



# City of Jacksonville Beach

## Agenda

11 North Third Street  
Jacksonville Beach, Florida

## City Council

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Monday, May 6, 2024

6:00 PM

Council Chambers

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### MEMORANDUM TO:

The Honorable Mayor and  
Members of the City Council  
City of Jacksonville Beach, Florida

Council Members:

The following Agenda of Business has been prepared for consideration and action at the Regular Meeting of the City Council.

### **OPENING CEREMONIES: INVOCATION, FOLLOWED BY SALUTE TO THE FLAG**

### **CALL TO ORDER**

### **ROLL CALL**

### **APPROVAL OF MINUTES**

- A. Regular City Council Meeting held on April 15, 2024

### **APPROVAL OF THE AGENDA**

### **ANNOUNCEMENTS**

### **COURTESY OF THE FLOOR TO VISITORS**

### **CONSENT AGENDA**

- A. Award RFP No. 03-2324 Special Events and Production Services to PRI Productions

### **MAYOR AND CITY COUNCIL**

- A. Proclamation for National Safe Boating Week  
B. Proclamation for American Legion Family Day  
C. Authorize Council Member Dan Janson to represent the City of Jacksonville Beach on the Board of Trustees for the Florida Municipal Investment Trust (FMIvT)

### **CITY CLERK**

### **CITY MANAGER/NEW BUSINESS**

- A. Approve/Disapprove a Roadway Illumination Services Agreement with the Florida Department of Transportation for State Road A1A from 7th Avenue North to Third Avenue South  
B. Approve/Disapprove an Agreement with Selectron to upgrade the IVR server  
C. Approve/Disapprove a Construction Services Agreement with Burns & McDonnell for all remaining engineering services, procurement of materials, and construction for a design-build contract for transmission system improvements and repairs for an amount not to exceed \$1,745,000 as the Contract Guaranteed Maximum Price

**RESOLUTIONS**

- A. Adopt/Deny Resolution No. 2171-2024 amending the Pay and Classification Plan for Managerial, Professional, and Administrative (Nonunion) Positions
- B. Adopt/Deny Resolution No. 2176-2024 designating the Director of Beaches Energy Services as attorney-in-fact for Beaches Energy Services; delegating signature authority to the Director of Beaches Energy Services for Roadway Illumination Services Agreements and other project-specific documents to complete performance thereof with the Florida Department Of Transportation (FDOT) when the one-time services charge to be paid by the FDOT to the City is less than \$25,000; and authorizing the City Manager to endorse any documentation required by the FDOT that evidences the authority granted herein

**ORDINANCES**

- A. Adopt/Deny Ordinance No. 2024-8211 on the second reading, vacating a 14-foot wide alley in Ocean Terrace Subdivision, Block 8
- B. Approve/Disapprove Ordinance No. 2024-8213 on the first reading approving the rezoning for property located at 602 N. 1st Street and 135, 129 and 123 N. 5th Avenue to Redevelopment District: RD, and schedule a second reading for May 20, 2024
- C. Approve/Disapprove Ordinance No. 2024-8214 on the first reading to transmit the 2050 Comprehensive Plan to the State Agencies for official review, and schedule a second reading for a future date to be determined
- D. Approve/Disapprove Ordinance No. 2024-8215 on the first reading amending Chapter 10 - Fire and Life Safety, Article III. - Fire Prevention and Life Safety, Section 10-3.03. - Codes Adopted, and schedule a second reading for May 20, 2024
- E. Approve/Disapprove Ordinance No. 2024-8216 on the first reading submitting to the electors of the City of Jacksonville Beach proposed amendments to the City of Jacksonville Beach Charter, and schedule a second reading for May 20, 2024

**ADJOURNMENT****NOTICE**

*In accordance with Section 286.0105, Florida Statutes, any person desirous of appealing any decision reached at this meeting may need a record of the proceedings. Such person may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based.*

*The public is encouraged to speak on issues on this Agenda that concern them. Anyone who wishes to speak should submit the request to the City Clerk or to the recording secretary prior to the beginning of the meeting. These forms are available at the entrance of the City Council Chambers for your convenience.*

*In accordance with the Americans with Disabilities Act and Section 286.26, Florida Statutes, persons with disabilities needing a special accommodation to participate in this meeting should contact the City Clerk's Office at (904) 247-6299 no later than one business day before the meeting.*



**Minutes of Regular City Council Meeting  
held Monday, April 15, 2024 at 6:00 P.M.  
in the Council Chambers, 11 North 3<sup>rd</sup> Street,  
Jacksonville Beach, Florida**



**OPENING CEREMONIES: INVOCATION, FOLLOWED BY SALUTE TO THE FLAG**

Council Member Janson provided the invocation, followed by the Pledge of Allegiance.

**CALL TO ORDER:**

Mayor Hoffman called the meeting to order at 6:00 P.M.

**ROLL CALL:**

Mayor: Christine Hoffman

|                  |                        |             |             |
|------------------|------------------------|-------------|-------------|
| Council Members: | Sandy Golding          | Bill Horn   | Dan Janson  |
|                  | Fernando Meza (remote) | Greg Sutton | John Wagner |

Also present were: City Manager Mike Staffopoulos, City Attorney David Migut, Chief Financial Officer Ashlie Gossett, Director of Planning and Development Heather Ireland, and City Clerk Sheri Gosselin.

**APPROVAL OF MINUTES:**

**Motion:** It was moved by Ms. Golding, seconded by Mr. Janson, and passed unanimously to approve the following minutes:

- Regular City Council Meeting held on April 1, 2024
- City Council Briefing held on April 8, 2024

**APPROVAL OF THE AGENDA**

**Motion:** It was moved by Ms. Golding, seconded by Mr. Janson, to approve the agenda.

**Voice Vote:** In a voice vote, the motion passed unanimously.

**ANNOUNCEMENTS:**

Council Member Golding participated in the Fletcher Band Donut Dash. She noted Senate Bill (SB) 280 (vacation rentals) was not yet sent to Governor DeSantis and Senator Michaels agreed to hand deliver the City's veto letter. She announced an Earth Day Community Cleanup would be held on April 20, 2024. She explained the Duval Shores Protection Project was expected to start April 23, 2024 with an expected completion date of June 15, 2024. She stated Beaches Watch would host an informational meeting on May 1, 2024 to discuss the project and beach renourishment.

Council Member Janson attended an artist meet and greet for the new beach sculpture "Water Walls."

Council Member Horn echoed Council Member Golding's sentiments and encouraged residents to reach out to the governor or state representatives regarding SB 280.

Mayor Hoffman attended the commemoration of the SS Gulfamerica on April 10, 2024. She announced the sandcastle contest would be held on April 27, 2024 and the Opening of the Beaches Parade on April 28, 2024. She asked the City Council to each nominate one citizen to judge the parade and sandcastle contest.

**COURTESY OF THE FLOOR TO VISITORS:**

- James Groark, 113 3<sup>rd</sup> Avenue South, Jacksonville Beach, spoke about parking issues
- K.C. Braun, 804 13<sup>th</sup> Avenue North, Jacksonville Beach, spoke about traffic dangers after bar hours
- Rachel Grage, 23 30<sup>th</sup> Avenue South, Jacksonville Beach, spoke about the stopping the school closings

**CONSENT AGENDA:**

**Item A**            **Accept the Monthly Financial Reports for the month of March 2024**

**Item B**            **Approve a Lease Agreement with ARC of St Johns, Inc., at 321 Penman Road**

**Item C**            **Adopt Resolution No. 2170-2024 extending the Contract Between the City of Jacksonville Beach and Lewis, Longman & Walker, P.A., for Primary and Alternate Special Magistrate Services for Code Enforcement**

**Motion:**        It was moved by Ms. Golding, seconded by Mr. Janson, to approve the Consent Agenda.

**Voice Vote:**    In a voice vote, the motion passed unanimously.

**MAYOR AND CITY COUNCIL:** None

**CITY CLERK:** None

**CITY MANAGER/NEW BUSINESS:** None

**RESOLUTIONS:**

**Item A**            **Adopt/Deny Resolution No. 2169-2024 amending the Operating Budget of the City of Jacksonville Beach, Florida for the Fiscal Year beginning October 1, 2023 and ending September 30, 2024**

Mayor Hoffman requested the City Clerk read Resolution No. 2169-2024 by title only, whereupon Ms. Gosselin read the following:

**“A RESOLUTION OF THE CITY OF JACKSONVILLE BEACH, FL  
AMENDING THE OPERATING BUDGET FOR THE FISCAL YEAR  
BEGINNING OCTOBER 1, 2023 AND ENDING SEPTEMBER 30,  
2024; AND PROVIDING FOR AN EFFECTIVE DATE.”**

Chief Financial Officer Ashlie Gossett provided background on the item.

**Motion:**        It was moved by Ms. Golding, seconded by Mr. Janson, to adopt Resolution No. 2169-2024 amending the Operating Budget of the City of Jacksonville Beach, Florida for the Fiscal Year beginning October 1, 2023 and ending September 30, 2024.

**Discussion:** None

**Roll Call Vote:** Ayes – Golding, Horn, Janson, Meza, Sutton, Wagner, and Mayor Hoffman

The motion passed unanimously.

**Item B      Adopt/Deny Resolution No. 2172-2024 requesting the Duval County School Board [DCPS] take action to ensure that Seabreeze Elementary School and San Pablo Elementary School continue to operate as the community's elementary schools and not be subject to closure.**

Mayor Hoffman provided background on the item. She read statements [on file] from the Mayor of Jacksonville Donna Deegan and School Board Representative April Carney.

**Public Hearing:**

The following spoke in support of the resolution:

- City of Jacksonville Councilman Rory Diamond, 1515 Oceanfront, Neptune Beach
- Elizabeth Borders, 1637 6<sup>th</sup> Avenue North, Jacksonville Beach
- Mandy Rubin, 582 8<sup>th</sup> Avenue North, Jacksonville Beach
- Natalie Brewster, 2519 Independence Drive, Jacksonville Beach
- Erin Mercer, 11 Democracy Court, Jacksonville Beach
- James Woods, 1645 6<sup>th</sup> Avenue North, Jacksonville Beach
- Kendra Sharp, 1211 18<sup>th</sup> Avenue North, Jacksonville Beach
- Jamilah McCann, 1867 Kings Court, Jacksonville Beach
- Jessica Morris, 3881 Poinciana Boulevard, Jacksonville Beach
- John Patrich, 707 1<sup>st</sup> Street South #304, Jacksonville Beach

The following submitted a speaker card in support of the resolution but did not wish to speak:

- Heather Nowicki, 12726 Josslyn Lane, Jacksonville
- Tabitha Tuggle, 13975 Sea Prairie Lane, Jacksonville
- Stephanie Scannapieco, 1302 West Defender Court, Atlantic Beach
- Christa Murphy, 519 6<sup>th</sup> Street North, Jacksonville Beach
- Edith Williams, 3906 Palm Way, Jacksonville Beach
- Lindsey Williams, 3906 Palm Way, Jacksonville Beach
- Colleen Newbegin, 14249 Crystal Cove Drive, Jacksonville
- Arielle Johnson, 27 San Pablo Circle North, Jacksonville Beach
- Kathy Armbruster, 1202 5<sup>th</sup> Avenue North, Jacksonville Beach
- Stafford Williams, 3906 Palm Way, Jacksonville Beach
- Erica Milam, 1152 13<sup>th</sup> Street North, Jacksonville Beach
- Jessica Morris, 3881 Poinciana Boulevard, Jacksonville Beach
- James Manson, 1704 9<sup>th</sup> Street North, Jacksonville Beach
- Jennifer Feber, 3916 Grande Boulevard, Jacksonville Beach
- Erin Harris, [no street address provided], Jacksonville Beach
- Melisia Bodkin, 1225 20<sup>th</sup> Street North, Jacksonville Beach
- Megan Weigel, 1227 Willow Oaks Drive West, Jacksonville Beach
- Erin Whittock, 819 16<sup>th</sup> Avenue North, Jacksonville Beach
- Stephanie Dixon, 2701 Isabella Boulevard, Jacksonville Beach
- Holly Scala, 850 Holly Drive, Jacksonville Beach
- Megan Tiliakos, 13 Freedom Way, Jacksonville Beach

- Karen Mitcham, 2200 Azalea Drive, Jacksonville Beach
- Frankie Mitcham, 2200 Azalea Drive, Jacksonville Beach
- K.C. Braun, 804 13<sup>th</sup> Avenue North, Jacksonville Beach
- Rachel Grage, 23 30<sup>th</sup> Avenue South, Jacksonville Beach

Mayor Hoffman closed the public hearing.

**Motion:** It was moved by Ms. Golding, seconded by Mr. Janson, to adopt Resolution No. 2172-2024 requesting the Duval County School Board take action to ensure that Seabreeze Elementary School and San Pablo Elementary School continue to operate as the community's elementary schools and not be subject to closure.

**Discussion:** Discussion ensued about the half-cent sales tax, the DCPS proposal, and the resolution.

**Motion to Amend:** It was moved by Mr. Janson, seconded by Mr. Sutton, to include the word “independently” after the word “operate” in the resolution.

**Discussion:** Discussion ensued about the amendment.

**Motion to Amend Roll Call Vote:** Ayes – Horn, Janson, Meza, Sutton, Wagner, Golding and Mayor Hoffman

The motion passed unanimously.

**Discussion:** Discussion ensued about the schools, school board, school choice, community comments, and the interlocal agreement.

**Amended Motion Roll Call Vote:** Ayes – Janson, Meza, Sutton, Wagner, Golding, Horn, and Mayor Hoffman

The amended motion passed unanimously.

#### **ORDINANCES:**

**Item A**      **Approve/Disapprove Ordinance No. 2024-8211 on the first reading, vacating a 14-foot-wide alley in Ocean Terrace Subdivision, Block 8, and schedule a second reading for May 6, 2024**

Mayor Hoffman requested the City Clerk read Ordinance No. 2024-8211 by title only, whereupon Ms. Gosselin read the following:

**“AN ORDINANCE OF THE CITY OF JACKSONVILLE BEACH, FLORIDA, VACATING, DISCONTINUING, ABANDONING, AND CLOSING A CERTAIN FOURTEEN (14) FOOT WIDE PUBLIC ALLEY RUNNING IN A NORTHERLY AND SOUTHERLY DIRECTION THROUGH THAT CERTAIN PROPERTY LOCATED IN THE CITY OF JACKSONVILLE BEACH, FLORIDA, KNOWN AS BLOCK 8, OCEAN TERRACE SUBDIVISION, ACCORDING TO THE PLAT BOOK THEREOF RECORDED IN PLAT BOOK**

**10, PAGE 2 OF THE CURRENT PUBLIC RECORDS OF DUVAL COUNTY, FLORIDA; PROVIDING FOR LEGISLATIVE FINDINGS, REPEAL OF CONFLICTING ORDINANCES, SEVERABILITY, SCRIVENER'S ERRORS, RECORDING AND NON-CODIFICATION, AND AN EFFECTIVE DATE."**

Mayor Hoffman read the following: "This ordinance is before this Council for a public hearing and consideration on its first reading. I will now open the public hearing on Ordinance No. 2024-8211."

**Public Hearing:**

The following spoke in support of the ordinance:

- Bryan Green, 3810 Tropical Terrace, Jacksonville Beach

Mayor Hoffman closed the public hearing.

Director of Planning and Development Heather Ireland provided background on the item.

**Motion:** It was moved by Ms. Golding, seconded by Mr. Janson, to approve Ordinance No. 2024-8211 on the first reading, vacating a 14-foot-wide alley in Ocean Terrace Subdivision, Block 8, and schedule a second reading for May 6, 2024.

**Discussion:** A discussion ensued about zoning, alleyways in other parts of the City, utilities, City policy, and vacating the property.

**Roll Call Vote:** Ayes – Meza, Sutton, Wagner, Golding, Horn, Janson, and Mayor Hoffman

The motion passed unanimously.

**ADJOURNMENT:**

**Motion:** It was moved by Ms. Golding, seconded by Mr. Janson, to adjourn.

**Voice Vote:** Ayes: Golding, Janson, Meza, Sutton, Wagner, Mayor Hoffman  
Nays: Horn  
The motion passed 6-1.

There being no further business, the meeting adjourned at 7:13 P.M.

Submitted by: Sheri Gosselin  
City Clerk

Approval:

\_\_\_\_\_  
Christine H. Hoffman, MAYOR

Date: \_\_\_\_\_



| CITY COUNCIL AGENDA ITEM |                                                        |
|--------------------------|--------------------------------------------------------|
| TO:                      | Michael J. Staffopoulos, City Manager                  |
| FROM:                    | Jason Phitides, Director of Parks and Recreation       |
| DATE:                    | 03/29/2024                                             |
| SUBJECT:                 | RFP No. 03-2324 Special Events and Production Services |

#### BACKGROUND

The intent of RFP No. 03-2324 Special Events and Production Services is to secure a full-service production company to assist with City-produced events. The scope of services consists of furnishing all labor, materials, supervision, insurance, tools, transportation, supplies, equipment, and all incidentals necessary to satisfactorily complete events, such as moonlight movies and music concerts.

Invitations were mailed to three vendors, in addition to the public advertisement of the solicitation. PRI Productions was the only respondent. Consideration for the contract award was based on qualifications, pricing, references, project team qualifications and proximity/location of the firm. The response was independently evaluated by members of the Special Events Committee with unanimous affirmation to award the contract to PRI Productions.

To review RFP No. 03-2324 in its entirety, click [here](#). The contract period will be one five-year term.

#### FINANCIAL IMPACT

Negotiated pricing for moonlight movies and music concerts is \$8,000 and \$25,000 each, respectively. The Special Events annual budget includes five moonlight movies and one music concert.

#### REQUESTED ACTION

Award RFP No. 03-2324 Special Events and Production Services to PRI Productions

#### ATTACHMENTS

1. PRI Productions' Response to RFP 03-2324
2. PRI Revised Pricing - RFP 03-2324
3. Notice of Intent to Submit RFP for Approval and Award by City Council



CITY OF JACKSONVILLE BEACH  
**SPECIAL EVENTS AND PRODUCTION SERVICES**  
**RFP: 03-2324**

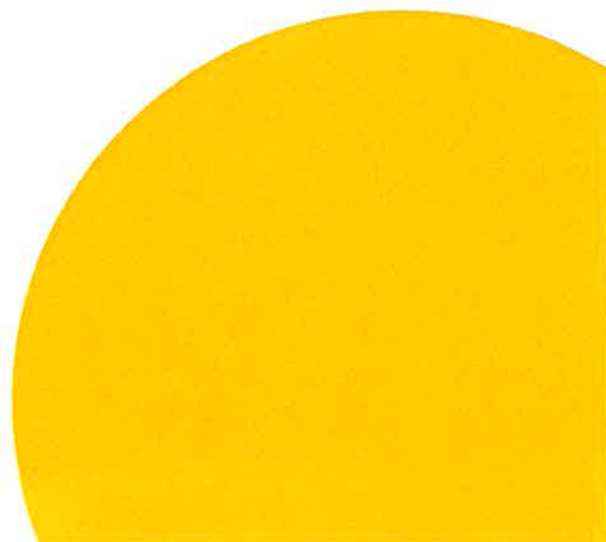
Prepared By



**PRODUCTIONS**

904.398.8179

1819 Kings Avenue  
Jacksonville, FL 32207





## TABLE OF CONTENTS

|                                              |    |
|----------------------------------------------|----|
| LETTER OF INTENT.....                        | 3  |
| QUALIFICATIONS .....                         | 4  |
| SCOPE OF SERVICES AND PRICING .....          | 10 |
| REFERENCES .....                             | 12 |
| PROJECT TEAM QUALIFICATIONS .....            | 7  |
| PROXIMITY/LOCATION OF FIRM .....             | 4  |
| REQUIRED DOCUMENTATION                       |    |
| FORM 1: PROPOSAL TENDER FORM .....           | 13 |
| FORM 2: RFP AWARD NOTICE .....               | 15 |
| FORM 3: REQUIRED DISCLOSURE .....            | 16 |
| FORM 4: DRUG-FREE WORKPLACE COMPLIANCE ..... | 17 |
| FORM 5: NON-COLLUSION AFFIDAVIT .....        | 18 |
| FORM 6: NON-BANKRUPTCY AFFIDAVIT .....       | 19 |
| W-9 .....                                    | 20 |
| ADDITIONAL DOCUMENTATION                     |    |
| PROOF OF INSURANCE .....                     | 21 |
| LOCAL BUSINESS TAX RECEIPT .....             | 23 |
| TALENT LICENSE .....                         | 24 |





## **PRODUCTIONS**

January 3, 2024

To Whom It May Concern,

PRI Productions is pleased to submit our bid to the City of Jacksonville Beach for Special Events and Production Services.

PRI Productions has served the Jacksonville area for almost thirty years, earning a reputation as the best in the business for events of all scale and caliber. Our company maintains all required licenses and insurances, which you can find verification of in this submission packet.

PRI Productions stands out as one of the few production companies with a variety of in-house services to bring our events to life. Our operation includes in-house audio/visual, printing, photography, videography, equipment rentals, design, floral, and more. Our team of highly skilled professionals work closely together to ensure every event's needs are met and executed above expectations. Our 100,000+ square feet of property across five buildings allows us to own a vast amount of inventory to service events of every size.

Our team is proud of the work we produce and our commitment to the Jacksonville community. Our historical knowledge and understanding of the importance of producing a quality event while remaining within a budget is invaluable to our clients. Please note, the pricing outlined in this proposal reflect additional equipment than historically utilized, including LED walls, multi-camera live video production, rigging, etc. Pricing can be modified and decreased if these elements do not fit in the budget of the event. We look forward to the opportunity to continue our work and partnership with the City of Jacksonville Beach.

Sincerely,  
Mallory Wanek Born

PRI Productions  
Vice President | Business Development and Community Relations  
(O) 904. 398. 8179  
malloryb@priproductions.com  
1819 Kings Avenue  
Jacksonville, FL 32207

# WHO WE ARE



PRI Productions is a full-service event design, planning, and production company that elevates ordinary events into extraordinary experiences. Founded in 1994 by Randy Goodwin, PRI Productions has grown to become one of the largest and most reputable event production companies in the Southeast United States. With a full time staff of 100 members, our team is comprised of professional individuals with expertise in a vast array of specialties from A/V Production, Event Logistics, Specialty Décor Styling, Graphic Design and more. Our staff is known for their innovative creations and attention to detail in all aspects of production, from entertainment and branding to everything in between. PRI Productions is proud to call the city of Jacksonville home, with our headquarters offices located in the San Marco neighborhood.

**List events produced for other municipal entities over the past three years**

PRI Productions has produced events for the City of Jacksonville, City of Jacksonville Beach, and City of Fernandina Beach including, but not limited to:

- Jacksonville Jazz Festival
- Moonlight Movies
- Sea & Sky Air Show
- Fourth of July Celebration
- World of Nations
- Dickens on Centre
- Clay County Agricultural Fair
- TaxSlayer Gator Bowl
- Jacksonville Beach Jazz Series
- FL/GA Game and Fanfare Festival
- Jacksonville Fair

**Describe experience providing sound and lighting for music concerts.**

At PRI Productions, our Audio/Visual department excels in the world of concert production. PRI Productions has had the pleasure to be the exclusive provider for events such as the Jacksonville Jazz Festival and acts as a preferred vendor for Daily's Place Amphitheater. Our skilled concert team has provided sound, video, and lighting for organizations including the Jacksonville Symphony, Don't Miss a Beat and artists such as Weezer, Baby Face, Dustin Lynch, Flo-Rida, Lady A, Lumineers, Darius Rucker, Bastille, Styxx, and Blue Oyster Cult.



**Describe experience providing outdoor projection for Moonlight Movies.**

Our PRI Productions teams have worked on the City of Jacksonville Beach Moonlight Movies for over a decade. Additionally, we have provided outdoor theater productions for various social and religious organizations over the years, including but not limited to Community Hospice Doors & More, Dickens on Centre, and many Covid-era drive in theaters such as Ramona Pavilion and private/corporate events.

**Number of years in business and breadth of company**

PRI Productions has been servicing the greater Northeast Florida region for 30 years, celebrating its 30th anniversary in June of 2024.

On average PRI Productions produces approximately 30-40 events per week and has the capacity to produce multiple events simultaneously on any given day. Our staff of 100 and fleet of over 20 vehicles allows our team to spread their expertise across multiple venues and locales.





## MEET YOUR TEAM



**Antonio Benitez**  
**Senior Event Producer**

Antonio has been with PRI Productions for four years and has had the pleasure of working closely with the City of Jacksonville Beach on Moonlight Movies. He brings years of client production experience from his time in the marketing industry in Puerto Rico prior to PRI Productions.



**Daniel Nelson**  
**Director of Technical Production**

Daniel Nelson has worked with PRI Productions for a decade as the Lead Lighting Designer before advancing to his role as Director of Technical Production. He specializes in concert lighting and video techniques, with a vast experience in rigging and power specialties.



**Stephen Pelkey**  
**Director of Event Technology**

Stephen Pelkey oversees our Audio/Visual Departments. His experience as Lead Audio Technician has allowed him to excel in the world of concert and sound production. Stephen Pelkey also brings years of stage management to the table, working closely with artists and production teams.

### **Staff Requirements**

PRI Productions proposes that music concert production will require a staff inclusive of a Project Manager, Front of House Audio Engineer, Monitor Engineer, Lighting Board Operator, Video Director, Camera Operators and Stage Hands as needed as well as additional labor to complete the scope of work and rider.

Moonlight movie production will require a staff inclusive of Project Manager, Audio Engineer, Projectionist, Video Engineer, and additional labor depending on scope of work and rider of event. Additional labor hands will be required for hard-goods and rentals for ancillary services.

**Ability to produce simultaneous events**

On average PRI Productions produces approximately 30-40 events a week and has the capability to produce multiple events simultaneously on any given day. Our staff of 100 and fleet of over 20 vehicles allows our team to spread their expertise across multiple venues and locales.

**List of preferred sub-contractors**

Backline: Eventcraft Backline

Power and Heavy Equipment: Sunbelt Rentals or United Rentals

Crowd Control: Sunbelt Rentals, United Rentals or United Site Services

PRI Productions requires that the City of Jacksonville Beach provides heavy equipment, scissor lift and boom lift, and power to complete the scope of work for all events. Additionally, PRI Productions requires a 48 hour window for load in and 24 hour window for load out, during which the City of Jacksonville Beach will be required to provide manned security for the duration of timeline.



## WHAT WE DO

With over 100,000+ square feet of inventory and resources across five properties, and one of the largest delivery fleets of any of our competitors, PRI Productions is one of the only full-service production companies in Jacksonville. Our company boasts multiple disciplines of equipment and talented full-time staff. When it comes to concert and video production, we are well equipped to service any need our clients bring to us. Our inventory includes but is not limited to:

- Meyer Line Array PA system
- DAS Lind Array PA system
- Digico and Midas consoles
- Shure Wireless microphones and EIM
- L'Acoustics monitors
- Audio interface to play required content
- Blu-ray, DVD, VHS systems
- Intelligent lighting fixtures from manufacturers like Martin, Chauvet and Clay Paky
- GrandMA and Chamsys lighting consoles
- Professional rigging systems including chain motors, Tyler GT truss systems
- Hazers
- HD studio recorders
- HD studio cameras
- Outdoor rated LED video walls
- Media servers
- BlackMagic HD switchers
- Panasonic laser projectors
- Custom 30' wide outdoor rated theater projection screen
- Generators
- Cable management systems
- Staging
- Tents
- Tables
- Chairs
- Specialty furniture
- Large theme props and custom creations
- Green screens and photo booths

# SCOPE OF WORK

In accordance with RFP 03-2324 PRI Productions proposes to provide the below items for one music concert at Seawalk Pavilion and one outdoor moonlight movie at Seawalk Pavilion:

## Lighting

- Movie: Lighting for title and sponsor banners
- Concert: Front and back lighting with atmospheric effects for concert music experience

## Audio

- Movie: Line-Array PA system to provide adequate sound for pavilion event space
- Concert: Line-Array PA system to provide adequate sound for pavilion event space and audio support for band

## Video Coverage and Screens

- Concert: Flown LED video screens with HD camera and switchers for video experience as needed

## Large theater screen with projection and sound equipment

- Movie: Custom 30' theater screen with laser projection equipment

## Graphic elements for both events

- Printed truss banner (one print run for duration of series)
- Videography, graphics and full production services for event commercials, logo loops and promotional display

## Turn-key events

- Services include labor and delivery for set-up and breakdown as needed for each event

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PRI Productions has the capability to provide the below inventory and services as addition to event contracts:

## Stage Props and decorations including but not limited to:

- Band stage risers
- Stage draping
- Oversize thematic props

## Plants, tents, tables, chairs and linens including but not limited to:

- Basic plant package for stage
- Upgraded stage seating available
- Multiple styles of tents, tables, chairs and linens

## Inflatables and outdoor interactive games

## Media services including photography, videography and additional graphic services



## PROPOSED PRICING STRUCTURE

PRI Productions requires that the City of Jacksonville Beach provides heavy equipment, scissor lift and boom lift, and power to complete the scope of work for all events. Additionally, PRI Productions requires a 48 hour window for load in and 24 hour window for load out, during which the City of Jacksonville Beach will be required to provide manned security for the duration of timeline.

### MUSIC CONCERT

|                    |                |
|--------------------|----------------|
| Equipment Rental   | \$ 53,000.00   |
| Labor and Delivery | \$ 12,000.00   |
| Sponsorship        | - \$ 29,750.00 |

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|        |              |
|--------|--------------|
| TOTAL: | \$ 35,250.00 |
|--------|--------------|

### MOONLIGHT MOVIE

|                    |                |
|--------------------|----------------|
| Equipment Rental   | \$ 16,500.00   |
| Labor and Delivery | \$ 3,500.00    |
| Sponsorship        | - \$ 10,000.00 |

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|        |              |
|--------|--------------|
| TOTAL: | \$ 10,000.00 |
|--------|--------------|

PRI Productions is proud to offer an in-kind sponsorship on both of the above events, providing that the below terms are accepted by the City of Jacksonville Beach

- Presenting Sponsor title and Title Sponsorship with equal billing to the City of Jacksonville Beach in all marketing materials
- Name, logo and sponsorship title inclusion in all event collateral
- Name, logo (where applicable) and sponsorship title inclusion in all information issued to the media
- Live mentions from main stage throughout event at least 5x
- 10 pre-paid parking tickets for all events
- 30 VIP tickets and 15 VIP pre-paid parking tickets for events when applicable

# REFERENCES

PRI Productions has had the pleasure to work with many notable clients over the years. Below are references for contacts whose event scope has been that of similar size and scale to the events proposed in this bid.

City of Jacksonville Special Events

Ross Triner

Event Operations Assistant Manager

904.255.5427

rtriner@coj.net

Events include: Jacksonville Jazz Festival, Sea & Sky Show, World of Nations

Jacksonville Jaguars and EverBank Stadium

Jenn Toy

Senior Director of Events and Entertainment

904.633.6572

toyj@nfl.jaguars.com

Events include: Jacksonville Jaguars Gameday Production and Entertainment, Jacksonville Jaguars Draft Party, Constellation Furyk & Friends Concert

Clay County Agricultural Fair

Tasha Hyder

Executive Director

904.284.1615

tasha@claycountyfair.org

Events include: Concert support for acts including Vanilla Ice, Nelly, Scotty McCreery, Montgomery Gentry

For project team qualifications please refer to page 7

For proximity/location of firm please refer to page 4

## FORM 1: PROPOSAL TENDER FORM

RFP NUMBER: 03-2324

RFP DATE: January 3, 2023

TO: THE CITY OF JACKSONVILLE BEACH, FLORIDA

FROM: Presentation Resource Inc, DBA PRI Productions

1819 Kings Avenue, Jacksonville, FL 32207

Submitter is solely responsible for developing / determining / verifying for this contract work all plans / all methods / all quantities / all measurements and all manufacturers' requirements / recommendations necessary to provide satisfactory fully completed contract work under the provisions of the RFP, to the City's satisfaction, to include costs for all labor, all equipment, all materials, all rental / leasing / purchasing of equipment and materials, all preparations, all repairs, all safety work, all quality control work, all disposal work, all mobilization and demobilization work, all sub-contractor work, all taxes, all insurance, all bonding if required, all inspection work, all verification work, all warranty work, all permitting at all levels of government, all contractor overhead, all contractor profit, and any / all other contract related work and/or cost / expense that is not listed, and all of which shall be the basis for the respondent's **Proposal** for each Event Type.

Respondent must provide a price on each event type listed. All entries in the proposal must be made clearly in ink. Prices on the **Proposal Tender Form** must be written in figures. Proposals in which the prices obviously are unbalanced may be rejected by the City at its sole discretion.

In accordance with the RFP to provide the completed work for **Special Events and Production Services** for the City of Jacksonville Beach, Florida, subject to the Specifications and Addenda, if any, all of which are made a part of the respondent's Proposal, thereof, the undersigned hereby submits the **Proposal Tender Form** for each of the following:

| Event (Description)     | Amount       |
|-------------------------|--------------|
| One (1) Music Concert   | \$ 35,250.00 |
| One (1) Moonlight Movie | \$ 10,000.00 |

The City reserves the sole prerogative whether or not to order / contract for any and all work listed in this proposal, and when the work is to be done, all in the best interests of the City. The respondent agrees that this proposal shall be good and may not be withdrawn for a period of 90 days after the opening of proposals

## FORM 1: PROPOSAL TENDER FORM

### RFP DOCUMENT TURN-IN CHECKLIST

The following documents are to be completed, signed and submitted as part of the Submittal Package in response to this RFP. Failure to provide the listed documents may be cause for the CITY to consider rejection of the submitted RFP. This consideration will be at the sole discretion of the CITY.

| INITIAL<br>Check-Off | #  | SECTION TITLE                                                                                                              |
|----------------------|----|----------------------------------------------------------------------------------------------------------------------------|
| [initials]           | 1. | FORM 1: PROPOSAL TENDER FORM (Page 29-30)                                                                                  |
| [initials]           | 2. | FORM 2: RFP AWARD NOTICE (Page 31)                                                                                         |
| [initials]           | 3. | FORM 3: REQUIRED DISCLOSURE (Page 32)                                                                                      |
| [initials]           | 4. | FORM 4: DRUG-FREE WORKPLACE COMPLIANCE (Page 33)                                                                           |
| [initials]           | 5. | FORM 5: NON-COLLUSION AFFIDAVIT (Page 34)                                                                                  |
| [initials]           | 6. | FORM 6: NON-BANKRUPTCY AFFIDAVIT (Page 35)                                                                                 |
| [initials]           | 7. | W-9 (Attach completed and signed form, which can be obtained from <a href="http://www.irs.gov">www.irs.gov</a> ) (Page 36) |

**NOTE:** Please INITIAL Check-Off of each *document / activity / requirement* that is attached to the Proposal Tender Form and/or is required by the RFP and/or Addenda.

### ADDENDA RECEIPT VERIFICATION

Respondent shall acknowledge receipt of all addenda, if any, to the RFP, by filling in Addenda Numbers and dates below.

|                                |                                |
|--------------------------------|--------------------------------|
| Addendum #: _____ Dated: _____ | Addendum #: _____ Dated: _____ |
| Addendum #: _____ Dated: _____ | Addendum #: _____ Dated: _____ |



**FORM 2: RFP AWARD NOTICE**

***City of Jacksonville Beach***

1460A Shetter Avenue, Jacksonville Beach, FL 32250, (904) 247-6229

**NOTICE:** Items 1 to 6 are to be completed by the respondent. The respondent is to submit the form to the CITY along with the Proposal Tender Form and other required documents.

1. **Company Name:** Presentation Resource Inc, DBA PRI Productions
2. **Address:** 1819 Kings Avenue
3. **City, State & Zip:** Jacksonville, Florida 32207
4. **Attention:** Mallory Wanek Born
5. **Phone:** 904.398.8179
6. **E-mail address:** malloryb@priproductions.com
- PLEASE PRINT CLEARLY**

\*\*\*\*\*  
**ITEMS BELOW TO BE COMPLETED BY THE CITY OF JACKSONVILLE BEACH**  
\*\*\*\*\*

Proposals were received and evaluated, and the following recommendation will be presented to the City Manager for award of **RFP No. 03-2324** per the attached Proposal Tabulation form(s).

A written notice of intent to file a protest must be filed with the Purchasing Administrator within three (3) days after receipt by the respondent of the Notice of Intent to Submit RFP for Approval and Award by City Council from the Purchasing Administrator in accordance with the procedures set forth in Section XII K., City of Jacksonville Beach Purchasing Manual.

If awarded RFP, please do not proceed with any work prior to receiving an official City of Jacksonville Beach Purchase Order and/or Notice-to-Proceed letter.

Thank you for your proposal.  
Sincerely,

**CITY OF JACKSONVILLE BEACH**  
/s/Luis F. Flores  
Property and Procurement Division

### FORM 3: REQUIRED DISCLOSURE

The following disclosure is of all material facts pertaining to any felony conviction or any pending felony charges in the last three (3) years in this State or any other state or the United States against (1) respondent, (2) any business entity related to or affiliated with respondent, or (3) any present or former owner of respondent or of any such related or affiliated entity. This disclosure shall not apply to any person or entity which is only a stockholder, which person or entity owns twenty (20) percent or less of the outstanding shares of a respondent whose stock is publicly owned and traded:

n/a

Signed: 

Title: 1/3/2024

Contractor: \_\_\_\_\_

## FORM 4: DRUG-FREE WORKPLACE COMPLIANCE

**IDENTICAL TIE PROPOSALS** - Preference shall be given to businesses with drug-free workplace programs. Whenever two or more proposals, which are equal with respect to price, quality and service, are received by the State or by any political subdivision for the procurement of commodities or contractual services, a proposal received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie proposals will be followed if none of the tied vendors have a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

- 1) Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
- 2) Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation and employee assistance programs and the penalties that may be imposed upon employees for drug abuse violations.
- 3) Give each employee engaged in providing the commodities or contractual services that are under contract a copy of the statement specified in subsection (1).
- 4) In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under contract, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
- 5) Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.
- 6) Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

  
\_\_\_\_\_  
Vendor's Signature



## FORM 5: NON-COLLUSION AFFIDAVIT

Mallory Wank Born, being first duly sworn deposes and says that:

1. He (it) is the VP. of Business Development and <sup>community relations of PR</sup> Productions the respondent that has submitted the attached proposal;
2. He is fully informed respecting the preparation and contents of the attached proposal and of all pertinent circumstances respecting such proposal;
3. Such proposal is genuine and is not a collusive or sham proposal;
4. Neither the said respondent nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affidavit, have in any way, colluded, conspired, connived or agreed, directly or indirectly, with any other respondent, firm or person to submit a collusive or sham proposal in connection with the Contract for which the attached proposal has been submitted; or to refrain from responding in connection with such Contract; or have in any manner, directly or indirectly, sought by agreement or collusion or communication, or conference with any respondent firm, or person to fix the price or prices in the attached proposal or of any other respondent or to fix any overhead, profit, or cost elements of the proposal price or the proposal price of any other respondent, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against other respondents, or any person interested in the proposed Contract;
5. The price or prices quoted in the attached proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the respondent or any other of its agents, representatives, owners, employees or parties in interest, including his affidavit.

By: MWB

Sworn and subscribed to before me this 3<sup>rd</sup> day of January, 2024,  
in the State of FLORIDA, County of DUVAL.

[Signature] Notary Public

My Commission Expires: 4-12-2024



AMY F. KNOPF  
Commission # GG 977985  
Expires April 12, 2024  
Bonded Thru Budget Notary Services

**FORM 6: NON-BANKRUPTCY AFFIDAVIT**

**RFP #: 03-2324**

STATE OF FLORIDA )

COUNTY OF DUVAL )

Randall Goodwin is an officer and member of  
the firm of PRI PRODUCTIONS, being first duly sworn, deposes and  
states that;

1. The subsequent certification statement is a true and accurate statement as of the date shown below.
2. The affiant understands that the intentional inclusion of false, deceptive or fraudulent statements on this Non-Bankruptcy Affidavit constitutes fraud; and, that the City of Jacksonville Beach, Florida, considers such action on the part of the affiant to constitute good cause for denial, suspension, revocation, disqualification, or rejection of affiant's participation in **RFP No. 03-2324**
3. Certification Statement: This is to certify that the aforementioned firm has not filed for bankruptcy in the past seven (7) years and that no owner/officer or principal of the aforementioned firm has filed for bankruptcy personally in the past seven (7) years or has been an owner/officer or principal of a firm which has filed for bankruptcy in the past seven (7) years.

[Signature]  
Affiant Signature

Sworn to before me this 3<sup>rd</sup> day of January, 2024 by Randall Goodwin  
(Name of affiant)

He/She is personally known to me or has produced \_\_\_\_\_ as identification.

[Signature]  
Signature of Notary

Notary's Printed Name

Amy F. Knopf

Affix Seal Here:

Expiration of Notary's Commission



AMY F. KNOPF  
Commission # GG 977985  
Expires April 12, 2024  
Bonded Thru Budget Notary Services

## Request for Taxpayer Identification Number and Certification

► Go to [www.irs.gov/FormW9](http://www.irs.gov/FormW9) for instructions and the latest information.

Give Form to the  
requester. Do not  
send to the IRS.

1 Name (as shown on your income tax return). Name is required on this line, do not leave this line blank.  
Presentation Resource, Inc

2 Business name/disregarded entity name, if different from above  
DBA PRI Productions

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC

☐ C Corporation

☒ S Corporation

☐ Partnership

☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ► \_\_\_\_\_

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ► \_\_\_\_\_

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) \_\_\_\_\_

Exemption from FATCA reporting code (if any) \_\_\_\_\_

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.  
1819 Kings Ave

6 City, state, and ZIP code  
Jacksonville, FL 32207

7 List account number(s) here (optional)

8 Requester's name and address (optional)

### Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

or

Employer identification number

59 - 3248817

### Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person Date ► 4/1/2024

### General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

**Future developments.** For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to [www.irs.gov/FormW9](http://www.irs.gov/FormW9).

### Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
  - Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
  - Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
  - Form 1099-S (proceeds from real estate transactions)
  - Form 1099-K (merchant card and third party network transactions)
  - Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
  - Form 1099-C (canceled debt)
  - Form 1099-A (acquisition or abandonment of secured property)
- Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding*, later.





# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

2/13/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

|                                                                                                                            |                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PRODUCER<br>Arthur J. Gallagher Risk Management Services, LLC<br>501 Riverside Avenue, Suite 1000<br>Jacksonville FL 32202 | CONTACT NAME:<br>PHONE (A/C No. Ext): 904-354-3785<br>FAX (A/C No.): 904-634-1302<br>E-MAIL:<br>ADDRESS:<br>INSURER(S) AFFORDING COVERAGE<br>INSURER A: Atlantic Specialty Insurance Company<br>INSURER B:<br>INSURER C:<br>INSURER D:<br>INSURER E:<br>INSURER F: |
| INSURED<br>Presentation Resource, Inc.<br>Glen Neal<br>1819 Kings Avenue<br>Jacksonville FL 32207                          | PRESRES-05<br>NAIC #<br>27154                                                                                                                                                                                                                                      |

## COVERAGES

CERTIFICATE NUMBER: 1485676365

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| INSR LTR | TYPE OF INSURANCE                                                                                                                                                                                                                                                                                                                                                                               | ADOL SUBR                           | POLICY NUMBER     | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS                                                                                                                                                                                                                                         |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------|-------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A        | <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY<br><input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR<br><input type="checkbox"/><br><input type="checkbox"/><br>GEN'L AGGREGATE LIMIT APPLIES PER:<br><input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC<br><input type="checkbox"/> OTHER |                                     | GL05667-02        | 2/8/2023                | 2/8/2024                | EACH OCCURRENCE \$ 1,000,000<br>DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000<br>MED EXP (Any one person) \$ 5,000<br>PERSONAL & ADV INJURY \$ 1,000,000<br>GENERAL AGGREGATE \$ 2,000,000<br>PRODUCTS - COMP/OP AGG \$ 1,000,000<br>\$ |
| A        | <input type="checkbox"/> AUTOMOBILE LIABILITY<br><input type="checkbox"/> ANY AUTO<br><input type="checkbox"/> OWNED AUTOS ONLY<br><input checked="" type="checkbox"/> HIRED AUTOS ONLY<br><input type="checkbox"/> SCHEDULED AUTOS<br><input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY                                                                                                 |                                     | 710-03-99-27-0002 | 2/8/2023                | 2/8/2024                | COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000<br>BODILY INJURY (Per person) \$<br>BODILY INJURY (Per accident) \$<br>PROPERTY DAMAGE (Per accident) \$<br>\$                                                                                |
| A        | <input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR<br><input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE<br><input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$ 0                                                                                                                                     |                                     | EX04107-02        | 2/8/2023                | 2/8/2024                | EACH OCCURRENCE \$ 1,000,000<br>AGGREGATE \$ 1,000,000<br>\$<br>PER STATUTE <input type="checkbox"/> OTH-ER <input type="checkbox"/>                                                                                                           |
|          | WORKERS COMPENSATION AND EMPLOYERS' LIABILITY<br>ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)<br>If yes, describe under DESCRIPTION OF OPERATIONS below                                                                                                                                                                                                          | Y/N<br><input type="checkbox"/> N/A |                   |                         |                         | E.L. EACH ACCIDENT \$<br>E.L. DISEASE - EA EMPLOYEE \$<br>E.L. DISEASE - POLICY LIMIT \$                                                                                                                                                       |
| A        | Inland Marine                                                                                                                                                                                                                                                                                                                                                                                   |                                     | 710-04-18-00-0001 | 2/8/2023                | 2/8/2024                | Unscheduled Equipment Deductible \$2,500<br>Special Include Theft \$2,000,000 Replacement cost                                                                                                                                                 |

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

The Certificate Holder is listed as Additional Insured with respects to General Liability but only as respects to claims arising out of the negligence of the original named insured

## CERTIFICATE HOLDER

## CANCELLATION

City of Jacksonville Beach  
1460A Shetter Ave.  
Jacksonville Beach FL 32250

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

© 1988-2015 ACORD CORPORATION. All rights reserved.



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
01/02/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

|                                                                                                                        |  |                                                                                                                                                                                                                           |  |
|------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>PRODUCER</b><br>J Kevin Campbell Agency<br>P O Box 9435<br><br>Panama City Beach FL 32417                           |  | <b>CONTACT NAME:</b> Kian Ostovar<br><b>PHONE (A/C, No, Ext):</b> (800) 508-9126 <b>FAX (A/C, No):</b> (877) 234-6089<br><b>E-MAIL ADDRESS:</b> kostovar@workcompspecialists.com                                          |  |
| <b>INSURED</b><br><br>Presentation Resources, Inc. DBA: PRI Productions<br>1819 Kings Ave<br><br>Jacksonville FL 32207 |  | <b>INSURER(S) AFFORDING COVERAGE</b><br><b>INSURER A:</b> Bridgefield Casualty Insurance Co. <b>NAIC #</b> 10335<br><b>INSURER B:</b><br><b>INSURER C:</b><br><b>INSURER D:</b><br><b>INSURER E:</b><br><b>INSURER F:</b> |  |

## COVERAGES

**CERTIFICATE NUMBER:** CL2381114238

**REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| INSR LTR | TYPE OF INSURANCE                                                                                                                                                                                                                                                                              | ADDL INFO | SUBR | POLICY NUMBER | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS                                                                                                                                                                                                   |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|---------------|-------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | <b>COMMERCIAL GENERAL LIABILITY</b><br><input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR<br><br><b>GEN'L AGGREGATE LIMIT APPLIES PER:</b><br><input type="checkbox"/> POLICY <input type="checkbox"/> PROJECT <input type="checkbox"/> LOC<br><input type="checkbox"/> OTHER |           |      |               |                         |                         | EACH OCCURRENCE \$<br>DAMAGE TO RENTED PREMISES (Ea occurrence) \$<br>MED EXP (Any one person) \$<br>PERSONAL & ADV INJURY \$<br>GENERAL AGGREGATE \$<br>PRODUCTS - COMP/OP AGG \$<br>\$                 |
|          | <b>AUTOMOBILE LIABILITY</b><br><input type="checkbox"/> ANY AUTO<br><input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS<br><input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY                                              |           |      |               |                         |                         | COMBINED SINGLE LIMIT (Ea accident) \$<br>BODILY INJURY (Per person) \$<br>BODILY INJURY (Per accident) \$<br>PROPERTY DAMAGE (Per accident) \$<br>\$                                                    |
|          | <b>UMBRELLA LIAB</b> <input type="checkbox"/> OCCUR<br><b>EXCESS LIAB</b> <input type="checkbox"/> CLAIMS-MADE<br><b>DED</b> <input type="checkbox"/> RETENTION \$                                                                                                                             |           |      |               |                         |                         | EACH OCCURRENCE \$<br>AGGREGATE \$<br>\$                                                                                                                                                                 |
| A        | <b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b><br>ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)<br>If yes, describe under DESCRIPTION OF OPERATIONS below                                                                                                  | Y/N<br>Y  | N/A  | 196-39555     | 09/19/2023              | 09/19/2024              | <input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER<br>E.L. EACH ACCIDENT \$ 1,000,000<br>E.L. DISEASE - EA EMPLOYEE \$ 1,000,000<br>E.L. DISEASE - POLICY LIMIT \$ 1,000,000 |
|          |                                                                                                                                                                                                                                                                                                |           |      |               |                         |                         |                                                                                                                                                                                                          |

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 104, Additional Remarks Schedule, may be attached if more space is required)

## CERTIFICATE HOLDER

|                                                                                        |                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| City of Jacksonville Beach<br>1460 A Shelter Avenue<br><br>Jacksonville Beach FL 32250 | <b>CANCELLATION</b><br><br>SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.<br><br>AUTHORIZED REPRESENTATIVE<br><br> |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|





## 2024 Florida Annual Resale Certificate for Sales Tax

DR-13  
R. 10/23

**This Certificate Expires on December 31, 2024**

Business Name and Location Address

Certificate Number

PRESENTATION RESOURCE, INC.  
1819 KINGS AVE  
JACKSONVILLE, FL 32207-8727

26-8012072259-0

By extending this certificate or the certificate number to a selling dealer to make eligible purchases of taxable property or services exempt from sales tax and discretionary sales surtax, the person or business named above certifies that the taxable property or services purchased or rented will be resold or re-rented for one or more of the following purposes:

- Resale as tangible personal property
- Re-rental as tangible personal property
- Resale of services
- Re-rental as commercial real property
- Incorporation into tangible personal property being repaired
- Re-rental as transient rental property
- Incorporation as a material, ingredient, or component part of tangible personal property that is being produced for sale by manufacturing, compounding, or processing

Your *Florida Annual Resale Certificate for Sales Tax* (Annual Resale Certificate) allows you or your representatives to buy or rent property or services tax exempt when the property or service is resold or re-rented. You **may not** use your Annual Resale Certificate to make tax-exempt purchases or rentals of property or services that will be used by your business or for personal purposes. Florida law provides for criminal and civil penalties for fraudulent use of an Annual Resale Certificate.

**As a seller**, you must document each tax-exempt sale for resale using one of three methods. You can use a different method each time you make a tax-exempt sale for resale.

1. Obtain a copy (paper or electronic) of your customer's current Annual Resale Certificate.
2. For each sale, obtain a transaction authorization number using your customer's Annual Resale Certificate number.
3. Each calendar year, obtain annual vendor authorization numbers for your regular customers using their Annual Resale Certificate numbers.

**Online:** Visit [floridarevenue.com/taxes/certificates](https://floridarevenue.com/taxes/certificates)

**Phone:** 877-357-3725 and enter your customer's Annual Resale Certificate number

**Mobile App:** Available for iPhone, iPad, and Android devices



Ron DeSantis, Governor

Melanie S. Griffin, Secretary



**STATE OF FLORIDA**  
**DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION**

**OFFICE OF TALENT AGENCIES**

THE TALENT AGENCY HEREIN IS LICENSED UNDER THE  
PROVISIONS OF CHAPTER 468, FLORIDA STATUTES

**PRESENTATION RESOURCE INC**

PRI PRODUCTIONS  
1819 KINGS AVENUE  
★ JACKSONVILLE FL 32207 ★

**LICENSE NUMBER: TA1158**

**EXPIRATION DATE: MAY 31, 2024**

Always verify licenses online at [MyFloridaLicense.com](http://MyFloridaLicense.com)



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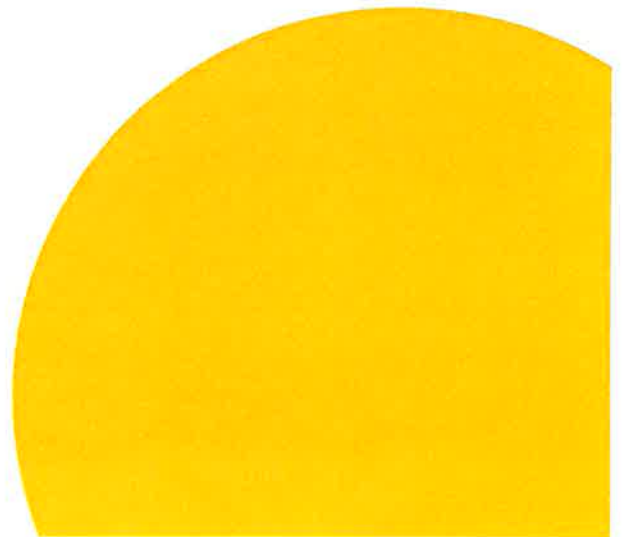
Prepared By



**PRODUCTIONS**

904.398.8179

1819 Kings Avenue  
Jacksonville, FL 32207





# REVISED

## PROPOSED PRICING STRUCTURE

PRI Productions requires that the City of Jacksonville Beach provides heavy equipment, scissor lift and boom lift, and power to complete the scope of work for all events. Additionally, PRI Productions requires a 48 hour window for load in and 24 hour window for load out, during which the City of Jacksonville Beach will be required to provide manned security for the duration of timeline.

### MUSIC CONCERT

|                    |                |
|--------------------|----------------|
| Equipment Rental   | \$ 32,600.00   |
| Labor and Delivery | \$ 10,400.00   |
| Sponsorship        | - \$ 18,000.00 |

---

|        |              |
|--------|--------------|
| TOTAL: | \$ 25,000.00 |
|--------|--------------|

### MOONLIGHT MOVIE

|                    |                |
|--------------------|----------------|
| Equipment Rental   | \$ 15,925.00   |
| Labor and Delivery | \$ 3,500.00    |
| Sponsorship        | - \$ 11,425.00 |

---

|        |             |
|--------|-------------|
| TOTAL: | \$ 8,000.00 |
|--------|-------------|

PRI Productions is proud to offer an in-kind sponsorship on both of the above events, providing that the below terms are accepted by the City of Jacksonville Beach

- Presenting Sponsor title and Title Sponsorship with equal billing to the City of Jacksonville Beach in all marketing materials
- Name, logo and sponsorship title inclusion in all event collateral
- Name, logo (where applicable) and sponsorship title inclusion in all information issued to the media
- Live mentions from main stage throughout event at least 5x
- 10 pre-paid parking tickets for all events
- 30 VIP tickets and 15 VIP pre-paid parking tickets for events when applicable



# REVISED SCOPE OF WORK

In accordance with RFP 03-2324 PRI Productions proposes to provide the below items for one music concert at Seawalk Pavilion and one outdoor moonlight movie at Seawalk Pavilion:

## Lighting

- Movie: Lighting for title and sponsor banners
- Concert: Front and back lighting with atmospheric effects for concert music experience

## Audio

- Movie: Line-Array PA system to provide adequate sound for pavilion event space
- Concert: Line-Array PA system to provide adequate sound for pavilion event space and audio support for band

## Large theater screen with projection and sound equipment

- Movie: Custom 30' theater screen with laser projection equipment

## Graphic elements for both events

- Printed truss banner (one print run for duration of series)
- Videography, graphics and full production services for event commercials, logo loops and promotional display

## Turn-key events

- Services include labor and delivery for set-up and breakdown as needed for each event
- 

PRI Productions has the capability to provide the below inventory and services as additions to event contracts:

## Stage Props and decorations including but not limited to:

- Band stage risers
- Stage draping
- Oversize thematic props

## Plants, tents, tables, chairs and linens including but not limited to:

- Basic plant package for stage
- Upgraded stage seating available
- Multiple styles of tents, tables, chairs and linens

## Inflatables and outdoor interactive games

## Media services including photography, videography and additional graphic services

City of  
Jacksonville Beach  
Property and  
Procurement Division  
1460A Shetter Avenue  
Jacksonville Beach  
FL 32250  
Phone: 904.247.6229  
Email: [purchasing@jaxbchfl.net](mailto:purchasing@jaxbchfl.net)  
[www.jacksonvillebeach.org](http://www.jacksonvillebeach.org)

*This is the only recommendation notice you will receive. If there are other representatives in your firm working on this project, please forward to their attention.*

## NOTICE OF INTENT TO SUBMIT RFP FOR APPROVAL AND AWARD BY CITY COUNCIL

Date: March 25, 2024  
From: Luis F. Flores, Property and Procurement Officer  
RE: **RFP No. 03-2324**

Recommendation will be presented to the City Manager for:

RFP Number: 03-2324  
Title: Special Events and Production Services

Award to: ***PRI Productions***

Attached is the Selection Committee Collective Summary.

In accordance with the procedures set forth in Section XII K., of the City of Jacksonville Beach Purchasing Manual, a written notice of intent to file a protest must be filed with the Property and Procurement Officer within three (3) business days, Monday through Friday, 8:00 AM – 4:00 PM, after receipt by the respondent of the Notice of Intent to Submit RFP for Approval and Award By City Council from the Property and Procurement Officer.

The City reserves the right to further negotiate any proposal, including price, with the highest rated respondent. If an agreement cannot be reached with the highest rated respondent, the City reserves the right to negotiate and recommend award to the next ranked respondent or subsequent respondents, until an agreement is reached.

If awarded, please do not proceed with any work prior to receiving an official City of Jacksonville Beach Purchase Order and/or Notice-to-Proceed letter.

We would like to thank each respondent for their submittal.

Luis F. Flores

Luis F. Flores, Property and Procurement Officer  
1460A Shetter Avenue, Jacksonville Beach, FL 32250



| Criteria 1 - Qualifications (35 Points) |          |          |          |          |          |       |
|-----------------------------------------|----------|----------|----------|----------|----------|-------|
| VENDOR                                  | Member 1 | Member 2 | Member 3 | Member 4 | Member 5 | SCORE |
| PRI Productions                         | 35       | 35       | 35       | 35       | 35       | 35    |

| Criteria 2 - Pricing (20 points) |          |          |          |          |          |       |
|----------------------------------|----------|----------|----------|----------|----------|-------|
| VENDOR                           | Member 1 | Member 2 | Member 3 | Member 4 | Member 5 | SCORE |
| PRI Productions                  | 20       | 20       | 20       | 20       | 20       | 20    |

| Criteria 3 - References (15 points) |          |          |          |          |          |       |
|-------------------------------------|----------|----------|----------|----------|----------|-------|
| VENDOR                              | Member 1 | Member 2 | Member 3 | Member 4 | Member 5 | SCORE |
| PRI Productions                     | 15       | 15       | 15       | 15       | 15       | 15    |

| Criteria 4 - Project Team Qualifications (20 points) |          |          |          |          |          |       |
|------------------------------------------------------|----------|----------|----------|----------|----------|-------|
| VENDOR                                               | Member 1 | Member 2 | Member 3 | Member 4 | Member 5 | SCORE |
| PRI Productions                                      | 20       | 20       | 20       | 20       | 20       | 20    |

| Criteria 5 - Proximity / Location to Firm (10 points) |          |          |          |          |          |       |
|-------------------------------------------------------|----------|----------|----------|----------|----------|-------|
| VENDOR                                                | Member 1 | Member 2 | Member 3 | Member 4 | Member 5 | SCORE |
| PRI Productions                                       | 10       | 10       | 10       | 10       | 10       | 10    |

| VENDOR          | SCORE | Rank |
|-----------------|-------|------|
| PRI Productions | 100   | 1    |



| CITY COUNCIL AGENDA ITEM |                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TO:                      | Honorable Mayor and City Council                                                                                                                            |
| FROM:                    | Michael J. Staffopoulos, City Manager                                                                                                                       |
| DATE:                    | 04/30/2024                                                                                                                                                  |
| SUBJECT:                 | Authorize Council Member Dan Janson to represent the City of Jacksonville Beach on the Board of Trustees for the Florida Municipal Investment Trust (FMIvT) |

#### BACKGROUND

The Florida Municipal Investment Trust (FMIvT) is a local government investment pool whose membership consists of local government entities. The FMIvT Board of Trustees oversees the FMIvT's operations, and the Florida League of Cities serves as its Administrator.

To qualify as a Trustee, a nominee at the time of appointment and throughout their tenure must be an elected municipal official from a municipality participating in the Trust. Trustee vacancies are filled by the Trust's current Board of Trustees, by majority vote, from the nominees offered by participating municipalities. A nominee may be appointed to fill either a current unexpired term or a full three-year term. Trustees are limited to serving two consecutive three-year terms. Service in an unexpired term is not counted.

The Trust typically meets four times a year, once each quarter; however, special meetings may be scheduled as needed. Trustees are reimbursed for travel, meal, and accommodation expenses incurred in attending Trust meetings and also receive a meeting fee.

A Trustee must relinquish their office or may be removed when they no longer serve as an elected official of the member from which they were selected or when the municipality from which they were selected ceases to participate as a member of the Trust.

The election of Trustees requires a formal nomination process and nominations must come from participating municipalities of the Trust, which includes the City of Jacksonville Beach. Mr. Janson, who is already a member of the Board of Trustees for the Florida Municipal Loan Council (FMLC) was contacted by the Florida League of Cities to gauge his interest in serving on the FMIvT Board and he is willing to serve as long as the City Council approves this action.

#### FINANCIAL IMPACT

None. All travel is reimbursed through the Florida League of Cities.

#### REQUESTED ACTION

Authorize Council Member Dan Janson to represent the City of Jacksonville Beach on the Board of Trustees for the Florida Municipal Investment Trust (FMIvT)

#### ATTACHMENTS





| CITY COUNCIL AGENDA ITEM |                                                                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| TO:                      | Michael J. Staffopoulos, City Manager                                                                                                                |
| FROM:                    | Allen Putnam, Director of Beaches Energy Service                                                                                                     |
| DATE:                    | 03/25/2024                                                                                                                                           |
| SUBJECT:                 | Roadway Illumination Services Agreement with the Florida Department of Transportation for State Road A1A from 7th Avenue North to Third Avenue South |

#### BACKGROUND

The Florida Department of Transportation (FDOT) has made a request to relocate, add, and modify the streetlights on State Road A1A (more commonly known as Third Street) from 7th Ave. N. to 3rd Ave. S. Consequently, the FDOT is seeking the execution of a Roadway Illumination Services Agreement to formalize arrangements for the project.

#### FINANCIAL IMPACT

FDOT will reimburse the City \$12,529.36, which is the cost estimated to complete this work. The budget will be adjusted at yearend.

#### REQUESTED ACTION

Approve/Disapprove a Roadway Illumination Services Agreement with the Florida Department of Transportation for State Road A1A from 7th Avenue North to Third Avenue South

#### ATTACHMENTS

1. Roadway Illumination Services Agreement
2. FDOT Lighting Plans

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
**ROADWAY ILLUMINATION SERVICES AGREEMENT**

710-010-53  
UTILITIES  
OGC – 07/13  
Page 1 of 8

|                                                     |                        |
|-----------------------------------------------------|------------------------|
| Financial Project ID: 449842-1-56-02                | Federal Project ID: NA |
| County: Duval                                       | State Road No.: A1A    |
| District Document No: 1                             |                        |
| Utility Agency/Owner (UAO): Beaches Energy Services |                        |

**THIS AGREEMENT**, entered into this \_\_\_\_\_ day of \_\_\_\_\_, year of \_\_\_\_\_, by and between the **STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION**, hereinafter referred to as the "**FDOT**", and **Beaches Energy Services**, hereinafter referred to as the "**UAO**";

**WITNESSETH:**

**WHEREAS**, the **UAO** owns poles located within the road right of way, the road identified as State Road A1A, from 7<sup>th</sup> Ave North to 3rd Ave S (the Road), which poles are available for the installation of lighting (said poles being hereinafter referred to as the "Poles"); and

**WHEREAS**, the **FDOT** desires to have the Road illuminated; and

**WHEREAS**, the **UAO** is an electric utility as defined in Section 366.02(2), Florida Statutes; and

**WHEREAS**, the **FDOT** has determined that it is in the best interest of the public to enter into an agreement with **UAO** pursuant to Section 337.11(15), Florida Statutes under which the **UAO** will illuminate the Road;

**NOW, THEREFORE**, in consideration of the premises and the mutual covenants contained herein, the **FDOT** and the **UAO** hereby agree as follows:

**1. Provision of Illumination Services**

- a. The **UAO** shall illuminate the Road in accordance with **FDOT** standards. Subject to the terms and conditions contained herein, illumination services shall continue until such time as **FDOT** notifies the **UAO** to discontinue the illumination services.
- b. The **UAO** shall be responsible for taking any and all actions as may be necessary to illuminate the Road, including, but not necessarily limited to, installation of such facilities and equipment as is necessary to properly illuminate the Road.
- c. Prior to installation of the equipment and facilities to illuminate the Road, the **UAO** shall provide such information (including a proposed work schedule) as is requested by the **FDOT** in order for the **FDOT** to verify that the illumination is acceptable and will be in accordance with **FDOT** standards, and that all work to be performed on **FDOT** right of way will be performed properly in accordance with **FDOT** standards for performance of such work. The **UAO** shall make such changes to the proposed illumination as the **FDOT** requests.
- d. The **UAO** shall notify the appropriate **FDOT** office in writing prior to beginning installation of the equipment and facilities to provide the illumination services and when the **UAO** stops, resumes, or completes the work. The work shall be completed within the time frame as specified in the schedule provided by the **UAO** to the **FDOT** pursuant to subparagraph 1.c. above.

**2. Cost of Illumination Services**

- a. The **FDOT** agrees to pay the **UAO**, after illumination services have begun, a one-time service charge equal to the incremental costs that the **UAO** incurred for installing the equipment and facilities for providing the illumination of the Road. The incremental costs are estimated to be \$ 12,529.36. The **UAO** shall obtain written approval from the **FDOT** prior to incurring any incremental costs which exceed the estimated amount stated above.
- b. The method to be used in calculating the incremental costs shall be one of the following (check which

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
**ROADWAY ILLUMINATION SERVICES AGREEMENT**

710-010-53  
UTILITIES  
OGC – 07/13  
Page 2 of 8

option applies):

- ☐ Actual and related indirect costs accumulated in accordance with a work order accounting procedure prescribed by the applicable Federal or State regulatory body.
- ☐ Actual and related indirect costs accumulated in accordance with an established accounting procedure developed by the **UAO** and approved by the **FDOT's**. (If this option is selected, the **UAO** shall provide written evidence of such approval).
- ☒ An agreed lump sum as supported by a detailed analysis of estimated costs prepared prior to the execution of this Agreement.

**3. Invoice Procedures for Cost of Illumination Services**

The following terms and conditions apply to the invoice submitted pursuant to this Agreement for payment of the cost of illumination services:

- a. The **UAO** shall submit a final invoice to the **FDOT** for payment of all costs within one hundred and eighty (180) days after illumination services have commenced. The **UAO** waives all right of payment for invoices submitted more than one hundred eighty (180) days after illumination services have commenced.
- c. The totals for labor, overhead, travel expenses, transportation, equipment, materials and supplies, handling costs and all other services shall be shown. Materials shall be itemized where they represent major components. Salvage credits from recovered and replaced permanent and recovered temporary materials shall be reported in relative position with the charge for the replacement or the original charge for temporary use.
- d. All invoices shall be submitted in triplicate and shall show the description and site of the project and the location where the records and accounts invoiced can be audited. Adequate reference shall be made in the invoicing to the **UAO's** records, accounts, and other relevant documents.
- e. All cost records and accounts shall be maintained in the auditable condition for a period of eight hundred twenty (820) days after final payment is received by the **UAO** and shall be subject to audit by a representative of the **FDOT** at any reasonable time during this eight hundred twenty (820) day period.
- f. Invoices for fees or other compensation for services or expenses shall be submitted in detail sufficient for a proper pre-audit and post-audit thereof. Such detail shall include, but not be limited to, a separation of costs for work performed by **UAO's** employees and work performed by **UAO's** contractor.
- g. Invoices for any travel expenses shall be submitted in accordance with Section 112.061, Florida Statutes. A state agency may establish rates lower than the maximum provided in Section 112.061, Florida Statutes.
- h. Upon receipt of an invoice, the **FDOT** has thirty (30) days to inspect and approve the goods and services. The **FDOT** has twenty (20) days from the latter of the date the invoice is received or the goods or services are received, inspected and approved to deliver a request for payment (voucher) to the Department of Financial Services or to return the invoice to the **UAO**.
- i. If a warrant in payment of an invoice is not issued within forty (40) days from the latter of the date the invoice is received or the goods or services are received, inspected and approved, a separate interest penalty, as established pursuant to Section 215.422, Florida Statutes, will be due and payable in addition to the invoice amount, to the **UAO**. Interest penalties of less than one (1) dollar will not be enforced unless the **UAO** requests payment. Invoices which have to be returned to the **UAO** because of **UAO's** preparation errors will result in a delay in the payment. The invoice payment requirements do not start until a properly completed invoice is provided to the **FDOT**. In the event of a bona fide dispute, the **FDOT's** voucher shall contain a statement of the dispute and authorize payment only of the undisputed

amount.

- j. In accordance with Section 287.0582, Florida Statutes, the State of Florida's performance and obligation to pay under this contract is contingent upon an annual appropriation by the legislature.
- k. A Vendor Ombudsman has been established within the Department of Financial Services. The duties of this individual include acting as an advocate for vendors who may be experiencing problems in obtaining timely payment(s) from a state agency. The Vendor Ombudsman may be contacted at (850) 410-9724 or by calling the Chief Financial Officer's Hotline, 1-800-848-3792.
- l. In accordance with the Florida Statutes, the **FDOT**, during any fiscal year, shall not expend money, incur any liability, or enter into any contract which, by its terms, involves the expenditure of money in excess of the amounts budgeted as available for expenditure during such fiscal year. Any contract, verbal or written, made in violation of this subsection is null and void, and no money may be paid on such contract. The **FDOT** shall require a statement from the comptroller of the **FDOT** that funds are available prior to entering into any such contract or other binding commitment of funds. Nothing herein contained shall prevent the making of contracts for periods exceeding one (1) year, but any contract so made shall be executory only for the value of the services to be rendered or agreed to be paid for in succeeding fiscal years; and this paragraph shall be incorporated verbatim in all contracts of the **FDOT** which are for an amount in excess of \$25,000.00 and which have a term for a period of more than one (1) year. For this purpose, the individual work orders shall be considered to be the binding commitment of funds.
- m. **PUBLIC ENTITY CRIME INFORMATION STATEMENT:** A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.
- n. An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity.

#### **4. Maintenance of Illumination Equipment and Facilities**

The following terms and conditions shall apply to the equipment and facilities used to provide the illumination services after illumination services have begun:

- a. The equipment and facilities shall at all times remain the property of and be properly protected and maintained by the **UAO** in accordance with the then current Utility Accommodation Manual and the current utility permit for the equipment and facilities.
- b. The equipment and facilities shall be maintained pursuant to a separate agreement between a city or county and the **UAO**. In the event that the city or county fails to comply with that separate agreement, the **UAO** may terminate the illumination services, provided, however, that the **UAO** shall first notify the **FDOT** in writing and provide the **FDOT** with a reasonable opportunity to cure the noncompliance prior to terminating the illumination services.
- c. The **UAO** shall not engage in any act or omission which in any way interferes with the continued provision of illumination services, including, without limitation, granting rights to third parties with respect to the equipment and facilities which interferes with the continued provision of illumination services.



## **5. Default**

- a. In the event that the **UAO** breaches any provision of this Agreement, then in addition to any other remedies which are otherwise provided for in this Agreement, the **FDOT** may exercise one or more of the following options, provided that at no time shall the **FDOT** be entitled to receive double recovery of damages:
- (1) Terminate this Agreement if the breach is material and has not been cured within 60 days from written notice thereof from **FDOT**.
  - (2) Pursue a claim for damages suffered by the **FDOT**.
  - (3) Withhold invoice payments until the breach is cured.
  - (4) Offset any damages suffered by the **FDOT** or the public against payments due under this Agreement. The right to offset shall be limited to actual claim payments made by **FDOT** to third parties.
  - (5) Suspend the issuance of further permits to the **UAO** for the placement of utilities on **FDOT** property if the breach is material and has not been cured within 60 days from written notice thereof from **FDOT** until such time as the breach is cured.
  - (6) Pursue any other remedies legally available.
- b. In the event that the **FDOT** breaches any provision of this Agreement, then in addition to any other remedies which are otherwise provided for in the Agreement, the **UAO** may exercise one or more of the following options:
- (1) Terminate this Agreement if the breach is material and has not been cured within 60 days from written notice thereof from the **UAO**.
  - (2) If the breach is a failure to pay an invoice for cost of the illumination services, pursue any statutory remedies that the **UAO** may have for failure to pay invoices.
  - (3) Pursue any other remedies legally available.
- c. Termination of this Agreement shall not relieve either party from any obligations it has pursuant to other agreements between the parties and from any statutory obligations that either party may have with regard to the subject matter hereof.

## **6. Indemnification**

### **FOR GOVERNMENT-OWNED UTILITIES,**

To the extent provided by law, the **UAO** shall indemnify, defend, and hold harmless the **FDOT** and all of its officers, agents, and employees from any claim, loss, damage, cost, charge, or expense arising out of any acts, action, error, neglect, or omission by the **UAO**, its agents, employees, or contractors during the performance of the Agreement, whether direct or indirect, and whether to any person or property to which **FDOT** or said parties may be subject, except that neither the **UAO**, its agents, employees, or contractors will be liable under this section for damages arising out of the injury or damage to persons or property directly caused by or resulting from the negligence of the **FDOT** or any of its officers, agents, or employees during the performance of this Agreement.

When the **FDOT** receives a notice of claim for damages that may have been caused by the **UAO** in the performance of services required under this Agreement, the **FDOT** will immediately forward the claim to the **UAO**. The **UAO** and the **FDOT** will evaluate the claim and report their findings to each other within fourteen (14) working days and will jointly discuss options in defending the claim. After reviewing the claim, the **FDOT** will determine whether to require the participation of the **UAO** in the defense of the claim or to require the **UAO** to

defend the **FDOT** in such claim as described in this section. The **FDOT's** failure to notify the **UAO** of a claim shall not release the **UAO** from any of the requirements of this section. The **FDOT** and the **UAO** will pay their own costs for the evaluation, settlement negotiations, and trial, if any. However, if only one party participates in the defense of the claim at trial, that party is responsible for all costs.

#### **FOR NON-GOVERNMENT-OWNED UTILITIES,**

The **UAO** shall indemnify, defend, and hold harmless the **FDOT** and all of its officers, agents, and employees from any claim, loss, damage, cost, charge, or expense arising out of any acts, action, error, neglect, or omission by the **UAO**, its agents, employees, or contractors during the performance of the Agreement, whether direct or indirect, and whether to any person or property to which **FDOT** or said parties may be subject, except that neither the **UAO**, its agents, employees, or contractors will be liable under this section for damages arising out of the injury or damage to persons or property directly caused by or resulting from the negligence of the **FDOT** or any of its officers, agents, or employees during the performance of this Agreement.

The **UAO's** obligation to indemnify, defend, and pay for the defense or at the **FDOT's** option, to participate and associate with the **FDOT** in the defense and trial of any damage claim or suit and any related settlement negotiations, shall arise within fourteen (14) days of receipt by the **UAO** of the **FDOT's** notice of claim for indemnification to the **UAO**. The notice of claim for indemnification shall be served by certified mail. The **UAO's** obligation to defend and indemnify within fourteen (14) days of such notice shall not be excused because of the **UAO's** inability to evaluate liability or because the **UAO** evaluates liability and determines the **UAO** is not liable or determines the **FDOT** is solely negligent. Only a final adjudication or judgment finding the **FDOT** solely negligent shall excuse performance of this provision by the **UAO**. The **UAO** shall pay all costs and fees related to this obligation and its enforcement by the **FDOT**. The **FDOT's** delay in notifying the **UAO** of a claim shall not release **UAO** of the above duty to defend.

#### **7. Force Majeure**

Neither the **UAO** nor the **FDOT** shall be liable to the other for any failure to perform under this Agreement to the extent such performance is prevented by an act of God, war, riots, natural catastrophe, or other event beyond the control of the non-performing party and which could not have been avoided or overcome by the exercise of due diligence; provided that the party claiming the excuse from performance has (a) promptly notified the other party of the occurrence and its estimate duration, (b) promptly remedied or mitigated the effect of the occurrence to the extent possible, and (c) resumed performance as soon as possible.

#### **8. Miscellaneous**

a. The **UAO** shall fully comply with the provisions of Title VI of the Civil Rights Act of 1964 and any subsequent revisions thereto in connection with the illumination services covered by this agreement, and such compliance will be governed by the method checked below:

- ☐ The **UAO** will provide all or part of such illumination services by a contractor paid under a contract let by the **UAO**, and the Appendix "A" of Assurances transmitted with the issued work order will be included in said contract let by the **UAO**.
- ☒ The **UAO** will perform all of the illumination services entirely with the **UAO's** forces and Appendix "A" of Assurances is not required.
- ☐ The illumination services involved are agreed to by way of just compensation for the taking of the **UAO's** facilities on right-of-way in which the **UAO** holds a compensable interest, and Appendix "A" of Assurances is not required.
- ☐ The **UAO** will provide all such illumination services entirely by continuing contract, which contract to provide all future illumination services was executed with the **UAO's** contractor prior to August 3, 1965, and Appendix "A" of Assurances is not required.

b. The **UAO** shall allow public access to all documents, papers, letters, or other material subject to the

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
**ROADWAY ILLUMINATION SERVICES AGREEMENT**

710-010-53  
UTILITIES  
OGC – 07/13  
Page 6 of 8

provisions of Chapter 119, Florida Statutes, and made or received by the **UAO** in conjunction with this Agreement. Specifically, if the **UAO** is acting on behalf of a public agency the **UAO** shall:

- (1) Keep and maintain public records that ordinarily and necessarily would be required by the Department in order to perform the services being performed by the **UAO**.
- (2) Provide the public with access to public records on the same terms and conditions that the Department would provide the records and at a cost that does not exceed the cost provided in chapter 119, Florida Statutes, or as otherwise provided by law.
- (3) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law.
- (4) Meet all requirements for retaining public records and transfer, at no cost, to the Department all public records in possession of the **UAO** upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the Department in a format that is compatible with the information technology systems of the Department.

Failure by the **UAO** to grant such public access shall be grounds for immediate unilateral cancellation of this Agreement by the Department. The **UAO** shall promptly provide the Department with a copy of any request to inspect or copy public records in possession of the **UAO** and shall promptly provide the Department a copy of the **UAO's** response to each such request.

- c. This Agreement constitutes the complete and final expression of the parties with respect to the subject matter hereof and supersedes all prior agreements, understandings, or negotiations with respect thereto.
- d. This Agreement shall be governed by the laws of the State of Florida. Any provision hereof found to be unlawful or unenforceable shall be severable and shall not affect the validity of the remaining provisions hereof.
- e. Time is of the essence in the performance of all obligations under this Agreement.
- f. All notices required pursuant to the terms hereof may be sent by first class United States Mail, facsimile transmission, hand delivery, or express mail and shall be deemed to have been received by the end of five business days from the proper sending thereof unless proof of prior actual receipt is provided. The **UAO** shall have a continuing obligation to notify each District of the **FDOT** of the appropriate persons for notices to be sent pursuant to this Agreement. Unless otherwise notified in writing, notices shall be sent to the following addresses:

If to the **UAO**:

Matthew Seeley

---

Electrical Engineering Project Supervisor

---

1460 Shetter Avenue Jacksonville, FL 32220

---

If to the **FDOT**

Todd Hunt

---

FDOT/D2 Utility Administrator

---

1109 South Marion Avenue, Lake City, FL 32025

---

- g. **UAO:**

1. shall utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the **UAO** during the term of the contract; and
2. shall expressly require any subcontractors performing work or providing services pursuant to the

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
**ROADWAY ILLUMINATION SERVICES AGREEMENT**

710-010-53  
UTILITIES  
OGC – 07/13  
Page 7 of 8

state contract to likewise utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term.

**9. Certification**

This document is a printout of an **FDOT** form maintained in an electronic format and all revisions thereto by the **UAO** in the form of additions, deletions, or substitutions are reflected only in an Appendix entitled Changes to Form Document and no change is made in the text of the document itself. Hand notations on affected portions of this document may refer to changes reflected in the above-named Appendix but are for reference purposes only and do not change the terms of the document. By signing this document, the **UAO** hereby represents that no change has been made to the text of this document except through the terms of the appendix entitled Changes to Form Document."

You MUST signify by selecting or checking which of the following applies:

- ☒ No changes have been made to this Form Document and no Appendix entitled "Changes to Form Document" is attached.
- ☐ No changes have been made to this Form Document, but changes are included on the attached Appendix entitled "Changes to Form Document."

**IN WITNESS WHEREOF**, the parties hereto have executed this Agreement effective the day and year first written.

**UTILITY: Beaches Energy Services**

BY: (Signature) \_\_\_\_\_ DATE: \_\_\_\_\_

(Typed Name: \_\_\_\_\_)

(Typed Title: \_\_\_\_\_)

---

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**District Utility Office**

BY: (Signature) \_\_\_\_\_ DATE: \_\_\_\_\_

---

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**FDOT Legal review**

BY: (Signature) \_\_\_\_\_ DATE: \_\_\_\_\_

**District Counsel**

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**STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION**

BY: (Signature) \_\_\_\_\_ DATE: \_\_\_\_\_

(Typed Name: \_\_\_\_\_)

(Typed Title: \_\_\_\_\_)

---

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**FEDERAL HIGHWAY ADMINISTRATION (if applicable)**

BY: (Signature) \_\_\_\_\_ DATE: \_\_\_\_\_

(Typed Name: \_\_\_\_\_)

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
**ROADWAY ILLUMINATION SERVICES AGREEMENT**

710-010-53  
UTILITIES  
OGC – 07/13  
Page 8 of 8

(Typed Title: \_\_\_\_\_)



ROADWAY PLANS  
SIGNING AND PAVEMENT MARKING PLANS  
SIGNALIZATION PLANS  
LIGHTING PLANS

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

## LIGHTING PLANS

FINANCIAL PROJECT ID 449842-1-52-01

(FEDERAL FUNDS)

DUVAL COUNTY (72100)

STATE ROAD NO. A1A (3RD STREET)

SR A1A (3RD STREET) AT 3RD AVENUE S AND 7TH AVENUE N

PEDESTRIAN HYBRID BEACONS

| SHEET NO. | SHEET DESCRIPTION              |
|-----------|--------------------------------|
| L-1       | KEY SHEET                      |
| L-2       | GENERAL NOTES                  |
| L-3       | LIGHTING DATA TABLE AND LEGEND |
| L-4 - L-5 | LIGHTING PLAN                  |

PROJECT LOCATION URL: <http://tinyurl.com/4498421>

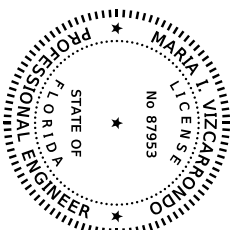
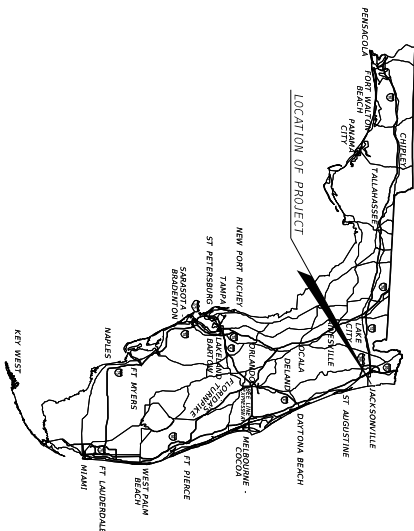
LOCATION 1 - SR A1A AT 3RD AVE S:  
BEGIN MP 18.33 - END MP 18.27

LOCATION 2 - SR A1A AT 7TH AVE N:  
BEGIN MP 17.62 - END MP 17.55

## MP 18.27 - MP 17.62

NONE

NONE



THIS ITEM HAS BEEN DIGITALLY  
SIGNED AND SEALED BY

ON THE DATE ADJACENT TO THE SEAL  
PRINTED COPIES OF THIS DOCUMENT ARE  
NOT CONSIDERED SIGNED AND SEALED  
AND THE SIGNATURE MUST BE VERIFIED  
ON ANY ELECTRONIC COPIES.

ENGINEER OF RECORD:

MARIA I. VIZCARRONDO, P.E.  
P.E. LICENSE NUMBER 87953  
RS&H, INC.  
10748 DEENWOOD PARK BLVD. SOUTH  
JACKSONVILLE, FL 32256  
(904) 256-2500  
CONTRACT NO.: CAF22  
VENDOR NO.: F592986466006

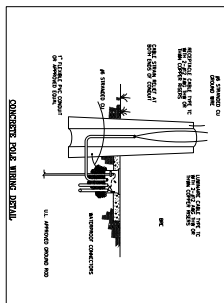
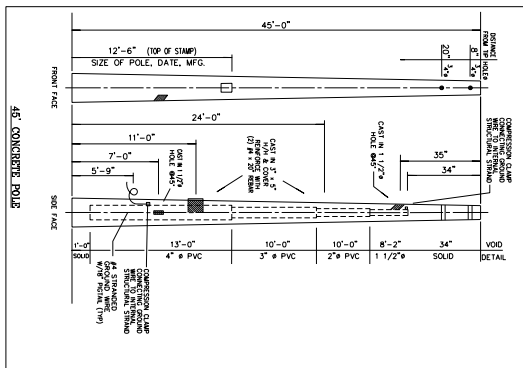
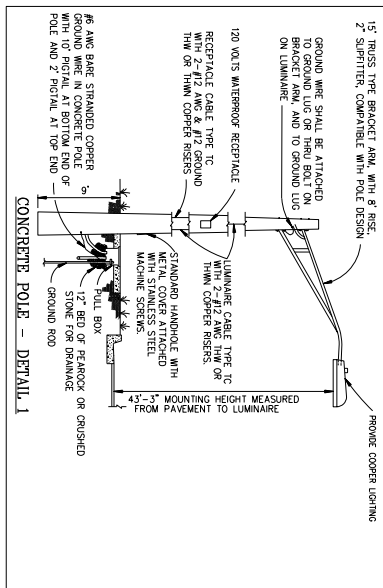
## FDOT PROJECT MANAGER:

RENEE BRINKLEY

PHASE IV SUBMITTAL  
FEBRUARY 2024

|                              |                |              |
|------------------------------|----------------|--------------|
| CONSTRUCTION<br>CONTRACT NO. | FISCAL<br>YEAR | SHEET<br>NO. |
| T 2991                       | 25             | L-1          |

- GENERAL NOTES:
1. WHERE FOTTER OR FOUNDATION ARE TO BE INSTALLED BY AUGERING OR DRILLING, SURVEY AND STAKE OR PAINT TO AN ACCURACY OF 0.1 FT. PRIOR TO REQUESTING UTILITY LOCATES. STAKE OR PAINT THE CENTER OF EACH LOCATION AND CLEARLY LABEL THE STATION, OFFSET, IDENTIFYING POLE NUMBER AND DIAMETER OF EXCAVATION IN INCHES.
  2. WHEN AUGERING OR DRILLING EXCAVATE THE FIRST 4 FEET BY NON MECHANICAL AND NON DESTRUCTIVE MEANS.
  3. WHEN BORING UNDER ROADWAY PAVEMENT MAINTAIN A BORE DEPTH EQUAL TO TEN TIMES THE BORED DIAMETER OR GREATER, WITH A MINIMUM OF 36 INCHES, AS MEASURED FROM THE TOP OF PAVEMENT TO THE TOP OF THE BORE, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
  4. TWO LUMINAIRS WERE USED AS THE BASIS OF DESIGN. MANUFACTURER, COROPER LIGHTING SOLUTIONS. MODEL: ARCH-M-P42-130-730-U-173-LED-20MSW-K-CC-PRF-10X, LED 131 WATTS, TYPE III DISTRIBUTION. PHOTOELECTRIC CURVE: ARCH-L-P43-200-730-U-173-LED MODEL: ARCH-L-P43-200-730-U-173-LED-20MSW-K-CC-PRF-10X, LED 201 WATTS, TYPE III DISTRIBUTION. PHOTOELECTRIC CURVE: ARCH-L-P43-200-730-U-173-LED
  5. EIGHTEEN MINUTES PRIOR TO INITIATING NOT FOR A LAKE CLOSURE, CONTACT THE DISTRICT TWO RINC AT (904)923-2000 TO PROVIDE INFORMATION ON THE ROADWAY, DIRECTION OF TRAVEL, AND WHICH LANES WILL BE CLOSED. ONCE THE WORK IS COMPLETE AND LANES ARE REOPENED, CONTACT THE DISTRICT TWO RINC WITHIN THIRTY MINUTES TO NOTIFY THEM THAT THE CLOSURES HAVE BEEN REMOVED.
  6. GROUNDWATER CONTAMINATION IS KNOWN TO EXIST WITHIN THE EXISTING ROW. THE CONTAMINATION IS APPROXIMATELY BETWEEN STA. 16+480.00 AND STA. 16+6780.00



## GENERAL NOTES

L-2

LIGHTING DATA TABLE

| POLE NO. | STATION   | OFFSET    | NUMBER OF LUMINAIRES | MOUNTING HEIGHT | ARM LENGTH | ARM CONFIG. | MAKE/MODEL                                                   | LUMENS | IES DIST. TYPE | LUMINAIRE WATT'S | LUMINAIRE VOLTAGE | LOCATION          | FOUNDATION | NOTES                             |
|----------|-----------|-----------|----------------------|-----------------|------------|-------------|--------------------------------------------------------------|--------|----------------|------------------|-------------------|-------------------|------------|-----------------------------------|
| 01       | 127+79.22 | 51.68' LT | 1                    | 43.25'          | 15'        | TRUSS       | EXIST.                                                       | EXIST. | EXIST.         | EXIST.           | EXIST.            | BACK OF SIDEWALK  | N/A        | EXISTING TO REMAIN                |
| 02       | 127+80.59 | 48.47' RT | 1                    | 43.25'          | 15'        | TRUSS       | EXIST.                                                       | EXIST. | EXIST.         | EXIST.           | EXIST.            | BACK OF SIDEWALK  | N/A        | EXISTING TO REMAIN                |
| 03       | 129+40.45 | 42.60' RT | 1                    | 43.25'          | 15'        | TRUSS       | COOPER ARCH-M-P42-130-U-T3-AP-20MSP-K-CC-PR7-10X-U142241     | 17,476 | 111            | 131              | 240               | FRONT OF SIDEWALK | N/A        | PROPOSED                          |
| 04       | 129+44.87 | 49.58' RT | 1                    | 43.25'          | 15'        | TRUSS       | EXIST.                                                       | EXIST. | EXIST.         | EXIST.           | EXIST.            | BACK OF SIDEWALK  | N/A        | EXISTING TO BE REMOVED            |
| 05       | 129+54.31 | 50.35' LT | 1                    | 43.25'          | 15'        | TRUSS       | COOPER ARCH-M-P42-130-U-T3-AP-20MSP-K-CC-PR7-10X-U142241     | 17,476 | 111            | 131              | 240               | BACK OF SIDEWALK  | N/A        | EXISTING LUMINAIRE TO BE REPLACED |
| 06       | 129+87.54 | 42.60' RT | 1                    | 43.25'          | 15'        | TRUSS       | COOPER ARCH-M-P42-130-U-T3-AP-20MSP-K-CC-PR7-10X-U142241     | 17,476 | 111            | 131              | 240               | FRONT OF SIDEWALK | N/A        | PROPOSED                          |
| 07       | 129+85.08 | 42.72' LT | 1                    | 43.25'          | 15'        | TRUSS       | EXIST.                                                       | EXIST. | EXIST.         | EXIST.           | EXIST.            | FRONT OF SIDEWALK | N/A        | PROPOSED                          |
| 08       | 131+15.50 | 49.35' LT | 1                    | 43.25'          | 15'        | TRUSS       | EXIST.                                                       | EXIST. | EXIST.         | EXIST.           | EXIST.            | BACK OF SIDEWALK  | N/A        | EXISTING TO REMAIN                |
| 09       | 131+38.37 | 48.81' RT | 1                    | 43.25'          | 15'        | TRUSS       | EXIST.                                                       | EXIST. | EXIST.         | EXIST.           | EXIST.            | BACK OF SIDEWALK  | N/A        | EXISTING TO REMAIN                |
| 10       | 165+62.20 | 48.63' RT | 1                    | 43.25'          | 15'        | TRUSS       | EXIST.                                                       | EXIST. | EXIST.         | EXIST.           | EXIST.            | BACK OF SIDEWALK  | N/A        | EXISTING TO REMAIN                |
| 11       | 165+62.33 | 48.22' LT | 1                    | 43.25'          | 15'        | TRUSS       | COOPER ARCH-L-P43-200-730-U-T3-AP-20MSP-K-CC-PR7-10X-U142239 | 26,425 | 111            | 201              | 240               | FRONT OF SIDEWALK | N/A        | PROPOSED                          |
| 12       | 166+57.01 | 40.44' RT | 1                    | 43.25'          | 15'        | TRUSS       | EXIST.                                                       | EXIST. | EXIST.         | EXIST.           | EXIST.            | BACK OF SIDEWALK  | N/A        | EXISTING TO BE REMOVED            |
| 13       | 167+03.71 | 48.96' RT | 1                    | 43.25'          | 15'        | TRUSS       | COOPER ARCH-L-P43-200-730-U-T3-AP-20MSP-K-CC-PR7-10X-U142239 | 26,425 | 111            | 201              | 240               | BACK OF SIDEWALK  | N/A        | EXISTING LUMINAIRE TO BE REPLACED |
| 14       | 167+33.45 | 50.95' LT | 1                    | 43.25'          | 15'        | TRUSS       | COOPER ARCH-M-P42-130-U-T3-AP-20MSP-K-CC-PR7-10X-U142241     | 17,476 | 111            | 131              | 240               | FRONT OF SIDEWALK | N/A        | PROPOSED                          |
| 15       | 167+69.71 | 45.37' RT | 1                    | 43.25'          | 15'        | TRUSS       | EXIST.                                                       | EXIST. | EXIST.         | EXIST.           | EXIST.            | BACK OF SIDEWALK  | N/A        | EXISTING TO REMAIN                |
| 16       | 168+94.52 | 53.49' LT | 1                    | 43.25'          | 15'        | TRUSS       | EXIST.                                                       | EXIST. | EXIST.         | EXIST.           | EXIST.            | BACK OF SIDEWALK  | N/A        | EXISTING TO REMAIN                |
| 17       | 169+00.65 | 51.58' RT | 1                    | 43.25'          | 15'        | TRUSS       | EXIST.                                                       | EXIST. | EXIST.         | EXIST.           | EXIST.            | BACK OF SIDEWALK  | N/A        | EXISTING TO REMAIN                |

LEGEND

DESCRIPTION

- SYMBOLS
- Single arm LED luminaire and pole. Provide integral photocontrol.
  - Single arm LED luminaire attached to existing pole. Provide integral photocontrol.
  - Existing pole and luminaire to remain.
  - Existing pole and luminaire to be removed.
  - Open trench conduit.
  - Directional bore conduit.
  - Pull box.
  - Service point.

SR A1A (3RD ST) SOUTH OF 7TH AVE NORTH

MIDBLOCK CROSSWALK  
LIGHTING DESIGN CRITERIA

Average Initial Intensity

2.3 Vertical Foot Candles

SR A1A (3RD ST) AT 3RD AVE SOUTH

UN SIGNALIZED INTERSECTION  
LIGHTING DESIGN CRITERIA

Average Initial Intensity

1.0 - 1.5 Vertical Foot Candles

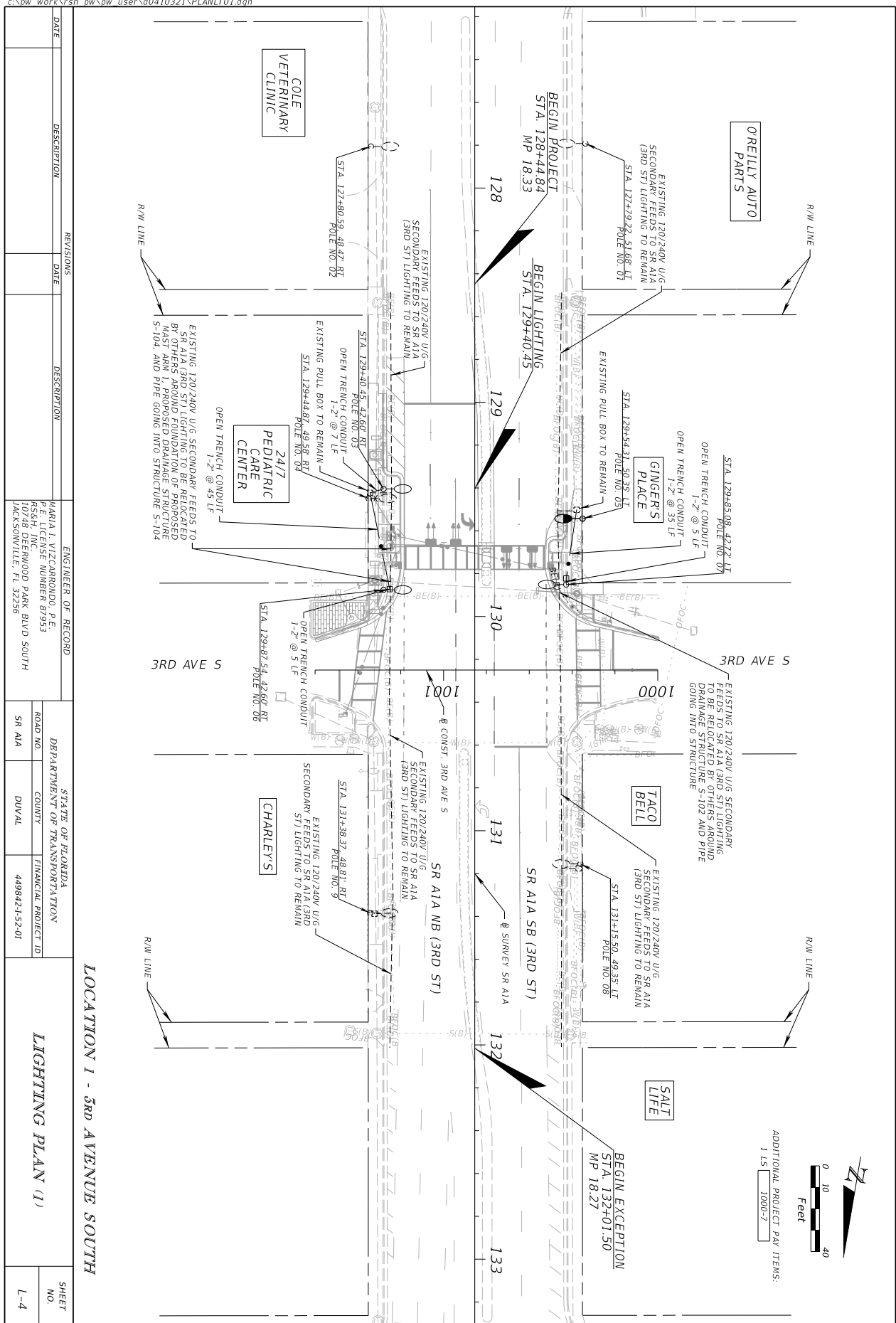
SCOPE OF LIGHTING WORK

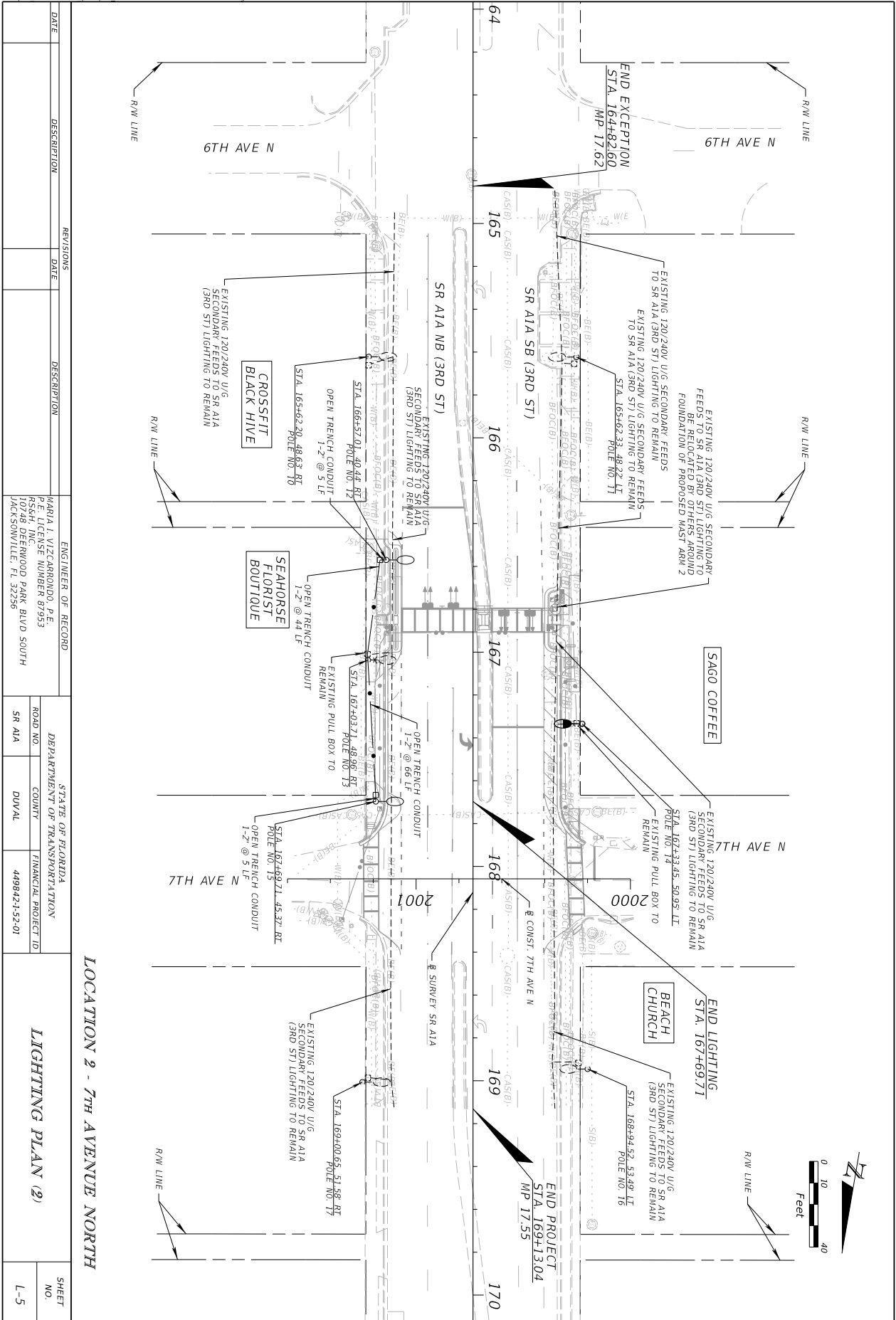
The lighting work includes the following items:

1. Installation of 5 concrete light pole assemblies.
2. Installation of 4 pull boxes.
3. Furnishing and installation of underground conduit.
4. Installation of wiring for light pole assemblies.
5. Removal of existing light pole assemblies.
6. Removal and replacement of 2 luminaires on existing light poles.

- \* The contractor is responsible for items 2, and 3.
- \* Becknes Energy is responsible for items 1, 4, 5, and 6.
- \* Becknes Energy will furnish all pull boxes.

| REVISIONS |             | ENGINEER OF RECORD |                                                                                                                                 | STATE OF FLORIDA |        |                      | LIGHTING DATA TABLE AND LEGEND |     |
|-----------|-------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------|--------|----------------------|--------------------------------|-----|
| DATE      | DESCRIPTION | DATE               | DESCRIPTION                                                                                                                     | ROAD NO.         | COUNTY | FINANCIAL PROJECT ID | SHEET NO.                      | L-3 |
|           |             |                    |                                                                                                                                 | SR A1A           | DUVAL  | 449842-1-52-01       |                                |     |
|           |             |                    | MARIA I VIZCARRONO, P.E.<br>P.E. LICENSE NUMBER 87953<br>RS&H, INC.<br>10748 DEERWOOD PARK BLVD SOUTH<br>JACKSONVILLE, FL 32256 |                  |        |                      |                                |     |







| CITY COUNCIL AGENDA ITEM |                                                    |
|--------------------------|----------------------------------------------------|
| TO:                      | Michael J. Staffopoulos, City Manager              |
| FROM:                    | Bill Rieger, Chief Information Officer             |
| DATE:                    | 04/02/2024                                         |
| SUBJECT:                 | Agreement with Selectron to upgrade the IVR server |

#### BACKGROUND

A critical review of our technological infrastructure has been undertaken in light of the recent cyber event that significantly impacted our operational capabilities and underscored the need for robust business continuity measures. In this context, the proposed upgrade of our Selectron Interactive Voice Response (IVR) system becomes a strategic imperative. The IVR system serves not only as an alternative method for customer payments but can also as a vital component of our disaster recovery and business continuity plan. By adopting a cloud-hosted IVR solution, we can ensure that payment services remain uninterrupted, safeguarding a steady inflow of revenue to the City even when primary systems are compromised.

It has come to our attention that our existing virtual server partner is incompatible with their updated offerings. This incompatibility necessitates the acquisition of new hardware and virtual server licenses to maintain our current setup at an approximate expenditure of \$190,115 over the next five years.

However, Selectron has proposed an alternative solution that could address our immediate needs and streamline our service delivery and operational efficiency. They offer a cloud-based IVR solution that is accompanied by comprehensive managed services. This innovative approach would eliminate the necessity for premise-based hardware, virtual server licenses, and the associated labor and security concerns related to maintaining such infrastructure. More importantly, it positions the city to better leverage modern technology for enhanced service delivery, aligning with our strategic goals of operational excellence and resilience. The total estimated cost of ownership for this managed service over five years stands at \$178,160, yielding immediate cost savings and long-term financial efficiency.

Here is the five-year cost summary for your reference:

Managed Service Total Cost of Ownership **\$178,169.71**

On-Premise Total Cost of Ownership (including IS staff time): **\$190,115.31**

The cloud-based solution promises to significantly reduce the internal resources required for server maintenance, security, and staff support, allowing our teams to focus on more strategic initiatives. In addition to operational efficiencies, this move aligns with the best cybersecurity and infrastructure management practices, significantly mitigating future risk exposure to cyber events.

After careful consideration, the administration recommends that the City Council approve a five-year managed service agreement with Selectron for the cloud-based IVR solution. This agreement will ensure the continuity of vital city services, such as telephone-based payments, while modernizing our technological infrastructure cost-effectively and efficiently.



This recommendation is presented with a keen understanding of our fiscal responsibilities and the strategic imperatives to enhance service delivery, operational resilience, and cybersecurity posture. We believe this approach offers the best path forward in addressing our immediate challenges while laying a foundation for future innovation and service excellence.

#### FINANCIAL IMPACT

The total cost of the five-year commitment is \$178,169.71. Funding for year 1 is available in the General Capital Projects Fund, ERP reserve and the budget will be adjusted at yearend. Funding for years 2 through 5 will be included in their corresponding annual operating budget.

#### REQUESTED ACTION

Approve/Disapprove an Agreement with Selectron to upgrade the IVR server

#### ATTACHMENTS

1. Jacksonville Beach Master Services and Hosting Agreement



## Master Services and Hosting Agreement

This Master Services and Hosting Agreement (this “**Agreement**”) by and between Selectron Technologies, Inc., an Oregon corporation having a principal place of business at 12323 SW 66<sup>th</sup> Avenue, Portland, OR 97223, and its successors and assigns (“**Selectron**”), and City of Jacksonville Beach, Florida (“**Licensee**”).

### Recitals

**Whereas**, as between Selectron and Licensee, Selectron is the owner of all rights, titles, and interest in and to certain software and materials, identified more particularly in this Agreement as the “**Licensed Software**”; and

**Whereas**, Selectron wishes to grant to Licensee, and Licensee desires to obtain from Selectron, certain rights to access and use, and to permit authorized Licensee employees to access and use the Licensed Software through Selectron’s application hosting service, as more particularly described below and in accordance with the terms and conditions of this Agreement.

**Now, Therefore**, in consideration of the mutual promises and covenants contained herein, the parties agree to the following terms and conditions, which set forth the rights, duties and obligations of the parties:

### Agreement

#### 1. Definitions

For purposes of this Agreement, the following terms shall have the following meanings. Any capitalized terms used in this Agreement that are not defined in this Section 1 shall have the meaning given to them elsewhere in this Agreement.

**1.1 “Aggregate Data”** means information, data, and statistics about a group of individuals, organizations, or transactions that cannot be used to identify Licensee or a particular individual, including Licensee Data that has been de-identified and anonymized and combined with data about other individuals and transactions.

**1.2 “Authorized User”** means an Employee that Licensee provides with access to the Licensed Software.

**1.3 “Customer Tools”** means the Licensed Software components and interfaces that, as described in the Documentation, are designed and intended to be accessed by customers of Licensee through an application that is set up and maintained as part of the Services and/or Licensee’s website.

**1.4 “Derivative Work”** shall mean a new or modified work that is based on or derived from a preexisting work, including, without limitation, a work that

in the absence of a license, would infringe the Intellectual Property Rights associated with such preexisting work.

**1.5 “Documentation”** shall mean the standard documentation for the Licensed Software, as generally provided by Selectron to its other customers.

**1.6 “Employee”** shall mean a then-current employee of Licensee.

**1.7 “Intellectual Property Rights”** shall mean all rights associated with (a) patents, designs, algorithms, and other industrial property rights; (b) works of authorship, including copyrights, “moral rights”, and derivative works thereof; (c) the protection of trade and industrial secrets and confidential information; (d) Trademarks (as defined herein); (e) all other intellectual and industrial property rights (of every kind and nature throughout the world and however designated), whether arising by operation of law, contract, license, or otherwise; and (f) all registrations, initial applications, divisions, continuations, renewals, extensions, divisions, and re-issuances of any of the foregoing, now existing or acquired in the future.

**1.8 “Licensed Software”** shall mean, collectively, (a) the software programs that are listed in Exhibit A and further described in Exhibit C; (b) the Documentation; and (c) any Updates.

**1.9 “Licensee Data”** means structured data about and identifiable to customers of Licensee, including without limitation data about transactions between such customers and Licensee, (a) that Licensee provides to Selectron to enable Selectron to provide the Licensed Software and the Services, (b) that Selectron collects from Licensee’s customers to facilitate payments by those customers to Licensee, or (c) that Selectron otherwise collects or creates, including by automated means, in the course of performing the Services or providing the Licensed Software to Licensee.

**1.10 “PCI Data”** means Cardholder Data (including, without limitation, Primary Account Number, cardholder name, expiration date, and Service Code) and Sensitive Authentication Data (including without limitation full magnetic stripe data or the equivalent on a chip, CAV2/CVC2/CW2/CID, PINs/PIN block), as such terms are defined by the PCI Security Standards Council.

**1.11 “Security Incident”** means a breach of security resulting in an unauthorized third party gaining access to Licensee Data if (a) such breach creates a substantial risk of harm to Licensee or any individual(s) and (b) the Licensee Data was accessed in unencrypted, usable, or readable form or it is reasonably likely that the unauthorized third party has acquired or will acquire the decryption key or other means of converting the Licensee Data to readable or usable form.

**1.12 “Services”** means the outbound call management, customization, training, set-up, configuration, or other services listed in Exhibit A and further described in Exhibit C hereto, the Technical Support Services, and any other services Selectron provides to Licensee as described herein.

**1.13 “Technical Support Services”** means the maintenance and technical support services described in Exhibit B hereto.

**1.14 “Term”** shall have the meaning set forth in Section 11.1.

**1.15 “Trademarks”** shall mean (a) the trademarks, trade names, and service marks used by a party, whether registered or unregistered; (b) the respective stylistic marks and distinctive logotypes for such trademarks, trade names, and service marks; (c) such other marks and logotypes as either party may designate from time to time in writing; and (d) the goodwill connected with the use of and symbolized by any of the foregoing.

**1.16 “Updates”** shall mean any modifications, error corrections, bug fixes, new releases, or other updates of or to Licensed Software, including the Documentation, that may be provided or otherwise made available hereunder by Selectron to Licensee during the Term.

**1.17 “Work Product”** means any and all work product, deliverables, materials, drawings, works of authorship, creative works, designs, inventions, documentation, methods, processes, techniques, software, reports, or data created or developed by Selectron in the course of performing the Services or providing the Licensed Software, excluding Licensee Data.

## **2. Grant of License; Restrictions**

**2.1 Grant of License to Use Licensed Software.** Subject to the terms and conditions of this Agreement, including the End User License Agreement (“EULA”) attached hereto as Exhibit D which is incorporated into and made a part hereof, and the timely payment of all fees hereunder, Selectron hereby grants to Licensee a non-exclusive, nontransferable, nonsublicensable, limited license, during the Term, to access and use the Licensed Software solely in accordance with the Documentation and the EULA and solely for Licensee’s own internal business use. Except as set forth in this Section 2.1 or the EULA, no other right or license of any kind is granted by Selectron to Licensee hereunder with respect to the Licensed Software.

**2.2 Software Restrictions.** Licensee hereby acknowledges and agrees that it shall not use the Licensed Software for any purpose other than the purpose for which Selectron has developed the Licensed Software, and that it shall use the Licensed Software in accordance with the EULA and all applicable laws, rules, and regulations. In the event of any violation of this Section 2.2 or the terms of the EULA by Licensee or any person Licensee provides with access to the Licensed Software (whether or not such person is an Authorized User), Selectron may terminate this Agreement in accordance with Section 11.2, and shall be entitled to equitable relief in accordance with Section 12.5.

**2.3 Data Restrictions.** Selectron hereby acknowledges that the Licensee Data may contain sensitive, personally-identifiable information. Selectron will not disclose Licensee Data to any third-party except as required to perform its obligations under this Agreement (e.g., transmittal of PCI Data to Licensee’s designated payment gateway) and will maintain and use the Licensee Data only for purposes of performing its obligations under

this Agreement. Except as otherwise expressly provided herein, Selectron will promptly delete any Licensee Data that Licensee requests in writing to be deleted (except for data retention required by law).

#### **2.4 Rights in Aggregate Data.**

Notwithstanding Section 2.3, Selectron may, (a) during the term of this Agreement, use and analyze the Licensee Data to generate Aggregate Data and (b) during and after the term of this Agreement, retain, use, publish, and otherwise disclose Aggregate Data without restriction, so long as the Aggregate Data is disclosed in a form in which it cannot be used to identify Licensee or any particular individual(s). By way of example and without creating any limitation, Selectron may analyze the Licensee Data along with data gathered from other sources to generate statistics and analytics about success rates of municipalities in collecting payments in response to application notification calls.

### **3. Deliverables and Services**

**3.1 Services.** Selectron shall perform the Services described in Exhibit A and Exhibit C and the Technical Support Services described in Exhibit B in accordance with the terms of this Agreement.

**3.2 Delivery, Testing, and Acceptance.** All deliveries of equipment or physical goods required under this Agreement shall be F.C.A. Selectron's facilities. Selectron shall provide Licensee with the Documentation and access to the Licensed Software according to the delivery, testing, and acceptance schedule and terms and conditions set forth in Exhibit A and Exhibit C. Unless a testing period of different duration is set forth in Exhibit A or Exhibit C, Licensee shall have a testing period of thirty (30) days from the date of delivery of any Licensed Software, including any customized Licensed Software, to inspect and test the Licensed Software. If Licensee provides Selectron with written notice during the applicable testing period describing the Licensed Software's failure to substantially comply with the limited warranty set forth in Section 7.2 in sufficient detail to enable Selectron to reproduce such failure, the Service Fees for the non-conforming Licensed Software shall be suspended until Selectron corrects any such substantial non-conformity. If Licensee does not provide such notice during the testing period, the Licensed Software shall be deemed accepted, and Licensee's sole remedy for any non-conformance shall be the Technical Support Services provided hereunder.

**3.3 Authorized Users; Licensee Identification and Passwords.** Except as provided in

Section 3.4, Licensee shall not permit any person to access the Licensed Software other than Employees whom Licensee has designated as Authorized Users. Each individual natural person shall be a separate Authorized User for purposes of this Agreement. Licensee shall create or request that Selectron create unique log-in credentials, consisting of a "**User Identification**" and "**User Password**", for each individual Authorized User who shall be accessing the Licensed Software. Licensee hereby acknowledges that Licensee and its Authorized Users bear sole responsibility for protecting the confidentiality of all User Passwords and shall remain fully responsible and liable for (and Selectron shall not be responsible or liable for) any unauthorized use of any User Identifications or User Passwords. Licensee shall not share or disclose, and shall not permit any Authorized User to share or disclose, such Authorized User's log-in credentials with or to any other individual or entity, even if such other individual is also an Authorized User. A User Identification may not be transferred from one Authorized User to another Authorized User. Licensee shall promptly terminate (or cause to be terminated by requesting that Selectron terminate) the User Identification for any individual who ceases to be an Authorized User for any reason, including without limitation due to termination of such individual's employment with Licensee. Licensee shall promptly notify Selectron if it discovers or suspects that any log-in credentials have been accessed or used by any person other than the Authorized User to which such log-in credentials were granted, in which case Selectron shall promptly reset or provide Licensee with a means of resetting the password associated with such log-in credentials.

**3.4 Customer Tools.** Licensee may permit its customers to access and use the Customer Tools solely through Licensee's website and/or an application that is set up and maintained as part of the Services, and solely for the purpose of enabling such customers to (a) receive notifications sent by or on behalf of Licensee, (b) make payments to Licensee, (c) view their invoices from Licensee and history of payments to Licensee, and (d) update their contact information with Licensee.

**3.5 Hosting.** During the Term, Selectron and/or its designees shall host and maintain the Licensed Software, and provide access thereto, subject to the terms and conditions of this Agreement and the EULA.

**3.6 Updates, Maintenance, and Technical Support.** During the Term, Selectron shall provide Licensee with Updates as they are made generally available by Selectron to its other customers, as well as

maintenance and technical support, in accordance with the terms and conditions set forth in Exhibit B. Any Update provided or made available by Selectron hereunder shall be deemed part of the Licensed Software and shall be subject to the terms and conditions of this Agreement.

**3.7 Other Modifications to the Licensed Software.** Licensee understands and agrees that Selectron may make modifications and updates to the Licensed Software from time to time. Selectron may determine in its sole discretion whether to provide such modifications and updates to Licensee and its other customers as an Update hereunder, or whether such modifications and updates will be issued as a separate or new product or premium version of the Licensed Software that is available only at an additional charge.

**3.8 Further Licensee Obligations.** Licensee shall be solely responsible for acquiring and maintaining, at its own expense, the necessary equipment and Internet and telecommunication services required to access the Licensed Software and the Services. Licensee acknowledges that Selectron shall have no obligation to assist Licensee in using or accessing the Licensed Software or the Service except as expressly set forth in this Agreement.

#### **4. Fees and Payment**

**4.1 Service Fees.** Licensee shall pay to Selectron service fees ("**Service Fees**") in the amounts and according to the terms and conditions set forth in Exhibit A. In addition to the payment of Service Fees, unless different terms are provided for in Exhibit A, Licensee agrees to reimburse Selectron for all actual, documented and reasonable travel and out-of-pocket expenses incurred by Selectron in connection with the performance of any Services.

**4.2 Payment Terms.** Unless different payment terms are set forth in Exhibit A, all fees and expenses payable hereunder shall be due thirty (30) days from the date of invoice, and any amounts not paid when due will incur late fee charges at the rate of 1.5% per month, or the maximum rate permitted by applicable law, whichever is lower, calculated on a daily basis. If any amounts are past due and outstanding, Selectron reserves the right to suspend the licenses granted hereunder, suspend access to the Licensed Software, and discontinue the Services until all outstanding amounts are paid. Selectron is entitled to recover all costs of collection, including attorney's fees and related expenses.

**4.3 Disputed Amounts.** Any disputed charges must be presented by Licensee to Selectron in writing within fifteen (15) days of the date of invoice, and the parties agree to cooperate in good faith to promptly resolve any disputed invoice within fifteen (15) days of Selectron's receipt of Licensee's written notice of dispute. In the event Licensee disputes any amounts invoiced by Selectron in good faith, the undisputed amount shall be paid when due, and only disputed amounts shall be withheld pending resolution of the dispute. If payment of a disputed amount has already been made and later resolution of the dispute is in Licensee's favor, a credit will be issued by Selectron to Licensee on the next invoice.

**4.4 Fee Increases.** During the Initial Term, the Service Fees set forth in Exhibit A shall apply. After the Initial Term (as defined in Section 11.1 below), Selectron may increase or change its fees by providing Licensee with notice of such increase or change at least ninety (90) days prior to the effective date of such increase or change. Licensee's sole alternative to such fee increase or change shall be to terminate this Agreement by providing notice of termination to Selectron within twenty (20) days after receipt of the notice of price increase or change, which termination will become effective thirty (30) days after such written notice of termination.

**4.5 Taxes.** All prices set forth in this Agreement are in U.S. Dollars and are exclusive of any applicable taxes. Licensee shall pay, indemnify, and hold Selectron harmless from all import and export duties, customs fees, levies, or imposts, and all sales, use, value added, or other taxes or governmental charges of any nature, including penalties and interest, and all government permit or license fees assessed upon or with respect to any products sold, leased, or licensed to Licensee and any services rendered to Licensee; provided, however, that Licensee shall not be responsible for paying any taxes imposed on, or with respect to, Selectron's income, revenues, gross receipts, personnel, or real or personal property or other assets.

#### **5. Proprietary Rights**

As between Selectron and Licensee, Selectron and/or its licensors own and shall retain all right, title and interest, including, without limitation, all Intellectual Property Rights in and to the Licensed Software and any Work Product resulting from performance of the Services and any portions thereof, including without limitation any copy or Derivative Work of the Licensed Software (or any portion thereof) and any Updates and upgrades thereto. Licensee agrees to take any action reasonably requested



by Selectron to evidence, maintain, enforce, or defend the foregoing. Licensee shall not take any action to jeopardize, encumber, limit, or interfere in any manner with Selectron's or its licensors' ownership of and rights with respect to the Licensed Software or Service, or any Derivative Work or Update or upgrade thereto. The Licensed Software and any Work Product are licensed, not sold, and Licensee shall have only those rights in and to the Licensed Software and Work Product and any Derivative Work or Update or upgrade thereto as are expressly granted to it under this Agreement, including the EULA.

## 6. Proprietary Information

During the Term of this Agreement and after the termination of this Agreement, the parties will take all steps reasonably necessary to hold the other party's Proprietary Information in confidence, will not use the disclosing party's Proprietary Information in any manner or for any purpose not expressly set forth in this Agreement, and will not disclose any such Proprietary Information to any third party without the disclosing party's express prior written consent; provided, however, that each party (the **"receiving party"**) may disclose Proprietary Information of the other party (the **"disclosing party"**) (a) to such receiving party's employees, directors, officers, contractors, and agents (collectively, **"Representatives"**) who have a need to know such information and who have been advised of and have agreed to comply with the confidentiality restrictions contained in this Section 6 and (b) to such third parties as are authorized or directed by the disclosing party in writing. Each party shall be responsible and liable for the actions and omissions of its Representatives. **"Proprietary Information"** belonging to a disclosing party includes, but is not limited to, such disclosing party's (a) trade secrets, inventions, ideas, processes, formulas, source and object codes, data, other works of authorship, know-how, improvements, discoveries, developments, designs, and techniques; (b) information regarding its plans for research, development, new products, marketing and selling, budgets and unpublished financial statements, licenses, prices and costs, suppliers and customers; (c) information regarding the skills and compensation of employees, and (d) other information about or belonging to such disclosing party that the receiving party should reasonably know, due to the nature of the information or the circumstances surrounding its disclosure, is regarded by the disclosing party as confidential. Proprietary Information includes reports, analyses, notes, and other information or materials that contain or are derived using the disclosing party's Proprietary Information, even if developed in whole or in part by the receiving party.

For clarity, information about the Licensed Software, including information about its features, functionality, and pricing, are and shall remain the Proprietary Information of Selectron. For further clarity, Licensee Data is and shall remain the Proprietary Information of Licensee.

Notwithstanding the foregoing, information will not be considered to be Proprietary Information if (a) it is readily available to the public other than by a breach of this Agreement; (b) it has been rightfully received by the receiving party from a third party without confidentiality limitations; (c) it has been independently developed by the receiving party without reference to or use of the disclosing party's Proprietary Information; or (d) it was rightfully known to the receiving party prior to its first receipt from the disclosing party. The receiving party shall be entitled to disclose the disclosing party's Proprietary Information if required by law or a judicial order; provided that the receiving party first provides prompt notice of the required disclosure to the disclosing party, and complies with any protective or similar order obtained by the disclosing party limiting the required disclosure.

## 7. Representations and Warranties; Warranty Disclaimer.

**7.1 Mutual Representations.** Each party represents and warrants to the other party that the execution, delivery and performance of this Agreement (a) is within its corporate, municipal, or governmental powers, as the case may be (b) has been duly authorized by all necessary corporate, municipal, or governmental action on such party's part, and (c) does not and shall not contravene or constitute a default under, and is not and shall not be inconsistent with, any law, regulation, judgment, decree or order, or any contract, agreement, or other undertaking, applicable to such party.

**7.2 Limited Software Warranty and Exclusive Remedy.** Subject to the limitations set forth in this Agreement, Selectron represents and warrants to Licensee that the Licensed Software, when used in accordance with the Documentation, shall throughout the Term substantially conform to the functional specifications in such Documentation. If Licensee finds what it reasonably believes to be a failure of the Licensed Software to substantially conform to the functional specifications in the Documentation, and provides Selectron with a written report that describes such failure in sufficient detail to enable Selectron to reproduce such failure, Selectron shall use commercially reasonable efforts to correct or provide a workaround for such failure at no additional charge to Licensee in accordance with

Exhibit B hereto. Outside the United States, this limited warranty is only available with proof of purchase from an authorized source. EXCEPT FOR THE EXPRESS WARRANTY ABOVE, SELECTRON PROVIDES THE LICENSED SOFTWARE TO LICENSEE "AS IS" AND "AS AVAILABLE." SELECTRON MAKES NO WARRANTY THAT ALL ERRORS, FAILURES, OR DEFECTS SHALL BE CORRECTED, OR THAT ACCESS TO OR USE OF THE LICENSED SOFTWARE SHALL BE UNINTERRUPTED, ERROR-FREE, OR SECURE. NO ORAL OR WRITTEN INFORMATION OR ADVICE PROVIDED BY SELECTRON, ITS AGENTS, OR ITS EMPLOYEES, SHALL CREATE ANY WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THE WARRANTIES EXPRESSLY PROVIDED IN THIS AGREEMENT. This Section states the entire liability of Selectron and the sole and exclusive remedy of Licensee with respect to any breach of the foregoing express warranty.

**7.3 Limited Services Warranty and Exclusive Remedy.** Subject to the limitations set forth in this Agreement, Selectron warrants that the Services shall be performed in a professional and workmanlike manner. Selectron's sole obligation, and Licensee's exclusive remedy for breach of the foregoing warranty, is that Selectron shall use its commercially reasonable efforts to re-perform the Services or otherwise cure such breach. If, in Selectron's sole judgement, curing the breach is not commercially feasible, Selectron shall credit Licensee for a portion of the fees allocable to the affected period of time that is proportionate to the period the Services or Licensee's ability to access or use the Licensed Software was impaired.

**7.4 Disclaimer of Other Warranties.** THE EXPRESS WARRANTIES SET FORTH IN THIS SECTION 7 AND SECTION 8.5 CONSTITUTE THE ONLY WARRANTIES MADE BY SELECTRON WITH RESPECT TO THE LICENSED SOFTWARE AND THE SERVICES AND ANY OTHER SUBJECT MATTER OF THIS AGREEMENT. SELECTRON MAKES NO OTHER, AND HEREBY DISCLAIMS ALL OTHER, REPRESENTATIONS, WARRANTIES, OR CONDITIONS OF ANY KIND, WHETHER EXPRESS, IMPLIED (EITHER IN FACT OR BY OPERATION OF LAW), OR STATUTORY, WITH RESPECT TO THE LICENSED SOFTWARE, THE SERVICES, OR ANY OTHER SUBJECT MATTER OF THIS AGREEMENT. SELECTRON EXPRESSLY DISCLAIMS ALL WARRANTIES OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND NONINFRINGEMENT, AND ALL WARRANTIES THAT MAY ARISE FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. SELECTRON DOES NOT WARRANT THAT ANY USE OF OR ACCESS TO THE LICENSED SOFTWARE SHALL BE ERROR-FREE OR SECURE, OR THAT OPERATION OF THE

LICENSED SOFTWARE SHALL BE UNINTERRUPTED, AND HEREBY DISCLAIMS ANY AND ALL LIABILITY IN CONNECTION THEREWITH. LICENSEE ACKNOWLEDGES THAT IT HAS RELIED ON NO WARRANTIES OTHER THAN THE EXPRESS WARRANTIES IN SECTION 7 AND SECTION 8.5 OF THIS AGREEMENT.

#### **7.5 Defects Not Covered by Warranties.**

Selectron shall have no obligations under Section 7.2 to the extent any nonconformance or failure of, or error in, the Licensed Software is caused by (a) use of any attachment, feature, hardware, software, or device in connection with the Licensed Software, or combination of the Licensed Software with any other materials or service, unless the combination is performed by Selectron; (b) transportation, neglect, misuse, or misapplication of the Licensed Software, or any use of the Licensed Software that is not in accordance with this Agreement, the EULA, and/or the Documentation; (c) alteration, modification, or enhancement of the Licensed Software, except as may be performed by Selectron; (d) failure to provide a suitable use environment for all or any part of the Licensed Software; or (e) failure to maintain systems and environments that are compatible with Updates.

### **8. Security**

**8.1 Internet Security.** Selectron's Licensed Software is made available through the Internet and may be used to access and transfer information over the Internet. Licensee is solely responsible for the security and integrity of information it transfers from the Licensed Software, if any. Selectron makes no representations or warranties to Licensee regarding (a) the security or privacy of Licensee's network environment, or (b) any third-party technologies' or services' ability to meet Licensee's security and privacy needs. These third-party technologies and services may include, but are not limited to, operating systems, database management systems, web servers, and payment processing services. Licensee is solely responsible for ensuring a secure environment for information it transfers from the Licensed Software, if any. Further, Licensee acknowledges and agrees that Selectron does not operate or control the Internet and that Selectron shall have no responsibility or liability in connection with a breach of security or privacy regarding the Licensed Software or information contained therein that is caused by (a) viruses, worms, Trojan horses, or other undesirable data or software; (b) unauthorized users, e.g., hackers; or (c) any other third party or activity beyond Selectron's reasonable control; in each of the foregoing cases, except to the extent caused by Selectron's breach of Section 8.4 or 8.5.

**8.2 Remote Access Security.** In order to enable code development and support and maintenance of the software, Selectron may require remote access capability. Remote access is normally provided by installing PC-Anywhere, ControlIT, or other industry standard remote access software. It may also be provided through a Licensee solution such as VPN access. Regardless of what method is used to provide remote access, or which party provides remote access software, it is Licensee's responsibility to ensure that the remote access method meets Licensee's security requirements. Selectron makes no representations or warranties to Licensee regarding the remote access software's ability to meet Licensee's security or privacy needs. Selectron also makes no recommendation for any specific package or approach with regard to security. Licensee is solely responsible for ensuring a secure network environment.

**8.3 Outbound Services Disclaimer.** Outbound services are intended to create additional methods of communication for Licensee's employees who use the Licensed Software in support of existing processes. These services are not intended to replace all interaction with Licensee's end users or employees. While the outbound services have been created with the best available tools and practices, they are dependent on infrastructure that is inherently not fail-proof, including but not limited to infrastructure such as software, computer hardware, network services, telephone services, and e-mail. Examples of situations that could cause failure include but are not limited to: down phone lines, all lines busy, equipment failure, email address changes, and Internet service disruptions. For this reason, while outbound services are valuable in providing enhanced communication, they are specifically not designed to be used as the sole method to deliver critical messages. Licensee acknowledges that it is aware of the potential hazards associated with relying on an automated outbound service feature, when using the Licensed Software, and Licensee acknowledges and agrees that it is giving up in advance any right to sue or make any claim against Selectron, and that Licensee forever releases Selectron from any and all liability caused by (a) any failed call attempts (including excess of calls over and above network or system capacity), incomplete calls, or any busy-outs; (b) any failure to transmit, obtain or collect data from callers or for human and machine errors, faulty or erroneous input, inarticulate caller communication, caller delays or call lengths exceeding estimated call lengths or omissions, delays and losses in connection with the Services provided hereunder; or (c) if Licensee, Licensee's employees, or Licensee's end user suffer injury or damage due to the failure of outbound services to operate, even

though Licensee does not know what or how extensive those injuries or damages might be, unless such losses were directly attributable to Selectron's gross negligence or willful misconduct.

**8.4 Privacy and Security Standards.** Selectron agrees that it will gather, collect, receive, generate, store, use, maintain, transmit, process, import, export, transfer and disclose the Licensee Data substantially in compliance with applicable data protection, security, breach notification and privacy laws, rules, regulations and industry standards to which Selectron is subject. Selectron shall, at all times, use reasonable measures to protect the confidentiality of the Licensee Data in its possession or care, including technical, administrative, and physical safeguards that are appropriate given the nature of the Licensee Data.

**8.5 PCI Compliance.** Selectron warrants that, during the Term of this Agreement, (a) all system components, people, processes, and the cardholder data environment that are used in Selectron's collection, transmittal, or other processing of PCI Data on behalf of Licensee are and shall remain compliant with the applicable provisions of PCI DSS; and (b) Selectron PayEngine™, Selectron's proprietary payment application, is and shall remain compliant with PA-DSS. On an annual basis or upon Licensee's request, Selectron shall provide Licensee with an Attestation of Compliance or Attestation of Validation confirming such compliance.

**8.6 Incident Response.** In the event Selectron becomes aware of a confirmed or suspected Security Incident involving the unauthorized disclosure or theft of PCI Data, Selectron shall (a) notify Licensee, (b) cooperate in any investigation, (c) promptly take reasonable measures to prevent further unauthorized access or use of the Licensee Data, (d) cooperate with Licensee's notification to affected individuals if such notification is required by applicable law or regulation, and (e) perform all such other acts, or cooperate with Licensee's performance of all such other acts, that are required with respect to such Security Incident by applicable law or regulation.

**8.7 Limited Scope of PCI Data Processing.** The parties acknowledge that Selectron's sole processing of PCI Data on behalf of Licensee shall consist of (a) collecting PCI Data needed to facilitate payments to Licensee, (b) transmitting such PCI Data to a third party payment gateway designated by Licensee, and (c) receiving confirmation via the payment gateway that the payment transaction has been completed. After

transmittal of PCI Data to the payment gateway, Selectron will not retain, store, or continue to use or process such PCI Data.

**8.8 Data Transfers Between Licensee and Selectron.** The parties acknowledge that, to facilitate providing the Services and the Licensed Software, Selectron and Licensee shall regularly transfer Licensee Data to each other. Licensee, not Selectron, is responsible for providing and maintaining a secure file transfer protocol for such transfer of Licensee Data, and shall be responsible for maintaining the security of the system components, environment, and procedures of such file transfer protocol.

**8.9 Licensee's Privacy Practices.** Licensee acknowledges that the Licensee Data includes information about individuals with whom Licensee, rather than Selectron, has direct relationships. Therefore, it is Licensee's obligation, and not Selectron's obligation, to provide any privacy notices or disclosures to, and obtain any consent from, such individuals as may be required by applicable law with respect to processing of the Licensee Data by Selectron on Licensee's behalf. Licensee represents, warrants, and covenants to Selectron that (a) Licensee has the authority to transmit the Licensee Data to Selectron; and (b) Selectron's collection, storage, transmittal, and other processing of the Licensee Data on behalf of Licensee, as described in the Documentation and this Agreement, does not and will not violate any applicable laws, regulations, ordinances, contracts, policies, orders, or decrees to which Licensee is subject.

## **9. Indemnification**

**9.1 Infringement Indemnity Obligations of Selectron.** Selectron shall defend any action brought against Licensee to the extent it is based on a third party claim that use by Licensee of the Licensed Software as furnished hereunder, which use is in accordance with the terms and conditions of this Agreement, directly infringes or misappropriates any valid United States patent, copyright, or trade secret. Selectron shall pay any liabilities, costs, damages, and expenses (including reasonable attorney's fees) finally awarded against Licensee in such action that are attributable to such claim. Licensee agrees to promptly notify Selectron of any known or suspected infringement or misappropriation of Selectron's proprietary rights of which Licensee becomes aware. Should the Licensed Software become, or be likely to become in Selectron's opinion, the subject of any claim of infringement, Selectron may, at its option (a) procure for Licensee the right to continue using the potentially

infringing materials; (b) replace or modify the potentially infringing materials to make them non-infringing; or (c) terminate this Agreement and provide Licensee with a refund equal to the set-up fees paid by Licensee, less an amount equal to the depreciated portion of such fees calculated on a five (5) year straight-line basis. This Section 9.1 states the entire liability of Selectron and the exclusive remedy of Licensee with respect to infringement of any third-party intellectual property or other rights, whether under theory of warranty, indemnity, or otherwise.

**9.2 Infringement Indemnity Obligations of Licensee.** Selectron shall have no liability for any claim based upon (a) the use, operation, or combination of the Licensed Software with non-Selectron programs, data, equipment, or documentation if liability would have been avoided but for such use, operation, or combination; (b) use of other than the then-current, unaltered version of the Licensed Software that incorporates all Updates; (c) Licensee's or its agents' or Employees' activities after Selectron has notified Licensee that Selectron believes such activities may result in infringement; (d) any modifications to or markings of the Licensed Software that are not specifically authorized in writing by Selectron; (e) any third party software; (f) any Licensee Data; or (g) Licensee's breach or alleged breach of this Agreement. Licensee shall indemnify, defend, and hold Selectron harmless for, from and against all liabilities, costs, damages, and expenses (including reasonable attorney's fees) awarded against or incurred by Selectron in such action(s) that are attributable to such claim.

**9.3 Security Related Indemnity Obligations of Selectron.** If an investigation performed by a qualified third party forensic investigator confirms that a Security Incident was caused solely by an act or omission of Selectron, including any security vulnerability in system components, procedures, or environments owned or controlled by Selectron, then Selectron shall defend, indemnify, and hold harmless Licensee for, from and against all liabilities, costs, damages, fines, penalties, and expenses (including reasonable attorney's fees) incurred by Licensee as a result of such Security Incident, including the reasonable costs of investigation and reasonable costs of notification to affected individuals and providing credit monitoring or other fraud prevention services, but only to the extent such notification, credit monitoring, or other fraud prevention services are required by applicable laws, regulations, a court order or consent decree, or the terms of a settlement and release of claims arising from such Security Incident that Selectron has consented to (collectively, "**Losses**").

**9.4 Security Related Indemnity Obligations of Licensee.** Selectron shall have no liability or obligation to defend or indemnify Licensee with respect to any Losses caused by Licensee's breach of Sections 8.8 or 8.9 or any Security Incident to the extent caused in whole or in part by an act or omission of Licensee or any third party (other than Selectron's subcontractors) or any of their affiliates, employees, directors, officers, agents, or contractors (other than Selectron), including without limitation any of the following acts or omissions: (a) their loss of control of any device, (b) their failure to maintain the confidentiality of log-in credentials, (c) their transmission of data via methods that are not secure, (d) their failure to maintain systems and environments that are compatible with any Update, (e) their violation of the applicable terms of this Agreement or any applicable laws, regulations, or industry standards, or (f) any vulnerability in their environment, systems, hardware, software, or physical or administrative security safeguards or procedures, including without limitation any vulnerability in the file transfer protocol maintained by Licensee pursuant to Section 8.8. Licensee shall indemnify, defend, and hold harmless Selectron for, from and against all Losses arising from any such Security Incident or Licensee's breach of Sections 8.7 or 8.8, including without limitation any expenses incurred by Selectron in complying with its obligations under Section 8.6.

**9.5 Conditions for Indemnification.** The parties' indemnification obligations hereunder shall apply only if (a) the party to be indemnified (the "**indemnatee**") notifies the party obligated to indemnify them (the "**indemnitor**") in writing of a claim promptly upon learning of or receiving the same; and (b) the indemnatee provides the indemnitor with reasonable assistance requested by the indemnitor, at the indemnitor's expense, for the defense and settlement, if applicable, of any claim. The indemnatee's failure to perform any obligations or satisfy any conditions under this Section 9.5 shall not relieve the indemnitor of its obligations hereunder except to the extent that the indemnitor can demonstrate that it has been materially prejudiced as a result of such failure. Moreover, any indemnification obligations of the Licensee hereunder are limited to the maximum extent allowed by applicable law.

**9.6 Control of Defense.** After receipt of notice of a claim, the indemnitor shall be entitled, if it so elects, at its own cost, risk and expense (a) to take control of the defense and investigation of such lawsuit or action; and (ii) to employ and engage attorneys of its own choice to handle and defend the same; *provided, however*, that the indemnatee's consent shall be required for any

settlement that does not include a full release of all claims. If the indemnitor fails to assume the defense of such claim within ten (10) business days after receipt of notice of the claim, the indemnatee will (upon delivering notice to such effect to the indemnitor) have the right to undertake, at the indemnitor's cost and expense, the defense, compromise or settlement of such claim on behalf of and for the account and risk of the indemnitor; provided, however, that such claim shall not be compromised or settled without the written consent of the indemnitor. The party that assumes control of the defense of the claim will keep the other party reasonably informed of the progress of any such defense, compromise or settlement. Notwithstanding the foregoing, the indemnatee shall be entitled to conduct its own defense at the cost and expense of the indemnitor if the indemnatee establishes that the conduct of its defense by the indemnitor would reasonably be likely to prejudice materially the indemnatee due to a conflict of interest between the indemnatee and the indemnitor; and provided further that in any event, the indemnatee may participate in such defense at its own expense.

## **10. Limitation of Liability**

**10.1 Limited Remedy.** EXCEPT AS EXPRESSLY PROVIDED HEREIN, TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW, IN NO EVENT SHALL SELECTRON OR ITS SUPPLIERS OR LICENSORS BE LIABLE FOR, OR BE OBLIGATED TO INDEMNIFY LICENSEE FOR, ANY LOSS OF PROFITS, LOSS OF BUSINESS, LOSS OF USE OR DATA, OR INTERRUPTION OF BUSINESS, OR FOR INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, EXEMPLARY, OR PUNITIVE DAMAGES OF ANY KIND OR OTHER ECONOMIC LOSS ARISING FROM OR RELATING TO THIS AGREEMENT OR THE SUBJECT MATTER HEREOF, EVEN IF SELECTRON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, HOWEVER CAUSED.

**10.2 Maximum Liability.** Notwithstanding anything in this Agreement to the contrary or the failure of essential purpose of any limited remedy or limitation of liability, Selectron's entire liability arising from or relating to this Agreement or the subject matter hereof, under any legal theory (whether in contract, tort or otherwise), shall not exceed the amounts actually received by Selectron from Licensee hereunder in the twelve (12) months immediately preceding the action that gave rise to the claim. Licensee acknowledges that the Service Fees reflect the allocation of risk set forth in this Agreement and that Selectron would not enter into this Agreement without the limitations on liability set forth in this Agreement.



## **11. Term and Termination**

**11.1 Term.** The term of this Agreement shall commence on the Effective Date and continue for an initial period of five (5) years therefrom (the “**Initial Term**”), and shall automatically renew for successive one (1) year periods unless either party notifies the other of its intention not to renew at least ninety (90) days before the end of the then-current term (collectively, the “**Term**”). If Licensee cancels prior to the end of the Initial Term of five (5) years, all fees for the Initial Term of this agreement that are unpaid will become immediately due.

**11.2 Termination for Default.** If either party materially defaults in any of its obligations under this Agreement, the non-defaulting party, at its option, shall have the right to terminate this Agreement by written notice to the other party unless, within sixty (60) calendar days after written notice of such default, the defaulting party remedies the default, or, in the case of a default which cannot with due diligence be cured within a period of sixty (60) calendar days, the defaulting party institutes within the sixty (60) day-period substantial steps necessary to remedy the default and thereafter diligently prosecutes the same to completion. Notwithstanding anything herein to the contrary, in the event Licensee breaches the EULA or Sections 2.2, 5 and/or 6 of this Agreement, Selectron may immediately terminate this Agreement. Licensee shall notify Selectron within twenty-four (24) hours of Licensee’s becoming aware of any breach (other than by Selectron) of the terms and conditions of this Agreement, including, without limitation, any breach of Sections 2.2, 5 or 6.

**11.3 Termination for Bankruptcy.** Either party may terminate this Agreement if the other party (a) becomes insolvent; (b) fails to pay its debts or perform its obligations in the ordinary course of business as they mature; (c) is declared insolvent or admits its insolvency or inability to pay its debts or perform its obligations as they mature; or (d) becomes the subject of any voluntary or involuntary proceeding in bankruptcy, liquidation, dissolution, receivership, attachment, or composition, or makes a general assignment for the benefit of creditors, provided that, in the case of an involuntary proceeding, the proceeding is not dismissed with prejudice within sixty (60) days after the institution thereof.

**11.4 Effect of Termination.** Upon the expiration or termination of this Agreement, all rights and licenses granted to Licensee hereunder shall immediately and automatically terminate. Within ten (10) days after any termination or expiration of this Agreement, Licensee

shall, at its sole expense, return to Selectron (or destroy, at Selectron’s sole election) all Licensed Software and Proprietary Information of Selectron (and all copies, summaries, and extracts thereof) then in the possession or under the control of Licensee and its current or former employees. Licensee shall furnish to Selectron an affidavit signed by an officer of Licensee certifying that, to the best of its knowledge, such delivery or destruction has been fully effected. Termination of this Agreement by either party shall not act as a waiver of any breach of this Agreement and shall not act as a release of either party from any liability for breach of such party’s obligations under this Agreement. Neither party shall be liable to the other for damages of any kind solely as a result of terminating this Agreement in accordance with its terms. Either party’s termination of this Agreement shall be without prejudice to any other right or remedy that it may have at law or in equity, and shall not relieve either party of liability for breaches occurring prior to the effective date of such termination. Any provisions that would reasonably be expected by the parties to survive termination of this Agreement shall survive such termination, including without limitation the provisions of the EULA and Sections 1 (“Definitions”), 2.2 (“Software Restrictions”), 2.3 (“Data Restrictions”), 2.4 (“Rights in Aggregate Data”), 4 (“Fees and Payment”) (with respect to amounts accrued but as-yet unpaid), 5 (“Proprietary Rights”), 6 (“Proprietary Information”), 7 (“Representations and Warranties; Warranty Disclaimer”), 8 (“Security”), 9 (“Indemnification”), 10 (“Limitation of Liability”), 11 (“Term and Termination”) and 12 (“General Provisions”).

## **12. General Provisions**

**12.1 Notices.** Any notice, request, demand or other communication required or permitted hereunder shall be in writing, shall reference this Agreement, and shall be deemed to be properly given (on the earliest of) (a) when delivered personally; (b) when sent by facsimile, with written confirmation of receipt; or (c) upon receipt three (3) days after having been sent by registered or certified mail, return receipt requested, postage prepaid. All notices shall be sent to the address set forth on the signature page below (or to such other address as may be designated by a party by giving written notice to the other party pursuant to this Section 12.1).

**12.2 Governing Law; Jurisdiction.** This Agreement shall be governed by and construed in accordance with the laws of the State of Florida, U.S.A., without reference to its conflicts of law provisions. The United Nations Convention on Contracts for the International Sale of Goods does not apply to and shall not



be used to interpret this Agreement. Any dispute regarding this Agreement must be brought in the state or federal courts located in Duval County, Florida, U.S.A.

**12.3 Construction.** This Agreement has been negotiated by the parties and their respective counsel. This Agreement shall be interpreted fairly in accordance with its terms and without any construction in favor of or against either party.

**12.4 Attorneys' Fees.** If any legal action is brought relating to this Agreement or the breach hereof, the prevailing party in any final judgment shall be entitled to the full amount of all reasonable expenses, including all court costs and reasonable attorney fees paid or incurred.

**12.5 Injunctive Relief.** In the event that Licensee breaches any provision of the EULA or Sections 2, 5, or 6 or any other material provision of this Agreement, Licensee acknowledges and agrees that there may be no adequate remedy at law to compensate Selectron for such breach, that any such breach may result in irreparable harm to Selectron that would be difficult to measure; and, therefore, that upon any such breach or threat thereof, Selectron shall be entitled to seek injunctive and other appropriate equitable relief (without the necessity of proving actual damages or of posting a bond or other security), in addition to whatever remedies Selectron may have at law, in equity, under this Agreement, or otherwise.

**12.6 Waiver.** The waiver by either party of a breach of or a default under any provision of this Agreement, shall be in writing and shall not be construed as a waiver of any subsequent breach of or default under the same or any other provision of this Agreement, nor shall any delay or omission on the part of either party to exercise or avail itself of any right or remedy that it has or may have hereunder, operate as a waiver of any right or remedy.

**12.7 Severability.** If the application of any provision of this Agreement to any particular facts or circumstances shall be held to be invalid or unenforceable, then (a) the validity and enforceability of such provision as applied to any other particular facts or circumstances and the validity of other provisions of this Agreement shall not in any way be affected or impaired thereby, and (b) such provision shall be enforced to the maximum extent possible so as to effect the intent of the parties, and reformed without further action by the parties, to the extent necessary to make such provision valid and enforceable. Without limiting the generality of the foregoing, Licensee agrees that Section 7.4 will remain in

effect notwithstanding the unenforceability of any other provision hereof.

**12.8 Independent Contractor Relationship.** Selectron's relationship with Licensee will be that of independent contractor, and nothing contained in this Agreement shall be deemed or construed as creating a joint venture, partnership, or employer-employee relationship. Licensee is not an agent of Selectron and is not authorized to make any representation, contract, or commitment on behalf of Selectron, or to bind Selectron in any way. Selectron is not an agent of Licensee and is not authorized to make any representation, contract, or commitment on behalf of Licensee, or to bind Licensee in any way. Selectron will not be entitled to any of the benefits that Licensee may make available to its employees, such as group insurance, profit sharing, or retirement benefits.

**12.9 Force Majeure.** Except for the payment of monies due hereunder, neither party shall be responsible or have any liability for any delay or failure to perform to the extent due to unforeseen circumstances or causes beyond its reasonable control, including, without limitation, acts of God, earthquake, fire, flood, embargoes, labor disputes and strikes, riots, war, error in the coding of electronic files, Internet or other network "brownouts" or failures, power failures, novelty of product manufacture or other unanticipated product development problems, and acts of civil and military authorities; provided that such party gives the other party prompt written notice of the failure to perform and the reason therefor and uses its reasonable efforts to limit the resulting delay in its performance and to mitigate the harm or damage caused by such delay.

**12.10 Public Announcements.** Licensee shall cooperate with Selectron so that Selectron may issue a press release concerning this Agreement; provided, however, Selectron may not release any such press release without the prior approval of Licensee (which shall not be unreasonably withheld, delayed, or conditioned). However, without seeking prior approval in each instance, Selectron shall have the right to use Licensee's name as a customer reference, and to use Licensee's trade name on Selectron's customer lists.

**12.11 U.S. Government Rights.** (a) The Licensed Software is a "commercial item," as that term is defined at 48 C.F.R. 2.101, consisting of "commercial computer software" and "commercial computer software documentation," as such terms are used in 48 C.F.R. 12.212 or 48 C.F.R. 227.7202, as applicable. Consistent

with 48 C.F.R. 12.212 and 48 C.F.R. 227.7202-1 through 227.7202-4, the Licensed Software are licensed to any U.S. Government End Users (i) only as a commercial item and (ii) with only those rights as are granted to all other end users pursuant to the terms and conditions herein. Manufacturer is Selectron Technologies, Inc., 12323 SW 66<sup>th</sup> Avenue, Portland, OR 97223, USA. This Section, consistent with 48 C.F.R. § 12.212 and 48 C.F.R. § 227.7202 is in lieu of, and supersedes, any other Federal Acquisition Regulation, Defense Federal Acquisition Regulation Supplement, or other clause or provision that addresses United States Government rights in computer software, technical data, or computer software documentation.

(b) The parties agree that, in the event that Licensee is a governmental entity, all other state and local governments within Licensee's state may purchase a license from Selectron to use the Licensed Software under the same terms and conditions as set forth in this Agreement by entering into a master services and hosting agreement with the same terms and conditions as set forth herein with Selectron.

**12.12 Export Controls.** The Licensed Software is subject to the export control laws of the United States and other countries. Licensee may not export or re-export the Licensed Software, unless Licensee has first obtained Selectron's prior written permission and the appropriate United States and foreign government licenses, at Licensee's sole expense. Licensee must otherwise comply with, and contractually require that all of its employees comply with, all applicable export control laws and regulations in the use of the Licensed Software. None of the Licensed Software may be downloaded or otherwise exported or re-exported (a) into any country for which the United States has a trade embargo, or (b) to anyone on the U.S. Treasury Department's list of Specially Designated Nationals or the U.S. Commerce Department's Denied Persons List. Licensee represents and warrants that it is not located in, under the control of, or a national or resident of any such country or on any such list. Licensee shall defend, indemnify and hold Selectron and all successors, assigns, affiliates, suppliers, and each of their officers, directors, employees, and agents harmless for, from, and against any and all claims, allegations, damages, liabilities, and costs and expenses (including without

limitation attorneys' fees and costs) arising out of Licensee's violation of such export control laws. Licensee further agrees to comply with the United States Foreign Corrupt Practices Act, as amended.

**12.13 Captions and Section Headings.** The captions and Section and paragraph headings used in this Agreement are inserted for convenience only and shall not affect the meaning or interpretation of this Agreement.

**12.14 Counterparts.** This Agreement may be signed in one or more counterparts, each of which will be deemed to be an original copy of this Agreement, and, when taken together, shall be deemed to constitute one and the same agreement. Each party agrees that the delivery of this Agreement by facsimile transmission or by PDF attachment to an e-mail transmission will be deemed to be an original of the Agreement so transmitted and, at the request of either party, the other party will confirm facsimile or e-mail transmitted signatures by providing the original document.

**12.15 Modification; Subsequent Terms.** No amendment or modification of any provision of this Agreement shall be effective unless in writing and signed by a duly authorized signatory of Selectron and Licensee. To the extent that the terms and conditions of the Exhibits hereto or Exhibits to subsequent amendments or modifications of or to the Agreement ("Subsequent Terms") differ from those herein, those Subsequent Terms shall control the interpretation and any conflict resolution thereof. The terms on any purchase order or similar document submitted by Licensee to Selectron will not modify the terms and conditions of this Agreement.

**12.16 Entire Agreement; Amendment.** This Agreement, including the Exhibit(s) attached hereto, constitutes the entire agreement between the parties concerning the subject matter hereof, and supersedes (a) all prior or contemporaneous representations, discussions, proposals, negotiations, conditions, agreements, and communications, whether oral or written, between the parties relating to the subject matter of this Agreement, and (b) all past courses of dealing and industry custom.

**In Witness Whereof**, the parties have caused this Agreement to be executed by duly authorized representatives of the parties as of the Effective Date.

**SELECTRON TECHNOLOGIES, INC.**

**LICENSEE**

By: \_\_\_\_\_  
Signature

By: \_\_\_\_\_  
Signature

Name: Todd A. Johnston

Name: \_\_\_\_\_

Title: President

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Address: 12323 SW 66<sup>th</sup> Avenue

Address: \_\_\_\_\_

Portland, OR 97223

\_\_\_\_\_

\_\_\_\_\_

EXHIBIT A

Scope of Work

## City of Jacksonville Beach, FL

### Relay IVR - Utility Application and Outbound Move to Managed

#### Professional Services

| Description                                              | Qty | Unit Price | Total              |
|----------------------------------------------------------|-----|------------|--------------------|
| Relay IVR Platform Move to Managed - Utility Application |     |            |                    |
| Project Management                                       | 38  | \$225.00   | \$8,550.00         |
| System Configuration                                     | 26  | \$225.00   | \$5,850.00         |
| QA Testing and Training                                  | 16  | \$225.00   | \$3,600.00         |
| Relay Outbound Platform Move to Managed                  |     |            |                    |
| Project Management                                       | 16  | \$225.00   | \$3,600.00         |
| System Configuration                                     | 16  | \$225.00   | \$3,600.00         |
| QA Testing and Training                                  | 8   | \$225.00   | \$1,800.00         |
| Database Integration                                     |     |            |                    |
| Development Resources                                    | 138 | \$225.00   | \$31,050.00        |
| <b>PROFESSIONAL SERVICES TOTAL</b>                       |     |            | <b>\$58,050.00</b> |

#### Annual Hosted Platform and Application Fees

| Description                                 | Qty    | Unit Price  | Total              |
|---------------------------------------------|--------|-------------|--------------------|
| Relay IVR Platform - Utility Application    | 1      | \$22,000.00 | \$22,000.00        |
| Integration Support                         |        |             |                    |
| Application Hosting                         |        |             |                    |
| Relay Outbound Platform                     | 1      | \$18,000.00 | \$18,000.00        |
| Selectron-Built Template                    | 1      | \$3,700.00  | \$3,700.00         |
| Bill Delinquency Notification               |        |             |                    |
| Universal Message Bundle for Relay Channels | 80,000 | \$0.20      | \$16,000.00        |
| <b>ANNUAL FEES TOTAL</b>                    |        |             | <b>\$59,700.00</b> |

**Five-Year Cost Summary**

| 1-Year Commitment Pricing        |                     |                    |                    |                    |                    |
|----------------------------------|---------------------|--------------------|--------------------|--------------------|--------------------|
|                                  | Year 1              | Year 2             | Year 3             | Year 4             | Year 5             |
| PROFESSIONAL SERVICES            | \$58,050.00         |                    |                    |                    |                    |
| ANNUAL FEES TOTAL                | \$59,700.00         | \$61,885.00        | \$64,179.25        | \$66,588.21        | \$69,117.62        |
| <b>TOTAL - 1-Year Commitment</b> | <b>\$117,750.00</b> | <b>\$61,885.00</b> | <b>\$64,179.25</b> | <b>\$66,588.21</b> | <b>\$69,117.62</b> |

| 3-Year Commitment Pricing        |                    |                    |                    |                    |                    |
|----------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|                                  | Year 1             | Year 2             | Year 3             | Year 4             | Year 5             |
| PROFESSIONAL SERVICES            | \$46,440.00        |                    |                    |                    |                    |
| ANNUAL FEES TOTAL                | \$48,600.00        | \$50,230.00        | \$51,941.50        | \$53,738.58        | \$55,625.50        |
| <b>TOTAL - 3-Year Commitment</b> | <b>\$95,040.00</b> | <b>\$50,230.00</b> | <b>\$51,941.50</b> | <b>\$53,738.58</b> | <b>\$55,625.50</b> |

| 5-Year Commitment Pricing        |                    |                    |                    |                    |                    |
|----------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|                                  | Year 1             | Year 2             | Year 3             | Year 4             | Year 5             |
| PROFESSIONAL SERVICES            | \$37,732.50        |                    |                    |                    |                    |
| Move to Managed Discount         | -\$37,732.50       |                    |                    |                    |                    |
| ANNUAL FEES TOTAL                | \$40,500.00        | \$41,521.00        | \$42,586.93        | \$43,699.85        | \$44,861.93        |
| Second Channel Discount          | -\$7,000.00        | -\$7,000.00        | -\$7,000.00        | -\$7,000.00        | -\$7,000.00        |
| <b>TOTAL - 5-Year Commitment</b> | <b>\$33,500.00</b> | <b>\$34,521.00</b> | <b>\$35,586.93</b> | <b>\$36,699.85</b> | <b>\$37,861.93</b> |

**Cost Analysis**

| Commitment               | Monthly Average | Annual Average | 5 Year Total | 5 Year Savings |
|--------------------------|-----------------|----------------|--------------|----------------|
| Cost Summary             |                 |                |              |                |
| 1-Year Commitment        | \$6,325.33      | \$75,904.02    | \$379,520.09 | \$0.00         |
| 3-Year Commitment        | \$5,109.59      | \$61,315.12    | \$306,575.58 | \$72,944.51    |
| 5-Year Commitment        | \$2,969.50      | \$35,633.94    | \$178,169.71 | \$201,350.37   |
| Per Account Cost Summary |                 |                |              |                |
| 1-Year Commitment        | \$0.18          | \$2.11         | \$10.54      | \$0.00         |
| 3-Year Commitment        | \$0.14          | \$1.70         | \$8.52       | \$2.03         |
| 5-Year Commitment        | \$0.08          | \$0.99         | \$4.95       | \$5.59         |

**Application Database Integration:**

Integration to Tyler - Munis requires appropriate ports enabled within the customer's network and VPN connectivity, as determined is necessary during the system implementation.

## PRICING & PAYMENT INFORMATION

The contract period begins upon execution. Pricing does not include additional application integration charges that may be required as part of this solution. This includes Application Vendor API, user, or implementation fees, additional licensing fees, or other surcharges directly or indirectly charged by or remitted to the Application Vendor.

### PROFESSIONAL SERVICES PAYMENT SCHEDULE

|     |                                                                    |
|-----|--------------------------------------------------------------------|
| 45% | Invoiced at time of execution of contracts                         |
| 55% | Invoiced upon system available for initial user acceptance testing |

### TRAVEL FEE PAYMENT SCHEDULE

|      |                                                                                                                                                                                                                                                                                                              |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 100% | If travel is identified in the above detail or later requested, all travel and related fees are scheduled in advance including travel days and will be invoiced upon completion. Total travel is invoiced at then current hourly rates, currently \$225.00 per person per hour, plus actual travel expenses. |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### ANNUAL FEES, BUNDLES, AND SUPPORT

|      |                                                                                                   |
|------|---------------------------------------------------------------------------------------------------|
| 100% | Invoiced at time of execution of contracts. Recurring fees are invoiced 45 days prior to renewal. |
|------|---------------------------------------------------------------------------------------------------|

In the event the customer terminates agreement prior to the end of the commitment term, 100% of all remaining unpaid fees for the term become immediately due.

### CHANGE ORDERS INCLUDING TIME AND MATERIAL RATES

- All service work and/or deliverables not listed, defined, or provided as optional deliverables in this document are considered outside of the scope of this project effort. Out of scope services will be invoiced at Selectron's then current Time and Material rate, currently \$225.00 per hour.
- If the out of scope services require a formal change order, the Company and Customer will mutually agree in writing, which will include a scope of work, timeline for delivery, Company and Customer responsibilities and the price terms and conditions. Upon acceptance by Customer and issuance of required purchasing documentation, all Change Orders shall be governed by the terms and conditions of this Agreement, no other terms or conditions shall apply. Customer acknowledges that such Change Orders may affect the implementation schedule and dates otherwise established as part of the project plan.

### TAXES

Sales Tax or any other applicable taxes are **not included** in any of the pricing in this agreement. All applicable taxes will be invoiced, collected and remitted in accordance with state and local tax laws.

### PAYMENT TERMS

Terms are net 45 days from date of invoice. Past due invoices are subject to a 1.5% per month late fee. All presented pricing is in US Dollars.

### VENDOR INFORMATION

Selectron Technologies, Inc.  
13535 SW 72nd Avenue, Suite 200  
Portland, OR 97223  
Ph: 503.443.1400 Fax: 503.443.2052



## EXHIBIT B

### Maintenance and Technical Support

This Exhibit describes the software maintenance and support services that Selectron shall provide for Licensee.

#### I. Definitions

Unless defined otherwise herein, capitalized terms used in this Exhibit shall have the same meaning as set forth in the Agreement.

**A. "Error"** means any failure of the Licensed Software to conform in any material respect with the Documentation.

**B. "Error Correction"** means either a bug fix, patch, or other modification or addition that brings the Licensed Software into material conformity with the Documentation.

**C. "Priority A Error"** means an Error that renders Licensed Software inoperative or causes a complete failure of the Licensed Software, as applicable.

**D. "Priority B Error"** means an Error that substantially degrades the performance of Licensed Software, as applicable, or materially restricts Licensee's use of the Licensed Software, as applicable.

**E. "Priority C Error"** means an Error that causes only a minor impact on Licensee's use of Licensed Software, as applicable.

#### II. Error Reporting and Resolution

**A. Error Reporting.** Selectron shall provide Licensee with telephone customer support twenty-four (24) hours per day, seven (7) days per week for the reporting of Priority A Errors, and telephone support during Selectron's normal business hours for the reporting of Priority B and Priority C Errors, in each event excluding Selectron holidays.

**B. Licensed Software Error Resolution.** Selectron shall use commercially reasonable efforts to: (a) notify applicable Vendors of all Licensed Software Errors properly reported by Licensee in accordance with Section II(A) of this Exhibit B; (b) make available to Licensee any Error Corrections that are made available by such Vendor(s) to Selectron promptly after such Error Corrections are delivered to Selectron; and (c) update Licensee with respect to the progress of the resolution of all Licensed Software Errors.

**C. Error Resolution.** Licensee shall report all Errors in the Licensed Software to Selectron in sufficient detail, with sufficient explanation of the circumstances under which the Error occurred or is occurring, and shall reasonably classify the Error as a Priority A, B, or C Error. Selectron shall use commercially reasonable efforts to correct any Error in the Licensed Software reported by Licensee, in accordance with the priority level actually assigned by Selectron to such Error, as follows:

**1. Priority A Errors.** In the event of a Priority A Error, Selectron shall, within two (2) hours of receiving Licensee's report, commence verification of the Error. Upon verification, Selectron shall use commercially reasonable efforts to resolve the Error with an Error Correction. Selectron shall use commercially reasonable efforts to provide a workaround for the Error within twenty-four (24) hours of receiving Licensee's report of such Error, and an Error Correction within forty-eight (48) hours of receiving Licensee's report. Selectron shall provide Licensee with periodic reports (no less frequently than once every eight (8) hours) on the status of the Error Correction.

**2. Priority B Errors.** In the event of a Priority B Error, Selectron shall, within six (6) hours of receiving Licensee's report, commence verification of the Error. Upon verification, Selectron shall use commercially reasonable efforts to resolve the Error with an Error Correction. Selectron shall use commercially reasonable efforts to provide a workaround for the Error within forty-eight (48) hours of receiving Licensee's report of such Error, and an Error Correction within six (6) business days of receiving Licensee's report. Selectron shall provide Licensee with periodic reports (no less frequently than once every twelve (12) hours) on the status of the Error Correction.

**3. Priority C Errors.** In the event of a Priority C Error, Selectron shall, within two (2) business days of receiving Licensee's report, commence verification of the Error. Upon verification, Selectron shall use commercially reasonable efforts to resolve the Error with an Error Correction. Selectron shall use commercially reasonable efforts to provide a workaround for the Error within six (6) business days of receiving Licensee's report of such Error, and an Error Correction within three (3) weeks of receiving Licensee's report. Selectron shall provide Licensee with periodic reports on the status of the Error Correction.



# Statement of Work

Jacksonville Beach, FL

## Relay

### UTILITY PACK

|                                            |           |
|--------------------------------------------|-----------|
| <b>1. Overview .....</b>                   | <b>2</b>  |
| 1.1. Revision History.....                 | 2         |
| <b>2. Functionality.....</b>               | <b>3</b>  |
| 2.1. The Relay Platform .....              | 3         |
| 2.2. Utility Pack.....                     | 3         |
| 2.3. Relay Outbound.....                   | 4         |
| 2.4. Payment Processing .....              | 5         |
| <b>3. System Integration.....</b>          | <b>6</b>  |
| 3.1. Application Database Interfaces ..... | 6         |
| 3.2. Payment Gateway Interfaces .....      | 6         |
| <b>4. Deployment Model.....</b>            | <b>7</b>  |
| 4.1. Hosted IVR Access .....               | 7         |
| <b>5. Administrative Tasks.....</b>        | <b>7</b>  |
| 5.1. Activity Widgets .....                | 7         |
| 5.2. Run System Reports .....              | 8         |
| 5.3. Schedule Outbound Campaigns .....     | 9         |
| <b>6. Responsibilities.....</b>            | <b>10</b> |
| 6.1. Selectron Technologies, Inc.....      | 10        |
| 6.2. Jacksonville Beach, FL.....           | 12        |

## 1. Overview

This Statement of Work (SOW) outlines the services provided by Selectron Technologies, Inc. (Selectron) to Jacksonville Beach, FL (Jacksonville Beach or Customer). Selectron will move the existing Relay IVR and outbound solution from an on-premise deployment to Selectron's Managed Services Environment. The features, functionality, and services are provided through Selectron Technologies' Relay communication platform (Relay).

### 1.1. Revision History

| Version # | Details         | Date       |
|-----------|-----------------|------------|
| 1.0       | Initial Release | 04/02/2024 |

## 2. Functionality

This section details the functionality of each application included in Relay. All functions and features are dependent upon the accessibility of Jacksonville Beach's Tyler Munis application database to provide the given data to Relay.

### 2.1. The Relay Platform

The Customer's solution is powered by Selectron's Relay platform. Relay is a multi-channel, multi-department platform designed to connect Customers and government agencies, and utilities. The Relay platform uses a number of different application packs specific to the market being serviced. In addition to each application pack, the Relay channels include interactive voice response (IVR), web, outbound, call center agent assistance, and interactive texting capabilities all in a single platform.

The following sections detail the functionality that will be implemented for the Customer. Additional channels, applications, and integrations that are not specified in this SOW are not included but may be able to be added to the system under a supplemental statement of work.

#### 2.1.1. Application Packs and Channels

The Customer's solution includes the following application pack and channels:

- Application packs:
  - Utility Pack
- Channels:
  - IVR
  - Outbound

### 2.2. Utility Pack

The solution will be configured with the Utility Pack. The Utility Pack offers the Customer's end user with a central point of access for account management and payments. The end user will be able to enter an account number or phone number and access account data and activities based on the channel being implemented.

#### 2.2.1. IVR Channel

The IVR Channel for the Utility Pack provides callers with an Interactive Voice Response (IVR) system for accessing account information and making payments over the phone.

Citizens can call the Utility IVR channel to hear account information and to make a payment. Citizens will access their account using an account number or other identifier as indicated below. The IVR validates this data against the Customer's application database. Once the account is validated, the IVR will speak the service address, followed

by the current balance owed and the due date. During the kickoff phase of the implementation project, Selectron and the Customer will need to determine the exact terminology and methodology around presenting 'current' and 'delinquent' amounts due to the user. The caller will then be prompted to make a payment. If no payment is due, then the IVR will say there is currently no payment due.

The functionality of the IVR will include the following:

- Current balance owed
- Last billing date and amount (up to last 6)
- Last payment date and amount (up to last 6)
- Next payment due date
- Payment Processing – Credit Card and E-Check

Callers will also be able to transfer to an agent. If a caller requests a transfer, the IVR performs a transfer to a number specified by the Customer.

## 2.3. Relay Outbound

Relay Outbound provides the Customer's staff with a multi-channel outbound communication platform capable of sending citizens voice, SMS, and email messages. Messages can be configured to include dynamic account data designed to be sent to specific recipients or can be designed as 'general information' messages without customer-specific data.

Messaging Channels:

- **Voice:** Phone campaigns with options for Selectron-created notifications that utilize professional voice recording and/or Customer-generated messages created using text-to-speech technology.
- **SMS:** Attention grabbing text message notifications that can be configured to send both dynamic customer information or general messages.
- **Email:** Notifications sent directly to the customer's inbox. Can include dynamic, customer specific information or generalized messaging depending on campaign configurations.

Notification Options:

- **Event-triggered notifications**  
These notifications are a reactive response to a specific event.
- **Automated Notifications**  
These notifications are designed to be sent to a list of specific recipients. These notifications are created by Selectron based on the needs of the Customer using the business rules of the customer. All campaigns are run based on the schedule outlined by Customer. In addition to the customer-configured messages, Selectron will design one message template during the implementation process. This Selectron-created template will use professional voice recording



for voice messages instead of text-to-speech. This project includes one Selectron-built notification as described in the following section.

- **User-Generated Campaigns**

These notifications are designed to be sent to a list of specific recipients. Outbound messaging campaigns can be designed by the Customer's staff using Relay Portal, and use text-to-speech technology.

Relay Portal allows users to:

- Schedule one time, daily, weekly or monthly outbound campaigns
- Use dynamic data variable in any campaign
- Set runtime windows and overflow rules for campaigns

### **2.3.1. Bill Delinquency Notification**

The Delinquency Notification is used to warn citizens that their account is overdue. It includes the following customer-specific data: account number, delinquent amount, and due date.

### **2.3.2. User-Generated Notifications**

The Customer can send end-user-defined notifications to citizens via phone, email, or SMS text. The Customer is responsible for defining and configuring these notifications, which can be done via the Relay Portal. Training for configuring and recording these notifications will be provided at the end of the implementation process.

## **2.4. Payment Processing**

The Relay solution can be configured to accept credit card and e-check payments, allowing citizens to make payments. The payment processing engine is a PCI-DSS-Verified payment system that **does not** retain any payment information. Users will need to enter their payment information for each transaction.

The Relay payment application interacts with the Customer's selected payment gateway to provide payment functionality. To make a payment, users will need to authenticate and provide valid payment information. Relay validates the user's payment information before passing it to the payment gateway. When a payment is reported as successful, Relay will post an update to the Customer's application database in real-time (as long as an API for such an update is available).

The solution will be able to take payments from citizens via the following payment methods:

- E-Check

- Credit Card

#### **2.4.1. Credit Card**

The interactive solution accepts Visa®, MasterCard®, Discover®, and American Express®. The Customer can elect to accept all or a subset of these card types. Any credit card types not accepted by the Customer will not be accepted by the solution. When taking a payment, Relay verifies the credit card number and expiration date. For more security, the Customer can choose to verify the cardholder's zip code and/or security code. All credit card transactions are sent through the designated payment gateway.

#### **2.4.2. E-Check**

Users wishing to pay via E-Check will need to enter their bank routing number and bank account number. All E-Check transactions are sent through the designated payment gateway.

### **3. System Integration**

Depending on the implemented features, Relay requires varying levels of integration with other database components. These are described in the following sections.

#### **3.1. Application Database Interfaces**

It is anticipated that Selectron will be integrating with the Customer's backend application database. All data-based interactivity on the solution is reliant upon data being available via the application vendor APIs.

During the implementation phase, if necessary data are not available via the included APIs, the project will be impacted. This may affect the implementation timeframe and result in additional professional service fees.

#### **3.2. Payment Gateway Interfaces**

For payment processing, Relay will be integrating to the Customer's selected payment gateway. The payment processing service is PCI - SFF validated. Integration to the payment gateway initiates the collection and reconciliation of the payments being gathered by the department.

For this project, the Customer's payment gateway will be: Speedpay with Forte for eCheck payments

The purchase of the application does not cover the following processing fees and services:

- Transaction fees
- Merchant accounts
- Third-party payment processing services, fees, and software

## 4. Deployment Model

This implementation of Relay will be deployed in Selectron's Relay Managed Services environment.

Relay Managed Services is a hosted application environment, located in Selectron's local hosting facility. Selectron's hosting facility is a co-located data center featuring keyed entry and individual server locks for security. With a Managed Services solution, Selectron owns all hardware and is responsible for security, ongoing maintenance, and proactive support.

### 4.1. Hosted IVR Access

For optimal user experience and telecom usage, it is recommended that callers access the hosted IVR by dialing directly into the hosted solution using a local 10-digit number, which Selectron will provide. If the Customer elects to have calls routed through their phone system first before connecting to the IVR, two customer telecom channels may be tied up during the duration of the entire call, and callers may experience a decrease in call quality.

## 5. Administrative Tasks

This section details administrative tasks that can be performed to manage Relay. All system administration for Relay is handled through the Relay Portal web application. The Customer's administrator will be provided with user credentials for Relay Portal during the implementation process. Additional users can be created by the administrator as needed. Permissions can be assigned per-user; permissions govern the functionality available to a given user.

The Relay Portal provides administrators with a single platform for viewing system usage and health, running reports, and configuring various system settings. The Relay Portal is supported on Chrome, Firefox, Microsoft Edge, and Safari.

### 5.1. Activity Widgets

The Customer's solution is equipped with the following dashboard widgets, allowing for the easy tracking of daily activity and statistics.

#### Activity

- Call Activity – Tracks and reports call activity with line graph
- IVR Usage – Display call statistics, including peak (concurrent) call activity

#### Payments

- Payments Widget – Tracks and reports payment activity with displayed numbers

**Support System**

- System Status Widget – Tracks status of the system through Ping and Database displays
- Today Widget – Displays date, holiday, office hours, and greeting information

**Outbound**

- Outbound: Completed Summary – Summarizes and displays data of completed outbound campaigns
- Outbound: Running Now – Tracks, reports, and displays current outbound data through a percentage chart
- Outbound: Up Next – Tracks, report and displays upcoming outbound campaign data through a time countdown

## 5.2. Run System Reports

Administrators will be able to run system reports via the Relay Portal.

### 5.2.1. Reports Center

- Running / Saving Reports - Depending on your permissions, the Reports Center has a large number of system, activity, and usage reports that you can run. Saving a Report - To save a report (including how you have set the filters), click the desired file type you want to download, either PDF or Excel. The Portal will automatically generate the file and allow you to download it.

The solution will also be equipped to provide the following reporting functions:

#### 5.2.1.1 Activity Reports

- Call Activity Report - This report provides a graph of different activity types performed by callers on the IVR over a relative span of time (hour over hour, day over day, month over month, and more).
- Call Activity Detail Report - Use this report to find a specific call or group of calls. Search by date/time, the caller's phone number, or other identifying information to find calls of interest.
- Call Statistics Report - This report provides aggregate facts and statistics about calls into the IVR including average call lengths, longest calls, and whether or not actions were completed by callers.
- Email Activity Report - This report provides a list of all emails sent on a specified date.
- IVR Usage Report - This report provides data on peak (concurrent) calls and average calls, hour by hour, over a selected date range.
- Multiple Calls Report - This report provides insight on how many times incoming phone numbers have called the IVR within a specified range of time.

- System Status Report - See a log of system events, including reboots and changes in the system's overall status or health.

### **Payment Reports**

- Payment Detail Report - This report shows the details of all payments attempted and approved through available channels (such as IVR and web) for a selected time range and/or account number.
- Payment Summary Report - This report shows the summary of payments attempted and approved through available channels (such as IVR and web) for a selected time range.
- Payment by Day Report - This report shows the cumulative transactions by type (Credit Card or Check) for each day of the month for a selected time range.
- Payment Response Time Summary Report - This report displays the average response time to the payment gateway for all payment attempts, by channel.

### **Relay Outbound Reports**

- Outbound Campaign Detail Report – This report shows the detail of Outbound campaign messages delivered for a specific Campaign Type.
- Outbound Campaign Summary Report – This report shows the summary of Outbound campaign messages delivered for a specific Campaign Type.
- Outbound Import Errors Report - This report shows all recipients that were not contacted due to incomplete data or errors.

## **5.3. Schedule Outbound Campaigns**

Using the Relay Portal, administrators can create, edit, and review outbound campaigns made using Relay Outbound. Each instance of an outbound campaign must be scheduled individually. This includes selecting the type of notification, the date/time of delivery, and (for user-generated notifications) the configuration of the message.

The administrator will also need to upload a contact list in .csv format for the notification. The exact formatting of the .csv file will vary depending on the notification being scheduled. Selectron will provide the Customer with example .csv files for the configured notifications included in this project, as well as assistance in generating the outbound call list.

## 6. Responsibilities

### 6.1. Selectron Technologies, Inc.

This section outlines Selectron Technologies' responsibilities regarding service initiation and operation.

#### 6.1.1. Provide Project Management

Selectron Technologies assigns a Project Manager to the service implementation. The Project Manager is the Customer's primary contact at Selectron Technologies and coordinates all necessary communication and resources.

#### 6.1.2. Provide Documentation

The Project Manager provides the Customer with the documents to help facilitate the service implementation process. Some or all of these may be provided depending on the scope of the project.

- Implementation Questionnaire- gathers critical information needed to set up and initiate the service. This includes information on the toll-free numbers, call volume, APIs, account validation information, and the types of payments being gathered.
- Remote Access Questionnaire- details information that Selectron Technologies needs to remotely access the Customer's network and application database prior to system initiation, allowing for complete system testing.
- Implementation Timetable- details project schedule and all project milestones.
- Quality Assurance Test Plan- assists the Customer in determining that the interactive solution is functioning as specified in the Contract.
- Service Acceptance Sign-off Form- indicates that the Customer has verified service functionality.

#### 6.1.3. Develop Channel Design

The Project Manager works with the Customer to develop and complete the following portions of channel design:

- IVR call flow design
- Outbound messaging configuration

Software development can begin once these design elements are completed and approved by the Customer.



#### **6.1.4. Perform Quality Assurance Testing**

Selectron Technologies thoroughly tests all applications and integration points prior to initiation, ensuring system functionality. This includes data read from and written to the application database and the general ability for a customer to successfully access live data and complete a transaction.

#### **6.1.5. Provide Installation and Administrative Training**

Selectron will provide remote training for the Relay solution. All installation is handled by Selectron technical staff at our remote hosting facility.

#### **6.1.6. Provide Marketing Materials**

Selectron Technologies provides marketing collateral that the Customer can use to promote the interactive solution to citizens. Marketing collateral includes a poster, tri-fold brochure, and business card; standard templates for each item are used. Collateral is provided to the Customer in PDF format (original Adobe InDesign files are provided upon request).

Marketing collateral will be provided for each department included in this project. Selectron Technologies' Project Manager will assist in gathering the correct information to be displayed on the marketing collateral. Information displayed includes the following:

- IVR phone number(s)
- Department logo (preferably in EPS format)
- Department address
- A description of functionality
- Additional contact/informational phone numbers
- Samples: where to find account/ permit/ case numbers, etc.

Any changes to the collateral that do not include the items listed above (e.g., design changes to the template) are billed on a time and materials basis. Any changes to the marketing materials after final delivery are also billed on a time and materials basis.

#### **6.1.7. Interface Upgrades**

After service initiation, the Customer's database application may release new updates to their application or its interface. Upgrading the Relay interface to be compatible with any of the Customer's application databases (or other application database software) may require professional services outside the scope of this service.

## **6.2. Jacksonville Beach, FL**

This section outlines the Customer's service implementation and maintenance requirements and responsibilities.

### **6.2.1. Return Questionnaires and Information**

Selectron Technologies' Project Manager provides the Customer with an implementation questionnaire. The implementation questionnaire must be returned prior to developing the call flow design and the implementation timetable.

### **6.2.2. Provide Customer Specific Information**

The following information should be supplied to Selectron Technologies, in conjunction with the Implementation Questionnaire, to help create a precisely integrated product. For further clarification on the format and detail of the following data, refer to the Implementation Questionnaire or contact your Selectron Technologies' Project Manager.

- Street names
- Observed holidays
- Extensions used for transfer functions
- Utility account numbering scheme
- Validations used for receiving payment on a utility bill

### **6.2.3. Approve Channel Configuration**

The Customer is responsible for approving the application design developed by Selectron Technologies' Project Manager. This includes reviewing:

- IVR call flow design
- Outbound messaging configuration

Once the channel design(s) have been approved, software development begins.

### **6.2.4. Provide Remote Network Access to Application Database(s)**

To fully test the interactive solution, Selectron Technologies requires access to the Customer's application database(s) prior to installation. The Customer will help facilitate communication between Selectron and the database vendor.

### **6.2.5. Provide System Access**

Selectron Technologies requires access to the Customer's network and database/system. Changing or deleting access accounts could disrupt service for the interactive solution and/or Selectron Technologies' ability to provide timely support. Please notify Selectron Technologies immediately if the accounts for the Application Database, the payment gateway, or the network are modified. The Customer is responsible for

providing Selectron with appropriate application database and payment gateway network access as defined in the System Integration section.

#### **6.2.6. Confirm Service Functionality**

The Customer has 30 calendar days after service initiation to verify the functionality of the interactive solutions. Within the 30-day system acceptance period, the Customer should test system functionality using the provided Quality Assurance Test Plan. Additionally, the System Acceptance Sign-off form must be sent to Selectron Technologies' Project Manager within this period.

#### **6.2.7. Contact Customer Support**

Anytime the Customer requests a significant change to their Selectron interactive solution, an authorized contact from the agency must provide acknowledgment to Selectron's Customer Support Department. A significant change is a modification that will A) change system behavior, B) allow users to change the system, or C) allow access to protected data.

**EXHIBIT D**  
SELECTRON TECHNOLOGIES, INC.  
END USER LICENSE AGREEMENT

This End User License Agreement (this “**EULA**”) is part of a Master Services and Hosting Agreement (the “**Master Agreement**”) between Selectron Technologies, Inc., an Oregon corporation (“**Selectron**”, “**we**”, “**our**”, or “**us**”) and the person or entity identified in the Master Agreement as the Licensee purchasing Services from us (“**Licensee**”). This EULA governs use by Licensee and all natural persons to whom Licensee provides access to the Licensed Software (each, an “**Authorized User**”). In this EULA, unless the context clearly indicates otherwise, all references to “**you**,” or “**your**” means both the Licensee and the Authorized User. All capitalized terms used but not defined in this EULA have the meanings given to them in the Master Agreement.

SELECTRON PROVIDES THE LICENSED SOFTWARE SOLELY ON THE TERMS AND CONDITIONS SET FORTH IN THIS EULA AND ON THE CONDITION THAT YOU ACCEPT AND COMPLY WITH THEM. IF YOU DO NOT AGREE TO THE TERMS OF THIS EULA, SELECTRON WILL NOT AND DOES NOT LICENSE THE LICENSED SOFTWARE TO YOU, AND YOU MUST NOT USE OR ACCESS THE SOFTWARE.

**1. License Grant.** Subject to your strict compliance with this EULA, Selectron hereby grants you a non-exclusive, non-transferable, non-sublicensable, limited license to use the Licensed Software solely in accordance with the Documentation, the Master Agreement, and this EULA, for Licensee's internal business purposes. The foregoing license will terminate immediately on the earlier to occur of:

- (a) the expiration or earlier termination of the Master Agreement between Selectron and Licensee; or
- (b) your ceasing to be authorized by Licensee to use the Licensed Software for any or no reason.

**2. Scope of License.** Subject to and conditioned upon Licensee's timely payment of the fees set forth in the Master Agreement and your strict compliance with all terms and conditions set forth in this EULA and the Master Agreement, you have a limited right and license to:

- (a) Use and access the Licensed Software in accordance with this EULA and the Documentation, solely for Licensee's internal business purposes.
- (b) Download, display, and use the Documentation, solely in support of Licensee's use and access of the Licensed Software in accordance herewith.
- (c) Download, display, copy, use, and create derivative works of reports and structured data generated using the Licensed Software, solely for Licensee's internal business purposes.

**3. Copies.** All copies of the Licensed Software and Documentation made by you:

- (a) Will be the exclusive property of Selectron;
- (b) Will be subject to the terms and conditions of the Master Agreement and this EULA; and

(c) Must include all trademark, copyright, patent and other intellectual property rights notices contained in the original.

**4. Use Restrictions.** You shall not, directly or indirectly:

(a) Use the Licensed Software beyond the scope of the license granted in the Master Agreement and Section 2 of this EULA;

(b) Copy all or any portion of the Licensed Software, except as expressly permitted in Section 2 of this EULA;

(c) Decompile, disassemble, decode, or otherwise reverse engineer the Licensed Software, or any portion thereof, or determine or attempt to determine any source code, algorithms, methods, or techniques used or embodied in the Licensed Software or any portion thereof;

(d) Modify, translate, adapt or otherwise create derivative works or improvements, whether or not patentable, of the Licensed Software or any part thereof;

(e) Provide any other person, including any subcontractor, independent contractor, affiliate, service provider, or other employee of Licensee, with access to or use of the Licensed Software, except as expressly permitted by the Master Agreement or this EULA;

(f) Distribute, disclose, market, rent, lease, lend, sell, timeshare, sublicense, assign, distribute, pledge, publish, transfer or otherwise make available the Licensed Software or any features or functionality of the Licensed Software, to any third party for any reason, whether or not over a network and whether or not on a hosted basis, including in connection with the internet, web hosting, wide area network (WAN), virtual private network (VPN), virtualization, time-sharing, service bureau, software as a service, cloud or other technology or service, except as expressly permitted by the Master Agreement or this EULA;

(g) Use the Licensed Software for the commercial or other benefit of a third party;

(h) Permit the Licensed Software to be used for or in connection with any facility management, service bureau, or time-sharing purposes, services, or arrangements, or otherwise used for processing data or other information on behalf of any third party;

(i) Remove, delete, alter or obscure any trademarks or any copyright, trademark, patent or other intellectual property or proprietary rights notices, legends, symbols, or labels appearing on or in the Licensed Software, including any copy thereof;

(j) Perform, or release the results of, benchmark tests or other comparisons of the Licensed Software with other software or materials;

(k) Incorporate the Licensed Software or any portion thereof into any other materials, products, or services, except as expressly permitted by the Master Agreement or this EULA;

(l) Use the Licensed Software for any purpose other than in accordance with the terms and conditions of this EULA and the Master Agreement.

(m) Use the Licensed Software in, or in association with, the design, construction, maintenance or operation of any hazardous environments or systems, including (i) power generation systems; (ii) aircraft navigation or communication systems, air traffic control systems or any other transport management systems; (iii) safety-critical applications, including medical or life-support systems, vehicle operation applications or

any police, fire or other safety response systems; (iv) military or aerospace applications, weapons systems or environments;

(n) Use the Licensee Data or the Licensed Software in any way that is fraudulent, misleading, or in violation of any applicable laws or regulations (including federal, state, local, and international laws and regulations), including but not limited to export or import control laws, information privacy laws, and laws governing the transmission of commercial electronic messages; or

(o) Use the Licensed Software for purposes of competitive analysis of the Licensed Software, the development of a competing software product or service or any other purpose that is to Selectron's commercial disadvantage.

**5. Collection and Use of Information.** Selectron may, directly or indirectly through the services of others, including by automated means and by means of providing maintenance and support services, collect and store information regarding your use of the Licensed Software, its performance, the equipment through which the Licensed Software accessed and used, such as dates and times of use by each Authorized User, activities conducted using the Licensed Software, the type of web browser used to access the Licensed Software, the operating system/platform you are using, your IP address, and your CPU speed. You agree that the Selectron may use such information for any purpose related to the Licensed Software, including but not limited to improving the performance of the Licensed Software, developing Updates, and verifying compliance with the terms of this Agreement and enforcing Selectron's rights, including all intellectual property rights in and to the Licensed Software.

**6. Intellectual Property Rights.** You acknowledge that the Licensed Software is provided under license, and not sold, to you. You do not acquire any ownership interest in the Licensed Software under this EULA or the Master Agreement, or any other rights to the Licensed Software other than to use the Licensed Software in accordance with the license granted under this EULA and the Master Agreement, subject to all terms, conditions and restrictions contained therein and herein. Selectron reserves and shall retain its entire right, title and interest in and to the Licensed Software and all intellectual property rights arising out of or relating to the Licensed Software, subject to the licenses expressly granted in the Master Agreement and this EULA. You shall use commercially reasonable efforts to safeguard all Licensed Software (including all copies thereof) from infringement, misappropriation, theft, misuse or unauthorized access.

**7. Login Credentials.** You, the Authorized User, shall not share or disclose your log-in credentials with or to any other individual or entity, even if such other individual is also an Authorized User. If you discover or suspect that log-in credentials of any Authorized User have been accessed or used by anyone other than the individual to whom such log-in credentials were originally granted, you will promptly notify Selectron, and Selectron shall promptly reset or provide Licensee with a means of resetting the password associated with such log-in credentials.

**8. Export Regulation.** The Licensed Software may be subject to US export control laws, including the US Export Administration Act and its associated regulations. You shall not, directly or indirectly, export, re-export or release the Licensed Software to, or make the Licensed Software accessible from, any jurisdiction or country to which export, re-export or release is prohibited by law, rule or regulation. You shall comply with all applicable federal laws, regulations and rules, and complete all required undertakings (including obtaining any necessary export license or other governmental approval), prior to exporting, re-exporting, releasing or otherwise making the Licensed Software available outside the US.

**9. Governing Law.** This EULA shall be governed by and construed in accordance with the internal laws of the State of Oregon without giving effect to any choice or conflict of law provision or rule (whether of the State of Oregon or any other jurisdiction) that would cause the application of laws of any jurisdiction other than those of the State of Oregon.





| CITY COUNCIL AGENDA ITEM |                                                        |
|--------------------------|--------------------------------------------------------|
| TO:                      | Mike Staffopoulos, City Manager                        |
| FROM:                    | Allen Putnam, Director Beaches Energy                  |
| DATE:                    | 03/28/2024                                             |
| SUBJECT:                 | Construction Services Agreement with Burns & McDonnell |

#### BACKGROUND

The City Council awarded RFP No. 04-2021, a design-build project for transmission system improvements, to Burns & McDonnell on February 23, 2022. The scope of the project was to perform preliminary engineering necessary to identify a complete bill of materials, identify all necessary construction services, and authorized Beaches Energy Services (BES) to begin contract negotiations with Burns & McDonnell to determine a mutually agreed upon guaranteed maximum price to complete the design-build contract.

After completing an inspection assessment of all 47 miles of BES's electric transmission system, it was determined that repairs and improvements will be addressed in a phased approach over multiple years as identified in the Capital Improvement Plan.

Phase one of the Transmission Line Hardware Renewal & Replacement program addresses items that pose the most risk to the reliability of the transmission system. Burns & McDonnell evaluated the material quotes and construction bids and selected the most economical options with respect to price and the project schedule. After estimating the remaining engineering and project management efforts on a time and materials basis, Burns & McDonnell proposed a lump sum price in the amount of \$1,587,000. BES proposes to add a 10% contingency in the amount of \$158,000 to account for any unforeseen issues that are out of the control of BES or Burns & McDonnell and will not be used unless BES authorizes a Change Order, for a total contract price not to exceed \$1,745,000.

The "Design-build", or "Engineer, Procure & Construct (EPC)" approach, as it is also referred to, was selected by BES to facilitate a project that is fully managed by a single firm such that BES is provided with the most economical and timely project deliverable available for a project of this type and size. Final engineering and procurement activities are scheduled to start immediately upon receiving City Council approval and the issuance of a Purchase Order. Construction is scheduled to start in October 2024 and be completed in May 2025 barring any unforeseen significant weather delays or outage request approvals from the Florida Reliability Coordinating Council Reliability Coordinator.

#### FINANCIAL IMPACT

This project was included in the FY2024 capital improvement budget at \$1,204,000. The remaining \$541,000 is available in current year's operating reserves. No budget adjustments are required.

#### REQUESTED ACTION



City of Jacksonville Beach • 11 North Third Street • Jacksonville Beach, FL 32250

Approve/Disapprove a Construction Services Agreement with Burns & McDonnell for all remaining engineering services, procurement of materials, and construction for a design-build contract for transmission system improvements and repairs for an amount not to exceed \$1,745,000 as the Contract Guaranteed Maximum Price

ATTACHMENTS

1. Burns & McDonnell Engineering, Procurement, and Construction Agreement



## ENGINEERING, PROCUREMENT, AND CONSTRUCTION AGREEMENT

### (LUMP SUM BASIS – SHORT FORM)

This agreement ("Agreement") is entered into by and between the City of Jacksonville Beach (d/b/a Beaches Energy Services), with offices at 11 North 3<sup>rd</sup> Street, Jacksonville Beach, FL 32250 ("Client") and Burns & McDonnell Engineering Company, Inc., a Missouri corporation headquartered at 9400 Ward Parkway, Kansas City, MO ("Contractor") (each a "Party", and together the "Parties"), effective as of \_\_\_\_\_, \_\_ 2024 ("Effective Date"), and shall govern the Parties' performance, obligations, and rights in connection with the engineering, procurement, and construction of the (the "Project").

WHEREAS, Client and Contractor have previously entered into a contract for professional services, the Agreement for Professional Engineering Services for RFQ No. 10-1920 dated December 21, 2020 executed under P.O. 220793, relating to the Project to be completed pursuant to this Agreement:

In consideration of the mutual covenants and obligations contained herein, Client and Contractor agree as follows:

#### General Conditions

1. **Scope of Work.** Contractor shall provide all supervision, labor, tools, materials, and equipment to perform or cause to be performed all services described in Exhibit A, as well as clarifications and assumptions, for the Project ("Work").
2. **Contract Documents.** The Contract Documents consist of this Agreement, any agreed Change Orders and amendments to the Agreement, and any attachment, drawings and specifications prepared by Contractor and approved by Client depicting the Work, all of which are a part of the Agreement between the Parties as if fully repeated herein.
3. **Compensation.** Client shall pay Contractor the firm fixed price sum of One Million Five Hundred Ninety Five Thousand Dollars (\$1,595,000) for the performance of the Work, subject to additions and deductions by Change Order in accordance with the Agreement ("Contract Price"). The Contract Price includes applicable sales, use, and consumer taxes mandated by law.
4. **Invoicing.** Contractor will invoice Client for milestone payments according to the payment procedure outlined below and in accordance with Exhibit B. Upon Contractor's completion of a portion of the Work as provided as a milestone in Exhibit B, Contractor shall submit to Client an application for payment ("Application for Payment") requesting payment for the portion of the Work furnished and completed previously in the applicable milestone(s) and remaining unpaid. Each such Application for Payment shall be accompanied by conditional lien releases from Contractor's major subcontractors who performed any Work and major suppliers who provided any materials or equipment for the Project through the date of the Application for Payment.
5. **Payment.** Client shall pay Contractor within fourteen (14) days of the date Client receives the Application for Payment or in accordance with Fla. Stat. 218.735. If a portion of any Application



for Payment is disputed, Client shall pay the undisputed portion by the due date and then advise Contractor, in writing, within seven (7) days of receipt of Contractor's Application for Payment, of the basis for withholding any disputed portion. Timely payment is a material part of the consideration of the Agreement. Payments due and unpaid by Client shall bear interest commencing the day after payment is due at the rate of one and one-half percent (1.5%) per month until paid. Client shall reimburse any costs incurred by Contractor in collecting any delinquent amount, including reasonable attorney's fees. Client reserves the right, in the event a claim is made against Client arising out of the performance of the Work, to withhold payments due to or which may become due to Contractor in such amounts as are necessary to protect the Client from liability retained by or transferred to Contractor in the Agreement. When the grounds for withholding payments are removed, payment of such withheld amounts shall be made.

6. **Changes.** The Agreement may only be amended, supplemented or modified by a written modification or change to this Agreement executed by both Parties ("Change Order"). Client may direct Contractor to perform changed or additional Work prior to issuing a Change Order; provided, such direction shall be in writing and Contractor's performance of such Work prior to receiving a Change Order shall not prejudice Contractor's right to an equitable adjustment in Contract Price and/or Contract Time.
7. **Warranty.** Contractor agrees to provide the construction portion of the Work in accordance with the requirements of the Contract Documents consistent with good construction industry standards and practices. Contractor's professional services (including, as applicable to the Work, design, architecture, engineering, surveying, planning and management) shall be performed consistent with customarily accepted professional practice with the degree of skill, care, and diligence which a professional of the same type would exercise under the same or similar circumstances, in the same locale. During the Warranty Period, the Contractor warrants to Client that construction Work performed under the Agreement will be of good quality and construction workmanship will be free from defects not otherwise inherent in the quality required or permitted. During the Warranty Period, the Contractor warrants to Client all materials and equipment furnished by Contractor as part of the Work shall be new (unless otherwise specified in the Contract Documents), of good quality, and in conformance with the Contract Documents. For equipment procured by Contractor, Contractor shall assign all manufacturer's warranties to Client upon Substantial Completion and payment in full, except for the value of punch list work. Client agrees to look to the manufacturer for any recourse related to the quality or performance of such procured equipment. Contractor shall assist Client in obtaining performance by such manufacturer(s) during the Warranty Period, but shall have no liability for defects in such equipment. Upon written notice from Client received during the Warranty Period, Contractor agrees to correct any defective Work. Client's warranty excludes damage or defect caused by abuse, modifications performed by others, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. Contractor does not guarantee the performance of or warrant the work, work product, or deliverables of any of Client's Separate Contractors (including all Client-Provided Work) or the performance or actions of any third parties impacting, exercising control over, or that have legal, regulatory, permitting or other jurisdiction involving the Project or Project site. Contractor's warranty obligations shall begin at the date of beneficial occupancy ("Substantial Completion") and such duration shall end twelve (12) months thereafter ("Warranty Period"). The warranties and remedies provided herein are in lieu of all other warranties, express or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. All Contractor liability shall end upon expiration of the Warranty Period.

8. **Intellectual Property Rights.** Contractor shall retain all ownership rights, title, and interest in and to all drawings, specifications, reports and related documentation, all information, processes, data, compilations, designs, and other material prepared, owned, licensed to, or developed by Contractor or existing before execution of this Agreement in performance of the Work ("Work Product"). Subject to Client's payment of the Contract Price, Contractor hereby grants to Client an irrevocable (except in the event of a breach of this license), non-exclusive, royalty-free license to utilize the Work Product to the extent necessary for the construction, operation, maintenance, or repair of the Project for which they were prepared and intended. Client shall not acquire any rights to any of Contractor's or its subcontractors' proprietary computer software that may be used in connection with the Work except as may be separately agreed. Client shall not reuse the Work Product on any other project, nor use the same with any other contractor or property owner. If Client alters or uses the Work Product in violation of this restriction, and without the express written consent of the Contractor, then to the fullest extent permitted by law, Client shall defend, indemnify and hold harmless Contractor, its design consultants and subcontractors from and against any and all claims, damages, liabilities, losses, and expenses, including reasonable attorneys' fees, to the extent resulting from the unauthorized use or alteration of the Work Product.
9. **Non-Infringement.** Contractor represents that (1) the Work will not infringe or misappropriate any intellectual property rights of any third party; (2) the Contractor has all rights and licenses necessary to convey to Client the ownership of or license rights to use, as required under the Agreement, all intellectual property rights in drawings, specifications and other materials delivered to Client; and (3) no drawings, specifications and other materials delivered to Client, nor their use by Client, will infringe or constitute an infringement or misappropriation of any intellectual property rights of any third party. Client represents that Client either possesses or will obtain permission regarding any and all necessary rights in intellectual property or other proprietary rights for any information including, but not limited to, all reports, plans or specifications prepared by others provided to the Contractor which Contractor has need to use, copy or adapt for performance of the Work. Client grants to Contractor (and its subcontractors and suppliers) a perpetual, worldwide, non-exclusive, paid-up, transferable license to use, copy, or modify such intellectual property solely as needed to enable Contractor (or its subcontractors and suppliers, as applicable) to perform the Work. Contractor's obligations under this paragraph will not apply to any drawing, product, specification, or other materials selected, requested, or controlled by Client.
10. **Contractor General Indemnity.** TO THE FULLEST EXTENT PERMITTED BY LAW, CONTRACTOR AGREES TO INDEMNIFY CLIENT FROM AND AGAINST COSTS, DAMAGES, AND EXPENSES (INCLUDING REASONABLE ATTORNEYS' FEES AND LITIGATION COSTS) INCURRED BY CLIENT ARISING FROM BODILY INJURY (INCLUDING DEATH) OR THIRD-PARTY PROPERTY DAMAGE BUT ONLY TO THE EXTENT CAUSED BY THE NEGLIGENT OR WRONGFUL ACTS OR OMISSIONS OF CONTRACTOR OR ANYONE FOR WHOSE ACTS CONTRACTOR IS LIABLE.
11. **Client General Indemnity.** CLIENT AGREES TO INDEMNIFY CONTRACTOR FROM AND AGAINST COSTS, DAMAGES, AND EXPENSES (INCLUDING REASONABLE ATTORNEYS' FEES AND LITIGATION COSTS) INCURRED BY CONTRACTOR ARISING FROM BODILY INJURY (INCLUDING DEATH) OR THIRD-PARTY PROPERTY DAMAGE BUT ONLY TO THE EXTENT CAUSED BY THE NEGLIGENT OR WRONGFUL ACTS OR OMISSIONS OF CLIENT, ITS SEPARATE CONTRACTORS, OR ANYONE FOR WHOSE ACTS CLIENT IS OR MAY BE LIABLE. THIS INDEMNITY SHALL NOT EXCEED THE LIMITS OF FLA. STAT. 768.28 AND EXPRESSLY EXCLUDES ALL NON-TORT CLAIMS.

**12. Intellectual Property Indemnity.** TO THE EXTENT PERMITTED BY LAW, EACH PARTY AGREES TO DEFEND AND INDEMNIFY THE OTHER PARTY AND ITS RESPECTIVE OFFICERS, DIRECTORS, OR EMPLOYEES FROM ALL LIABILITY, COSTS, EXPENSES, OR DAMAGES (INCLUDING REASONABLE ATTORNEY'S FEES) CAUSED BY A BREACH OF THE NON-INFRINGEMENT WARRANTY IN THIS AGREEMENT ARISING OUT OF ANY THIRD-PARTY CLAIM THAT THE OTHER PARTY INFRINGED OR MISAPPROPRIATED ANY INTELLECTUAL PROPERTY RIGHT OF ANY THIRD PARTY. Contractor will have no obligation to defend or indemnify Client or others for any loss or liability arising from: any suit or proceeding based on or arising out of a configuration or modification, product, equipment, or material made, specified, or requested by Client; the use of the items delivered or supplied by Contractor or Client in a process or application specified, requested, or controlled by Client or any third parties; or the use by Client of the items delivered or supplied by Contractor in combination with other equipment, software, or materials not supplied by Contractor where such combination gives rise to the claim of infringement.

**13. Insurance.** Before commencing the Work, as part of the Contract Price and a condition of payment, Contractor shall purchase and maintain insurance as described below with an A.M. Best financial strength rating of "A-VII" or better, that will protect Contractor from claims alleging bodily injury or property damage caused by the Work performed by Contractor.

|                              |                                                                                   |
|------------------------------|-----------------------------------------------------------------------------------|
| Commercial General Liability | \$1,000,000 each occurrence and annual aggregate<br>• Additional Insured Coverage |
| Automobile Liability         | \$1,000,000 per accident<br>• Additional Insured Coverage                         |
| Worker's Compensation        | Statutory                                                                         |
| Employer's Liability         | \$1,000,000 each accident/each employee by disease/policy limit by disease.       |
| Professional Liability       | \$1,000,000 per claim and annual aggregate                                        |
| All Risk Builder's Risk      | Full Replacement Value                                                            |

- a. Contractor shall furnish Client with certificates of insurance evidencing insurance coverage as required herein. Contractor's insurance shall remain in effect until Substantial Completion.
- b. Contractor shall be responsible for all deductibles and retentions with regard to its insurance, except for Builder's Risk. In the case of loss or damage or other event that requires notice or other action under the terms of any insurance coverage described above, Contractor will be solely responsible for taking such action. Client shall be responsible for all deductibles and retentions with regard to its insurance.
- c. Contractor shall provide and maintain Builder's Risk insurance for the full amount of the Work on a replacement cost basis during construction and until Substantial Completion of the Project. Client, Contractor's subcontractors, sub-subcontractors, and suppliers shall be included as additional insureds. A waiver of subrogation shall be afforded to Client under the Builder's Risk insurance. Client shall be responsible for all deductibles for the Builder's Risk insurance.



- d. Client shall either self-insure or obtain and maintain its own liability insurance for protection against claims arising out of the performance of this Agreement, including without limitation, loss of use and claims, losses, and expenses arising out of the Client's errors or omissions. Client shall purchase and maintain property insurance for the full replacement value of the existing property at the Project site and its contents or self-insure the property and its contents at the Project site. Client agrees to look solely to such property insurance or such self-insurance for any damage or loss to existing property and/or the contents and loss of use of the property or its contents, however caused, and waives all rights against Contractor and subcontractors and suppliers of any tier for damages caused by fire or other causes of loss insured in whole or in part under such property insurance applicable to the Work, Project, or the Project site or that could be covered by property insurance, if Client is self-insured. Contractor shall have no risk of loss or liability for damage to any existing property or the contents at the Project, the Project site, or the Work upon Substantial Completion. Upon Substantial Completion of the Work, Client shall obtain or maintain property insurance on or self-insure the completed Project, including the Work. The Client or other user or owner of the property procuring such property insurance shall waive all rights in accordance with the terms herein for damages caused by fire or other causes of loss insured in whole or in part under such property insurance or that could be covered by property insurance, if self-insured. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.
14. **Termination for Convenience.** Notwithstanding anything contained herein to the contrary, Client shall have the right to terminate this Agreement at any time and for any reason, without cause, upon at least thirty (30) days' prior written notice to Contractor. If Client elects to terminate the Work under this provision, Contractor shall be entitled to compensation for all Work performed prior to such termination and all related charges and expenses accrued at the time of termination including, without limitation, the reasonable cost of terminating existing subcontracts, reasonable demobilization costs, reasonable costs of any incidental or "close-out" work necessary and approved by the Client, cancellation charges for materials or equipment on order or under rental in connection with the Work at the time of termination and which cannot, despite Contractor's diligent efforts, be avoided or cancelled.
15. **Termination for Cause.** Either Party shall have the right to terminate this Agreement at any time due to the other Party's material breach of any provision. In the event of such breach, the non-breaching Party shall send the breaching Party written notice of breach describing how the Party breached this Agreement. If the breaching Party does not cure such breach within ten (10) days of receiving such notice, then the non-breaching Party may declare the breaching Party in default; provided, however, if such breach cannot be reasonably cured within in ten (10) days, the breaching Party shall not be in default unless such Party fails to commence to cure such breach within ten (10) days and fails to diligently continue to pursue such cure through completion. Upon default by either Party, the non-breaching Party may immediately terminate this Agreement by written notice.
16. **Disputes.** The Parties shall seek to resolve in good faith any dispute or difference arising between them in respect of any matter connected with this Agreement. If the Parties cannot resolve any such dispute or difference within fourteen (14) Days, or such a period as the Parties may subsequently agree, then such dispute shall be finally litigated in a court of competent jurisdiction. Venue for any such litigation arising under this Agreement shall be in Duval County, Florida.

**17. Limits of Liability.**

- A. IN NO EVENT SHALL CLIENT OR CONTRACTOR BE LIABLE TO THE OTHER PARTY IN CONTRACT, TORT, STRICT LIABILITY, WARRANTY OR OTHERWISE, FOR ANY SPECIAL, INCIDENTAL, INDIRECT, EXEMPLARY, PUNITIVE, OR CONSEQUENTIAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DELAY, DISRUPTION, LOSS OF PRODUCT, LOSS OF ANTICIPATED PROFITS OR REVENUE, LOSS OF USE OF THE EQUIPMENT OR SYSTEM, NON-OPERATION OR INCREASED EXPENSE OF OPERATION OF OTHER EQUIPMENT OR SYSTEMS, CLAIMS BY CUSTOMERS OF CLIENT, COST OF CAPITAL, OR COST OF PURCHASE OR REPLACEMENT EQUIPMENT, SYSTEMS OR POWER.
- B. IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS OF THE PROJECT TO BOTH CLIENT AND CONTRACTOR, THE RISKS HAVE BEEN ALLOCATED SUCH THAT CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO LIMIT THE LIABILITY OF CONTRACTOR TO CLIENT FOR ANY AND ALL CLAIMS, LOSSES, COSTS, DAMAGES, AND EXPENSES OF ANY NATURE WHATSOEVER, EXCEPT FOR DAMAGES DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, INCLUDING WITHOUT LIMITATION REASONABLE ATTORNEYS' FEES AND COSTS AND EXPERT WITNESS FEES AND COSTS, SO THAT THE TOTAL AGGREGATE LIABILITY OF CONTRACTOR TO CLIENT SHALL NOT EXCEED THE ACTUAL CONTRACT PRICE RECEIVED BY CONTRACTOR, OR THE SUM OF ONE MILLION DOLLARS (\$1,000,000), WHICHEVER IS GREATER.
- c. The waivers and disclaimers of liability, releases from liability, limitations, and apportionments of liability and indemnity obligations expressed in this Agreement have been bargained for by the Parties, represent the agreement of the Parties with respect to a fair allocation of risks, and shall apply even in the event of the fault, negligence (in whole or in part), strict liability, breach of Agreement, or otherwise of the Party released or indemnified or whose liability is waived, disclaimed, limited, apportioned, indemnified or held harmless, and shall extend to such Party, property owner, and its Affiliates, and its and their officers, directors, employees, agents, and representatives.
- d. PURSUANT TO FLA. STAT. § 558.035, INDIVIDUAL EMPLOYEES AND AGENTS OF CONTRACTOR MAY NOT BE HELD INDIVIDUALLY LIABLE FOR NEGLIGENCE. Therefore, Client agrees not to sue any individual employee, agent, officer or director of Contractor (nor of Contractor's subcontractors or suppliers) in their individual capacity for negligence, warranty, or any other breach of contract associated with this Agreement. Individual employees, agents, officers or directors of Contractor (nor of Contractor's subcontractors or suppliers) shall be intended third party beneficiaries of this Section 17 Limits of Liability.

Conditions of the Work

- 18. Compliance with Laws.** Contractor shall comply with applicable laws pertaining to occupational safety and health; protection of persons and property from death, injury or damage; the environment and the use, handling, storage, labeling and disposal of toxic or hazardous materials; labor and employment conditions; wages and hours; workmen's compensation and unemployment insurance, and affirmative action and equal employment opportunity; in the performance of its Work.

19. **Safety.** Contractor shall be responsible for, and have control over, initiating, maintaining, and supervising safety precautions and programs for its Work and will control, supervise, and direct the construction means, methods, techniques, sequences and procedures and coordinate its Work. Contractor shall comply with Client-specific safety requirements set forth in the Contract Documents. Contractor shall report to Client, in writing, safety-related injury, damage, or accident arising from the and, to the extent mandated by applicable law, to the appropriate authorities having jurisdiction over safety-related matters involving the Project or the Work. When on site, Client and its agents or invitees agree to abide by Contractor's Project Site safety rules and directives. In the event Client desires to bring its invitees or other guests to the Site prior to substantial completion of the Work, Client shall: (i) to the extent permitted by law, indemnify Contractor from any claims made by Client or its agents, employees, invitees, or others for property damage or personal injury, and (ii) provide or cause to be provided to Contractor a release on Contractor's approved release form prior to entry on the Site.
20. **Cooperation.** The Parties shall, throughout the duration of the Agreement, reasonably cooperate with one another and each Party shall perform its responsibilities and obligations under the Agreement to avoid delay or interference with the other Party's timely and efficient performance of its obligations under the Agreement.
21. **Site Access.** Client shall provide Contractor proper and safe access to the Site at reasonable times as is necessary for performance of the Work. Client is responsible for securing and executing all necessary agreements with the property owner and/or adjacent land or property owners that are necessary to enable Contractor to perform the Work.
22. **Client's Responsibilities.** Contractor is entitled to reasonably rely on the information furnished by the Client. Client shall provide at the Client's expense and with reasonable promptness: information describing the physical characteristics of the Site, including data or drawings depicting existing conditions, reports, and investigations; tests, inspections, and other reports dealing with environmental matters, hazardous conditions, and other existing conditions; and any other information or services requested in writing by the Contractor that are relevant to Contractor's performance of the Work. Utility details shall include available services, lines at the Site, and adjacent thereto and connection points. The information shall include public and private information, exact locations and dimensions, and benchmarks that can be used by the Contractor in laying out the Work. Client shall, throughout the performance of the Work, cooperate with Contractor and perform its responsibilities, obligations, and services in a timely manner to facilitate Contractor's timely and efficient performance of the Work and so as not to delay or interfere with Contractor's performance of its obligations under the Contract Documents.
23. **Permits.** Except for those permits and fees related to the Work which are the responsibility of the Contractor as set forth in Exhibit A, the Client shall secure and pay for all other permits, approvals, easements, assessments and fees required for the development, construction, use or occupancy of permanent structures or for permanent changes in existing facilities, including the building permit.
24. **Separate Contractors.** Client is responsible for all work performed on the Project or at the Site by its own forces, or by any separate contractors or others it hires. Client shall contractually require its separate contractors to cooperate with and coordinate their activities so as not to interfere with, Contractor in order to enable Contractor to timely complete the Work. Notwithstanding anything contained in the Contract Documents to the contrary, the

Client and the Client's separate contractors assume all risk of loss or damage to any and all of their property or the Work and any loss of use or occupancy thereof caused by them or anyone for whom they are responsible, and hereby release the Contractor and its agents, employees, insurers, sureties and subcontractors therefrom.

**25. Differing Site Conditions.** Concealed or latent physical conditions or subsurface conditions at the Site that differ from the observable conditions at the Site in areas that Contractor was provided access to including, without limitation, the presence of underground utilities, historically significant artifacts, or any hazardous wastes or materials are collectively referred to herein as "Differing Site Conditions." If Differing Site Conditions are encountered, the Contractor shall notify the Client, in writing, and Contractor shall be entitled to a Change Order equitably adjusting the Contract Price and/or Contract Time, as appropriate.

**26. Hazardous Conditions.**

- a. Contractor is not responsible for any hazardous conditions encountered at the Site. Upon encountering any hazardous conditions, Contractor will stop Work immediately in the affected area and duly notify Client and, if required by the law, government or quasi-government entities with jurisdiction over the Project or Site. Upon receiving notice of the presence of suspected hazardous conditions, Client shall take the necessary measures required to confirm that the hazardous conditions are remediated or rendered harmless. Contractor shall not be obligated to resume Work in the affected area until Client provides written confirmation that the hazardous conditions are remediated or rendered harmless.
- b. Contractor shall not be obligated to resume Work at the affected area of the Project until after the Client provides it with written certification that: (i) the hazardous conditions have been removed or rendered harmless, and (ii) all necessary approvals have been obtained from all government and quasi-government entities having jurisdiction over the Project or Site. To the fullest extent permitted by law, including but not limited to Section 768.28, Florida Statutes, the Client shall defend, indemnify, and hold harmless the Contractor, its subcontractors and suppliers of any tier, and the agents, officers, directors and employees of each of them, from and against any and all direct claims, damages, losses, costs and expenses, including but not limited to reasonable attorneys' fees, costs and expenses arising out of or incurred in connection with any and all hazardous conditions, except to the extent the damages are caused by the gross negligence or reckless disregard of Contractor, its subcontractors, and suppliers. This indemnity expressly excludes all non-tort claims.

**27. Site.** Contractor shall keep the Contractor's work area at the Site free from accumulation of waste materials or rubbish caused by operations under the Agreement. At completion of the Work, Contractor shall remove from the Site any waste materials, rubbish, Contractor's tools, equipment, machinery and excess materials generated or used by Contractor.

**28. Delays.** Delays that are outside the reasonable control of the Party thereby affected shall include, without limitation, delays generally recognized as events of force majeure, unusual weather, Differing Site Conditions, failure of a Party to provide access, notice, approvals, or submittals required by the Contract Documents within the time specified therein, and delays directly caused by any applicable government agency or regulatory authority (collectively, "Excusable Delays"). The affected Party shall notify the other Party in writing of any actual or anticipated Excusable Delay in accordance with the Notice provisions of this Agreement.



Contractor shall be entitled to a Change Order equitably adjusting the Contract Price and/or Contract Time, as appropriate. In no event will Contractor be liable for any delay damages.

- a. Any information or services to be provided by the Client shall be provided in a timely manner so as not to delay the Work.
- b. In the event the Work includes installation of materials or equipment furnished by the Client or others, it shall be the responsibility of the Client or others to examine the items so provided and thereupon handle, store, and install the items, unless otherwise provided in the Agreement, with such skill and care as to provide a satisfactory and proper installation. Loss or damage to such items shall be the responsibility of the Client.

29. **Financial Evidence.** Prior to commencement of the Work, the Client shall provide reasonable evidence that Client has made financial arrangements to fulfill its obligations under this Agreement. Thereafter, Contractor may request such and the Client shall furnish such evidence as a condition precedent to commencement or continuation of the Work. After the Client furnishes the evidence, the Client shall not materially vary such financial arrangements without prior notice to Contractor.

#### Miscellaneous

30. **Relationship of Parties.** Contractor in performing its obligations under the Agreement shall be deemed an independent contractor and nothing herein shall be construed as creating, at any time, the relationship of joint venturers, partners, principal/agent or employer/employee between the Parties hereto.

31. **Subcontractors.** Contractor is responsible for managing its subcontractors and is responsible to the Client for such subcontractors and their respective employees and other persons or entities in their performance of portions of the Work for, or on behalf of, the Contractor or any of its subcontractors.

32. **Labor Sources.** Contractor may engage temporary staffing agencies or obtain assistance from its affiliates and subsidiaries in its own reasonable discretion, including Burns & McDonnell International Inc. and Burns & McDonnell India Pvt. Ltd. ("Labor Sources") to fulfill Contractor's performance obligations under this Agreement. The Parties agree that any contracts between Contractor and any Labor Sources are not subcontracts as that term is used in this Agreement. Personnel from Labor Sources shall be considered agents of Contractor and able to act on behalf of Contractor within the scope of the authority granted such personnel according to job function and billing classification. Contractor shall remain fully responsible for all Work performed by Labor Sources and shall not be relieved of any obligations under this Agreement by virtue of delegating duties to such Labor Sources. No contract between Contractor and any Labor Sources shall bind or purport to bind Client or give any Labor Sources a right to seek compensation or damages from the Client under this Agreement.

33. **Choice of Law.** The Agreement shall be subject to, interpreted and enforced according to the laws of the State of Florida without regard to any conflicts of law provisions.

34. **Severability.** The invalidity or unenforceability of any portion(s) or provision(s) of the Agreement shall in no way affect the validity or enforceability of any other portion(s) thereof. Any invalid or unenforceable provision(s) shall be severed from the Agreement and the





balance of the Agreement shall be construed and enforced as if the Agreement did not contain the particular portion(s) or provision(s) held to be invalid and/or unenforceable.

### **35. Confidential Records, Public Records, and Audit.**

#### **a. Confidential Records and Information**

Each Party shall maintain and prevent the disclosure of Confidential Information, to the extent authorized by federal and Florida law. Access to Confidential Information will be limited by the Parties to only those employees or agents or subcontractors that must have access to comply with the terms of this Agreement.

#### **b. Public Records.**

Contractor acknowledges that Client is a public agency subject to Chapter 119, Florida Statutes. Contractor agrees to comply with public records laws, including the following provisions of sec. 119.0701, Florida Statutes, as it relates to records kept and maintained by Contractor in performance of services pursuant to this Agreement. Specifically, Contractor shall, subject to available statutory exemptions:

1. Keep and maintain public records required by Client to perform services pursuant to this Agreement.
2. Upon request from the Client's custodian of public records, provide the Client with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost allowed by law.
3. Ensure that any public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed, except as authorized by law, for the duration of the Agreement term and following completion of this Agreement if the Contractor does not transfer the records to Client.
4. Upon completion of this Agreement, transfer, at no cost, to Client all public records in Contractor's possession or keep and maintain the public records as required by Client. If Contractor transfers all public records to Client upon completion of this Agreement, Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If Contractor keeps and maintains public records upon completion of this Agreement, Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to Client, upon request, in a format that is compatible with the information technology systems of Client.

Contractor's failure or refusal to comply with the provisions of this section may result in the immediate termination of this Agreement by Client and may subject Contractor to penalties pursuant to Chapter 119, Florida Statutes.

IF CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF FLORIDA STATUTES, CHAPTER 119, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT THE JACKSONVILLE BEACH CITY CLERK'S OFFICE:

Phone: (904) 247-6299  
Email: [cityclerk@jaxbchfl.net](mailto:cityclerk@jaxbchfl.net)





Address: 11 N. Third Street  
City Hall, First Floor  
Jacksonville Beach, FL 32250

c. Audit.

Contractor shall preserve and make available and require all consultants and subcontractors to preserve and make available all books, records, and accounts which concern or relate to this Agreement, or the Work described herein, for a minimum of five (5) years from the date of termination of this Agreement or the date the Project is completed, whichever is later. Client, or any duly authorized agents or representatives of Client, reserves the right to examine and audit all such records and documentation during the term of this Agreement and the five-year retention period described herein; provided, however, such activity shall be conducted only during normal business hours. If any audit has been initiated and audit findings have not been resolved at the end of the retention period, the books, records, and accounts shall be retained until resolution of the audit findings. Notwithstanding anything to the contrary in this Subsection (c), the firm fixed price stated earlier in this Agreement is not subject to audit. In addition, any rate sheets, multipliers, or markups agreed to by Client and Contractor are only subject to audit to confirm that such rate, multiplier, or markup has been charged in accordance with this Agreement, but the composition of such rate, multiplier or markup is not subject to audit.

36. **Integration.** The Agreement represent the entire and integrated agreement between the Client and Contractor and supersedes prior negotiations, representations or agreements, either written or oral for this Project.

37. **Notices.** All notices, requests, demands and other communications which are required or may be given under this Agreement, including all documents delivered pursuant to this Agreement shall be in writing and shall be deemed to have been duly given when received if personally delivered; when transmitted if transmitted by telecopy, electronic or digital transmission method; the business day after it is sent, if sent for next business day delivery to a domestic address by recognized overnight delivery service (e.g., Federal Express or UPS); and upon receipt, if sent by certified or registered mail, return receipt requested.

Client's Address for Notices:

Allen Putnam  
1460 Shetter Avenue  
Jacksonville Beach, FL 32250  
Phone: 904-247-6281  
E-Mail: [Aputnam@beachesenergy.com](mailto:Aputnam@beachesenergy.com)

Contractor's Address for Notices:

Burns & McDonnell Engineering Company, Inc.  
Attn: Richard Mahaley, Senior Vice President  
2301 Maitland Center Parkway, Suite 400  
Maitland, FL 32751

38. **Interpretation.** The various documents comprising the Contract Documents are intended to be complementary and interpreted in harmony so as to avoid conflict, with words and phrases interpreted in a manner consistent with construction and design industry standards. In the event of any conflict between the terms and conditions set forth in a Change Order and this Agreement, the terms and conditions of the Change Order shall prevail. Inconsistent, conflicting or supplemental terms and conditions or other terms and conditions which have not been negotiated and mutually agreed between the parties (including, without limitation, purported limitations on liability, waivers of rights and remedies, and variations from any of the warranty, guarantee, indemnity and liability provisions of this Agreement) which may be contained in any proposal, Change Order, standard purchase order issued by Client, or other direction shall be of no force or effect and shall be superseded by the terms and conditions of this Agreement unless the document expressing such terms clearly states that any such terms or conditions shall replace or modify this Agreement and the Parties mutually agree in writing on the change.
39. **Waiver.** No failure or delay by a Party in exercising any right, power or remedy will operate as a waiver of that right, power or remedy, and no waiver will be effective unless it is in writing and signed by an authorized representative of the waiving Party. If a Party waives any right, power or remedy, the waiver will not waive any successive or other right, power or remedy that Party may have.
40. **Assignment.** Neither party shall assign this Agreement and any rights or obligations hereunder (by contract, acquisition, merger, operation of law or otherwise) in whole or in part, without the prior written consent of the other party, which consent shall not be unreasonably withheld. Any attempt to assign any rights or obligations hereunder without appropriate consent shall be deemed void. There are no third-party beneficiaries of this Agreement. No Party other than the Parties themselves has any rights or remedies under this Agreement.

#### Exhibits

The following exhibits are attached hereto and incorporated herein:

Exhibit A – Scope of Work

Exhibit B – Milestone Payment Schedule

Exhibit C – Contractor Safety Plan

Exhibit D – Client-Provided Work or Equipment



The Parties hereby execute this Agreement as of the Effective Date first set forth above.

|               |                                                                    |
|---------------|--------------------------------------------------------------------|
| <b>CLIENT</b> | <b>CONTRACTOR: Burns &amp; McDonnell Engineering Company, Inc.</b> |
| By:           | By:                                                                |
| Printed Name: | Printed Name:                                                      |
| Title:        | Title:                                                             |



BEACHES | ENERGY  
S E R V I C E S

BURNS  MCDONNELL

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# EXHIBIT A

**Beaches Energy Services T-Line Repair Phase I**

**Scope OF Work**



BEACHES | ENERGY  
SERVICES

BURNS  MCDONNELL

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|      |                                          |   |
|------|------------------------------------------|---|
| 1.   | Overview and Description of Project..... | 3 |
| 1.1. | Assumptions and Clarifications .....     | 3 |
| 2.   | Project Schedule Milestones .....        | 4 |

## 1. Overview and Description of Project

The purpose of this project is to perform pole repairs and replacements on Beaches Energy Services (BES) 138 kV transmission system that was prioritized based on a previous engineering assessment.

| Pole Number | RFP Pole No. | Lat.     | Long.     | NEW POLE | INSULATORS AND ASSOCIATED HARDWARE | GUY(S) | GROUNDING | BONDING | SHIELD WIRE HARDWARE | DAMPERS | CONCRETE REPAIR | UNDERBUILD | NEW CONDUCTOR            | NEW SHIELD WIRE       | NEW STEEL BRACKET |
|-------------|--------------|----------|-----------|----------|------------------------------------|--------|-----------|---------|----------------------|---------|-----------------|------------|--------------------------|-----------------------|-------------------|
| 804-8       | 8            | 30.0578  | -81.51688 | X        | Line Post (Polymer, gain base)     |        | X         | X       | X                    | X       |                 |            |                          |                       |                   |
| 804-23      | 37           | 30.06013 | -81.48696 |          | Line Post (Polymer, flat base)     |        |           | X       | X                    | X       | X               |            |                          |                       | X                 |
| 804-49      | 161          | 30.07658 | -81.44998 |          |                                    | X      | X         | X       |                      |         |                 |            |                          |                       |                   |
| 805-66      | 198          | 30.10373 | -81.43667 |          | Braced Post Brace (Polymer Strain) |        |           |         |                      |         |                 |            |                          |                       |                   |
| 805-110     | 280          | 30.18274 | -81.43533 |          |                                    |        | X         |         |                      | X       |                 |            |                          | Splice 7no9 alumoweld |                   |
| 805J-136    | 301          | 30.19137 | -81.40133 |          |                                    |        | X         | X       |                      |         | X               |            |                          |                       |                   |
| 803-7       | 131          | 30.20081 | -81.40373 |          | Line Post (Polymer, flat base)     |        |           | X       | X                    | X       | X               |            |                          |                       |                   |
| 803-16      | 140          | 30.21098 | -81.40626 | X        | Line Post (Polymer, gain base)     |        | X         | X       | X                    | X       |                 | X          |                          |                       |                   |
| 802-3       | 376          | 30.25499 | -81.39428 | X        | Line Post (Polymer, gain base)     |        | X         | X       | X                    | X       |                 | FUTURE     |                          |                       |                   |
| 802-8       | 381          | 30.25908 | -81.39441 |          |                                    |        |           | X       | X                    | X       | X               |            |                          |                       | X                 |
| 802-18      | 391          | 30.26938 | -81.39473 |          |                                    |        |           | X       | X                    | X       | X               |            |                          | Splice 7no9 alumoweld | X                 |
| 801-1       | 409          | 30.28321 | -81.40081 |          | Polymer Strain                     | X      | X         | X       | X                    |         |                 |            | 954 ACSR AW 54/7 Jumpers | 7no9 alumoweld jumper |                   |
| 803-40      | 346          | 30.22704 | -81.39367 | X        |                                    |        | X         | X       |                      |         |                 | X          |                          |                       |                   |

### 1.1. Assumptions and Clarifications

- The Contractor shall identify what outages are needed to perform the work and identify such in the project schedule.
- Refer to the IFC workbook in attachment 1 to this SOW for details on the repairs and pole replacements. This work was performed under the Agreement for Professional Engineering Services Agreement.
- Refer to 30% design package in Attachment 2 to this SOW for details on the pole replacement for 803-40. This work was performed under the Agreement for Professional Engineering Services Agreement.
- Geotechnical report for the project is included in Attachment 3.
- All distribution work shall be performed by Beaches Energy Crews. Contractor shall identify all distribution work that is required to execute the work and identify said work on the project schedule. Contractor to coordinate with BES on all distribution work that is needed to effect the Work.
- Notice of award and P.O. issued no later than April 30, 2024 to ensure bid validity period does not expire prior to the ability for Contractor to award monopole and hardware material packages.
- Structure 803-40 design is not Issued For Construction. The 30% design package is included in attachment #2. In addition to the Assumptions and Clarifications listed herein, the specific Assumptions and Clarifications for structure 803-40 are as follows:



- 
- Structure 803-40 will be a 2 piece engineered steel galvanized monopole 90' in height.
  - Foundation will be a 4' diameter drilled pier foundation 35' in Depth maximum.
  - There will be a 3 day outage with 3 hour Emergency Return to Service (ERT) on the distribution circuit, and a simultaneous 3 day set up for work (one shots) on transmission circuit.
  - Scope includes deconstruction and disposal of the existing 803-40 structure. Old guys and anchors to be clipped and abandoned in place by manual means only.
  - There will be a 5 day outage (No return) on Transmission circuit for pole installation.
  - BES will remove the distribution and fiber prior to the pole replacement taking place. BES will reinstall the distribution circuit and fiber after the pole is replaced. Contractor to coordinate this activity with BES.

If the IFC design for 803-40 changes any assumptions listed here-in for 803-40, or changes the design details of the 30% engineering package found in Attachment 2, Contractor shall be entitled to equitable adjustment in Contract Price and/or Contract Time.

## 2. Project Schedule Milestones

---

| DATE              | MILESTONE                                                    |
|-------------------|--------------------------------------------------------------|
| April 15, 2024    | Contract award                                               |
| April 30, 2024    | Material order placed                                        |
| November 18, 2024 | 803-40 pole installation completed                           |
| December 23, 2024 | All work completed with exception of insulators replacements |
| April, 21, 2025   | All Insulator replacements completed                         |
| May 05, 2025      | Substantial Completion                                       |



BEACHES | ENERGY  
S E R V I C E S

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---

**Attachment 1**  
IFC Binder

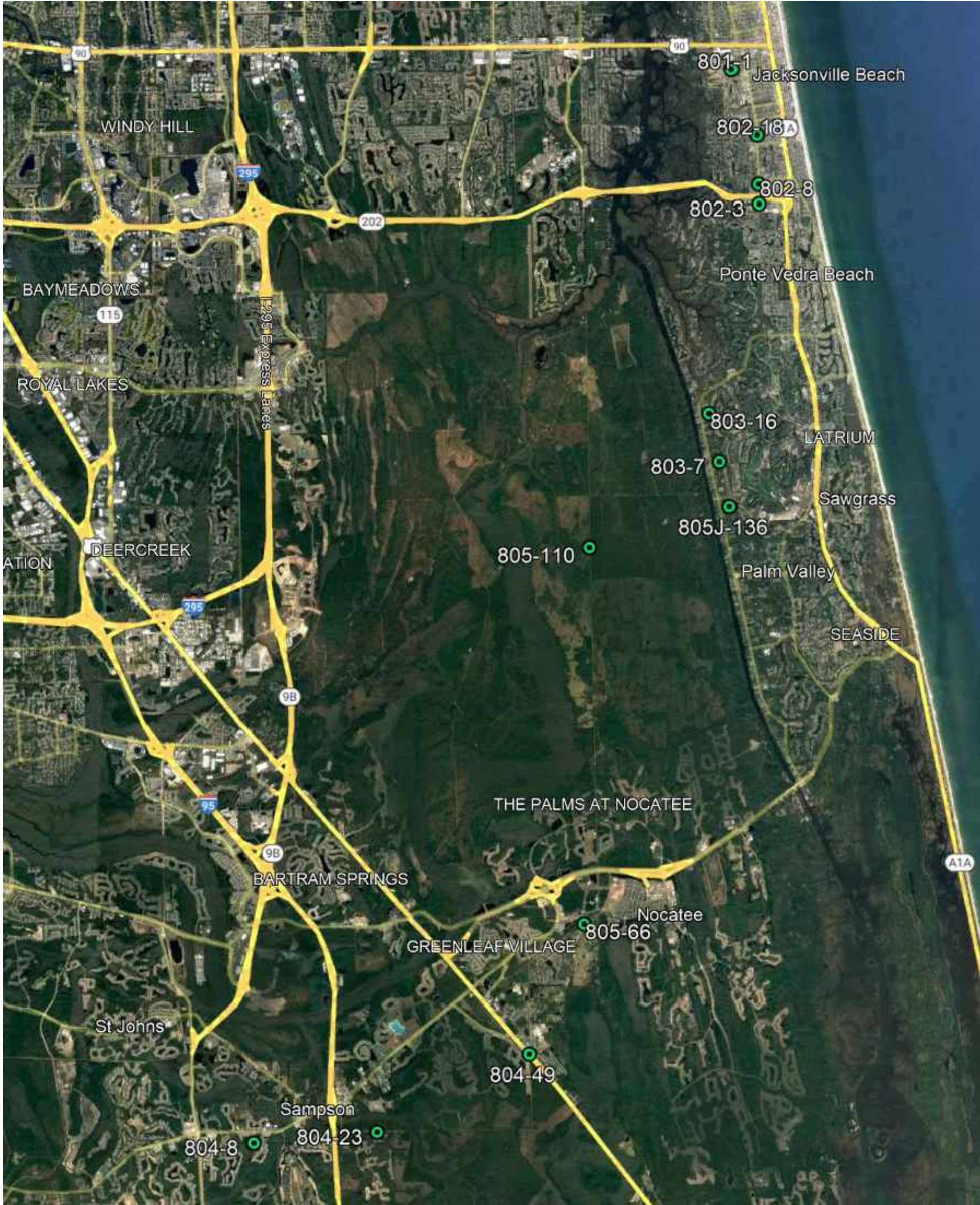




# BEACHES ENERGY SERVICES

## TRANSMISSION LINE REPAIRS - PHASE 1

### DUVAL COUNTY/ST. JOHNS COUNTY, FL



| DRAWING INDEX    |   |                                 |  |
|------------------|---|---------------------------------|--|
| BES-COV-01       | - | COVER SHEET                     |  |
| BES-LOC-01       | - | LOCATION MAPS                   |  |
| BES-WRK-01 & 02  | - | WORK PLAN                       |  |
| BES-ENV-01 & 02  | - | ENVIRONMENTAL                   |  |
| BES-CND-01       | - | CONDUCTOR ASSEMBLY DETAILS      |  |
| BES-OGW-01       | - | SHIELD WIRE ASSEMBLY DETAILS    |  |
| BES-UDB-01 & 02  | - | DISTRIBUTION UNDERBUILD DETAILS |  |
| BES-CPB-01 TO 03 | - | CONCRETE POLE DETAILS           |  |
| BES-CPR-01 & 02  | - | CONCRETE POLE REPAIR DETAILS    |  |
| BES-FDN-01       | - | FOUNDATION DETAILS              |  |
| BES-GUY-01       | - | GUYING DETAILS                  |  |
| BES-ANC-01       | - | GUY ANCHOR DETAILS              |  |
| BES-GRD-01 TO 03 | - | GROUNDING DETAILS               |  |
| BES-STL-01       | - | STEEL DETAILS                   |  |

ISSUED  
FOR CONSTRUCTION

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
COVER SHEET

|                      |                     |                   |
|----------------------|---------------------|-------------------|
| DESIGNED <u>DMT</u>  | CHECKED <u>AJK</u>  | SCALE <u>NONE</u> |
| DATE <u>10/13/23</u> | ENGINEER <u>CM</u>  |                   |
| WBS/SO               | APPROVED <u>AJK</u> |                   |

BES-COV-01 - R0



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**BURNS  
& MCDONNELL**  
ENGINEERING COMPANY, INC.  
2301 MAITLAND CENTER PARKWAY  
SUITE 400  
MAITLAND, FL 32751

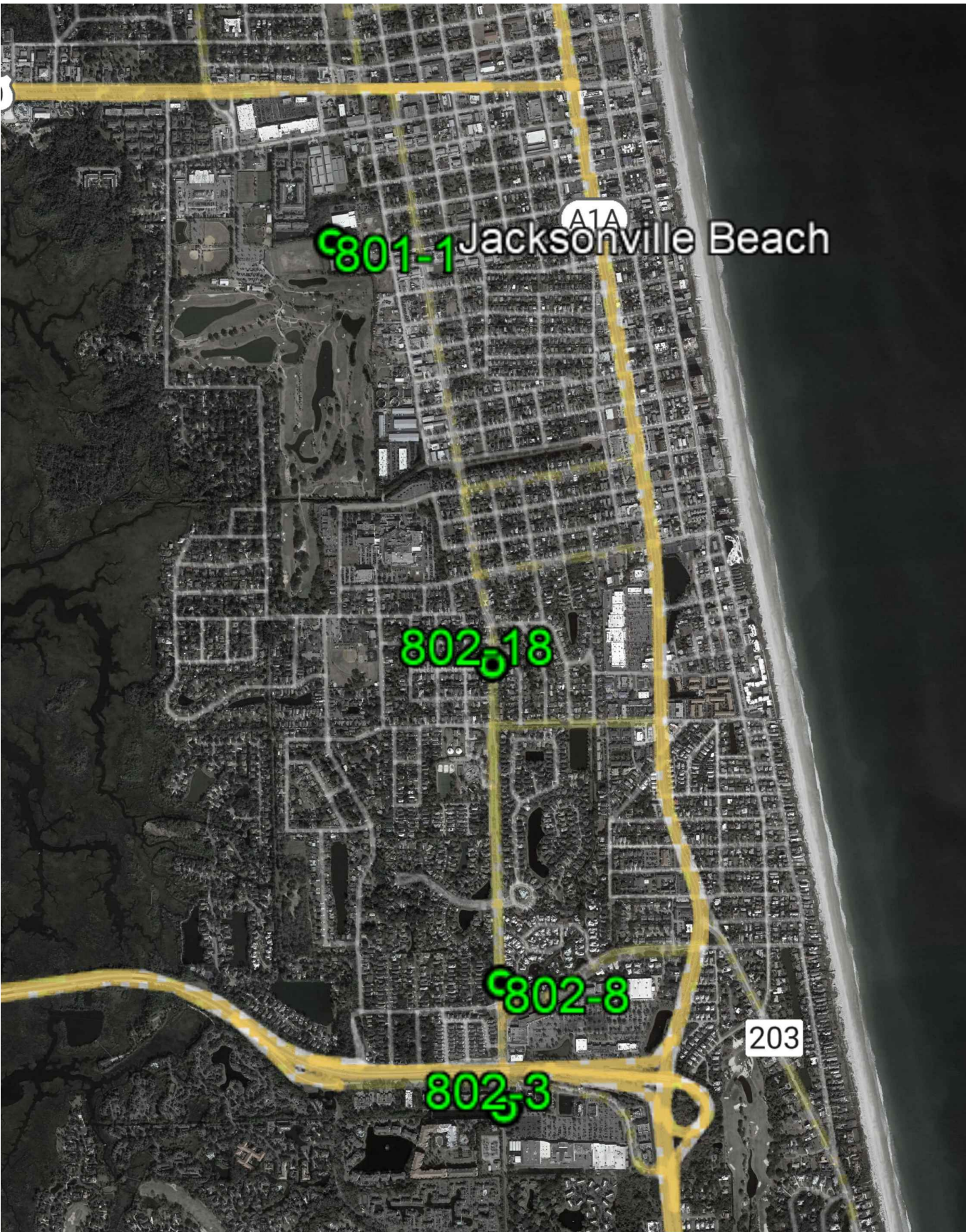
THE REGISTRANT OF THE NEWLY APPLIED  
SEAL ASSUMES RESPONSIBILITY FOR THE  
CHANGES AS INDICATED BY THE FOLLOWING  
REVISION NUMBER 0



| Structure No. | RFP Pole No. | Lat.     | Long.     | NEW POLE | INSULATORS AND ASSOCIATED HARDWARE | GUY(S) | GROUNDING | BONDING | SHIELD WIRE HARDWARE | DAMPERS | CONCRETE REPAIR | UNDERBUILD | NEW CONDUCTOR            | NEW SHIELD WIRE       | NEW STEEL BRACKET |
|---------------|--------------|----------|-----------|----------|------------------------------------|--------|-----------|---------|----------------------|---------|-----------------|------------|--------------------------|-----------------------|-------------------|
| 804-8         | 8            | 30.0578  | -81.51698 | X        | Line Post (Polymer, gain base)     |        | X         | X       | X                    | X       |                 |            |                          |                       |                   |
| 804-23        | 37           | 30.06013 | -81.48696 |          | Line Post (Polymer, flat base)     |        |           | X       | X                    | X       | X               |            |                          |                       | X                 |
| 804-49        | 161          | 30.07658 | -81.44998 |          |                                    | X      | X         | X       |                      |         |                 |            |                          |                       |                   |
| 805-66        | 198          | 30.10373 | -81.43667 |          | Braced Post Brace (Polymer Strain) |        |           |         |                      |         |                 |            |                          |                       |                   |
| 805-110       | 280          | 30.18274 | -81.43533 |          |                                    |        | X         |         |                      | X       |                 |            |                          | Splice 7no9 alumoweld |                   |
| 805J-136      | 301          | 30.19137 | -81.40133 |          |                                    |        | X         | X       |                      |         | X               |            |                          |                       |                   |
| 803-7         | 131          | 30.20081 | -81.40373 |          | Line Post (Polymer, flat base)     |        |           | X       | X                    | X       | X               |            |                          |                       |                   |
| 803-16        | 140          | 30.21098 | -81.40626 | X        | Line Post (Polymer, gain base)     |        | X         | X       | X                    | X       |                 | X          |                          |                       |                   |
| 802-3         | 376          | 30.25499 | -81.39428 | X        | Line Post (Polymer, gain base)     |        | X         | X       | X                    | X       |                 | FUTURE     |                          |                       |                   |
| 802-8         | 381          | 30.25908 | -81.39441 |          |                                    |        |           | X       | X                    | X       | X               |            |                          |                       | X                 |
| 802-18        | 391          | 30.26938 | -81.39473 |          |                                    |        |           | X       | X                    | X       | X               |            |                          | Splice 7no9 alumoweld | X                 |
| 801-1         | 409          | 30.28321 | -81.40081 |          | Polymer Strain                     | X      | X         | X       | X                    |         |                 |            | 954 ACSR AW 54/7 Jumpers | 7no9 alumoweld jumper |                   |

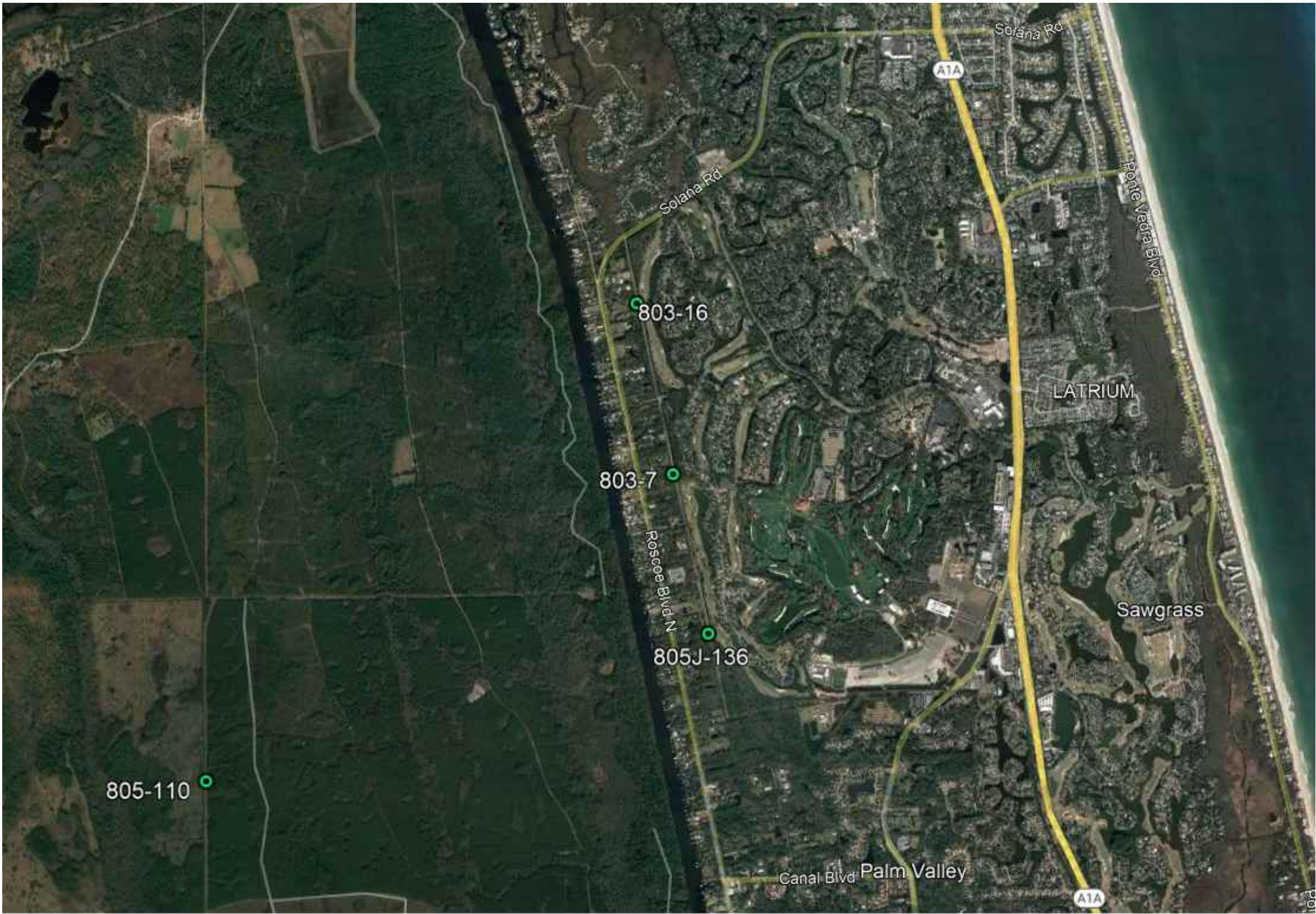
NOTE: THIS TABLE CONTAINS A HIGH LEVEL SCOPE FOR EACH POLE AND IS PRESENTED FOR REFERENCE ONLY. REFER TO DWG. BES-WRK-01 AND BES-WRK-02 FOR SPECIFIC SCOPE OF WORK FOR EACH POLE.

803-40 AND 804-101 WERE REMOVED FROM THIS TABLE AND PACKAGE AS THESE WILL BE DESIGNED AND CONSTRUCTED UNDER SEPARATE CONTRACTS.



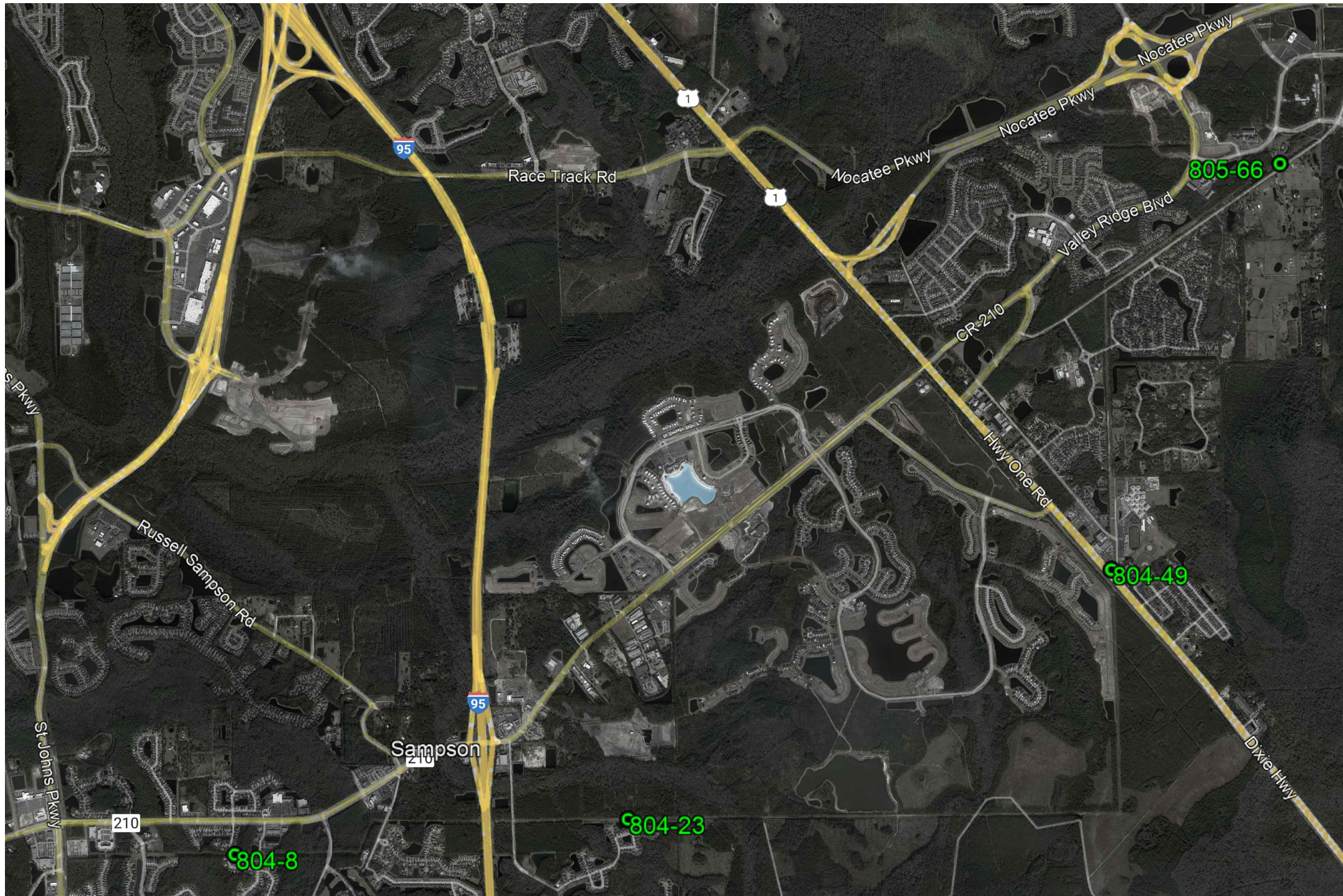
LOCATION MAP

NORTH TARGET POLES



LOCATION MAP

CENTRAL TARGET POLES



LOCATION MAP

SOUTH TARGET POLES



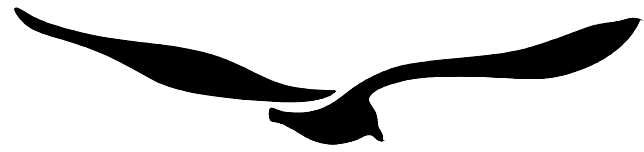
DRAWING INDEX

- |                  |                                   |
|------------------|-----------------------------------|
| BES-COV-01       | - COVER SHEET                     |
| BES-LOC-01       | - LOCATION MAPS                   |
| BES-WRK-01 & 02  | - WORK PLAN                       |
| BES-ENV-01       | - EROSION CONTROL                 |
| BES-CND-01       | - CONDUCTOR ASSEMBLY DETAILS      |
| BES-OGW-01       | - SHIELD WIRE ASSEMBLY DETAILS    |
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| BES-FDN-01       | - FOUNDATION DETAILS              |
| BES-GUY-01       | - GUYING DETAILS                  |
| BES-ANC-01       | - GUY ANCHOR DETAILS              |
| BES-GRD-01 TO 03 | - GROUNDING DETAILS               |
| BES-STL-01       | - STEEL DETAILS                   |

ISSUED  
FOR CONSTRUCTION

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY  
S E R V I C E S  
BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
LOCATION MAPS

DESIGNED DMT CHECKED AJK SCALE NONE

DATE 10/13/23 ENGINEER CAM

WBS/SO APPROVED AJK

BES-LOC-01

- R0



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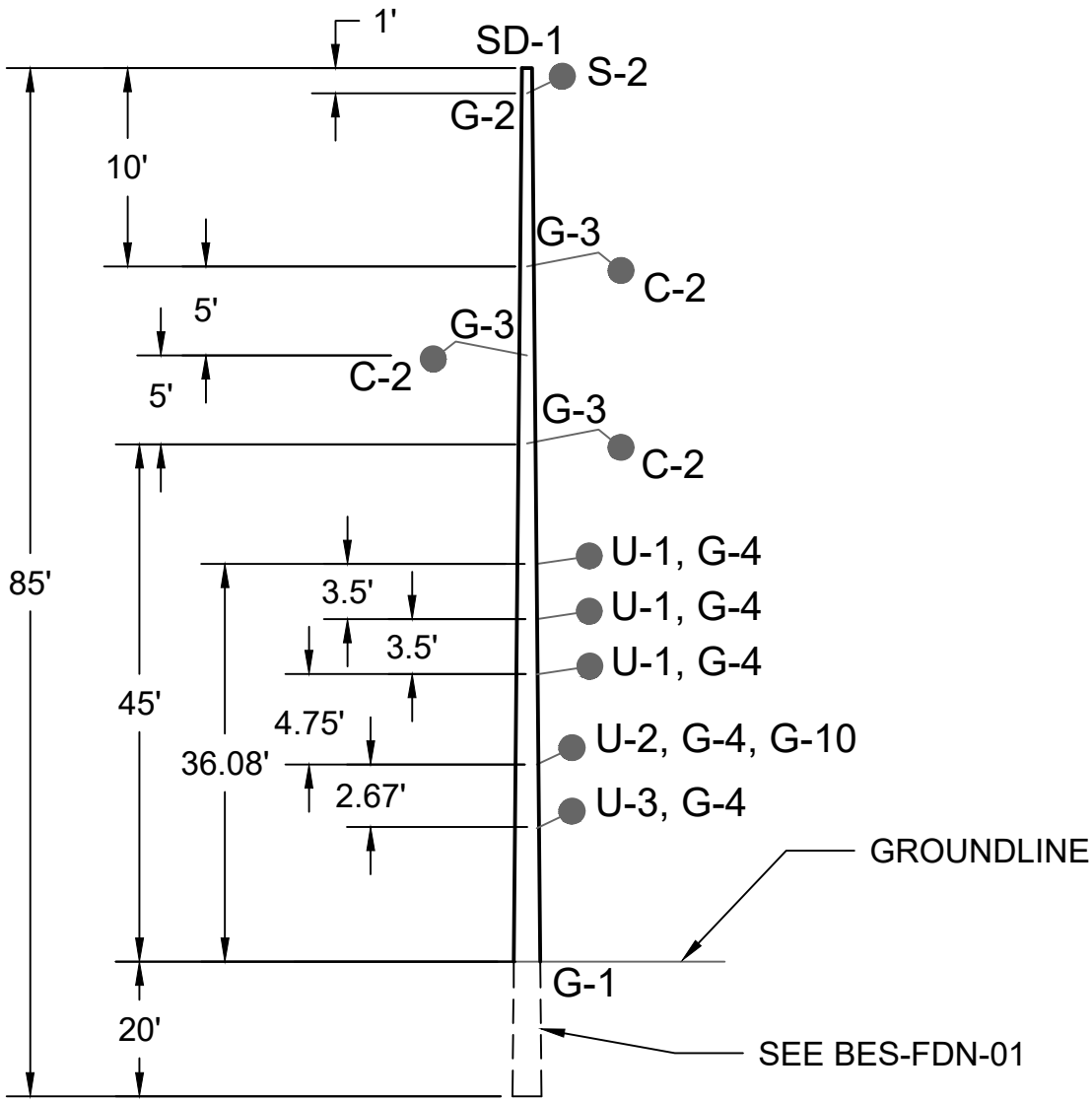
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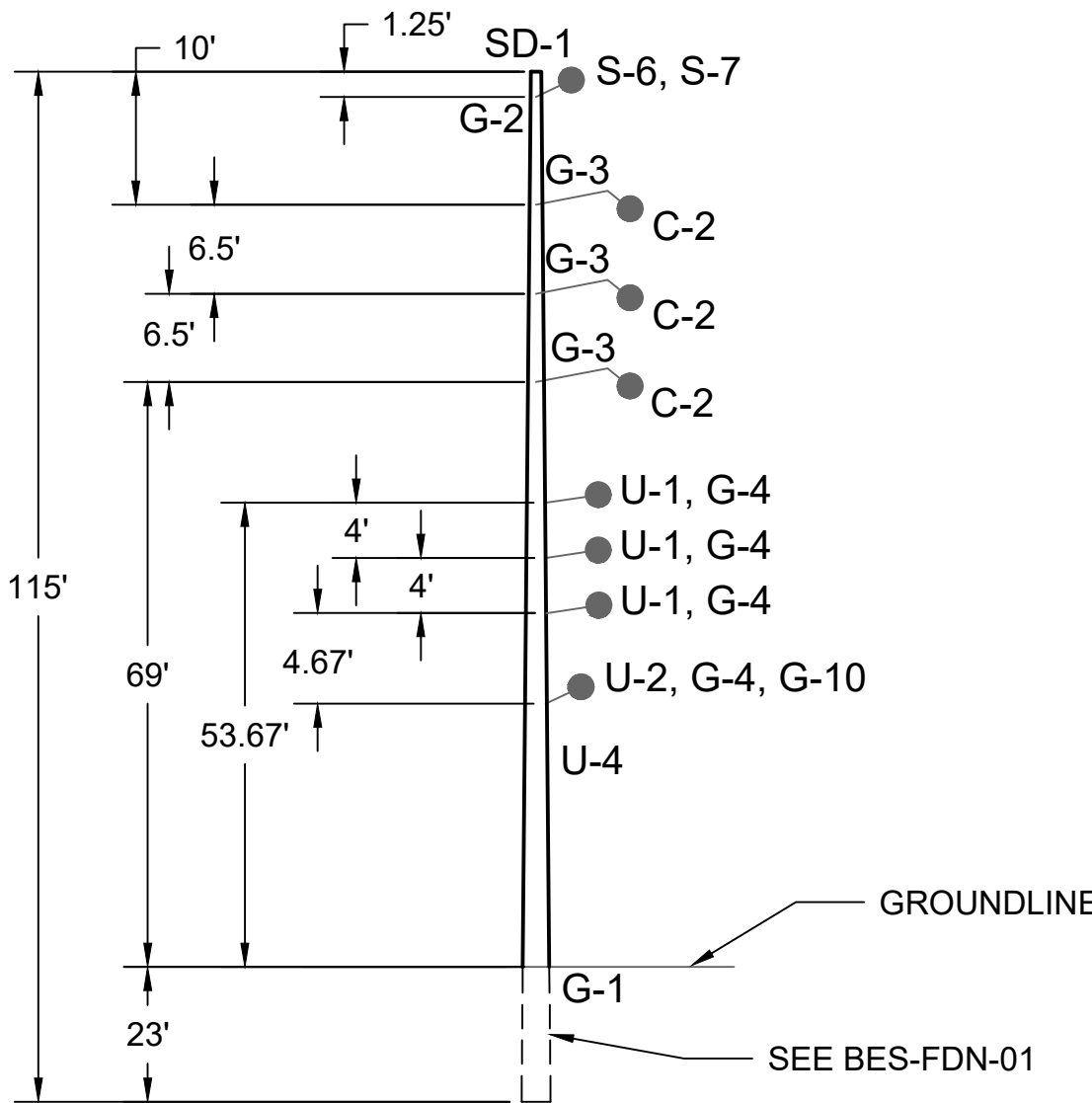




STRUCTURE # 803-16  
COORDINATES 30.21098, -81.40626  
LOOKING NORTH  
EXISTING POLE: MATERIAL: CONCRETE, SQUARE  
FRAMING: THPC-1S  
LENGTH: 85', EMBED: 13.5'  
NEW POLE: MATERIAL: CONCRETE, ROUND  
FRAMING: TD-1U  
LENGTH: 85', EMBED: 20'

SCOPE OF WORK:

INSTALL NEW ROUND, TAPERED CONCRETE POLE 10' O.C. TO THE NORTH OF THE EXISTING POLE. INSTALL NEW INSULATORS AND HARDWARE. TRANSFER WIRES TO NEW POLE. REMOVE EXISTING POLE. SUBCONTRACTOR TO MEASURE EXISTING POLE TOP WIDTH AND POLE TAPER AND REPORT BACK TO ENGINEER.

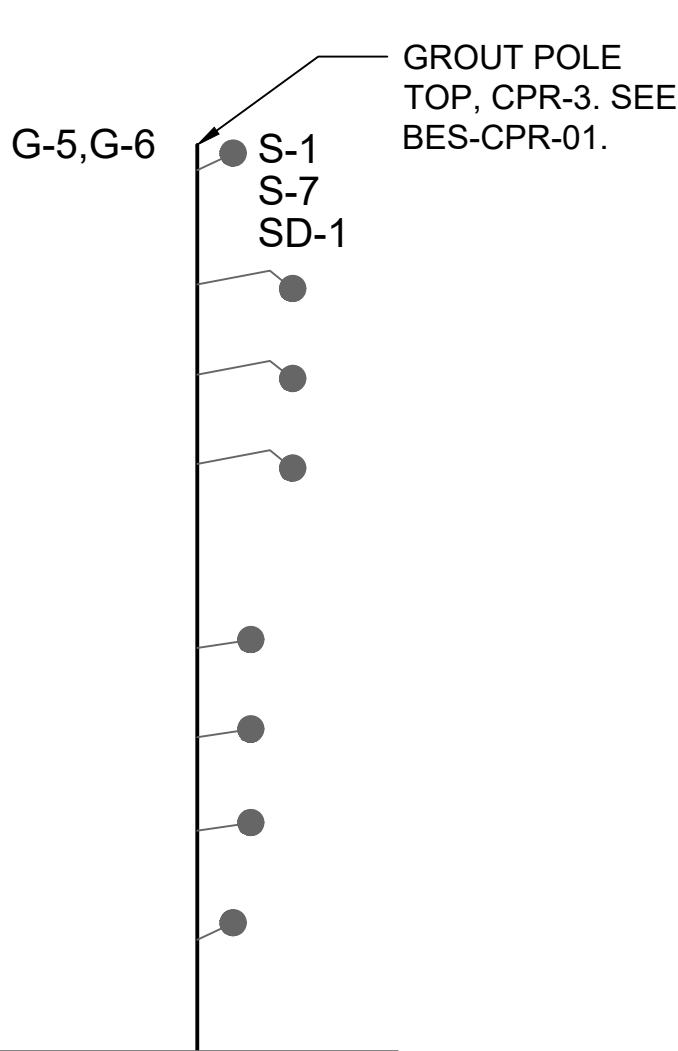


STRUCTURE #: 802-3  
COORDINATES: 30.25499, -81.39428  
LOOKING: SOUTH  
EXISTING POLE: MATERIAL: CONCRETE, SQUARE  
FRAMING: 6T-4  
LENGTH: 113', EMBED 21'  
NEW POLE: MATERIAL: CONCRETE, ROUND  
FRAMING: TV-1U  
TOTAL LENGTH: 115', EMBED: 23'

SCOPE OF WORK:

INSTALL A NEW ROUND, TAPERED CONCRETE POLE 10' O.C. TO THE NORTH OF THE EXISTING POLE. INSTALL NEW TRANSMISSION AND DISTRIBUTION INSULATORS AND HARDWARE. TRANSFER CONDUCTORS TO NEW POLE AND REMOVE EXISTING POLE. SUBCONTRACTOR TO MEASURE EXISTING POLE TOP WIDTH AND POLE TAPER AND REPORT BACK TO ENGINEER.

BES TO PROCURE MATERIAL AND INSTALL STREET LIGHT AND RISER INCLUDING, BUT NOT LIMITED TO, TAPS, BRACKETS, FUSED DISCONNECTS, ARRESTERS, TERMINATORS, CABLING, BANDING. BMCD TO PROCURE UNDERGROUND CONDUIT. SUBCONTRACTOR TO TIE IN NEW CONDUIT TO EXISTING AND STUB UP ABOVE GRADE AT EAST SIDE OF NEW POLE.

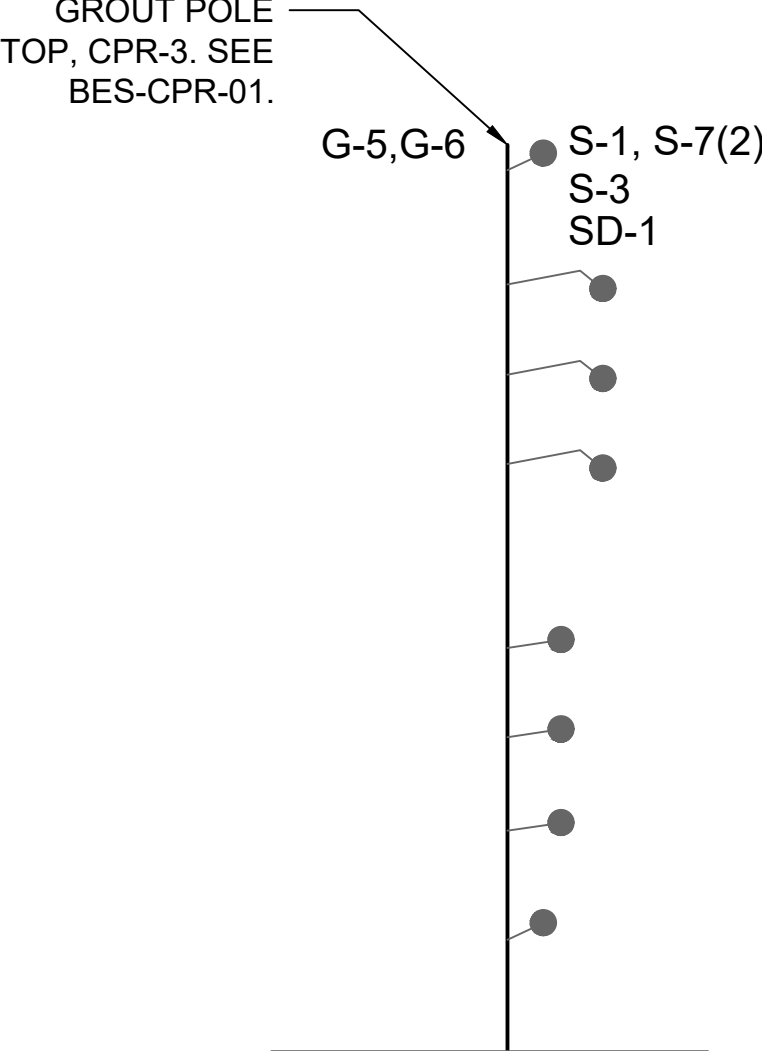


STRUCTURE #: 802-8  
COORDINATES: 30.25908, -81.39441  
LOOKING: SOUTH  
EXISTING POLE: MATERIAL: CONCRETE, SQUARE  
FRAMING: THPC-2S  
LENGTH: 85', EMBED 13.5'

SCOPE OF WORK:

REMOVE EXISTING SHIELD WIRE SUSPENSION CLAMP, ARMOR ROD, AND SUPPORT BRACKET. INSTALL NEW SUPPORT BRACKET, TRUNNION MOUNTING BRACKET, AND TRUNNION CLAMP, AND ASSOCIATED BONDING. INSTALL SPIRAL VIBRATION DAMPERS. INSTALL NEW DOWNLEAD ON SHIELD WIRE. INSTALL SHIELD WIRE WEIGHTS. GROUT POLE TOP.

SUBCONTRACTOR TO MEASURE EXISTING POLE TOP WIDTH AND POLE TAPER AND REPORT BACK TO ENGINEER.



STRUCTURE #: 802-18  
COORDINATES: 30.26938, -81.39473  
LOOKING: SOUTH  
EXISTING POLE: MATERIAL: CONCRETE, SQUARE  
FRAMING: THPC-2S  
LENGTH: 100', EMBED 14.5'

SCOPE OF WORK:

SPLICE IN NEW LENGTH OF SHIELD WIRE. REMOVE EXISTING SHIELD WIRE SUSPENSION CLAMP, ARMOR ROD, AND SUPPORT BRACKET. INSTALL NEW SUPPORT BRACKET, TRUNNION MOUNTING BRACKET, AND TRUNNION CLAMP, AND ASSOCIATED BONDING. INSTALL SPIRAL VIBRATION DAMPERS. INSTALL NEW DOWNLEAD ON SHIELD WIRE. INSTALL TWO SETS OF SHIELD WIRE WEIGHTS (ONE SET EACH SIDE OF POLE). GROUT POLE TOP.

SUBCONTRACTOR TO MEASURE EXISTING POLE TOP WIDTH AND POLE TAPER AND REPORT BACK TO ENGINEER.

GENERAL NOTES

- CONSTRUCTION ACTIVITIES ON THIS PROJECT SHALL BE LIMITED TO THOSE NECESSARY TO PRESERVE, RESTORE, REPAIR, REMOVE, OR REPLACE EXISTING UTILITY POLES OR AERIAL TRANSMISSION OR DISTRIBUTION LINES. NO DREDGING OR FILLING IN WETLANDS OR OTHER SURFACE WATERS ARE PERMITTED EXCEPT TO REMOVE POLES AND REPLACE THEM WITH NEW POLES.
- TEMPORARY ACCESS TO MAINTAIN OR REPAIR PROJECTS WITHIN WETLANDS SHALL BE PERFORMED USING PLACEMENT OF WOODEN, COMPOSITE, METAL, OR OTHER NON-EARTHEN CONSTRUCTION MATS IN CONFORMANCE WITH THE FOLLOWING:
  - THERE SHALL BE NO CUTTING OR CLEARING OF WETLAND TREES HAVING A DIAMETER FOUR INCHES (CIRCUMFERENCE OF 12 INCHES) OR GREATER AT BREAST HEIGHT;
  - THE MAXIMUM WIDTH OF THE CONSTRUCTION ACCESS AREA SHALL BE 15 FEET;
  - MATS SHALL BE REMOVED AS SOON AS PRACTICABLE AFTER EQUIPMENT HAS COMPLETED PASSAGE THROUGH, OR WORK HAS BEEN COMPLETED AT, EACH LOCATION ALONG THE ALIGNMENT OF THE PROJECT, BUT IN NO CASE LONGER THAN SEVEN DAYS AFTER EQUIPMENT HAS COMPLETED WORK OR PASSAGE THROUGH THAT LOCATION; AND
  - AREAS DISTURBED FOR ACCESS SHALL BE RESTORED TO NATURAL GRADES IMMEDIATELY AFTER THE WORK IS COMPLETE.
- THE CONSTRUCTION ACTIVITIES MUST NOT INCREASE THE VOLTAGE OF EXISTING POWER LINES OR RELOCATE EXISTING POLES OR LINES MORE THAN 10 FEET IN ANY DIRECTION FROM THEIR ORIGINAL LOCATION.
- CALLOUTS ON ELEVATIONS ON THIS SHEET REFER TO THE APPLICABLE ASSEMBLY THAT IS REQUIRED AS PART OF THE WORK. REFER TO ASSEMBLY DETAIL DRAWINGS BELOW FOR DETAILS OF THE APPLICABLE ASSEMBLY.
- EXISTING POLE INFORMATION, INCLUDING FRAMING CALLOUTS, WERE OBTAINED FROM REPORT "EVALUATION OF 138-KV TRANSMISSION LINES FOR BEACHES ENERGY SERVICES, 138-KV TRANSMISSION LINES ANALYSIS FINAL REPORT" DATED JANUARY 2014 AND HAVE NOT BEEN VERIFIED. CORRESPONDING RECORD DETAILS MAY NOT BE AVAILABLE.
- SUBCONTRACTOR IS RESPONSIBLE FOR ALL MAINTENANCE OF TRAFFIC NECESSARY TO COMPLETE WORK.
- MATCH EXISTING PHASING
- ACCESS TO SITES - ACCESS TO THE STRUCTURE SITES IS TYPICALLY MADE VIA PUBLIC ROADS AND ALONG THE EXISTING RIGHT OF WAY. FOR SPECIFIC ACCESS TO EACH STRUCTURE LOCATION, THE SUBCONTRACTOR SHALL COORDINATE DIRECTLY WITH THE BES CONSTRUCTION MANAGER DURING THE DAILY PRE-JOB BEFORE MOBILIZING TO EACH SITE.
- MATERIAL YARD - THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A MATERIAL YARD AND FURNISHING ALL TEMPORARY CONSTRUCTION UTILITIES NECESSARY AT THE MATERIAL YARD. COSTS FOR MAINTENANCE, SAFETY, SECURITY, SANITATION, AND CLEANUP DURING THE PROJECT WILL BE THE RESPONSIBILITY OF THE SUBCONTRACTOR. SUBCONTRACTOR SHALL SUPPLY HIS OWN DUMPSTERS AND PORTA LETS. THE SUBCONTRACTOR IS ALSO RESPONSIBLE FOR RESTORING THE MATERIAL YARD TO ITS ORIGINAL CONDITION ONCE THE PROJECT IS COMPLETE.

MATERIAL NOTES:

- MATERIAL SHALL BE SUPPLIED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS.

MATERIAL SPECIFICATIONS

33 05 80 - OVERHEAD DISTRIBUTION MATERIAL  
33 71 16 13 - SPUN PRESTRESSED CONCRETE STRUCTURES (MATERIAL)  
33 71 23 - TRANSMISSION LINE HARDWARE (MATERIAL)  
33 71 24 - CERAMIC INSULATORS (MATERIAL)  
33 71 25 - NONCERAMIC INSULATORS (MATERIAL)  
33 71 27 - GUY STRAND (MATERIAL)  
33 71 28 - GUY HARDWARE (MATERIAL)  
33 71 34 - OVERHEAD GROUNDWIRE (MATERIAL)  
33 71 36.14 - ACSR CONDUCTOR (MATERIAL)  
33 79 19 - GROUNDING (MATERIAL)

CONSTRUCTION NOTES:

- CONSTRUCTION SHALL BE PERFORMED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS.

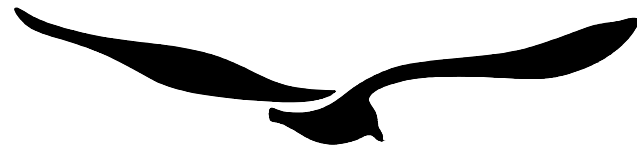
CONSTRUCTION SPECIFICATIONS

33 05 80 - OVERHEAD DISTRIBUTION CONSTRUCTION  
33 71 16 13 - SPUN PRESTRESSED CONCRETE STRUCTURES  
33 71 24 - CERAMIC INSULATORS  
33 71 25 - NONCERAMIC INSULATORS  
33 71 27 - GUY STRAND  
33 71 28 - GUY HARDWARE  
33 71 35 - CONDUCTOR AND OVERHEAD SHIELDWIRE INSTALLATION  
33 79 19 - GROUNDING

ISSUED  
FOR CONSTRUCTION

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY  
SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
WORK PLAN

DESIGNED DMT CHECKED AJK SCALE AS NOTED

DATE 10/17/23 ENGINEER cam

WBS/SO \_\_\_\_\_ APPROVED AJK

BES-WRK-02

- R0

|                     |                  |   |                    |
|---------------------|------------------|---|--------------------|
| REFERENCE DRAWINGS: | BES-ANC-01       | - | GUY ANCHOR DETAILS |
| BES-COV-01          | BES-GRD-01 TO 03 | - | GROUNDING DETAILS  |
| BES-LOC-01          | BES-STL-01       | - | STEEL DETAILS      |
| BES-WRK-01 & 02     |                  |   |                    |
| BES-ENV-01 & 02     |                  |   |                    |
| BES-CND-01          |                  |   |                    |
| BES-OGW-01          |                  |   |                    |
| BES-UDB-01 & 02     |                  |   |                    |
| BES-CPB-01 TO 03    |                  |   |                    |
| BES-CPR-01 & 02     |                  |   |                    |
| BES-FDN-01          |                  |   |                    |
| BES-GUY-01          |                  |   |                    |



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Suite 400  
Maitland, FL 32751

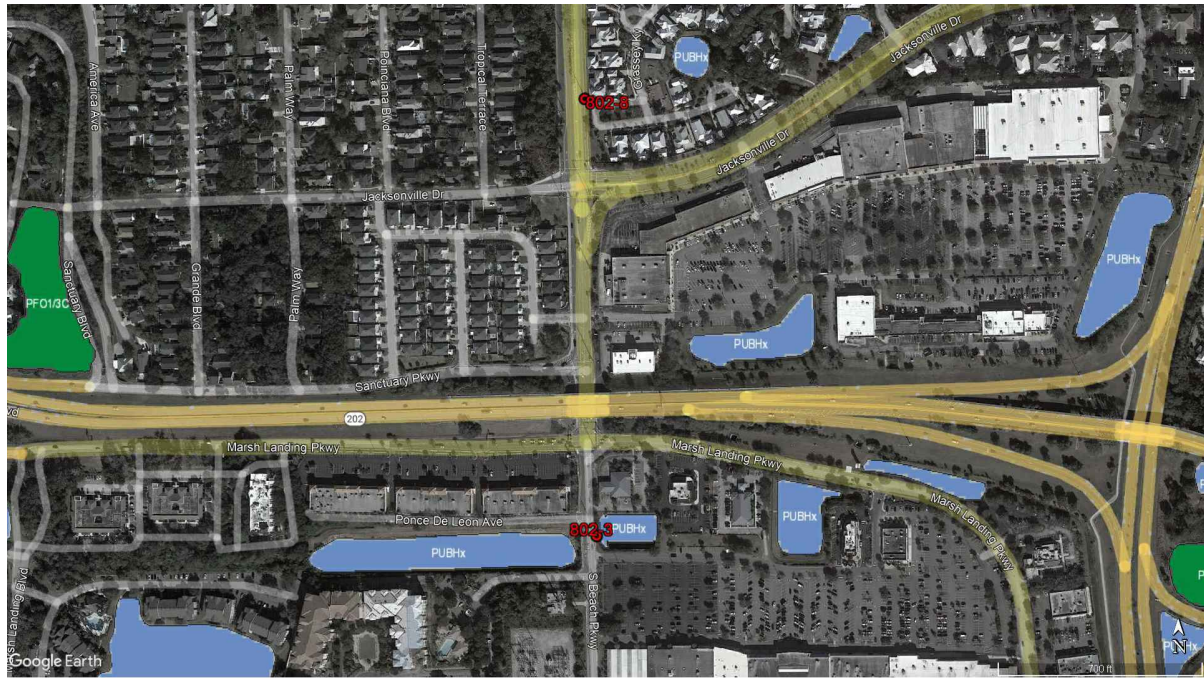




LOCATION MAP  
804-8



LOCATION MAP  
805-110



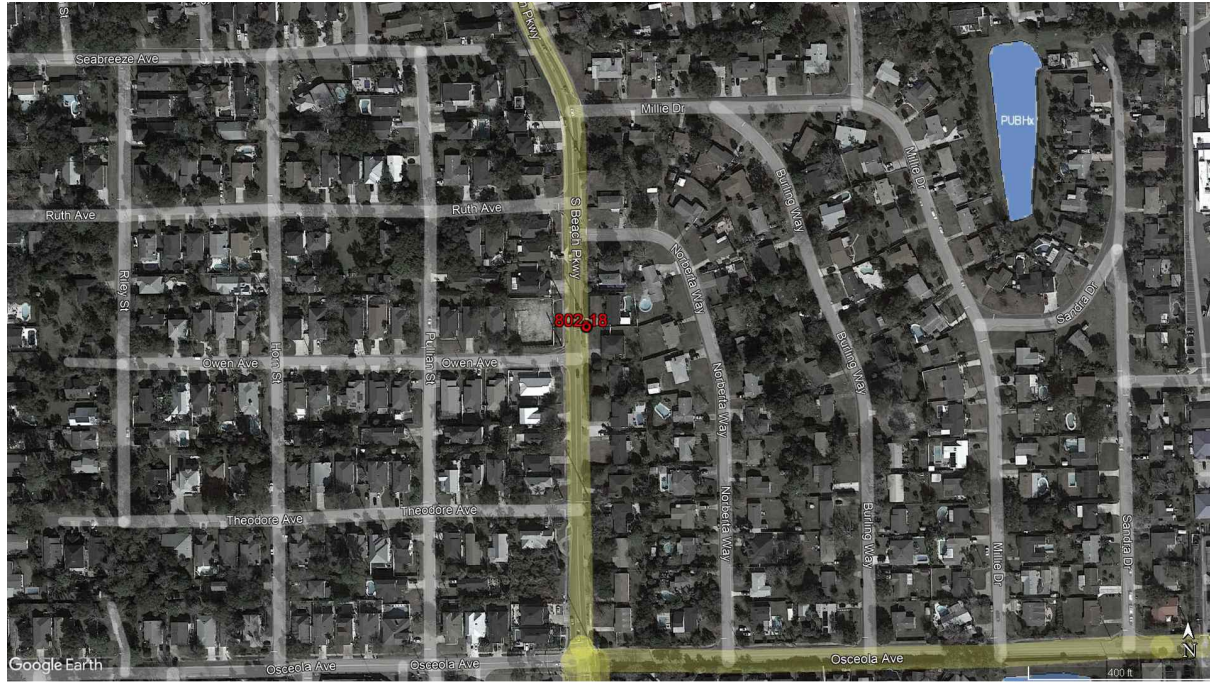
LOCATION MAP  
802-3 AND 802-8



LOCATION MAP  
804-23



LOCATION MAP  
805J-136



LOCATION MAP  
802-18



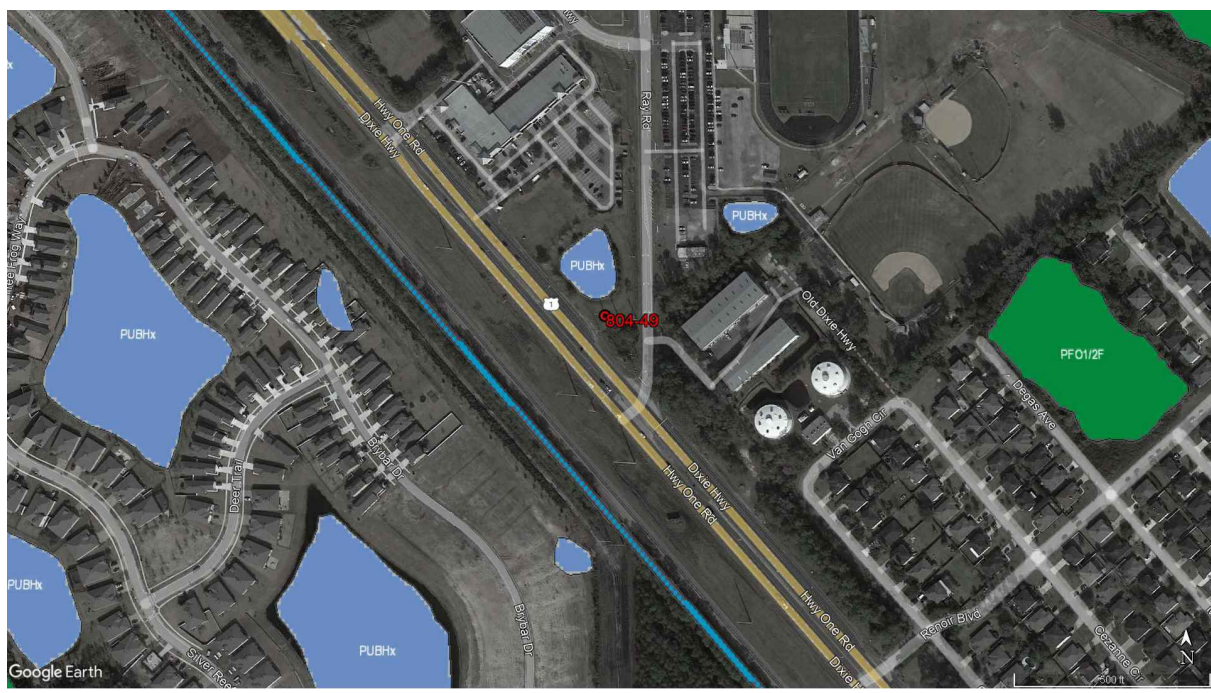
LOCATION MAP  
805-66



LOCATION MAP  
803-7



LOCATION MAP  
801-1



LOCATION MAP  
804-49



LOCATION MAP  
803-16

#### GENERAL NOTES

- THE MAPS ON THIS SHEET DEPICT THE LOCATIONS OF POLES WITHIN THE SCOPE OF THIS PROJECT WITH U.S. FISH AND WILDLIFE SERVICE NATIONAL WETLAND INVENTORY .KML DATA OVERLAID (KML DATA ACCESSED ON 10/17/2022. SEE <https://www.fws.gov/node/264582> FOR LIMITATIONS). THIS IS PROVIDED FOR REFERENCE ONLY AND DOES NOT NECESSARILY DEPICT ACTUAL DELINEATION OF WETLANDS.
- REFER TO BES-ENV-02 FOR EROSION CONTROL REQUIREMENTS.
- CONSTRUCTION ACTIVITIES ON THIS PROJECT SHALL BE LIMITED TO THOSE NECESSARY TO PRESERVE, RESTORE, REPAIR, REMOVE, OR REPLACE EXISTING UTILITY POLES OR AERIAL TRANSMISSION OR DISTRIBUTION LINES. NO DREDGING OR FILLING IN WETLANDS OR OTHER SURFACE WATERS ARE PERMITTED EXCEPT TO REMOVE POLES AND REPLACE THEM WITH NEW POLES. THE ACTIVITIES MUST NOT INCREASE THE VOLTAGE OF EXISTING POWER LINES OR RELOCATE EXISTING POLES OR LINES MORE THAN 10 FEET IN ANY DIRECTION FROM THEIR ORIGINAL LOCATION.
- TEMPORARY ACCESS TO MAINTAIN OR REPAIR PROJECTS WITHIN WETLANDS SHALL BE PERFORMED USING PLACEMENT OF WOODEN, COMPOSITE, METAL, OR OTHER NON-EARTHEN CONSTRUCTION MATS IN CONFORMANCE WITH THE FOLLOWING:
  - THERE SHALL BE NO CUTTING OR CLEARING OF WETLAND TREES HAVING A DIAMETER FOUR INCHES (CIRCUMFERENCE OF 12 INCHES) OR GREATER AT BREAST HEIGHT;
  - THE MAXIMUM WIDTH OF THE CONSTRUCTION ACCESS AREA SHALL BE 15 FEET;
  - MATS SHALL BE REMOVED AS SOON AS PRACTICABLE AFTER EQUIPMENT HAS COMPLETED PASSAGE THROUGH, OR WORK HAS BEEN COMPLETED AT, EACH LOCATION ALONG THE ALIGNMENT OF THE PROJECT, BUT IN NO CASE LONGER THAN SEVEN DAYS AFTER EQUIPMENT HAS COMPLETED WORK OR PASSAGE THROUGH THAT LOCATION; AND
  - AREAS DISTURBED FOR ACCESS SHALL BE RESTORED TO NATURAL GRADES IMMEDIATELY AFTER THE WORK IS COMPLETE.
- WORK SHALL BE PERFORMED IN ACCORDANCE WITH EPA, FDEP, AND LOCAL JURISDICTION BEST MANAGEMENT PRACTICES AND EROSION CONTROL SPECIFICATIONS.

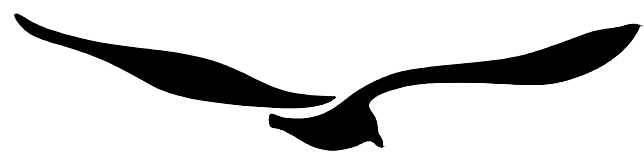
#### REFERENCE DRAWINGS:

- |                  |                                   |
|------------------|-----------------------------------|
| BES-COV-01       | - COVER SHEET                     |
| BES-LOC-01       | - LOCATION MAPS                   |
| BES-WRK-01 & 02  | - WORK PLAN                       |
| BES-CND-01       | - CONDUCTOR ASSEMBLY DETAILS      |
| BES-OGW-01       | - SHIELD WIRE ASSEMBLY DETAILS    |
| BES-JDB-01 & 02  | - DISTRIBUTION UNDERBUILD DETAILS |
| BES-CPB-01 & 02  | - CONCRETE POLE DETAILS           |
| BES-CPR-01 & 02  | - CONCRETE POLE REPAIR DETAILS    |
| BES-FDN-01       | - FOUNDATION DETAILS              |
| BES-GUY-01       | - GUYING DETAILS                  |
| BES-ANC-01       | - GUY ANCHOR DETAILS              |
| BES-GRD-01 TO 03 | - GROUNDING DETAILS               |

ISSUED  
FOR CONSTRUCTION

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

#### REVISIONS



BEACHES ENERGY  
SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
ENVIRONMENTAL  
WETLAND MAPS

|                      |                     |                       |
|----------------------|---------------------|-----------------------|
| DESIGNED <u>DMT</u>  | CHECKED <u>AJK</u>  | SCALE <u>AS NOTED</u> |
| DATE <u>10/13/23</u> | ENGINEER <u>CAM</u> |                       |
| WBS/SO               | APPROVED <u>AJK</u> |                       |

BES-ENV-01

- R0



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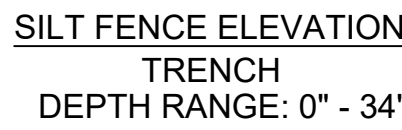
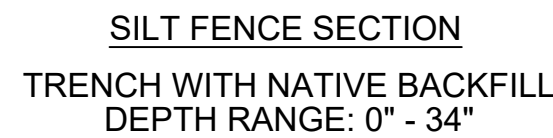
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ALEX JOSEPH KLADIVA, PE#76262  
2301 Maitland Center Pkwy, Maitland, FL 32751

**BURNS  
& MCDONNELL**  
ENGINEERING COMPANY, INC.  
2301 MAITLAND CENTER PARKWAY  
SUITE 400  
MAITLAND, FL 32751

THE REGISTRANT OF THE NEWLY APPLIED  
SEAL ASSUMES RESPONSIBILITY FOR THE  
CHANGES AS INDICATED BY THE FOLLOWING  
REVISION NUMBER 0





1. INSTALL SEDIMENT AND EROSION CONTROL DEVICES PER PLAN PRIOR TO SOIL DISTURBANCE ACTIVITIES.
2. COMMENCE CONSTRUCTION.
3. AT ALL TIMES DURING CONSTRUCTION, INSTALL ADDITIONAL SEDIMENT AND EROSION CONTROL MEASURES AS NEEDED OR AS RECOMMENDED BY AN ASSIGNED QUALIFIED STORMWATER INSPECTOR.
4. COMPLETE CONSTRUCTION.
5. RESTORE AND STABILIZE ALL AREAS DISTURBED BY CONSTRUCTION.
6. REMOVE TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES WHEN CONSTRUCTION IS COMPLETE AND DISPOSE OF IN ACCORDANCE WITH LOCAL PERMITTING AUTHORITY STANDARDS.

|  |                            |
|--|----------------------------|
|  | ISSUED<br>FOR CONSTRUCTION |
|--|----------------------------|

## REVISIONS



BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
ENVIRONMENTAL  
EROSION CONTROL

WBS/SO \_\_\_\_\_ APPROVED AJK

- R0



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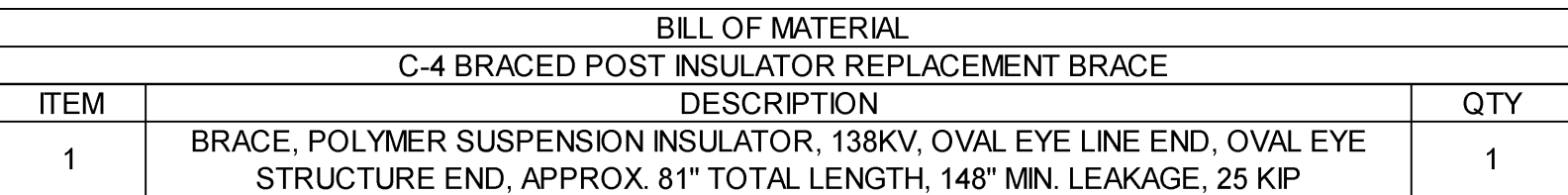
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REVISION NUMBER 0.





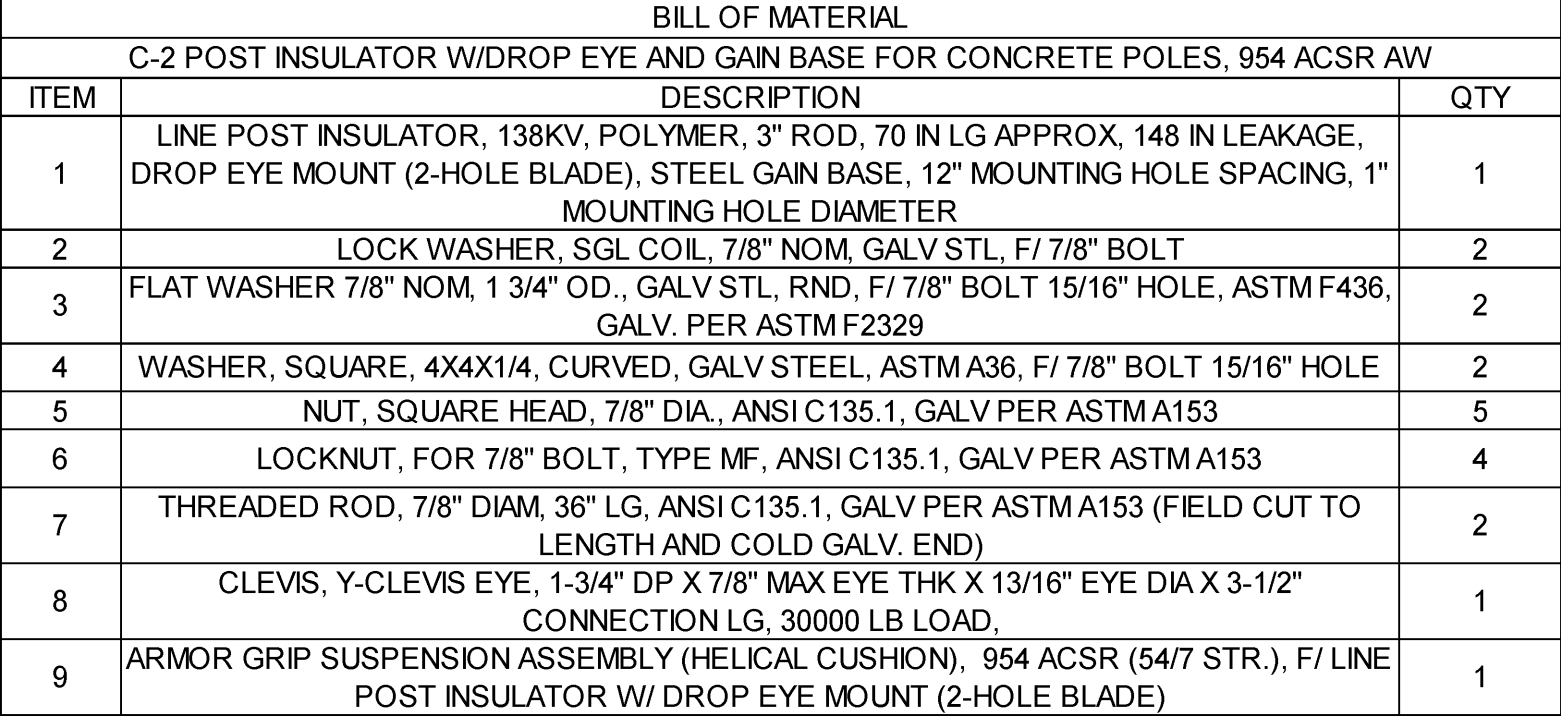
C-1

138KV POST INSULATOR, FLAT BASE,  
FOR EXISTING SQUARE POLES



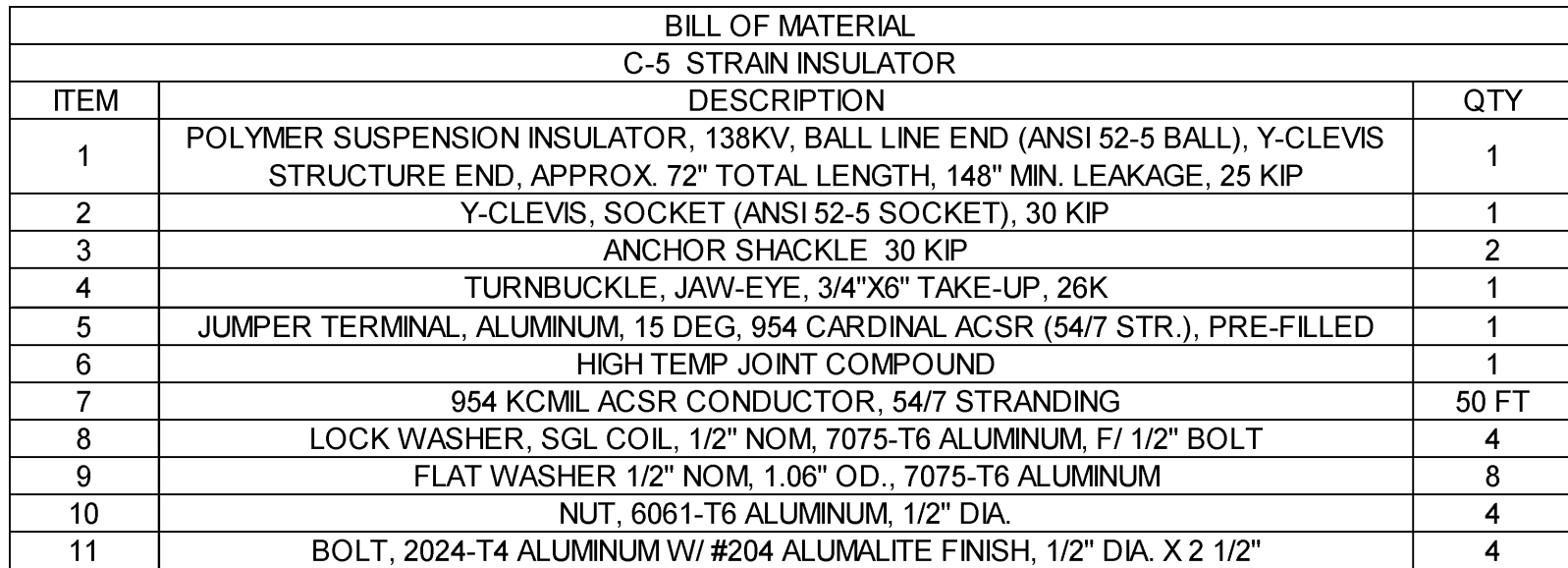
**C-4**

138KV BRACED POST INSULATOR  
REPLACEMENT BRACE



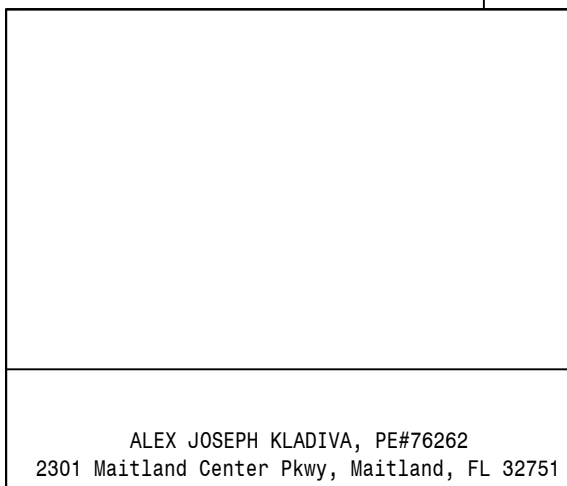
C-2

138KV POST INSULATOR, GAIN BASE,  
FOR NEW ROUND CONCRETE POLES



C-5

138KV STRAIN INSULATOR



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| REV | DATE     | DESCRIPT                |



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REVISION NUMBER 0.

33 71 24 - CERAMIC INSULATORS  
33 71 25 - NONCERAMIC INSULATORS  
33 71 35 - CONDUCTOR AND OVERHEAD SHIELDWIRE INSTALLATION

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

DESIGNED DMT CHECKED AJK SCALE AS NOTED

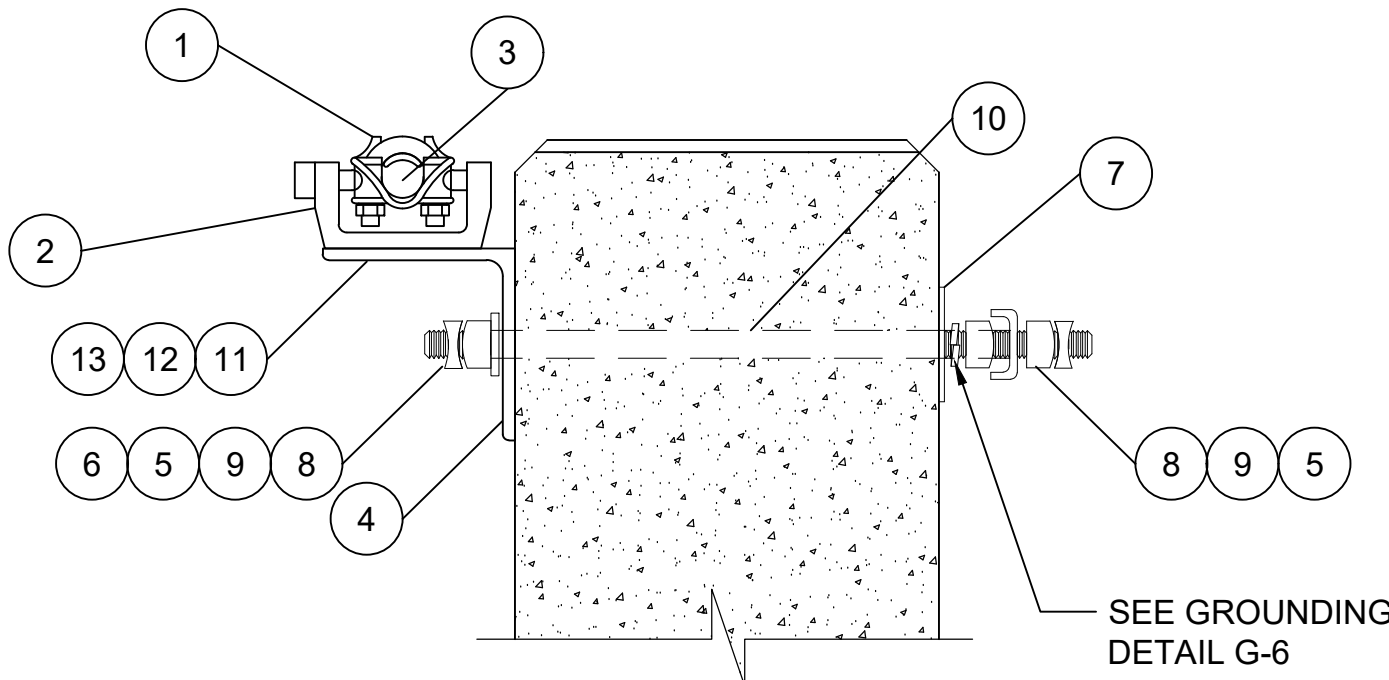
DATE 10/13/23 ENGINEER CAM

WBS/SO \_\_\_\_\_ APPROVED AJK

BES-CND-01

- R0



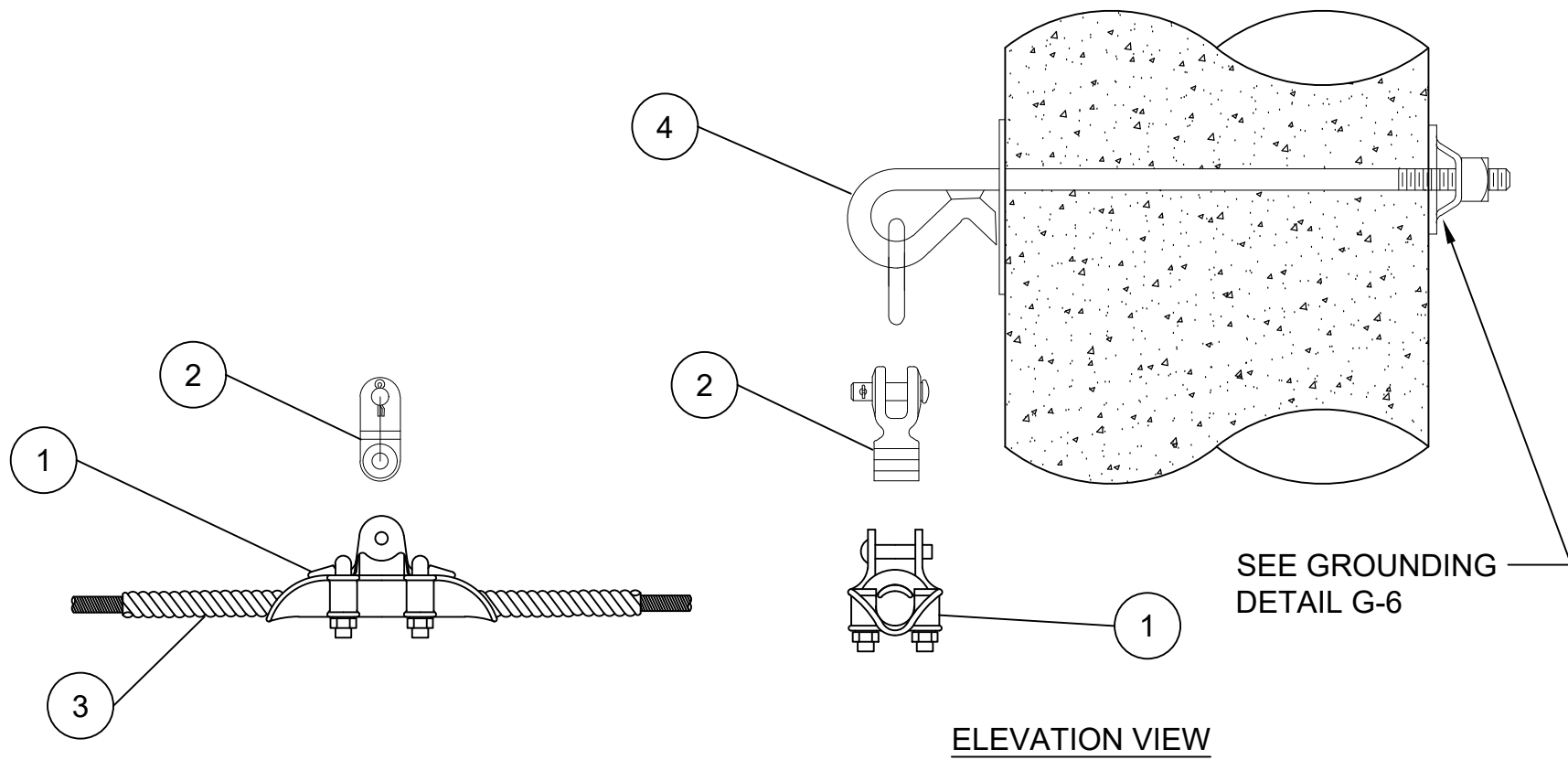
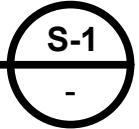


CONCRETE POLE TOP  
ELEVATION VIEW

| BILL OF MATERIAL                                      |                                                                                                           |     |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----|
| S-1 OHGW SUPPORT FOR 7NO9 ALUMOWELD, TRUNNION BRACKET |                                                                                                           |     |
| ITEM                                                  | DESCRIPTION                                                                                               | QTY |
| 1                                                     | OHG TRUNNION CLAMP FOR 7 NO. 9 ALUMOWELD W/ ARMOR ROD                                                     | 1   |
| 2                                                     | TRUNNION BRACKET, 5/8" MOUNTING HOLES ON 5" BOLT CIRCLE, SUPPLIED WITH MOUNTING BOLTS                     | 1   |
| 3                                                     | ALUMOWELD ARMOR ROD FOR 7 NO. 9 ALUMOWELD                                                                 | 1   |
| 4                                                     | BRACKET, ANGLE, STL-2, SEE BOM ON BES-STL-01                                                              | 1   |
| 5                                                     | LOCK WASHER, SGL COIL, 3/4" NOM, GALV STL, F/ 3/4" BOLT                                                   | 2   |
| 6                                                     | FLAT WASHER, 3/4" NOM, 1.7" OD., GALV STL, RND, F/ 3/4" BOLT 13/16" HOLE, ASTM F436, GALV. PER ASTM F2329 | 1   |
| 7                                                     | WASHER, SQUARE, 4X4X1/4, FLAT, GALV STEEL, ASTM A36, F/ 3/4" BOLT 13/16" HOLE                             | 1   |
| 8                                                     | NUT, SQUARE HEAD, 3/4" DIA., ANSI C135.1, GALV PER ASTM A153                                              | 3   |
| 9                                                     | LOCKNUT, FOR 3/4" BOLT, TYPE MF, ANSI C135.1, GALV PER ASTM A153                                          | 2   |
| 10                                                    | THREADED ROD, 3/4" DIAM, 36" LG, ANSI C135.1, GALV PER ASTM A153 (FIELD CUT TO LENGTH AND COLD GALV. END) | 1   |
| 11                                                    | BOLT, HEAVY HEX HEAD, ASTM F3125 GR. A325, 1/2" DIA. X 2" LONG, HOT DIPPED GALVANIZED PER ASTM F2329      | 4   |
| 12                                                    | NUT, HEAVY HEX HEAD, ASTM A563, 1/2" DIA., HOT DIPPED GALVANIZED PER ASTM F2329                           | 4   |
| 13                                                    | WASHER, HARDENED, ASTM F436, 1/2" DIA., HOT DIPPED GALVANIZED PER ASTM F2329                              | 8   |

DETAIL

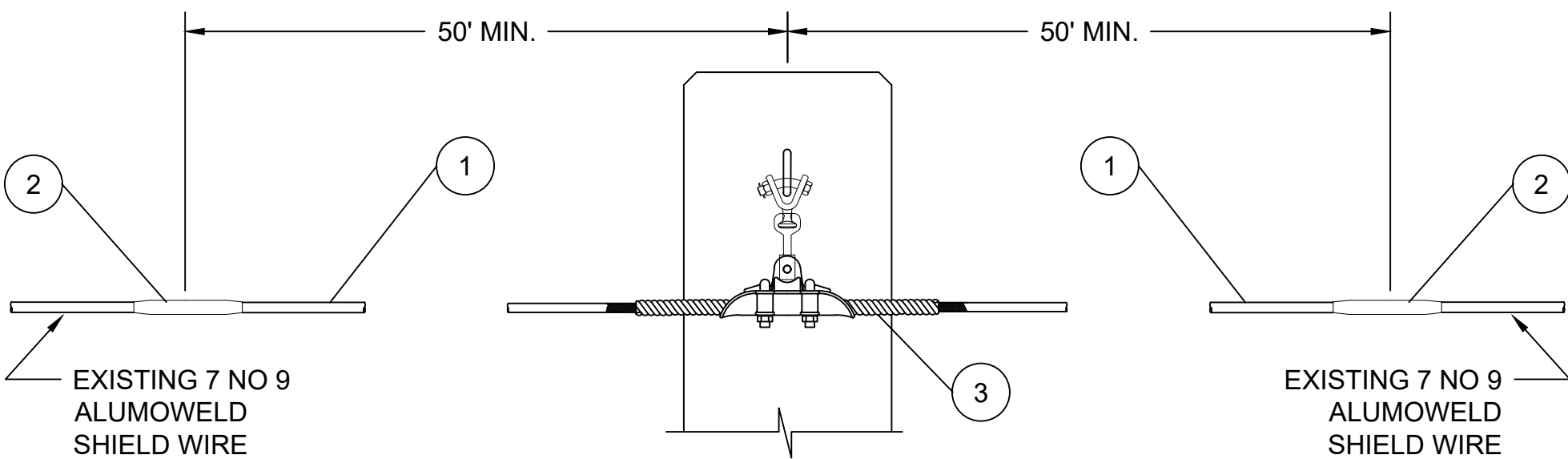
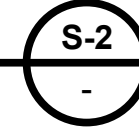
OHGW SUPPORT FOR 7NO9  
ALUMOWELD, TRUNNION BRACKET



| BILL OF MATERIAL                              |                                                                                                                                         |     |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----|
| S-2 OHGW SUSPENSION CLAMP, NEW CONCRETE POLES |                                                                                                                                         |     |
| ITEM                                          | DESCRIPTION                                                                                                                             | QTY |
| 1                                             | OHG SUSPENSION CLAMP FOR 7 NO. 9 ALUMOWELD W/ ARMOR ROD                                                                                 | 1   |
| 2                                             | CLEVIS-EYE, 30K                                                                                                                         | 1   |
| 3                                             | ALUMOWELD ARMOR ROD FOR 7 NO. 9 ALUMOWELD                                                                                               | 1   |
| 4                                             | SHIELD WIRE SUPPORT BRACKET, OVAL EYE THROUGH BOLT, 3/4" DIA., 20" LONG, THREADED 6" MIN., W/ 5/8" CHAIN LINK, W/ CURVED SQUARE WASHERS | 1   |

DETAIL

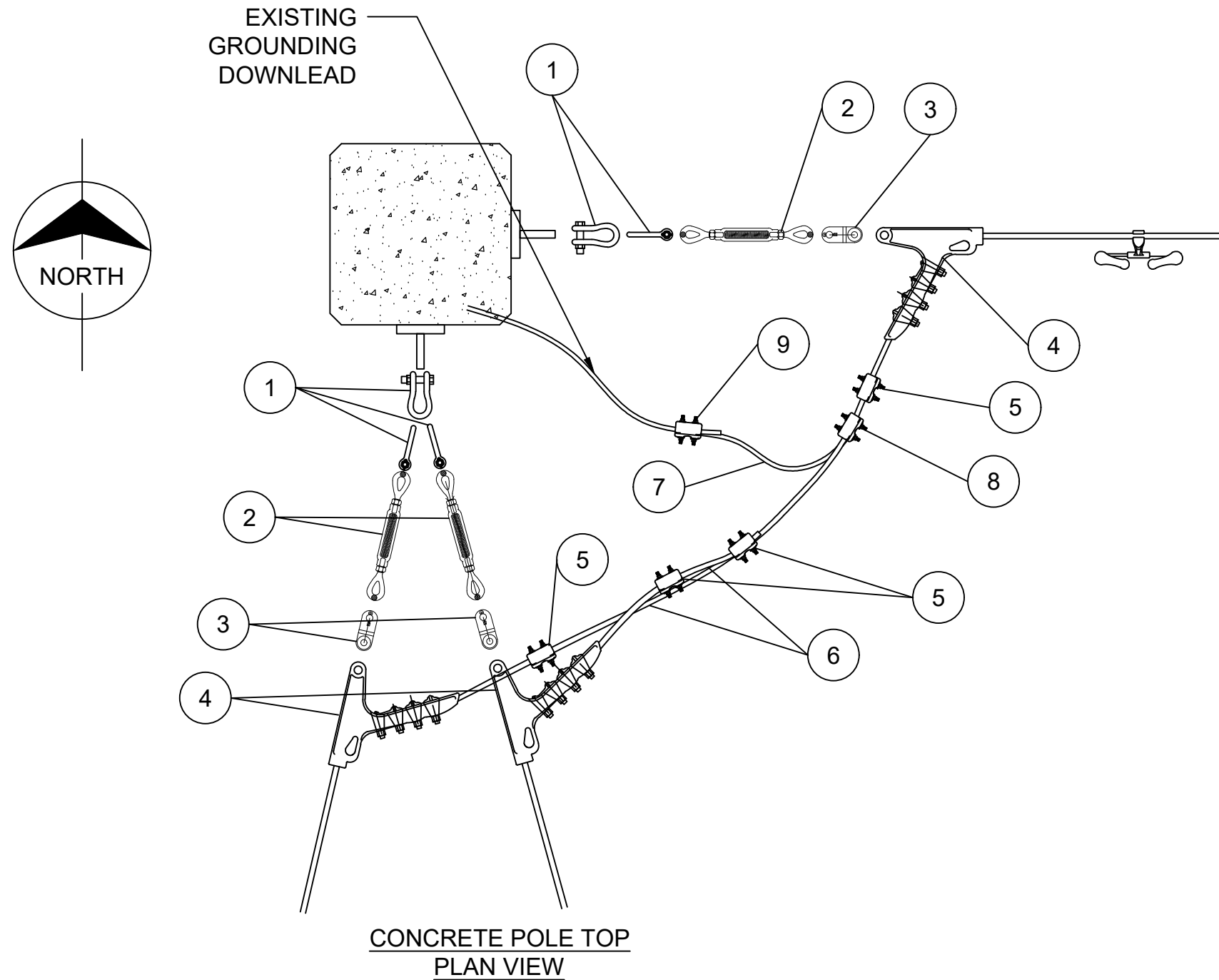
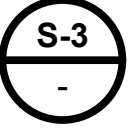
OHGW SUSPENSION CLAMP, NEW  
CONCRETE POLES



| BILL OF MATERIAL                   |                                           |        |
|------------------------------------|-------------------------------------------|--------|
| S-3 SHIELD WIRE COMPRESSION SPLICE |                                           |        |
| ITEM                               | DESCRIPTION                               | QTY    |
| 1                                  | ALUMOWELD 7#9 WIRE                        | 150 FT |
| 2                                  | FULL TENSION SLEEVE FOR ALUMOWELD 7#9     | 2      |
| 3                                  | ALUMOWELD ARMOR ROD FOR 7 NO. 9 ALUMOWELD | 1      |

DETAIL

SHIELD WIRE SPLICE

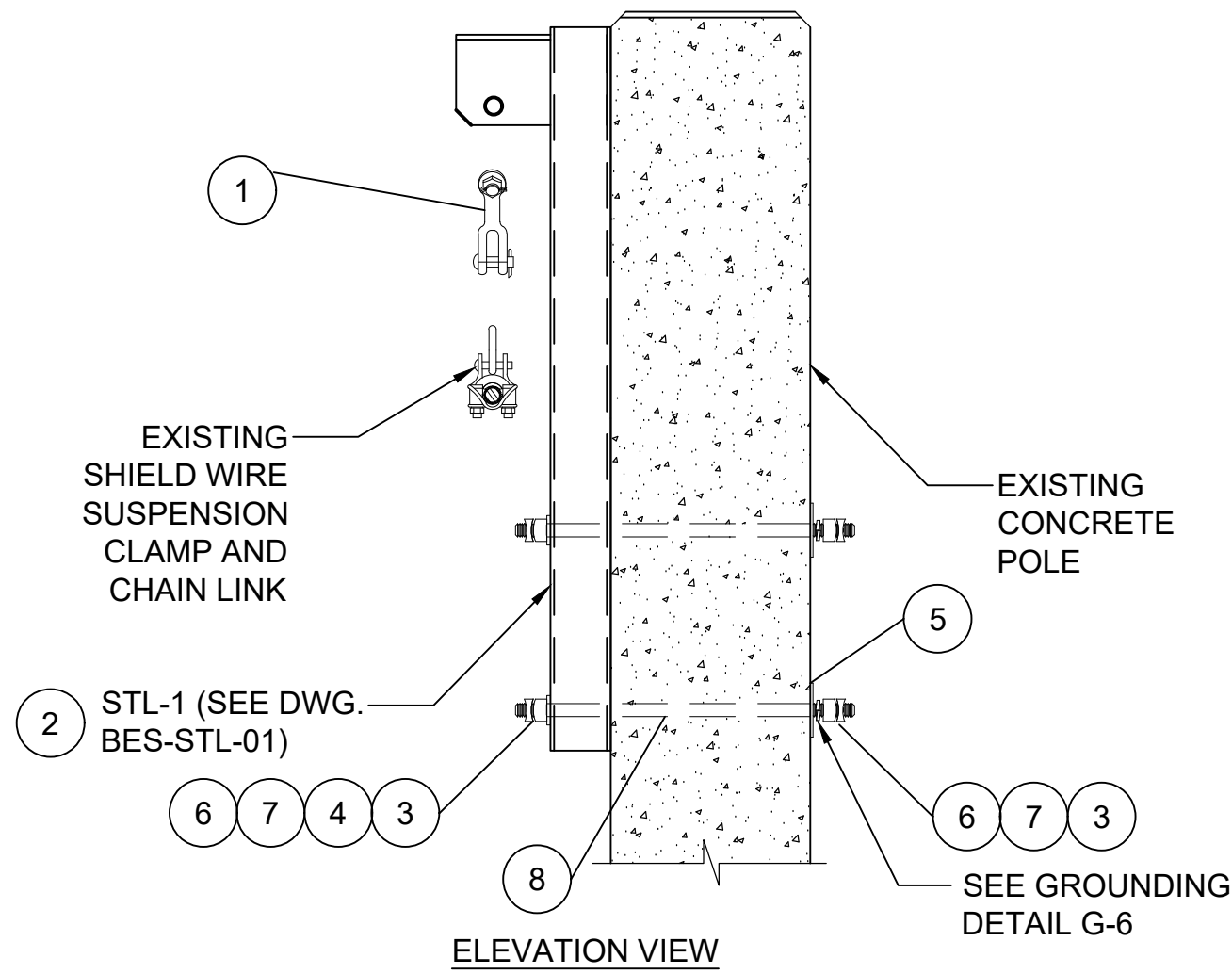
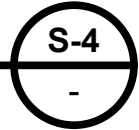


CONCRETE POLE TOP  
PLAN VIEW

| BILL OF MATERIAL                 |                                                                                                                                 |     |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-----|
| S-4 SHIELD WIRE DEADEND ASSEMBLY |                                                                                                                                 |     |
| ITEM                             | DESCRIPTION                                                                                                                     | QTY |
| 1                                | ANCHOR SHACKLE 30K                                                                                                              | 5   |
| 2                                | TURNBUCKLE, EYE-EYE, 3/4"X18" TAKE-UP, 26K                                                                                      | 3   |
| 3                                | CLEVIS EYE 30K                                                                                                                  | 3   |
| 4                                | CLAMP, STRAIN, BOLTED, 0.2"-0.59" CONDUCTOR, 15000 LB CAPACITY, ALUM, NO CONNECTOR                                              | 3   |
| 5                                | PARALLEL GROOVE CLAMP, ALUMINUM, TWO-BOLT, WITH OXIDE INHIBITOR, 7 NO. 9 ALUMOWELD MAIN, 7 NO. 9 ALUMOWELD TAP                  | 4   |
| 6                                | ALUMOWELD 7#9 WIRE                                                                                                              | 50  |
| 7                                | WIRE/CABLE ELECTRICAL, BARE, 7 STR SD, 2 AWG, TINNED CU CONDUCTOR                                                               | 20  |
| 8                                | PARALLEL GROOVE CLAMP, ALUMINUM, SINGLE BOLT, WITH OXIDE INHIBITOR, #2 7-STRAND TINNED COPPER MAIN, 7 NO. 9 ALUMOWELD TAP       | 1   |
| 9                                | PARALLEL GROOVE CLAMP, TINNED COPPER, SINGLE BOLT, WITH OXIDE INHIBITOR, #2 7-STRAND TINNED COPPER MAIN, NO. 4 SOLID COPPER TAP | 1   |

DETAIL

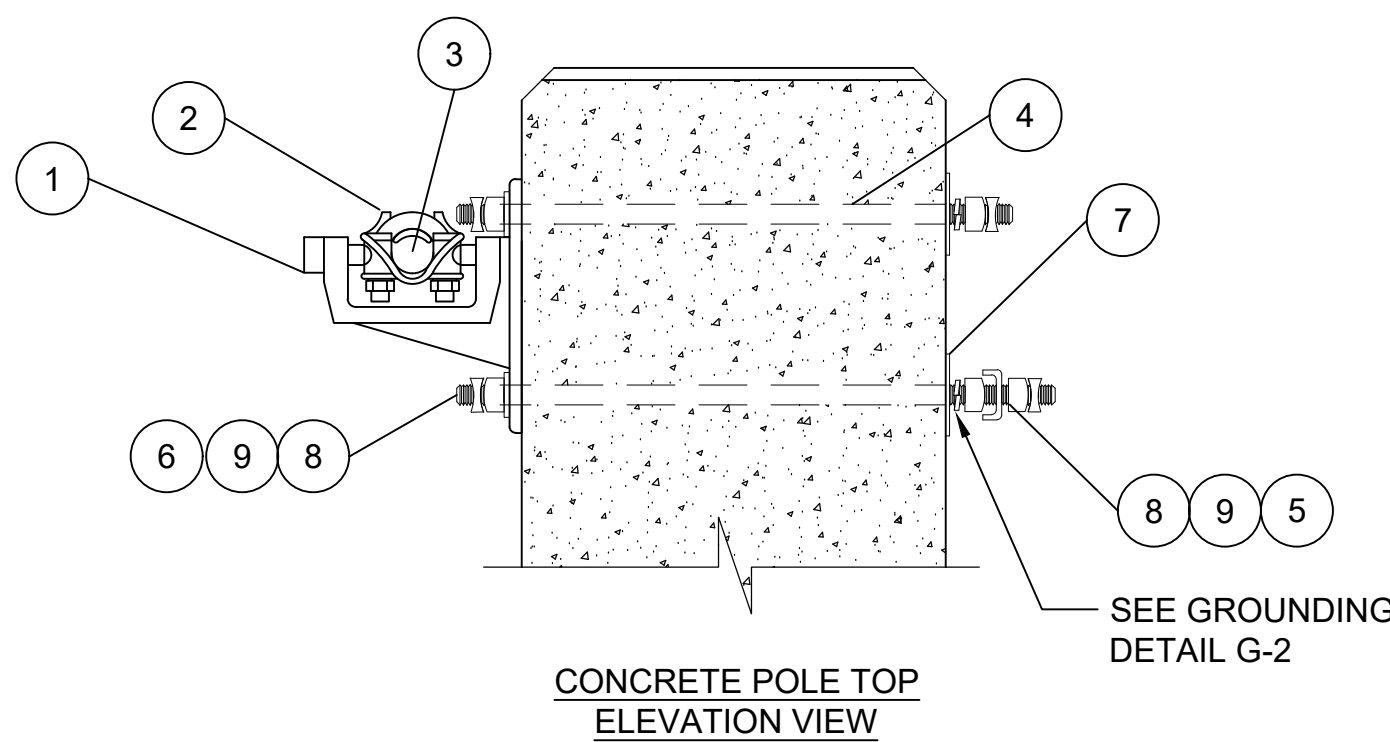
STR. 801-1 SHIELD WIRE DEADEND  
ASSEMBLY



| BILL OF MATERIAL                                  |                                                                                                           |     |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----|
| S-5 OHGW SUSPENSION ASSEMBLY AT NEW STEEL BAYONET |                                                                                                           |     |
| ITEM                                              | DESCRIPTION                                                                                               | QTY |
| 1                                                 | Y-CLEVIS CLEVIS, 90DEG, 30 KIP                                                                            | 1   |
| 2                                                 | STEEL BAYONET (SEE DWG. BES-STL-01 FOR BOM)                                                               | 1   |
| 3                                                 | LOCK WASHER, SGL COIL, 3/4" NOM, GALV STL, F/ 3/4" BOLT                                                   | 4   |
| 4                                                 | FLAT WASHER, 3/4" NOM, 1.7" OD., GALV STL, RND, F/ 3/4" BOLT 13/16" HOLE, ASTM F436, GALV. PER ASTM F2329 | 2   |
| 5                                                 | WASHER, SQUARE, 4X4X1/4, FLAT, GALV STEEL, ASTM A36, F/ 3/4" BOLT 13/16" HOLE                             | 2   |
| 6                                                 | NUT, SQUARE HEAD, 3/4" DIA., ANSI C153.1, GALV PER ASTM A153                                              | 5   |
| 7                                                 | LOCKNUT, FOR 3/4" BOLT, TYPE MF, ANSI C153.1, GALV PER ASTM A153                                          | 4   |
| 8                                                 | THREADED ROD, 3/4" DIAM, 36" LG, ANSI C153.1, GALV PER ASTM A153 (FIELD CUT TO LENGTH AND COLD GALV. END) | 2   |

DETAIL

OHGW SUSPENSION ASSEMBLY  
AT NEW STEEL BAYONET

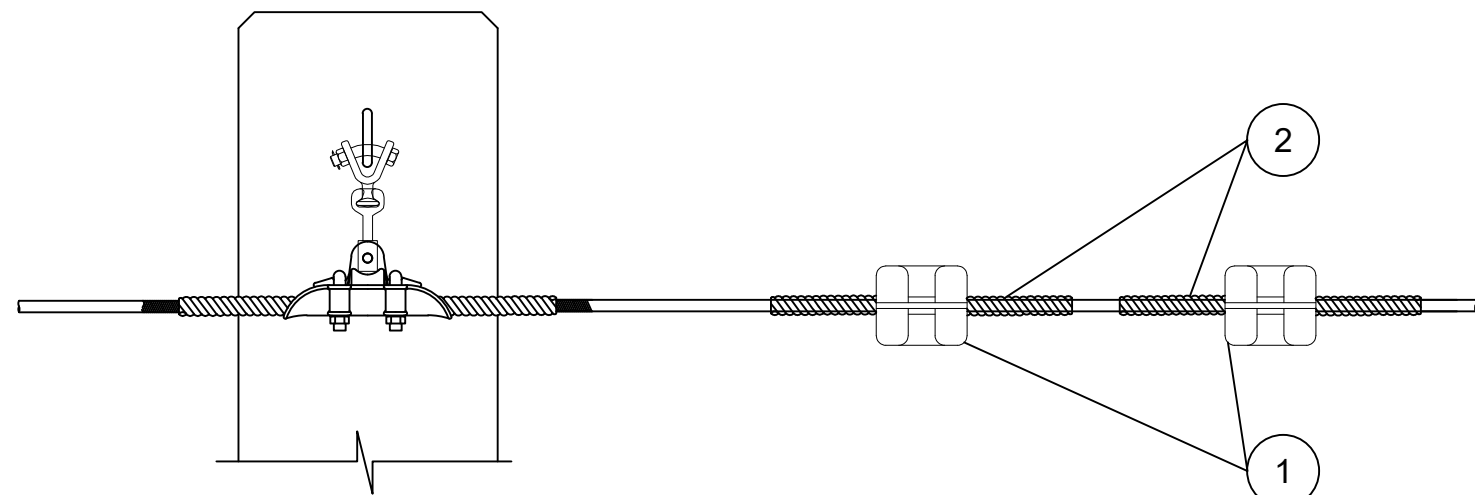
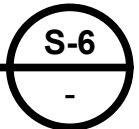


CONCRETE POLE TOP  
ELEVATION VIEW

| BILL OF MATERIAL                               |                                                                                                           |     |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----|
| S-6 OHGW TRUNNION SUPPORT AT NEW CONCRETE POLE |                                                                                                           |     |
| ITEM                                           | DESCRIPTION                                                                                               | QTY |
| 1                                              | BRACKET, OHG HORIZ. TRUNNION CLAMP, 11/16" DIA. MOUNTING HOLES ON 6" SPACING, 1000# UPLIFT CAPACITY MIN.  | 1   |
| 2                                              | OHG TRUNNION CLAMP FOR 7 NO. 9 ALUMOWELD W/ ARMOR ROD                                                     | 1   |
| 3                                              | ALUMOWELD ARMOR ROD FOR 7 NO. 9 ALUMOWELD                                                                 | 1   |
| 4                                              | THREADED ROD, 5/8" DIAM, 36" LG, ANSI C135.1, GALV PER ASTM A153 (FIELD CUT TO LENGTH AND COLD GALV. END) | 2   |
| 5                                              | LOCK WASHER, SGL COIL, 5/8" NOM, GALV STL, F/ 5/8" BOLT                                                   | 2   |
| 6                                              | FLAT WASHER, 5/8" NOM, 1.7" OD., GALV STL, RND, F/ 5/8" BOLT 11/16" HOLE, ASTM F436, GALV. PER ASTM F2329 | 2   |
| 7                                              | WASHER, SQUARE, 4X4X1/4, FLAT, GALV STEEL, ASTM A36, F/ 5/8" BOLT 11/16" HOLE                             | 2   |
| 8                                              | NUT, SQUARE HEAD, 5/8" DIA., ANSI C135.1, GALV PER ASTM A153                                              | 5   |
| 9                                              | LOCKNUT, FOR 5/8" BOLT, TYPE MF, ANSI C135.1, GALV PER ASTM A153                                          | 4   |

DETAIL

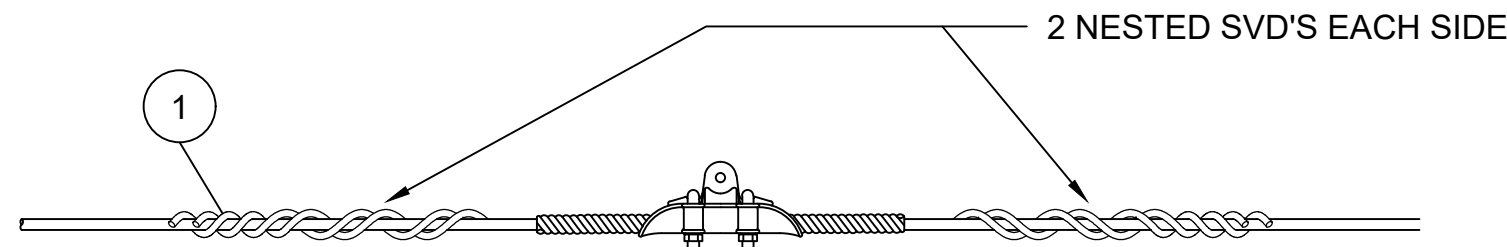
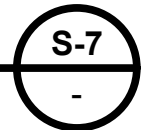
OHGW SUPPORT FOR 7NO9  
ALUMOWELD, TRUNNION BRACKET



| S-7 OHGW ZINC HOLDDOWN WEIGHTS |                                                                  |     |
|--------------------------------|------------------------------------------------------------------|-----|
| ITEM                           | DESCRIPTION                                                      | QTY |
| 1                              | HOLDDOWN WEIGHT, ZINC, 50 POUND, FOR 7 NO. 9 ALUMOWELD ARMOR ROD | 2   |
| 2                              | ALUMOWELD ARMOR ROD FOR 7 NO. 9 ALUMOWELD                        | 2   |

DETAIL

SHIELD WIRE WEIGHT



| BILL OF MATERIAL   |                                     |     |
|--------------------|-------------------------------------|-----|
| SD-1 SPIRAL DAMPER |                                     |     |
| ITEM               | DESCRIPTION                         | QTY |
| 1                  | SPIRAL DAMPER FOR 7 NO. 9 ALUMOWELD | 4   |

DETAIL

SPIRAL VIBRATION DAMPER



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REV DATE DESCRIPTION



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REVISION NUMBER 0

ALEX JOSEPH KLADIVA, PE#76262  
2301 Maitland Center Pkwy, Maitland, FL 32751

GENERAL NOTES

1. REFER TO DRAWING BES-WRK-01 AND BES-WRK-02 FOR REQUIRED LOCATIONS OF ASSEMBLY DETAILS.

REFERENCE DRAWINGS:

BES-COV-01 - COVER SHEET  
BES-WRK-01&02 - WORK PLAN  
BES-CND-01 - INSULATOR AND CONDUCTOR ASSEMBLY DETAILS  
BES-CPB-01&02 - CONCRETE POLE BORING DETAILS  
BES-GRD-01 TO 03 - GROUNDING DETAILS  
BES-STL-01 - STEEL DETAILS

MATERIAL NOTES:

1. MATERIAL SHALL BE SUPPLIED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS.

MATERIAL SPECIFICATIONS

33 71 16 13 - SPUN PRESTRESSED CONCRETE STRUCTURES (MATERIAL)  
33 71 23 - TRANSMISSION LINE HARDWARE (MATERIAL)  
33 71 34 - OVERHEAD GROUNDWIRE (MATERIAL)

CONSTRUCTION NOTES:

1. CONSTRUCTION SHALL BE PERFORMED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS.

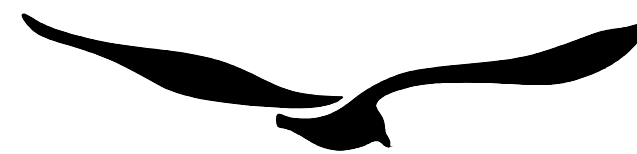
CONSTRUCTION SPECIFICATIONS

33 71 16 13 - SPUN PRESTRESSED CONCRETE STRUCTURES  
33 71 35 - CONDUCTOR AND OVERHEAD SHIELDWIRE INSTALLATION

ISSUED  
FOR CONSTRUCTION

NO DATE DESCRIPTION DSD EGR CHK APD

REVISIONS



BEACHES ENERGY  
SERVICES

BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
SHIELD WIRE ASSEMBLY DETAILS

DESIGNED DMT CHECKED AJK SCALE AS NOTED

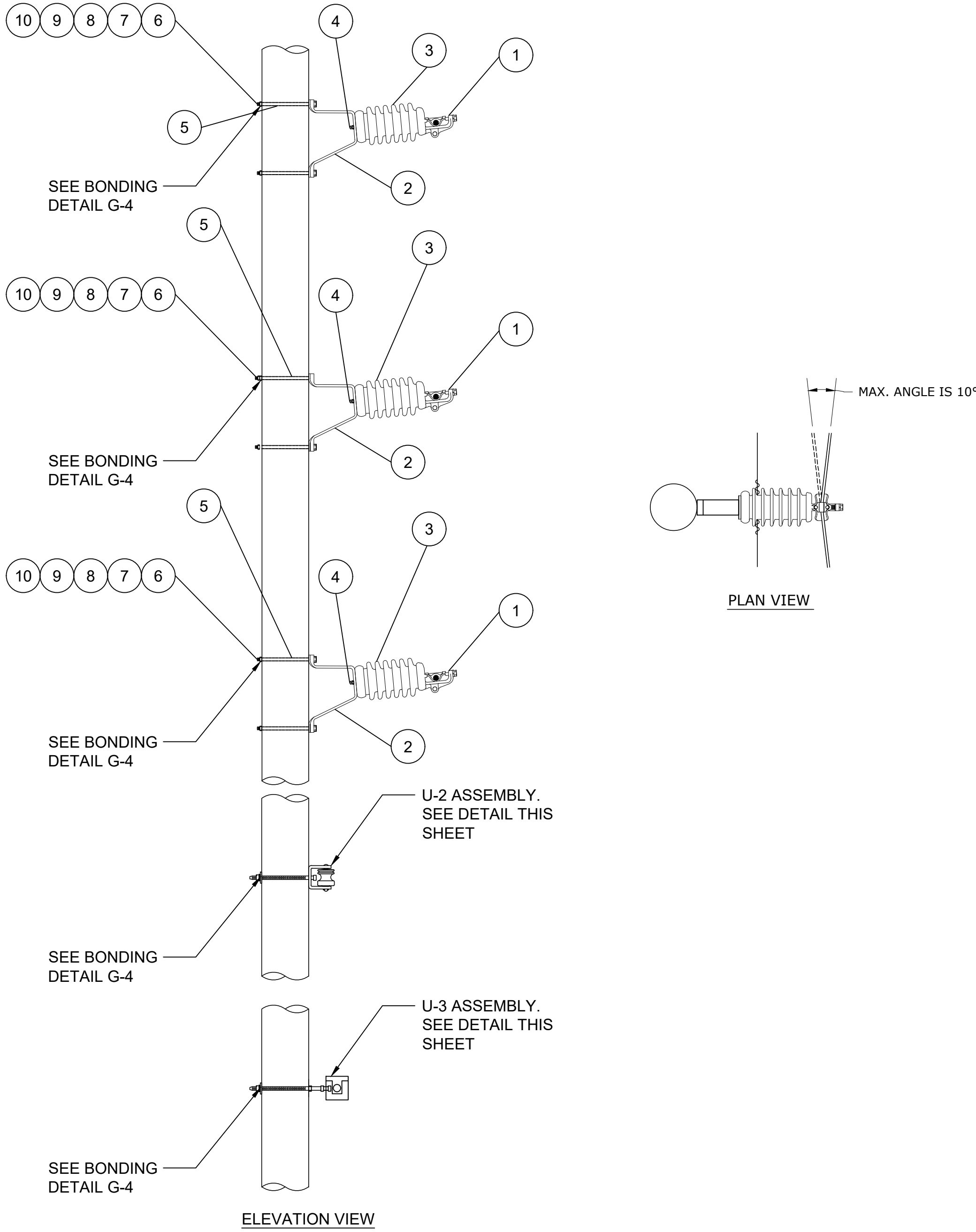
DATE 10/13/23 ENGINEER CAM

WBS/SO APPROVED AJK

BES-OGW-01

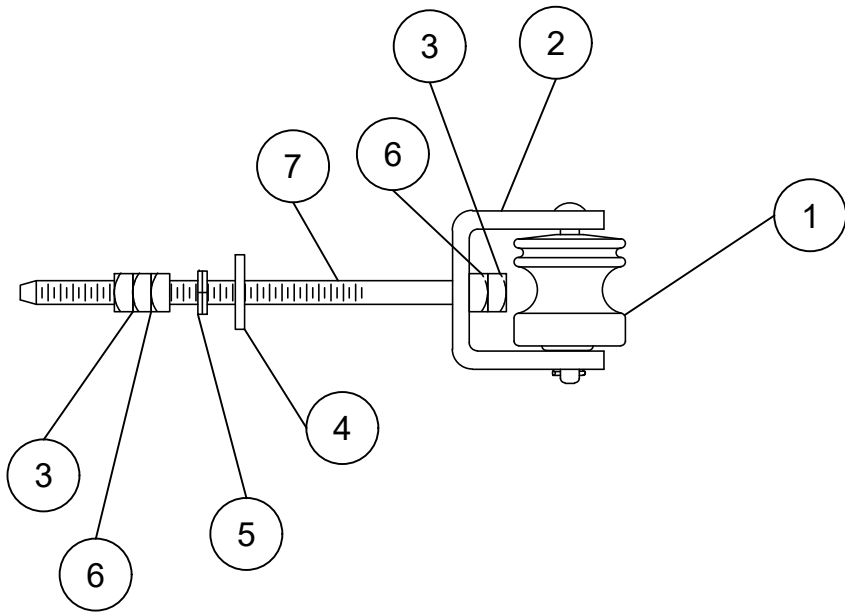
- R0





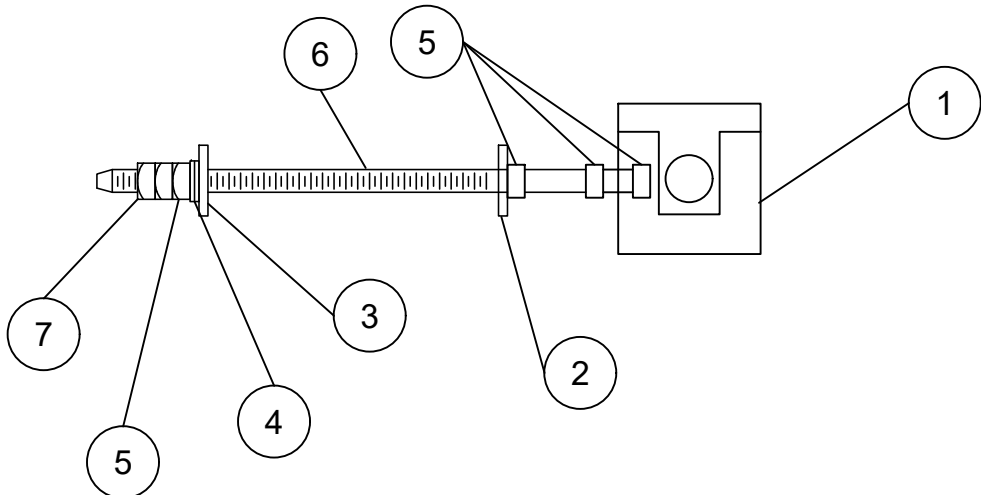
| BILL OF MATERIAL                |                                                                                                           |     |
|---------------------------------|-----------------------------------------------------------------------------------------------------------|-----|
| U-1 DISTRIBUTION POST INSULATOR |                                                                                                           |     |
| ITEM                            | DESCRIPTION                                                                                               | QTY |
| 1                               | CLAMP, GRIP, TRUNNION, 556-954 CONDUCTOR RANGE                                                            | 3   |
| 2                               | POST INSULATOR MOUNTING BRACKET, 15 DEG, 12" MOUNTING SPACING                                             | 3   |
| 3                               | INSULATOR, LINE POST, 35KV, HOR CLAMP                                                                     | 3   |
| 4                               | STUD, INSULATOR, 5/8" DIA, 3" LG, 11 UNC, GALV STL                                                        | 3   |
| 5                               | THREADED ROD, 5/8" DIAM, 36" LG, ANSI C135.1, GALV PER ASTM A153 (FIELD CUT TO LENGTH AND COLD GALV. END) | 6   |
| 6                               | WASHER, LOCK DBL COIL SPRING 5/8" GALV STL                                                                | 24  |
| 7                               | FLAT WASHER, 5/8" NOM 1.7" OD, GALV STL, RND, F/ 5/8" BOLT 11/16" HOLE                                    | 24  |
| 8                               | WASHER, SQUARE, 4X4X1/4, CURVED, GALV STEEL, ASTM A36, F/ 5/8" BOLT 11/16" HOLE                           | 6   |
| 9                               | LOCKNUT, FOR 5/8" BOLT, TYPE MF, ANSI C135.1, GALV PER ASTM A153                                          | 12  |
| 10                              | NUT, SQUARE HEAD, 5/8" DIA, ANSI C135.1, GALV PER ASTM A153                                               | 12  |

DETAIL U-1  
DISTRIBUTION POST INSULATOR



| BILL OF MATERIAL                             |                                                                                                           |     |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----|
| U-2 SPOOL INSULATOR SECONDARY / NEUTRAL RACK |                                                                                                           |     |
| ITEM                                         | DESCRIPTION                                                                                               | QTY |
| 1                                            | INSULATOR SPOOL, 3-1/8" DIA X 3" LG PORCELAIN                                                             | 1   |
| 2                                            | CLEVIS, INSULATOR SPOOL GALV STL 5" LG X 3-3/8" HT                                                        | 1   |
| 3                                            | LOCKNUT, FOR 5/8" BOLT, TYPE MF, ANSI C135.1, GALV PER ASTM A153                                          | 2   |
| 4                                            | WASHER, SQUARE, 4X4X1/4, CURVED, GALV STEEL, ASTM A36, F/ 5/8" BOLT 11/16" HOLE                           | 1   |
| 5                                            | WASHER, LOCK DBL COIL SPRING 5/8" GALV STL                                                                | 1   |
| 6                                            | NUT, SQUARE HEAD, 5/8" DIA, ANSI C135.1, GALV PER ASTM A153                                               | 3   |
| 7                                            | THREADED ROD, 5/8" DIAM, 36" LG, ANSI C135.1, GALV PER ASTM A153 (FIELD CUT TO LENGTH AND COLD GALV. END) | 1   |

DETAIL U-2  
SPOOL INSULATOR SECONDARY / NEUTRAL RACK



| BILL OF MATERIAL |                                                                                                           |     |
|------------------|-----------------------------------------------------------------------------------------------------------|-----|
| U-3 ADSS SUPPORT |                                                                                                           |     |
| ITEM             | DESCRIPTION                                                                                               | QTY |
| 1                | FIBERLIGN DIELECTRIC SUPPORT, 0.526 - 0.575 IN. CABLE RANGE                                               | 1   |
| 2                | FLAT WASHER, 5/8" NOM, 1.7" OD, GALV STL, RND, F/ 5/8" BOLT 11/16" HOLE                                   | 1   |
| 3                | WASHER, SQUARE, 4X4X1/4, CURVED, GALV STEEL, ASTM A36, F/ 5/8" BOLT 11/16" HOLE                           | 1   |
| 4                | WASHER, LOCK DBL COIL SPRING 5/8" GALV STL                                                                | 1   |
| 5                | NUT, SQUARE HEAD, 5/8" DIA, ANSI C135.1, GALV PER ASTM A153                                               | 5   |
| 6                | THREADED ROD, 5/8" DIAM, 36" LG, ANSI C135.1, GALV PER ASTM A153 (FIELD CUT TO LENGTH AND COLD GALV. END) | 1   |
| 7                | LOCKNUT, FOR 5/8" BOLT, TYPE MF, ANSI C135.1, GALV PER ASTM A153                                          | 1   |

DETAIL U-3  
ADSS SUPPORT

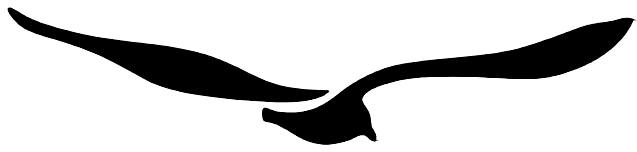
- GENERAL NOTES
1. REFER TO DRAWING BES-WRK-01 AND BES-WRK-02 FOR REQUIRED LOCATIONS OF ASSEMBLY DETAILS.
- REFERENCE DRAWINGS:
- |                  |   |                   |
|------------------|---|-------------------|
| BES-COV-01       | - | COVER SHEET       |
| BES-LOC-01       | - | LOCATION MAPS     |
| BES-WRK-01&02    | - | WORK PLAN         |
| BES-GRD-01 to 03 | - | GROUNDING DETAILS |

- MATERIAL NOTES:
1. MATERIAL SHALL BE SUPPLIED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS.
- MATERIAL SPECIFICATIONS
- 33 05 80 OVERHEAD DISTRIBUTION MATERIAL  
33 71 23 - TRANSMISSION LINE HARDWARE (MATERIAL)  
33 71 24 - CERAMIC INSULATORS (MATERIAL)  
33 71 25 - NONCERAMIC INSULATORS (MATERIAL)  
33 71 36.14 - ACSR CONDUCTOR (MATERIAL)
- CONSTRUCTION NOTES:
1. CONSTRUCTION SHALL BE PERFORMED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS.
- CONSTRUCTION SPECIFICATIONS
- 33 71 24 - CERAMIC INSULATORS  
33 71 25 - NONCERAMIC INSULATORS  
33 71 35 - CONDUCTOR AND OVERHEAD SHIELDWIRE INSTALLATION

ISSUED  
FOR CONSTRUCTION

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY  
SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
DISTRIBUTION UNDERBUILD DETAILS

|                      |                     |                       |
|----------------------|---------------------|-----------------------|
| DESIGNED <u>DHT</u>  | CHECKED <u>AJK</u>  | SCALE <u>AS NOTED</u> |
| DATE <u>10/13/23</u> | ENGINEER <u>CAM</u> |                       |
| WBS/SO               | APPROVED <u>AJK</u> |                       |

BES-UDB-01 - R0



THIS ITEM HAS BEEN DIGITALLY  
SIGNED AND SEALED BY  
ALEX JOSEPH KLADIVA ON THE DATE  
ADJACENT TO THE SEAL.

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SEALED AND THE SIGNATURE MUST BE  
VERIFIED ON ANY ELECTRONIC COPIES.

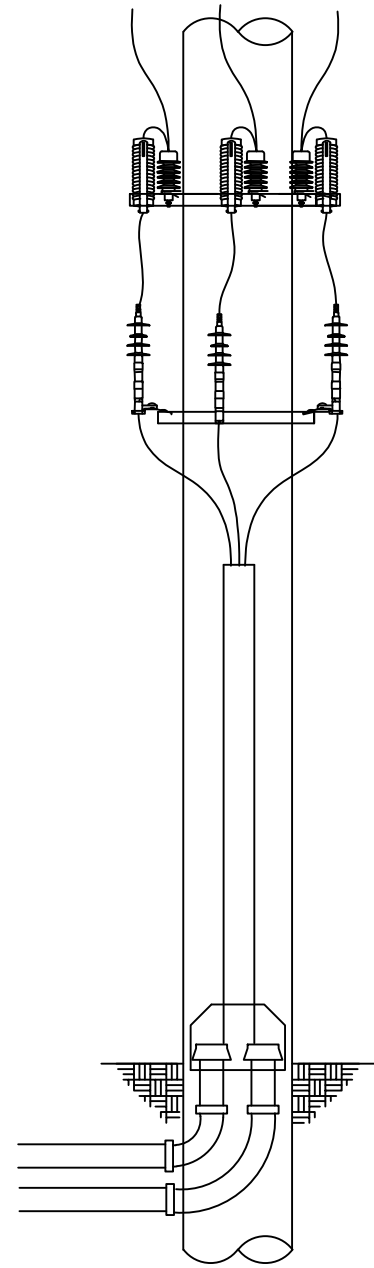
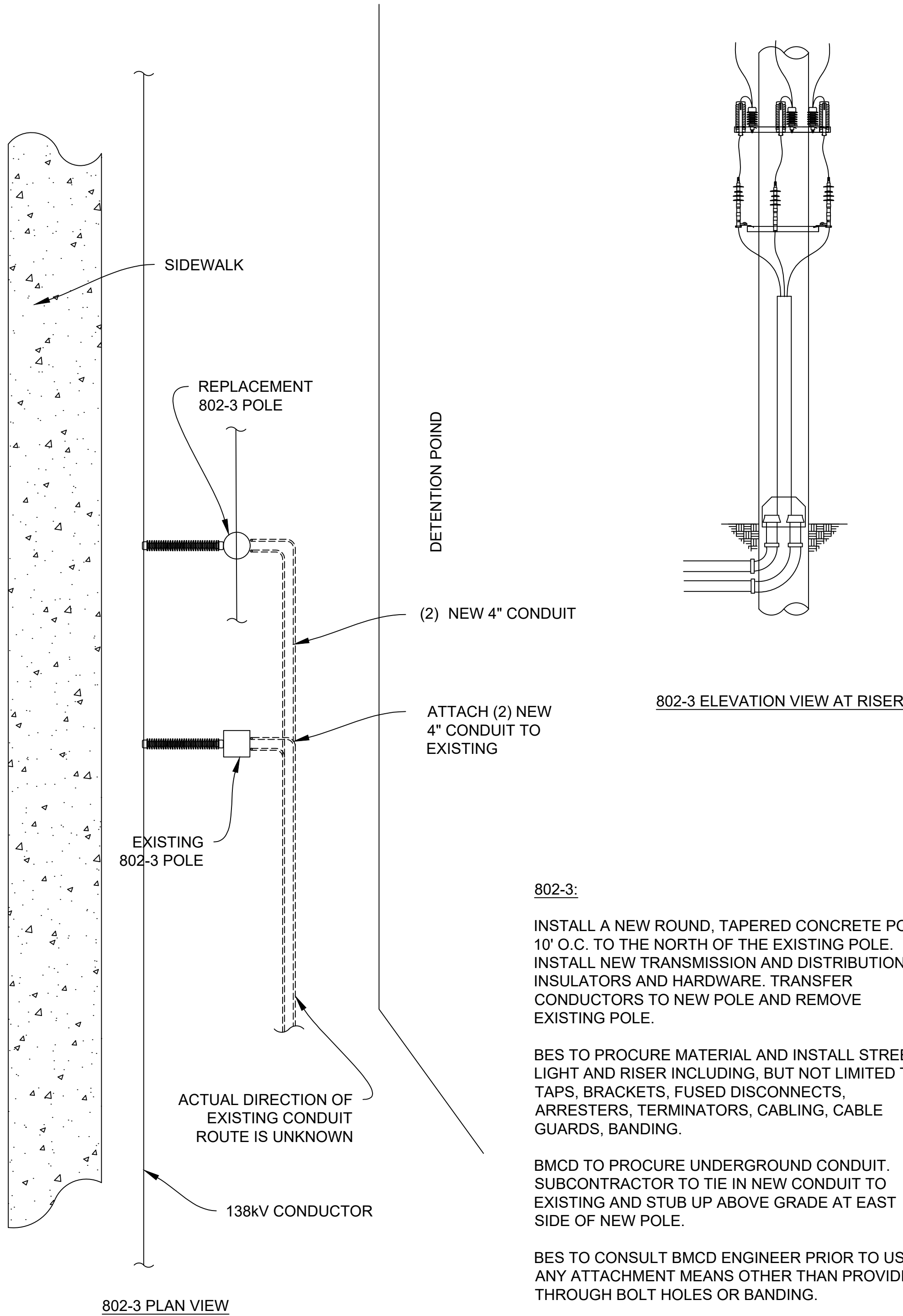
ALEX JOSEPH KLADIVA, PE#76262  
2301 Maitland Center Pkwy, Maitland, FL 32751

BURNS  
& MCDONNELL  
ENGINEERING COMPANY, INC.  
2301 MAITLAND CENTER PARKWAY  
SUITE 400  
MAITLAND, FL 32751

THE REGISTRANT OF THE NEWLY APPLIED  
SEAL ASSUMES RESPONSIBILITY FOR THE  
CHANGES AS INDICATED BY THE FOLLOWING  
REVISION NUMBER 0



SOUTH BEACH PARKWAY



802-3 ELEVATION VIEW AT RISER

**802-3:**  
INSTALL A NEW ROUND, TAPERED CONCRETE POLE 10' O.C. TO THE NORTH OF THE EXISTING POLE. INSTALL NEW TRANSMISSION AND DISTRIBUTION INSULATORS AND HARDWARE. TRANSFER CONDUCTORS TO NEW POLE AND REMOVE EXISTING POLE.

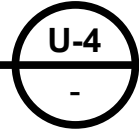
BES TO PROCURE MATERIAL AND INSTALL STREET LIGHT AND RISER INCLUDING, BUT NOT LIMITED TO, TAPS, BRACKETS, FUSED DISCONNECTS, ARRESTERS, TERMINATORS, CABLING, CABLE GUARDS, BANDING.

BMCD TO PROCURE UNDERGROUND CONDUIT. SUBCONTRACTOR TO TIE IN NEW CONDUIT TO EXISTING AND STUB UP ABOVE GRADE AT EAST SIDE OF NEW POLE.

BES TO CONSULT BMCD ENGINEER PRIOR TO USING ANY ATTACHMENT MEANS OTHER THAN PROVIDED THROUGH BOLT HOLES OR BANDING.

| BILL OF MATERIAL  |                                                                  |       |
|-------------------|------------------------------------------------------------------|-------|
| U-4 RISER CONDUIT |                                                                  |       |
| ITEM              | DESCRIPTION                                                      | QTY   |
| 1                 | CONDUIT, PVC, RIGID, 4" SCH 40                                   | 40 FT |
| 2                 | ELBOW, CONDUIT, PVC, RIGID, 4" SCH. 40, 36" RADIUS, 90 DEG SWEEP | 2     |
| 3                 | COUPLER, CONDUIT, PVC RIGID, 4" SCH 40                           | 4     |

DETAIL  
802-3 RISER



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ALEX JOSEPH KLADIVA ON THE DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ALEX JOSEPH KLADIVA, PE#76262  
2301 Maitland Center Pkwy, Maitland, FL 32751



THE REGISTRANT OF THE NEWLY APPLIED SEAL ASSUMES RESPONSIBILITY FOR THE CHANGES AS INDICATED BY THE FOLLOWING REVISION NUMBER 0.

GENERAL NOTES

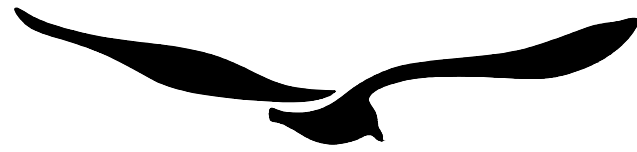
1. REFER TO DRAWING BES-WRK-01 AND BES-WRK-02 FOR REQUIRED LOCATIONS OF ASSEMBLY DETAILS.

REFERENCE DRAWINGS:  
BES-COV-01 - COVER SHEET  
BES-LOC-01 - LOCATION MAPS  
BES-WRK-01&02 - WORK PLAN

ISSUED  
FOR CONSTRUCTION

| NO | DATE | DESCRIPTION | DSO | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY  
S E R V I C E S  
BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
DISTRIBUTION UNDERBUILD DETAILS

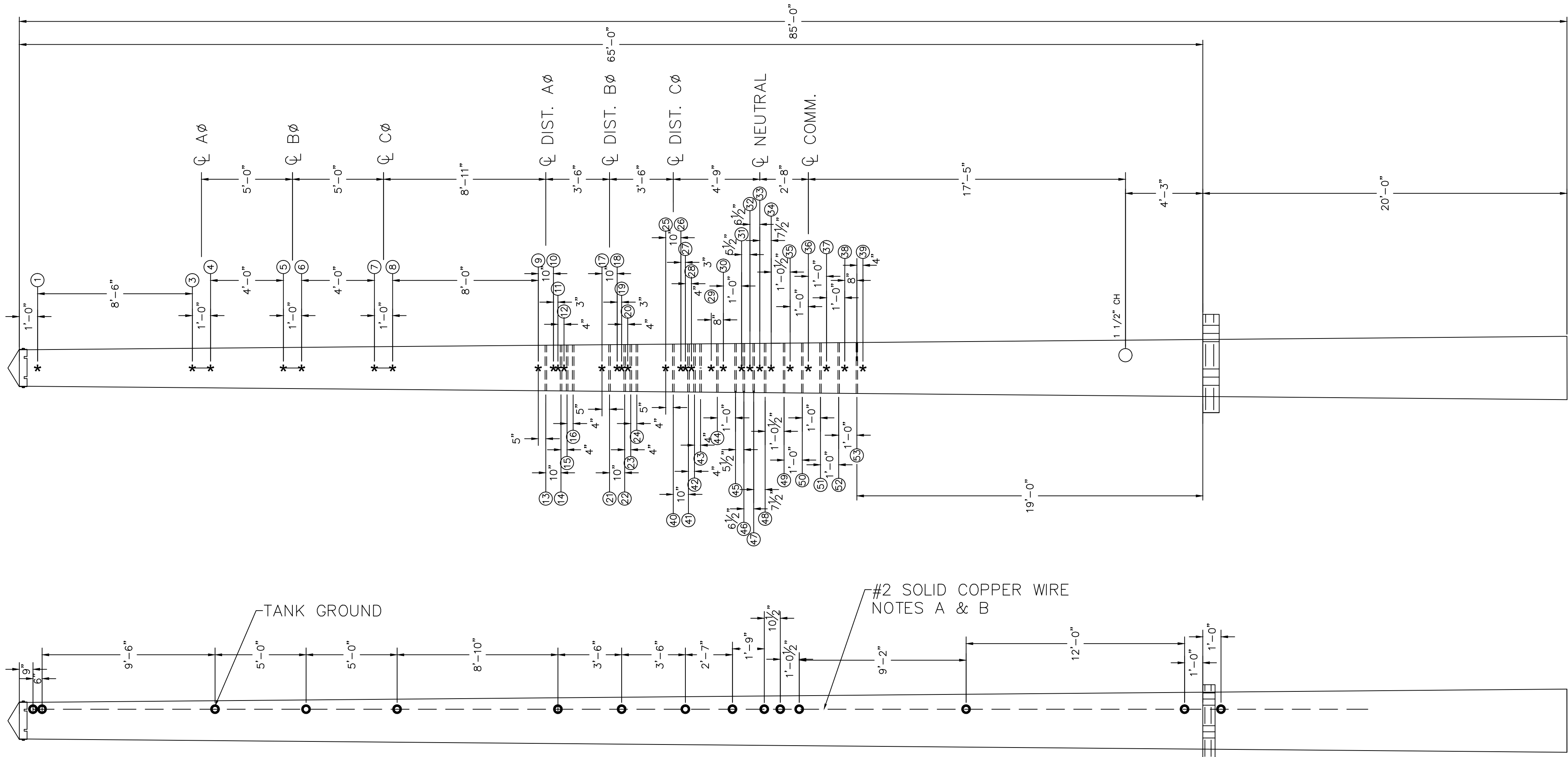
DESIGNED DMT CHECKED AJK SCALE AS NOTED  
DATE 10/13/23 ENGINEER cam  
WBS/SO APPROVED AJK

BES-UDB-02

- R0



STRUCTURE 803-16



BY MANUFACTURER

- A. CONNECT #2 SOLID GROUND WIRE TO STRAND WITH COMP CONNECTOR.

B. #2 SOLID GROUND WIRE ALSO TO BE CONNECTED TO INSERT PLATES.

C. PROVIDE CONE AT POLE TOP. IF SHIPPED LOOSE, PROVIDE MEANS OF ATTACHMENT AND ATTACHMENT INSTRUCTION.
1. POLE SHALL BE SUPPLIED IN CONFORMANCE WITH THE SPECIFICATION 33 71 16 13 – SPUN PRESTRESSED CONCRETE STRUCTURES.

2. ALL HOLES ARE FOR 7/8" THROUGH-BOLT UNLESS NOTED.

3. TANK GROUND LOCATIONS ARE AS NOTED FROM TIP.

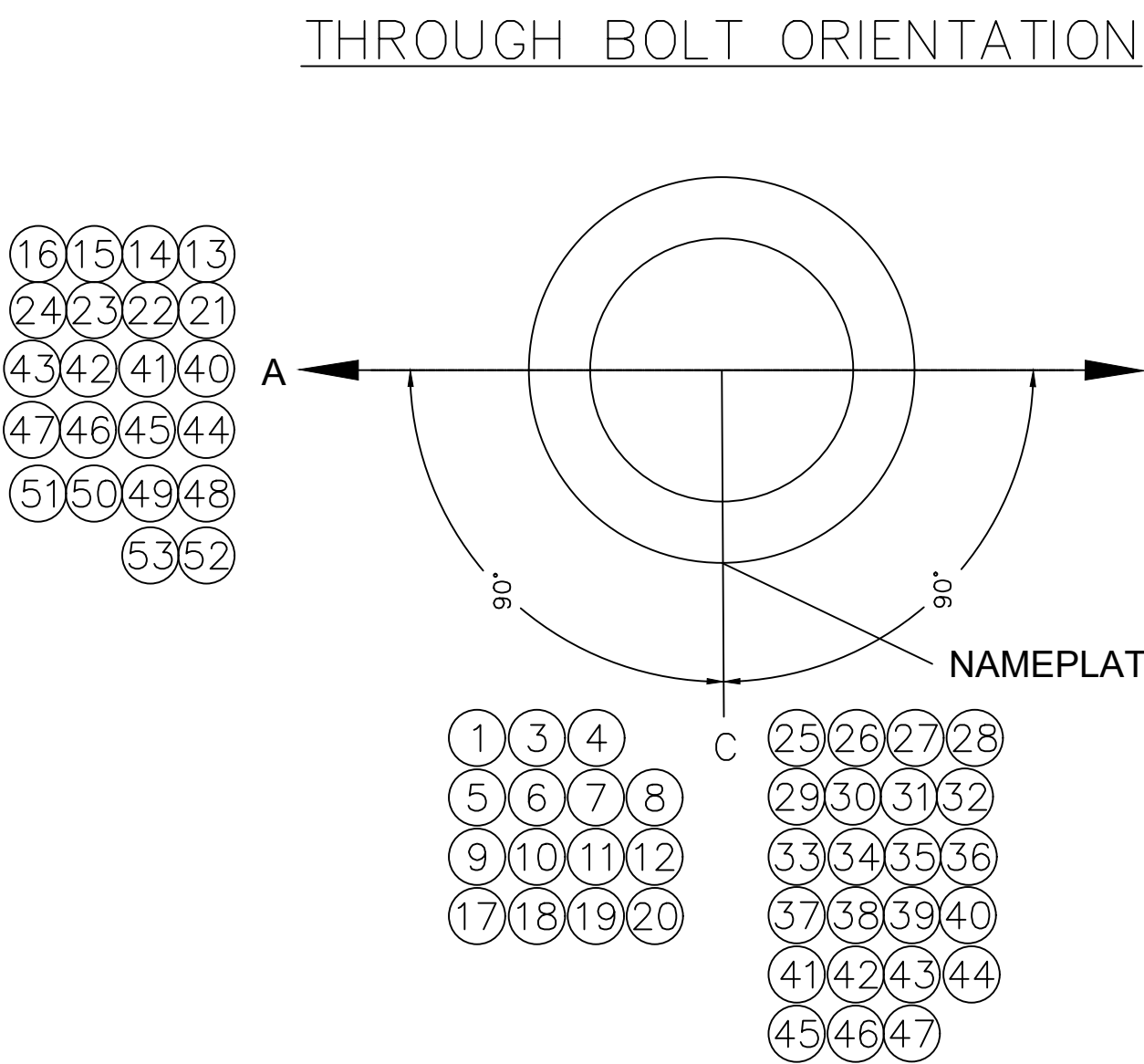
4. PROVIDE VENT HOLES APPROX 10' FROM TIP & 5' AGL

5. NAME PLATE LOCATION IS 5' A.G.L. AT C-PLANE.

6. POLE TO HAVE A RISER SHROUD ATTACHED AT A LATER DATE. POLE MANUFACTURER TO PROVIDE INSTRUCTIONS FOR ACCEPTABLE ATTACHMENT TO THE POLE.

7. REQUESTED DELIVERY: SEE REP

8. POLE SHALL BE CAPABLE OF RESISTING A LATERAL LOAD OF 12 KIPS APPLIED 2' BELOW THE TIP



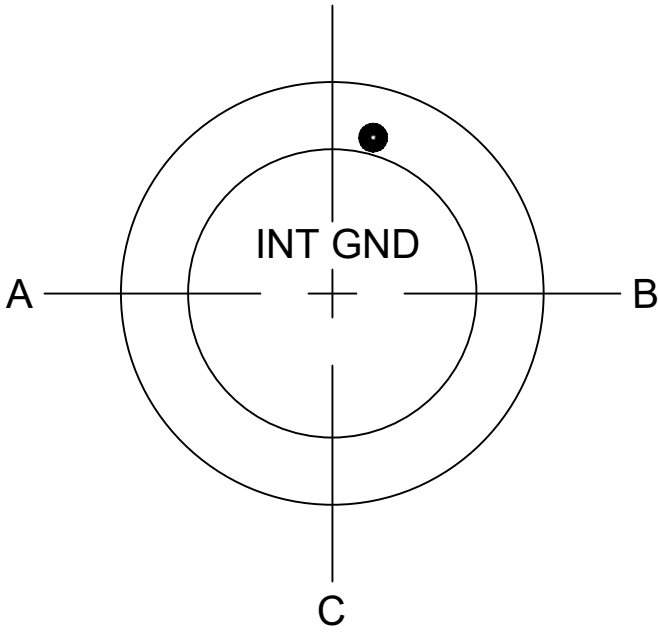
NOTES

PLANE C: POST INSULATOR

HOLE FOR 3/4" THROUGH-BOLT ①

HOLE FOR 5/8" THROUGH-BOLT

- ⑧⑨⑩⑪⑫⑬⑭⑮⑯
- ⑬⑭⑮⑯⑰⑱⑲⑳㉑㉒
- ㉓㉔㉕㉖㉗㉘㉙㉚㉛㉜
- ㉝㉞㉟㊱㊲㊳㊴㊵
- ㊶㊷㊸㊹㊺㊻㊼㊽㊾
- ㊿①②③④⑤⑥⑦



|  |                                                                                                                                   |  |                                                                                                                                     |          |                         |
|--|-----------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------|
|  |                                                                                                                                   |  |                                                                                                                                     |          |                         |
|  | THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ALEX JOSEPH KLADIVA ON THE DATE ADJACENT TO THE SEAL.                           |  | 0                                                                                                                                   | 10/13/23 | ISSUED FOR CONSTRUCTION |
|  | PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES. |  | REV                                                                                                                                 | DATE     | DESCRIPTION             |
|  | ALEX JOSEPH KLADIVA, PE#76262<br>2301 Maitland Center Pkwy, Maitland, FL 32751                                                    |  | <br>THE REGISTRANT OF THE NEWLY APPLIED SEAL ASSUMES RESPONSIBILITY FOR THE CHANGES AS INDICATED BY THE FOLLOWING REVISION NUMBER 0 |          |                         |

ISSUED FOR CONSTRUCTION

| NO        | DATE | DESCRIPTION | DSO | EGR | CHK | APD |
|-----------|------|-------------|-----|-----|-----|-----|
| REVISIONS |      |             |     |     |     |     |

BEACHES ENERGY SERVICES

BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
CONCRETE POLE DETAILS

|                      |                     |                   |
|----------------------|---------------------|-------------------|
| DESIGNED <u>DMT</u>  | CHECKED <u>AJK</u>  | SCALE <u>NONE</u> |
| DATE <u>10/13/23</u> | ENGINEER <u>CAM</u> |                   |
| WBS/SO               | APPROVED <u>AJK</u> |                   |

BES-CPB-01

- R0

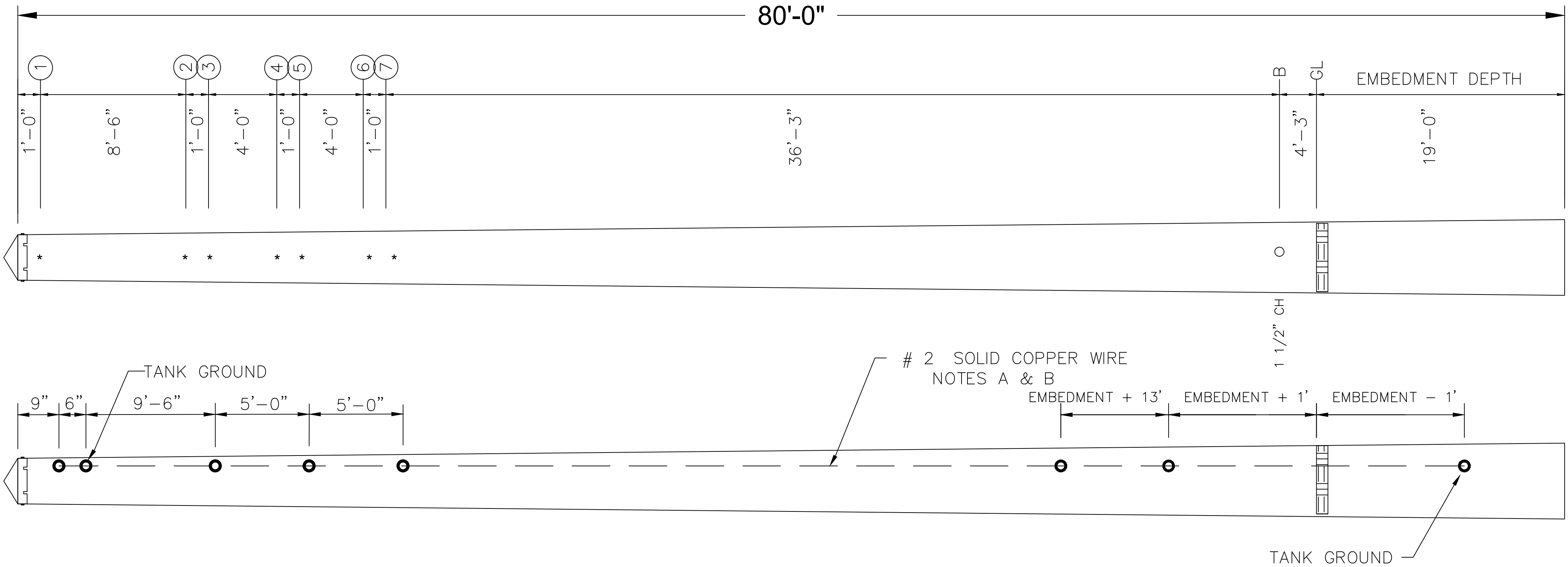


STRUCTURE 804-8

A. TANK GROUND LOCATIONS ARE AS NOTED FROM TIP.

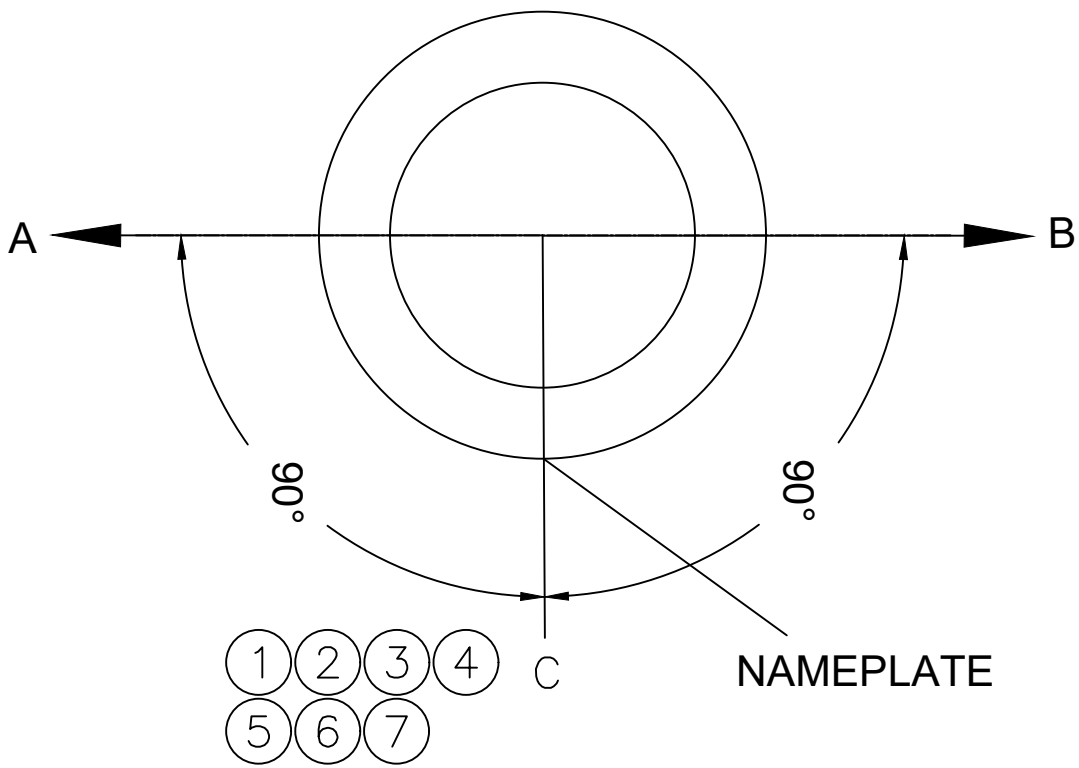
BY MANUFACTURER

- A. CONNECT #2 SOLID GROUND WIRE TO STRAND WITH COMP CONNECTOR.
- B. #2 SOLID GROUND WIRE ALSO TO BE CONNECTED TO INSERT PLATES.
- C. PROVIDE CONE AT POLE TOP. IF SHIPPED LOOSE, PROVIDE MEANS OF ATTACHMENT AND ATTACHMENT INSTRUCTION.



1. POLE SHALL BE SUPPLIED IN CONFORMANCE WITH THE SPECIFICATION 33 71 16 13 - SPUN PRESTRESSED CONCRETE STRUCTURES.
2. ALL HOLES ARE FOR 7/8" THROUGH-BOLT UNLESS NOTED.
3. PROVIDE VENT HOLES APPROX 10' FROM TIP & 5' AGL
4. NAME PLATE LOCATION IS 5' A.G.L. AT C-PLANE.
5. REQUESTED DELIVERY: SEE RFP
6. POLE SHALL BE CAPABLE OF RESISTING A LATERAL LOAD OF 12 KIPS APPLIED 2' BELOW THE TIP

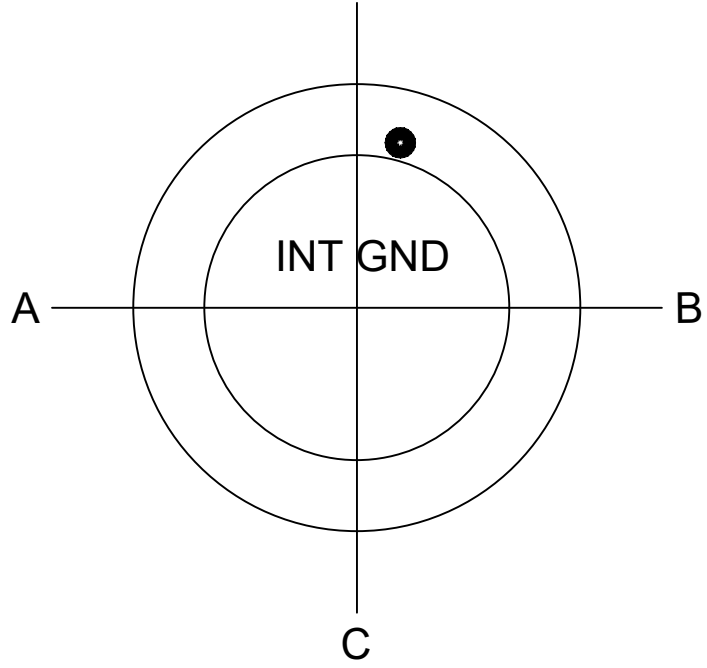
THROUGH BOLT ORIENTATION



① HOLE FOR 3/4" THROUGH-BOLT

NOTES

PLANE C: POST INSULATOR

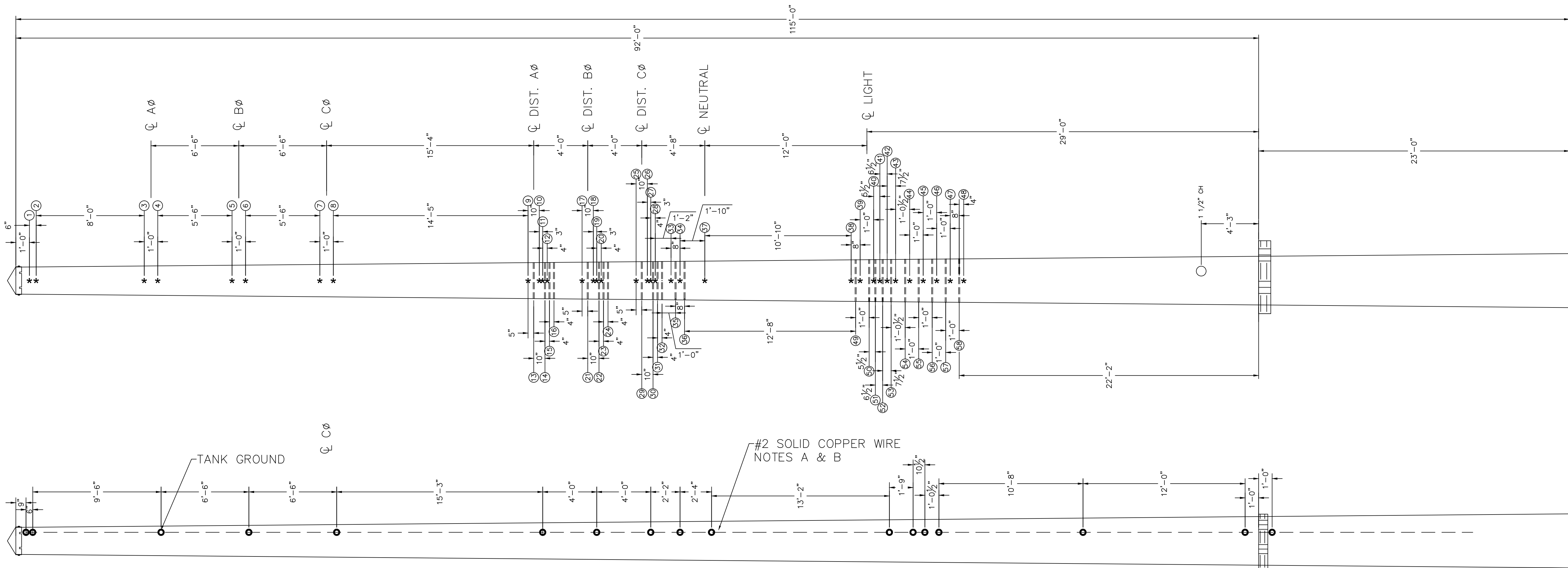


|                                                                                |                                                                                                         |  |  |  |  |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--|--|--|--|
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|                                                                                |                                                                                                         |  |  |  |  |
|                                                                                |                                                                                                         |  |  |  |  |
|                                                                                | THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY ALEX JOSEPH KLADIVA ON THE DATE ADJACENT TO THE SEAL. |  |  |  |  |
|                                                                                |                                                                                                         |  |  |  |  |
|                                                                                |                                                                                                         |  |  |  |  |
|                                                                                |                                                                                                         |  |  |  |  |
| ALEX JOSEPH KLADIVA, PE#76262<br>2301 Maitland Center Pkwy, Maitland, FL 32751 |                                                                                                         |  |  |  |  |
|                                                                                |                                                                                                         |  |  |  |  |
|                                                                                |                                                                                                         |  |  |  |  |
|                                                                                |                                                                                                         |  |  |  |  |

|                                                                                       |      |             |     |     |     |     |
|---------------------------------------------------------------------------------------|------|-------------|-----|-----|-----|-----|
| ISSUED<br>FOR CONSTRUCTION                                                            |      |             |     |     |     |     |
| NO                                                                                    | DATE | DESCRIPTION | DSO | EGR | CHK | APD |
| REVISIONS                                                                             |      |             |     |     |     |     |
|  |      |             |     |     |     |     |
| B E A C H E S   E N E R G Y<br>S E R V I C E S                                        |      |             |     |     |     |     |
| BEACHES ENERGY SERVICES<br>TRANSMISSION LINE REPAIRS - PHASE<br>CONCRETE POLE DETAILS |      |             |     |     |     |     |
| DESIGNED <u>DMT</u> CHECKED <u>AJK</u> SCALE <u>NONE</u>                              |      |             |     |     |     |     |
| DATE <u>10/13/23</u> ENGINEER <u>CAM</u>                                              |      |             |     |     |     |     |
| WBS/SO      APPROVED <u>AJK</u>                                                       |      |             |     |     |     |     |
| BES-CPB-02      - R0                                                                  |      |             |     |     |     |     |



STRUCTURE 802-3

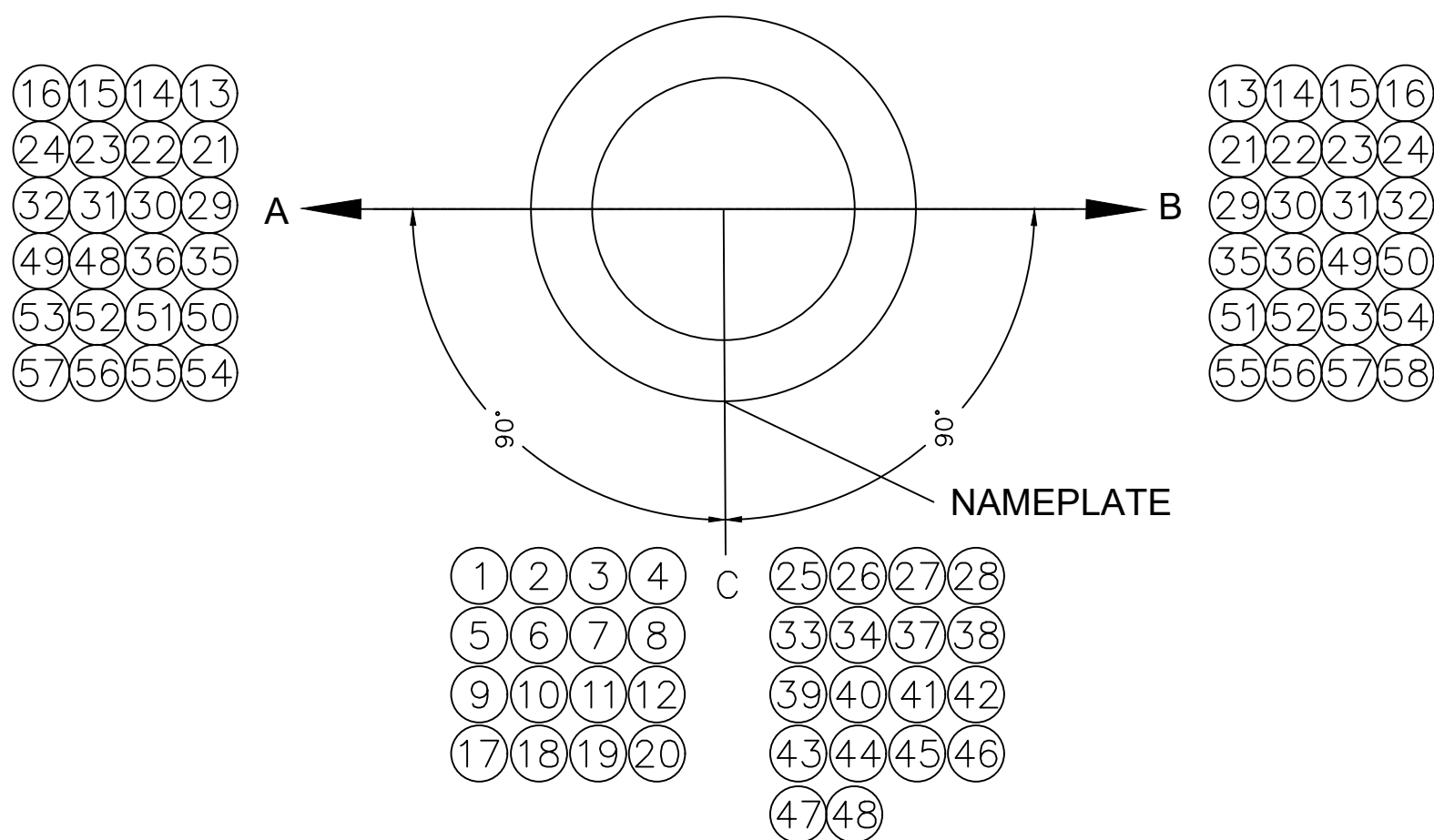


BY MANUFACTURER

- A. CONNECT #2 SOLID GROUND WIRE TO STRAND WITH COMP CONNECTOR.
- B. #2 SOLID GROUND WIRE ALSO TO BE CONNECTED TO INSERT PLATES.
- C. PROVIDE CONE AT POLE TOP. IF SHIPPED LOOSE, PROVIDE MEANS OF ATTACHMENT AND ATTACHMENT INSTRUCTION.

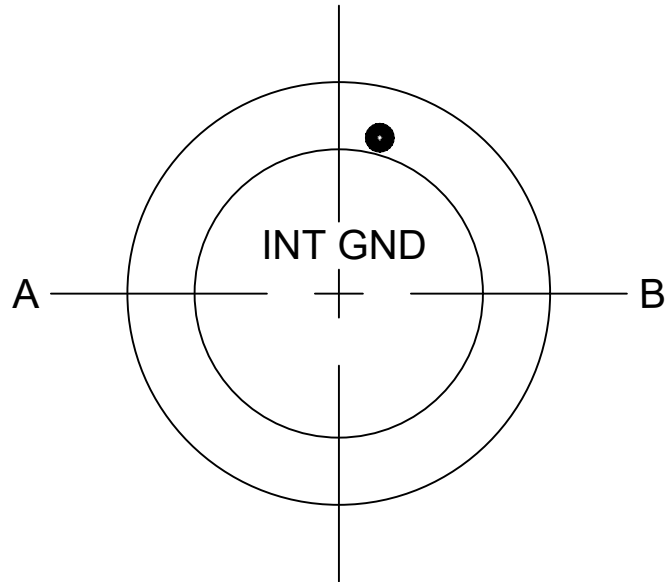
1. POLE SHALL BE SUPPLIED IN CONFORMANCE WITH THE SPECIFICATION 33 71 16 13 – SPUN PRESTRESSED CONCRETE STRUCTURES.
2. ALL HOLES ARE FOR 7/8” THROUGH-BOLT UNLESS NOTED.
3. TANK GROUND LOCATIONS ARE AS NOTED FROM TIP.
4. PROVIDE VENT HOLES APPROX 10’ FROM TIP & 5’ AGL
5. NAME PLATE LOCATION IS 5’ A.G.L. AT C-PLANE.
6. POLE TO HAVE A RISER SHROUD ATTACHED AT A LATER DATE. POLE MANUFACTURER TO PROVIDE INSTRUCTIONS FOR ACCEPTABLE ATTACHMENT TO THE POLE.
7. REQUESTED DELIVERY: SEE RFP
8. POLE SHALL BE CAPABLE OF RESISTING A LATERAL LOAD OF 12 KIPS APPLIED 2’ BELOW THE TIP

THROUGH BOLT ORIENTATION



HOLE FOR 5/8" THROUGH-BOLT

- 1 2 9 10 11 12 13 14 15 16  
13 14 15 16 17 18 19 20 21 22  
23 24 25 26 27 28 29 30 31 32  
33 34 35 36 37 38 39 40 41 42  
43 44 45 46 47 48 49  
50 51 52 53 54 55 56 57 58



NOTES

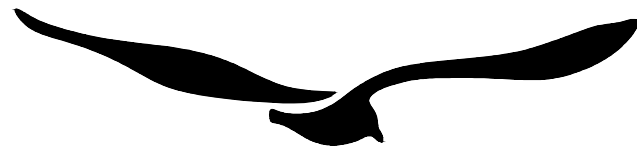
PLANE C: POST INSULATOR

|                                                                                |                                                                                                               |  |                                                                                                                                                                                                            |          |                         |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------|
|                                                                                |                          |  |                                                                                                                                                                                                            |          |                         |
|                                                                                | THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY<br>ALEX JOSEPH KLADIVA ON THE DATE<br>ADJACENT TO THE SEAL. |  | 0                                                                                                                                                                                                          | 10/13/23 | ISSUED FOR CONSTRUCTION |
|                                                                                |                                                                                                               |  | REV                                                                                                                                                                                                        | DATE     | DESCRIPTION             |
|                                                                                |                                                                                                               |  | <br>BURNS & MCDONNELL<br>ENGINEERING COMPANY, INC.<br>2301 MAITLAND CENTER PARKWAY<br>SUITE 400<br>MAITLAND, FL 32751 |          |                         |
| ALEX JOSEPH KLADIVA, PE#76262<br>2301 Maitland Center Pkwy, Maitland, FL 32751 |                                                                                                               |  |                                                                                                                                                                                                            |          |                         |

ISSUED FOR CONSTRUCTION

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS- PHASE 1  
CONCRETE POLE DETAILS

|                      |                     |                   |
|----------------------|---------------------|-------------------|
| DESIGNED <u>DMT</u>  | CHECKED <u>AJK</u>  | SCALE <u>NONE</u> |
| DATE <u>10/13/23</u> | ENGINEER <u>CAM</u> |                   |
| WBS/SO               | APPROVED <u>AJK</u> |                   |

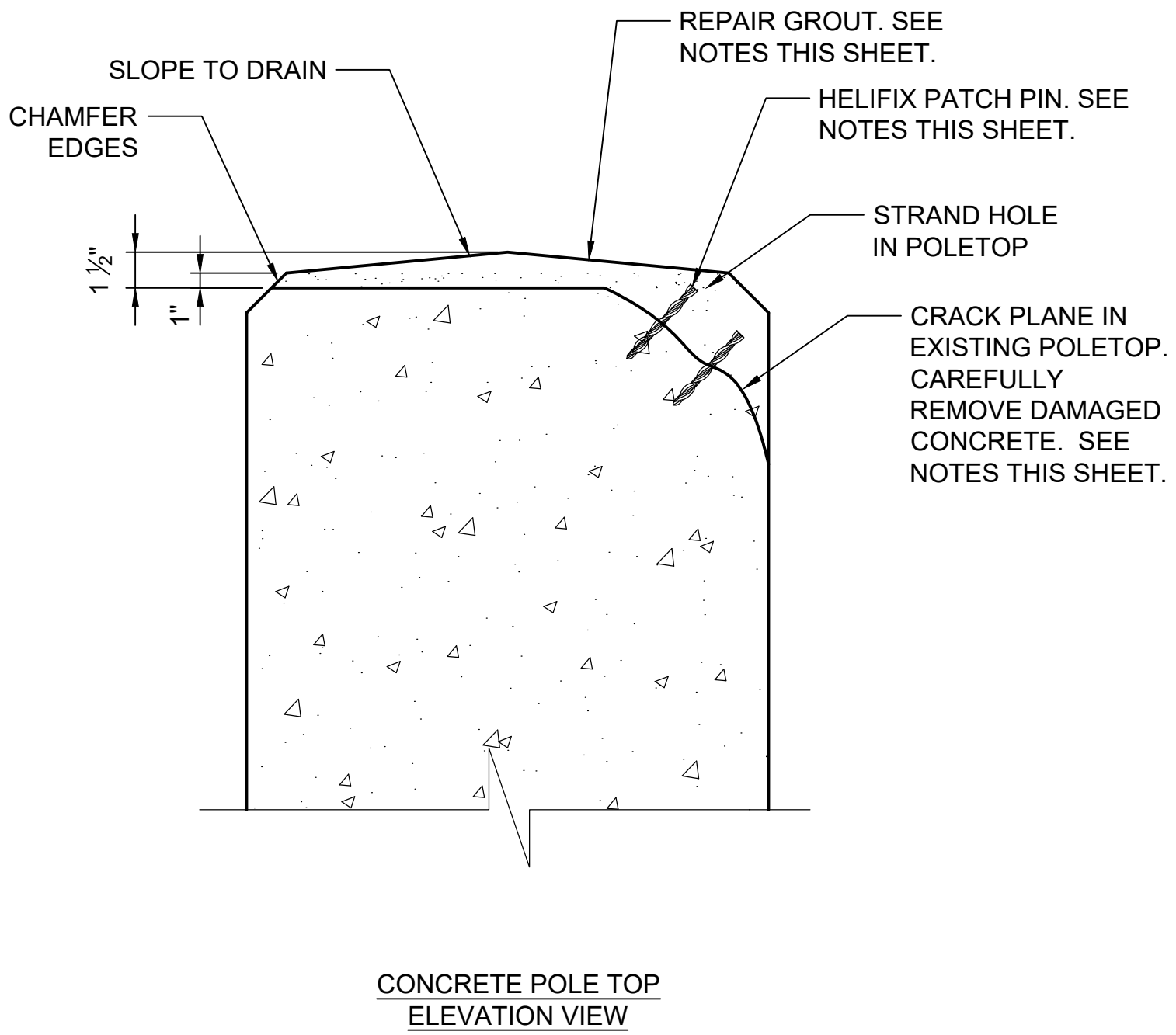
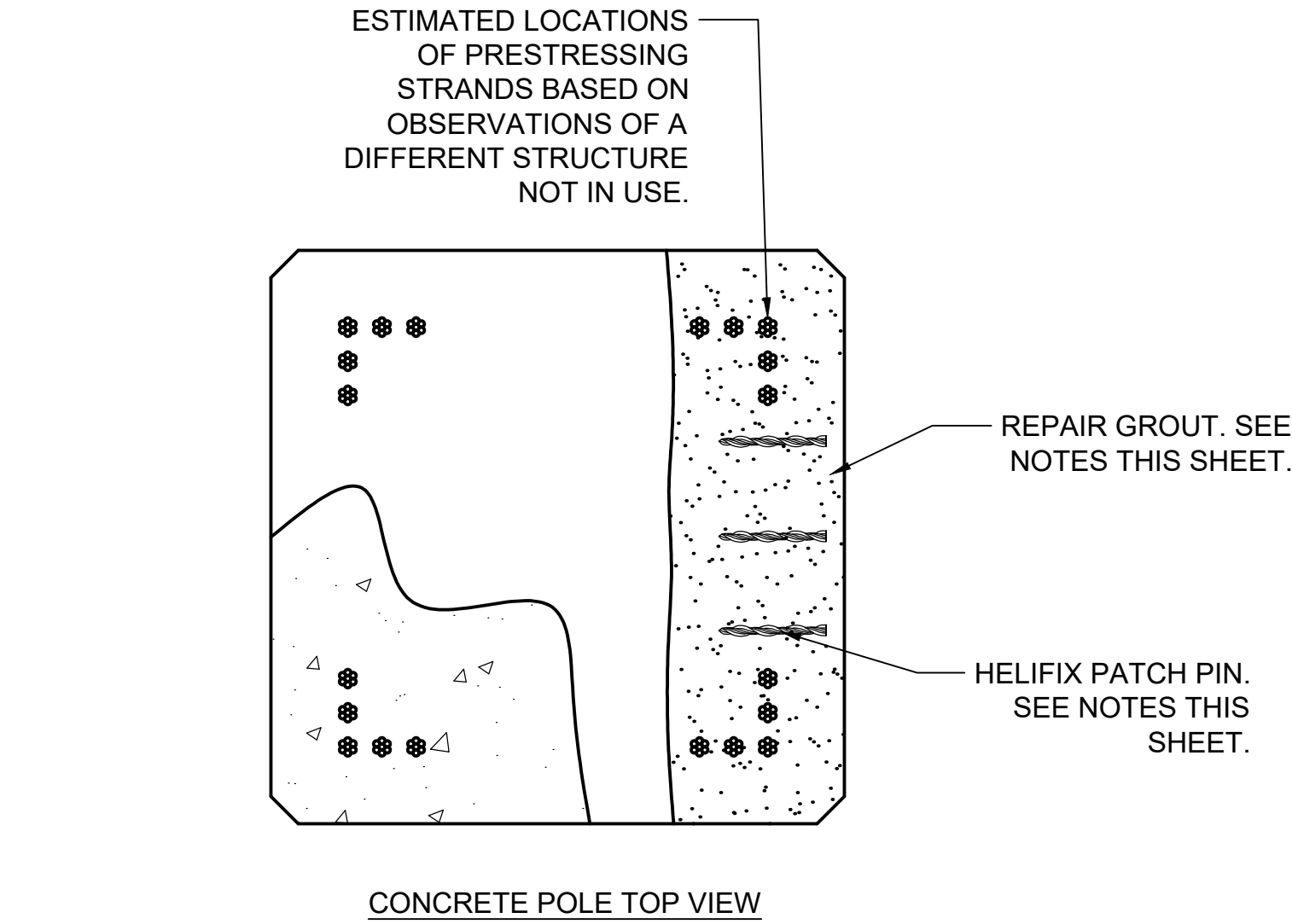
BES-CPB-03

- R0



NOTE: APPLY NEW GROUT PER NOTES THIS SHEET.

SUBCONTRACTOR TO MEASURE THE POLETOP WIDTH AND REPORT BACK TO ENGINEER.



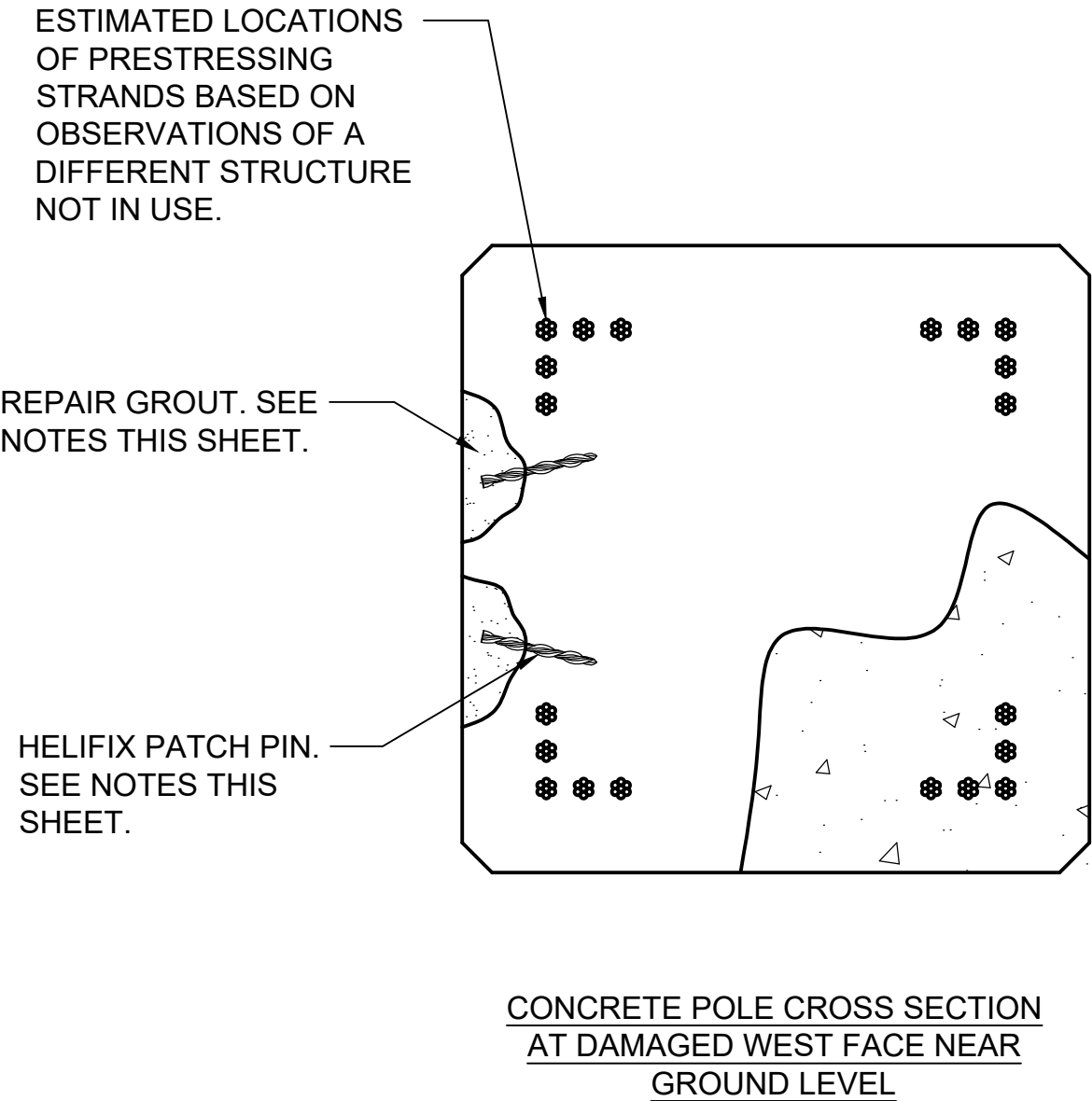
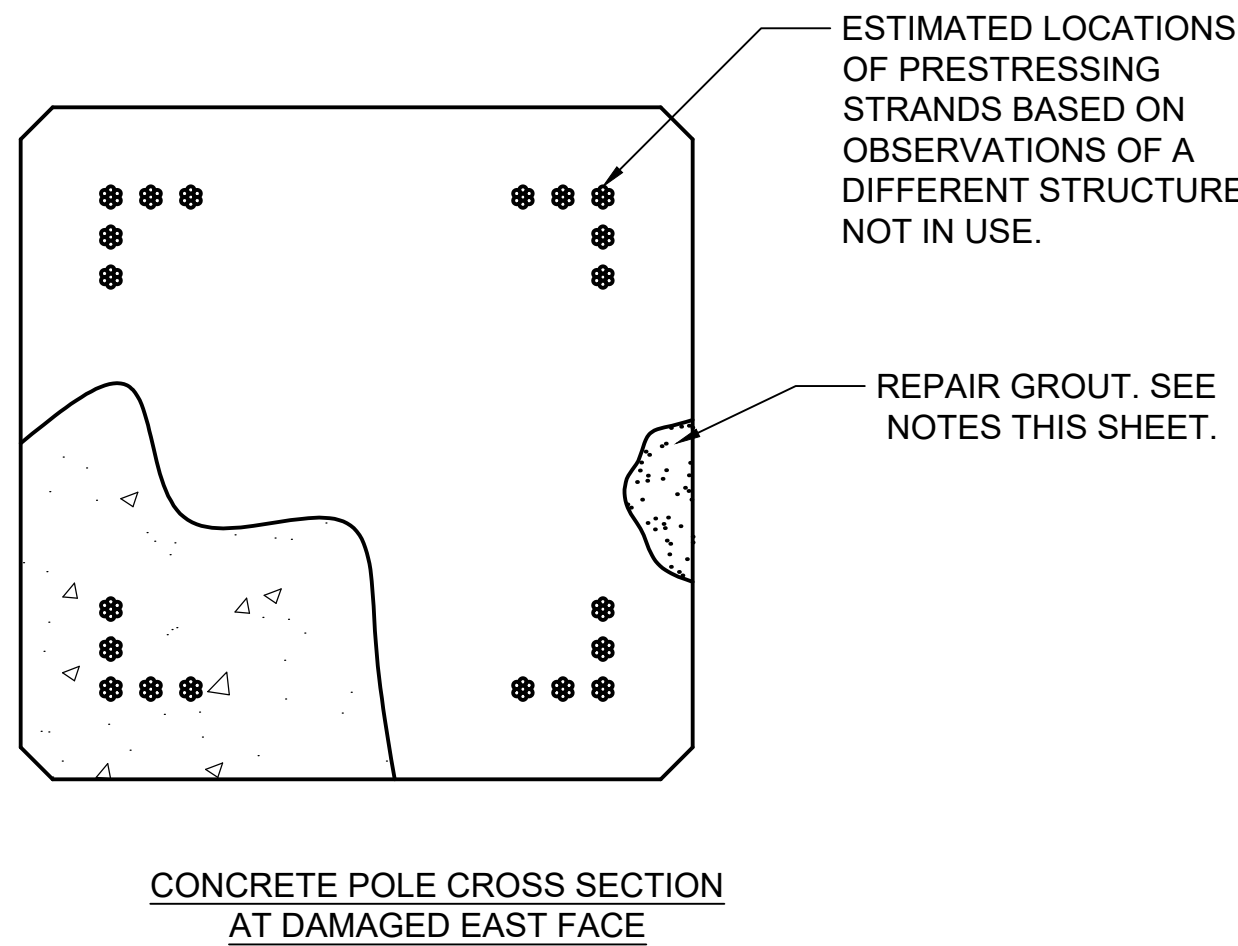
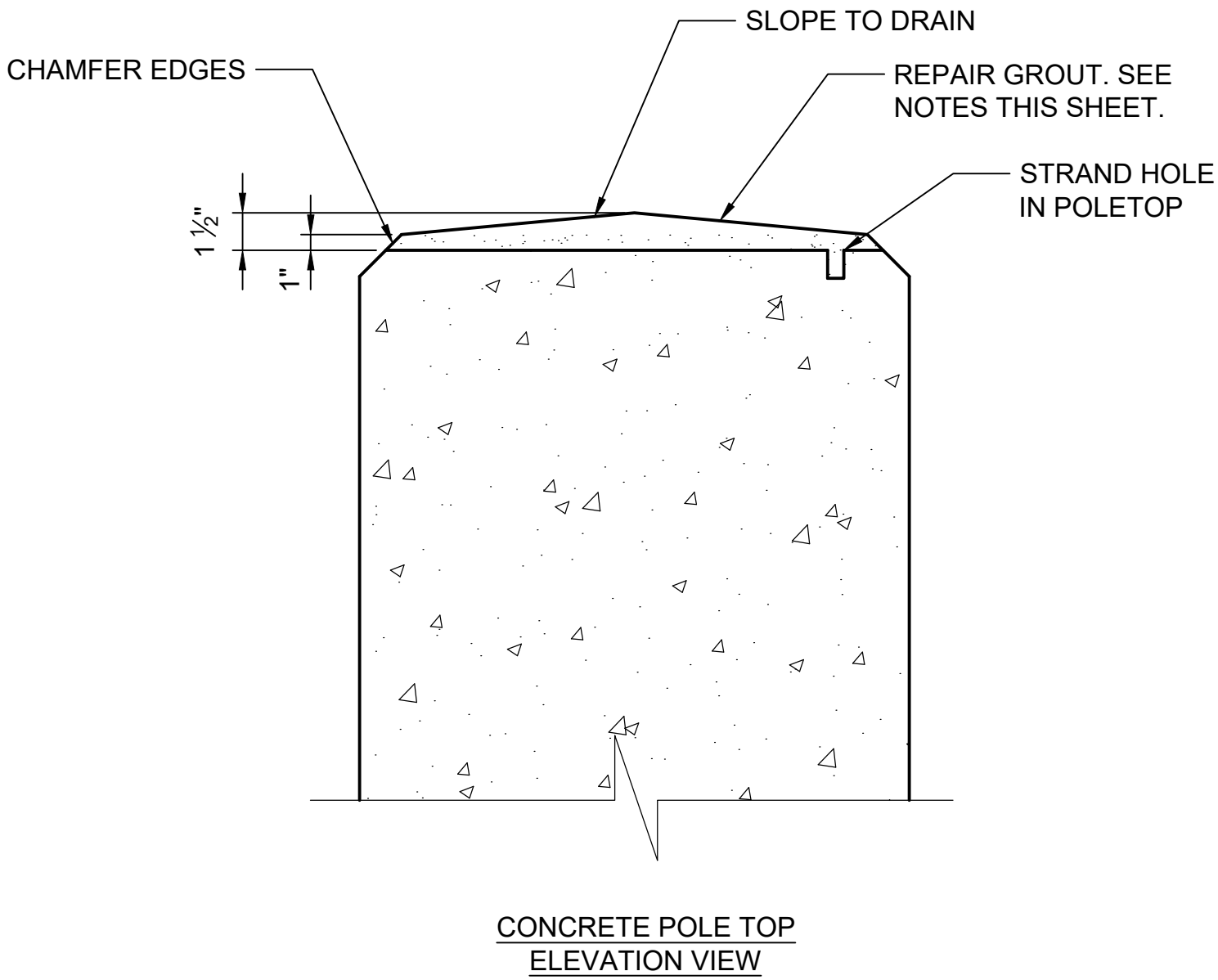
**DETAIL**

STRUCTURE 804-23 CONCRETE POLE DAMAGE REPAIR

**CPR-1**

NOTE: POLETOP GROUT OVER PRESTRESSING STRANDS HAS DETERIORATED. REMOVE REMAINDER OF GROUT PER NOTES THIS SHEET. APPLY NEW GROUT PER NOTES THIS SHEET.

SUBCONTRACTOR TO MEASURE THE POLETOP WIDTH AND REPORT BACK TO ENGINEER.



**DETAIL**

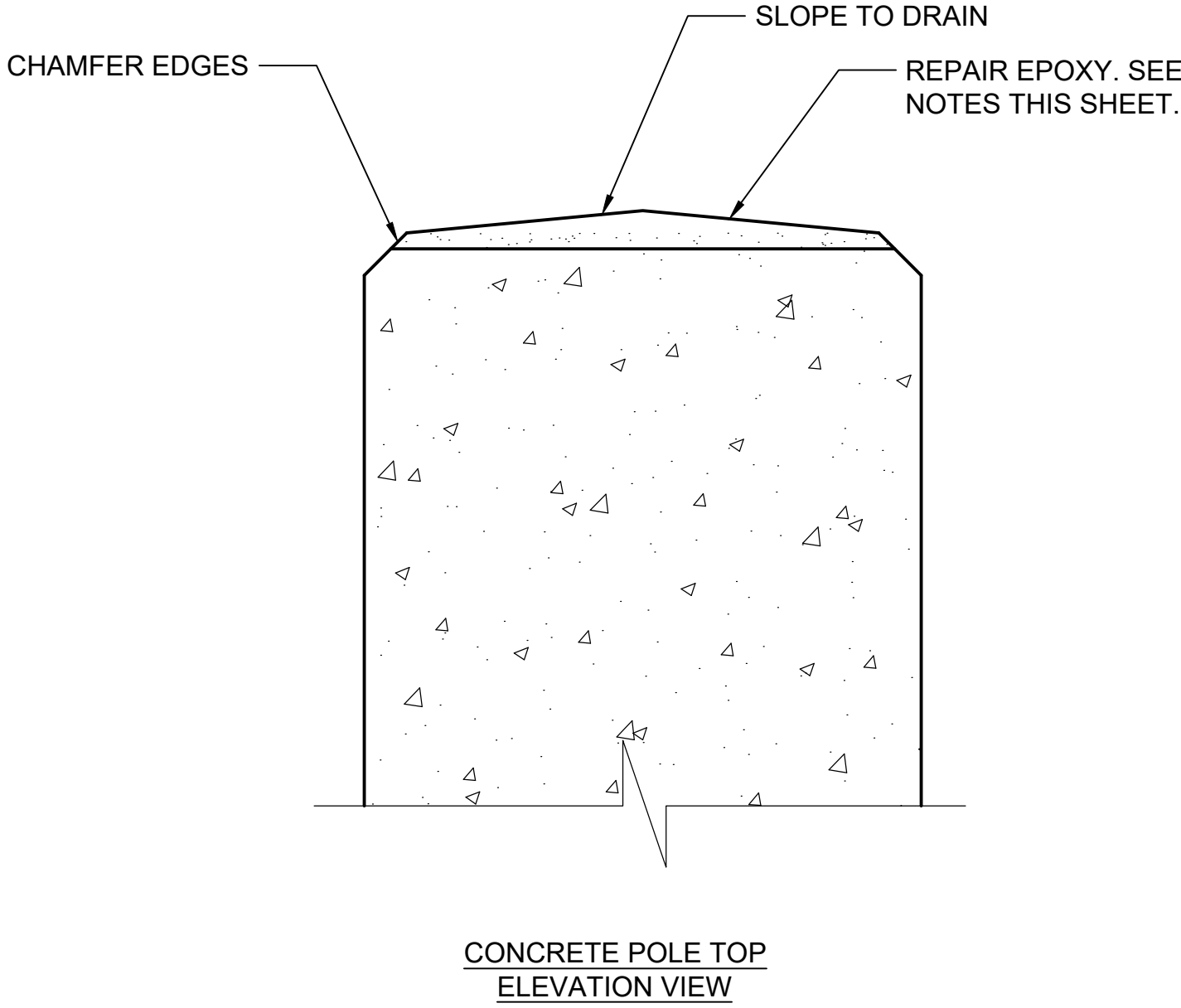
STRUCTURE 803-7 CONCRETE POLE DAMAGE REPAIR

**CPR-2**

NOTE: AT STRUCTURE 803-7, EXISTING STEEL ELEMENTS AT FACE OF PATCHING AT GROUND LEVEL ON WEST FACE APPEAR TO BE FOR AN ORIGINAL LIFTING APPARATUS. BURN BACK TO 1" BENEATH FINISHED CONCRETE SURFACE. INSTALL HELIFIX PATCH PINS ADJACENT TO EXISTING BURNED BACK ELEMENTS.

NOTE: POLETOP GROUT OVER PRESTRESSING STRANDS HAS DETERIORATED. REMOVE REMAINDER OF GROUT PER NOTES THIS SHEET. APPLY REPAIR EPOXY PER NOTES THIS SHEET.

SUBCONTRACTOR TO MEASURE THE POLETOP WIDTH AND REPORT BACK TO ENGINEER.



**DETAIL**

EPOXY SQUARE CONCRETE POLE TOP

(STRUCTURES 803-40, 802-8, 802-18, 805-110, 801-1)

**CPR-3**

- CONSTRUCTION NOTES:
- REMOVE EXISTING PATCH MATERIALS AND ALL LOOSE CONCRETE FROM THE AREA TO BE PATCHED. HAMMER TAP THE AREA TO ESTABLISH IF ANY HOLLOWES ARE PRESENT AND BREAK BACK TO SOUND CONCRETE.
  - DO NOT CHIP AROUND PRESTRESSING STRAND THAT IS EXPOSED ANYWHERE AWAY FROM THE IMMEDIATE END OF THE MEMBER. CONSULT THE ENGINEER WHEN REPAIRING AN AREA IN WHICH PRESTRESSING STRANDS HAVE BEEN EXPOSED. WHEN REPAIR DICTATES THAT CHIPPING OCCUR AROUND EXPOSED STRANDS, THE CONTRACTOR MUST AVOID STRIKING THE STRANDS DIRECTLY OR OTHERWISE CAUSING DAMAGE THAT COULD LEAD TO WIRE OR STRAND BREAKS.
  - REMOVE ANY DUST AND DEBRIS WITH A STIFF WIRE BRUSH. CLEAN AND TREAT ANY EXPOSED EMBEDDED STEEL REBAR WITH A SUITABLE EPOXY COATING.
  - HELIFIX PATCH PINS
    - DRILL PILOT HOLES, VERTICALLY OR AT AN ANGLE OF UP TO 45°, TO THE CORRECT DIAMETER AND SPACING INTO THE CONCRETE (USING AN SDS ROTARY HAMMER DRILL).
    - FIT THE PATCHPIN DRILL SLEEVE DRIVER OVER THE DRILL BIT AND INSERT THE PATCHPIN INTO THE TOOL. INSTALL THE PATCHPIN INTO THE PILOT HOLE WITH THE SDS ROTARY HAMMER DRILL SET TO HAMMER ONLY. ENSURE THAT THE OUTER END OF THE PIN WILL BE BELOW THE FACE OF THE CONCRETE PATCH - THE PIN CAN BE BENT, IF REQUIRED.
  - REPAIR MORTAR
    - USE SIKATOP 123 PLUS REPAIR MORTAR WHEN REPAIR DEPTH IS 3" OR LESS. IF REPAIR DEPTH EXCEEDS 3", CONTACT ENGINEER.
    - APPLY SIKA ARMATEC 110 TO CONCRETE PRIOR TO APPLICATION OF SIKATOP 123 PLUS.
    - INSTALL PER MANUFACTURER RECOMMENDATIONS.
    - CURING IS REQUIRED. CURE AS PER ACI RECOMMENDATIONS. MOIST CURE WITH WET BURLAP AND POLYETHYLENE. A FINE MIST OF WATER. MOIST CURING SHOULD COMMENCE IMMEDIATELY AFTER FINISHING. PROTECT NEWLY APPLIED MATERIAL FROM DIRECT SUN LIGHT, WIND, RAIN AND FROST.
  - REPAIR EPOXY
    - USE SIKADUR 32 EPOXY.
    - INSTALL PER MANUFACTURER RECOMMENDATIONS.
  - REPAIR SPECIFICATIONS
    - MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN CONCRETE INSTITUTE PUBLICATIONS:
      - ACI 117 - "SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS"
      - ACI 301 - "SPECIFICATIONS FOR STRUCTURAL CONCRETE"
      - ACI 304 - "GUIDE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE"
      - ACI 305 - "HOT WEATHER CONCRETING"
      - ACI 306 - "COLD WEATHER CONCRETING"
      - ACI 308.1 - "GUIDE TO CURING CONCRETE"
      - ACI 311 - "ACI MANUAL OF CONCRETE INSPECTION (SP-2)"
      - ACI 318 - "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"
      - ACI 347 - "GUIDE TO FORMWORK FOR CONCRETE"

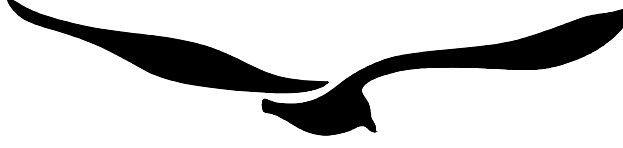
REFERENCE DRAWINGS:

BES-COV-01 - COVER SHEET

BES-WRK-01&02 - WORK PLAN

**ISSUED  
FOR CONSTRUCTION**

| NO        | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|-----------|------|-------------|-----|-----|-----|-----|
| REVISIONS |      |             |     |     |     |     |



BEACHES ENERGY  
SERVICES

BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
CONCRETE POLE REPAIR DETAILS

DESIGNED DMT CHECKED AJK SCALE NONE

DATE 10/13/23 ENGINEER CAM

WBS/SO \_\_\_\_\_ APPROVED AJK

BES-CPR-01 - R0

**BURNS  
McDONNELL**

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ADJACENT TO THE SEAL.

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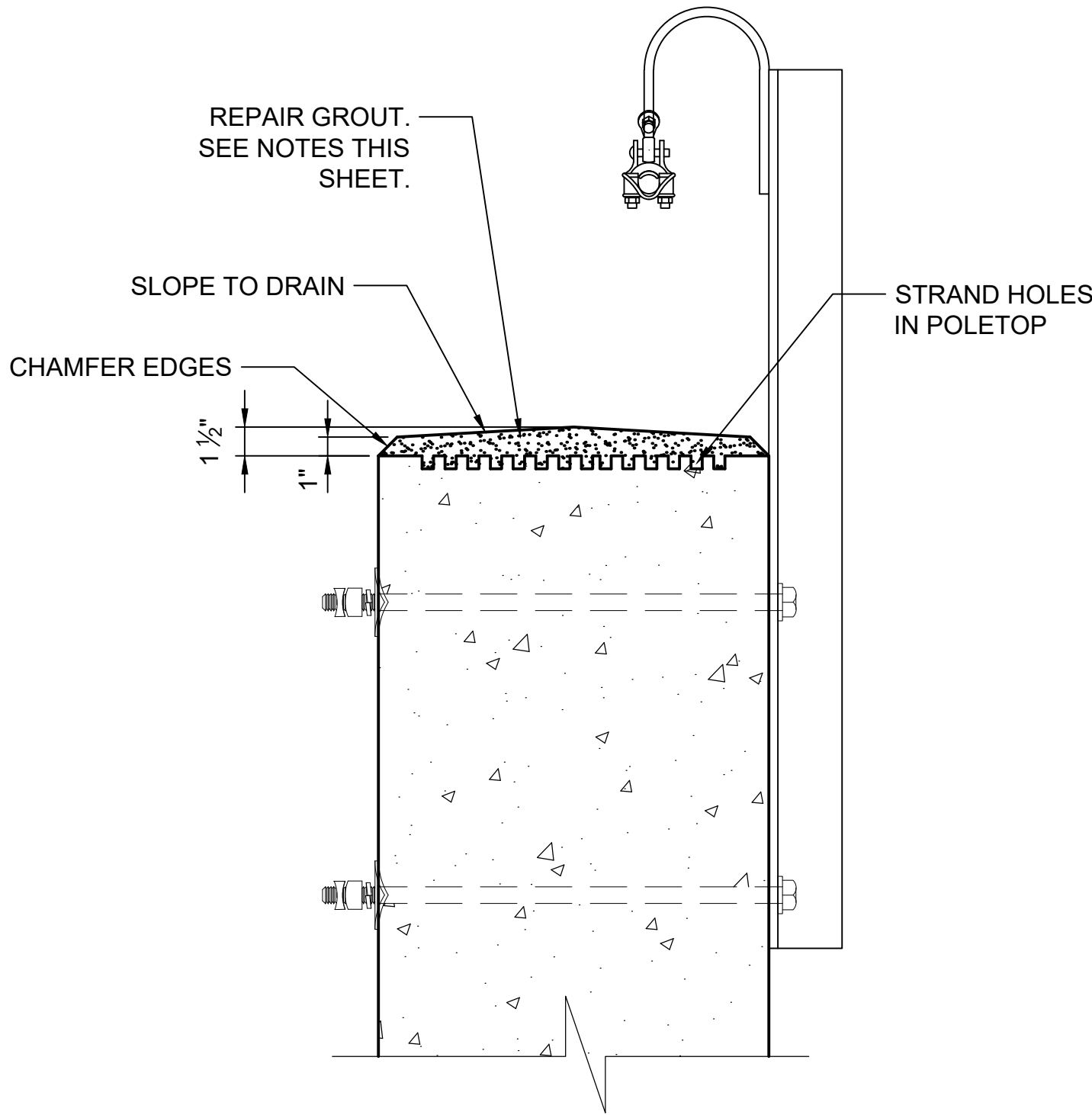
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McDONNELL**  
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ENGINEERING COMPANY, INC.  
2301 MAITLAND CENTER PARKWAY  
SUITE 400  
MAITLAND, FL 32751

THE REGISTRANT OF THE NEWLY APPLIED  
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CHANGES AS INDICATED BY THE FOLLOWING  
REVISION NUMBER 0



NOTE: AT STRUCTURE 805J-136, POLETOP GROUT OVER PRESTRESSING STRANDS HAS DETERIORATED. REMOVE REMAINDER OF GROUT PER NOTES THIS SHEET. APPLY NEW GROUT PER NOTES THIS SHEET.

SUBCONTRACTOR TO MEASURE THE POLETOP DIAMETER AND THE POLE WALL THICKNESS AND REPORT BACK TO ENGINEER.



CONCRETE POLE TOP  
ELEVATION VIEW

DETAIL

STRUCTURE 805J-136 POLETOP  
GROUT



CONSTRUCTION NOTES:

- REMOVE EXISTING PATCH MATERIALS AND ALL LOOSE CONCRETE FROM THE AREA TO BE PATCHED. HAMMER TAP THE AREA TO ESTABLISH IF ANY HOLLOWES ARE PRESENT AND BREAK BACK TO SOUND CONCRETE.
- DO NOT CHIP AROUND PRESTRESSING STRAND THAT IS EXPOSED ANYWHERE AWAY FROM THE IMMEDIATE END OF THE MEMBER. CONSULT THE ENGINEER WHEN REPAIRING AN AREA IN WHICH PRESTRESSING STRANDS HAVE BEEN EXPOSED. WHEN REPAIR DICTATES THAT CHIPPING OCCUR AROUND EXPOSED STRANDS, THE CONTRACTOR MUST AVOID STRIKING THE STRANDS DIRECTLY OR OTHERWISE CAUSING DAMAGE THAT COULD LEAD TO WIRE OR STRAND BREAKS.
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  - APPLY SIKA ARMATEC 110 TO CONCRETE PRIOR TO APPLICATION OF SIKATOP 123 PLUS.
  - INSTALL PER MANUFACTURER RECOMMENDATIONS.
  - CURING IS REQUIRED. CURE AS PER ACI RECOMMENDATIONS. MOIST CURE WITH WET BURLAP AND POLYETHYLENE, A FINE MIST OF WATER. MOIST CURING SHOULD COMMENCE IMMEDIATELY AFTER FINISHING. PROTECT NEWLY APPLIED MATERIAL FROM DIRECT SUN LIGHT, WIND, RAIN AND FROST.
- MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN CONCRETE INSTITUTE PUBLICATIONS:
  - ACI 117 - "SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS"
  - ACI 301 - "SPECIFICATIONS FOR STRUCTURAL CONCRETE"
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  - ACI 318 - "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"
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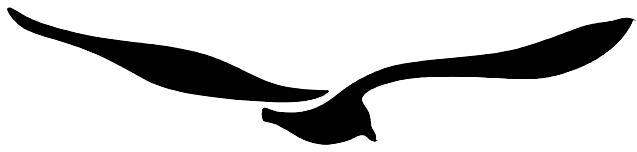
REFERENCE DRAWINGS:

REFERENCE DRAWINGS:  
BES-COV-01 - COVER SHEET  
BES-WRK-01&02 - WORK PLAN  
BES-CPR-01 - CONCRETE POLE REPAIR DETAILS

ISSUED  
FOR CONSTRUCTION

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY  
SERVICES

BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
CONCRETE POLE REPAIR DETAILS

DESIGNED DMT CHECKED AJK SCALE NONE  
DATE 10/13/23 ENGINEER CAM  
WBS/SO \_\_\_\_\_ APPROVED AJK

BES-CPR-02

- R0



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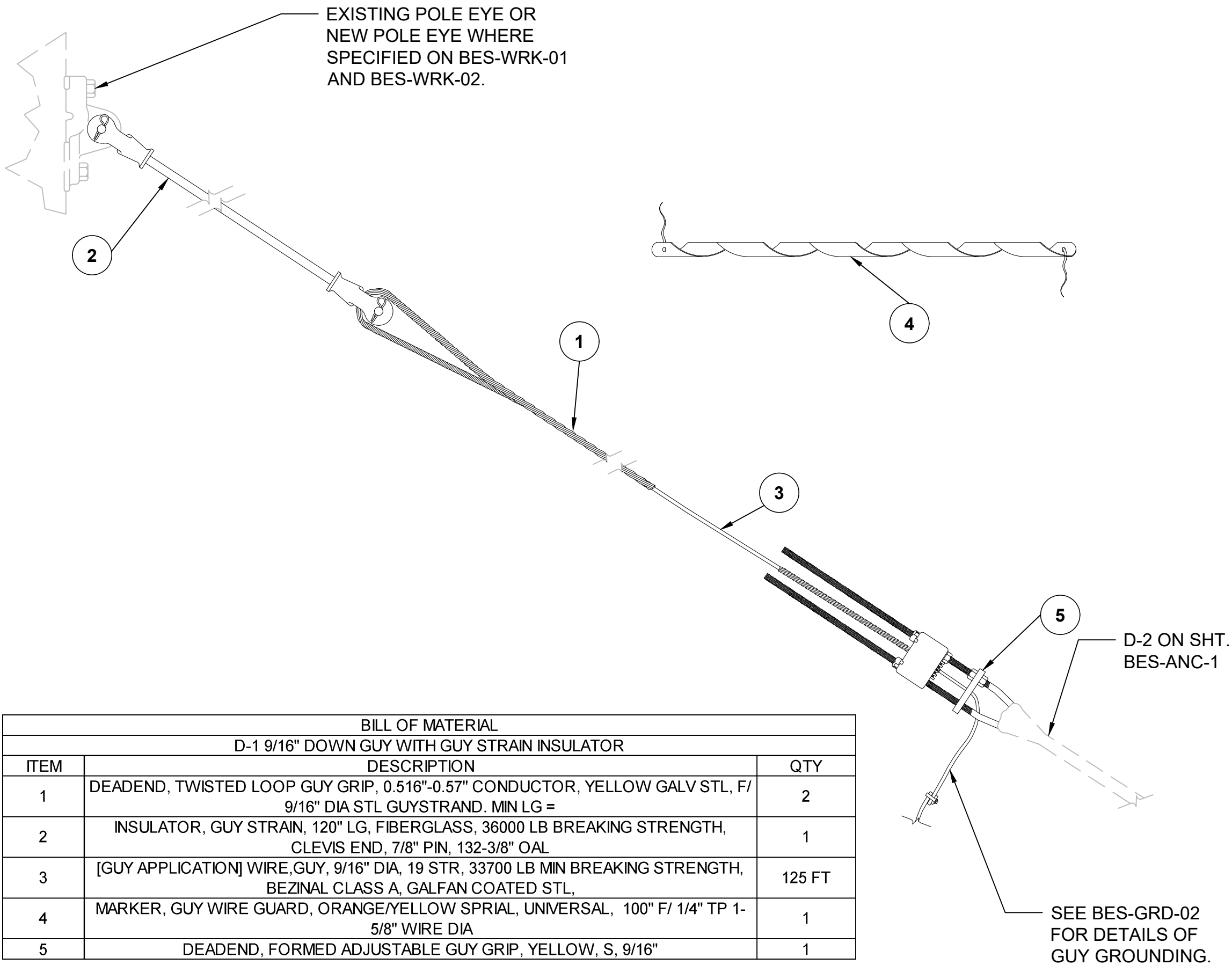
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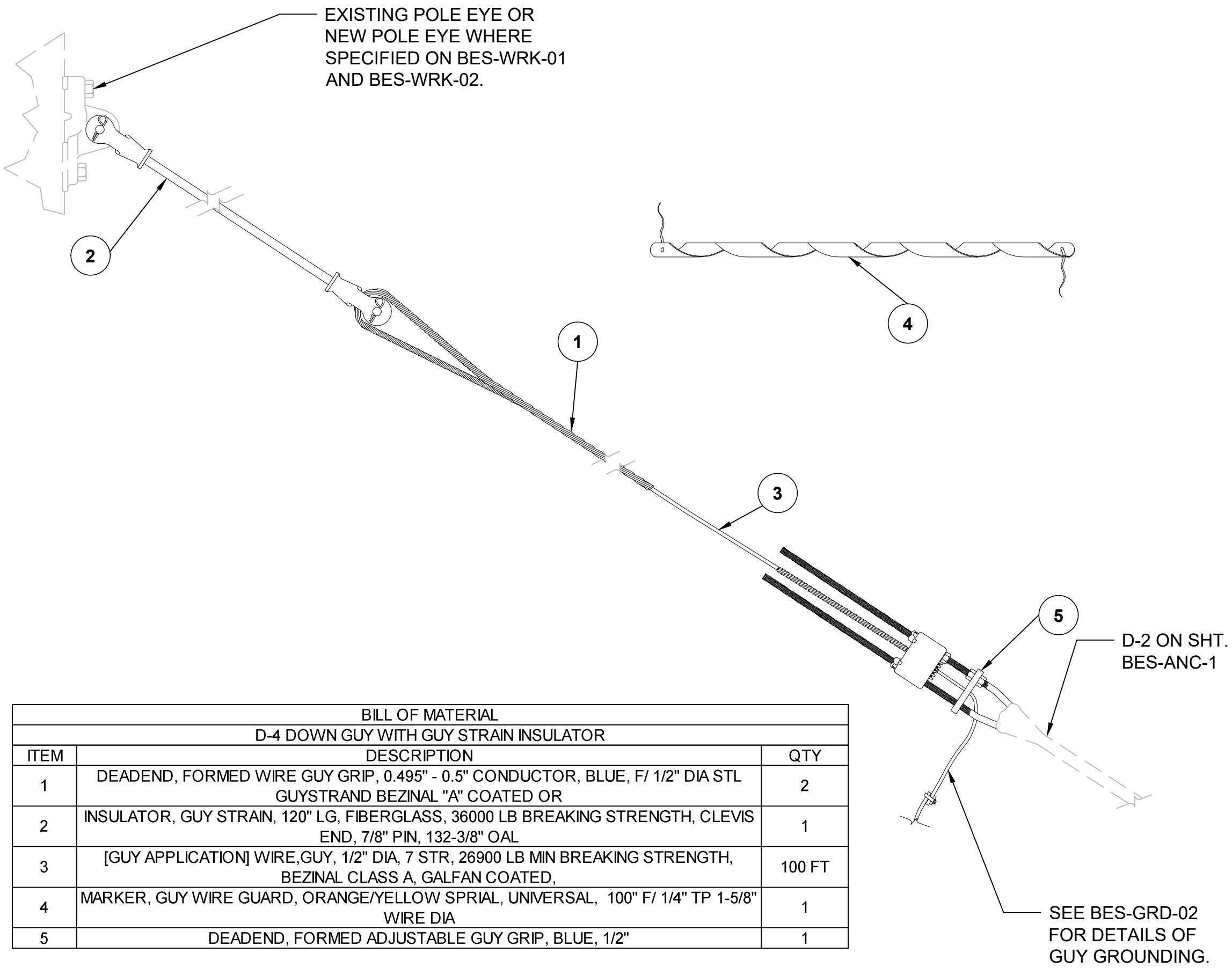
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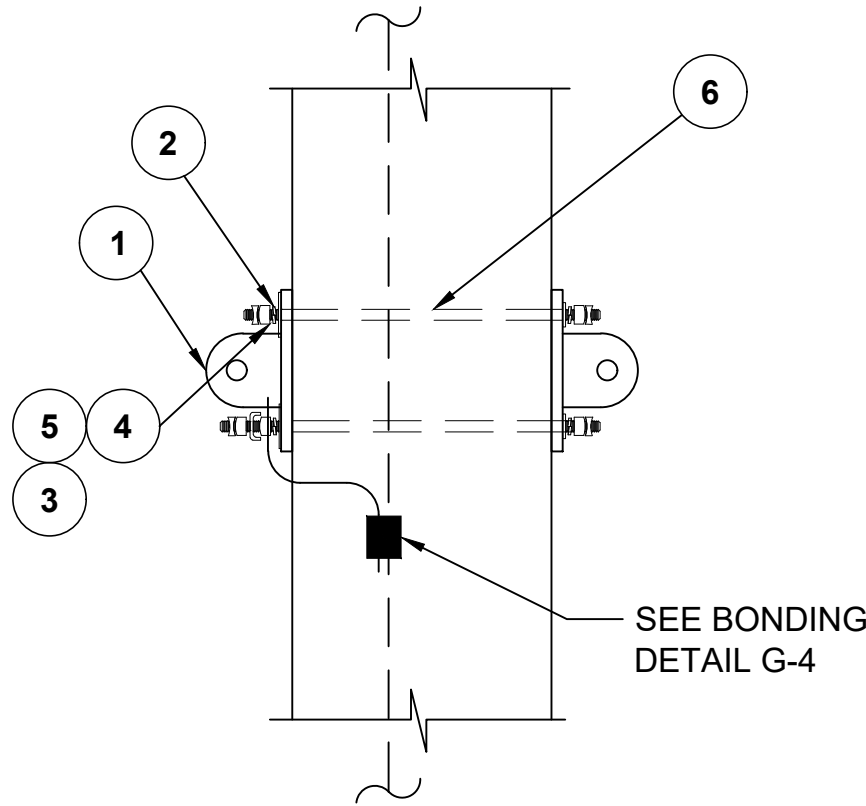




DETAIL  
9/16" GUY WIRE WITH GUY STRAIN INSULATOR



DETAIL  
1/2" GUY WIRE WITH GUY STRAIN INSULATOR



| BILL OF MATERIAL                                                                   |                                                                                                            |     |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----|
| D-3 POLE EYE ON EXISTING SQUARE CONCRETE POLE (RE-USING POLE EYE ON OPPOSITE FACE) |                                                                                                            |     |
| ITEM                                                                               | DESCRIPTION                                                                                                | QTY |
| 1                                                                                  | PLATE, POLE EYE, FLAT BASE, 1" MOUNTING HOLES, 6" HOLE SPACING, HOT DIP GALV, 40 KIP CAPACITY              | 2   |
| 2                                                                                  | LOCK WASHER, SGL COIL, 7/8" NOM, GALV STL, F/ 7/8" BOLT                                                    | 4   |
| 3                                                                                  | FLAT WASHER 7/8" NOM, 1 3/4" OD., GALV STL, RND, F/ 7/8" BOLT 15/16" HOLE, ASTM F436, GALV. PER ASTM F2329 | 4   |
| 4                                                                                  | NUT, SQUARE HEAD, 7/8" DIA., ANSI C135.1, GALV PER ASTM A153                                               | 5   |
| 5                                                                                  | LOCKNUT, FOR 7/8" BOLT, TYPE MF, ANSI C135.1, GALV PER ASTM A153                                           | 4   |
| 6                                                                                  | THREADED ROD, 7/8" DIAM, 36" LG, ANSI C135.1, GALV PER ASTM A153 (FIELD CUT TO LENGTH AND COLD GALV. END)  | 2   |

DETAIL  
POLE EYE ON EXISTING SQUARE CONCRETE POLE

GENERAL NOTES

1. REFER TO DRAWING BES-WRK-01 AND BES-WRK-02 FOR REQUIRED LOCATIONS OF ASSEMBLY DETAILS.

REFERENCE DRAWINGS:

|               |   |                    |
|---------------|---|--------------------|
| BES-COV-01    | - | COVER SHEET        |
| BES-WRK-01&02 | - | WORK PLAN          |
| BES-GRD-02    | - | GROUNDING DETAILS  |
| BES-ANC-01    | - | GUY ANCHOR DETAILS |

MATERIAL NOTES:

1. MATERIAL SHALL BE SUPPLIED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS.

MATERIAL SPECIFICATIONS

33 71 23 -TRANSMISSION LINE HARDWARE  
33 71 27 - GUY STRAND  
33 71 28 - GUY HARDWARE

CONSTRUCTION NOTES:

1. CONSTRUCTION SHALL BE PERFORMED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS.

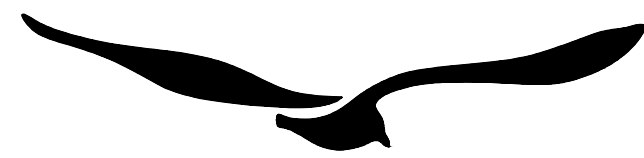
CONSTRUCTION SPECIFICATIONS

33 71 27 - GUY STRAND  
33 71 28 - GUY HARDWARE  
33 71 35 - CONDUCTOR AND OVERHEAD SHIELDWIRE INSTALLATION

ISSUED  
FOR CONSTRUCTION

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY  
S E R V I C E S

BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
GUYING DETAILS

DESIGNED DMT CHECKED AJK SCALE NONE  
DATE 10/13/23 ENGINEER cam  
WBS/SO APPROVED AJK

BES-GUY-01 - R0



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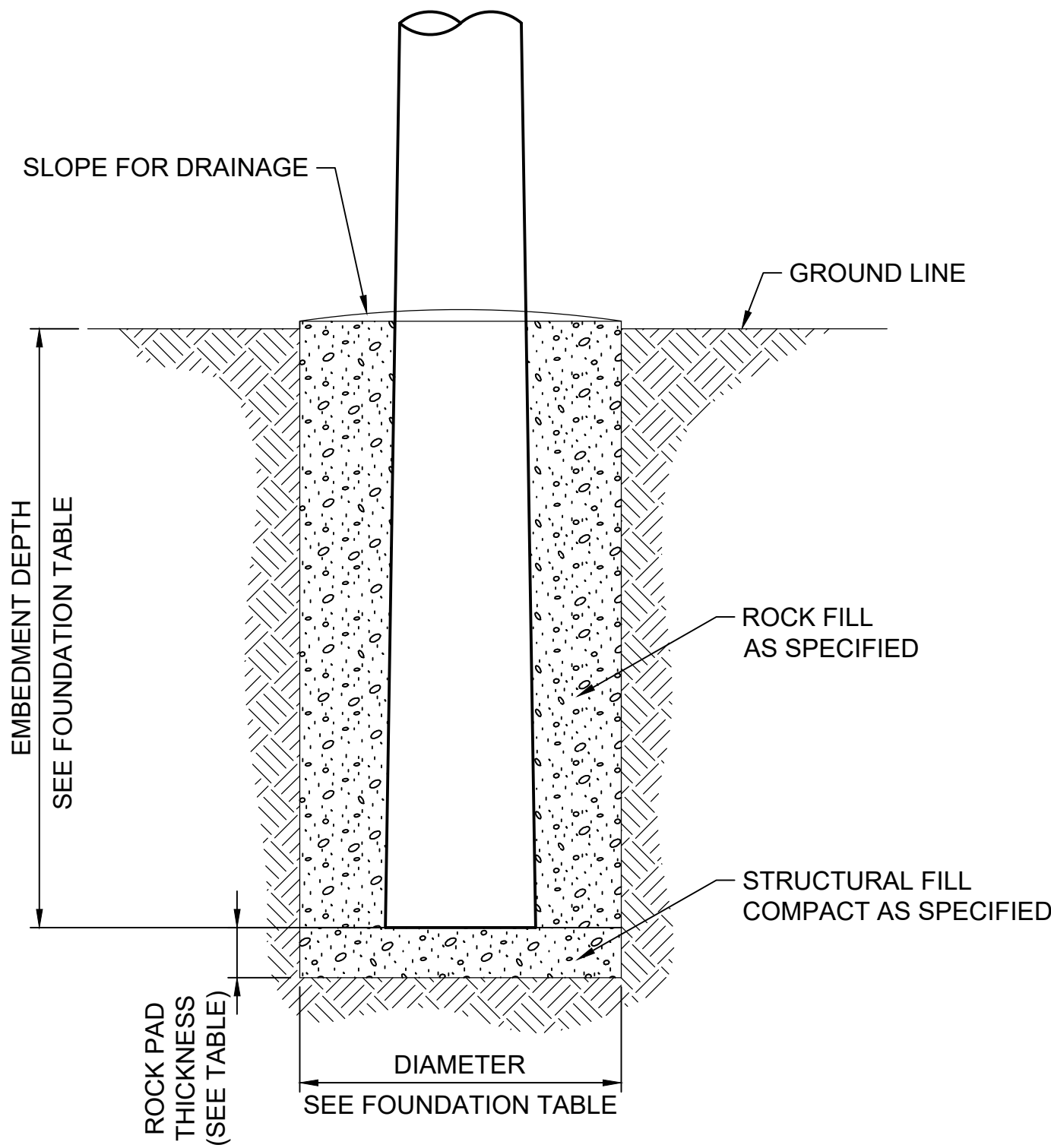
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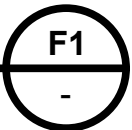
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DETAIL  
ROCK BACKFILL DIRECT EMBED  
FOUNDATION DETAIL

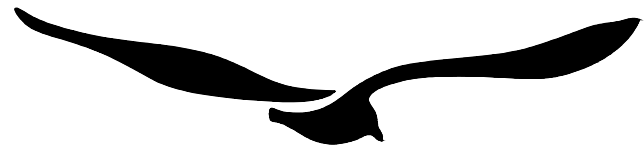


| FOUNDATION TABLE |                          |                        |                            |                                |                                                        |          |
|------------------|--------------------------|------------------------|----------------------------|--------------------------------|--------------------------------------------------------|----------|
| STR<br>NUMBER    | STR<br>DRAWING<br>NUMBER | POLE<br>LENGTH<br>(FT) | EMBEDMENT<br>DEPTH<br>(FT) | EXCAVATION<br>DIAMETER<br>(IN) | OVEREXCAVATION<br>DEPTH/ ROCK<br>PAD THICKNESS<br>(IN) | COMMENTS |
| 802-3            | BES-WRK-02               | 115'                   | 23'                        | 66                             | 12                                                     |          |
| 803-16           | BES-WRK-02               | 85'                    | 20'                        | 66                             | 12                                                     |          |
| 804-8            | BES-WRK-01               | 80'                    | 19'                        | 66                             | 12                                                     |          |

- REFERENCE DRAWINGS:
- REFERENCE DRAWINGS:
- BES-COV-01 - COVER SHEET
  - BES-WRK-01 - WORK PLAN
  - BES-CPB-01 - CONCRETE POLE DETAILS
  - BES-GRD-01 - GROUNDING DETAILS
- MATERIAL NOTES:
- MATERIAL SHALL BE SUPPLIED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS:
- 31 63 30 FOUNDATIONS FOR DIRECT EMBEDDED POLES
- CONSTRUCTION NOTES:
- SUBCONTRACTOR SHALL CONTACT SUNSHINE 811 FOR LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
  - SUBCONTRACTOR SHALL REDLINE THE LOCATIONS OF THE EXISTING FOUNDATIONS.
  - CONSTRUCTION SHALL BE PERFORMED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS:
- 31 63 30 FOUNDATIONS FOR DIRECT EMBEDDED POLES
- EXCAVATIONS SHALL BE PLACED MINIMUM 16.5' O.C. AWAY FROM EXISTING POLES.
- GENERAL NOTES
- SUBSURFACE INFORMATION WAS OBTAINED IN JUNE 2022, PERFORMED BY BJ ROCK CONSULTANTS, INC., AND UTILIZED FOR THE DESIGNS. THIS INFORMATION IS AVAILABLE UPON REQUEST.
  - SUBSURFACE INFORMATION WAS OBTAINED IN NOVEMBER 2016, PERFORMED BY TERRACON, INC., AND UTILIZED FOR THE DESIGNS. THIS INFORMATION IS AVAILABLE UPON REQUEST.

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY  
SERVICES

BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
FOUNDATION DETAILS

DESIGNED DMT CHECKED AJK SCALE AS NOTED  
DATE 10/13/23 ENGINEER CAM  
WBS/SO \_\_\_\_\_ APPROVED AJK

BES-FDN-01

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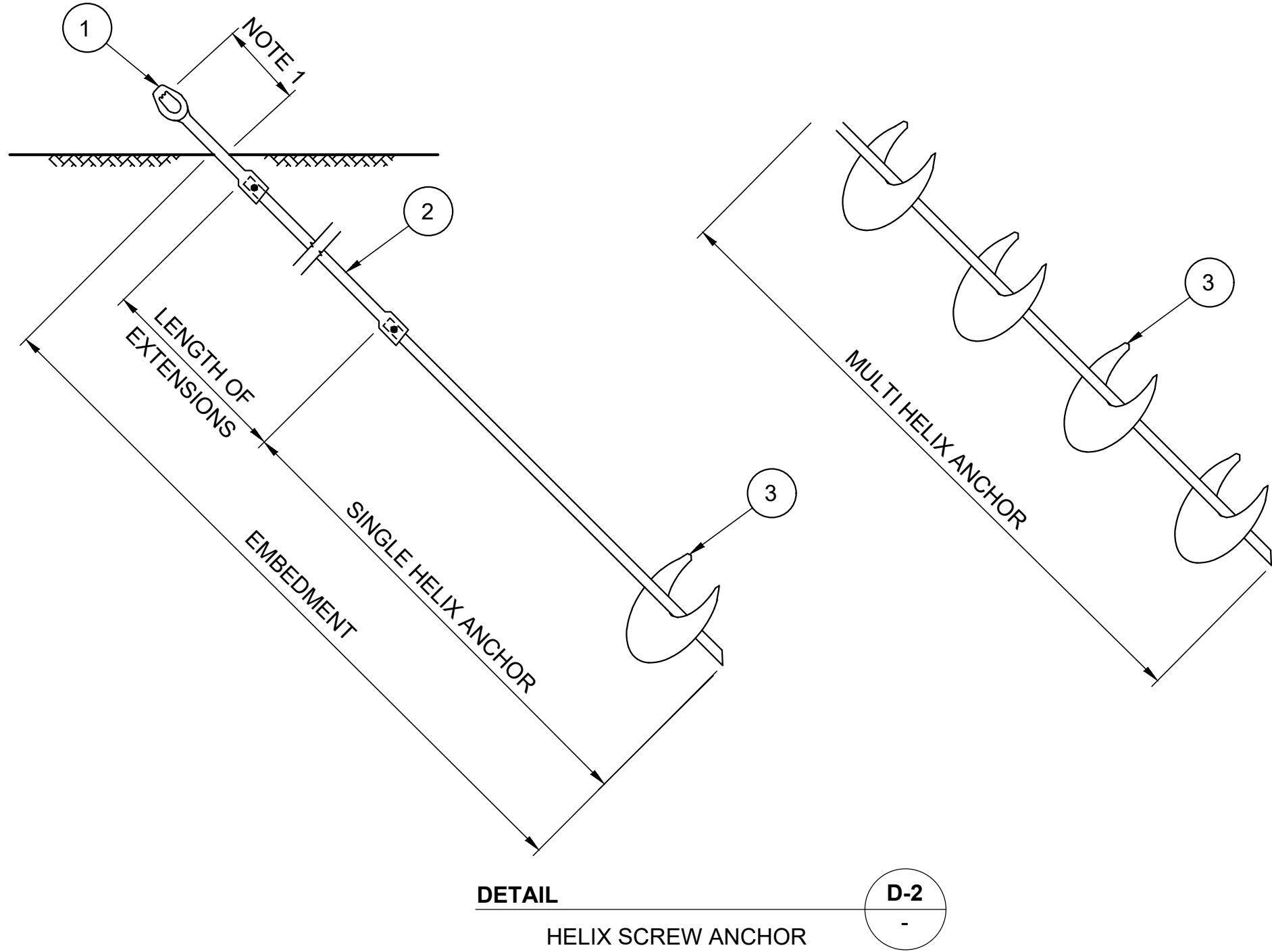
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| BILL OF MATERIAL       |                                                                                        |                                                                                                           |
|------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| D-2 DOWN GUY ANCHORING |                                                                                        |                                                                                                           |
| ITEM                   | DESCRIPTION                                                                            | QTY                                                                                                       |
| 1                      | TRIPLEYE GUY ATTACHMENT, SIZE AND STRENGTH CORRESPONDING TO LEAD SECTION AND EXTENSION | 1                                                                                                         |
| 2                      | HELICAL ANCHOR EXTENSION                                                               | AS REQ'D TO REACH THE MIN. REQUIRED DEPTH. ADDITIONAL MAY BE REQUIRED TO ACHIEVE MIN. INSTALLATION TORQUE |
| 3                      | ANCHOR, SCREW, SINGLE- OR MULT-HELIX (SEE TABLE THIS SHEET)                            | 1                                                                                                         |

NOTES:

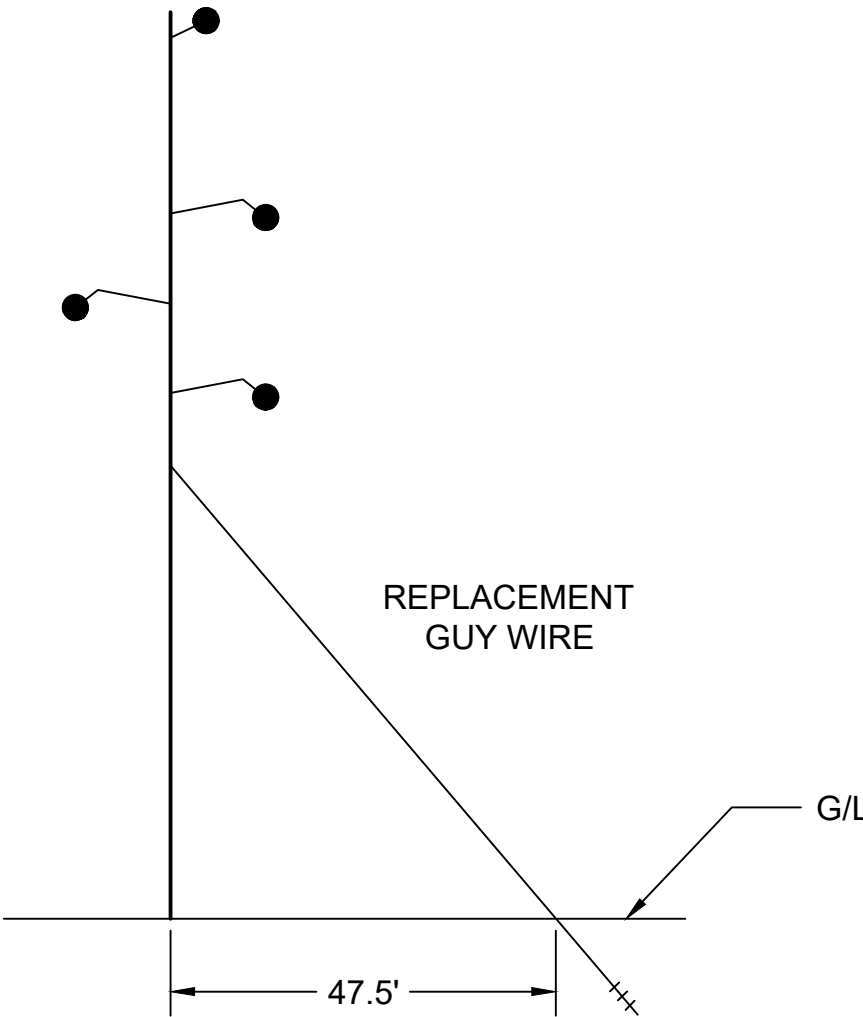
1. RECOMMENDED MINIMUM PROJECTION AFTER PRELOADING IS 8 INCHES. PROJECTION MAY BE INCREASED TO AVOID OVERTORQUING OF THE SHAFT. FINAL PROJECTION SHALL BE APPROVED BY THE ENGINEER.



| ANCHOR LOCATION (STRUCTURE)              | DESIGN BORING PROFILE | DESIGN ANCHOR UPLIFT CAPACITY* (KIPS) | ASSUME A.B. CHANCE SECTION MATERIALS (OR EQUIVALENT) | MULT-HELIX ANCHOR CONFIGURATION (IN) | INSTALLATION ANGLE FROM VERTICAL [DEG] | MIN. TOTAL ANCHOR LENGTH, MEASURED FROM GROUND SURFACE TO TIP (FEET) | MINIMUM INSTALLATION TORQUE (FT-LBS) |
|------------------------------------------|-----------------------|---------------------------------------|------------------------------------------------------|--------------------------------------|----------------------------------------|----------------------------------------------------------------------|--------------------------------------|
| 804-49                                   | B-3                   | 33.7                                  | SS150                                                | 10, 12                               | 45                                     | 29.0                                                                 | 5900                                 |
| 801-1 (WEST)                             | B-1 (Jax Beach)       | 26.9                                  | SS5                                                  | 14, 14                               | 45.6                                   | 27.0                                                                 | 4750                                 |
| 801-1 (NORTH) (TWO GUY WIRES PER ANCHOR) | B-1 (Jax Beach)       | 53.8                                  | SS175                                                | 14, 14, 14                           | 33                                     | 28.0                                                                 | 8500                                 |

\* Factor of Safety = 1.5

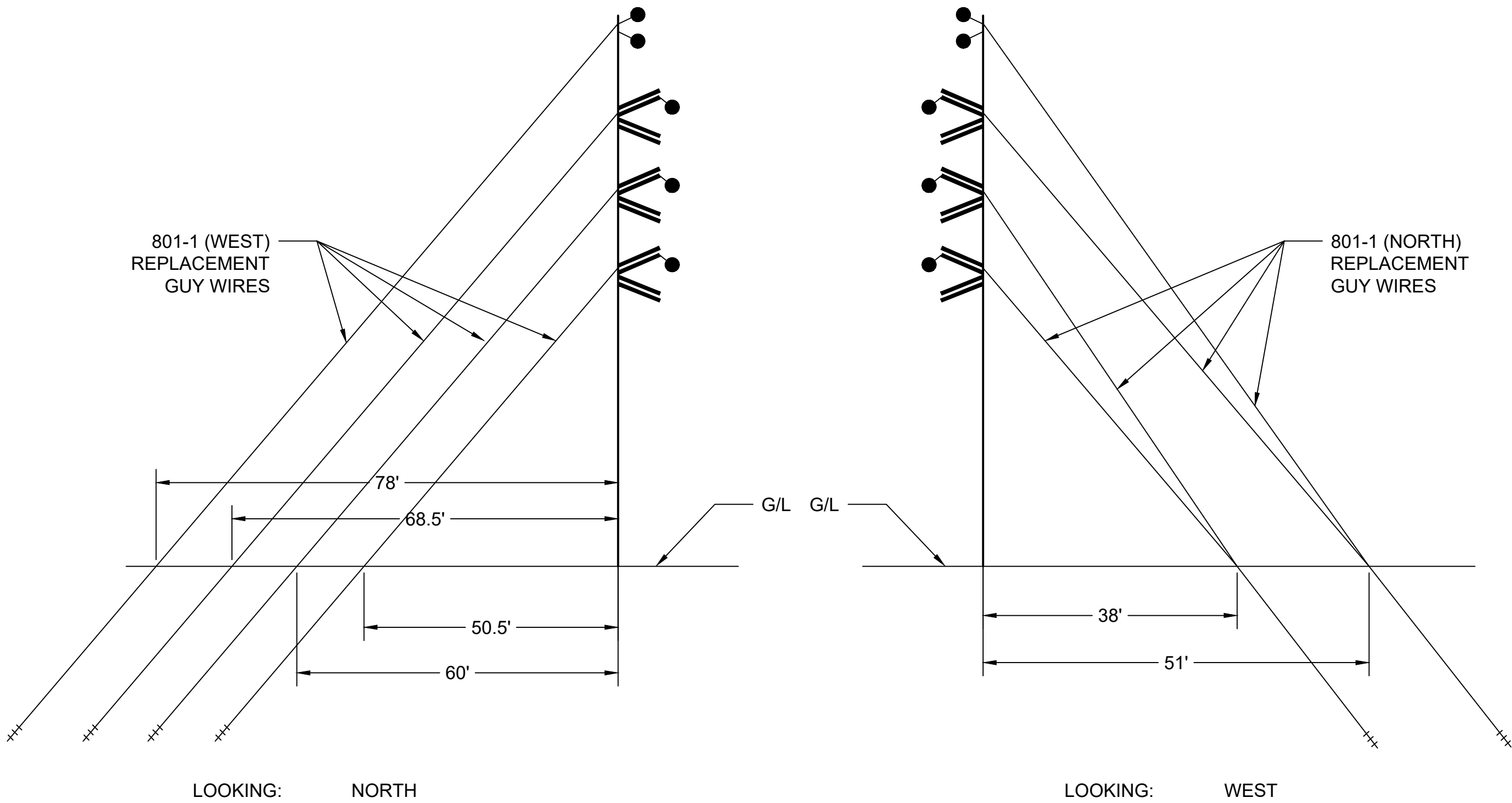
803-40 AND 804-101 WERE REMOVED FROM THIS TABLE AND PACKAGE AS THESE WILL BE DESIGNED AND CONSTRUCTED UNDER SEPARATE CONTRACTS.



STRUCTURE #: 804-49  
COORDINATES: 30.07658, -81.44998  
LOOKING: NORTH

**DETAIL**

804-49 GUYING DIAGRAM



STRUCTURE # 801-1  
COORDINATES 30.28321, -81.40081

**DETAIL**

804-101 GUYING DIAGRAM



REFERENCE DRAWINGS:  
BES-COV-01 - COVER SHEET  
BES-LOC-01 - LOCATION MAPS  
BES-WRK-01 & 02 - WORK PLAN  
BES-GUY-01 - GUYING DETAILS  
BES-GRD-01 TO 03 - GROUNDING DETAILS

MATERIAL NOTES:

1. MATERIAL SHALL BE SUPPLIED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS:

31 68 16 HELICAL SCREW ANCHORS

CONSTRUCTION NOTES:

1. SUBCONTRACTOR SHALL CONTACT SUNSHINE 811 FOR LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. SUBCONTRACTOR SHALL REDLINE THE LOCATIONS OF THE EXISTING ANCHORS.
3. CONSTRUCTION SHALL BE PERFORMED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS:

31 68 16 HELICAL SCREW ANCHORS

4. ANCHOR TESTING SHALL BE PERFORMED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS:

31 68 17 ANCHOR TESTING

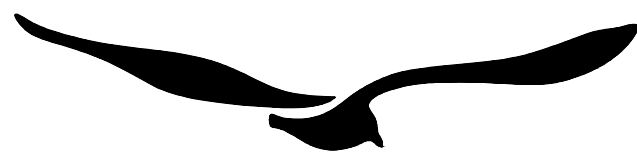
GENERAL NOTES

1. SUBSURFACE INFORMATION WAS OBTAINED IN JUNE 2022, PERFORMED BY BJ ROCK CONSULTANTS, INC., AND UTILIZED FOR THE DESIGNS. THIS INFORMATION IS AVAILABLE UPON REQUEST.
2. SUBSURFACE INFORMATION WAS OBTAINED IN NOVEMBER 2016, PERFORMED BY TERRACON, INC., AND UTILIZED FOR THE DESIGNS. THIS INFORMATION IS AVAILABLE UPON REQUEST.
3. HELICAL ANCHORS AND ASSOCIATED MATERIALS ARE ASSUMED TO BE A.B. CHANCE MATERIALS OR COMPARABLE WITH AN ULTIMATE AXIAL LOAD OF 55 KIPS AND A RATED TORQUE CAPACITY OF 5,500 FT-LB, WITH HELIX THICKNESS = 0.375 IN, HELIX GRADE = 50 KSI, AND HELIX STRENGTH = 40 KIPS.
4. ANCHORS SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.
5. ANCHORS SHALL BE HOT-DIPPED GALVANIZED
6. EACH HELICAL ANCHOR TYPE SHALL BE INSTALLED PER THIS SHEET USING A.B. CHANCE PRODUCTS OR ENGINEER APPROVED EQUIVALENT.
7. CONTRACTOR IS RESPONSIBLE FOR MEASURING THE INSTALLATION TORQUE TO AN ACCURACY OF AT LEAST 0.5 PERCENT.
8. ALL INSTALLATION TORQUE IS TO BE GRADUALLY INCREASED. NO SUDDEN APPLICATION OF TORQUE WILL BE ACCEPTABLE, AND INSTALLATION EQUIPMENT MUST BE CAPABLE OF MEETING THIS REQUIREMENT.
9. CONTRACTOR SHALL CONTACT THE ENGINEER IF TORQUE LIMITS ARE MET BEFORE THE ANCHOR HAS BEEN INSTALLED TO THE ESTIMATED EMBEDMENT DEPTH.
10. ANCHORS SHALL BE LOCATED AS INDICATED WITH THE FOLLOWING TOLERANCES:
- 10.1. CENTERLINE OF SCREW ANCHOR SHALL BE NO MORE THAN 3 IN FROM INDICATED PLAN LOCATION.
- 10.2. SCREW ANCHOR PLUMBNESS SHALL BE WITHIN 2.0 DEGREES OF DESIGN ALIGNMENT.
- 10.3. TOP ELEVATION OF SCREW ANCHOR SHALL, INCLUDING BEARING PLATE AND/OR BRACKET, SHALL BE WITHIN 1 IN OF THE DESIGN VERTICAL ELEVATION.
11. ANCHORS SHOULD BE SPACED AT LEAST 5 DIAMETERS APART, CENTER-TO-CENTER, AS MEASURED FROM THE LARGEST HELIX.
12. PERFORM PROOF TESTING AT EACH HELICAL ANCHOR.

**ISSUED  
FOR CONSTRUCTION**

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY  
SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
ANCHOR DETAILS

DESIGNED DMT CHECKED AJK SCALE AS NOTED

DATE 10/13/23 ENGINEER CAM

WBS/SO                      APPROVED AJK

BES-ANC-01

- R0



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2301 Maitland Center Pkwy, Maitland, FL 32751

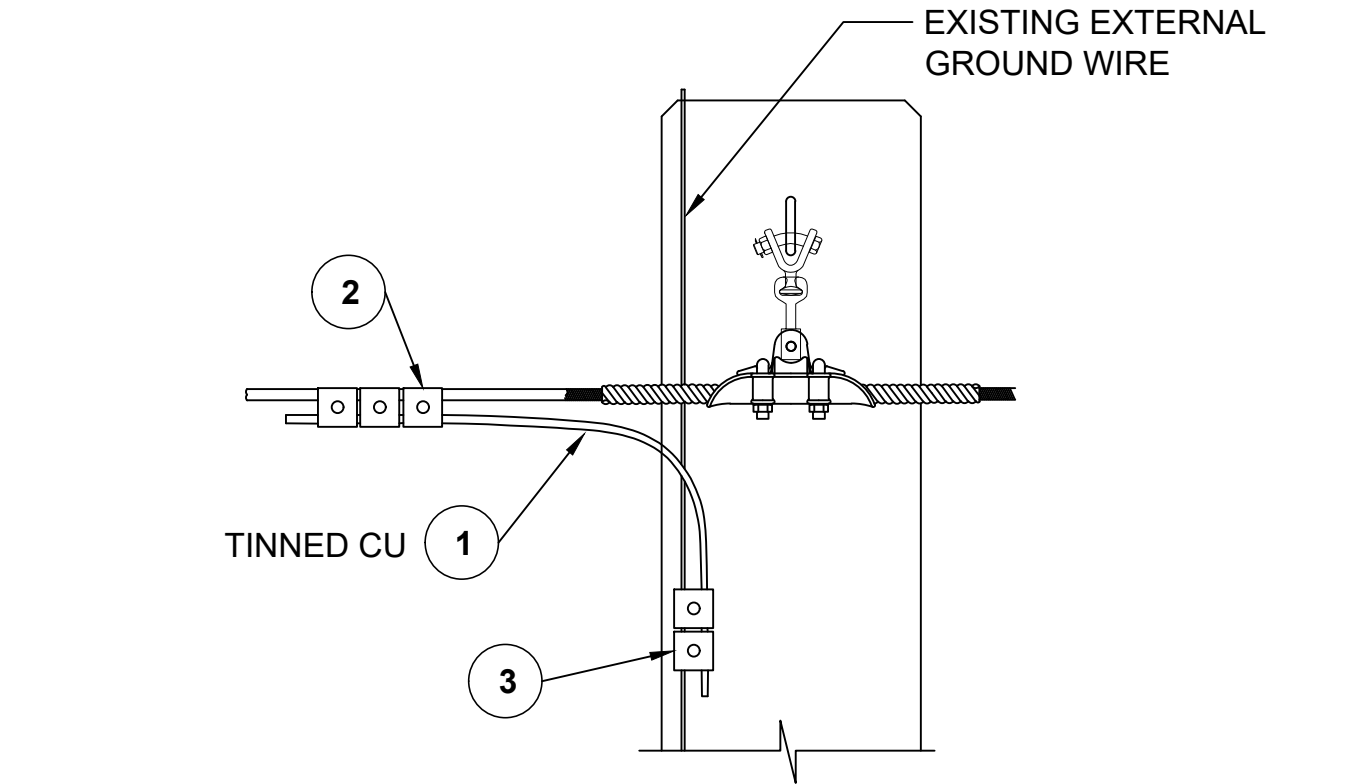
**BURNS  
& MCDONNELL**  
ENGINEERING COMPANY, INC.  
2301 MAITLAND CENTER PARKWAY  
SUITE 400  
MAITLAND, FL 32751

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REVISION NUMBER 0



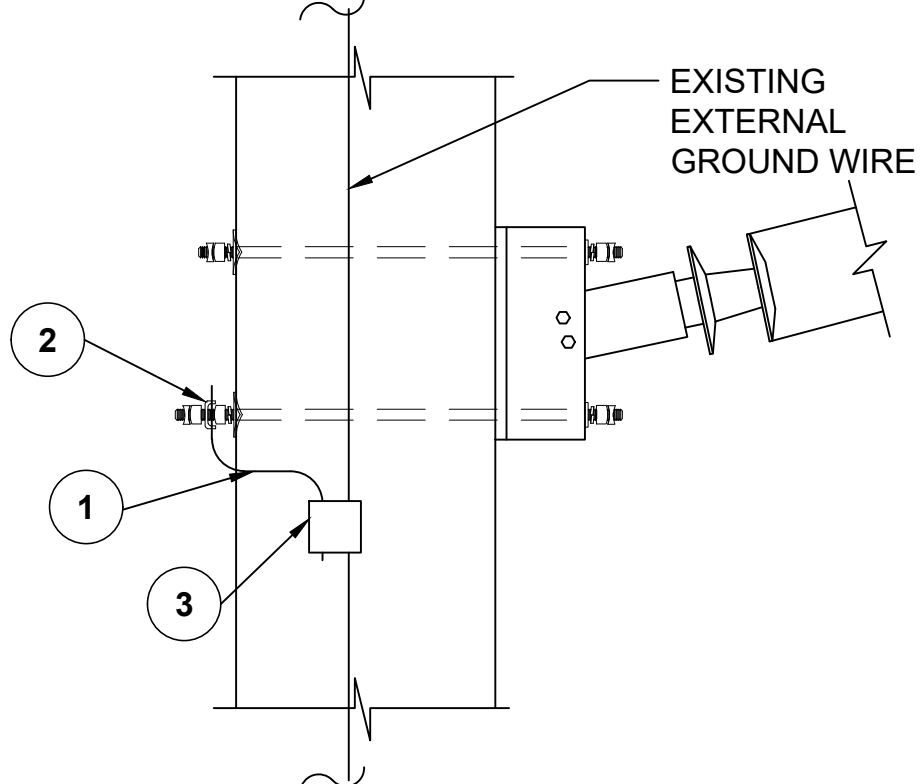






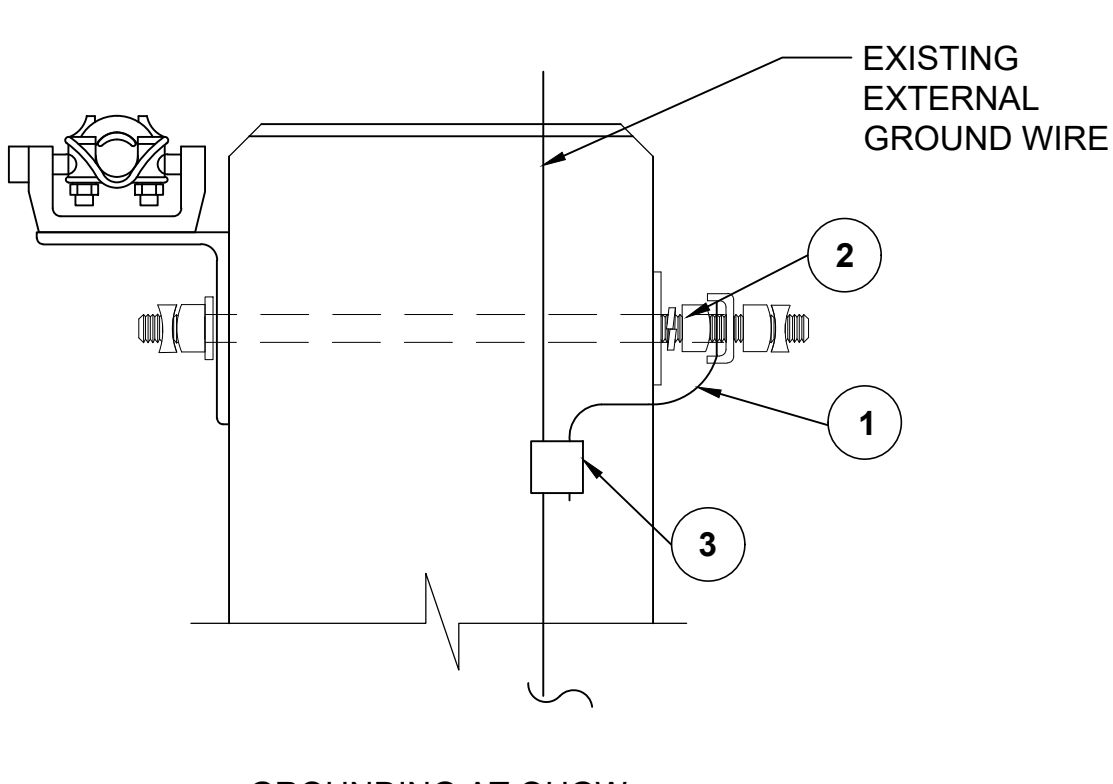
| BILL OF MATERIAL                                                                               |                                                                                                                                  |       |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------|
| G-5 SHIELD WIRE GROUNDING, 7NO9 ALUMOWELD (EXISTING SQUARE POLE WITH EXTERNAL COPPER DOWNLEAD) |                                                                                                                                  |       |
| ITEM                                                                                           | DESCRIPTION                                                                                                                      | QTY   |
| 1                                                                                              | WIRE/CABLE,ELECTRICAL, BARE, 7 STR SD, 2 AWG, TINNED CU CONDUCTOR                                                                | 20 FT |
| 2                                                                                              | PARALLEL GROOVE CLAMP, ALUMINUM, SINGLE BOLT, WITH OXIDE INHIBITOR, #2 7- STRAND TINNED COPPER MAIN, 7 NO. 9 ALUMOWELD TAP       | 3     |
| 3                                                                                              | PARALLEL GROOVE CLAMP, TINNED COPPER, SINGLE BOLT, WITH OXIDE INHIBITOR, #2 7- STRAND TINNED COPPER MAIN, NO. 4 SOLID COPPER TAP | 2     |

**DETAIL**  
SHIELD WIRE GROUNDING,  
7 NO 9 ALUMOWELD TO EXISTING  
EXTERNAL COPPER DOWNLEAD



| BILL OF MATERIAL                                                                       |                                                                                      |       |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------|
| G-6 INSULATOR/OHGW BRACKET BONDING FOR CONCRETE POLES WITH EXTERNAL GROUNDING DOWNLEAD |                                                                                      |       |
| ITEM                                                                                   | DESCRIPTION                                                                          | QTY   |
| 1                                                                                      | WIRE/CABLE,ELECTRICAL, BARE, 7 STR SD, 2 AWG, TINNED CU CONDUCTOR                    | 10 FT |
| 2                                                                                      | BONDING CLIP FOR 3/4" BOLT                                                           | 1     |
| 3                                                                                      | CONNECTOR, C-TAP COMPRESSION, COPPER, #2 7-STRAND COPPER RUN, NO. 4 SOLID COPPER TAP | 1     |

**DETAIL**  
INSULATOR/OHGW BRACKET  
BONDING FOR CONCRETE POLES  
WITH EXTERNAL GROUNDING  
DOWNLEAD



| BILL OF MATERIAL                                                         |                                                                                      |       |
|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------|
| G-7 POLE EYE BONDING FOR CONCRETE POLES WITH EXTERNAL GROUNDING DOWNLEAD |                                                                                      |       |
| ITEM                                                                     | DESCRIPTION                                                                          | QTY   |
| 1                                                                        | WIRE/CABLE,ELECTRICAL, BARE, 7 STR SD, 2 AWG, TINNED CU CONDUCTOR                    | 10 FT |
| 2                                                                        | BONDING CLIP FOR 7/8" BOLT                                                           | 1     |
| 3                                                                        | CONNECTOR, C-TAP COMPRESSION, COPPER, #2 7-STRAND COPPER RUN, NO. 4 SOLID COPPER TAP | 1     |

**DETAIL**  
POLE EYE BONDING FOR  
CONCRETE POLES WITH EXTERNAL  
GROUNDING DOWNLEAD



GENERAL NOTES

1. REFER TO DRAWING BES-WRK-01 AND BES-WRK-02 FOR REQUIRED LOCATIONS OF ASSEMBLY DETAILS.

REFERENCE DRAWINGS:

- BES-COV-01 - COVER SHEET
- BES-LOC-01 - LOCATION MAPS
- BES-WRK-01 & 02 - WORK PLAN
- BES-CND-01 - CONDUCTOR ASSEMBLY DETAILS
- BES-OGW-01 - SHIELD WIRE ASSEMBLY DETAILS
- BES-UDB-01 - DISTRIBUTION UNDERBUILD DETAILS
- BES-CPB-01 TO 03 - CONCRETE POLE DETAILS
- BES-FDN-01 - FOUNDATION DETAILS
- BES-GUY-01 - GUYING DETAILS
- BES-ANC-01 - GUY ANCHOR DETAILS
- BES-GRD-01 & 03 - GROUNDING DETAILS

MATERIAL NOTES:

1. MATERIAL SHALL BE SUPPLIED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS.

MATERIAL SPECIFICATIONS

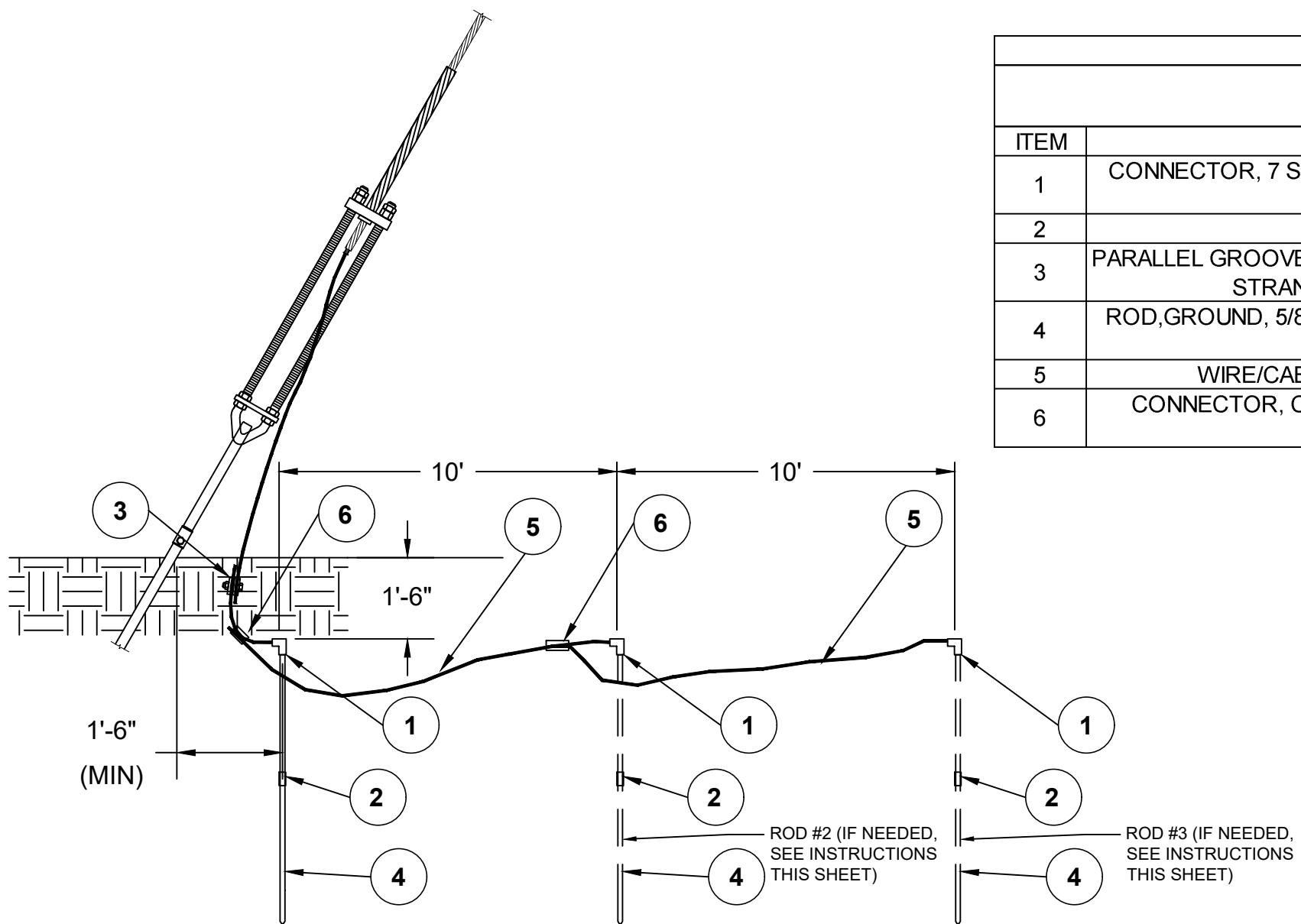
33 79 19 - GROUNDING (MATERIAL)

CONSTRUCTION NOTES:

1. CONSTRUCTION SHALL BE PERFORMED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS.

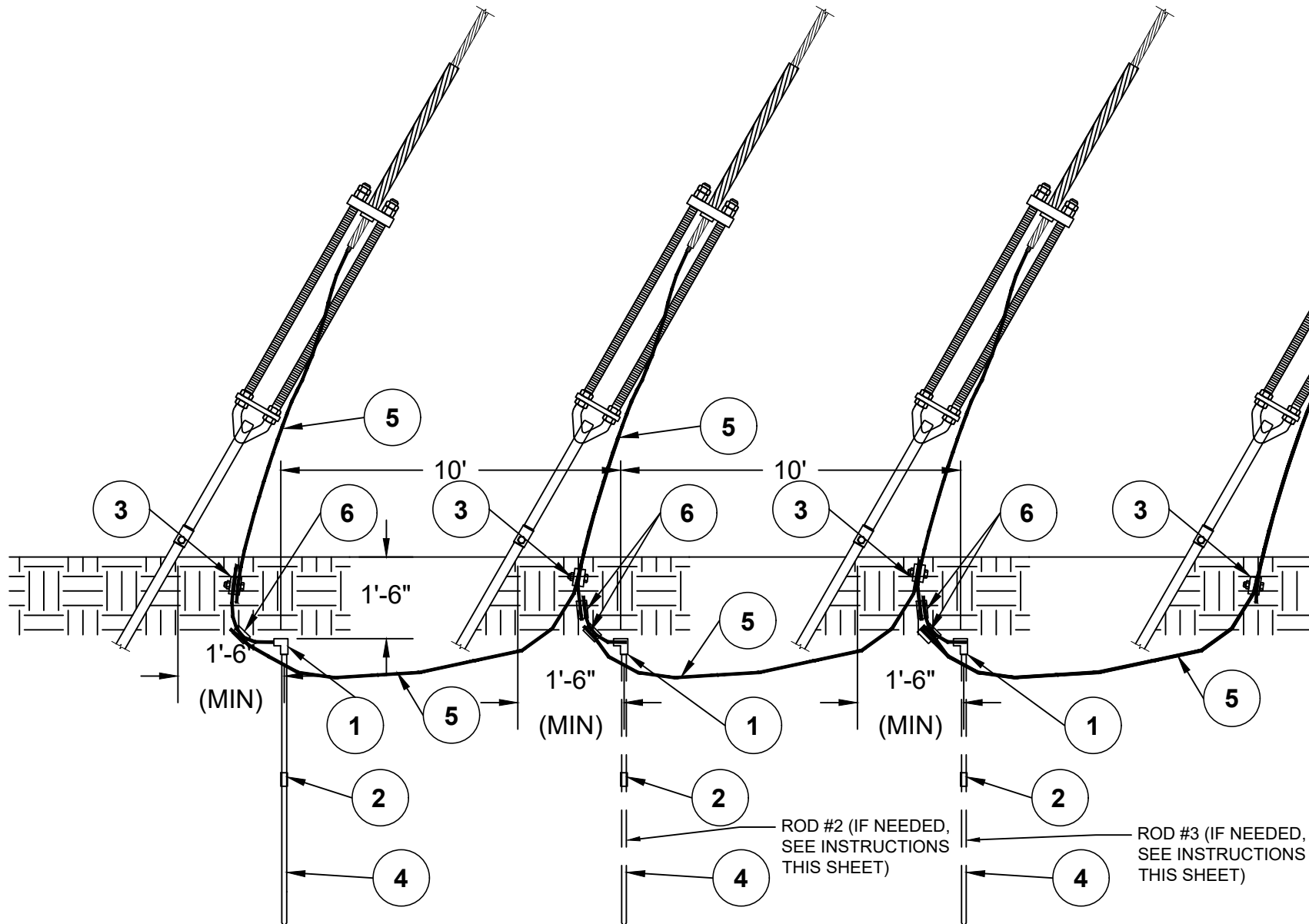
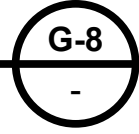
CONSTRUCTION SPECIFICATIONS

33 79 19 - GROUNDING

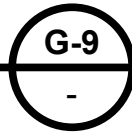


| BILL OF MATERIAL                   |                                                                                                                                       |     |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----|
| G-8 GUY GROUNDING, SINGLE GUY WIRE |                                                                                                                                       |     |
| ITEM                               | DESCRIPTION                                                                                                                           | QTY |
| 1                                  | CONNECTOR, 7 STR 2 AWG CU CONDUCTOR, CU CONNECTOR, HAMMER DRIVEN F/ 7 STR 2 AWG                                                       | 3   |
| 2                                  | COUPLING ROD, GROUND, 5/8", BRZ NON THD                                                                                               | 3   |
| 3                                  | PARALLEL GROOVE CLAMP, TINNED COPPER, SINGLE BOLT, WITH OXIDE INHIBITOR, #2 7- STRAND TINNED COPPER MAIN, 1/2" 7-STRAND STEEL GUY TAP | 1   |
| 4                                  | ROD, GROUND, 5/8" DIA, 120" (10') LG, 0.013" THK CU BONDED TO HIGH STRENGTH STL, NON-THREADED                                         | 6   |
| 5                                  | WIRE/CABLE,ELECTRICAL, BARE, 7 STR SD, 2 AWG, CU CONDUCTOR                                                                            | 50  |
| 6                                  | CONNECTOR, C-TAP COMPRESSION, COPPER, #2 7-STRAND COPPER RUN, #2 7- STRAND COPPER TAP                                                 | 2   |

**DETAIL**  
GUY GROUNDING,  
SINGLE GUY WIRE



**DETAIL**  
GUY GROUNDING,  
MULTIPLE GUY WIRES



| BILL OF MATERIAL                      |                                                                                                                                       |     |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----|
| G-9 GUY GROUNDING, MULTIPLE GUY WIRES |                                                                                                                                       |     |
| ITEM                                  | DESCRIPTION                                                                                                                           | QTY |
| 1                                     | CONNECTOR, 7 STR 2 AWG CU CONDUCTOR, CU CONNECTOR, HAMMER DRIVEN F/ 7 STR 2 AWG                                                       | 3   |
| 2                                     | COUPLING ROD, GROUND, 5/8", BRZ NON THD                                                                                               | 3   |
| 3                                     | PARALLEL GROOVE CLAMP, TINNED COPPER, SINGLE BOLT, WITH OXIDE INHIBITOR, #2 7- STRAND TINNED COPPER MAIN, 1/2" 7-STRAND STEEL GUY TAP | 5   |
| 4                                     | ROD, GROUND, 5/8" DIA, 120" (10') LG, 0.013" THK CU BONDED TO HIGH STRENGTH STL, NON-THREADED                                         | 6   |
| 5                                     | WIRE/CABLE,ELECTRICAL, BARE, 7 STR SD, 2 AWG, CU CONDUCTOR                                                                            | 120 |
| 6                                     | CONNECTOR, C-TAP COMPRESSION, COPPER, #2 7-STRAND COPPER RUN, #2 7- STRAND COPPER TAP                                                 | 7   |

#### STRUCTURE GROUNDING PROCEDURE

DRIVE ONE (1) 5/8" x 20' GROUNDING ELECTRODE  
LOCATED AS SHOWN

TEST GROUND RESISTANCE PER SPECIFICATION.

GROUND RESISTANCE  
MEASUREMENT IS 10 OHMS OR LESS?

YES

FINISHED: CONNECTION TO THE STRUCTURE  
CAN BE COMPLETED AT THIS TIME.  
ALL READINGS SHALL BE RECORDED  
AND PROVIDED TO PURCHASER.

DRIVE SECOND 5/8" x20' GROUNDING ELECTRODE  
LOCATED AS SHOWN, AND CONNECT TO THE  
FIRST GROUNDING ELECTRODE

TEST GROUND RESISTANCE PER SPECIFICATION.

GROUND RESISTANCE  
MEASUREMENT IS 10 OHMS OR LESS?

YES

FINISHED: CONNECTION TO THE STRUCTURE  
CAN BE COMPLETED AT THIS TIME.  
ALL READINGS SHALL BE RECORDED  
AND PROVIDED TO PURCHASER.

DRIVE THIRD 5/8" x20' GROUNDING ELECTRODE  
LOCATED AS SHOWN, AND CONNECT TO THE  
SECOND GROUNDING ELECTRODE

TEST GROUND RESISTANCE PER SPECIFICATION.

FINISHED

CONNECTION TO THE STRUCTURE CAN BE COMPLETED AT THIS TIME.  
ALL READINGS SHALL BE RECORDED AND PROVIDED TO PURCHASER.  
GROUND CONNECTIONS NOT MEETING THE SPECIFIED 10 OHM  
RESISTANCE SHALL BE IDENTIFIED TO THE OWNER IN WRITING AND  
NOTED FOR RE-TESTING AFTER CONSTRUCTION IS COMPLETED AND ALL  
CONNECTIONS ARE MADE TO OVERHEAD STATIC WIRE.



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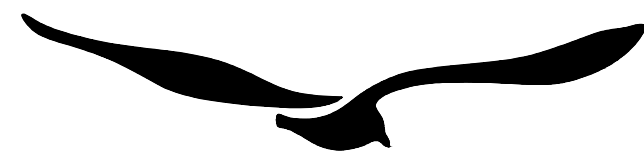


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REVISION NUMBER 0

**ISSUED  
FOR CONSTRUCTION**

NO DATE DESCRIPTION DSD EGR CHK APD

REVISIONS



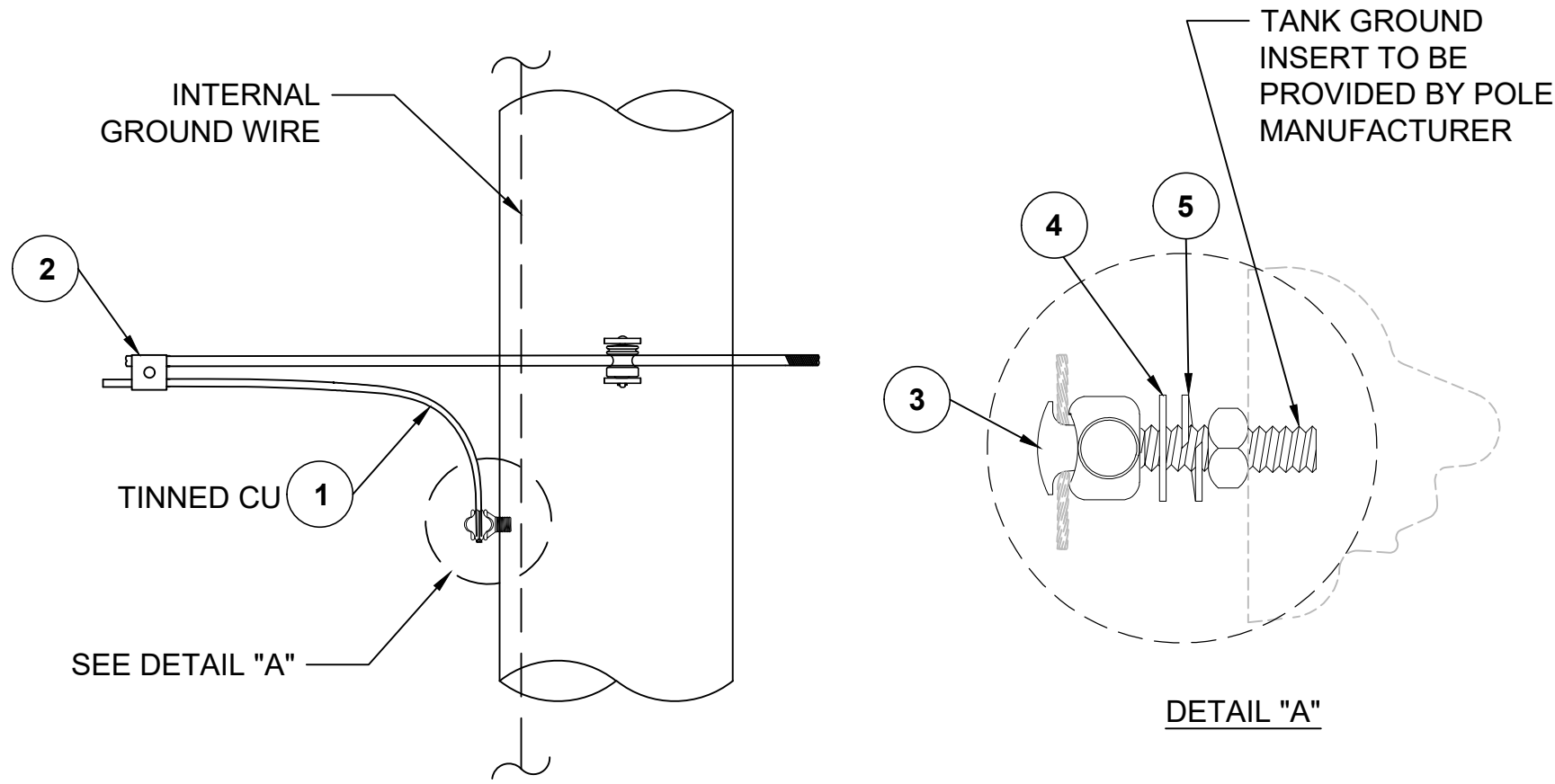
BEACHES ENERGY  
SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
GROUNDING DETAILS

DESIGNED DMT CHECKED AJK SCALE NONE  
DATE 10/13/23 ENGINEER cam  
WBS/SO APPROVED AJK

BES-GRD-02

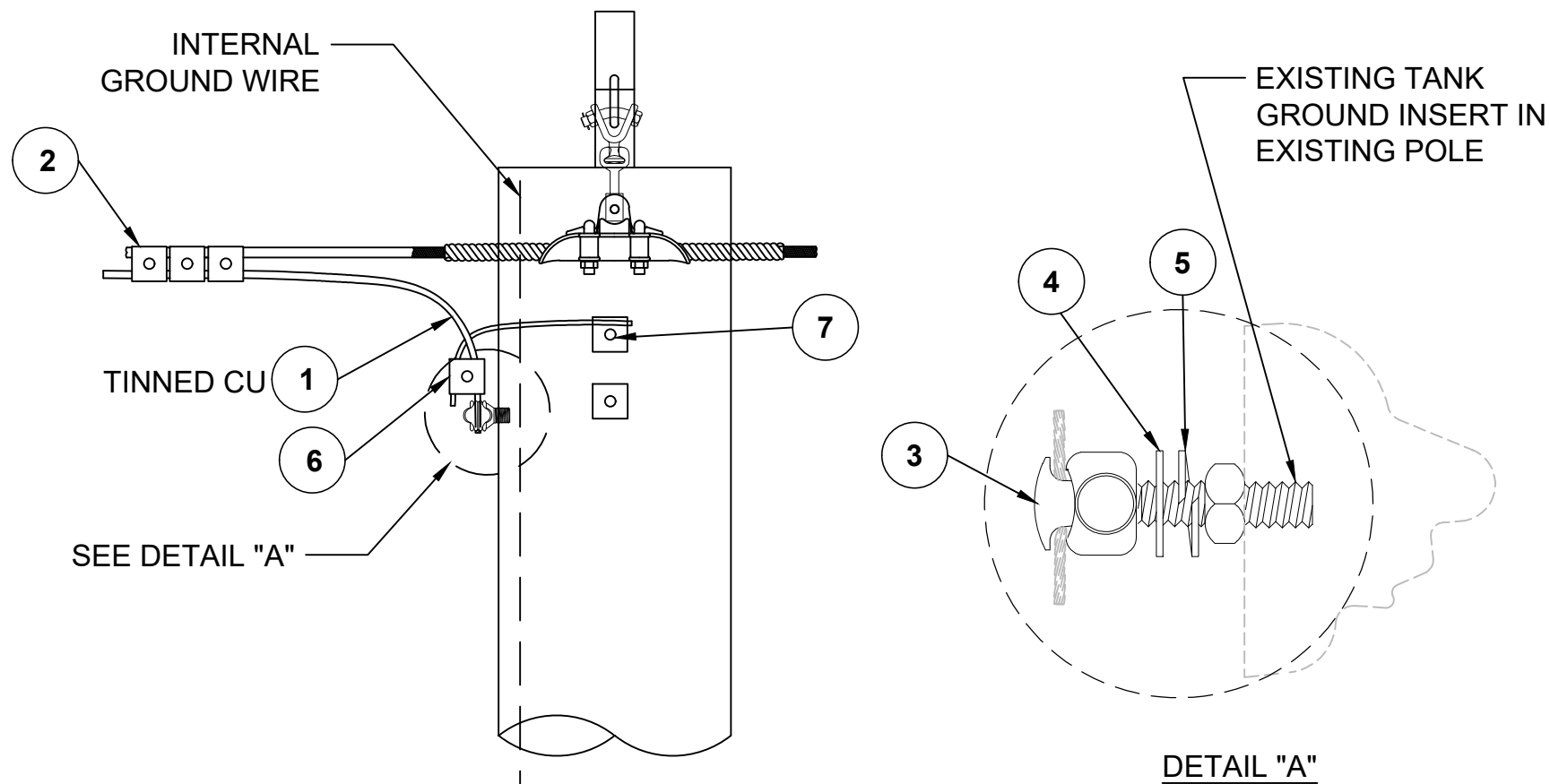
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| BILL OF MATERIAL                         |                                                                                                                                         |       |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------|
| G-10 DISTRIBUTION NEUTRAL TO TANK GROUND |                                                                                                                                         |       |
| ITEM                                     | DESCRIPTION                                                                                                                             | QTY   |
| 1                                        | WIRE/CABLE, ELECTRICAL, BARE, 7 STR SD, 2 AWG, TINNED CU CONDUCTOR                                                                      | 20 FT |
| 2                                        | PARALLEL GROOVE CLAMP, ALUMINUM, SINGLE BOLT, WITH OXIDE INHIBITOR, #2 7-STRAND TINNED COPPER MAIN, 195.7 AAAC TAP                      | 1     |
| 3                                        | CLAMP, GROUNDING, CABLE TO TRANSFORMER, 8 AWG SOL-2 AWG STR CU, CONNECTOR, EYEBOLT, STUD 1/2"-13 THD X 7/16" LG, SILICON BRZ TIN PLATED | 1     |
| 4                                        | FLAT WASHER 1/2" NOM, 1.25" OD, 0.091" THK, SILICON BRZ                                                                                 | 1     |
| 5                                        | LOCK WASHER, SGL COIL, 1/2" NOM, SILICON BRZ TIN PLATED, MED SECTION, F/1/2" BOLT                                                       | 1     |

**DETAIL**  
DISTRIBUTION NEUTRAL GROUNDING  
TO CONCRETE POLE TANK GROUND



| BILL OF MATERIAL                                          |                                                                                                                                        |       |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------|
| G-11 SHIELD WIRE GROUNDING, 7NO9 ALUMOWELD TO TANK GROUND |                                                                                                                                        |       |
| ITEM                                                      | DESCRIPTION                                                                                                                            | QTY   |
| 1                                                         | WIRE/CABLE, ELECTRICAL, BARE, 7 STR SD, 2 AWG, TINNED CU CONDUCTOR                                                                     | 50 FT |
| 2                                                         | PARALLEL GROOVE CLAMP, ALUMINUM, SINGLE BOLT, WITH OXIDE INHIBITOR, #2 7-STRAND TINNED COPPER MAIN, 7 NO. 9 ALUMOWELD TAP              | 3     |
| 3                                                         | CLAMP, GROUNDING, TWO CABLE TO BAR, 8 AWG SOL-2 AWG STR CU, CONNECTOR, EYEBOLT, STUD 1/2"-13 THD X 7/16" LG, SILICON BRZ TIN PLATED    | 1     |
| 4                                                         | FLAT WASHER 1/2" NOM, 1.25" OD, 0.091" THK, SILICON BRZ                                                                                | 1     |
| 5                                                         | LOCK WASHER, SGL COIL, 1/2" NOM, SILICON BRZ TIN PLATED, MED SECTION, F/1/2" BOLT                                                      | 1     |
| 6                                                         | PARALLEL GROOVE CLAMP, TINNED COPPER, SINGLE BOLT, WITH OXIDE INHIBITOR, #2 7-STRAND TINNED COPPER MAIN, #2 7-STRAND TINNED COPPER TAP | 1     |
| 7                                                         | BONDING CLIP FOR 3/4" BOLT                                                                                                             | 1     |

**DETAIL**  
SHIELD WIRE GROUNDING,  
7 NO 9 ALUMOWELD TO CONCRETE  
POLE TANK GROUND (805J-136)



- GENERAL NOTES
- REFER TO DRAWING BES-WRK-01 AND BES-WRK-02 FOR REQUIRED LOCATIONS OF ASSEMBLY DETAILS.
- REFERENCE DRAWINGS:
- BES-COV-01 - COVER SHEET
  - BES-LOC-01 - LOCATION MAPS
  - BES-WRK-01 & 02 - WORK PLAN
  - BES-CND-01 - CONDUCTOR ASSEMBLY DETAILS
  - BES-OGW-01 - SHIELD WIRE ASSEMBLY DETAILS
  - BES-UDB-01 - DISTRIBUTION UNDERBUILD DETAILS
  - BES-CPB-01 TO 03 - CONCRETE POLE DETAILS
  - BES-FDN-01 - FOUNDATION DETAILS
  - BES-GUY-01 - GUYING DETAILS
  - BES-ANC-01 - GUY ANCHOR DETAILS
  - BES-GRD-01 & 02 - GROUNDING DETAILS

- MATERIAL NOTES:
- MATERIAL SHALL BE SUPPLIED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS.

MATERIAL SPECIFICATIONS

33 79 19 - GROUNDING (MATERIAL)

- CONSTRUCTION NOTES:
- CONSTRUCTION SHALL BE PERFORMED IN CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS.

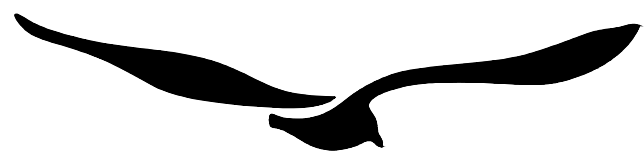
CONSTRUCTION SPECIFICATIONS

33 79 19 - GROUNDING

**ISSUED  
FOR CONSTRUCTION**

| NO | DATE | DESCRIPTION | DSO | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY  
S E R V I C E S

BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
GROUNDING DETAILS

DESIGNED DMT CHECKED AJK SCALE NONE

DATE 10/13/23 ENGINEER CAM

WBS/SO \_\_\_\_\_ APPROVED AJK

BES-GRD-03 - R0



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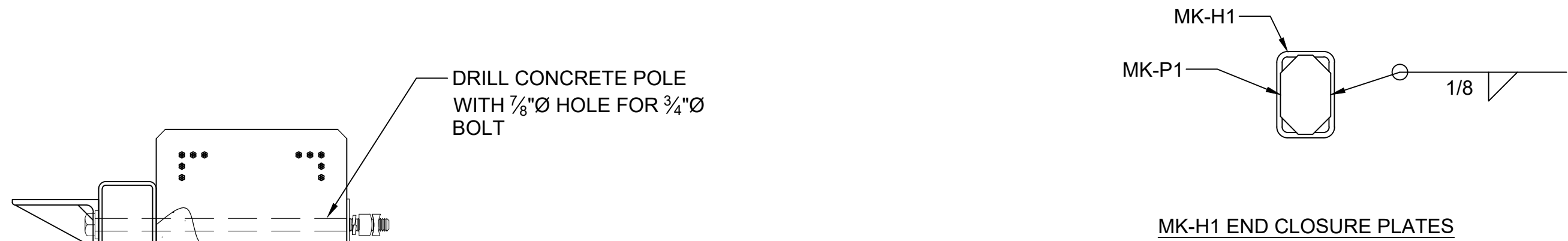
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REVISION NUMBER 0

REV DATE DESCRIPTION

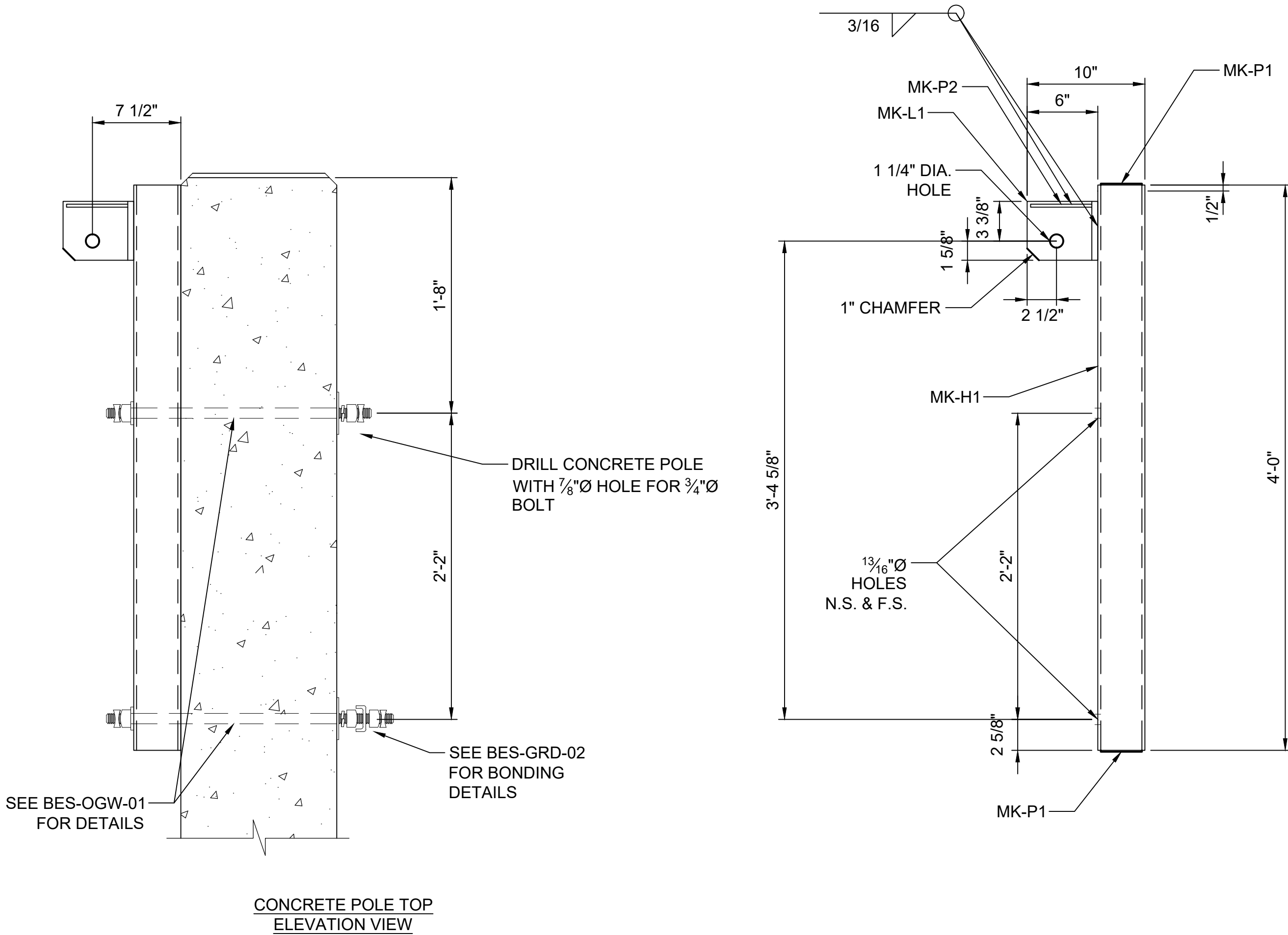
0 10/13/23 ISSUED FOR CONSTRUCTION



| BILL OF MATERIALS, STL-1 |          |                 |        |       |                 |
|--------------------------|----------|-----------------|--------|-------|-----------------|
| MARK                     | QUANTITY | DESCRIPTION     | LENGTH |       | WEIGHT<br>(LBS) |
|                          |          |                 | FT     | IN    |                 |
| MK-H1                    | 1        | HSS6X4X1/4      | 4      | 0     | 62.5            |
| MK-L1                    | 1        | L6X3 1/2X3/8    | 0      | 5     | 4.9             |
| MK-P1                    | 2        | PL 3/16"X3-3/4" | 0      | 5 3/4 | 2.2             |
| MK-P2                    | 1        | PL 1/4" X 3"    | 0      | 5 1/2 | 1.1             |
| TOTAL BLACK WEIGHT       |          |                 |        |       | 70.7            |
| GALVANIZED WEIGHT        |          |                 |        |       | 73.1            |



CONCRETE POLE TOP TOP VIEW

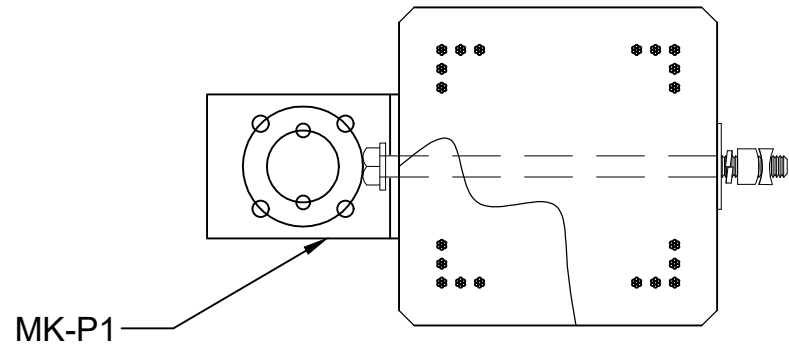


CONCRETE POLE TOP ELEVATION VIEW

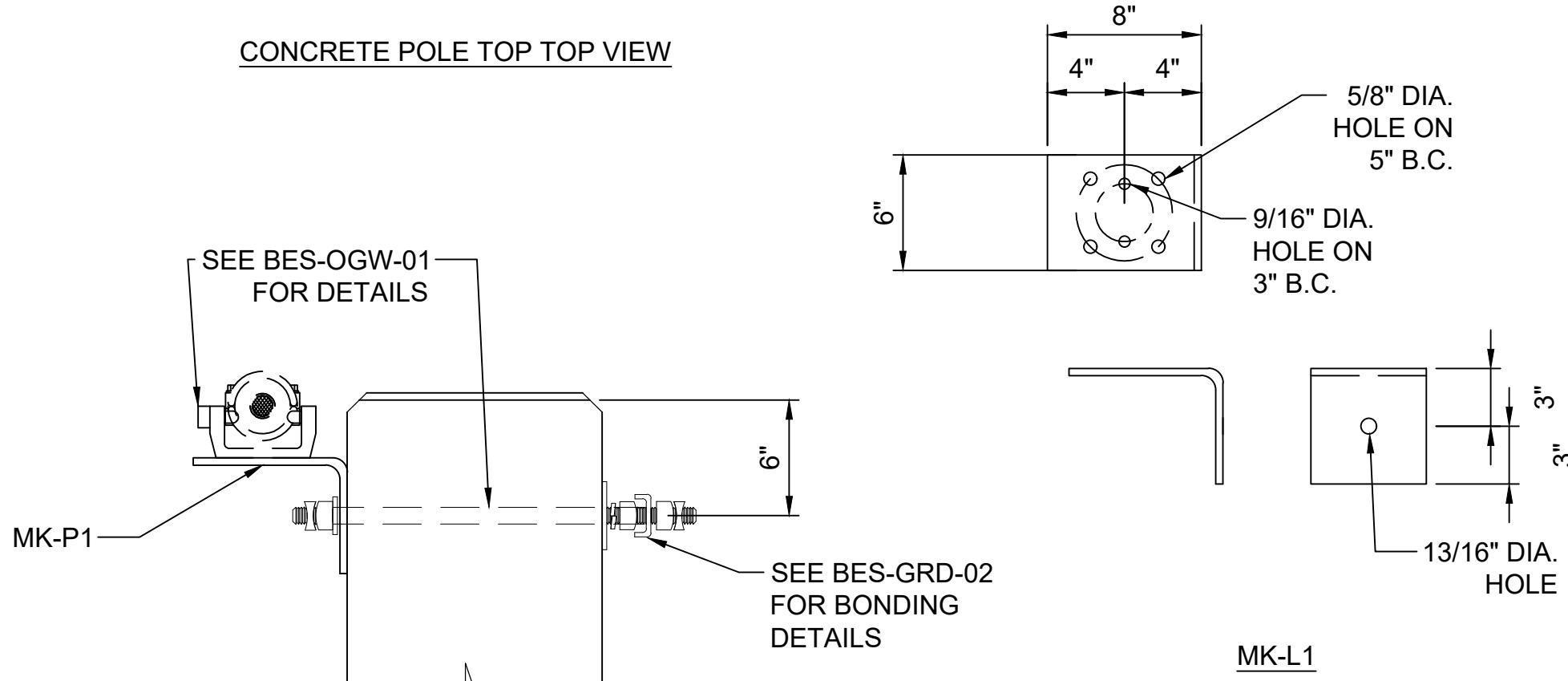
DETAIL  
STRUCTURE 804-23 CONCRETE POLE  
BAYONET



| BILL OF MATERIALS, STL-2 |          |                 |        |    |                 |
|--------------------------|----------|-----------------|--------|----|-----------------|
| MARK                     | QUANTITY | DESCRIPTION     | LENGTH |    | WEIGHT<br>(LBS) |
|                          |          |                 | FT     | IN |                 |
| MK-P1                    | 1        | BENT PL 3/8 X 6 | 1      | 2  | 9               |
| TOTAL BLACK WEIGHT       |          |                 |        |    | 9               |
| GALVANIZED WEIGHT        |          |                 |        |    | 9.3             |



CONCRETE POLE TOP TOP VIEW



CONCRETE POLE TOP ELEVATION VIEW

DETAIL  
OHGW TRUNNION ATTACHMENT  
BRACKET



STRUCTURAL STEEL NOTES:

- ALL STRUCTURAL STEEL SHALL BE DESIGNED, DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE AISC "SPECIFICATION FOR DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS," MANUAL OF STEEL CONSTRUCTION 15TH EDITION AND THE AISC "CODE OF STANDARD PRACTICE," AS REVISED TO DATE.
- ALL WIDE FLANGE STRUCTURAL SHAPES SHALL BE ASTM A992, FY=50KSI. ALL CHANNELS, ANGLES, AND PLATES SHALL BE ASTM A36, UNLESS NOTED OTHERWISE. GRADE 50 MATERIAL, WHERE SPECIFIED, SHALL BE ASTM A572 GR. C. ALL RECTANGULAR HOLLOW STRUCTURAL STEEL SHALL BE ASTM A500 GR. C, FY=46KSI. ALL ROUND HOLLOW STRUCTURAL STEEL SHALL BE ASTM A500 GR. B, FY=42KSI
- THREADED RODS AND NUTS SHALL CONFORM TO ANSI C135.1, UNLESS NOTED OTHERWISE. NUTS SHALL BE ASTM A563 AND WASHERS SHALL CONFORM TO ASTM F436.
- BOLTS SHOULD BE OF SUFFICIENT LENGTH TO EXTEND AT LEAST TWO THREADS BEYOND THE NUT WHEN FULLY TIGHTENED.
- ALL BOLTS, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM F2329.
- ALL BOLT HOLES SHALL BE 13/16" DIA. UNLESS NOTED OTHERWISE.
- ALL STEEL SHALL BE HOT DIPPED GALVANIZED ACCORDING TO ASTM A123 "STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATING ON IRON AND STEEL PRODUCTS".
- ALL WELDING SHALL COMPLY WITH AWS D1.1 USING E70XX ELECTRODES. ALL WELDING TO BE DONE BY AWS PREQUALIFIED WELDERS, CERTIFIED FOR THE WELDS MADE.
- WELDER CERTIFICATION PROCEDURES SHALL BE AS FOLLOWS:
  - ALL WELDERS SHALL BE CURRENTLY CERTIFIED AND REGISTERED BY THE LOCAL BUILDING OFFICIALS AND/OR THE AMERICAN WELDING SOCIETY AND, IF REQUIRED, ALL WELDERS SHALL HAVE THEIR CERTIFICATION AVAILABLE TO THE ENGINEER.
  - A COPY OF CERTIFIED WELDING PROCEDURES NOT PREQUALIFIED BY AWS, SHALL BE SUBMITTED FOR INFORMATION.
- WELDING PROCEDURE AND SEQUENCES SHALL BE PLANNED TO MINIMIZE WELD SHRINKAGE THAT COULD RESULT IN LAMELLAR TEARING. BASEPLATES, CAP PLATES, SHEAR PLATES AND OTHER CONNECTIONS SHALL BE FULLY WELDED TO THE COLUMN OR BEAM SECTIONS. CARE SHALL BE TAKEN TO AVOID EXCESSIVE DEFORMATION OF THE PLATES DURING THE WELDING PROCESS.
- DAMAGED GALVANIZING SHALL BE REPAIRED PER ASTM A780.
- ALL BOLTS IN SHEAR CONNECTIONS SHALL BE INSTALLED TO THE SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR 490 BOLTS". ALL BOLTS AT MOMENT CONNECTIONS SHALL BE TYPE SC INSTALLED TO THE FULLY PRE-TENSIONED CONDITION AS DEFINED IN EITHER 8.2.1 OR 8.2.3 OF THE SPECIFICATION FOR STRUCTURAL JOINTS NOTED ABOVE. FOR THE GALVANIZED SC CONNECTIONS, THE FAYING SURFACES SHALL BE ROUGHENED PRIOR TO INSTALLATION WITH HAND WIRE BRUSHING, PER AISC REQUIREMENTS.
- ALL NUTS FOR BOLTS SHALL BE BROUGHT TO A SNUG-TIGHT CONDITION AND THEN TIGHTENED AN ADDITIONAL 1/4 OF A TURN.
- FABRICATOR SHALL BE RESPONSIBLE FOR SUPPLYING ALL REQUIRED BOLTS FOR STRUCTURE ERECTION.

CONCRETE POLE DRILLING NOTES:

- LOCATE REBAR USING GPR PRIOR TO DRILLING.
- DRILL 1/2" PILOT HOLE PRIOR TO DRILLING FINAL HOLE.
- USE MINIMAL PRESSURE WHEN NEAR EXITING THE POLE SO AS NOT TO CAUSE A BLOWOUT AT THE EXIT LOCATION.

REFERENCE DRAWINGS:

- REFERENCE DRAWINGS:
- BES-COV-01 - COVER SHEET
  - BES-WRK-01 - WORK PLAN
  - BES-OGW-01 - OVERHEAD GROUNDWIRE DETAILS

ISSUED  
FOR CONSTRUCTION

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY  
SERVICES

BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIRS - PHASE 1  
STEEL DETAILS

DESIGNED DMT CHECKED AJK SCALE 1 1/2" = 1'-0"

DATE 10/13/23 ENGINEER CAM

WBS/SO \_\_\_\_\_ APPROVED AJK

BES-STL-01

- R0



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ALEX JOSEPH KLADIVA, PE#76262  
2301 Maitland Center Pkwy, Maitland, FL 32751



BURNS & MCDONNELL  
ENGINEERING COMPANY, INC.  
2301 MAITLAND CENTER PARKWAY  
SUITE 400  
MAITLAND, FL 32751

THE REGISTRANT OF THE NEWLY APPLIED  
SEAL ASSUMES RESPONSIBILITY FOR THE  
CHANGES AS INDICATED BY THE FOLLOWING  
REVISION NUMBER 0



BEACHES | ENERGY  
S E R V I C E S

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**Attachment 2**

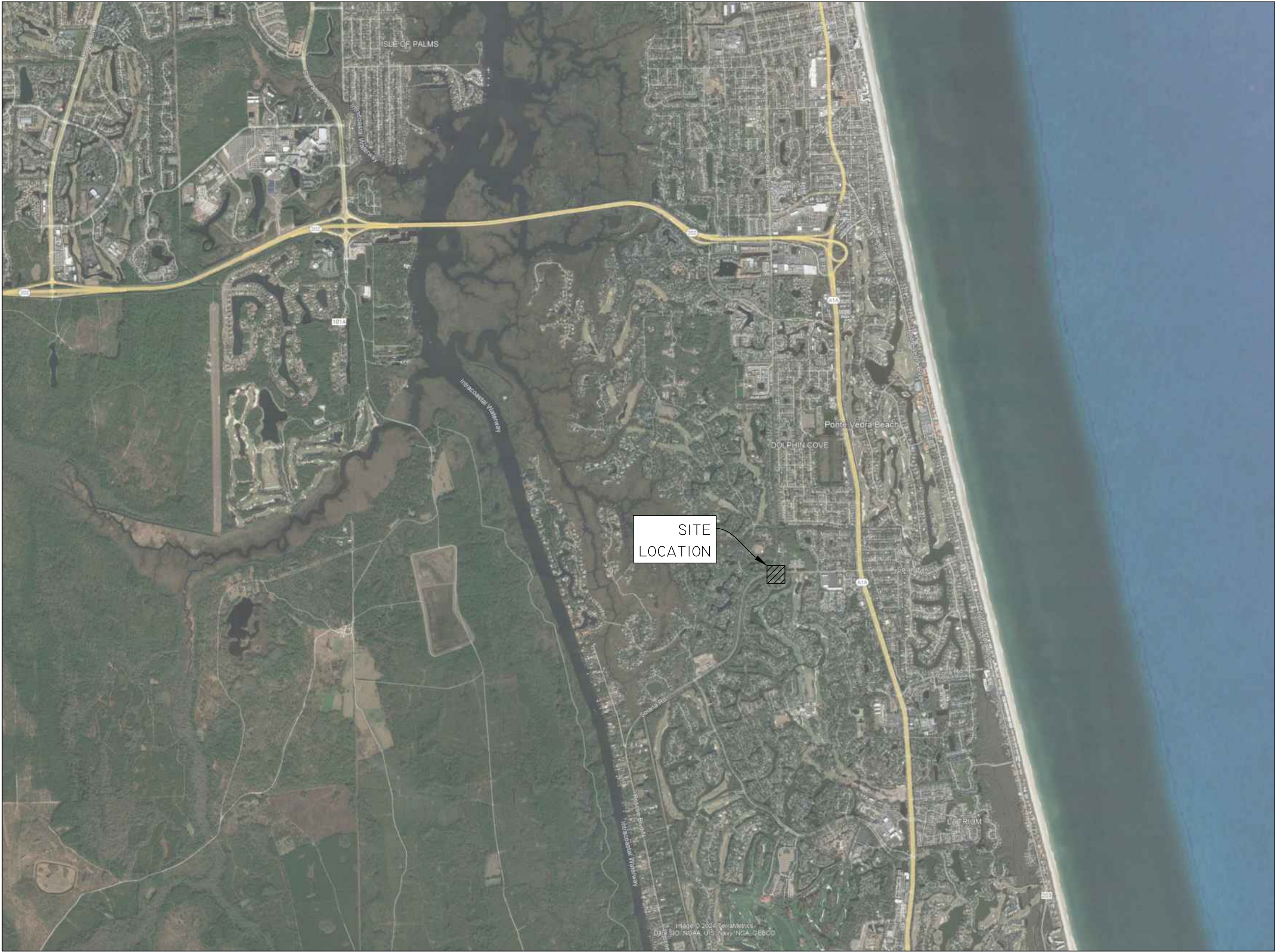
803-40 30% engineering package



# BEACHES ENERGY SERVICES

## STRUCTURE 803-40 REPLACEMENT

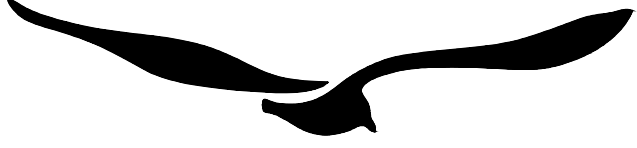
### ST. JOHNS COUNTY, FL



|                   |   |                  |  |  |
|-------------------|---|------------------|--|--|
| DRAWING INDEX     |   |                  |  |  |
| BES-803-40-COV-01 | - | COVER SHEET      |  |  |
| BES-803-40-PP-01  | - | PLAN & PROFILE   |  |  |
| BES-803-40-FRM-01 | - | FRAMING DETAILS  |  |  |
| BES-803-40-BOM-01 | - | BILL OF MATERIAL |  |  |

ISSUED FOR REVIEW

| NO        | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|-----------|------|-------------|-----|-----|-----|-----|
| REVISIONS |      |             |     |     |     |     |



BEACHES ENERGY  
SERVICES

BEACHES ENERGY SERVICES  
STRUCTURE 803-40 REPLACEMENT  
COVER SHEET

|                     |                     |                       |
|---------------------|---------------------|-----------------------|
| DESIGNED <u>SEA</u> | CHECKED <u>AJK</u>  | SCALE <u>AS NOTED</u> |
| DATE <u>2/20/24</u> | ENGINEER <u>DMT</u> |                       |
| WBS/SO _____        | APPROVED <u>AJK</u> |                       |

BES-803-40-COV-01- R0



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|-----|---------|-----------------------|
| REV | DATE    | DESCRIPTION           |



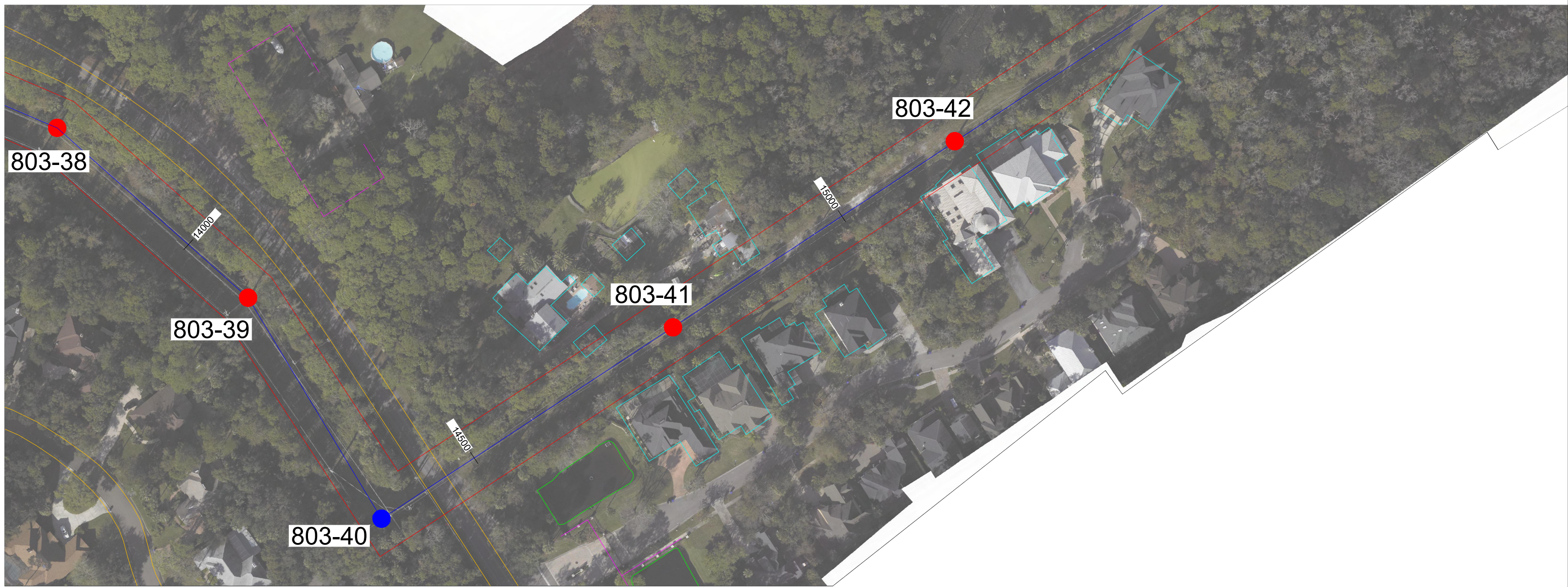
THE REGISTRANT OF THE NEWLY APPLIED SEAL ASSUMES RESPONSIBILITY FOR THE CHANGES AS INDICATED BY THE FOLLOWING REVISION NUMBER 0.

ALEX JOSEPH KLADIVA, PE#76262  
2301 Maitland Center Pkwy, Maitland, FL 32751

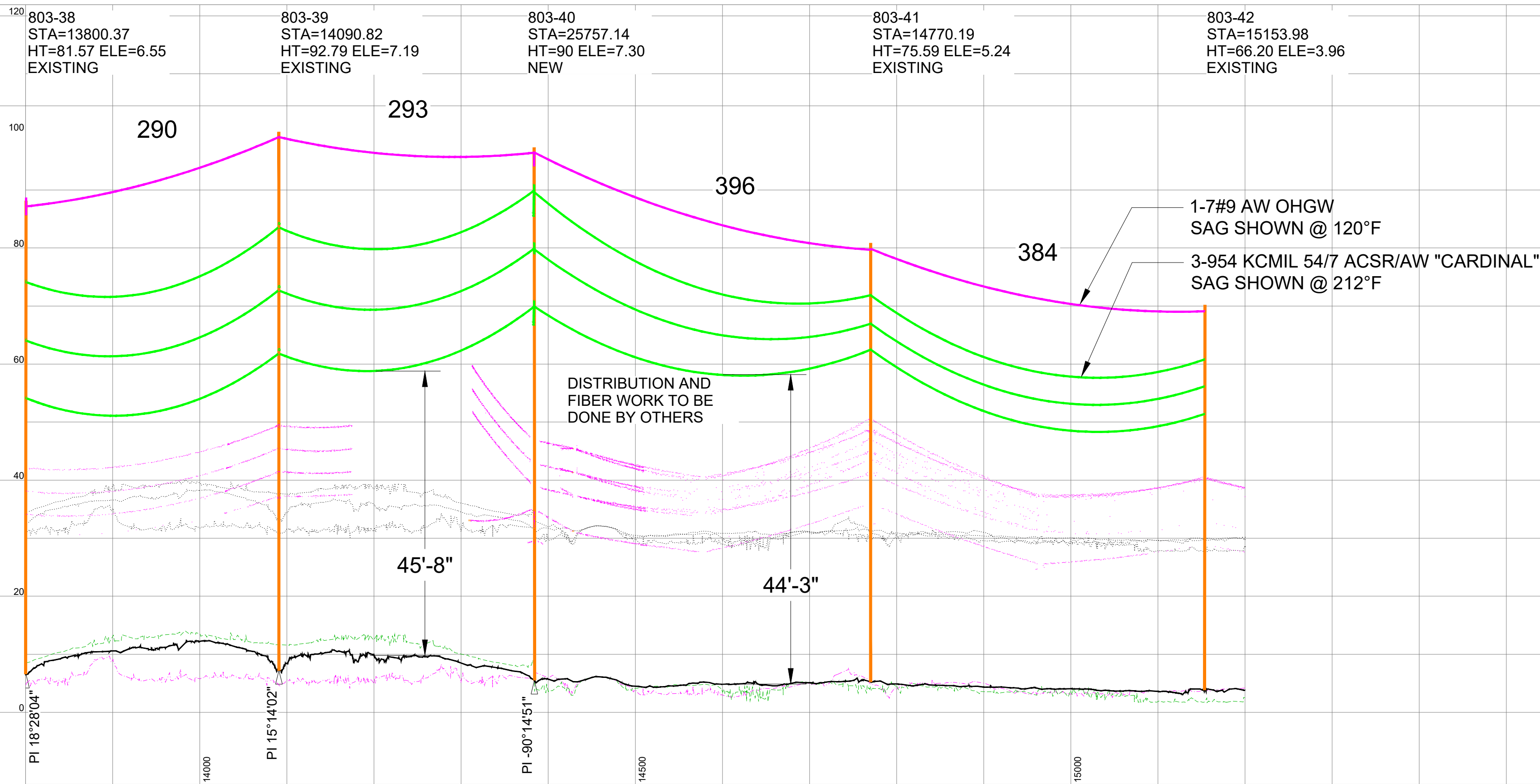
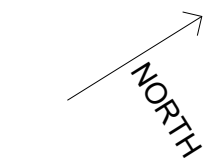
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MAITLAND, FL 32751



\\mcd\dfs\clients\TND\Beaches\Enr\144844\_TimeRep\Ph1\Design\TimeRep\Modelling\803-40 Pole Replacement Project\30% Preliminary Design Package\BES-803-40-PP-01.dwg (803-40) Plotted on: Feb 28, 2024 - 10:35am by geacosta



803-38 - 803-40, 0KV, 7#9 ALUMOWELD 7 STRANDS ALUMOWELD, RULING SPAN 292 (FT), TENSION 1842 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 120F/49C (0-MPH) CREEP 1218 (LBS)  
803-38 - 803-40, 138KV, CARDINAL/AW ACSRAW 954 KCMIL 54/7, RULING SPAN 281 (FT), 3 PHASES, TENSION 3407 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 212F/100C (0-MPH) CREEP 1901 (LBS)  
803-40 - 803-42, 0KV, 7#9 ALUMOWELD 7 STRANDS ALUMOWELD, RULING SPAN 396 (FT), TENSION 1799 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 120F/49C (0-MPH) CREEP 1203 (LBS)  
803-40 - 803-42, 138KV, CARDINAL/AW ACSRAW 954 KCMIL 54/7, RULING SPAN 390 (FT), 3 PHASES, TENSION 5164 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 194F/90C (0-MPH) CREEP 2740 (LBS)  
803-40-1 - 803-40, 35KV, 795 KCMIL 37/0 STRANDS ARBUTUS AAC, RULING SPAN 72 (FT), 2 PHASES, TENSION 985 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 194F/90C (0-MPH) CREEP 267 (LBS)  
803-40-1 - 803-40, 35KV, 795 KCMIL 37/0 STRANDS ARBUTUS AAC, RULING SPAN 75 (FT), TENSION 1146 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 194F/90C (0-MPH) CREEP 281 (LBS)  
803-40-1 - 803-40, 35KV, 795 KCMIL 37/0 STRANDS ARBUTUS AAC, RULING SPAN 72 (FT), TENSION 1281 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 194F/90C (0-MPH) CREEP 276 (LBS)  
803-40 - 803-40-2, 35KV, 795 KCMIL 37/0 STRANDS ARBUTUS AAC, RULING SPAN 52 (FT), TENSION 1293 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 194F/90C (0-MPH) CREEP 203 (LBS)  
803-40 - 803-40-2, 35KV, 795 KCMIL 37/0 STRANDS ARBUTUS AAC, RULING SPAN 53 (FT), TENSION 1346 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 194F/90C (0-MPH) CREEP 208 (LBS)  
803-40 - 803-40-2, 35KV, 795 KCMIL 37/0 STRANDS ARBUTUS AAC, RULING SPAN 54 (FT), TENSION 1559 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 194F/90C (0-MPH) CREEP 211 (LBS)  
803-40 - 803-40-2, 35KV, 795 KCMIL 37/0 STRANDS ARBUTUS AAC, RULING SPAN 54 (FT), TENSION 1559 (LBS) AT 60 (DEG F) CREEP, DISPLAYED 194F/90C (0-MPH) CREEP 212 (LBS)



LEGEND:  
— EXISTING ROW  
— STRUCTURE CENTERLINE  
● PROPOSED STRUCTURE  
● EXISTING STRUCTURE  
--- EXISTING DISTRIBUTION UNDERBUILD

100.0 FT. — HORIZ. SCALE  
15.0 FT. — VERT. SCALE

| REV. NO. | BY  | DATE     | APPR | REVISION              |
|----------|-----|----------|------|-----------------------|
| 0        | DMT | 02/20/24 | AJK  | ISSUED FOR 30% REVIEW |

| REV. NO. | BY | DATE | APPR | REVISION |
|----------|----|------|------|----------|
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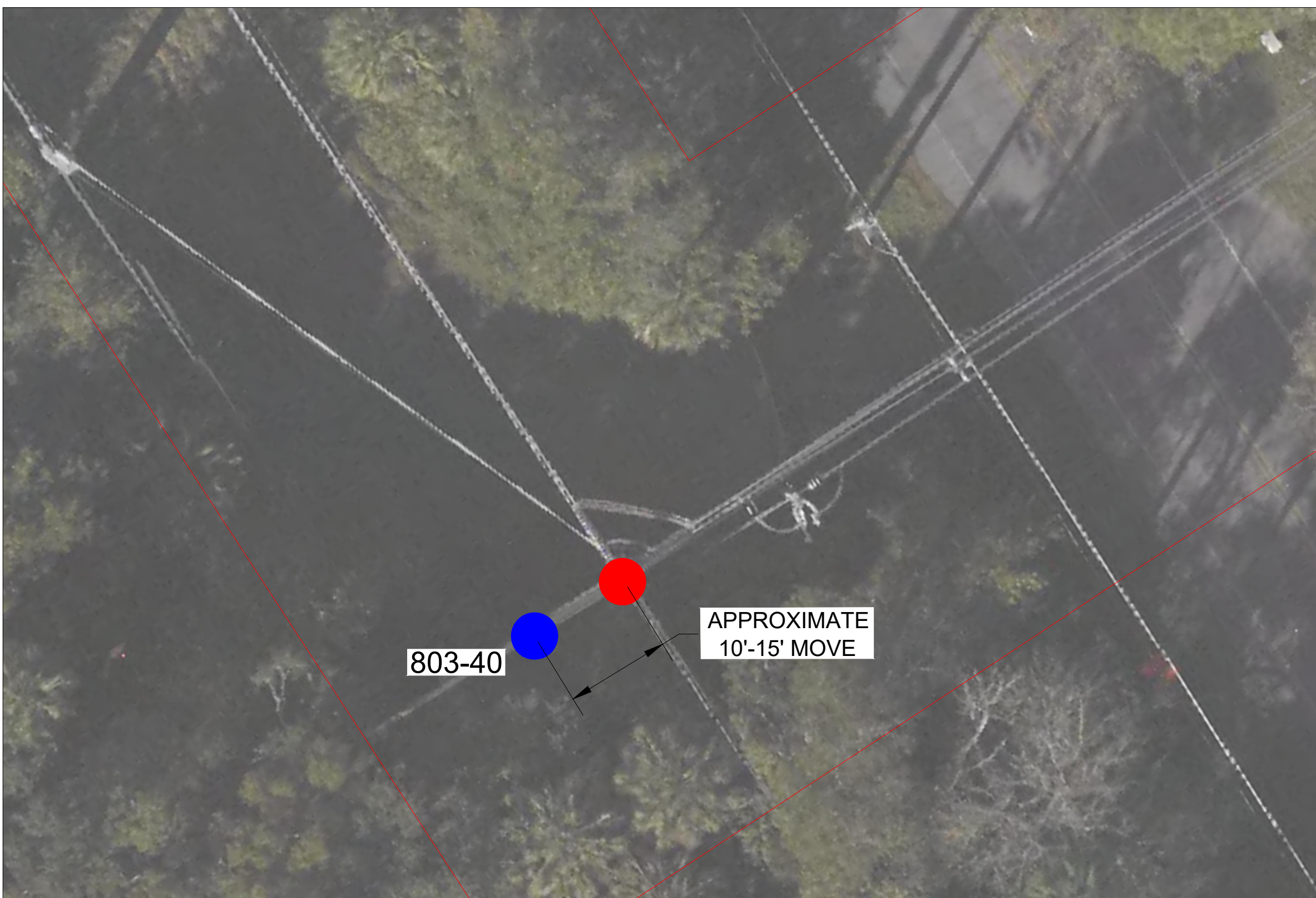
BEACHES  
ENERGY  
SERVICES

|                        |                 |
|------------------------|-----------------|
| DIVISION: TRANSMISSION |                 |
| ENGINEER: DMT          |                 |
| DRN BY: GEA            | DATE 02/20/2024 |
| APPR BY: AJK           | DATE 02/20/2024 |

CIRCUIT 803 - FT DIEGO TO BUTLER 138KV  
803-38 TO 803-42

PRELIMINARY NOT  
FOR CONSTRUCTION

|             |                  |
|-------------|------------------|
| DRAWING NO. | BES-803-40-PP-01 |
| SHEET       | PAGE 1 OF 1      |
| REV.        | 0                |

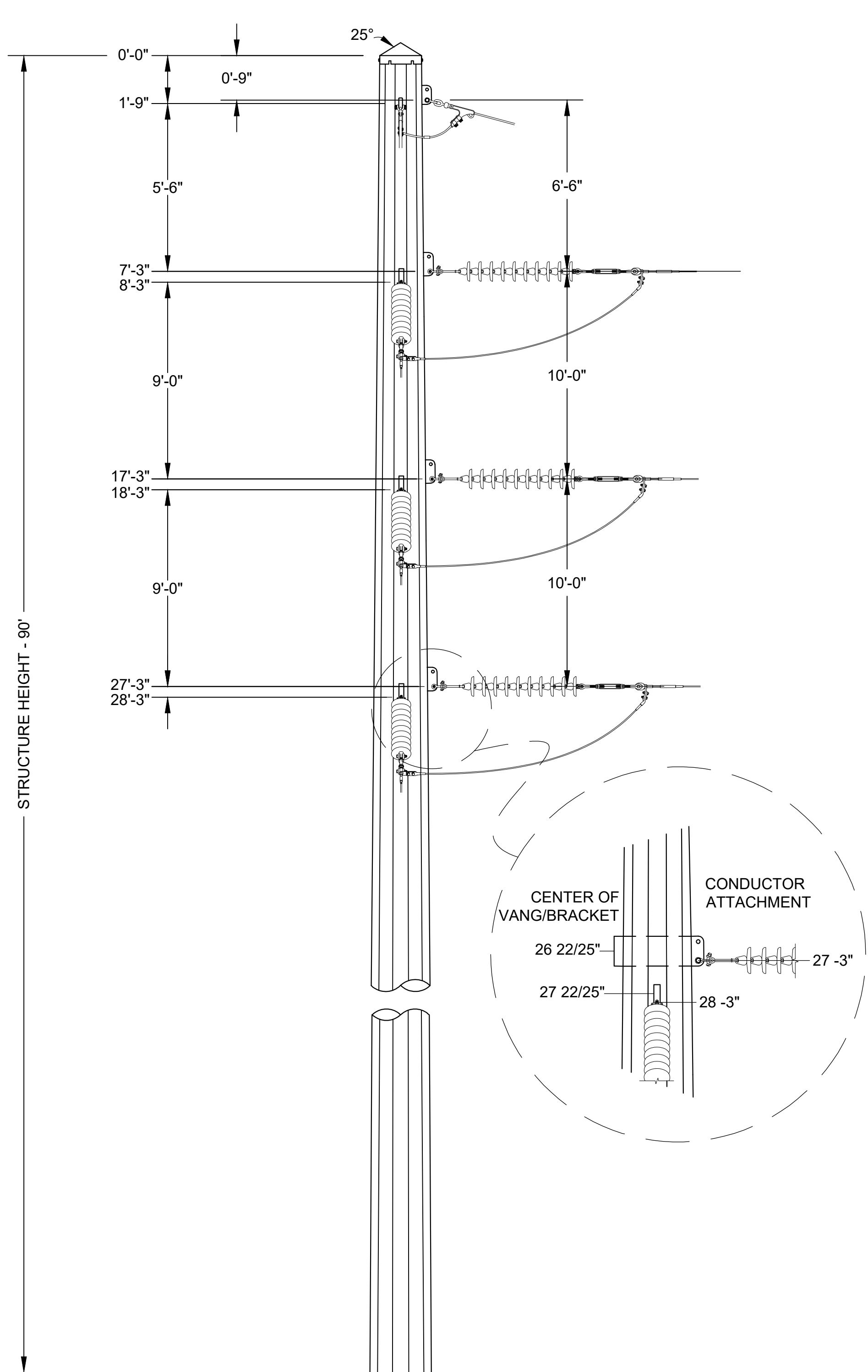


STR. 803-40 DETAIL

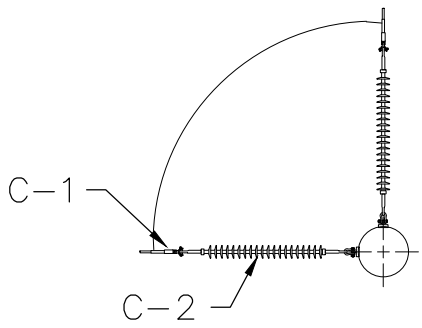
NOTES:

- THE PROJECT SCOPE CONSISTS OF REPLACING GUYED LARGE ANGLE DEAD-END CONCRETE POLE STRUCTURE #830-40 WITH A NEW DRILLED PIER FOUNDATION WITH ROCK BACKFILL LARGE ANGLE DEAD-END STEEL POLE STRUCTURE, APPROXIMATELY 10-15 FEET BACK FROM THE EXISTING LOCATION.
- THE EXISTING CONDUCTOR 954 KCMIL 54/7 ACSRAW "CARDINAL" CONDUCTOR AND SHIELD WIRE 7#9 ALUMOWELD 7 STRANDS WILL BOTH BE TRANSFERRED OVER TO THE NEW STRUCTURE VIA SPLICING METHOD.
- ANTICIPATED REMOVAL: REMOVE EXISTING GUYED LARGE ANGLE DEAD-END CONCRETE POLE STRUCTURE #830-40 AND CONDUCTOR HARDWARE.
- INSULATORS TO BE REPLACED WITH TOUGHENED GLASS WITH 16 BELLS TO MATCH THE EXISTING BELL QUANTITY.
- AN ELECTRICAL WORK ORDER BOOK TO IMPLEMENT CONSTRUCTION
- THE CONDUCTORS TO BE RE-CONNECTED TO THE NEW STRUCTURE 803-40 ARE TO BE SPLICED (ADDING A CERTAIN LENGTH) AND RE-SAGGED IN THE FOLLOWING SECTIONS:
  - STRUCTURE 803-40 THROUGH STRUCTURE 803-39 TO 803-38 (138KV AND OHGW)
  - STRUCTURE 803-40 THROUGH STRUCTURE 803-41 TO 803-42 (138KV AND OHGW)

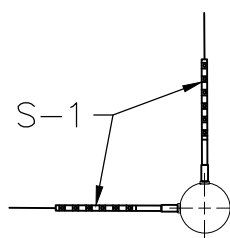




138kV SINGLE CIRCUIT  
ENGINEERED STEEL DEADEND  
LARGE ANGLE STRUCTURE



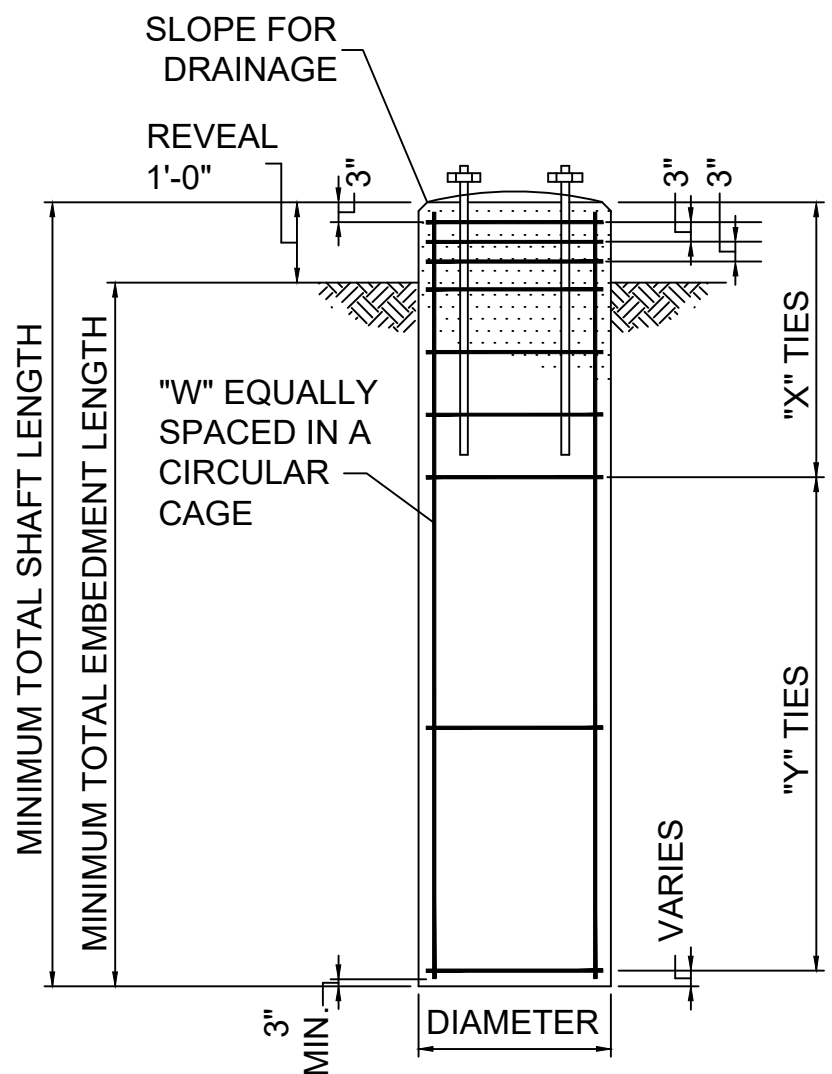
CONDUCTOR PLAN



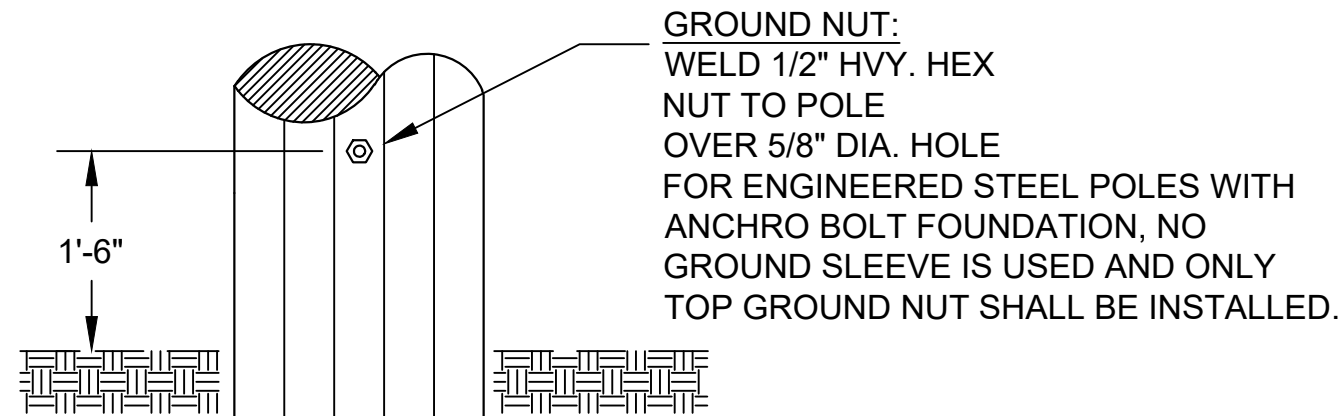
SHIELD WIRE PLAN

- NOTES:
- POLE MANUFACTURER'S DETAILS AND/OR ASSEMBLY DRAWINGS WILL BE FURNISHED SEPARATELY WITH WORK ORDERS.
  - STEEL POLE MANUFACTURER SHALL SUPPLY THE FOLLOWING:
    - OHG & CONDUCTOR VANGS
    - MISC HARDWARE/BOLTS
  - GROUNDING PER G-1 DETAIL DRAWING. FOR BONDING GROUND CONNECTORS & #2 7-STRAND CU IS PROVIDED IN THE BILL OF MATERIALS.
  - 1/2" STAINLESS STEEL NUT SHALL BE WELDED TO STRUCTURE AT 1'-6" ABOVE GRADE.
  - WHEN ADDING CONICAL CAPS CONSIDER LOWERING ATTACHMENT POINT FOR THE STATIC VANGS TO ACCOMMODATE THE CONICAL CAP.
  - CONDUCTOR ATTACHMENT SPACING IS ADEQUATE FOR CONTAMINATION ZONE 1 AND ZONE 2. DESIGNER SHOULD VERIFY POLLUTION LEVELS DO NOT EXCEED LEVEL D (REFER TO IEC 60818-1).

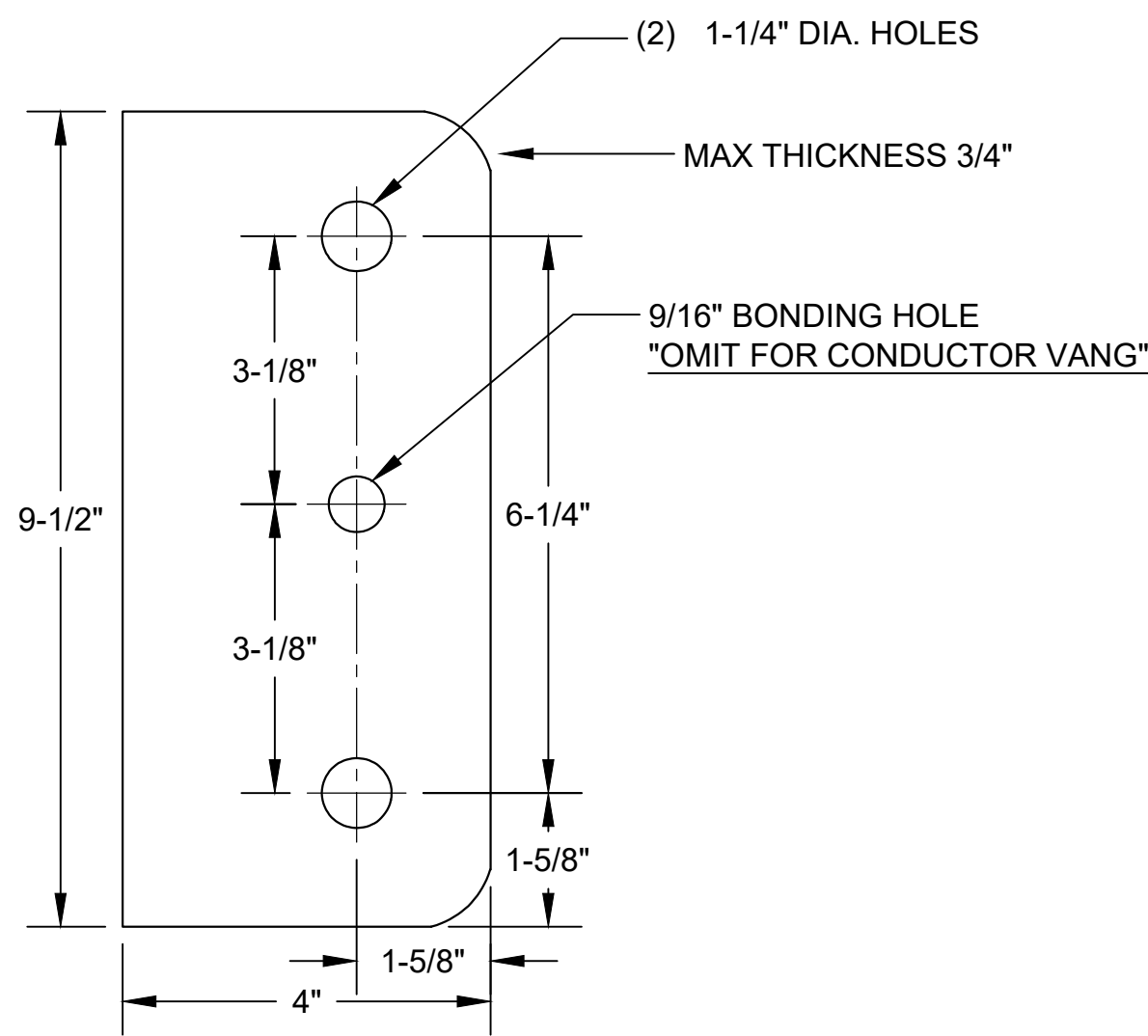
| ASSEMBLY REQUIRED: |                              |
|--------------------|------------------------------|
| DWG                | DESCRIPTION                  |
| C-1                | CONDUCTOR W/O JUMPER SUPPORT |
| S-1                | OHG (1) STRAIN CLAMP         |
| G-1                | GROUNDING                    |
| C-2                | SUSPENSION INSULATOR         |



DRILLED SHAFT FOUNDATION DETAIL



GROUND SLEEVE AND GROUNDING NUTS  
FOR ENGINEERED AND STANDARD  
SERIES (LD) STEEL POLES



CONDUCTOR AND OHG  
DEADEND VANG

CONSTRUCTION NOTES:

MATERIAL NOTES:

FOUNDATION PLAN:

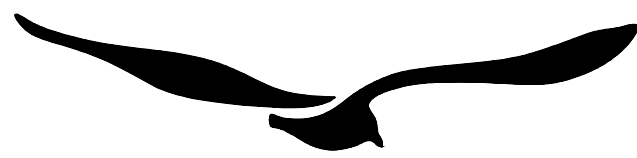
GENERAL NOTES:

SPECIFICATIONS:

ISSUED FOR REVIEW

| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY  
SERVICES  
TRANSMISSION LINE REPAIR - PHASE 1  
FRAMING DRAWING

|                     |                     |                       |
|---------------------|---------------------|-----------------------|
| DESIGNED <u>SEA</u> | CHECKED <u>AJK</u>  | SCALE <u>AS NOTED</u> |
| DATE <u>2/28/24</u> | ENGINEER <u>DMT</u> |                       |
| WBS/SO              | APPROVED <u>AJK</u> |                       |

BES-803-40-FRM-01

- R0

REFERENCE DRAWINGS:  
BES-803-40-PNP-01 - PLAN & PROFILE  
BES-803-40-ASY-01 - ASSEMBLY DETAILS 1  
BES-803-40-BOM-01 - BILL OF MATERIAL



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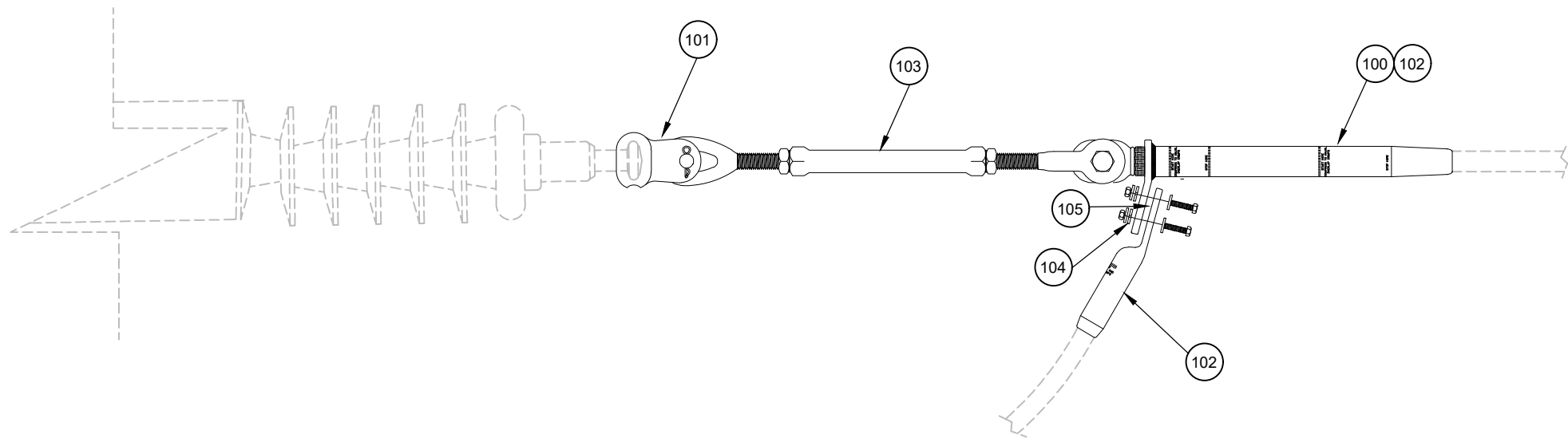
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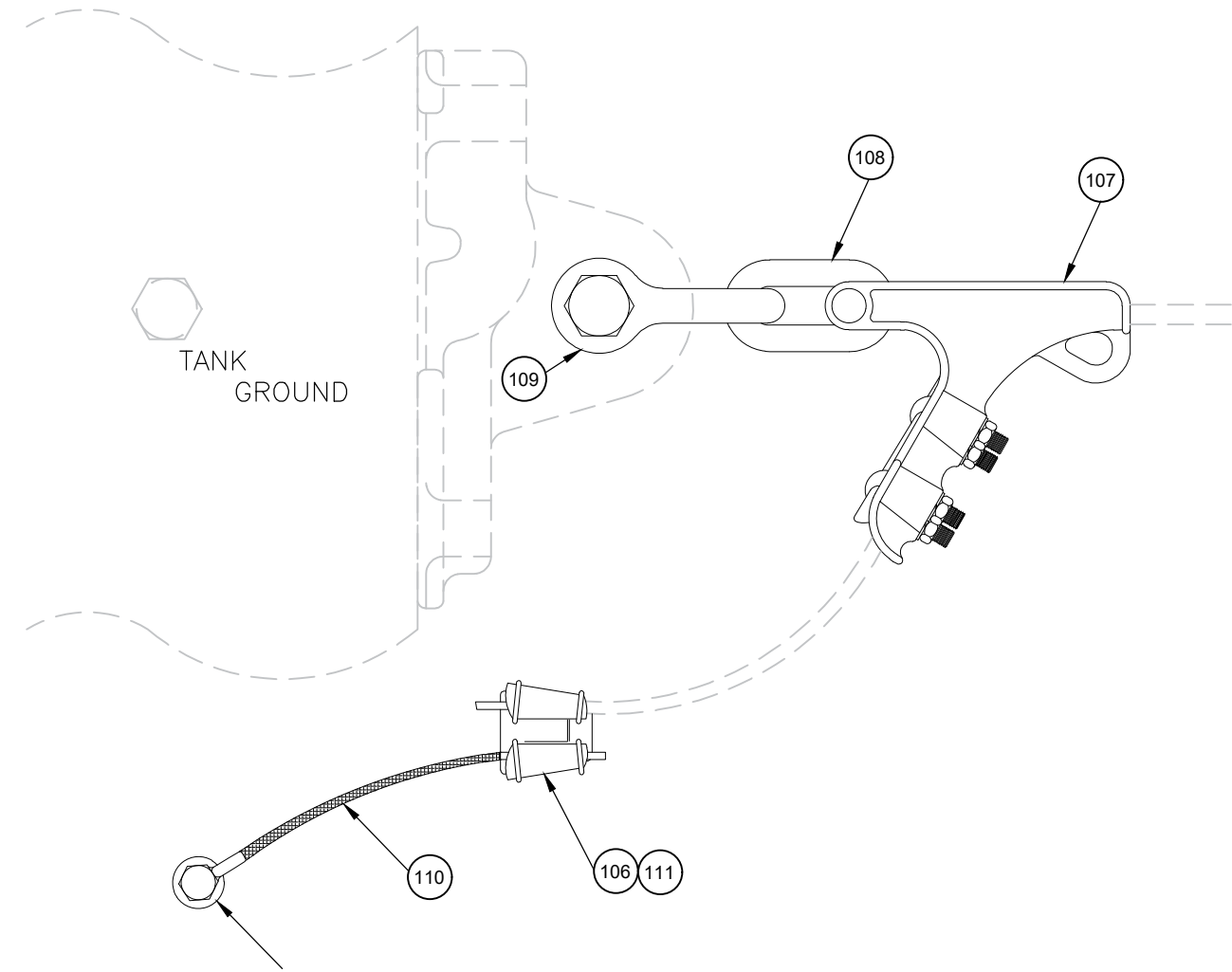
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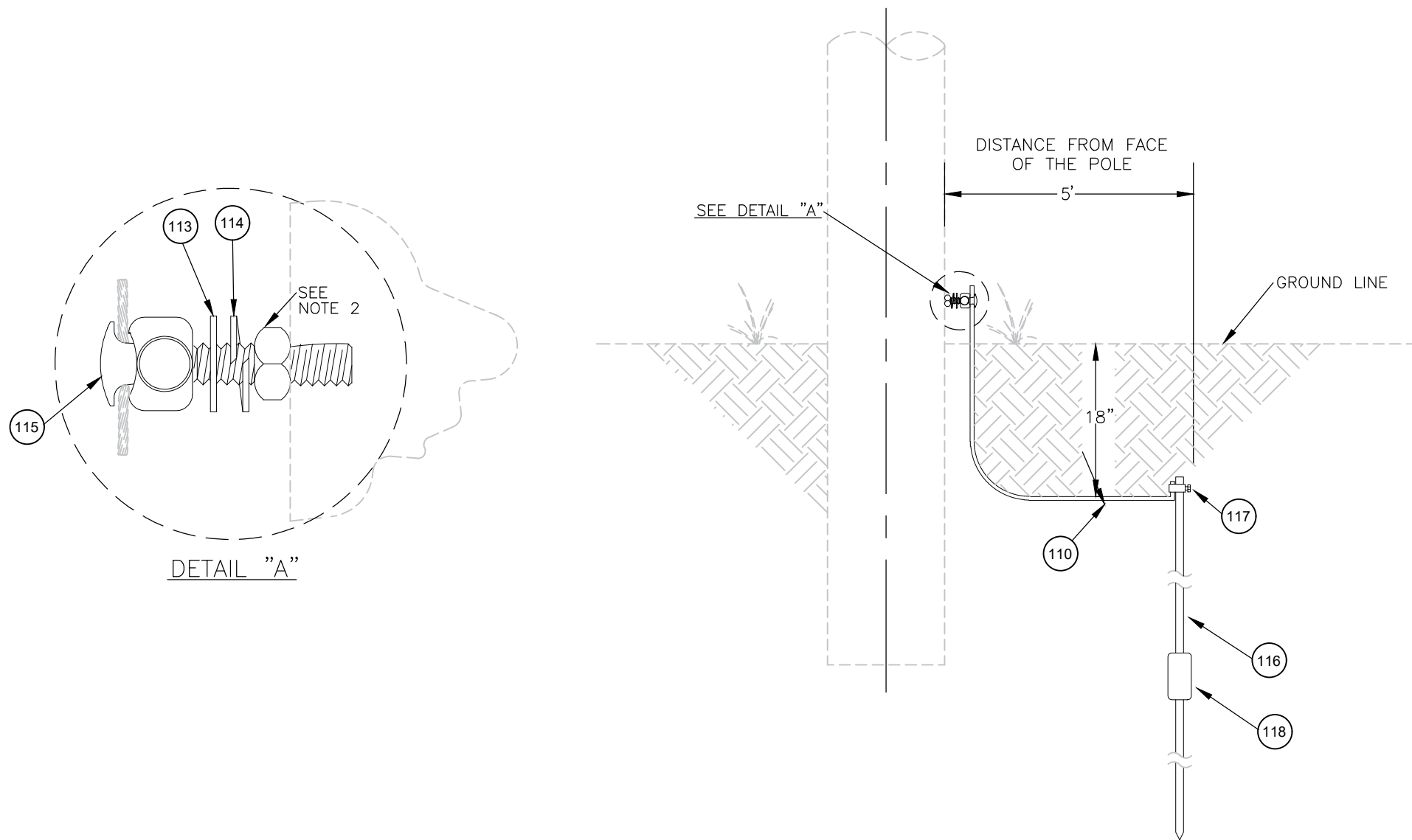
C-1  
CONDUCTOR DEADENDS  
ALUM. CONDUCTOR COMP W/O CORONA MATERIAL

| BMcD BOM# | Qty TOTAL | DESCRIPTION                                                | MANUFACTURER | PART NO.         |
|-----------|-----------|------------------------------------------------------------|--------------|------------------|
| 100       | 7         | DEADEND, 954 ACSR COND, SNGL TONGUE, 2 DIE, 4 HOLE         | HUBBELL      | SEDA4121         |
| 101       | 7         | CLEVIS SOCKET, 50K                                         | HUBBELL      | SC501            |
| 102       | 7         | COMP, HI TEMP COND COMP FILLER, 1 LB TUBE                  | AFL          | AFCHT10T         |
| 103       | 7         | TURNBUCKLE, JAW/EYE GALV, 26" LG, 1" SHANK DIA, 12" TAKEUP | HUBBELL      | TB1.E12BNKLN     |
| 104       | 25        | WASHER LOCK SCL COIL, 1/2" BOLT, ALUM                      | HUBBELL      | 4035             |
| 105       | 7         | COMPOUND ELECTRICAL INHIBITOR 8.8OZ HI TEMP                | AFL          | HI TEMP COMPOUND |



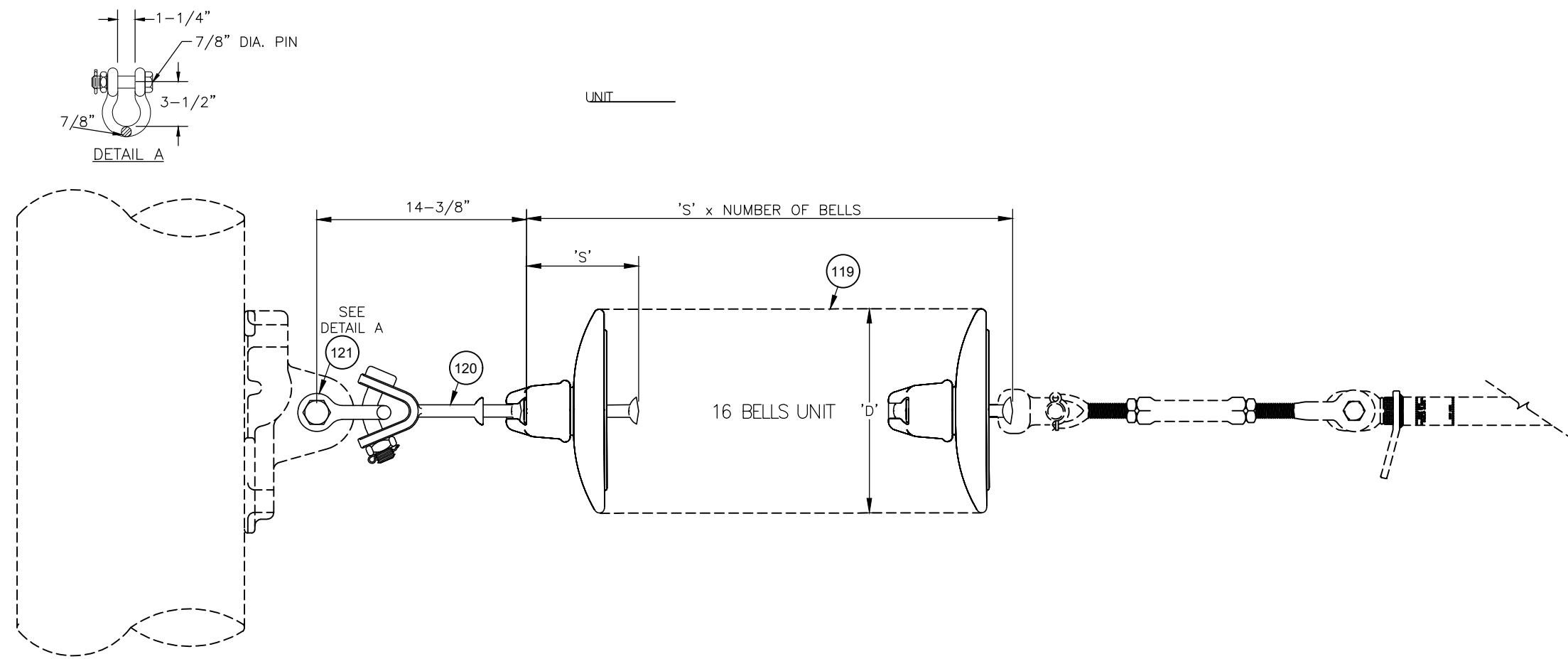
S-1  
OVERHEAD GROUND WIRE DEADEND STRAIN CLAMP W/ ANCHOR SHACKLE SINGLE POSITION

| BMcD BOM# | Qty TOTAL | DESCRIPTION                                              | MANUFACTURER | PART NO.        |
|-----------|-----------|----------------------------------------------------------|--------------|-----------------|
| 106       | 3         | CARTRIDGE, LARGE, BLUE                                   | AMPINC       | 693381          |
| 107       | 3         | CLAMP, STRAIN, 0.2"x0.59" COND, 15000LB                  | HUBBELL      | SD57N           |
| 108       | 3         | LINK STRAIGHT CHAIN, 40000LB                             | HUBBELL      | 792722000       |
| 109       | 3         | SHACKLE, ANCHOR, 40000LB                                 | HUBBELL      | AS35 BNK        |
| 110       | 125       | WIRE/CABLE ELECTRICAL, BARE 7 STR SD, 2 AWG, CU COND     | SOUTH WIRE   | 10686416        |
| 111       | 3         | CLAMP, OHGW TAP WEDGE, BLUE ALUM                         | AM/PRODUCTS  | 600403          |
| 112       | 3         | CONN. ELECTRICAL, TERM. LUG, 2 SAG COND, COMP CONN, ALUM | PENNUNION CO | BLU2S10USA MADE |



G-1  
GROUNDING  
CONCRETE AND STEEL POLES

| BMcD BOM# | Qty TOTAL | DESCRIPTION                                                         | MANUFACTURER   | PART NO. |
|-----------|-----------|---------------------------------------------------------------------|----------------|----------|
| 113       | 2         | WASHER FLAT, 1/2" NOM, 1.25" OD, 0.091" THK, SILICONE BRZ, MED SEC. | ALLIED BOLT IN | 12FWSB   |
| 114       | 2         | WASHER LOCK SPLIT, 1/2" NOM, SILICONE BRZ, MED SEC.                 | FASTENALCO     | 74972    |
| 115       | 2         | CLAMP, GRND. TRANSFORMER, 8 AWG SOL 2 AWG STR CU, CONN, EYE BOLT    | HUBBELL        | GTCL23A  |
| 116       | 8         | ROD, GRND, 5/8" DIA, 120" LG, 0.013" THK                            | ERICOPRODUCTS  | 615803   |
| 117       | 2         | CONN. ELEC. GROUND, 2/0 AWG STR CU COND, CU CONN.                   | ERICOPRODUCTS  | EHL58C2G |
| 118       | 7         | COUPLING, ROD, GROUND, 5/8", BRZ NON THD                            | ERICOPRODUCTS  | CC58     |



C-2  
INSULATORS  
TOUGHENED GLASS DEADEND 40K BALL & SOCKET INSULATOR

| BMcD BOM# | Qty TOTAL | DESCRIPTION                                                           | MANUFACTURER | PART NO.    |
|-----------|-----------|-----------------------------------------------------------------------|--------------|-------------|
| 119       | 99        | INSL. SUSP. TOUGHENED GLASS, 11" DIA X 53/4" SPACING 40K              | HUBBELL      | PSN180146DC |
| 120       | 7         | LINK EXT. YCLEVIS BALL, 11" LG, 50K                                   | HUBBELL      | HYBC5011    |
| 121       | 7         | SHACKLE, ANCHOR, 11/4" INSIDE WD, 31/2" INSIDE LG, 7/8" PIN, 60K LOAD | HUBBELL      | ASSOVBNK    |

CONSTRUCTION NOTES:

MATERIAL NOTES:

FOUNDATION PLAN:

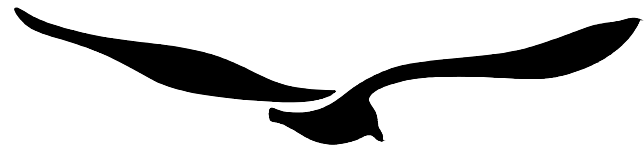
GENERAL NOTES:

SPECIFICATIONS:

ISSUED FOR REVIEW

| NO | DATE | DESCRIPTION | DSO | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY SERVICES  
TRANSMISSION LINE REPAIR - PHASE 1  
FRAMING DRAWING

|                     |                     |                       |
|---------------------|---------------------|-----------------------|
| DESIGNED <u>SEA</u> | CHECKED <u>AJK</u>  | SCALE <u>AS NOTED</u> |
| DATE <u>2/28/24</u> | ENGINEER <u>DMT</u> |                       |
| WBS/SO              | APPROVED <u>AJK</u> |                       |

BES-803-40-ASY-01

- R0

REFERENCE DRAWINGS:

BES-803-40-FRM-01 - FRAMING DETAILS  
BES-803-40-BOM-01 - BILL OF MATERIAL



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|     |         |                       |
|-----|---------|-----------------------|
| REV | DATE    | DESCRIPTION           |
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| Beaches Energy Services  |           |                 |                                                                       |               |                  |  |
|--------------------------|-----------|-----------------|-----------------------------------------------------------------------|---------------|------------------|--|
| BES TLine Repair Phase 1 |           |                 |                                                                       |               |                  |  |
| STR 80340 Replacement    |           |                 |                                                                       |               |                  |  |
| BMcD BOM#                | Qty TOTAL | UNIT OF MEASURE | DESCRIPTION                                                           | MANUFACTURER  | PART NO.         |  |
| 100                      | 7         | Each            | DEADEND, 954 ACSR COND, SNGLTONGUE, 2 DIE, 4 HOLE                     | HUBBELL       | SEDA4121         |  |
| 101                      | 7         | Each            | CLEVIS--SOCKET, 50K                                                   | HUBBELL       | SC501            |  |
| 102                      | 7         | Each            | COMP, HI TEMP COND COMP FILLER, 1LB TUBE                              | AFL           | AFCHT10T         |  |
| 103                      | 7         | Each            | TURNBUCKLE, JAWEYE GALV, 26" LG, 1" SHANK DIA, 12" TAKEUP             | HUBBELL       | TB1JE12BNKLN     |  |
| 104                      | 25        | Each            | WASHER, LOCK, SGL COIL 1/2" BOLT, ALUM                                | HUBBELL       | 4035             |  |
| 105                      | 7         | Each            | COMPOUND ELECTRICAL INHIBITOR 8.8OZ HI TEMP                           | AFL           | HI TEMP COMPOUND |  |
| 106                      | 3         | Each            | CARTRIDGE, LARGE, BLUE                                                | AMPINC        | 693381           |  |
| 107                      | 3         | Each            | CLAMP, STRAIN, 0.2"0.59" COND, 15000LB                                | HUBBELL       | SD57N            |  |
| 108                      | 3         | Each            | LINK, STRAIGHT CHAIN, 40000LB                                         | HUBBELL       | 792722000        |  |
| 109                      | 3         | Each            | SHACKLE, ANCHOR, 40000LB                                              | HUBBELL       | AS35 BNK         |  |
| 110                      | 125       | FT              | WIRE/CABLE, ELECTRICAL, BARE 7 STR SD, 2 AWG, CU COND                 | SOUTHWIRE     | 10686416         |  |
| 111                      | 3         | Each            | CLAMP, OHGW TAP WEDGE, BLUE ALUM                                      | AMPPRODUCTS   | 600403           |  |
| 112                      | 3         | Each            | CONN. ELECTRICAL, TERM. LUG, 2 SWG COND, COMP CONN, ALUM              | PENNUNIONCO   | BLU2S10USAMADE   |  |
| 113                      | 2         | Each            | WASHER, FLAT, 1/2" NOM, 1.25" OD, 0.091" THK, SILICONE BRZ, MED SEC.  | ALLIEDBOLTIN  | 12FWSB           |  |
| 114                      | 2         | Each            | WASHER, LOCK, SPLIT, 1/2" NOM, SILICONE BRZ, MED SEC.                 | FASTENALCO    | 74972            |  |
| 115                      | 2         | Each            | CLAMP, GRND. TRANSFORMER, 8 AWG SOL2 AWG STR CU, CONN, EYEBOLT        | HUBBELL       | GTCL23A          |  |
| 116                      | 8         | Each            | ROD, GRND. 5/8" DIA, 120" LG, 0.013" THK                              | ERICOPRODUCTS | 615803           |  |
| 117                      | 2         | Each            | CONN. ELEC. GROUND. 2/0 AWG STR CU COND. CU CONN.                     | ERICOPRODUCTS | EHL58C2G         |  |
| 118                      | 7         | Each            | COUPLING, ROD, GROUND, 5/8", BRZ NON THD                              | ERICOPRODUCTS | CC58             |  |
| 119                      | 99        | Each            | INSL. SUSP. TOUGHENED GLASS, 11" DIA X 53/4" SPACING 40K              | HUBBELL       | PSN180146DC      |  |
| 120                      | 7         | Each            | LINK, EXT. Y CLEVISBALL, 11" LG, 50K                                  | HUBBELL       | HYBC5011         |  |
| 121                      | 7         | Each            | SHACKLE, ANCHOR, 11/4" INSIDE WD, 31/2" INSIDE LG, 7/8" PIN, 60K LOAD | HUBBELL       | AS50WBNK         |  |
| 122                      | 3         | Each            | AREAL MARKER FOR CONCRETE/STEEL "0"                                   | UTICOMSYSTEMS | U443250          |  |
| 123                      | 2         | Each            | AREAL MARKER FOR CONCRETE/STEEL "3"                                   | UTICOMSYSTEMS | U443253          |  |
| 124                      | 2         | Each            | AREAL MARKER FOR CONCRETE/STEEL "4"                                   | UTICOMSYSTEMS | U443254          |  |
| 125                      | 2         | Each            | AREAL MARKER FOR CONCRETE/STEEL "8"                                   | UTICOMSYSTEMS | U443258          |  |
| 126                      | 2         | Each            | AREAL MARKER FOR CONCRETE/STEEL ""                                    | UTICOMSYSTEMS | U443264          |  |
| 127                      | 1500      | FT              | 954 ACSR/AW CARDINAL CONDUCTOR                                        | SOUTHWIRE     | 23491415         |  |
| 128                      | 500       | FT              | 7#9 ALUMOWELD CONDUCTOR                                               | AFL           | 7 No. 9          |  |
| 129                      | 7         | Each            | DAMPER, CONDUCTOR, 954 ACSR/AW                                        | PLP           | VSD4032          |  |
| 130                      | 7         | Each            | SPLICE, SLEEVE,FULL TENSION, 954 ACSR                                 | BURNDY        | YTS48RT48RS      |  |
| 131                      | 3         | Each            | DAMPER, SHIELD WIRE, 7 NO. 9                                          | PLP           | 5050104          |  |
| 132                      | 3         | Each            | SPLICE, SLEEVE, FULL TENSION, SHIELD WIRE 7NO. 9                      | BURNDY        | YDS7M9T          |  |
| 133                      | 7         | Each            | ARMOR RODS, 954 KCMIL 54/7                                            | PLP           | AR0142           |  |
| 134                      | 5         | Each            | ARMOR RODS, 7 NO. 9, SUSPENSION                                       | PLP           | AR0115           |  |

REFERENCE DRAWINGS:  
BES-803-40-FRM-01 - FRAMING DETAILS  
BES-803-40-ASY-01 - ASSEMBLY DETAILS

ALEX JOSEPH KLADIVA, PE#76262  
2301 Maitland Center Pkwy, Maitland, FL 32751



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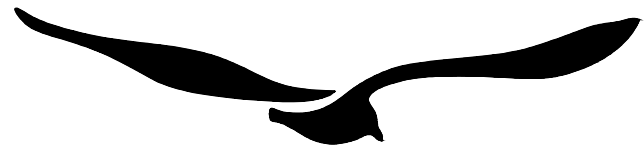
**BURNS  
MCDONNELL**  
BURNS & MCDONNELL  
ENGINEERING COMPANY, INC.  
2301 MAITLAND CENTER PARKWAY  
SUITE 400  
MAITLAND, FL 32751

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| NO | DATE | DESCRIPTION | DSD | EGR | CHK | APD |
|----|------|-------------|-----|-----|-----|-----|

REVISIONS



BEACHES ENERGY  
S E R V I C E S  
BEACHES ENERGY SERVICES  
STRUCTURE 803-40 REPLACEMENT  
BILL OF MATERIAL

|                     |                     |                       |
|---------------------|---------------------|-----------------------|
| DESIGNED <u>SEA</u> | CHECKED <u>AJK</u>  | SCALE <u>AS NOTED</u> |
| DATE <u>2/20/24</u> | ENGINEER <u>DMT</u> |                       |
| WBS/SO              | APPROVED <u>AJK</u> |                       |

BES-803-40-BOM-01

- R0



| Row # | Structure Number | Line Angle (deg) | Stake Description | Station (ft) | Offset (ft) | X Easting (ft) | Y Northing (ft) | Z Elevation (ft) | Structure Height or Pole Length (ft) |
|-------|------------------|------------------|-------------------|--------------|-------------|----------------|-----------------|------------------|--------------------------------------|
| 3     | 803-40           | -92.17           | Structure Hub     | 25757.14     | 0           | 531836.029     | 2142701.333     | 7.299            | 90                                   |

REFERENCE DRAWINGS:  
BES-803-40-COV-01 - COVER SHEET  
BES-803-40-PNP-01 - PLAN & PROFILE



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2301 Maitland Center Pkwy, Maitland, FL 32751

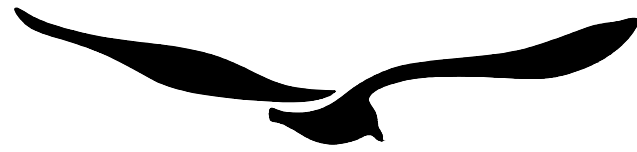


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|----|------|-------------|-----|-----|-----|-----|
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REVISIONS



BEACHES ENERGY  
S E R V I C E S  
BEACHES ENERGY SERVICES  
STRUCTURE 803-40 REPLACEMENT  
STRUCTURE STAKING

DESIGNED SEA CHECKED AJK SCALE AS NOTED  
DATE 2/28/24 ENGINEER DMT  
WBS/SO \_\_\_\_\_ APPROVED AJK

BES-803-40-STK-01 - R0



| From                                  | To     | Cable       | Cable     | Span        | Mid Span Sag (ft-in) @ °F |        |        |        |        |        |       |        |        |       |        | Span Vert. |
|---------------------------------------|--------|-------------|-----------|-------------|---------------------------|--------|--------|--------|--------|--------|-------|--------|--------|-------|--------|------------|
| Str                                   | Str    |             | Condition | Length (ft) | 0°                        | 10°    | 20°    | 30°    | 40°    | 50°    | 60°   | 70°    | 80°    | 90°   | 100°   | Proj. (ft) |
| Structures from:                      |        |             | 803-38    | to          | 803-40                    |        |        |        |        |        |       |        |        |       |        |            |
| Section Max Horizontal Tension (lbs): |        |             |           |             | 6201                      | 5581   | 5018   | 4518   | 4086   | 3716   | 3403  | 3140   | 2914   | 2723  | 2559   | -          |
| 803-38                                | 803-39 | 954 ACSR/AW | Creep RS  | 289         | 2'-0'                     | 2'-3"  | 2'-5"  | 2'-9"  | 3'-0"  | 4'-5"  | 3'-7" | 3'-11" | 4'-3"  | 4'-6" | 4'-10" | 5.63       |
| 803-38                                | 803-39 | 954 ACSR/AW | Creep RS  | 289         | 2'-0'                     | 2'-3"  | 2'-6"  | 2'-9"  | 3'-0"  | 4'-5"  | 3'-7" | 3'-11" | 4'-3"  | 4'-6" | 4'-10" | 4.72       |
| 803-38                                | 803-39 | 954 ACSR/AW | Creep RS  | 289         | 2'-0'                     | 2'-3"  | 2'-5"  | 2'-9"  | 3'-0"  | 4'-5"  | 3'-7" | 3'-11" | 4'-3"  | 4'-6" | 4'-10" | 3.64       |
| Section Max Horizontal Tension (lbs): |        |             |           |             | 6201                      | 5581   | 5018   | 4518   | 4086   | 3716   | 3403  | 3140   | 2914   | 2723  | 2559   | -          |
| 803-39                                | 803-40 | 954 ACSR/AW | Creep RS  | 293         | 2'-0"                     | 2'-3"  | 2'-6"  | 2'-10" | 3'-1"  | 4'-5"  | 3'-9" | 4'-0"  | 4'-4"  | 4'-8" | 4'-11" | 10.20      |
| 803-39                                | 803-40 | 954 ACSR/AW | Creep RS  | 293         | 2'-0"                     | 2'-3"  | 2'-6"  | 2'-10" | 3'-1"  | 4'-5"  | 3'-9" | 4'-0"  | 4'-4"  | 4'-8" | 4'-11" | 11.20      |
| 803-39                                | 803-40 | 954 ACSR/AW | Creep RS  | 293         | 2'-0"                     | 2'-3"  | 2'-6"  | 2'-10" | 3'-1"  | 4'-5"  | 3'-9" | 4'-0"  | 4'-4"  | 4'-8" | 4'-11" | 12.20      |
| Structures from:                      |        |             | 803-40    | to          | 803-42                    |        |        |        |        |        |       |        |        |       |        |            |
| Section Max Horizontal Tension (lbs): |        |             |           |             | 8609                      | 7927   | 7282   | 6675   | 6118   | 5611   | 5154  | 4759   | 4408   | 4108  | 3841   | -          |
| 803-40                                | 803-41 | 954 ACSR/AW | Creep RS  | 396         | 2'-8"                     | 2'-11" | 3'-2"  | 3'-6"  | 3'-9"  | 4'-2"  | 4'-6" | 4'-10" | 5'-3"  | 5'-8" | 6'-0"  | -19.06     |
| 803-40                                | 803-41 | 954 ACSR/AW | Creep RS  | 396         | 2'-8"                     | 2'-11" | 3'-2"  | 3'-6"  | 3'-9"  | 4'-1"  | 4'-6" | 4'-10" | 5'-3"  | 5'-8" | 6'-0"  | -13.96     |
| 803-40                                | 803-41 | 954 ACSR/AW | Creep RS  | 396         | 2'-8"                     | 2'-11" | 3'-2"  | 3'-6"  | 3'-9"  | 4'-1"  | 4'-6" | 4'-10" | 5'-3"  | 5'-8" | 6'-0"  | -8.41      |
| Section Max Horizontal Tension (lbs): |        |             |           |             | 8609                      | 7927   | 7282   | 6675   | 6118   | 5611   | 5154  | 4759   | 4408   | 4108  | 3841   | -          |
| 803-41                                | 803-42 | 954 ACSR/AW | Creep RS  | 383         | 2'-6"                     | 2'-9"  | 3'-0'  | 3'-3"  | 3'-6"  | 3'-10" | 4'-2" | 4'-7"  | 4'-11" | 5'-3" | 5'-8"  | -11.07     |
| 803-41                                | 803-42 | 954 ACSR/AW | Creep RS  | 383         | 2'-6"                     | 2'-9"  | 3'-0'  | 3'-3"  | 3'-6"  | 3'-10" | 4'-2" | 4'-6"  | 4'-11" | 5'-3" | 5'-8"  | -10.80     |
| 803-41                                | 803-42 | 954 ACSR/AW | Creep RS  | 383         | 2'-6"                     | 2'-9"  | 3'-0'  | 3'-3"  | 3'-6"  | 3'-10" | 4'-2" | 4'-7"  | 4'-11" | 5'-3" | 5'-8"  | -11.10     |
| Structures from:                      |        |             | 803-38    | to          | 803-40                    |        |        |        |        |        |       |        |        |       |        |            |
| Section Max Horizontal Tension (lbs): |        |             |           |             | 2529                      | 2412   | 2297   | 2182   | 2069   | 1954   | 1842  | 1732   | 1624   | 1517  | 1415   | -          |
| 803-38                                | 803-39 | 7#9 AW      | Creep RS  | 290         | 0'-10"                    | 0'-11" | 0'-11" | 1'-0"  | 1'-1"  | 1'-1"  | 1'-2" | 1'-3"  | 1'-4"  | 1'-2" | 1'-7"  | 11.61      |
| Section Max Horizontal Tension (lbs): |        |             |           |             | 2529                      | 2412   | 2297   | 2182   | 2069   | 1954   | 1842  | 1732   | 1624   | 1517  | 1415   | -          |
| 803-39                                | 803-40 | 7#9 AW      | Creep RS  | 293         | 0'-11"                    | 0'-11" | 1'-0'  | 1'-0"  | 2'-10" | 1'-2"  | 1'-3" | 1'-3"  | 1'-4"  | 1'-6" | 1'-7"  | -2.35      |
| Structures from:                      |        |             | 803-40    | to          | 803-42                    |        |        |        |        |        |       |        |        |       |        |            |
| Section Max Horizontal Tension (lbs): |        |             |           |             | 2411                      | 2298   | 2186   | 2076   | 1969   | 1861   | 1759  | 1657   | 1558   | 1463  | 1371   | -          |
| 803-40                                | 803-41 | 7#9 AW      | Creep RS  | 396         | 1'-8"                     | 1'-9"  | 1'-10" | 2'-0'  | 2'-10" | 2'-2"  | 2'-4" | 2'-6"  | 2'-7"  | 2'-9" | 3'-0'  | -17.56     |
| Section Max Horizontal Tension (lbs): |        |             |           |             | 2411                      | 2298   | 2186   | 2076   | 1969   | 1861   | 1759  | 1657   | 1558   | 1463  | 1371   | -          |
| 803-41                                | 803-42 | 7#9 AW      | Creep RS  | 384         | 1'-7"                     | 1'-8"  | 1'-9"  | 1'-10" | 2'-10" | 2'-1"  | 2'-2" | 2'-4"  | 2'-5"  | 2'-7" | 2'-9"  | -10.77     |

TOP  
MIDDLE  
BOTTOM

TOP  
MIDDLE  
BOTTOM

TOP  
MIDDLE  
BOTTOM

TOP  
MIDDLE  
BOTTOM

|                                                                                                                                              |      |                     |     |                       |     |     |
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| NO                                                                                                                                           | DATE | DESCRIPTION         | DSO | EGR                   | CHK | APD |
| REVISIONS                                                                                                                                    |      |                     |     |                       |     |     |
| <div><div>BEACHES ENERGY</div><div>SERVICES</div></div> |      |                     |     |                       |     |     |
| BEACHES ENERGY SERVICES<br>STRUCTURE 803-40 REPLACEMENT<br>STRINGING CHART                                                                   |      |                     |     |                       |     |     |
| DESIGNED <u>GEA</u>                                                                                                                          |      | CHECKED <u>AJK</u>  |     | SCALE <u>AS NOTED</u> |     |     |
| DATE <u>2/20/24</u>                                                                                                                          |      | ENGINEER <u>DMT</u> |     |                       |     |     |
| WBS/SO                                                                                                                                       |      | APPROVED <u>AJK</u> |     |                       |     |     |
| BES-803-40-STG-01 - R0                                                                                                                       |      |                     |     |                       |     |     |

|                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                            |         |                       |
|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------------|
| REFERENCE DRAWINGS:<br>BES-803-40-COV-01 - COVER SHEET<br>BES-803-40-PNP-01 - PLAN & PROFILE<br>BES-803-40-STK-01 - STRUCTURE STAKING |                                                       |                                                                                                                                                                                                            |         |                       |
|                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                            |         |                       |
|                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                            |         |                       |
|                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                            |         |                       |
|                                                                                                                                       |                                                                                                                                            |                                                                                                                                                                                                            |         |                       |
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|                                                                                                                                       | ALEX JOSEPH KLADIVA, PE#76262<br>2301 Maitland Center Pkwy, Maitland, FL 32751                                                             | THE REGISTRANT OF THE NEWLY APPLIED<br>SEAL ASSUMES RESPONSIBILITY FOR THE<br>CHANGES AS INDICATED BY THE FOLLOWING<br>REVISION NUMBER <u>Ø</u> .                                                          |         |                       |



BEACHES | ENERGY  
S E R V I C E S

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---

**Attachment 3**  
Geotechnical report Phase I



# Subsurface Information for the Transmission Line Rebuild St. Johns County, Florida

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THE SUBSURFACE INFORMATION AND DATA CONTAINED HEREIN DO NOT FORM A PART OF ANY CONTRACT DOCUMENT ISSUED BY BURNS & McDONNELL.

**Beaches Energy Services**  
**St. Johns County, Florida**  
Project No. 144844  
June 2022

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## TABLE OF CONTENTS

|                                         | <u>Page No.</u> |
|-----------------------------------------|-----------------|
| <b>1.0 GENERAL.....</b>                 | <b>1</b>        |
| <b>2.0 WATER LEVEL INFORMATION.....</b> | <b>1</b>        |
| <b>3.0 LIMITATIONS.....</b>             | <b>1</b>        |
| 3.1 Document Use.....                   | 1               |
| 3.2 Variations.....                     | 2               |

### APPENDIX A – REPORT BY BJ ROCK



## 1.0 GENERAL

This subsurface information document consists of the data and results from a subsurface investigation described in a report titled *Geotechnical Report, Beaches Energy Rebuild, St. Johns County, Florida*, dated June 2022. The investigation was performed by BJ Rock, LLC (BJ Rock) of Tampa, Florida. The report, as prepared by BJ Rock, is included in Appendix A of this document.

Drilling and laboratory testing for this investigation was performed by BJ Rock. The drilling phase was performed May 16 through May 17, 2022. It included the completion of six (6) borings drilled to depths ranging from 25 feet to 40 feet below grade. Laboratory tests were conducted on select available samples following the completion of drilling operations. Boring logs and laboratory test results, as prepared by BJ Rock, are included in the report in Appendix A of this document.

Samples recovered during the subsurface investigation were transported to the laboratory by BJ Rock. BJ Rock was not compensated to store the samples after testing and reporting beyond their customary retention period prior to disposal.

## 2.0 WATER LEVEL INFORMATION

Groundwater observations, as provided by BJ Rock, are presented in Appendix A of this document. It should be noted by the reader that fluctuations in water levels may occur over more prolonged periods of readings and can be influenced by various outside factors. It may take groundwater several days, or longer, to reach its hydrostatic levels in holes in cohesive soils. Seasonal variations in rainfall, changes to on-site conditions, and changes to off-site conditions can affect groundwater levels. Fluctuations in groundwater levels from those noted should be anticipated during construction. Water levels observed and recorded reflect only those conditions that existed at the time of investigation and may vary from true phreatic groundwater levels.

## 3.0 LIMITATIONS

### 3.1 Document Use

The information presented in this document has been prepared for the use of Burns & McDonnell. No other warranty, express or implied, is made as to the information included in this document. In the event that conclusions and recommendations based on data contained in this document are made by others, such conclusions and recommendations are the responsibility of others.

The information gathered and presented in this document was not obtained for an environmental audit nor to evaluate the potential for hazardous materials at the Site. The equipment, techniques, and personnel used to perform geoenvironmental exploration differ substantially from those applied in soil and foundation engineering.

This document is not intended to be utilized as a Geotechnical Baseline Report.

### **3.2 Variations**

The subsurface information submitted in this document is based upon data obtained from test borings completed at the approximate locations indicated in Appendix A of this document. This document does not reflect variations which may occur between test borings. The nature and extent of variations between the test borings may not become evident until construction is performed. Water levels, as described in this document, reflect only those conditions that existed at the time that this particular subsurface investigation was performed by BJ Rock. Fluctuations or changes in water levels and groundwater conditions can be influenced by sources outside the site investigated, by seasonal rainfall, and by changes in drainage conditions in and around the Site. Fluctuations can occur and should be anticipated between the time of investigation and the time of construction.

**APPENDIX A – REPORT BY BJ ROCK**

**Beaches Energy Rebuild**

**St. Johns County, Florida**

**Report Prepared for Burns & McDonnell Engineering Company, Inc.**

**Report Prepared by BJ Rock, LLC**

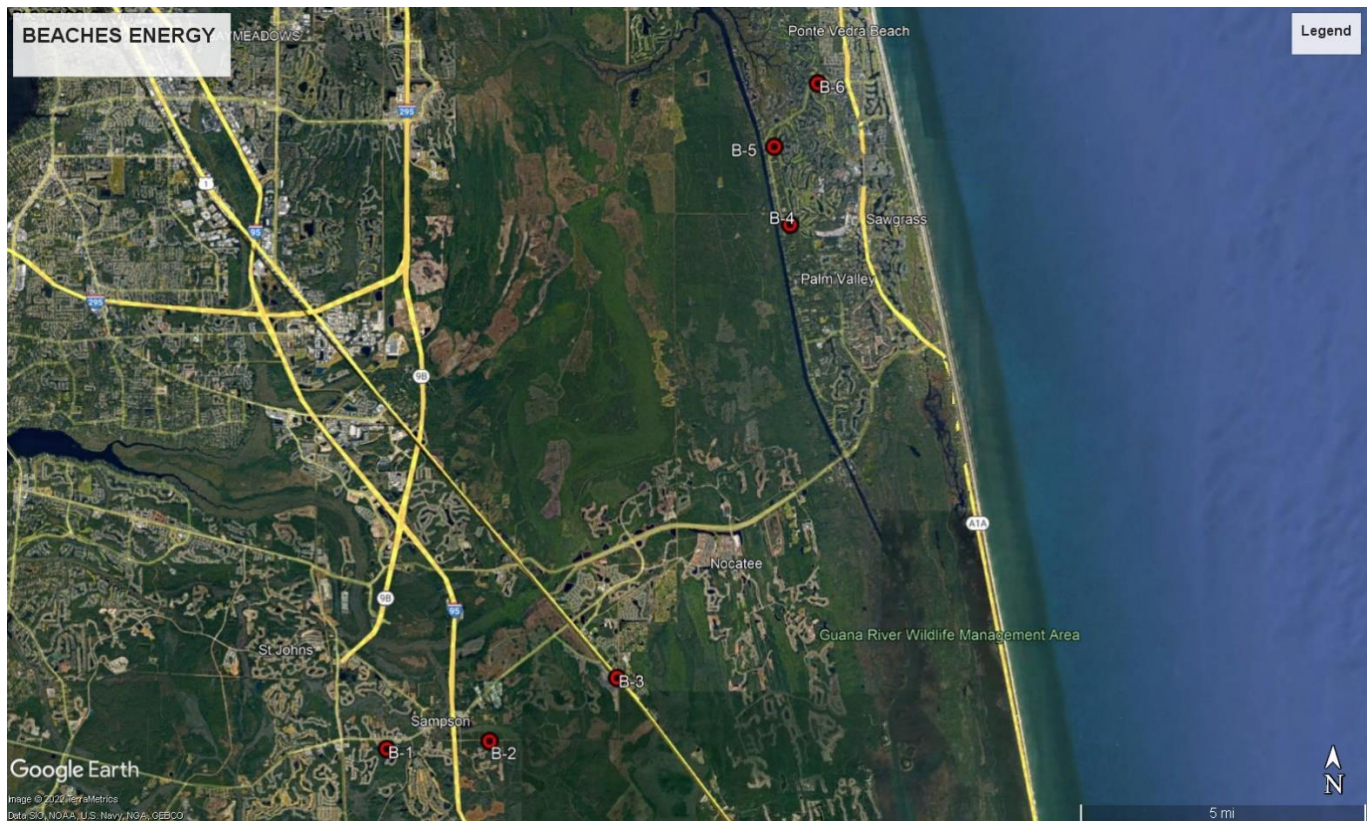
**Report Dated 06/2022**



# GEOTECHNICAL REPORT



# BEACHES ENERGY REBUILD ST. JOHNS COUNTY, FL



MAY / JUNE 2022  
BJR 21-225





June 2, 2022

Esteban Martinez, PE  
Andrew Harper, PE  
**Burns & McDonnell**  
2301 Maitland Center Parkway, Suite 400, Lake Mary, FL 32751

**Geotechnical Exploration Report  
Beaches Energy Rebuild Project  
St. Johns County, Florida  
BJR Job No. 21-225**

Dear Esteban and Andrew:

**BJ Rock, LLC (BJR)** has completed the geotechnical exploration for the referenced project as authorized by Burns & McDonnell (BM). The purposes of this study were to explore general subsurface conditions for the proposed Beaches Energy Rebuild project and to use the data obtained to develop engineering recommendations to guide the design of the foundations for the structures. This report describes our exploration procedure, presents the data obtained, and presents our conclusions and recommendations regarding the geotechnical engineering aspects of foundation design.

In summary, based on the results of this subsurface exploration, it appears that the soils at the site are suitable for development of the proposed structures following the foundation recommendations presented in this report.

BJR appreciates the opportunity to participate in this project and we trust that the information included in this report is sufficient for your design. If you have any questions or comments concerning the contents of this report, please contact us.

Sincerely,  
**BJ Rock, LLC**

BJR FL Certificate of Authorization No. 29100



John C. Peak, P.E.  
Sr. Geotechnical Engineer  
FL P.E. License No. 57018

## TABLE OF CONTENTS

|                                                                  |   |
|------------------------------------------------------------------|---|
| PROJECT INFORMATION.....                                         | 1 |
| EXISTING SITE.....                                               | 1 |
| PROJECT APPROACH .....                                           | 1 |
| SCOPE OF WORK .....                                              | 1 |
| SOIL SURVEY REVIEW .....                                         | 2 |
| SUBSURFACE EXPLORATION .....                                     | 2 |
| FIELD EXPLORATION PROCEDURES .....                               | 2 |
| FIELD EXPLORATION RESULTS.....                                   | 2 |
| <i>Subsurface Conditions</i> .....                               | 2 |
| <i>Groundwater</i> .....                                         | 3 |
| RECOMMENDATIONS AND CONCLUSIONS.....                             | 3 |
| <i>Transmission Structure Foundation Design Evaluation</i> ..... | 3 |
| <i>Construction and Design Considerations</i> .....              | 3 |
| TESTING AND MONITORING .....                                     | 3 |
| LIMITATIONS.....                                                 | 4 |

## ATTACHMENTS

Site Location Plan (Figure 1)  
Boring Location Plan (Figure 2)  
Boring Logs (Figure 3)  
Soil Design Parameters (Table)  
Field Testing Standards and Procedures



## PROJECT INFORMATION

### Existing Site

Based on the information provided for our review from Burns & McDonnell, we understand the Beaches Energy Rebuild alignment, located in the Jacksonville, Point Vedra Beach and Palm Valley areas of St. Johns County, Florida (Figure 1). Our study addressed geotechnical design and foundation recommendations for the structures planned for the project.

### Project Approach

The objective of the geotechnical investigation for the proposed project was to obtain information concerning the subsurface conditions along the alignment in order to make geotechnical engineering estimates and recommendations in each of the following areas:

- Soil stratigraphy at the boring locations and the development of the approximate soil profile.
- General location and description of potentially deleterious materials which may interfere with construction or new structure performance, including buried or surficial existing fills, organics, construction debris, etc.
- Identification of some critical design or construction details, including present groundwater levels, estimated wet season levels, and seasonal fluctuations in the specified areas.
- Feasibility of supporting the proposed structures.
- Design parameters required for the foundation system recommended for the structures based on the Standard Penetration Tests (SPT) blow counts obtained in the boring.

### Scope of Work

In order to address the above objectives, our scope of work for this project included the following:

- Reviewed available published information on the site, including the United States Department of Agriculture (USDA) National Resources Conservation Service (NRCS) soil survey data for St. Johns County.
- Conducted a subsurface exploration program consisting of the advancement of 6 SPT borings to 25 and 40 feet each for the specified power structures, subsurface sampling, and field testing. Our testing included the collection of representative soil samples and the recording of the SPT blow counts during the drilling of the boring. The SPT borings were performed in general compliance with standard field penetration test procedures (ASTM D 1586-99). See our Field Testing Standards and Procedures in the Appendix for a detailed description of the Standard Penetration Test (SPT) Boring procedures.
- Measured the stabilized groundwater levels at the boring location.
- Reviewed and visually classified the recovered soils in the laboratory using the Unified Soil Classification System (ASTM D 2487). Developed the general soil stratigraphy at the boring locations.



- Performed geotechnical engineering studies and analyses in order to develop geotechnical engineering recommendations for each of the objectives previously discussed for the proposed project.
- Prepared a geotechnical report that summarizes the course of our study, the field and laboratory data generated, the subsurface conditions encountered, and our geotechnical engineering recommendations for the proposed project.

## **Soil Survey Review**

According to the USDA NRCS “Soil Survey of St. Johns County”, the soil types generally present on the site are as follows:

- Ona-Ona, wet fine sand (12) – Generally consists of fine sandy soils to 80+ inches. Estimated historical seasonal high groundwater level between 6-18 inches below natural grade.
- Zolfo fine sand (8) – Generally consists of fine sandy soils to 80+ inches. Estimated historical seasonal high groundwater level between 24-42 inches below natural grade.
- Immokalee fine sand (7) – Generally consists of fine sandy soils to 80+ inches. Estimated historical seasonal high groundwater level between 6-18 inches below natural grade.
- Manatee fine sandy loam, flooded (22) – Generally consists of fine sandy loam to fine sandy soils to 80+ inches. Estimated historical seasonal high groundwater level between 0-12 inches below natural grade.
- Toco fine sand (34) – Generally consists of fine sands to loamy fine sandy soils to 80+ inches. Estimated historical seasonal high groundwater level between 6-18 inches below natural grade.

## **SUBSURFACE EXPLORATION**

### **Field Exploration Procedures**

The procedures used by BJ Rock, LLC for field sampling and testing are in general accordance with industry standards of care and established geotechnical engineering practice. BJR performed 6 SPT borings to 25 and 40 feet each for the power structures as specified by Burns & McDonnell.

Utility locates were performed at the specified structure locations by the Sunshine One-Call System. Our staff located the borings in the field per the plans and field information provided by BM. The approximate boring locations are noted on the provided Boring Location Plan (Figure 2) in the Appendix. The standards and procedures for the Standard Penetration Test (SPT) Boring and soil sample handling and classification are described in our Field Testing Standards and Procedures in the Appendix.

### **Field Exploration Results**

#### ***Subsurface Conditions***

The SPT borings generally encountered fine clean to slightly silty sands, silty to clayey fine sands, sandy clays and silts with shell to an approximate depth of 40 feet below existing grade. The SPT “N” values are presented adjacent along the left side of the boring logs in Figure 3. The correlation of the SPT “N” values with relative density, unconfined compressive strength, and consistency are provided on a table in the Appendix. No geologic hazards / karst / sinkhole activity were encountered in the tested areas for this project.





### **Groundwater**

Groundwater was encountered at approximate depths of 4 to 5.5 feet below ground surface in the soil test boring performed in May 2022. Based on our past site experience, the results of our investigation, and our review of the NRCS soil survey, it is our opinion that the seasonal high groundwater table will be encountered at approximate depths of 1.5 to 3<sup>+/-</sup> feet below existing ground surface in the areas tested for this project. Estimated existing and seasonal high groundwater elevations per boring are shown on the attached Soil Boring Log (Figure 3) in the Appendix. Significant fluctuations in the groundwater levels should be expected due to seasonal variations in rainfall, runoff, and other site-specific factors.

## **RECOMMENDATIONS AND CONCLUSIONS**

### ***Transmission Structure Foundation Design Evaluation***

We understand direct embedded precast pre-stressed concrete poles with crushed rock backfill foundations are planned for this project. Drilled shaft foundations may be considered for pole structure foundations if needed. Based on the results of our geotechnical exploration, the attached Design Soil Parameters (Tables in the Appendix) should be considered for design of the pole structure foundations.

Please note no factor of safety was applied in our calculations. We typically recommend applying a safety factor of 3.0 to the ultimate shaft capacities. Total vertical shaft settlements are expected to be less than ½ inch under design loads (using 3.0 SF), with differential settlement considered to be negligible.

We recommend minimum embedment depths bear in competent soils either well above or below any low N-value soils, such as the low blow count silty/clayey sands encountered in boring B-2 and the low blow count silts encountered in borings B-4, B-5 and B-6. The silts can be considered compressible, causing possible settlement of the structures.

We recommend assuming the soils along the alignment are considered moderately to extremely aggressive. The proposed pre-cast concrete poles should consist of Cement Type II (MH) with fly ash (or similar) for corrosion protection in aggressive corrosive environments.

### ***Construction and Design Considerations***

Based on the groundwater level conditions encountered and seasonal high groundwater estimates, areas of the alignment may flood during the rainy season. Therefore, we anticipate typical wet hole construction conditions. Contractors typically utilize a 5-foot section of temporary casing to stabilize the upper soils during excavation.

## **TESTING AND MONITORING**

Construction monitoring and testing are essential to proper site construction and performance. Compliance with the recommended foundation specification must be verified by our engineering technician familiar with the project construction. Observation of site preparation work is an integral part of the engineering recommendations contained in this report.



## LIMITATIONS

This report has been prepared for the exclusive use of **Burns & McDonnell** for the specific application to the project previously discussed. Our conclusions and recommendations have been rendered using generally accepted standards of geotechnical engineering geology practice in the state of Florida. No other warranty is expressed or implied.

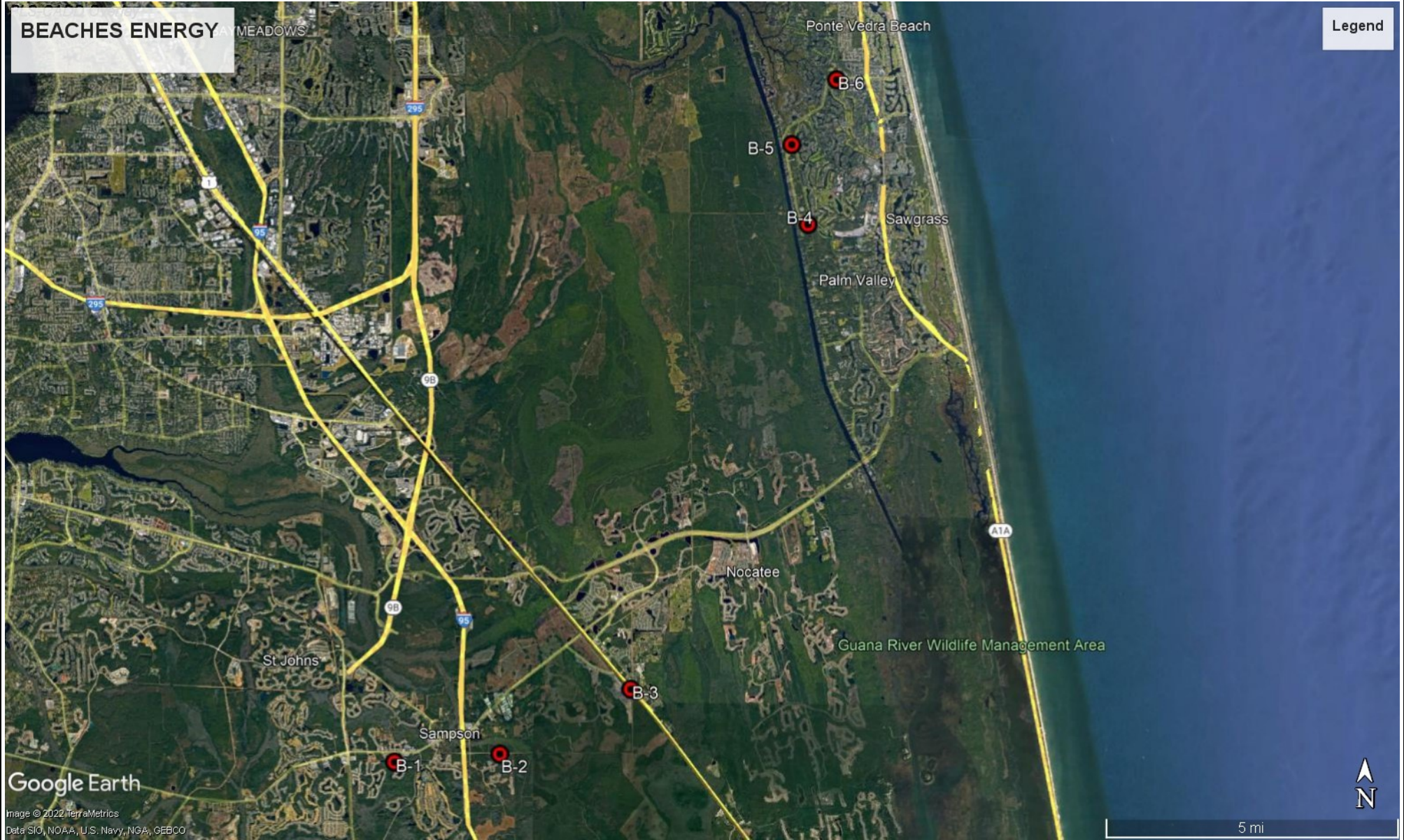
Our conclusions and recommendations are based on the design information furnished to us, the data obtained from the previously described subsurface exploration, and our experience. They do not reflect variations in the subsurface conditions that are likely to exist in the region of our boring and in unexplored areas of the site. These variations are due to the inherent variability of the subsurface conditions in this geologic region. Should variations become apparent during construction, it will be necessary to re-evaluate our conclusions and recommendations based upon our on-site observations of the conditions.

The site is underlain by limestone bedrock that is susceptible to dissolution and the subsequent development of karst features such as voids and sinkholes in the natural soil overburden. Construction in a sinkhole prone area is therefore accompanied by some risk that internal soil erosion and ground subsidence could affect new structures in the future. It is not possible to investigate or design to completely eliminate the possibility of future sinkhole-related problems. In any event, the Owner must understand and accept this risk.

The scope of our services does not include any environmental assessments or investigations for the possible presence of hazardous or toxic substances in the soil, groundwater, or surface water within or in the general vicinity of the site studied. Any statements made in this report or shown on the test boring log regarding unusual subsurface conditions and/or composition, odor, staining, origin, or other characteristics of the surface and/or subsurface materials are strictly for the information of our client and may or may not be indicative of an environmental problem.

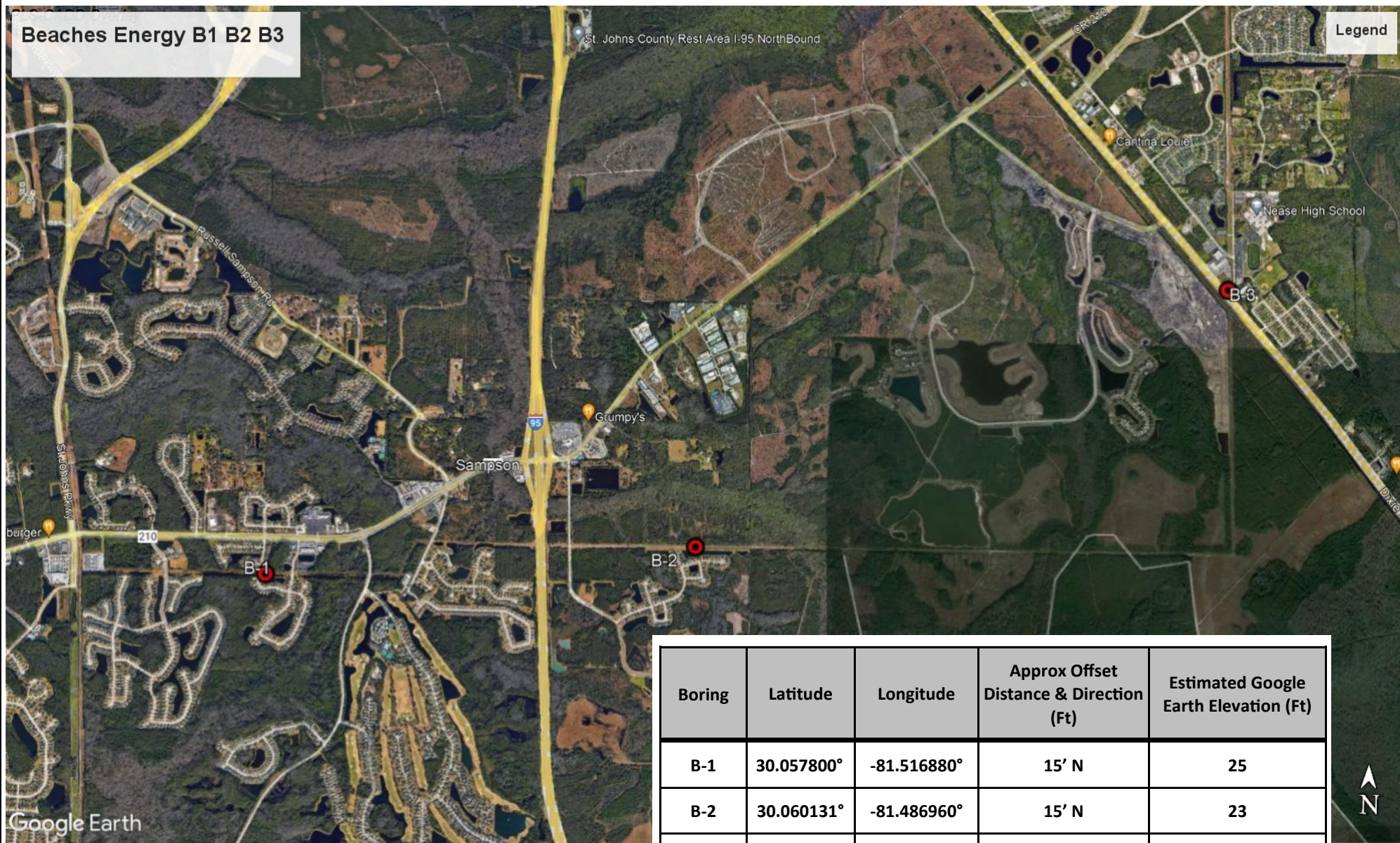
If changes are made in the overall design or the location of the proposed structure(s), the recommendations presented in this report must not be considered valid unless the changes are reviewed by our firm and recommendations modified or verified in writing. We should be given the opportunity to review the foundation plan and the applicable portions of the project specifications when the design is finalized. This review will allow us to check whether these documents are consistent with the intent of our recommendations.

## **APPENDIX**





# Beaches Energy B1 B2 B3

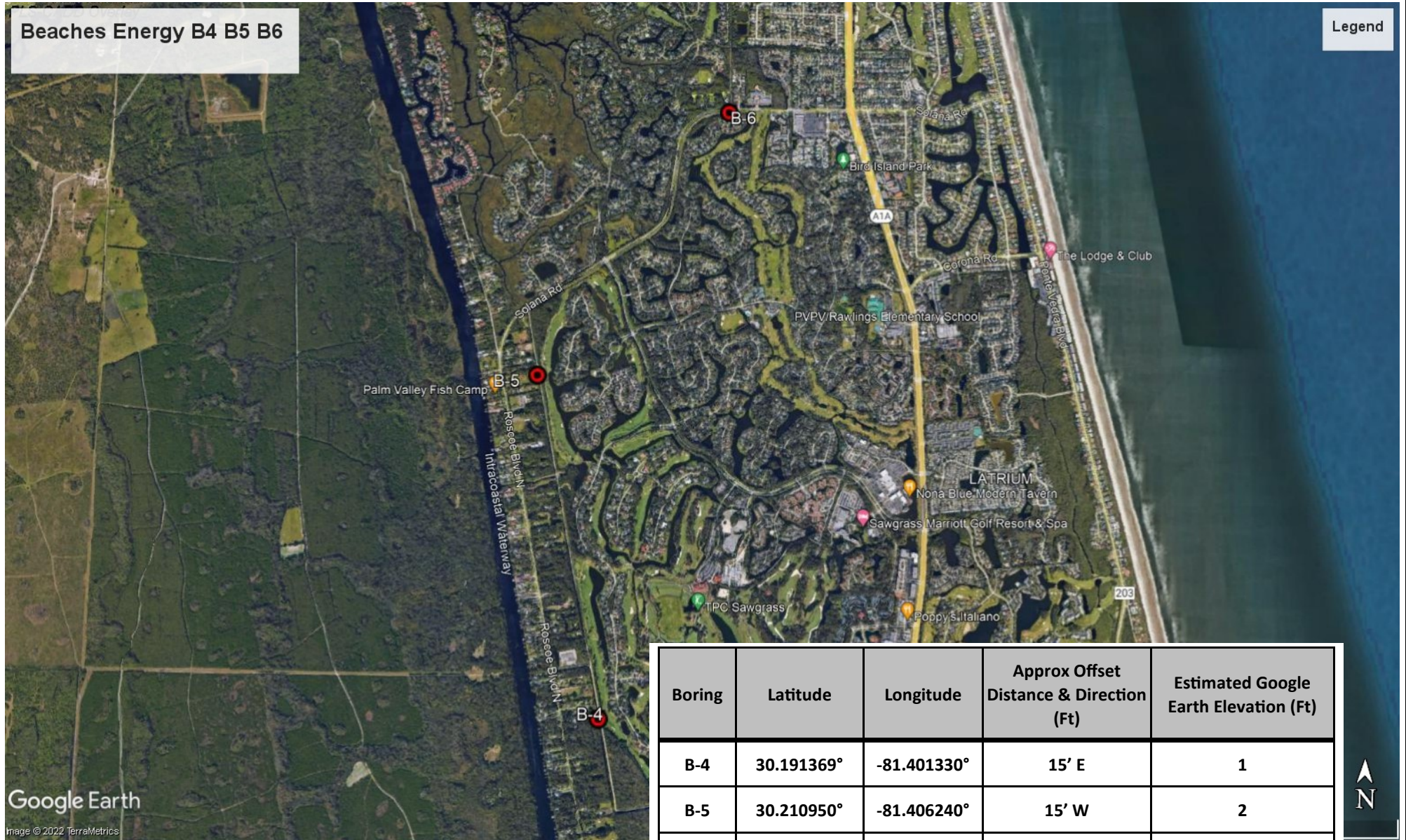


| Boring | Latitude   | Longitude   | Approx Offset Distance & Direction (Ft) | Estimated Google Earth Elevation (Ft) |
|--------|------------|-------------|-----------------------------------------|---------------------------------------|
| B-1    | 30.057800° | -81.516880° | 15' N                                   | 25                                    |
| B-2    | 30.060131° | -81.486960° | 15' N                                   | 23                                    |
| B-3    | 30.076578° | -81.449975° | 15' E                                   | 49                                    |



# Beaches Energy B4 B5 B6

Legend



Google Earth

Image © 2022 TerraMetrics

| Boring | Latitude   | Longitude   | Approx Offset<br>Distance & Direction<br>(Ft) | Estimated Google<br>Earth Elevation (Ft) |
|--------|------------|-------------|-----------------------------------------------|------------------------------------------|
| B-4    | 30.191369° | -81.401330° | 15' E                                         | 1                                        |
| B-5    | 30.210950° | -81.406240° | 15' W                                         | 2                                        |
| B-6    | 30.227050° | -81.393721° | 30' N                                         | 3                                        |

**BJ ROCK**  
GEOENGINEERING

## BEACHES ENERGY REBUILD BORING LOCATION PLAN ST JOHNS COUNTY, FLORIDA

DATE:  
06/01/22

SCALE:  
NOT TO SCALE

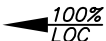
JOB NO.  
21-225

DRAWN BY: J. PEAK

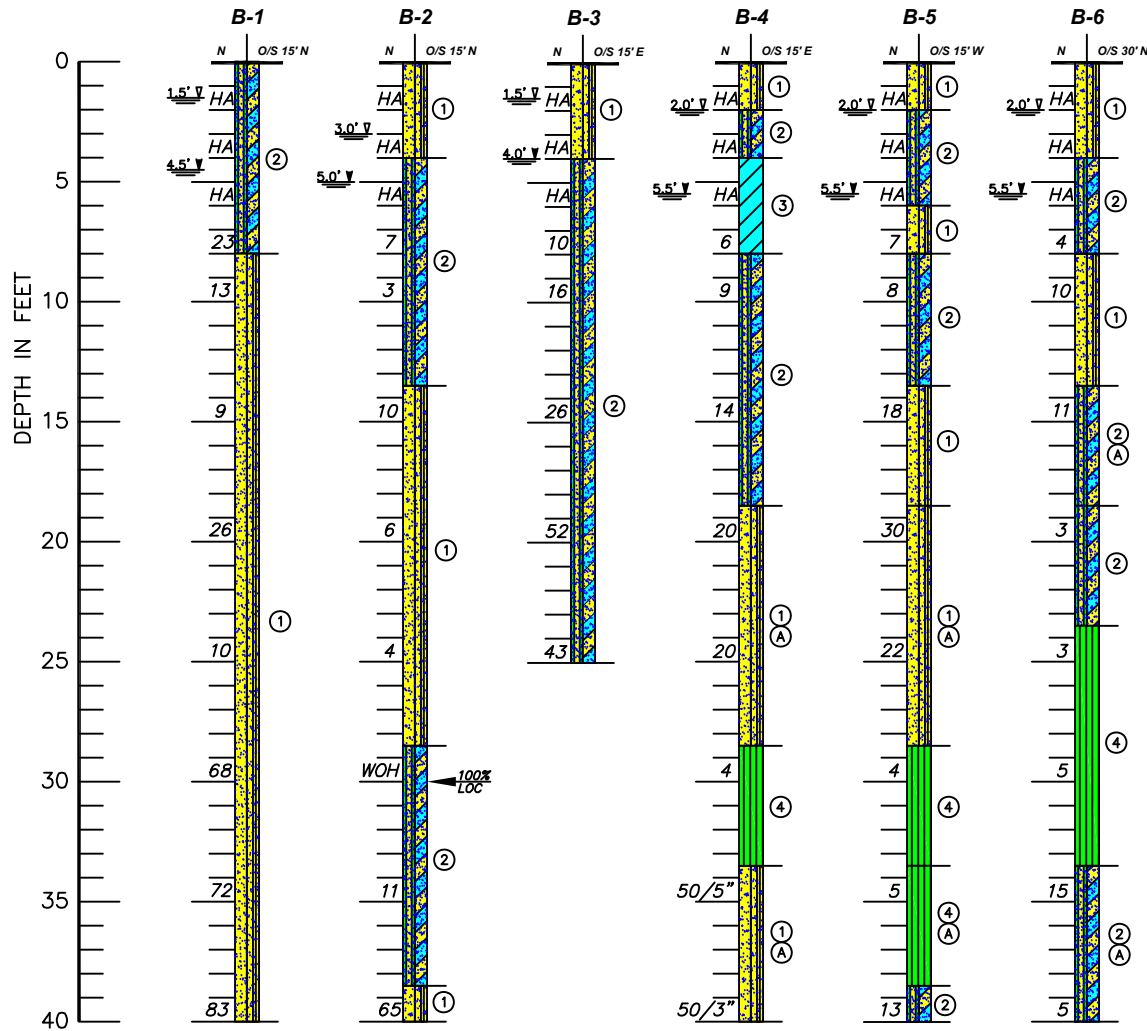
CK'D BY: B. JORY

FIGURE 2  
2 OF 2

## LEGEND

-  ① = GRAY, BROWN, TAN, GRAY/GREEN, DARK BROWN, DARK RED/BROWN FINE TO SLIGHTLY SILTY FINE SANDS (SP)/(SP-SM)
-  ② = GRAY, TAN, BROWN, DARK BROWN/GRAY SILTY TO CLAYEY FINE SANDS (SM)/(SC)
-  ③ = GRAY SANDY CLAYS (CL)
-  ④ = GRAY, GRAY/GREEN SILTS (ML)
- Ⓐ = WITH SHELL
- WOH = WEIGHT OF HAMMER PENETRATION
- (SP) = UNIFIED SOIL CLASSIFICATION GROUP SYMBOL
- N = STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT
- HA = HAND AUGER DUE TO AVOID BURIED UTILITIES
-  = LOSS OF DRILLING FLUID CIRCULATION
- 50/0" = 50 BLOWS FOR 0 INCHES OF PENETRATION
- 0/S = OFFSET DISTANCE AND DIRECTION FOR SAFETY
- 0.0' ▽ = ESTIMATED SEASONAL HIGH GROUNDWATER LEVEL
- 0.0' ▼ = DEPTH TO EXISTING GROUNDWATER

NOTE: BORINGS PERFORMED ON MAY 16–17, 2022.





## RECOMMENDED DESIGN SOIL PARAMETERS

### BEACHES ENERGY REBUILD

| Boring No.<br>B-1  |                       |                          | Soil Type | USCS Soil Symbol | Raw SPT-N                     | Total Unit Weight              | Effective Unit Weight     | Effective Stress            | Internal Angle of Friction | Undrained Shear Strength Cohesion | Uniaxial Compressive Strength | Elastic (Young's) Modulus | Shear Modulus            | Poisson's Ration | Lateral Soil Modulus        | Strain Factor E50                 | MFAD Deformation Modulus             | MFAD Concrete / Rock Bond Strength | Rankine Active Lateral Earth Pressure | Rankine Passive Lateral Earth Pressure | At-Rest Lateral Earth Pressure | MFAD Layer Type (Soil or Rock) | Ultimate Unit End Bearing |
|--------------------|-----------------------|--------------------------|-----------|------------------|-------------------------------|--------------------------------|---------------------------|-----------------------------|----------------------------|-----------------------------------|-------------------------------|---------------------------|--------------------------|------------------|-----------------------------|-----------------------------------|--------------------------------------|------------------------------------|---------------------------------------|----------------------------------------|--------------------------------|--------------------------------|---------------------------|
| Soil Layer Depths  |                       |                          |           |                  |                               |                                |                           |                             |                            |                                   |                               |                           |                          |                  |                             |                                   |                                      |                                    |                                       |                                        |                                |                                |                           |
| top<br><i>(ft)</i> | bottom<br><i>(ft)</i> | mid-point<br><i>(ft)</i> |           |                  |                               |                                |                           |                             |                            |                                   |                               |                           |                          |                  |                             |                                   |                                      |                                    |                                       |                                        |                                |                                |                           |
|                    |                       |                          |           |                  | <i>N</i><br><i>(blows/ft)</i> | $\gamma_{sat}$<br><i>(pcf)</i> | $\gamma'$<br><i>(pcf)</i> | $\sigma'_v$<br><i>(psf)</i> | $\phi$<br><i>(deg)</i>     | $c_u$<br><i>(tsf)</i>             | $q_u$<br><i>(tsf)</i>         | <i>E</i><br><i>(ksi)</i>  | <i>G</i><br><i>(ksi)</i> | <i>v</i>         | <i>k</i><br><i>(psi/in)</i> | $\epsilon_{50}$<br><i>(in/in)</i> | <i>E<sub>p</sub></i><br><i>(ksi)</i> |                                    | <i>K<sub>a</sub></i>                  | <i>K<sub>p</sub></i>                   | <i>K<sub>0</sub></i>           |                                | <i>qb</i><br><i>(tsf)</i> |
| 0                  | 6                     | 3                        | 2         | SM / SC          | 5                             | 103                            | 41                        | 122                         | 26.5                       | -                                 | -                             | 0.44                      | 3.00                     | 0.25             | 20                          | -                                 | 0.4                                  | -                                  | 0.38                                  | 2.61                                   | 0.89                           | SOIL                           | 3.0                       |
| 6                  | 8                     | 7                        | 2         | SM / SC          | 23                            | 117.5                          | 55                        | 299                         | 35.4                       | -                                 | -                             | 2.57                      | 17.50                    | 0.3              | 110                         | -                                 | 2                                    | -                                  | 0.27                                  | 3.75                                   | 1.33                           | SOIL                           | 13.8                      |
| 8                  | 18                    | 13                       | 1         | SP / SP-SM       | 11                            | 107.5                          | 45                        | 579                         | 31.4                       | -                                 | -                             | 2.21                      | 7.50                     | 0.3              | 45                          | -                                 | 1.4                                  | -                                  | 0.31                                  | 3.18                                   | 1.07                           | SOIL                           | 6.6                       |
| 18                 | 23                    | 20.5                     | 1         | SP / SP-SM       | 26                            | 115                            | 53                        | 936                         | 36                         | -                                 | -                             | 4.41                      | 15.00                    | 0.3              | 100                         | -                                 | 3.5                                  | -                                  | 0.26                                  | 3.85                                   | 1.35                           | SOIL                           | 15.6                      |
| 23                 | 28                    | 25.5                     | 1         | SP / SP-SM       | 10                            | 105                            | 43                        | 1174                        | 29.8                       | -                                 | -                             | 1.47                      | 5.00                     | 0.3              | 35                          | -                                 | 1.4                                  | -                                  | 0.34                                  | 2.98                                   | 0.92                           | SOIL                           | 6.0                       |
| 28                 | 38                    | 33                       | 1         | SP / SP-SM       | 70                            | 130                            | 68                        | 1619                        | 43                         | -                                 | -                             | 10.29                     | 20.00                    | 0.3              | 165                         | -                                 | 9.8                                  | -                                  | 0.19                                  | 5.29                                   | 1.30                           | SOIL                           | 30.0                      |
| 38                 | 40                    | 39                       | 1         | SP / SP-SM       | 83                            | 130                            | 68                        | 2024                        | 43                         | -                                 | -                             | 11.76                     | 20.00                    | 0.3              | 165                         | -                                 | 11                                   | -                                  | 0.19                                  | 5.29                                   | 1.19                           | SOIL                           | 30.0                      |

| Boring No.        |                |                   | Soil Type | USCS Soil Symbol | Raw SPT-N       | Total Unit Weight         | Effective Unit Weight | Effective Stress         | Internal Angle of Friction | Undrained Shear Strength Cohesion | Uniaxial Compressive Strength | Elastic (Young's) Modulus | Shear Modulus | Poisson's Ration | Lateral Soil Modulus | Strain Factor E50          | MFAD Deformation Modulus | MFAD Concrete / Rock Bond Strength | Rankine Active Lateral Earth Pressure | Rankine Passive Lateral Earth Pressure | At-Rest Lateral Earth Pressure | MFAD Layer Type (Soil or Rock) | Ultimate Unit End Bearing |
|-------------------|----------------|-------------------|-----------|------------------|-----------------|---------------------------|-----------------------|--------------------------|----------------------------|-----------------------------------|-------------------------------|---------------------------|---------------|------------------|----------------------|----------------------------|--------------------------|------------------------------------|---------------------------------------|----------------------------------------|--------------------------------|--------------------------------|---------------------------|
| Soil Layer Depths |                |                   |           |                  |                 |                           |                       |                          |                            |                                   |                               |                           |               |                  |                      |                            |                          |                                    |                                       |                                        |                                |                                |                           |
| top               | bottom         | mid-point         |           |                  |                 |                           |                       |                          |                            |                                   |                               |                           |               |                  |                      |                            |                          |                                    |                                       |                                        |                                |                                |                           |
| top<br>(ft)       | bottom<br>(ft) | mid-point<br>(ft) |           |                  | N<br>(blows/ft) | γ <sub>sat</sub><br>(pcf) | γ'<br>(pcf)           | σ' <sub>v</sub><br>(psf) | ϕ<br>(deg)                 | c <sub>u</sub><br>(tsf)           | q <sub>u</sub><br>(tsf)       | E<br>(ksi)                | G<br>(ksi)    | v                | k<br>(psi/in)        | ε <sub>50</sub><br>(in/in) | E <sub>p</sub><br>(ksi)  |                                    | K <sub>a</sub>                        | K <sub>p</sub>                         | K <sub>0</sub>                 |                                | q <sub>b</sub><br>(tsf)   |
| 0                 | 4              | 2                 | 1         | SP / SP-SM       | 5               | 103                       | 98                    | 196                      | 28.5                       | -                                 | -                             | 0.88                      | 3.00          | 0.25             | 25                   | -                          | 0.56                     | -                                  | 0.35                                  | 2.83                                   | 0.87                           | SOIL                           | 3.0                       |
| 4                 | 13             | 8.5               | 2         | SM / SC          | 5               | 103                       | 41                    | 575                      | 26.5                       | -                                 | -                             | 0.44                      | 3.00          | 0.25             | 20                   | -                          | 0.4                      | -                                  | 0.38                                  | 2.61                                   | 0.89                           | SOIL                           | 3.0                       |
| 13                | 18             | 15.5              | 1         | SP / SP-SM       | 10              | 105                       | 43                    | 864                      | 29.8                       | -                                 | -                             | 1.47                      | 5.00          | 0.3              | 35                   | -                          | 1.4                      | -                                  | 0.34                                  | 2.98                                   | 1.05                           | SOIL                           | 6.0                       |
| 18                | 28             | 23                | 1         | SP / SP-SM       | 5               | 103                       | 41                    | 1173                     | 28.5                       | -                                 | -                             | 0.88                      | 3.00          | 0.25             | 20                   | -                          | 0.56                     | -                                  | 0.35                                  | 2.83                                   | 0.77                           | SOIL                           | 3.0                       |
| 28                | 33             | 30.5              | 2         | SM / SC          | 1               | 100                       | 38                    | 1470                     | 24.9                       | -                                 | -                             | 0.07                      | 0.50          | 0.2              | 5                    | -                          | 0.0075                   | -                                  | 0.41                                  | 2.45                                   | 0.49                           | SOIL                           | 0.6                       |
| 33                | 38             | 35.5              | 2         | SM / SC          | 11              | 105                       | 43                    | 1671                     | 27.8                       | -                                 | -                             | 0.74                      | 5.00          | 0.25             | 30                   | -                          | 1                        | -                                  | 0.36                                  | 2.75                                   | 0.82                           | SOIL                           | 6.6                       |
| 38                | 40             | 39                | 1         | SP / SP-SM       | 65              | 130                       | 68                    | 1845                     | 42.9                       | -                                 | -                             | 8.82                      | 20.00         | 0.3              | 165                  | -                          | 8.4                      | -                                  | 0.19                                  | 5.26                                   | 1.15                           | SOIL                           | 30.0                      |

| Boring No.         |                       |                          | Soil Type | USCS Soil Symbol | Raw SPT-N | Total Unit Weight | Effective Unit Weight | Effective Stress | Internal Angle of Friction | Undrained Shear Strength Cohesion | Uniaxial Compressive Strength | Elastic (Young's) Modulus | Shear Modulus | Poisson's Ration | Lateral Soil Modulus | Strain Factor E50 | MFAD Deformation Modulus | MFAD Concrete / Rock Bond Strength | Rankine Active Lateral Earth Pressure | Rankine Passive Lateral Earth Pressure | At-Rest Lateral Earth Pressure | MFAD Layer Type (Soil or Rock) | Ultimate Unit End Bearing |                |              |              |              |              |              |              |              |          |                 |                 |                      |                      |                      |                      |           |
|--------------------|-----------------------|--------------------------|-----------|------------------|-----------|-------------------|-----------------------|------------------|----------------------------|-----------------------------------|-------------------------------|---------------------------|---------------|------------------|----------------------|-------------------|--------------------------|------------------------------------|---------------------------------------|----------------------------------------|--------------------------------|--------------------------------|---------------------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------|-----------------|-----------------|----------------------|----------------------|----------------------|----------------------|-----------|
| Soil Layer Depths  |                       |                          |           |                  |           |                   |                       |                  |                            |                                   |                               |                           |               |                  |                      |                   |                          |                                    |                                       |                                        |                                |                                | <i>N</i>                  | $\gamma_{sat}$ | $\gamma'$    | $\sigma'_v$  | $\phi$       | $c_u$        | $q_u$        | <i>E</i>     | <i>G</i>     | <i>v</i> | <i>k</i>        | $\epsilon_{50}$ | <i>E<sub>p</sub></i> | <i>K<sub>a</sub></i> | <i>K<sub>p</sub></i> | <i>K<sub>0</sub></i> | <i>qb</i> |
| top<br><i>(ft)</i> | bottom<br><i>(ft)</i> | mid-point<br><i>(ft)</i> |           |                  |           |                   |                       |                  |                            |                                   |                               |                           |               |                  |                      |                   |                          |                                    |                                       |                                        |                                |                                | <i>(blows/ft)</i>         | <i>(pcf)</i>   | <i>(pcf)</i> | <i>(psf)</i> | <i>(deg)</i> | <i>(tsf)</i> | <i>(tsf)</i> | <i>(ksi)</i> | <i>(ksi)</i> |          | <i>(psi/in)</i> | <i>(in/in)</i>  | <i>(ksi)</i>         | <i>(ksf)</i>         |                      |                      |           |
| 0                  | 4                     | 2                        | 1         | SP / SP-SM       | 5         | 103               | 41                    | 81               | 28.5                       | -                                 | -                             | 0.88                      | 3.00          | 0.25             | 20                   | -                 | 0.56                     | -                                  | 0.35                                  | 2.83                                   | 0.87                           | SOIL                           | 3.0                       |                |              |              |              |              |              |              |              |          |                 |                 |                      |                      |                      |                      |           |
| 4                  | 13                    | 8.5                      | 2         | SM / SC          | 13        | 110               | 48                    | 377              | 31                         | -                                 | -                             | 1.47                      | 10.00         | 0.3              | 50                   | -                 | 1                        | -                                  | 0.32                                  | 3.12                                   | 1.13                           | SOIL                           | 7.8                       |                |              |              |              |              |              |              |              |          |                 |                 |                      |                      |                      |                      |           |
| 13                 | 18                    | 15.5                     | 2         | SM / SC          | 26        | 117.5             | 55                    | 729              | 35.4                       | -                                 | -                             | 2.57                      | 17.50         | 0.3              | 110                  | -                 | 2.5                      | -                                  | 0.27                                  | 3.75                                   | 1.38                           | SOIL                           | 15.6                      |                |              |              |              |              |              |              |              |          |                 |                 |                      |                      |                      |                      |           |
| 18                 | 25                    | 21.5                     | 2         | SM / SC          | 47        | 125               | 63                    | 1085             | 39                         | -                                 | -                             | 3.68                      | 20.00         | 0.3              | 150                  | -                 | 4                        | -                                  | 0.23                                  | 4.40                                   | 1.50                           | SOIL                           | 28.2                      |                |              |              |              |              |              |              |              |          |                 |                 |                      |                      |                      |                      |           |

## RECOMMENDED DESIGN SOIL PARAMETERS

### BEACHES ENERGY REBUILD

| Boring No.<br>B-4 |        |           | Soil Type | USCS Soil Symbol | Raw SPT-N       | Total Unit Weight       | Effective Unit Weight | Effective Stress     | Internal Angle of Friction | Undrained Shear Strength Cohesion | Uniaxial Compressive Strength | Elastic (Young's) Modulus | Shear Modulus | Poisson's Ratio | Lateral Soil Modulus | Strain Factor E50          | MFAD Deformation Modulus | MFAD Concrete / Rock Bond Strength | Rankine Active Lateral Earth Pressure | Rankine Passive Lateral Earth Pressure | At-Rest Lateral Earth Pressure | MFAD Layer Type (Soil or Rock) | Ultimate Unit End Bearing |
|-------------------|--------|-----------|-----------|------------------|-----------------|-------------------------|-----------------------|----------------------|----------------------------|-----------------------------------|-------------------------------|---------------------------|---------------|-----------------|----------------------|----------------------------|--------------------------|------------------------------------|---------------------------------------|----------------------------------------|--------------------------------|--------------------------------|---------------------------|
| top               | bottom | mid-point |           |                  |                 |                         |                       |                      |                            |                                   |                               |                           |               |                 |                      |                            |                          |                                    |                                       |                                        |                                |                                |                           |
| (ft)              | (ft)   | (ft)      |           |                  | N<br>(blows/ft) | $\gamma_{sat}$<br>(pcf) | $\gamma'$<br>(pcf)    | $\sigma'_v$<br>(psf) | $\phi$<br>(deg)            | $c_u$<br>(tsf)                    | $q_u$<br>(tsf)                | E<br>(ksi)                | G<br>(ksi)    | v               | k<br>(psi/in)        | $\epsilon_{50}$<br>(in/in) | $E_p$<br>(ksi)           |                                    | $K_a$                                 | $K_p$                                  | $K_0$                          |                                | qb<br>(tsf)               |
| 0                 | 2      | 1         | 1         | SP / SP-SM       | 5               | 103                     | 98                    | 98                   | 28.5                       | -                                 | -                             | 0.88                      | 3.00          | 0.25            | 25                   | -                          | 0.56                     | -                                  | 0.35                                  | 2.83                                   | 0.87                           | SOIL                           | 3.0                       |
| 2                 | 4      | 3         | 2         | SM / SC          | 5               | 103                     | 41                    | 237                  | 26.5                       | -                                 | -                             | 0.44                      | 3.00          | 0.25            | 20                   | -                          | 0.4                      | -                                  | 0.38                                  | 2.61                                   | 0.89                           | SOIL                           | 3.0                       |
| 4                 | 8      | 6         | 6         | CL               | 6               | 113                     | 51                    | 378                  | -                          | 0.38                              | 0.75                          | -                         | 4.00          | 0.35            | 200                  | 0.01                       | 0.45                     | -                                  | -                                     | -                                      | -                              | SOIL                           | 2.0                       |
| 8                 | 18     | 13        | 2         | SM / SC          | 11              | 107.5                   | 45                    | 705                  | 29.4                       | -                                 | -                             | 1.10                      | 7.50          | 0.3             | 40                   | -                          | 1                        | -                                  | 0.34                                  | 2.93                                   | 1.08                           | SOIL                           | 6.6                       |
| 18                | 28     | 23        | 1         | SP / SP-SM       | 20              | 110                     | 48                    | 1169                 | 33                         | -                                 | -                             | 2.94                      | 10.00         | 0.3             | 60                   | -                          | 2.8                      | -                                  | 0.29                                  | 3.39                                   | 1.11                           | SOIL                           | 12.0                      |
| 28                | 33     | 30.5      | 4         | ML               | 4               | 105.5                   | 43                    | 1514                 | 22                         | -                                 | -                             | 0.29                      | 2.00          | 0.3             | 15                   | -                          | 0.23                     | -                                  | 0.45                                  | 2.20                                   | 0.81                           | SOIL                           | 2.4                       |
| 33                | 40     | 36.5      | 1         | SP / SP-SM       | 100             | 130                     | 68                    | 1859                 | 43                         | -                                 | -                             | 14.70                     | 20.00         | 0.3             | 165                  | -                          | 11                       | -                                  | 0.19                                  | 5.29                                   | 1.37                           | SOIL                           | 30.0                      |

| Boring No.<br>B-5 |        |           | Soil Type | USCS Soil Symbol | Raw SPT-N       | Total Unit Weight       | Effective Unit Weight | Effective Stress     | Internal Angle of Friction | Undrained Shear Strength Cohesion | Uniaxial Compressive Strength | Elastic (Young's) Modulus | Shear Modulus | Poisson's Ratio | Lateral Soil Modulus | Strain Factor E50          | MFAD Deformation Modulus | MFAD Concrete / Rock Bond Strength | Rankine Active Lateral Earth Pressure | Rankine Passive Lateral Earth Pressure | At-Rest Lateral Earth Pressure | MFAD Layer Type (Soil or Rock) | Ultimate Unit End Bearing |
|-------------------|--------|-----------|-----------|------------------|-----------------|-------------------------|-----------------------|----------------------|----------------------------|-----------------------------------|-------------------------------|---------------------------|---------------|-----------------|----------------------|----------------------------|--------------------------|------------------------------------|---------------------------------------|----------------------------------------|--------------------------------|--------------------------------|---------------------------|
| top               | bottom | mid-point |           |                  |                 |                         |                       |                      |                            |                                   |                               |                           |               |                 |                      |                            |                          |                                    |                                       |                                        |                                |                                |                           |
| (ft)              | (ft)   | (ft)      |           |                  | N<br>(blows/ft) | $\gamma_{sat}$<br>(pcf) | $\gamma'$<br>(pcf)    | $\sigma'_v$<br>(psf) | $\phi$<br>(deg)            | $c_u$<br>(tsf)                    | $q_u$<br>(tsf)                | E<br>(ksi)                | G<br>(ksi)    | v               | k<br>(psi/in)        | $\epsilon_{50}$<br>(in/in) | $E_p$<br>(ksi)           |                                    | $K_a$                                 | $K_p$                                  | $K_0$                          |                                | qb<br>(tsf)               |
| 0                 | 2      | 1         | 1         | SP / SP-SM       | 5               | 103                     | 98                    | 98                   | 28.5                       | -                                 | -                             | 0.88                      | 3.00          | 0.25            | 25                   | -                          | 0.56                     | -                                  | 0.35                                  | 2.83                                   | 0.87                           | SOIL                           | 3.0                       |
| 2                 | 6      | 4         | 2         | SM / SC          | 5               | 103                     | 41                    | 277                  | 26.5                       | -                                 | -                             | 0.44                      | 3.00          | 0.25            | 20                   | -                          | 0.4                      | -                                  | 0.38                                  | 2.61                                   | 0.89                           | SOIL                           | 3.0                       |
| 6                 | 8      | 7         | 1         | SP / SP-SM       | 7               | 105                     | 43                    | 401                  | 29.8                       | -                                 | -                             | 1.47                      | 5.00          | 0.3             | 35                   | -                          | 0.85                     | -                                  | 0.34                                  | 2.98                                   | 0.94                           | SOIL                           | 4.2                       |
| 8                 | 13     | 10.5      | 2         | SM / SC          | 8               | 105                     | 43                    | 550                  | 27.8                       | -                                 | -                             | 0.74                      | 5.00          | 0.25            | 30                   | -                          | 0.8                      | -                                  | 0.36                                  | 2.75                                   | 1.00                           | SOIL                           | 4.8                       |
| 13                | 18     | 15.5      | 1         | SP / SP-SM       | 18              | 110                     | 48                    | 776                  | 33                         | -                                 | -                             | 2.94                      | 10.00         | 0.3             | 60                   | -                          | 2.1                      | -                                  | 0.29                                  | 3.39                                   | 1.24                           | SOIL                           | 10.8                      |
| 18                | 28     | 23        | 1         | SP / SP-SM       | 26              | 115                     | 53                    | 1158                 | 36                         | -                                 | -                             | 4.41                      | 15.00         | 0.3             | 100                  | -                          | 3.5                      | -                                  | 0.26                                  | 3.85                                   | 1.19                           | SOIL                           | 15.6                      |
| 28                | 38     | 33        | 4         | ML               | 4               | 105.5                   | 43                    | 1636                 | 22                         | -                                 | -                             | 0.29                      | 2.00          | 0.3             | 15                   | -                          | 0.23                     | -                                  | 0.45                                  | 2.20                                   | 0.79                           | SOIL                           | 2.4                       |
| 38                | 40     | 39        | 2         | SM / SC          | 13              | 105                     | 43                    | 1894                 | 27.8                       | -                                 | -                             | 0.74                      | 5.00          | 0.25            | 30                   | -                          | 1                        | -                                  | 0.36                                  | 2.75                                   | 0.81                           | SOIL                           | 7.80                      |

| Boring No.<br>B-6 |        |           | Soil Type | USCS Soil Symbol | Raw SPT-N       | Total Unit Weight       | Effective Unit Weight | Effective Stress     | Internal Angle of Friction | Undrained Shear Strength Cohesion | Uniaxial Compressive Strength | Elastic (Young's) Modulus | Shear Modulus | Poisson's Ratio | Lateral Soil Modulus | Strain Factor E50          | MFAD Deformation Modulus | MFAD Concrete / Rock Bond Strength | Rankine Active Lateral Earth Pressure | Rankine Passive Lateral Earth Pressure | At-Rest Lateral Earth Pressure | MFAD Layer Type (Soil or Rock) | Ultimate Unit End Bearing |
|-------------------|--------|-----------|-----------|------------------|-----------------|-------------------------|-----------------------|----------------------|----------------------------|-----------------------------------|-------------------------------|---------------------------|---------------|-----------------|----------------------|----------------------------|--------------------------|------------------------------------|---------------------------------------|----------------------------------------|--------------------------------|--------------------------------|---------------------------|
| top               | bottom | mid-point |           |                  |                 |                         |                       |                      |                            |                                   |                               |                           |               |                 |                      |                            |                          |                                    |                                       |                                        |                                |                                |                           |
| (ft)              | (ft)   | (ft)      |           |                  | N<br>(blows/ft) | $\gamma_{sat}$<br>(pcf) | $\gamma'$<br>(pcf)    | $\sigma'_v$<br>(psf) | $\phi$<br>(deg)            | $c_u$<br>(tsf)                    | $q_u$<br>(tsf)                | E<br>(ksi)                | G<br>(ksi)    | v               | k<br>(psi/in)        | $\epsilon_{50}$<br>(in/in) | $E_p$<br>(ksi)           |                                    | $K_a$                                 | $K_p$                                  | $K_0$                          |                                | qb<br>(tsf)               |
| 0                 | 4      | 2         | 1         | SP / SP-SM       | 5               | 103                     | 98                    | 196                  | 28.5                       | -                                 | -                             | 0.88                      | 3.00          | 0.25            | 20                   | -                          | 0.56                     | -                                  | 0.35                                  | 2.83                                   | 0.87                           | SOIL                           | 3.0                       |
| 4                 | 8      | 6         | 2         | SM / SC          | 4               | 103                     | 41                    | 473                  | 26.5                       | -                                 | -                             | 0.44                      | 3.00          | 0.25            | 20                   | -                          | 0.4                      | -                                  | 0.38                                  | 2.61                                   | 0.84                           | SOIL                           | 2.4                       |
| 8                 | 13     | 10.5      | 1         | SP / SP-SM       | 10              | 105                     | 43                    | 661                  | 29.8                       | -                                 | -                             | 1.47                      | 5.00          | 0.3             | 35                   | -                          | 1.4                      | -                                  | 0.34                                  | 2.98                                   | 1.05                           | SOIL                           | 6.0                       |
| 13                | 18     | 15.5      | 2         | SM / SC          | 11              | 105                     | 43                    | 874                  | 27.8                       | -                                 | -                             | 0.74                      | 5.00          | 0.25            | 30                   | -                          | 1                        | -                                  | 0.36                                  | 2.75                                   | 1.09                           | SOIL                           | 6.6                       |
| 18                | 23     | 20.5      | 2         | SM / SC          | 3               | 101                     | 39                    | 1077                 | 25.3                       | -                                 | -                             | 0.15                      | 1.00          | 0.2             | 10                   | -                          | 0.2                      | -                                  | 0.40                                  | 2.49                                   | 0.73                           | SOIL                           | 1.8                       |
| 23                | 33     | 28        | 4         | ML               | 4               | 105.5                   | 43                    | 1389                 | 22                         | -                                 | -                             | 0.29                      | 2.00          | 0.3             | 15                   | -                          | 0.23                     | -                                  | 0.45                                  | 2.20                                   | 0.84                           | SOIL                           | 2.4                       |
| 33                | 40     | 36.5      | 2         | SM / SC          | 10              | 105                     | 43                    | 1754                 | 27.8                       | -                                 | -                             | 0.74                      | 5.00          | 0.25            | 30                   | -                          | 1                        | -                                  | 0.36                                  | 2.75                                   | 0.78                           | SOIL                           | 6.0                       |



## FIELD TESTING STANDARDS AND PROCEDURES

### **Standard Penetration Test (SPT) Boring**

The SPT borings were advanced by means of a truck or track mounted drill rig employing wet rotary drilling techniques. The SPT testing was performed continuously in the upper ten feet and at five-foot intervals thereafter. The soil samples were obtained at the depths where the SPT testing was performed. The soil samples were then classified in the field, placed in sealed containers, and returned to our laboratory for further evaluation by a geotechnical engineer.

The SPT borings were performed in general compliance with standard field penetration test procedures (ASTM D 1586-99). After drilling to the sampling depth and flushing the borehole, the standard two-inch O.D. split-barrel sampler was seated by driving it six inches into the undisturbed soil at the bottom of the borehole. The sampler was then driven an additional 12 inches by a 140-pound hammer falling 30 inches. The number of blows required to produce the 12 inches of penetration is recorded as the standard penetration test value (N). These values are plotted on the left side of the boring log Figure 3.

In the upper ten feet sampling was performed by driving the split-barrel sampler 24 inches and the blows required to drive the sampler the middle two 6-inch increments were recorded as the “N” value. Through this technique, the upper ten feet of the soil was sampled continuously. Detailed descriptions of the soils encountered during the advancement of the SPT boring are presented in the Boring Logs.

### **Soil Sample Handling and Classification**

The soil samples obtained from the SPT borings were placed in sealed containers to retain moisture and returned to our laboratory. The samples were then reviewed by a geotechnical engineer to confirm classifications, visually estimate the relative percentages of the soil's constituents (sand, clay, etc.), and identify pertinent structural features. We visually classified the soils according to the Unified Soil Classification System (ASTM D 2487). The stratification lines shown on the boring logs in Figure 3 represent our interpretation of approximate boundaries between soil types. The transition between strata may be gradual. Our classifications are based on a visual estimation of the soil properties and our engineering experience with the soils found in this geologic area.

The SPT “N” values are presented adjacent along the left side of the boring logs. The correlation of the SPT “N” values with relative density, unconfined compressive strength, and consistency are provided in the following table:

| Coarse-Grained Soils                |                          | Fine Grained Soils                  |                                                                 |                     |
|-------------------------------------|--------------------------|-------------------------------------|-----------------------------------------------------------------|---------------------|
| Penetration Resistance N (blows/ft) | Relative Density of Sand | Penetration Resistance N (blows/ft) | Unconfined Compressive Strength of Clay (tons/ft <sup>2</sup> ) | Consistency of Clay |
| 0-4                                 | Very Loose               | <2                                  | <0.25                                                           | Very Soft           |
| 4-10                                | Loose                    | 2-4                                 | 0.25-0.50                                                       | Soft                |
| 10-30                               | Medium-Dense             | 4-8                                 | 0.50-1.00                                                       | Medium              |
| 30-50                               | Dense                    | 8-15                                | 1.00-2.00                                                       | Stiff               |
| >50                                 | Very Dense               | 15-30                               | 2.00-4.00                                                       | Very Stiff          |
|                                     |                          | >30                                 | >4.00                                                           | Hard                |

### **Hand Auger Borings**

The auger borings were performed with a manually advanced hand auger. The auger was advanced by rotating it into the ground in approximate 6-inch increments. After each incremental penetration, the auger was retracted, and the soils collected in the auger bucket were placed in sealed containers. The samples were then reviewed by a geotechnical engineer and classified as described above. Detailed descriptions of the soils encountered in the auger borings are presented in the Auger Boring Logs.



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Updated 04.05.2024

EXHIBIT B



## Safety & Health Program

**Client Name**

Client Location

Client LOGO (1.0" height)

**Project #####**

Month day, year



## EXHIBIT C

|                                                                                   |  |                                                          |                                   |                                                                                     |
|-----------------------------------------------------------------------------------|--|----------------------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------|
|  |  | Subject:<br><b>Corporate Safety &amp; Health Program</b> |                                   |  |
| Approved for use by:<br><b>V.P. Corporate Safety &amp; Health</b>                 |  | Current Issue:<br><b>REV-12</b>                          | Issue Date:<br><b>10 Jan 2024</b> | Last Review Date:<br><b>10 Jan 2024</b>                                             |
|                                                                                   |  | <b>Prepared by Burns &amp; McDonnell</b>                 |                                   |                                                                                     |

| Rev # | Date       | Review | Approval | Description                                                                                 |
|-------|------------|--------|----------|---------------------------------------------------------------------------------------------|
| 1     | 05/18/2021 | LG     | JB       | Initial                                                                                     |
| 2     | 07/19/2021 | LG     | JB       | PPE, Foot Protection update                                                                 |
| 3     | 09/28/2021 | EJ     | JB       | COVID-19 Form moved from Safety Forms to MacCentral                                         |
| 4     | 9/30/2021  | EJ     | JB       | Portable Ladder Inspection form added per RefChem request                                   |
| 5     | 02/18/2022 | LG     | JB       | Aboveground Storage and Dispensing Tanks Monthly Inspection Checklist added to Safety Forms |
| 6     | 04/05/2022 | LG     | JB       | N – 1W, N -2, C-7 Forms Corrected                                                           |
| 7     | 05/19/2022 | LG     | JB       | Update 2.1.1                                                                                |
| 8     | 11/04/2022 | LG     | LT       | Update 3.11, N-3, N-7 Forms Corrected                                                       |
| 9     | 02/24/2023 | LG     | LT       | Update PD loss Dollar Amounts, R-1 removal, J-1 correction                                  |
| 10    | 03/01/2023 | LG     | LT       | Update G-13B                                                                                |
| 11    | 04/04/2023 | LG     | LT       | Update Cell height G-19, Update                                                             |
| 12    | 01/10/2024 | LG     | LT       | Policy Update                                                                               |
| 13    |            |        |          |                                                                                             |
| 14    |            |        |          |                                                                                             |
| 15    |            |        |          |                                                                                             |
| 16    |            |        |          |                                                                                             |
| 17    |            |        |          |                                                                                             |
| 18    |            |        |          |                                                                                             |
| 19    |            |        |          |                                                                                             |
| 20    |            |        |          |                                                                                             |
| 21    |            |        |          |                                                                                             |
| 22    |            |        |          |                                                                                             |
| 23    |            |        |          |                                                                                             |
| 24    |            |        |          |                                                                                             |
| 25    |            |        |          |                                                                                             |



## **Table of Contents**

|            |                                                                                  |           |
|------------|----------------------------------------------------------------------------------|-----------|
| <b>1</b>   | <b>BURNS &amp; MCDONNELL SAFETY AND HEALTH POLICY .....</b>                      | <b>1</b>  |
| <b>1.1</b> | <b>Burns &amp; McDonnell Safety and Health Policy .....</b>                      | <b>2</b>  |
| <b>2</b>   | <b>PROJECT SAFETY &amp; HEALTH GOALS .....</b>                                   | <b>3</b>  |
| <b>2.1</b> | <b>Project Safety &amp; Health Goals.....</b>                                    | <b>4</b>  |
| 2.1.1      | General .....                                                                    | 4         |
| 2.1.2      | General Liability .....                                                          | 4         |
| <b>3</b>   | <b>GENERAL SAFETY .....</b>                                                      | <b>5</b>  |
| <b>3.1</b> | <b>Program Administration .....</b>                                              | <b>7</b>  |
| 3.1.1      | Project Safety & Health Program .....                                            | 7         |
| 3.1.2      | Project Safety & Health Coordination Meetings.....                               | 7         |
| 3.1.3      | Incident Reporting Requirements .....                                            | 7         |
| 3.1.4      | Executive Incident Review .....                                                  | 7         |
| <b>3.2</b> | <b>Project Safety Assessments .....</b>                                          | <b>8</b>  |
| 3.2.1      | Purpose.....                                                                     | 8         |
| 3.2.2      | General .....                                                                    | 8         |
| 3.2.3      | Weekly Work Area Audit .....                                                     | 8         |
| 3.2.4      | Daily Field Safety & Health Report .....                                         | 8         |
| 3.2.5      | Project Safety Assessment .....                                                  | 9         |
| 3.2.6      | Executive Safety Assessment.....                                                 | 10        |
| 3.2.7      | Other Inspection(s) .....                                                        | 10        |
| <b>3.3</b> | <b>Safety &amp; Health Monitoring and Enforcement.....</b>                       | <b>10</b> |
| 3.3.1      | Monitoring .....                                                                 | 10        |
| 3.3.2      | Enforcement.....                                                                 | 10        |
| 3.3.3      | Violation Abatement.....                                                         | 11        |
| 3.3.4      | Violation Procedure (Individuals) .....                                          | 11        |
| 3.3.4.1    | Non-Serious Violations .....                                                     | 11        |
| 3.3.4.2    | Serious Violations and Repeat Violations.....                                    | 12        |
| 3.3.5      | Violation Procedure (Company).....                                               | 12        |
| <b>3.4</b> | <b>Project Safety &amp; Health Coordination and Submittal Requirements .....</b> | <b>12</b> |
| 3.4.1      | General Requirements .....                                                       | 12        |
| 3.4.2      | Pre-Mobilization Submittals .....                                                | 12        |
| 3.4.2.1    | Subcontractor/Contractor Site-Specific Safety & Health Program .....             | 12        |
| 3.4.2.2    | Subcontractor/Contractor Verification.....                                       | 12        |
| 3.4.2.3    | Designated Safety Representative .....                                           | 12        |
| 3.4.2.4    | Competent Person Designation.....                                                | 13        |
| 3.4.3      | Pre/Post-Activity Coordination & Submittal Requirements .....                    | 13        |
| 3.4.3.1    | Project Safety & Health Orientation .....                                        | 13        |
| 3.4.3.2    | New to Site Employee .....                                                       | 13        |
| Figure 3-1 | "New to Site" Hard Hat Sticker.....                                              | 14        |
| 3.4.3.3    | Certification of Training .....                                                  | 14        |
| 3.4.3.4    | Activity Hazard Analysis (AHA).....                                              | 14        |
| 3.4.3.5    | Work Permitting .....                                                            | 15        |
| 3.4.3.6    | Pre-Task Analysis (PTA) .....                                                    | 15        |
| 3.4.3.7    | Chemical Inventory List .....                                                    | 16        |
| 3.4.3.8    | Safety Data Sheets (SDS) .....                                                   | 16        |
| 3.4.4      | Weekly Submittal Requirements.....                                               | 16        |





|             |                                                            |           |
|-------------|------------------------------------------------------------|-----------|
| 3.4.4.1     | Weekly Work Hour Report .....                              | 16        |
| 3.4.4.2     | Weekly Toolbox Safety Training .....                       | 16        |
| 3.4.5       | Monthly Work Hour Report .....                             | 16        |
| 3.4.6       | Additional Submittals .....                                | 17        |
| <b>3.5</b>  | <b>Program Amendment.....</b>                              | <b>17</b> |
| <b>3.6</b>  | <b>Required Postings.....</b>                              | <b>17</b> |
| <b>3.7</b>  | <b>Barricades and Signage .....</b>                        | <b>18</b> |
| 3.7.1       | Barricades .....                                           | 18        |
| 3.7.2       | Signage .....                                              | 18        |
|             | Table 3-1 Standard Color Coding for Safety .....           | 19        |
| <b>3.8</b>  | <b>Housekeeping Requirements.....</b>                      | <b>19</b> |
| 3.8.1       | Site Sanitation .....                                      | 19        |
| 3.8.1.1     | Controls and Disposal of Solid Waste .....                 | 19        |
| 3.8.1.2     | Disposal of Demolition and Other Construction Debris ..... | 20        |
| 3.8.1.3     | Sewage .....                                               | 20        |
|             | Table 3-2 Requirements for Toilet Facilities.....          | 20        |
| 3.8.1.4     | Dust Control .....                                         | 20        |
| 3.8.1.5     | Chemicals and Chemical Waste .....                         | 20        |
| 3.8.1.6     | Hazardous Waste Management and Disposal .....              | 21        |
| 3.8.1.7     | Wastewater Disposal .....                                  | 21        |
| 3.8.2       | Cell Phones.....                                           | 21        |
| 3.8.3       | Breaks and Lunches .....                                   | 21        |
| 3.8.3.1     | Break Areas .....                                          | 21        |
| 3.8.3.2     | Smoking Areas.....                                         | 21        |
| 3.8.3.3     | Drinking Water .....                                       | 21        |
| 3.8.4       | Washing and Hygiene Facilities.....                        | 22        |
| <b>3.9</b>  | <b>Short Service Employee Program .....</b>                | <b>22</b> |
| 3.9.1       | General .....                                              | 22        |
| 3.9.2       | Employee Identification.....                               | 22        |
| 3.9.3       | Mentoring .....                                            | 22        |
| 3.9.4       | Program Evaluation .....                                   | 22        |
| <b>3.10</b> | <b>Stop Work Authority Program .....</b>                   | <b>23</b> |
| 3.10.1      | Stop Work Authority .....                                  | 23        |
| 3.10.2      | Training .....                                             | 23        |
| 3.10.3      | Interventions.....                                         | 23        |
| 3.10.4      | Corrective Actions .....                                   | 23        |
| 3.10.5      | Learning .....                                             | 24        |
| 3.10.6      | Non-Retaliation or Discrimination .....                    | 24        |
| <b>3.11</b> | <b>Task Safety Observations.....</b>                       | <b>24</b> |
| 3.11.1      | General .....                                              | 25        |
| 3.11.2      | Procedure.....                                             | 25        |
| 3.11.3      | Training .....                                             | 26        |
| <b>3.12</b> | <b>Visitor Access .....</b>                                | <b>26</b> |
| <b>4</b>    | <b>STAIRWAYS, LADDERS AND SCAFFOLDS .....</b>              | <b>28</b> |
| <b>4.1</b>  | <b>Ladders .....</b>                                       | <b>30</b> |
| 4.1.1       | Definitions .....                                          | 30        |
| 4.1.2       | Inspection and Use .....                                   | 30        |
|             | Table 4-1 Quarterly/Monthly Color Codes.....               | 30        |



|            |                                                                                                       |           |
|------------|-------------------------------------------------------------------------------------------------------|-----------|
| <b>4.2</b> | <b>Scaffolds</b>                                                                                      | <b>30</b> |
| 4.2.1      | Definitions                                                                                           | 30        |
| <b>4.3</b> | <b>Scaffold Inspection and Tagging</b>                                                                | <b>31</b> |
|            | Table 4-2 Scaffold Tagging Color Codes                                                                | 31        |
| <b>4.4</b> | <b>Fall Protection</b>                                                                                | <b>31</b> |
| <b>4.5</b> | <b>Training</b>                                                                                       | <b>31</b> |
| <b>5</b>   | <b>EMERGENCY ACTION PLANS</b>                                                                         | <b>32</b> |
| <b>5.1</b> | <b>Emergency Action Plans</b>                                                                         | <b>34</b> |
| <b>6</b>   | <b>MOBILE ELEVATING WORK PLATFORMS</b>                                                                | <b>35</b> |
| <b>6.1</b> | <b>Mobile Elevating Work Platforms</b>                                                                | <b>37</b> |
| 6.1.1      | General Requirements                                                                                  | 37        |
| 6.1.2      | Specific Requirements                                                                                 | 37        |
| 6.1.3      | Ground Control and Spotter                                                                            | 37        |
| 6.1.4      | Fall Restraint                                                                                        | 37        |
| 6.1.5      | Electrical Clearances                                                                                 | 38        |
|            | Table 6-1 Alternative Minimum Approach Distances for Voltages of 72.5-kV and Less <sup>1</sup>        | 38        |
|            | Table 6-2 Alternative Minimum Approach Distances for Voltages of More Than 72.5-kV <sup>1, 2, 3</sup> | 39        |
| 6.1.6      | Required Training                                                                                     | 40        |
| <b>7</b>   | <b>CONFINED SPACES IN CONSTRUCTION</b>                                                                | <b>41</b> |
| <b>7.1</b> | <b>Confined Spaces in Construction</b>                                                                | <b>43</b> |
| 7.1.1      | General Requirements                                                                                  | 43        |
| 7.1.2      | Definitions                                                                                           | 43        |
| <b>7.2</b> | <b>Project Entity Site Leadership</b>                                                                 | <b>43</b> |
| <b>7.3</b> | <b>Confined Space — Project Communication and Coordination</b>                                        | <b>44</b> |
| 7.3.1      | Pre-Entry Information Exchange                                                                        | 44        |
| 7.3.2      | Post-Entry Information Exchange                                                                       | 44        |
| <b>7.4</b> | <b>Entry Permit</b>                                                                                   | <b>45</b> |
| 7.4.1      | Permit Contents                                                                                       | 45        |
| 7.4.2      | Permit Management                                                                                     | 46        |
| 7.4.2.1    | Preplanning                                                                                           | 46        |
| 7.4.3      | Recordkeeping                                                                                         | 46        |
| <b>7.5</b> | <b>Confined Space Entry Procedures</b>                                                                | <b>46</b> |
| 7.5.1      | Competent Person                                                                                      | 46        |
| 7.5.2      | Written Program                                                                                       | 47        |
| 7.5.3      | Classification of Confined Spaces                                                                     | 47        |
| 7.5.4      | Preparation for Entry                                                                                 | 47        |
| 7.5.5      | Changes to Work Environment During Work Activities                                                    | 48        |
| 7.5.6      | Permit-Required Confined Space Program                                                                | 49        |
| <b>7.6</b> | <b>Training</b>                                                                                       | <b>49</b> |
| 7.6.1      | Duties of Authorized Entrants                                                                         | 50        |
| 7.6.2      | Duties of Attendants                                                                                  | 51        |
| 7.6.3      | Duties of Entry Supervisors                                                                           | 52        |
| <b>7.7</b> | <b>Rescue Planning</b>                                                                                | <b>52</b> |
| 7.7.1      | Project Entity Employee Rescue Personnel                                                              | 53        |
| <b>8</b>   | <b>PROCESS SAFETY MANAGEMENT AND HAZWOPER</b>                                                         | <b>55</b> |



|             |                                                                    |           |
|-------------|--------------------------------------------------------------------|-----------|
| <b>9</b>    | <b>PERSONAL PROTECTIVE EQUIPMENT .....</b>                         | <b>58</b> |
| <b>9.1</b>  | <b>Personal Protective Equipment (PPE) .....</b>                   | <b>62</b> |
| 9.1.1       | General Requirements .....                                         | 62        |
| <b>9.2</b>  | <b>Eye and Face Protection .....</b>                               | <b>62</b> |
| 9.2.1       | Basic Eye Protection .....                                         | 62        |
| 9.2.2       | Prescription Safety Glasses .....                                  | 62        |
| 9.2.3       | Face Shields .....                                                 | 62        |
| 9.2.4       | Chemical Goggles .....                                             | 63        |
| 9.2.5       | Burning Goggles/Face Shield .....                                  | 63        |
| 9.2.6       | Welding Hoods .....                                                | 63        |
| 9.2.7       | Eye Protection Inspection .....                                    | 63        |
| <b>9.3</b>  | <b>Head Protection .....</b>                                       | <b>63</b> |
| 9.3.1       | Issuance of Head Protection .....                                  | 63        |
| 9.3.2       | Inspection .....                                                   | 63        |
| 9.3.3       | General Requirements .....                                         | 63        |
| <b>9.4</b>  | <b>Hearing Protection .....</b>                                    | <b>64</b> |
| 9.4.1       | General Requirements .....                                         | 64        |
| 9.4.2       | Training .....                                                     | 64        |
| <b>9.5</b>  | <b>Hand Protection .....</b>                                       | <b>64</b> |
|             | Table 9-1 Hand Protection Reference Guide .....                    | 65        |
| <b>9.6</b>  | <b>Foot Protection .....</b>                                       | <b>65</b> |
| 9.6.1       | Basic Foot Protection .....                                        | 65        |
| 9.6.2       | Special Purpose Footwear .....                                     | 65        |
| 9.6.2.1     | Foot Protectors .....                                              | 66        |
| <b>9.7</b>  | <b>Clothing Policy .....</b>                                       | <b>66</b> |
| 9.7.1       | Standard Work Clothing .....                                       | 66        |
| 9.7.2       | Specialized Work Clothing .....                                    | 66        |
| <b>9.8</b>  | <b>Respiratory Protection .....</b>                                | <b>66</b> |
| 9.8.1       | General Requirements .....                                         | 66        |
| 9.8.2       | Duration of Respiratory Protection Use .....                       | 67        |
| 9.8.3       | Selection of Respirators .....                                     | 68        |
| 9.8.4       | Assigned Protection Factors (APF) .....                            | 68        |
|             | Table 9-2 Respirator Assigned Protection Factor <sup>5</sup> ..... | 68        |
| 9.8.5       | Fit Testing .....                                                  | 69        |
| 9.8.6       | Field Tests .....                                                  | 69        |
| 9.8.7       | Voluntary Use .....                                                | 69        |
| 9.8.8       | Inspection, Cleaning, Maintenance and Storage .....                | 69        |
| 9.8.9       | Respiratory Program Evaluation .....                               | 69        |
| 9.8.10      | Training and Information .....                                     | 70        |
| <b>9.9</b>  | <b>Personal Hydrogen Sulfide (H<sub>2</sub>S) Monitors .....</b>   | <b>70</b> |
| 9.9.1       | General Requirements .....                                         | 70        |
| 9.9.2       | Care, Use and Storage .....                                        | 70        |
| 9.9.3       | Proper Placement .....                                             | 70        |
| 9.9.4       | Training .....                                                     | 70        |
| <b>9.10</b> | <b>Personal Floatation Devices .....</b>                           | <b>70</b> |
| 9.10.1      | Working Over or Near Water, Barges, and Boats .....                | 70        |
| 9.10.2      | Personal Flotation Devices (PFDs) .....                            | 71        |



|             |                                                            |           |
|-------------|------------------------------------------------------------|-----------|
| 9.10.3      | Throwable Devices (Type IV PFD)                            | 71        |
|             | Figure 9-1 Personal Flotation Devices                      | 72        |
| <b>10</b>   | <b>EXCAVATIONS</b>                                         | <b>73</b> |
| <b>10.1</b> | <b>Excavation Requirements</b>                             | <b>76</b> |
| 10.1.1      | Determination of Requirements                              | 76        |
| 10.1.2      | Inspection by Competent Person                             | 76        |
| <b>10.2</b> | <b>Requirements for Protective Systems</b>                 | <b>76</b> |
| 10.2.1      | Protection of Workers in Excavations                       | 76        |
| <b>10.3</b> | <b>Appendix A — Soil Classification</b>                    | <b>76</b> |
| <b>10.4</b> | <b>Appendix B — Sloping and Benching</b>                   | <b>76</b> |
| <b>11</b>   | <b>MEDICAL AND FIRST AID</b>                               | <b>77</b> |
| <b>11.1</b> | <b>Medical Services and First Aid</b>                      | <b>79</b> |
| 11.1.1      | General Requirements                                       | 79        |
| 11.1.2      | First Aid Kits                                             | 79        |
| 11.1.3      | Availability of Medical Personnel                          | 79        |
| 11.1.4      | Medical Facility Designation                               | 79        |
| 11.1.5      | Corrosive Materials                                        | 79        |
| <b>11.2</b> | <b>Injury/Illness Case Management</b>                      | <b>80</b> |
| 11.2.1      | General Requirements                                       | 80        |
| 11.2.2      | Injury Care                                                | 80        |
|             | Table 11-1 Injury Notification                             | 80        |
| <b>12</b>   | <b>FIRE PROTECTION AND PREVENTION</b>                      | <b>81</b> |
| <b>12.1</b> | <b>Fire Protection and Prevention</b>                      | <b>83</b> |
| 12.1.1      | General Requirements                                       | 83        |
| <b>12.2</b> | <b>Fire Classifications and Extinguishers</b>              | <b>83</b> |
| 12.2.1      | Fire Classifications                                       | 83        |
| 12.2.2      | Extinguishers                                              | 83        |
|             | Table 12-1 Fire Extinguisher Requirements                  | 84        |
| <b>12.3</b> | <b>Fire Extinguisher Inspections</b>                       | <b>84</b> |
| 12.3.1      | Monthly Fire Extinguisher Inspections                      | 84        |
|             | Figure 12-1 Fire Extinguisher Inspection Tag               | 85        |
| 12.3.2      | Annual Fire Extinguisher Maintenance/Inspections           | 85        |
|             | Table 12-2 Hydrostatic Test Interval for Extinguishers     | 85        |
| <b>12.4</b> | <b>Fire Brigades</b>                                       | <b>86</b> |
| <b>12.5</b> | <b>Hot Work Permitting</b>                                 | <b>86</b> |
| 12.5.1      | Permit Issuance/Completion                                 | 87        |
| 12.5.2      | Permit Duration/Validity                                   | 87        |
| 12.5.3      | Hot Work Permit/Work Permit Guidelines                     | 87        |
| <b>12.6</b> | <b>Fire Watch Requirements</b>                             | <b>88</b> |
| <b>12.7</b> | <b>Material Storage for Fire Prevention</b>                | <b>88</b> |
| <b>12.8</b> | <b>Temporary Aboveground Storage Tanks</b>                 | <b>89</b> |
| 12.8.1      | Monthly Inspection                                         | 89        |
| <b>12.9</b> | <b>Hazardous Material Identification System (HMIS)</b>     | <b>90</b> |
|             | Figure 12-2 Hazardous Material Identification System Label | 90        |





|              |                                                                          |            |
|--------------|--------------------------------------------------------------------------|------------|
| <b>12.10</b> | <b>NFPA 704 Labeling System .....</b>                                    | <b>90</b>  |
|              | Figure 12-3 NFPA 704M Label.....                                         | 91         |
| <b>12.11</b> | <b>Flammable and Combustible Liquid Storage .....</b>                    | <b>91</b>  |
| 12.11.1      | Indoor Storage of flammable liquids.....                                 | 91         |
| <b>12.12</b> | <b>Temporary Heating Devices .....</b>                                   | <b>92</b>  |
| <b>12.13</b> | <b>Fueling/Refueling.....</b>                                            | <b>92</b>  |
| <b>12.14</b> | <b>Training.....</b>                                                     | <b>92</b>  |
| <b>13</b>    | <b>COMPRESSED AIR, ABRASIVE BLASTING, PNEUMATICS, AND PAINTING .....</b> | <b>93</b>  |
| <b>13.1</b>  | <b>Compressed Air Operations .....</b>                                   | <b>95</b>  |
| <b>13.2</b>  | <b>Abrasive Blasting .....</b>                                           | <b>96</b>  |
| 13.2.1       | Exteriors of Equipment in Service.....                                   | 98         |
| 13.2.2       | Cone-Roof or Flat-Deck Tanks .....                                       | 98         |
| 13.2.3       | Floating-Roof Tanks.....                                                 | 99         |
| 13.2.4       | Interiors of Tanks and Other Vessels .....                               | 99         |
| 13.2.5       | Lead-Based Paint .....                                                   | 99         |
| 13.2.6       | Dust Hazards .....                                                       | 99         |
| 13.2.7       | Housekeeping .....                                                       | 99         |
| <b>13.3</b>  | <b>Spray Finishing (Painting) .....</b>                                  | <b>100</b> |
| 13.3.1       | Pressurized Paint Equipment.....                                         | 100        |
| 13.3.2       | Airless Paint Equipment.....                                             | 101        |
| 13.3.3       | Epoxy Compounds.....                                                     | 101        |
| 13.3.4       | Creosote-Based Paint.....                                                | 101        |
| <b>14</b>    | <b>EQUIPMENT FOR MATERIAL HANDLING AND RIGGING .....</b>                 | <b>103</b> |
| <b>14.1</b>  | <b>General Requirements for Equipment.....</b>                           | <b>108</b> |
| 14.1.1       | General .....                                                            | 108        |
| <b>14.2</b>  | <b>Cranes and Derricks.....</b>                                          | <b>108</b> |
| 14.2.1       | Definitions .....                                                        | 108        |
| 14.2.2       | Equipment Knowledge .....                                                | 108        |
| 14.2.3       | Calculating Load Capacity .....                                          | 108        |
| 14.2.4       | Operational Considerations .....                                         | 109        |
| 14.2.5       | Crane and/or Crane Equipment Modification.....                           | 109        |
| 14.2.6       | Crane Inspections .....                                                  | 110        |
| 14.2.6.1     | Post-Assembly/Initial Inspections .....                                  | 110        |
| 14.2.6.2     | Frequent/Pre-Shift Inspections .....                                     | 110        |
| 14.2.6.3     | Monthly Inspections .....                                                | 110        |
| 14.2.6.4     | Annual Inspections.....                                                  | 110        |
| 14.2.6.5     | Equipment Modification Inspections .....                                 | 110        |
| 14.2.6.6     | Severe-Service or Not-in-Regular-Use Inspections.....                    | 111        |
| 14.2.7       | Crane Inspections Guidelines .....                                       | 111        |
| 14.2.7.1     | Barricades and Swing Radius Protection .....                             | 111        |
| 14.2.7.2     | Wire Rope .....                                                          | 111        |
| 14.2.7.3     | Guarding .....                                                           | 112        |
| 14.2.7.4     | Mechanical Items.....                                                    | 112        |
| 14.2.7.5     | Boom and Jib .....                                                       | 112        |
| 14.2.7.6     | Outriggers .....                                                         | 112        |
| 14.2.7.7     | Brakes and Operator Aids .....                                           | 113        |
| 14.2.7.8     | Crane Cab/Operator's Station .....                                       | 113        |
| 14.2.7.9     | Field of Vision .....                                                    | 113        |



|             |                                                                                  |            |
|-------------|----------------------------------------------------------------------------------|------------|
| 14.2.8      | Maintenance Guidelines .....                                                     | 114        |
| 14.2.9      | Assembly and Disassembly .....                                                   | 114        |
| 14.2.10     | Power Line Awareness.....                                                        | 115        |
|             | Table 14-1 Minimum Clearance Distances .....                                     | 115        |
|             | Table 14-2 Minimum Clearance Distances While Traveling With No Load .....        | 115        |
| 14.2.11     | Critical Lifts .....                                                             | 116        |
| 14.2.12     | Hand Signals .....                                                               | 117        |
| 14.2.13     | Authority to Stop Operation .....                                                | 117        |
| 14.2.14     | Ground Conditions/Stability .....                                                | 117        |
| 14.2.14.1   | Ground Conditions .....                                                          | 117        |
|             | Table 14-3 Allowable Bearing Pressure .....                                      | 118        |
| 14.2.14.2   | Stability .....                                                                  | 118        |
| 14.2.15     | Specialty Cranes .....                                                           | 119        |
| 14.2.15.1   | Overhead Cranes .....                                                            | 119        |
| <b>14.3</b> | <b>Crane-Suspended Personnel Platforms, Material Hoists, and Elevators .....</b> | <b>119</b> |
| 14.3.1      | Use of Crane-Suspended Personnel Platforms.....                                  | 119        |
| 14.3.2      | Equipment Criteria .....                                                         | 119        |
| 14.3.3      | Devices .....                                                                    | 120        |
| 14.3.3.1    | Controlled Load Lowering.....                                                    | 120        |
| 14.3.4      | Proper Operation.....                                                            | 120        |
| 14.3.5      | Personnel Platform Criteria.....                                                 | 120        |
| 14.3.6      | Personnel Platform Loading and Use .....                                         | 121        |
| 14.3.7      | Attachments and Rigging.....                                                     | 122        |
| 14.3.7.1    | Hooks and Other Detachable Devices.....                                          | 122        |
| 14.3.7.2    | Rope Bridle .....                                                                | 122        |
| 14.3.8      | Trial Lift and Inspection.....                                                   | 122        |
| 14.3.9      | Proof Testing.....                                                               | 124        |
| 14.3.10     | Work Practices .....                                                             | 124        |
| 14.3.11     | Environmental Conditions .....                                                   | 124        |
| 14.3.11.1   | Wind.....                                                                        | 124        |
| 14.3.12     | Fall Protection.....                                                             | 125        |
| 14.3.13     | Traveling Equipment .....                                                        | 125        |
| 14.3.14     | Pre-Lift Meeting .....                                                           | 125        |
| 14.3.15     | Hoisting Personnel Near Power Lines .....                                        | 125        |
| 14.3.16     | Hoisting Personnel in Drill Shafts .....                                         | 125        |
| 14.3.17     | Hoisting Personnel for Pile Driving Operations .....                             | 126        |
| 14.3.18     | Hoisting Personnel for Marine Transfer .....                                     | 126        |
| <b>14.4</b> | <b>Conveyors .....</b>                                                           | <b>127</b> |
| 14.4.1      | General Requirements.....                                                        | 127        |
| <b>14.5</b> | <b>Helicopters .....</b>                                                         | <b>127</b> |
| 14.5.1      | Helicopter Lift Plan Submittal .....                                             | 127        |
| <b>14.6</b> | <b>Rigging Equipment for Material Handling.....</b>                              | <b>127</b> |
| 14.6.1      | Rigger Qualification/Training.....                                               | 127        |
| 14.6.2      | Rigging Equipment Inspection .....                                               | 128        |
|             | Table 14-4 Quarterly/Monthly Color Codes.....                                    | 129        |
| <b>14.7</b> | <b>Forklifts/Powered Industrial Trucks .....</b>                                 | <b>129</b> |
| 14.7.1      | Operator Training .....                                                          | 129        |
| 14.7.2      | Inspection.....                                                                  | 129        |
| 14.7.3      | Battery Maintenance .....                                                        | 129        |



|             |                                                       |            |
|-------------|-------------------------------------------------------|------------|
| <b>15</b>   | <b>MOTOR VEHICLES AND EARTHMOVING EQUIPMENT .....</b> | <b>131</b> |
| <b>15.1</b> | <b>Motor Vehicles Project Program .....</b>           | <b>133</b> |
| 15.1.1      | General Requirements .....                            | 133        |
| 15.1.2      | Site Supervision .....                                | 134        |
| <b>15.2</b> | <b>Dump Trucks .....</b>                              | <b>134</b> |
| <b>15.3</b> | <b>Pneumatic Rubber-Tired Vehicles .....</b>          | <b>134</b> |
| <b>15.4</b> | <b>Earthmoving Equipment .....</b>                    | <b>134</b> |
| 15.4.1      | General .....                                         | 134        |
| <b>15.5</b> | <b>Vacuum Truck .....</b>                             | <b>134</b> |
| 15.5.1      | General .....                                         | 134        |
| 15.5.2      | Bonding and Grounding .....                           | 135        |
| 15.5.3      | Operations.....                                       | 135        |
| 15.5.4      | Training .....                                        | 137        |
| <b>15.6</b> | <b>Drilling, Boring and Direct-Push .....</b>         | <b>137</b> |
| 15.6.1      | Overhead Obstructions .....                           | 137        |
| 15.6.2      | Underground Utilities .....                           | 138        |
| 15.6.3      | Turning or Rotating Machinery.....                    | 138        |
| 15.6.4      | Hydraulic Machinery .....                             | 138        |
| 15.6.5      | Working Safely Around Vehicles.....                   | 139        |
| 15.6.6      | Terrain Hazards .....                                 | 140        |
| 15.6.7      | Rig Kill Switch .....                                 | 141        |
| <b>15.7</b> | <b>Rail Car and Truck Dock Procedures .....</b>       | <b>141</b> |
| 15.7.1      | General Requirements .....                            | 141        |
| 15.7.1.1    | Training .....                                        | 141        |
| 15.7.2      | Traffic Crossing .....                                | 141        |
| 15.7.3      | Working Near Railroad Tracks.....                     | 142        |
| 15.7.4      | Rail Dock Procedure .....                             | 142        |
| 15.7.4.1    | Boxcar Loading and/or Unloading .....                 | 143        |
| 15.7.5      | Truck Dock Procedures .....                           | 144        |
| 15.7.5.1    | Truck Dock Facilities and Equipment .....             | 145        |
| <b>16</b>   | <b>HAND AND PORTABLE POWERED TOOLS .....</b>          | <b>146</b> |
| <b>16.1</b> | <b>Hand and Portable Powered Tools .....</b>          | <b>148</b> |
| 16.1.1      | General Requirements .....                            | 148        |
|             | Table 16-2 Quarterly/Monthly Color Codes.....         | 148        |
| <b>16.2</b> | <b>Hand Tools .....</b>                               | <b>148</b> |
| <b>16.3</b> | <b>Abrasive Wheel Grinders .....</b>                  | <b>149</b> |
| <b>16.4</b> | <b>Powder-Actuated Tools .....</b>                    | <b>150</b> |
| <b>16.5</b> | <b>Electric Power Tools .....</b>                     | <b>151</b> |
| <b>16.6</b> | <b>Saws .....</b>                                     | <b>151</b> |
| <b>16.7</b> | <b>Drills .....</b>                                   | <b>151</b> |
| <b>16.8</b> | <b>Pneumatic Tools .....</b>                          | <b>152</b> |
| <b>16.9</b> | <b>Battery Powered Tools.....</b>                     | <b>153</b> |
| <b>17</b>   | <b>WELDING, CUTTING AND BRAZING .....</b>             | <b>154</b> |
| <b>17.1</b> | <b>Arc Welding .....</b>                              | <b>156</b> |
| <b>17.2</b> | <b>Electrical Shock Hazards .....</b>                 | <b>156</b> |



|             |                                                                                                 |            |
|-------------|-------------------------------------------------------------------------------------------------|------------|
| <b>17.3</b> | <b>Welding Material Rigged by Chain Falls, Come-Alongs, and Wire or Nylon Chokers .....</b>     | <b>157</b> |
| 17.3.1      | Inspections .....                                                                               | 157        |
| <b>17.4</b> | <b>Gas Welding .....</b>                                                                        | <b>157</b> |
| 17.4.1      | Oxygen-Fuel Gas Burning .....                                                                   | 158        |
| 17.4.2      | Lancing.....                                                                                    | 158        |
| 17.4.3      | Plasma Arc Cutting .....                                                                        | 158        |
| <b>17.5</b> | <b>Welding/Cutting in Enclosed Spaces .....</b>                                                 | <b>159</b> |
| <b>17.6</b> | <b>Training.....</b>                                                                            | <b>159</b> |
| 17.6.1      | General .....                                                                                   | 159        |
| 17.6.2      | Oxy-Fuel Cutting .....                                                                          | 159        |
| 17.6.3      | General Precautions for Welders/Cutters .....                                                   | 160        |
| 17.6.4      | Cylinder Use.....                                                                               | 161        |
| 17.6.5      | Hoses and Torches .....                                                                         | 164        |
| 17.6.6      | Ignition Control.....                                                                           | 165        |
|             | Figure 17-1 Typical Hot Tap Activity Flow.....                                                  | 167        |
|             | Figure 17-2 Example Process to Review Whether Hot Tapping is Appropriate .....                  | 168        |
|             | Figure 17-3 Example Decision Process for Authorizing Hot Tapping .....                          | 169        |
| <b>18</b>   | <b>ELECTRIC POWER GENERATION, TRANSMISSION, AND DISTRIBUTION &amp; TELECOMMUNICATIONS .....</b> | <b>170</b> |
| <b>18.1</b> | <b>Electric Power Generation, Transmission, and Distribution .....</b>                          | <b>172</b> |
| 18.1.1      | General .....                                                                                   | 172        |
| 18.1.1.1    | Definitions .....                                                                               | 172        |
| 18.1.2      | Job Briefing .....                                                                              | 172        |
| 18.1.3      | Information Transfer.....                                                                       | 172        |
| 18.1.4      | Personal Protective Equipment.....                                                              | 172        |
| 18.1.5      | Crane Lifting Plans.....                                                                        | 173        |
| 18.1.6      | Substations .....                                                                               | 173        |
| 18.1.7      | Training .....                                                                                  | 173        |
| <b>18.2</b> | <b>Telecommunications .....</b>                                                                 | <b>175</b> |
| 18.2.1      | General .....                                                                                   | 175        |
| 18.2.1.1    | Tower Climbers and Ground Crew Workers.....                                                     | 175        |
| 18.2.2      | Work Site Safety Practices .....                                                                | 175        |
| 18.2.3      | Zero-Tolerance Policy to Unsafe Work Practices .....                                            | 175        |
| 18.2.4      | Rescue .....                                                                                    | 176        |
| 18.2.5      | Tools and Personal Protective Equipment.....                                                    | 176        |
| 18.2.6      | Personal Climbing Equipment.....                                                                | 176        |
| 18.2.7      | Vehicle-Mounted Material Handling Devices and Other Mechanical Equipment .....                  | 176        |
| 18.2.8      | Derrick Trucks and Similar Equipment.....                                                       | 176        |
| 18.2.9      | Electrical Vaults, Manholes and Enclosed Spaces.....                                            | 176        |
| <b>19</b>   | <b>ELECTRIC SITE SPECIFIC.....</b>                                                              | <b>177</b> |
| <b>19.1</b> | <b>Electrical Safe Work Practices .....</b>                                                     | <b>184</b> |
| 19.1.1      | Introduction .....                                                                              | 184        |
| 19.1.2      | Personnel Interaction with Electrical Equipment.....                                            | 185        |
| 19.1.3      | Responsibilities .....                                                                          | 186        |
| 19.1.3.1    | Host Site Responsibilities .....                                                                | 186        |
| 19.1.3.2    | Subcontractor Responsibilities .....                                                            | 186        |
| 19.1.3.3    | Project Manager.....                                                                            | 187        |
| 19.1.3.4    | Construction Site Manager and Startup Manager .....                                             | 188        |





|              |                                                                                                      |            |
|--------------|------------------------------------------------------------------------------------------------------|------------|
| 19.1.3.5     | Employee Responsibilities .....                                                                      | 188        |
| 19.1.4       | Documentation .....                                                                                  | 189        |
| <b>19.2</b>  | <b>Program Definitions .....</b>                                                                     | <b>189</b> |
| 19.2.1       | Qualified Person Criteria .....                                                                      | 189        |
| 19.2.1.1     | Qualified Person Stipulations .....                                                                  | 189        |
| 19.2.2       | Unqualified Persons Criteria .....                                                                   | 190        |
| 19.2.3       | General Definitions .....                                                                            | 191        |
| <b>19.3</b>  | <b>Training Requirements .....</b>                                                                   | <b>193</b> |
| 19.3.1       | Electrical Safety Training .....                                                                     | 194        |
| 19.3.1.1     | Additional Retraining .....                                                                          | 195        |
| 19.3.1.2     | Type of Training .....                                                                               | 195        |
| 19.3.1.3     | Electrical Safety Training Documentation .....                                                       | 195        |
| 19.3.1.4     | Lockout/Tagout (LOTO) Procedure Training .....                                                       | 196        |
| 19.3.1.4.1   | Initial Training .....                                                                               | 196        |
| 19.3.1.4.2   | Retraining .....                                                                                     | 196        |
| 19.3.1.5     | Emergency Response Training .....                                                                    | 196        |
| 19.3.1.5.1   | Contact Release .....                                                                                | 196        |
| 19.3.1.5.2   | First Aid, Emergency Response and Resuscitation .....                                                | 197        |
| 19.3.1.5.3   | Training Verification .....                                                                          | 197        |
| <b>19.4</b>  | <b>General Construction .....</b>                                                                    | <b>197</b> |
| 19.4.1       | Portable Cord-and-Plug-Connected Electric Equipment .....                                            | 197        |
| 19.4.1.1     | Handling and Storage .....                                                                           | 197        |
| 19.4.1.2     | Grounding-Type Equipment .....                                                                       | 198        |
| 19.4.1.3     | Visual Inspection and Repair Portable Cord-and-Plug-Connected Equipment and Flexible Cord Sets ..... | 198        |
| Table 19-1   | Quarterly/Monthly Color Codes .....                                                                  | 198        |
| 19.4.1.3.1   | Defective Equipment .....                                                                            | 199        |
| 19.4.1.3.2   | Proper Mating .....                                                                                  | 199        |
| 19.4.1.3.3   | Conductive Work Locations .....                                                                      | 199        |
| 19.4.1.3.4   | Connecting Attachment Plugs .....                                                                    | 199        |
| 19.4.1.3.5   | Manufacturer's Instructions .....                                                                    | 200        |
| 19.4.1.4     | Power Strips .....                                                                                   | 200        |
| 19.4.1.5     | Ground-Fault Circuit-Interrupter (GFCI) Protection .....                                             | 201        |
| 19.4.1.5.1   | Outdoors .....                                                                                       | 201        |
| 19.4.1.6     | Assured Equipment Grounding Conductor Program .....                                                  | 202        |
| 19.4.1.6.1   | Testing Ground-Fault Circuit-Interrupter (GFCI) Protection Devices .....                             | 202        |
| 19.4.1.7     | Portable and Vehicle Mounted Generators .....                                                        | 202        |
| 19.4.1.8     | Safe Distribution Systems .....                                                                      | 202        |
| 19.4.1.8.1   | Access and Working Space/Working Position .....                                                      | 203        |
| 19.4.1.9     | Underground Locations Containing Multiple Cables .....                                               | 204        |
| 19.4.1.10    | Materials Storage Near Energized Parts/Lines .....                                                   | 204        |
| 19.4.1.11    | Vehicle Operations .....                                                                             | 204        |
| 19.4.1.12    | Wet Cell Storage Batteries .....                                                                     | 205        |
| <b>19.5</b>  | <b>Supplying Temporary Power .....</b>                                                               | <b>207</b> |
| 19.5.1       | Responsibilities .....                                                                               | 208        |
| 19.5.2       | General Requirements .....                                                                           | 208        |
| 19.5.2.1     | Maintenance of Equipment .....                                                                       | 209        |
| 19.5.2.1.1   | Environmental Deterioration or Deteriorating Agents .....                                            | 209        |
| 19.5.2.1.1.1 | Protection Against Corrosion .....                                                                   | 209        |
| 19.5.2.2     | Temporary Construction Wiring .....                                                                  | 209        |
| 19.5.2.3     | Batteries and Battery Charging: .....                                                                | 209        |
| 19.5.3       | Temporary Wiring .....                                                                               | 210        |



|              |                                                                         |            |
|--------------|-------------------------------------------------------------------------|------------|
| 19.5.3.1     | Temporary Electrical and Use of Power Strips .....                      | 211        |
| 19.5.4       | Inspections .....                                                       | 212        |
| 19.5.4.1     | Selection and Use of Temporary Lighting .....                           | 212        |
| <b>19.6</b>  | <b>Electrical Safety Management.....</b>                                | <b>213</b> |
| 19.6.1       | Inspections .....                                                       | 213        |
| 19.6.2       | Electrical Safety Program Procedures .....                              | 213        |
| 19.6.3       | Risk Assessment Procedures .....                                        | 214        |
| 19.6.3.1     | Identifying Hazards .....                                               | 214        |
| 19.6.3.2     | Risk Assessment .....                                                   | 215        |
| 19.6.3.3     | Hierarchy of Risk Control Methods .....                                 | 216        |
| 19.6.3.4     | Job Safety Planning and Pre-Job Briefing .....                          | 216        |
| 19.6.4       | General Requirements for Electrical Safety-Related Work Practices ..... | 217        |
| 19.6.4.1     | Arc Flash Risk Assessments .....                                        | 217        |
| 19.6.4.2     | Job Briefing .....                                                      | 217        |
| 19.6.4.3     | Change in Scope .....                                                   | 217        |
| 19.6.5       | Auditing .....                                                          | 218        |
| 19.6.5.1     | Electrical Safety Program Audit .....                                   | 218        |
| 19.6.5.2     | Field Work Audit .....                                                  | 218        |
| <b>19.7</b>  | <b>Establishing an Electrically Safe Work Condition (ESWC) .....</b>    | <b>218</b> |
| 19.7.1       | Lockout/Tagout (LOTO) Program .....                                     | 219        |
| 19.7.1.1     | General .....                                                           | 219        |
| 19.7.2       | Grounding .....                                                         | 219        |
| 19.7.2.1     | Placement .....                                                         | 219        |
| 19.7.2.2     | Capacity .....                                                          | 220        |
| 19.7.2.3     | Impedance .....                                                         | 220        |
| 19.7.3       | Work Involving Electrical Hazards .....                                 | 220        |
| 19.7.3.1     | General .....                                                           | 220        |
| 19.7.3.2     | Electrically Safe Work Conditions (ESWC) .....                          | 221        |
| <b>19.8</b>  | <b>Energized Electrical Work Permit (EEWP) .....</b>                    | <b>222</b> |
| 19.8.1       | Energized Work .....                                                    | 222        |
| 19.8.1.1     | Infeasibility .....                                                     | 222        |
| 19.8.1.2     | Equipment Operating at Less Than 50 Volts .....                         | 222        |
| 19.8.1.3     | Normal Operating Condition .....                                        | 222        |
| 19.8.1.4     | Energized Electrical Work Permit — (EEWP-1) .....                       | 223        |
| 19.8.1.4.1   | When Required .....                                                     | 223        |
| 19.8.1.4.2   | Testing & Commissioning Energized Electrical Work Permit (EEWP-2) ..... | 224        |
| <b>19.9</b>  | <b>Working While Exposed to Electrical Hazards .....</b>                | <b>224</b> |
| 19.9.1       | Justification .....                                                     | 225        |
| 19.9.2       | Hazards .....                                                           | 225        |
| 19.9.3       | Risk to Employee .....                                                  | 225        |
| 19.9.4       | Employee Involvement .....                                              | 226        |
| 19.9.5       | Employee Protection .....                                               | 226        |
| <b>19.10</b> | <b>Shock Risk Assessment .....</b>                                      | <b>226</b> |
| 19.10.1      | General .....                                                           | 226        |
| 19.10.1.1    | Additional Protective Measures .....                                    | 226        |
| 19.10.2      | Shock Protection Boundaries .....                                       | 227        |
| 19.10.2.1    | Limited Approach Boundary .....                                         | 227        |
| 19.10.2.1.1  | Working at, or Close to, the Limited Approach Boundary .....            | 227        |
| 19.10.2.1.2  | Entering the Limited Approach Boundary .....                            | 227        |
| 19.10.2.2    | Restricted Approach Boundary .....                                      | 228        |



|              |                                                                               |            |
|--------------|-------------------------------------------------------------------------------|------------|
| <b>19.11</b> | <b>Arc Flash Protection and Precautions .....</b>                             | <b>228</b> |
| 19.11.1      | Arc Flash Risk Assessment.....                                                | 228        |
| 19.11.1.1    | General .....                                                                 | 228        |
| 19.11.1.2    | Estimate of Likelihood and Severity .....                                     | 228        |
| 19.11.1.3    | Additional Protective Measures .....                                          | 229        |
| 19.11.1.4    | Documentation.....                                                            | 229        |
| 19.11.2      | Arc Flash Boundary .....                                                      | 229        |
| 19.11.3      | Arc Flash PPE .....                                                           | 230        |
| 19.11.3.1    | Incident Energy Analysis Method .....                                         | 230        |
| 19.11.3.2    | Arc Flash PPE Category Method.....                                            | 231        |
| 19.11.3.3    | Equipment Labeling .....                                                      | 232        |
| <b>19.12</b> | <b>Personal and Other Protective Equipment .....</b>                          | <b>232</b> |
| 19.12.1      | General .....                                                                 | 232        |
| 19.12.2      | Care of Equipment .....                                                       | 232        |
| 19.12.2.1    | Movement and Visibility .....                                                 | 233        |
| 19.12.2.1.1  | Head, Face, Neck, and Chin (Head-Area) Protection.....                        | 233        |
| 19.12.2.1.2  | Eye Protection .....                                                          | 233        |
| 19.12.2.1.3  | Hearing Protection .....                                                      | 233        |
| 19.12.2.1.4  | Body Protection .....                                                         | 233        |
| 19.12.2.1.5  | Hand and Arm Protection.....                                                  | 233        |
| 19.12.2.2    | Shock Protection.....                                                         | 233        |
| 19.12.3      | Arc Flash Protection .....                                                    | 233        |
| 19.12.3.1    | Maintenance and Use.....                                                      | 234        |
| 19.12.3.1.1  | Foot Protection.....                                                          | 234        |
| 19.12.3.2    | Factors in Selection of Protective Clothing .....                             | 234        |
| 19.12.4      | Arc Flash Protective Equipment.....                                           | 235        |
| 19.12.4.1    | Arc Flash Suits.....                                                          | 235        |
| 19.12.4.2    | Head Protection .....                                                         | 236        |
| 19.12.4.2.1  | Face Protection .....                                                         | 236        |
| 19.12.4.3    | Hand Protection .....                                                         | 236        |
| 19.12.4.4    | Foot Protection .....                                                         | 236        |
| 19.12.4.5    | Clothing and Other Apparel Not Permitted .....                                | 236        |
| 19.12.5      | Care and Maintenance of Arc-Rated Clothing and Arc-Rated Arc Flash Suits..... | 236        |
| 19.12.5.1    | Inspection.....                                                               | 236        |
| 19.12.5.2    | Manufacturer's Instructions.....                                              | 237        |
| 19.12.5.3    | Storage .....                                                                 | 237        |
| 19.12.5.4    | Cleaning, Repairing and Affixing Items .....                                  | 237        |
| <b>19.13</b> | <b>Requirements for Insulated Tools .....</b>                                 | <b>237</b> |
| 19.13.1      | General .....                                                                 | 237        |
| <b>19.14</b> | <b>Test Instruments and Equipment.....</b>                                    | <b>239</b> |
| 19.14.1      | Testing.....                                                                  | 239        |
| 19.14.1.1    | Rating.....                                                                   | 239        |
| 19.14.1.2    | Design.....                                                                   | 239        |
| 19.14.1.3    | Visual Inspection and Repair .....                                            | 240        |
| 19.14.1.4    | Operation Verification .....                                                  | 240        |
| <b>19.15</b> | <b>Overhead Lines, Substations and Electrical Equipment Rooms .....</b>       | <b>240</b> |
| 19.15.1      | Working On or Near Energized Lines or Equipment .....                         | 240        |
| 19.15.2      | Guarding Energized Electrical Equipment .....                                 | 243        |
| 19.15.3      | Fuse Handling .....                                                           | 244        |
| 19.15.4      | Grounding.....                                                                | 244        |
| 19.15.5      | Jumpers.....                                                                  | 246        |



|              |                                                                               |            |
|--------------|-------------------------------------------------------------------------------|------------|
| 19.15.6      | Connections and Disconnections .....                                          | 247        |
| 19.15.7      | Live Dead Live .....                                                          | 247        |
| 19.15.7.1    | For High Voltage (Greater Than 480 VAC) .....                                 | 248        |
| 19.15.7.2    | For Low Voltage (Equal to or Less Than 480 VAC) .....                         | 248        |
| 19.15.8      | Electrical Switching Operations .....                                         | 248        |
| <b>19.16</b> | <b>Electrical Cables .....</b>                                                | <b>249</b> |
| 19.16.1      | Work on Energized Cables .....                                                | 249        |
| 19.16.2      | Work on De-Energized Cables .....                                             | 249        |
| 19.16.3      | Demo of De-Energized Cables from Service .....                                | 250        |
| 19.16.4      | Pulling Cables .....                                                          | 250        |
| 19.16.5      | Performing High-Voltage Tests on Cables and Equipment .....                   | 250        |
| <b>19.17</b> | <b>Other Precautions .....</b>                                                | <b>251</b> |
| 19.17.1      | Alertness .....                                                               | 251        |
| 19.17.1.1    | When Electrical Hazards May Exist .....                                       | 251        |
| 19.17.1.2    | When Impaired .....                                                           | 251        |
| 19.17.1.3    | Changes in Scope .....                                                        | 251        |
| 19.17.1.4    | Blind Reaching .....                                                          | 251        |
| 19.17.2      | Illumination .....                                                            | 251        |
| 19.17.2.1    | General .....                                                                 | 251        |
| 19.17.2.2    | Obstructed View of Work Area .....                                            | 252        |
| 19.17.2.3    | Conductive Articles Being Worn .....                                          | 252        |
| 19.17.3      | Conductive Materials, Tools, and Equipment Being Handled .....                | 252        |
| 19.17.3.1    | General .....                                                                 | 252        |
| 19.17.4      | Approach to Energized Electrical Conductors and Circuit Parts .....           | 252        |
| 19.17.4.1    | Confined or Enclosed Workspaces .....                                         | 252        |
| 19.17.4.2    | Doors and Hinged Panels .....                                                 | 252        |
| 19.17.4.3    | Clear Spaces .....                                                            | 252        |
| 19.17.4.4    | Housekeeping Duties .....                                                     | 253        |
| 19.17.4.5    | Occasional Use of Flammable Materials .....                                   | 253        |
| 19.17.4.6    | Anticipating Failure .....                                                    | 253        |
| 19.17.4.7    | Overcurrent Protection Modification .....                                     | 253        |
| 19.17.4.8    | Routine Opening and Closing of Circuits .....                                 | 253        |
| 19.17.4.9    | Reclosing Circuits After Protective Device Operation .....                    | 254        |
| 19.17.4.10   | Safety Interlocks .....                                                       | 254        |
| <b>19.18</b> | <b>Alerting Techniques .....</b>                                              | <b>254</b> |
| 19.18.1      | Safety Signs and Tags .....                                                   | 254        |
| 19.18.1.1    | Barricades .....                                                              | 254        |
| <b>19.19</b> | <b>Electrical Work Best Practices .....</b>                                   | <b>255</b> |
| <b>19.20</b> | <b>PV Electrical Testing — Preparing for Absence of Voltage Testing .....</b> | <b>256</b> |
| 19.20.1      | Planning .....                                                                | 256        |
| 19.20.1.1    | Determine .....                                                               | 256        |
| 19.20.1.2    | Tools .....                                                                   | 257        |
| 19.20.1.3    | Instrumentation .....                                                         | 257        |
| 19.20.2      | Electrical Test Equipment .....                                               | 258        |
| 19.20.2.1    | CAT-Appropriate Equipment .....                                               | 258        |
| 19.20.2.2    | High-Altitude Considerations .....                                            | 258        |
| 19.20.2.3    | Test Leads .....                                                              | 258        |
| 19.20.2.4    | High-Energy Fuse Replacements .....                                           | 258        |
| 19.20.2.5    | Probes and Probe Accessories .....                                            | 259        |
| 19.20.2.6    | Personal Protective Equipment (PPE) .....                                     | 259        |
| 19.20.2.7    | Digital Multimeter .....                                                      | 259        |





|              |                                                                                 |            |
|--------------|---------------------------------------------------------------------------------|------------|
| <b>19.21</b> | <b>Ground Faults in PV Systems .....</b>                                        | <b>259</b> |
| 19.21.1      | Grounding Types & Protocols .....                                               | 259        |
| 19.21.1.1    | Equipment Grounding Conductor (EGC) .....                                       | 259        |
| 19.21.1.2    | Grounding Electrode Conductor (GEC) .....                                       | 259        |
| 19.21.1.3    | Grounded Conductor .....                                                        | 259        |
|              | Figure 19-1 Grounded Conductor .....                                            | 260        |
| 19.21.1.4    | Negatively Grounded PV System (DC Side) .....                                   | 260        |
| 19.21.1.5    | DC Ground Faults Hazards .....                                                  | 260        |
| 19.21.1.6    | DC Ground Faults Detection, Diagnosis, and Mitigation .....                     | 260        |
| 19.21.2      | Diagnostic Techniques .....                                                     | 261        |
| 19.21.2.1    | Determining the Source .....                                                    | 261        |
|              | Figure 19-2 Approach Boundaries — Table 130.4(D)(a) .....                       | 263        |
|              | Figure 19-3 Approach Boundaries — Table 130.4(D)(b) .....                       | 264        |
|              | Figure 19-4 Shock Protection Approach Boundaries — Table 130.4(E)(a) .....      | 265        |
|              | Figure 19-5 Arc-Flash Hazard PPE Categories — Table 130.7(C)(15)(A)(b) .....    | 266        |
|              | Figure 19-6 Arc-Flash Hazard PPE Categories — Table 130.7(C)(15)(B) .....       | 267        |
|              | Figure 19-7 Personal Protective Equipment (PPE) — Table 130.7(C)(16) .....      | 268        |
|              | Figure 19-8 Approach Boundary Diagram .....                                     | 269        |
|              | Figure 19-10 Likelihood of Arc Flash Incident — Table 130.5(C) .....            | 270        |
|              | Figure 19-11 Likelihood of Arc Flash Incident — Table 130.5(C) Continued .....  | 271        |
|              | Figure 19-12 Risk Assessment Flow Chart .....                                   | 272        |
|              | Figure 19-13 Sample Thought Process Flow Chart .....                            | 273        |
|              | Figure 19-14 Arc-Rated Clothing System — Tables H.2 and H.3 .....               | 274        |
| <b>20</b>    | <b>DEMOLITION .....</b>                                                         | <b>275</b> |
| <b>20.1</b>  | <b>Preparatory Operations .....</b>                                             | <b>278</b> |
| 20.1.1       | General .....                                                                   | 278        |
| 20.1.2       | Hazardous Materials .....                                                       | 279        |
| 20.1.3       | Access .....                                                                    | 279        |
| 20.1.4       | Removal of Materials .....                                                      | 279        |
| 20.1.5       | Mechanical Demolition .....                                                     | 280        |
| 20.1.6       | Protection of the Public .....                                                  | 280        |
| <b>21</b>    | <b>STEEL ERECTION .....</b>                                                     | <b>281</b> |
| <b>21.1</b>  | <b>General .....</b>                                                            | <b>284</b> |
| 21.1.1       | Definitions .....                                                               | 284        |
| <b>21.2</b>  | <b>Site Layout, Site-Specific Erection Plan and Construction Sequence .....</b> | <b>284</b> |
| 21.2.1       | Site-Specific Steel Erection Plan .....                                         | 284        |
| <b>21.3</b>  | <b>Approval to Begin Steel Erection .....</b>                                   | <b>284</b> |
| <b>21.4</b>  | <b>Hoisting and Rigging .....</b>                                               | <b>284</b> |
| 21.4.1       | Multiple Lift .....                                                             | 284        |
| <b>22</b>    | <b>FALL PROTECTION .....</b>                                                    | <b>286</b> |
| <b>22.1</b>  | <b>Fall Protection .....</b>                                                    | <b>288</b> |
| 22.1.1       | General .....                                                                   | 288        |
| 22.1.2       | Definitions .....                                                               | 288        |
| <b>22.2</b>  | <b>Same-Level Fall Protection .....</b>                                         | <b>288</b> |
| <b>22.3</b>  | <b>Lower-Level Fall Protection .....</b>                                        | <b>288</b> |
| <b>22.4</b>  | <b>Floor Openings .....</b>                                                     | <b>288</b> |



|             |                                                               |            |
|-------------|---------------------------------------------------------------|------------|
| 22.4.1      | Hole Covers .....                                             | 288        |
| 22.4.1.1    | General Requirements.....                                     | 288        |
| <b>22.5</b> | <b>Grating/Guardrail Removal .....</b>                        | <b>289</b> |
| 22.5.1      | Floor Grating Removal .....                                   | 289        |
| 22.5.2      | Guardrail Removal .....                                       | 289        |
| <b>22.6</b> | <b>Fall Protection Systems.....</b>                           | <b>289</b> |
| 22.6.1      | Guardrail Systems.....                                        | 289        |
| 22.6.2      | Personal Fall Arrest Systems.....                             | 290        |
| 22.6.3      | Safety Nets.....                                              | 290        |
| 22.6.4      | Positioning Devices.....                                      | 290        |
| 22.6.5      | Warning Line Systems .....                                    | 291        |
| 22.6.6      | Controlled Access Zones .....                                 | 291        |
| <b>22.7</b> | <b>Storage/General Use .....</b>                              | <b>291</b> |
| 22.7.1      | Inspection .....                                              | 291        |
| <b>22.8</b> | <b>Site-Specific Fall Protection Plan .....</b>               | <b>292</b> |
| <b>22.9</b> | <b>Dropped Object Prevention .....</b>                        | <b>293</b> |
| 22.9.1      | Mitigation Methods .....                                      | 293        |
| 22.9.1.1    | Securing Items Aloft.....                                     | 293        |
| 22.9.1.2    | Barricading .....                                             | 293        |
| 22.9.1.3    | Scaffolding .....                                             | 293        |
| 22.9.1.4    | Toe Boards .....                                              | 293        |
| 22.9.1.5    | Grating .....                                                 | 293        |
| 22.9.1.6    | Decking .....                                                 | 293        |
| 22.9.1.7    | Debris Nets .....                                             | 294        |
| 22.9.2      | Training .....                                                | 294        |
| 22.9.3      | Dropped Object Reporting .....                                | 294        |
| <b>23</b>   | <b>CONCRETE AND MASONRY CONSTRUCTION.....</b>                 | <b>295</b> |
| <b>23.1</b> | <b>Appendix A.....</b>                                        | <b>297</b> |
| 23.1.1      | Pre-Cast Concrete .....                                       | 297        |
| <b>23.2</b> | <b>Appendix B.....</b>                                        | <b>297</b> |
| 23.2.1      | Lift-Slab Operations .....                                    | 297        |
| <b>24</b>   | <b>HAZARDOUS ENERGY CONTROL PROGRAM .....</b>                 | <b>298</b> |
| <b>24.1</b> | <b>Hazardous Energy Control Program (Lockout/Tagout).....</b> | <b>299</b> |
| 24.1.1      | Purpose.....                                                  | 299        |
| 24.1.2      | Definitions .....                                             | 300        |
| <b>24.2</b> | <b>Roles and Responsibilities .....</b>                       | <b>305</b> |
| 24.2.1      | Lockout/Tagout (LOTO) Manager .....                           | 305        |
| 24.2.2      | Tagging Authority .....                                       | 306        |
| 24.2.3      | Authorized Employee .....                                     | 307        |
| 24.2.4      | Affected Employee .....                                       | 307        |
| 24.2.5      | Other Employees .....                                         | 308        |
| <b>24.3</b> | <b>Violations.....</b>                                        | <b>308</b> |
| <b>24.4</b> | <b>Periodic Inspection.....</b>                               | <b>308</b> |
| <b>24.5</b> | <b>Lockout/Tagout (LOTO) Sequence .....</b>                   | <b>308</b> |
| 24.5.1      | Step 1: Identify the Work.....                                | 309        |
| 24.5.2      | Step 2: Identify Potential Hazardous Energy Sources.....      | 309        |



|              |                                                                                                                                     |            |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------|------------|
| 24.5.3       | Step 3: Identify Ways to Eliminate the Hazards — Prepare an Isolation Record .....                                                  | 310        |
| 24.5.4       | Step 4: Eliminate the Hazards — Isolate Equipment, Release Stored Energy, and Verify Zero-Energy State for All Energy Sources ..... | 310        |
| 24.5.4.1     | Satellite Lockbox .....                                                                                                             | 311        |
| 24.5.5       | Step 5: Perform Task .....                                                                                                          | 311        |
| 24.5.5.1     | Change Management .....                                                                                                             | 311        |
| 24.5.6       | Step 6: Lockout/Tagout (LOTO) Release .....                                                                                         | 312        |
| 24.5.6.1     | Emergency Release .....                                                                                                             | 312        |
| 24.5.6.2     | Temporary Release for Testing and Positioning .....                                                                                 | 313        |
| <b>24.6</b>  | <b>Modify Lockout/Tagout (LOTO) Boundary .....</b>                                                                                  | <b>314</b> |
| <b>24.7</b>  | <b>Procedure Modification .....</b>                                                                                                 | <b>314</b> |
| <b>24.8</b>  | <b>LOTO Awareness Training .....</b>                                                                                                | <b>315</b> |
| <b>25</b>    | <b>BLASTING AND EXPLOSIVES .....</b>                                                                                                | <b>316</b> |
| <b>26</b>    | <b>HAZARD COMMUNICATION PROGRAM .....</b>                                                                                           | <b>318</b> |
| <b>26.1</b>  | <b>Hazard Communication Program .....</b>                                                                                           | <b>320</b> |
| 26.1.1       | Hazard Communication Program .....                                                                                                  | 320        |
| 26.1.2       | Introduction .....                                                                                                                  | 320        |
| 26.1.3       | Safety Data Sheets (SDSs) .....                                                                                                     | 320        |
| 26.1.4       | Labeling .....                                                                                                                      | 321        |
| 26.1.5       | Training .....                                                                                                                      | 321        |
| 26.1.6       | Emergencies .....                                                                                                                   | 321        |
| 26.1.7       | Hazardous Material Identification System (HMIS) .....                                                                               | 321        |
|              | Table 26-1 HMIS Protective Equipment Examples .....                                                                                 | 322        |
| 26.1.8       | NFPA 704 Labeling System .....                                                                                                      | 322        |
|              | Figure 26-1 NFPA 704M Label .....                                                                                                   | 323        |
| 26.1.9       | Occupational Safety and Health Administration (OSHA) Required Labeling for GHS .....                                                | 323        |
|              | Figure 26-2 Required Label Information .....                                                                                        | 325        |
|              | Figure 26-3 GHS Labeling Guide .....                                                                                                | 326        |
| <b>26.2</b>  | <b>HAZCOM Appendix .....</b>                                                                                                        | <b>327</b> |
| 26.2.1       | Asbestos .....                                                                                                                      | 327        |
| 26.2.2       | Arsenic (Inorganic) .....                                                                                                           | 328        |
| 26.2.3       | Benzene .....                                                                                                                       | 328        |
| 26.2.4       | Cadmium .....                                                                                                                       | 329        |
| 26.2.5       | Chromium VI .....                                                                                                                   | 330        |
| 26.2.6       | Formaldehyde .....                                                                                                                  | 331        |
| 26.2.7       | Lead .....                                                                                                                          | 332        |
| 26.2.8       | Silica .....                                                                                                                        | 333        |
| 26.2.8.1     | Silica Dust in Construction .....                                                                                                   | 333        |
| 26.2.8.1.1   | General .....                                                                                                                       | 333        |
| 26.2.8.1.2   | Types of Materials Where Silica Can Be Found: .....                                                                                 | 334        |
| 26.2.8.1.3   | Types of Operations Where Silica Dust is Generated: .....                                                                           | 334        |
| 26.2.8.1.4   | Silica Exposure Control Plan (SECP) .....                                                                                           | 334        |
| 26.2.8.1.5   | Exposure Control Plan (ECP) Training .....                                                                                          | 335        |
| 26.2.8.1.6   | Silica Exposure Controls .....                                                                                                      | 335        |
| 26.2.8.2     | Silica Dust Control Measures .....                                                                                                  | 336        |
| 26.2.8.2.1   | Visible and Respirable Dust .....                                                                                                   | 336        |
| 26.2.8.2.2   | Wet Cutting .....                                                                                                                   | 336        |
| 26.2.8.2.2.1 | Maintenance .....                                                                                                                   | 337        |
| 26.2.8.2.2.2 | Electrical Safety .....                                                                                                             | 337        |



|              |                                                                                      |            |
|--------------|--------------------------------------------------------------------------------------|------------|
| 26.2.8.2.3   | Vacuum Dust Collection Systems .....                                                 | 337        |
| 26.2.8.3     | Adjustments in Work Methods and Equipment.....                                       | 337        |
| 26.2.8.3.1   | Employee Positioning.....                                                            | 337        |
| 26.2.8.3.2   | Grinding-Wheel Size .....                                                            | 338        |
| 26.2.8.3.3   | Construction Work Methods.....                                                       | 338        |
| 26.2.8.3.4   | Construction — Specified Exposure Control Methods.....                               | 338        |
| Table 26-2   | Exposure Control Tasks and Protection .....                                          | 339        |
| 26.2.8.3.5   | Fully and Properly Implementing Controls Specified on Table 26-2.....                | 343        |
| 26.2.8.3.6   | Respiratory Protection Requirements on Table 26-2.....                               | 343        |
| 26.2.8.4     | Alternative Exposure Control Methods — Methods of Compliance — Hierarchy of Controls | 344        |
| 26.2.8.4.1   | Alternative Exposure Control Methods .....                                           | 344        |
| 26.2.8.4.2   | Permissible Exposure Limit (PEL) .....                                               | 344        |
| 26.2.8.4.3   | Exposure Assessment .....                                                            | 344        |
| 26.2.8.4.3.1 | General .....                                                                        | 344        |
| 26.2.8.4.3.2 | Performance Option .....                                                             | 344        |
| 26.2.8.4.3.3 | Scheduled Monitoring Option .....                                                    | 344        |
| 26.2.8.4.4   | Reassessment of Exposures .....                                                      | 345        |
| 26.2.8.5     | Abrasive Blasting .....                                                              | 345        |
| 26.2.8.6     | Medical Surveillance .....                                                           | 345        |
| 26.2.8.7     | Recordkeeping.....                                                                   | 345        |
| 26.2.8.8     | Respiratory Protection .....                                                         | 345        |
| <b>27</b>    | <b>BLOODBORNE PATHOGENS .....</b>                                                    | <b>346</b> |
| <b>27.1</b>  | <b>Bloodborne Pathogen Exposure Control Plan .....</b>                               | <b>348</b> |
| 27.1.1       | Employee Exposure Determination .....                                                | 348        |
| Table 27-1   | Job Classification and Task/Procedure.....                                           | 348        |
| <b>27.2</b>  | <b>Compliance Methods.....</b>                                                       | <b>348</b> |
| 27.2.1       | Universal Precautions .....                                                          | 348        |
| 27.2.2       | Engineering Controls and Work Practices .....                                        | 348        |
| <b>27.3</b>  | <b>Personal Protective Equipment (PPE).....</b>                                      | <b>350</b> |
| <b>27.4</b>  | <b>Housekeeping .....</b>                                                            | <b>351</b> |
| 27.4.1       | General Housekeeping Procedures.....                                                 | 351        |
| Table 27-2   | Contaminated Surfaces Cleaning and Decontamination Schedule .....                    | 351        |
| 27.4.2       | Cleaning Guidelines .....                                                            | 351        |
| 27.4.3       | Regulated Waste.....                                                                 | 352        |
| 27.4.4       | Contaminated Laundry.....                                                            | 353        |
| <b>27.5</b>  | <b>Hepatitis B Vaccine, Post-Exposure Evaluation and Follow-up.....</b>              | <b>353</b> |
| 27.5.1       | Hepatitis B Vaccination .....                                                        | 353        |
| 27.5.2       | Post-Exposure Evaluation and Follow-up.....                                          | 353        |
| 27.5.3       | Information Provided to the Healthcare Professional .....                            | 354        |
| 27.5.4       | Healthcare Professional's Written Opinion .....                                      | 354        |
| 27.5.5       | Procedures for Evaluating the Circumstances Surrounding an Exposure Incident.....    | 354        |
| <b>27.6</b>  | <b>Communication of Hazards .....</b>                                                | <b>355</b> |
| 27.6.1       | Labels and Signs.....                                                                | 355        |
| 27.6.2       | Information and Training .....                                                       | 355        |
| <b>27.7</b>  | <b>Recordkeeping.....</b>                                                            | <b>356</b> |
| 27.7.1       | Medical Records .....                                                                | 356        |
| 27.7.2       | Training Records.....                                                                | 356        |
| 27.7.3       | Sharps Injury Log .....                                                              | 357        |





|             |                                                       |            |
|-------------|-------------------------------------------------------|------------|
| 27.7.4      | Evaluation and Review .....                           | 357        |
| <b>28</b>   | <b>OCCUPATIONAL NOISE EXPOSURE .....</b>              | <b>358</b> |
| <b>28.1</b> | <b>Occupational Noise Exposure.....</b>               | <b>359</b> |
| 28.1.1      | Administrative or Engineering Controls .....          | 359        |
| 28.1.2      | Variations in Noise Level .....                       | 359        |
|             | Table 28-1 Permissible Noise Exposure Levels.....     | 359        |
| <b>28.2</b> | <b>Illumination.....</b>                              | <b>360</b> |
| 28.2.1      | General .....                                         | 360        |
|             | Table 28-2 Minimum Illumination Intensities .....     | 360        |
| <b>29</b>   | <b>HEAT ILLNESS PREVENTION PROGRAM.....</b>           | <b>361</b> |
| <b>29.1</b> | <b>General Requirements .....</b>                     | <b>362</b> |
| <b>29.2</b> | <b>Training.....</b>                                  | <b>362</b> |
| <b>29.3</b> | <b>Body Fluid Replacement.....</b>                    | <b>362</b> |
| <b>29.4</b> | <b>Heat Assessment.....</b>                           | <b>362</b> |
| 29.4.1      | WBGT Monitoring.....                                  | 362        |
|             | Table 29-1 WBGT Index Monitoring for TLV .....        | 363        |
| 29.4.2      | Physiological Monitoring .....                        | 363        |
|             | Figure 29-1 Heat Index Chart.....                     | 364        |
| <b>29.5</b> | <b>Acclimatization .....</b>                          | <b>364</b> |
| <b>29.6</b> | <b>Rest Breaks .....</b>                              | <b>364</b> |
| <b>29.7</b> | <b>Sunscreen .....</b>                                | <b>364</b> |
| <b>29.8</b> | <b>Monitoring Heat Stress .....</b>                   | <b>365</b> |
| 29.8.1      | Heat Stroke .....                                     | 365        |
| 29.8.2      | Heat Exhaustion.....                                  | 365        |
| 29.8.3      | Heat Cramps .....                                     | 365        |
| 29.8.4      | Heat Rash .....                                       | 365        |
| 29.8.5      | Heat Syncope.....                                     | 365        |
|             | Table 29-2 Symptoms and Treatment of Heat Stress..... | 365        |
| <b>29.9</b> | <b>Ultraviolet Radiation/Sun Exposure .....</b>       | <b>366</b> |
| 29.9.1      | Ultraviolet (UV) Rays .....                           | 366        |
| 29.9.2      | Sunlight Exposure .....                               | 367        |
| 29.9.3      | Prevention .....                                      | 367        |
| 29.9.3.1    | Sunscreen Performance and SPF.....                    | 367        |
| 29.9.3.2    | Appropriate Clothing .....                            | 368        |
| <b>30</b>   | <b>OUTDOOR BIOLOGICAL EXPOSURES.....</b>              | <b>369</b> |
| <b>30.1</b> | <b>Bees, Wasps and Hornets .....</b>                  | <b>370</b> |
|             | Table 30-1 Stinging Insects.....                      | 370        |
| 30.1.1      | Exposure Prevention, Symptoms, and Treatment.....     | 370        |
| <b>30.2</b> | <b>Fire Ants .....</b>                                | <b>372</b> |
|             | Table 30-2 Fire Ants.....                             | 372        |
| 30.2.1      | Exposure Prevention, Symptoms, and Treatment.....     | 372        |
| <b>30.3</b> | <b>Scorpions .....</b>                                | <b>373</b> |
|             | Table 30-3 Scorpion Identification and Range .....    | 373        |
| 30.3.1      | Exposure Prevention, Symptoms, and Treatment.....     | 374        |
| <b>30.4</b> | <b>Dog Safety .....</b>                               | <b>374</b> |



|             |                                                              |            |
|-------------|--------------------------------------------------------------|------------|
| 30.4.1      | Dog Injury Prevention, Response, and Treatment.....          | 374        |
| <b>30.5</b> | <b>Mosquitoes — ZIKA and West Nile Virus .....</b>           | <b>375</b> |
| 30.5.1      | Exposure Prevention, Symptoms, and Treatment .....           | 376        |
| <b>30.6</b> | <b>Poison Ivy, Poison Oak and Poison Sumac .....</b>         | <b>376</b> |
|             | Figure 30-1 Poisonous Plant Locations.....                   | 377        |
| 30.6.1      | Plant Identification .....                                   | 378        |
|             | Table 30-4 Poisonous Plant Identification .....              | 378        |
| 30.6.2      | Exposure Prevention, Symptoms, and Treatment .....           | 378        |
| <b>30.7</b> | <b>Venomous Snakes.....</b>                                  | <b>380</b> |
|             | Table 30-5 Major Identification Features of Snakes.....      | 380        |
|             | Table 30-6 Snake Varieties Identification and Ranges .....   | 380        |
| 30.7.1      | Exposure Prevention, Symptoms, and Treatment .....           | 383        |
| <b>30.8</b> | <b>Venomous Spiders .....</b>                                | <b>384</b> |
|             | Table 30-7 Spider Varieties Identification and Ranges .....  | 384        |
| 30.8.1      | Exposure Prevention, Symptoms, and Treatment .....           | 386        |
| <b>30.9</b> | <b>Ticks.....</b>                                            | <b>386</b> |
|             | Table 30-8 Tick Varieties Identification and Ranges .....    | 386        |
| 30.9.1      | Protection and Exposure Prevention .....                     | 389        |
| 30.9.2      | Illnesses, Signs and Symptoms .....                          | 390        |
|             | Table 30-9 Tick-Borne Diseases and Common U.S. Regions ..... | 390        |
| 30.9.3      | Controls .....                                               | 390        |
| 30.9.4      | Clothing .....                                               | 391        |
| 30.9.5      | Repellants and Contact Insecticides .....                    | 391        |
| 30.9.6      | Tick Check .....                                             | 391        |
| 30.9.7      | Tick Removal .....                                           | 392        |
| 30.9.8      | Tick Bite Treatment .....                                    | 392        |
| <b>31</b>   | <b>SEVERE WEATHER AND LIGHTNING.....</b>                     | <b>393</b> |
| <b>31.1</b> | <b>Lightning .....</b>                                       | <b>394</b> |
| 31.1.1      | Outdoors .....                                               | 394        |
| 31.1.2      | Indoors .....                                                | 394        |
| 31.1.3      | Curtailement of Site Activity .....                          | 395        |
| 31.1.3.1    | Yellow Alert .....                                           | 395        |
| 31.1.3.2    | Orange Alert.....                                            | 395        |
| 31.1.3.3    | Red Alert .....                                              | 395        |
| 31.1.3.4    | All Clear .....                                              | 395        |
| <b>31.2</b> | <b>Tornado .....</b>                                         | <b>396</b> |
| <b>31.3</b> | <b>Flash Floods.....</b>                                     | <b>396</b> |
| <b>31.4</b> | <b>Wild Land Fire .....</b>                                  | <b>396</b> |
| <b>31.5</b> | <b>Tropical Storm and Hurricane Preparedness .....</b>       | <b>397</b> |
| 31.5.1      | Before the Storm .....                                       | 397        |
| 31.5.2      | During the Storm .....                                       | 398        |
| 31.5.3      | After the Storm .....                                        | 398        |
| <b>31.6</b> | <b>Earthquakes .....</b>                                     | <b>399</b> |
| 31.6.1      | Preparation.....                                             | 399        |
| 31.6.2      | Action Taken If an Earthquake Strikes .....                  | 399        |
| 31.6.2.1    | Steps to Take During an Earthquake.....                      | 399        |
| 31.6.2.2    | Steps to Take Immediately After an Earthquake .....          | 400        |



|             |                                                                |            |
|-------------|----------------------------------------------------------------|------------|
| <b>32</b>   | <b>COLD STRESS</b>                                             | <b>401</b> |
| <b>32.1</b> | <b>Cold Stress</b>                                             | <b>402</b> |
| 32.1.1      | Training                                                       | 402        |
| <b>32.2</b> | <b>Environmental Monitoring</b>                                | <b>402</b> |
| <b>32.3</b> | <b>Protective Clothing and Rest Breaks</b>                     | <b>402</b> |
| <b>32.4</b> | <b>Identification and Treatment of Cold Stress</b>             | <b>403</b> |
|             | Figure 32-1 Cooling Power of Wind on Exposed Flesh             | 404        |
|             | Figure 32-2 NOAA Wind Chill Chart                              | 404        |
| <b>32.5</b> | <b>Hypothermia</b>                                             | <b>405</b> |
| 32.5.1      | Early Symptoms                                                 | 405        |
| 32.5.2      | Late Symptoms                                                  | 405        |
| 32.5.3      | Treatment of Hypothermia                                       | 405        |
| <b>32.6</b> | <b>Frostbite</b>                                               | <b>406</b> |
| 32.6.1      | Symptoms of Frostbite                                          | 406        |
| 32.6.2      | Treatment of Frostbite                                         | 406        |
| <b>32.7</b> | <b>Cold Water Immersion</b>                                    | <b>407</b> |
| <b>33</b>   | <b>WORKING OVER OR NEAR WATER HAZARDS</b>                      | <b>408</b> |
| <b>33.1</b> | <b>Working Over or Near Water, Barges, and Boats</b>           | <b>409</b> |
| <b>33.2</b> | <b>Boating Safety</b>                                          | <b>409</b> |
| <b>33.3</b> | <b>Responsibilities</b>                                        | <b>411</b> |
| 33.3.1      | On-Site Supervisor                                             | 411        |
| 33.3.2      | Boat Captain                                                   | 411        |
| 33.3.3      | Boat Operators                                                 | 411        |
| 33.3.4      | Safety Boat                                                    | 412        |
| 33.3.5      | Boat Crew                                                      | 412        |
| 33.3.6      | Safety Captain                                                 | 412        |
| 33.3.7      | Shoreline Worker                                               | 412        |
| <b>33.4</b> | <b>Shoreline Safety</b>                                        | <b>413</b> |
| <b>33.5</b> | <b>Personal Flotation Devices (PFDs)</b>                       | <b>413</b> |
| 33.5.1      | Throwable Devices (Type IV PFD)                                | 414        |
| <b>33.6</b> | <b>Lifesaving and Safety Skiffs</b>                            | <b>414</b> |
| <b>33.7</b> | <b>Lifesaving Boats</b>                                        | <b>415</b> |
| <b>33.8</b> | <b>Access to and From Wharves, Floats, Barges and/or Boats</b> | <b>416</b> |
| <b>33.9</b> | <b>Working Surfaces of Barges</b>                              | <b>417</b> |
| <b>34</b>   | <b>LONE WORKER/WORKING ALONE</b>                               | <b>418</b> |
| <b>34.1</b> | <b>Lone Worker/Working Alone</b>                               | <b>419</b> |
| 34.1.1      | General                                                        | 419        |
| 34.1.2      | Definitions                                                    | 419        |
| <b>34.2</b> | <b>Hazard Assessment</b>                                       | <b>419</b> |
| <b>34.3</b> | <b>Communications</b>                                          | <b>420</b> |
| <b>34.4</b> | <b>Training</b>                                                | <b>420</b> |
| <b>35</b>   | <b>FATIGUE MANAGEMENT PLAN</b>                                 | <b>421</b> |
| <b>35.1</b> | <b>General</b>                                                 | <b>422</b> |
| <b>35.2</b> | <b>Extended/Unusual Shifts</b>                                 | <b>422</b> |



|             |                                                             |            |
|-------------|-------------------------------------------------------------|------------|
| 35.2.1      | General .....                                               | 422        |
| 35.2.2      | When Extended/Unusual Shifts Are Used .....                 | 422        |
| <b>35.3</b> | <b>Fatigue .....</b>                                        | <b>422</b> |
| 35.3.1      | Equipment Operators .....                                   | 423        |
| 35.3.2      | Motor Vehicle Operators .....                               | 423        |
| 35.3.3      | Responsibilities of Project Entities .....                  | 423        |
| 35.3.4      | Responsibilities of Project Personnel.....                  | 423        |
| <b>36</b>   | <b>FIRST LINE BREAK .....</b>                               | <b>425</b> |
| <b>36.1</b> | <b>First Line Break.....</b>                                | <b>426</b> |
| 36.1.1      | Limitations and Restrictions .....                          | 426        |
| <b>36.2</b> | <b>Line Break Isolation.....</b>                            | <b>426</b> |
| <b>36.3</b> | <b>Line Break Permit Requirements .....</b>                 | <b>426</b> |
| <b>36.4</b> | <b>First Line Break Operations .....</b>                    | <b>427</b> |
| <b>36.5</b> | <b>Training.....</b>                                        | <b>427</b> |
| <b>37</b>   | <b>HYDRO-BLASTING .....</b>                                 | <b>428</b> |
| <b>37.1</b> | <b>Hydro-Blasting (High-Pressure Water Jetting).....</b>    | <b>429</b> |
| 37.1.1      | General .....                                               | 429        |
| 37.1.2      | Definitions .....                                           | 429        |
| <b>37.2</b> | <b>Equipment Definitions and Standards .....</b>            | <b>430</b> |
| 37.2.1      | Care and Maintenance of Equipment .....                     | 433        |
| <b>37.3</b> | <b>Protective Clothing and Personal Protection .....</b>    | <b>435</b> |
| <b>37.4</b> | <b>Pre-Operating Procedures.....</b>                        | <b>435</b> |
| 37.4.1      | Hook-Up.....                                                | 435        |
| <b>37.5</b> | <b>Operational Procedures.....</b>                          | <b>436</b> |
| 37.5.1      | Operational Procedures .....                                | 436        |
| 37.5.2      | Shotgunning .....                                           | 438        |
| 37.5.3      | Moleing or Flex Lancing .....                               | 438        |
| 37.5.4      | Rigid Lancing .....                                         | 438        |
| 37.5.5      | Proper Operation.....                                       | 439        |
| 37.5.6      | Use of Lances and Nozzles .....                             | 440        |
| <b>37.6</b> | <b>Operational and Training Requirements .....</b>          | <b>441</b> |
| 37.6.1      | General .....                                               | 442        |
| 37.6.2      | Permanent Cleaning Areas.....                               | 442        |
| 37.6.3      | Freeze Precautions .....                                    | 442        |
| <b>38</b>   | <b>CHAPTER 38 - RESERVED .....</b>                          | <b>443</b> |
| <b>39</b>   | <b>CHAPTER 39 – RESERVED .....</b>                          | <b>444</b> |
| <b>40</b>   | <b>SUBSTANCE AND ALCOHOL ABUSE PREVENTION PROGRAM .....</b> | <b>445</b> |
| <b>40.1</b> | <b>Substance and Alcohol Abuse Prevention Program .....</b> | <b>446</b> |
| 40.1.1      | General .....                                               | 446        |
| <b>40.2</b> | <b>Testing .....</b>                                        | <b>446</b> |
| 40.2.1      | Pre-Site Access/Annual Testing .....                        | 447        |
| 40.2.2      | Post Incident Testing .....                                 | 447        |
| 40.2.3      | Probable-Cause/Reasonable Suspicion Testing .....           | 447        |
| 40.2.4      | Random Testing.....                                         | 448        |





|             |                                                                                   |            |
|-------------|-----------------------------------------------------------------------------------|------------|
| 40.2.5      | Collections.....                                                                  | 448        |
| 40.2.6      | Refusal to Test.....                                                              | 449        |
| <b>40.3</b> | <b>Testing Parameters .....</b>                                                   | <b>449</b> |
| 40.3.1      | Substance Abuse .....                                                             | 449        |
| 40.3.2      | Alcohol Abuse .....                                                               | 449        |
| 40.3.3      | Supervision, Confirmation and Control .....                                       | 450        |
| <b>40.4</b> | <b>Sanctions/Consequences Imposed for Failing Drug and/or Alcohol Tests .....</b> | <b>450</b> |
| <b>40.5</b> | <b>Training.....</b>                                                              | <b>450</b> |
|             | Safety Forms .....                                                                | 452        |



# **Chapter 1**

## **Burns & McDonnell Safety and Health Policy**

### **Chapter Contents**

#### **1 Burns & McDonnell Safety and Health Policy**

##### **1.1 Burns & McDonnell Safety and Health Policy**



## 1.1 Burns & McDonnell Safety and Health Policy

At Burns & McDonnell, safeguarding the safety and health of our employees, subcontractors and related personnel is of the utmost importance. Safety is a core value of our culture, and we are dedicated to protecting the safety and health of all those associated with our company.

Our mission is to "Make Our Clients Successful." A safe and healthy work environment impacts every measure of a firm's success, from quality of work life to productivity and profitability — our clients' and our own. With many of our staff working full time in client facilities, our safety leadership not only affects the safety and health of our employee-owners, but that of many others influenced by their activities.

We understand that each of us plays a vital role in ensuring work is completed in a safe manner. Employee recommendations to improve safety and health conditions are encouraged, and all recommendations will be given thorough consideration by our management team. Everyone has the authority, responsibility, and duty to STOP any task or operation where concerns or questions regarding the control of Health, Safety, or Environmental issues exist. The goal of our Safety & Health Program is zero incidents on all job sites.

Our goal will be achieved by:

- Committing to a belief that accidents are preventable.
- Top management's commitment to providing a safe and healthy work environment for all employees by holding management personnel accountable for all aspects of employee safety and health.
- Employee involvement in improving the quality of workplace safety and health.
- This employee involvement includes brainstorming, inspecting, detecting, and correcting, from project startup to project completion.
- Committing auditing resources to detect hazards and ensure hazard correction.
- Ensuring that all employees and subcontractors have the knowledge and training needed to accomplish the task ahead.
- Providing all employees and all job sites with appropriate, state-of-the-art equipment to get the job done.
- Recognition that safety starts with executive management, not on the job site.

Burns & McDonnell's safety record puts us in the top 5% of all contractors nationwide. However, we are determined not to rest upon past successes, but to use those successes as a foundation for continual improvement in making us truly, world class.



## **Chapter 2**

# **Project Safety & Health Goals**

### **Chapter Contents**

#### **2 Project Safety & Health Goals**

##### **2.1 Project Safety & Health Goals**

###### **2.1.1 General**

###### **2.1.2 General Liability**





## 2.1 Project Safety & Health Goals

### 2.1.1 General

The Project Safety & Health Program is a framework designed to coordinate the safety and health efforts of Burns & McDonnell and its subsidiaries' employee-owners, contingent workers, subcontractors, contractors, and lower-tier subcontractors (hereinafter collectively referred to as "Project Entity" or "Project Entities", unless specifically identified individually), in a consistent manner; and shall be considered the minimum requirements with respect to project safety and health execution.

The Project Safety & Health Program in no way relieves Project Entities of any legal obligation as it relates to local, state, or federal laws, regulations, or requirements.

Burns & McDonnell and its subsidiaries are dedicated to achieving safety excellence by promoting a culture that will effectively identify and manage risk through recognition, evaluation, education, and action.

### 2.1.2 General Liability

Project Entities shall take all necessary precautions to protect the public, facilities, and the personnel/tenants of **CLIENT NAME** from hazards created by the project's construction operations. All construction operations shall be isolated from the public and **CLIENT NAME**'s operations to the greatest extent possible.



## Chapter 3

### General Safety

#### Chapter Contents

#### 3 General Safety

##### 3.1 Program Administration

- 3.1.1 Project Safety & Health Program
- 3.1.2 Project Safety & Health Coordination Meetings
- 3.1.3 Incident Reporting Requirements
- 3.1.4 Executive Incident Review

##### 3.2 Project Assessments

- 3.2.1 Purpose
- 3.2.2 General
- 3.2.3 Weekly Work Area Audit
- 3.2.4 Daily Field Safety & Health Report
- 3.2.5 Project Safety Assessment
- 3.2.6 Executive Safety Assessment
- 3.2.7 Other Inspection(s)

##### 3.3 Safety & Health Monitoring and Enforcement

- 3.3.1 Monitoring
- 3.3.2 Enforcement
- 3.3.3 Violation Abatement
- 3.3.4 Violation Procedure (Individuals)
  - 3.3.4.1 Non-Serious Violations
  - 3.3.4.2 Serious Violations and Repeat Violations
- 3.3.5 Violation Procedure (Company)

##### 3.4 Subcontractor Project Safety & Health Coordination and Submittal Requirements

- 3.4.1 General Requirements
- 3.4.2 Pre-Mobilization Submittals
  - 3.4.2.1 Subcontractor/Contractor Site-Specific Safety & Health Program
  - 3.4.2.2 Subcontractor/Contractor Verification
  - 3.4.2.3 Designated Safety Representative
  - 3.4.2.4 Competent Person Designation
- 3.4.3 Pre/Post-Activity Coordination & Submittal Requirements
  - 3.4.3.1 Project Safety & Health Orientation
  - 3.4.3.2 New to Site Employee
    - Figure 3-1 — “New to Site” Hard Hat Sticker**
  - 3.4.3.3 Certification of Training
  - 3.4.3.4 Activity Hazard Analysis (AHA)
  - 3.4.3.5 Work Permitting
  - 3.4.3.6 Pre-Task Analysis (PTA)
  - 3.4.3.7 Chemical Inventory List
  - 3.4.3.8 Safety Data Sheets (SDS)
- 3.4.4 Weekly Submittal Requirements



3.4.4.1 **Weekly Work Hour Report**

3.4.4.2 **Weekly Toolbox Safety Training**

3.4.5 **Monthly Work Hour Report**

3.4.6 **Additional Submittals**

**3.5 Program Amendment**

**3.6 Required Postings**

**3.7 Barricades and Signage**

3.7.1 **Barricades**

3.7.2 **Signage**

**Table 3-1 — Standard Color Coding for Safety**

**3.8 Housekeeping**

3.8.1 **Site Sanitation**

3.8.1.1 **Controls and Disposal of Solid Waste**

3.8.1.2 **Disposal of Demolition and Other Construction Debris**

3.8.1.3 **Sewage**

**Table 3-2 — Requirements for Toilet Facilities**

3.8.1.4 **Dust Control**

3.8.1.5 **Chemicals and Chemical Waste**

3.8.1.6 **Hazardous Waste Management and Disposal**

3.8.1.7 **Wastewater Disposal**

3.8.2 **Cell Phones**

3.8.3 **Breaks and Lunches**

3.8.3.1 **Break Areas**

3.8.3.2 **Smoking Areas**

3.8.3.3 **Drinking Water**

3.8.4 **Washing and Hygiene Facilities**

**3.9 Short Service Employee Program**

3.9.1 **General**

3.9.2 **Employee Identification**

3.9.3 **Mentoring**

3.9.4 **Program Evaluation**

**3.10 Stop Work Authority Program**

3.10.1 **Stop Work Authority**

3.10.2 **Training**

3.10.3 **Interventions**

3.10.4 **Corrective Actions**

3.10.5 **Learning**

3.10.6 **Non-Retaliation or Discrimination**

**3.11 Task Safety Observation**

3.11.1 **General**

3.11.2 **Procedure**

3.11.3 **Training**

**3.12 Visitor Access**



## **Program Administration**

### **3.1.1 Project Safety & Health Program**

Project Entities shall be responsible for managing the Project Safety & Health Program and all other project-related programs.

Project Entities shall be responsible for training and familiarizing their employees regarding the minimum requirements set forth in this program, to include any changes, modifications, revisions, addendums, etc.

Project personnel shall familiarize themselves with the requirements of the Project Safety & Health Program.

Project personnel shall adhere to established policies/procedures of the Project Safety & Health Program, as applicable to their respective scopes of work.

### **3.1.2 Project Safety & Health Coordination Meetings**

The Project Entity's designated Safety & Health representative shall be required to attend the weekly Project Safety & Health Coordination Meeting. Allotted time shall be up to two hours for the Project Entity's designated Safety & Health representative's attendance and participation.

The weekly Project Safety & Health Coordination Meeting shall also serve as a forum for Project Entities to discuss safety and health concerns as they relate to each other and the project.

### **3.1.3 Incident Reporting Requirements**

Project Entities shall be required to immediately report all incidents, near misses/hits, injuries, illnesses, property damage, environmental impacts, client production interruptions, deaths, related hospitalizations, etc., regardless of severity, to Burns & McDonnell and/or its subsidiaries.

An initial written notification via email will be made to all applicable parties as soon as possible, but no more than four hours after the event. Additionally, required documents shall be submitted electronically no more than 24 hours after the actual occurrence.

Project Entities shall be required to submit, within 24 hours of a reported incident, a completed Safety Form C-2, "Incident Investigation Report," as well as, all supporting materials/documentation — photographs, drawings, witness statements, inspection records, training records, etc.

### **3.1.4 Executive Incident Review**

The Project Entity's project manager shall be required to attend an Executive Incident Review after the occurrence of a recordable injury, as defined by the Occupational Safety and Health Administration (OSHA), or a property damage event resulting in a loss of \$8000 or more.

The Project Entity's president or senior officer shall be required to attend an Executive Incident Review after the occurrence of a Days Away, Restricted, and Transferred (DART) injury, as defined by OSHA, or a near miss/hit of a serious nature.

At the time of the Executive Incident Review, the Project Entity's project manager and/or senior officer shall be required to present a recovery plan of action to prevent such occurrences in the future.

The respective global practice safety representative shall be responsible for the coordination and scheduling of the Executive Incident Review.





## **3.2 Project Safety Assessments**

### **3.2.1 Purpose**

The purpose of this process is to identify and correct safety and health hazards encountered in the workplace; to provide uniform guidance with respect to these hazards; and satisfy rules or standards promulgated by federal, state, or local authority.

### **3.2.2 General**

Inspections and assessments have been identified as primary management tools for continually improving the Safety & Health Program. These on-site evaluations, when executed effectively, can lead to enhanced safety and health performance.

Safety inspections and assessments shall be considered as tools to be utilized to assess site safety and health conditions, ensure compliance with the Project Safety & Health Program, and identify methodology for establishing and maintaining continuous improvement of safety and health performance.

The following types of inspections and assessments may be utilized to aid in the continuous improvement of safety and health performance:

- Weekly Work Area Assessment
- Daily Field Safety & Health Report
- Project Safety Assessment
- Executive Safety Assessment
- Other Inspections

### **3.2.3 Weekly Work Area Audit**

Weekly Work Area Audits shall be conducted by the site manager and/or his/her designee, site safety manager, if applicable, and a minimum of one representative from each Project Entity.

Scheduling and selection of the assessment team shall be coordinated by the site manager and/or his/her designee.

The assessment team shall conduct a comprehensive review of the Project Safety & Health Program's implementation on the project site.

Safety Forms C-11, "Weekly Work Area Audits," and C-11A, "Weekly Work Area Audit Action Items," shall be utilized to document compliance, deficiencies, and corrective action(s) taken and/or to be taken.

Completed Weekly Work Area Audit forms shall be submitted to the Burns & McDonnell and/or its subsidiaries' site manager/designee.

### **3.2.4 Daily Field Safety & Health Report**

Safety observations, interface and/or concerns shall be documented daily, when applicable, by the project team.



Safety Form B-2, "Daily Field Safety & Health Report," shall be utilized to document compliance, deficiencies, corrective action(s) taken/to be taken, and other safety related interface and concerns.

Daily Field Safety & Health Reports completed by the site safety manager/specialist shall be submitted to the site manager (project superintendent) and the Section Manager/Manager of Field Operations, Safety and Health, for review, comment and recommendation.

Completed Daily Field Safety & Health Reports shall be retained for project archiving purposes.

### 3.2.5 Project Safety Assessment

Project Safety Assessments shall be conducted when Burns & McDonnell and/or its subsidiaries are contractually responsible for project safety.

Scheduling and project selection shall be coordinated by the project manager and their respective global practice safety representative.

An assessment team shall conduct a comprehensive review of the Site Safety & Health Program's implementation on the project site.

The comprehensive review shall include:

- **Opening Conference**
  - The assessment team will meet with the senior project personnel to review the purpose, scope, and methodology of the assessment; and to identify site personnel participation.
- **Site Observation and Evaluation**
  - The assessment team is to conduct a job site physical evaluation noting compliance, deficiencies, and corrective actions to be taken with immediate, positive, and certain feedback.
- **Review of Documentation, Statistics and Metrics**
  - The assessment team shall review documentation required by the Site Safety & Health Program, as well as incident history.
- **Closing Conference**
  - The assessment team will meet with project personnel and review the findings of the Project Safety & Health Assessment.

Burns & McDonnell's "Project Safety Assessment" worksheets are to be utilized to document compliance, deficiencies and corrective action(s) taken/to be taken.

Completed worksheets shall be submitted to the global practice project manager, construction manager, and site manager/project superintendent and retained for project archiving purposes.

The site manager/project superintendent has the responsibility to facilitate implementation of any corrective action(s) to be taken.



Completed worksheets shall be submitted for review and distributed to the respective Executive Leadership, Global Practice Leader(s), Corporate Safety and Health, Project Manager, Construction Project Manager, and Site Manager/Project Superintendent, as applicable.

### 3.2.6 **Executive Safety Assessment**

Executive Safety Assessments may be conducted by executive/senior management at their sole discretion, when Burns & McDonnell and/or its subsidiaries are contractually responsible for project safety.

Executive/senior management is to conduct at least one cross-global practice safety assessment annually.

Scheduling and project selection will be coordinated by the executive/senior manager and their respective global practice safety segment leader.

A notification of assessment shall be sent to the respective project manager, construction manager, site manager, and global practice safety segment leader in advance of the assessment.

The assessment team will conduct a comprehensive review of the Site Safety & Health Program's implementation on the project site.

- Burns & McDonnell's "Executive Safety Assessment" worksheets shall be utilized to document compliance, deficiencies and corrective action(s) taken/to be taken.
- Completed worksheets are to be submitted to the site manager and retained for project archiving purposes.
- The site manager/project superintendent has the responsibility of facilitating the implementation of any corrective action(s) to be taken.
- Completed worksheets will be submitted to Corporate Safety & Health, and the project manager for review and distribution.

### 3.2.7 **Other Inspection(s)**

Other safety and health inspections and assessments may be conducted at the discretion of Burns & McDonnell and/or its subsidiaries.

## 3.3 **Safety & Health Monitoring and Enforcement**

### 3.3.1 **Monitoring**

Project Entities are required to ensure that their employees do not create an unsafe condition which may result in harm to themselves, other personnel, the environment, or property.

### 3.3.2 **Enforcement**

The enforcement of the Project Safety & Health Program; its disciplinary procedures; related federal, state, local, or otherwise stated safety and health rules, regulations, and procedures; shall be the responsibility of the Project Entity.

The site management team shall take disciplinary action against Project Entity management for failing to enforce such procedures.



In the event multiple disciplinary procedures are applicable, the most stringent shall be applied.

Verbal instruction may be used at the discretion of the designated safety representative for conditions or practices which are less than serious and are not likely to cause injury or damage to property.

Violation Notices shall be logged in Safety Form C-15, "Violation Log."

Violations shall be classified as follows:

- **Non-Serious**
  - Any condition or practice which is not likely to cause death or serious physical harm to any person.
- **Serious**
  - Any condition or practice which is causing or likely to cause death or serious physical harm to any person.
- **Stop Work/Imminent Danger**
  - Upon the discovery of any condition or practice which would reasonably be expected to cause death or serious physical harm; all personnel, shall be withdrawn from the affected area, with the exception of those deemed necessary to correct the unsafe condition or practice.
- **Repeat**
  - Violations which have been verbally stated or written to an employee or Project Entity more than once.

### 3.3.3 Violation Abatement

Abatement of Safety & Health Violation Notices shall occur within the allotted time as identified by Safety Form C-1, "Violation Notice."

Failure to comply with the requirements of Safety Form C-1, "Violation Notice," by the Project Entity, without proposal and acceptance of an alternate solution, may result in disciplinary action taken against the Project Entity.

### 3.3.4 Violation Procedure (Individuals)

Violations Notices issued to individuals are subject to applicable federal, state, and local authority; the Project Entity's Site-Specific Safety & Health Program; the Project Safety & Health Program; and all other project-related programs.

Project Entities shall have violation/disciplinary procedures that meet, at a minimum, the standards outlined in sections 3.3.4.1 through 3.3.4.2 of this chapter.

#### 3.3.4.1 Non-Serious Violations

First offense shall require a verbal warning with documentation for reference.

Second offense shall require a written warning.





Third offense shall require either temporary or permanent removal from the project.

#### 3.3.4.2 **Serious Violations and Repeat Violations**

First offense shall be subject to either temporary or permanent removal from the project, at the discretion of the site manager and/or the site safety manager/specialist.

#### 3.3.5 **Violation Procedure (Company)**

Violation Notices issued to companies are subject to applicable federal, state, and local authority; the Project Entity's Site-Specific Safety & Health Program; the Project Safety & Health Program; and all other project-related programs.

### 3.4 **Project Safety & Health Coordination and Submittal Requirements**

#### 3.4.1 **General Requirements**

Program submittals are necessary to coordinate the requirements established in the Project Safety & Health Program with the Project Entity's Site-Specific Safety & Health Program.

#### 3.4.2 **Pre-Mobilization Submittals**

##### 3.4.2.1 **Subcontractor/Contractor Site-Specific Safety & Health Program**

Project Entities shall be required to submit a written Site-Specific Safety & Health Program to Burns & McDonnell and/or its subsidiaries prior to commencing any work activity. As the minimum standard, the subcontractor/contractor's Site-Specific Safety & Health Program shall include all the requirements outlined in the Project Safety & Health Program.

Subcontractors/contractors that do not have a written Site-Specific Safety & Health Program may adopt the Project Safety & Health Program as their own, for the exclusive use on that project.

Burns & McDonnell and/or its subsidiaries are in no way responsible for the use and/or interpretation of the Project Safety & Health Program when adopted by the subcontractor/contractor.

##### 3.4.2.2 **Subcontractor/Contractor Verification**

The subcontractor/contractor shall submit their intention to adopt the Project Safety & Health Program as their own for the project, in writing, to Burns & McDonnell and/or its subsidiaries. Safety Form B-3, "Subcontractor/Contractor Verification," shall be utilized to fulfill this obligation.

Burns & McDonnell and/or its subsidiaries shall not be responsible for administering the subcontractor/contractor's Site-Specific Safety & Health Program or providing training for any subcontractor/contractor personnel after the subcontractor/contractor has adopted the Project Safety & Health Program for use on the project.

##### 3.4.2.3 **Designated Safety Representative**

All Project Entities shall designate a qualified safety representative to be responsible for the administration of the Project Entity's Site-Specific Safety & Health Program, the Project Safety & Health Program, and all **CLIENT NAME** requirements and procedures.

The Project Entity's qualified safety representative shall, at minimum, have the ability to identify existing and predictable hazards associated with the work, the authority to stop/correct work activities identified as



at risk, and the ability to coordinate safety and health efforts as defined by the Project Safety & Health Program.

Project Entities shall utilize Safety Form B-3, "Subcontractor/Contractor Verification," to designate their qualified safety representative.

#### **3.4.2.4 Competent Person Designation**

Project Entities shall be required to identify and designate competent persons, as applicable to their scope of work activity, using Safety Form C-17, "Competent Person Designation."

The Project Entity's competent persons shall, by way of training and/or experience, demonstrate that they are knowledgeable of applicable standards; be capable of identifying existing and predictable hazards in the surroundings along with working conditions which are unsanitary, hazardous, or dangerous to employees; and have the authority to take prompt corrective measures to eliminate these issues.

Project Entities shall submit Safety Form C-17, "Competent Person Designation," before commencing any task or work activity that requires the designation of a competent person.

#### **3.4.3 Pre/Post-Activity Coordination & Submittal Requirements**

##### **3.4.3.1 Project Safety & Health Orientation**

Project personnel shall be required to attend a Project Safety & Health Orientation prior to performing any work activity(s). Safety Form C-8, "Project Orientation Training," shall be completed by the trainee to document orientation attendance and acknowledge understanding of the expectations set forth in the Project Safety & Health Program.

Project Safety & Health Orientations shall be conducted by a Burns & McDonnell and/or its subsidiaries' site management team member or their designee. The Project Safety & Health Orientation may not be restricted to the items listed on Safety Form C-8, "Project Orientation Training," but will at a minimum include all applicable items listed on the form.

##### **3.4.3.2 New to Site Employee**

Upon completion of the Project Safety & Health Orientation, project personnel shall be issued a "New to Site" sticker.

Project personnel shall be required to conspicuously display the "New to Site" sticker on their respective hard hats for a period of no less than 30 calendar days from sticker issuance.

Project management, supervision, and experienced craftworkers shall be required to monitor the activities of "New to Site" personnel and provide guidance, as needed, for the duration of the first 30 calendar days.

Project Entity management shall be responsible for reviewing each "New to Site" employee's performance, as it relates to safety, and authorizing removal of the "New to Site" sticker at the end of the 30-day period.

**Figure 3-1 “New to Site” Hard Hat Sticker**

#### 3.4.3.3 Certification of Training

Project Entity employees shall be trained by their respective employer. All safety-related Project Entity training shall be documented on Safety Form C-9, “Certification of Training,” and submitted to Burns & McDonnell and/or its subsidiaries prior to the commencement of any activities involving, but not being limited to, the following:

- Fall protection
- Scaffolds
- Hazardous energy control — lockout/tagout
- Confined space
- Respiratory protection
- Powered industrial truck operators
- Crane operators — per type of equipment
- High voltage
- First aid/cardiopulmonary resuscitation (CPR)

#### 3.4.3.4 Activity Hazard Analysis (AHA)

Project Entities shall complete an Activity Hazard Analysis (AHA) before commencing work activity.

Project Entities shall complete Activity Hazard Analyses for each scope of work/construction discipline.

Depending upon the scope/planned work activity, Project Entities may be required to complete multiple Activity Hazard Analyses.

At a minimum, the following details shall be included in the AHA:

- Definition of the activity
- Description of the sequence of operation
- Specific hazards related to the operation
- Hazard control measures



- Training for all involved employees
- Designated competent person

The AHA shall be reviewed with all applicable personnel and attendance documented by the Project Entity.

Safety Form C-12, "Activity Hazard Analysis," shall be submitted to Burns & McDonnell and/or its subsidiaries before the task or work activity commences.

#### 3.4.3.5 **Work Permitting**

Work permits shall be issued before commencing any hazardous work activities, such as:

- Excavations.
- Confined space entry.
- Hot work — e.g., welding, cutting, brazing, spark producing, etc.
- Lockout/tagout work activities — e.g., electrical, mechanical, etc.

Additionally, work permits shall:

- Be requested by the Project Entity, crew foreman, or superintendent performing the work.
- Be discussed during the daily Pre-Task Analysis Meeting.
- Remain on the job site until the work is completed, or the permit expires, whichever occurs first.
- Be legibly written/completed.
- Be returned to the approver when the permit has expired, or the work has been completed.

Work permits shall be required at the beginning of each new work shift.

#### 3.4.3.6 **Pre-Task Analysis (PTA)**

A daily, documented Pre-Task Analysis (PTA) is to be completed prior to each work activity/task being performed, using Safety Form C-10, "Pre-Task Analysis."

The PTA shall require the Project Entity personnel performing the task/work activity to adequately identify hazards associated with the scope of work for the activity.

Before beginning their task/work activity, Project Entity personnel shall be required to sign the PTA to acknowledge that they understand the hazards associated with the task/work activity they will be performing, and the risk mitigations identified.

Prior to returning to the work activities/tasks being performed after a lunch break, Project Entity personnel shall be required to review the PTA to ensure that it adequately addresses hazards not identified during the initial analysis. Project Entity personnel shall be required to initial the PTA upon review completion.





Project Entity personnel shall be required to sign the PTA when their involvement with the task/work activity has ended.

The applicable Project Entity front-line supervisor and superintendent will then be required to sign the PTA in the allocated spaces and complete the Post-Task Assessment.

Project Entities shall submit a copy of the completed PTA at the end of each shift.

#### **3.4.3.7 Chemical Inventory List**

Project Entities shall be required to compile a list of hazardous materials and/or chemicals which are to be used in the performance of work activity.

Project Entities shall submit Safety Form Z-1, "Chemical Inventory List," to Burns & McDonnell and/or its subsidiaries prior to the introduction of hazardous materials/chemicals at the project location.

Project Entities will be expected to update the Chemical Inventory List, as needed.

#### **3.4.3.8 Safety Data Sheets (SDS)**

Project Entities shall be required to submit Safety Data Sheets (SDS) for all hazardous materials and/or chemicals identified on the Chemical Inventory List.

SDSs shall be submitted prior to the introduction of the hazardous material/chemical at the project location.

Hard copy or electronic SDS submittals shall be considered acceptable.

### **3.4.4 Weekly Submittal Requirements**

#### **3.4.4.1 Weekly Work Hour Report**

The previous week's safety and health statistics, including hours worked by the respective subcontractor/contractor and their subcontractors, shall be submitted at the time of the weekly Project Safety & Health Coordination Meeting. This is to be completed using Safety Form C-3, "Subcontractor/Contractor Work Hour and Incident Report."

#### **3.4.4.2 Weekly Toolbox Safety Training**

Project Entities shall be required to hold, at a minimum, Weekly Toolbox Safety Trainings with their employees.

Topics of discussion shall be relevant to the Project Entity's scope of work activity.

Safety Form C-13, "Weekly Toolbox Safety Training," shall be used to document topics of discussion and attendance.

Project Entities shall submit completed Safety Form C-13, "Weekly Toolbox Safety Training" to Burns & McDonnell and/or its subsidiaries weekly.

### **3.4.5 Monthly Work Hour Report**

No later than the fifth day of every month, the previous month's safety and health statistics, including hours worked by the respective Project Entity and their subcontractors, shall be submitted to Burns &



McDonnell and/or its subsidiaries using Safety Form C-3, "Subcontractor/Contractor Work Hour and Incident Report."

#### **3.4.6 Additional Submittals**

Additional submittals shall be required, as detailed in the subsequent chapters of the Project Safety & Health Program. Safety Form C-20, "Safety Submittals," shall be referenced by Project Entities for additional guidance.

### **3.5 Program Amendment**

On rare occasion, circumstances may necessitate a change, variance, or waiver from some requirements of the Project Safety & Health Program.

Project Entities shall be responsible for proposing any variance or waiver from the requirements of the Project Safety & Health Program in writing, using Safety Form C-14, "Amendment Form."

Prior to implementing any new procedures or providing variance for established procedures, Safety Form C-14, "Amendment Form," is to be approved and signed by the responsible Burns & McDonnell and/or its subsidiaries' project manager and the director of Corporate Safety & Health and/or his/her designee.

Once approved, Safety Form C-14 shall be retained by the site management team for assessment and archiving purposes.

### **3.6 Required Postings**

Project Entities shall be responsible for the posting of all federal, state, and locally required notices upon their mobilization.

Required postings include, but are not limited to:

- Notice to Workers Concerning Unemployment Benefits
- Employee Polygraph Protection Act
- Equal Employment Opportunity
- Discrimination in Employment
- Family and Medical Leave Act of 1993
- Federal Minimum Wage
- State Minimum Wage
- OSHA – Job Safety & Health
- Emergency Procedures and Contacts
- OSHA 300A Summary (Feb. 1-April 30)
- Worker's Compensation



- Discrimination

### **3.7 Barricades and Signage**

#### **3.7.1 Barricades**

Project Entities shall be required to barricade areas of potential hazard exposure. Instances in which barricading shall be required include, but are not limited to, open ditches, excavations, overhead work, suspended loads, and radiography operations.

Project Entities shall ensure signs, tags, labels, etc., are utilized to provide project personnel with adequate information related to the hazards associated with the barricades.

Project Entities shall use yellow barricading to indicate areas with potential hazards. Project personnel may enter a yellow barricaded area, providing they know and understand the potential hazards.

Project Entities shall use red barricading to indicate areas with imminent/existing hazards. Project personnel may only enter a red barricaded area if they are involved with the work activity requiring the barricade, or the controlling contractor responsible for the erection of the barricade grants permission.

Project Entities shall prohibit all project personnel from entering a red barricaded area erected to demarcate overhead work activity.

Project Entities shall use magenta/purple on yellow barricading to indicate areas of potential radiation exposure. Project personnel shall be prohibited from entering a yellow and magenta barricaded area, unless they are involved with the radiological activity, have the required training, and are using the appropriate personal protective equipment (PPE).

#### **3.7.2 Signage**

Project Entities shall ensure that hazard alerting signs are placed to alert and inform project personnel, as necessary.

Project Entities shall ensure that hazard alerting signs are legible; do not distract or create a hazard; and are not placed on, or adjacent to, moveable objects, such as, doors windows, etc.

Project Entities shall ensure that hazard alerting signs and fire equipment signs are clearly visible in the immediate vicinity of the hazard or designated equipment.

Project Entities shall ensure that hazard alerting signs are protected from damage caused by fading and other potential environmental conditions.

Project Entities shall ensure that hazard alerting signs are displayed with illumination or retro reflectiveness, as needed, for adequate legibility under normal operating conditions. Where illumination is inadequate, or colors are not recognizable, supplemental illumination must be used. Where illumination may be interrupted, the hazard alerting signs should be made with photo-luminescent materials.

| Table 3-1 Standard Color Coding for Safety                                    |                          |                                                                                                                                                                      |
|-------------------------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COLOR                                                                         | MEANING                  | APPLICATION                                                                                                                                                          |
| Red                                                                           | <b>Danger</b>            | Safety cans and signs.                                                                                                                                               |
|                                                                               | <b>Stop</b>              | Emergency stop bar or button on machinery. Identification of fire equipment.                                                                                         |
| Fluorescent Orange or Orange-Red                                              | <b>Biosafety</b>         | Labels and containers for blood and infectious waste — warning labels must be fluorescent orange or orange-red with the biosafety symbol in a contrasting color.     |
| Yellow                                                                        | <b>Caution</b>           | Tripping, falling and striking hazards. “Flammable, Keep Fire Away” labels on cabinets. Safety cans and containers for explosives, corrosives or unstable materials. |
| Orange                                                                        | <b>Warning</b>           | Parts of machinery or energized equipment that may cut, crush or otherwise injure. Inside of transmission guards for pulleys, gears, etc.                            |
| Green                                                                         | <b>Safety</b>            | Location of first aid equipment. Location of safety equipment, respirators, safety showers, etc.                                                                     |
| Blue                                                                          | <b>Information</b>       | Signs and bulletin boards. Specific railroad warnings against starting, using or moving equipment being repaired.                                                    |
| Black, White, Yellow, or Combination of Black with White or Black with Yellow | <b>Boundaries</b>        | Traffic or housekeeping markings. Stairways, directions and borders.                                                                                                 |
|                                                                               |                          |                                                                                                                                                                      |
| Magenta or Purple on Yellow                                                   | <b>Radiation Caution</b> | X-ray, alpha, beta, gamma, neutron and/or proton radiation.                                                                                                          |

### 3.8 Housekeeping Requirements

Project Entities shall be responsible for housekeeping in their work areas. This is to include the regular and frequent removal and disposal of accumulated debris and/or surplus materials, tools, equipment, etc.

Project Entity's failure to provide a work environment free of accumulated debris, surplus materials, tools, equipment, etc., may result in the Project Entity being charged for the removal of these items.

#### 3.8.1 Site Sanitation

All waste shall be disposed of properly.

##### 3.8.1.1 Controls and Disposal of Solid Waste

Solid waste shall be picked up and placed in containers as it is generated.

Waste containers shall be emptied by the Project Entity on a regular basis, to prevent over-flowing conditions. All handling and disposal will be conducted in a manner that minimizes secondary contamination by overflow or spillage during waste transfer.





Project Entities shall be responsible for arranging for removal of waste from the project site by means of a contracted vendor.

#### 3.8.1.2 Disposal of Demolition and Other Construction Debris

Project Entities shall be responsible for the disposal of construction debris as follows:

- All waste generated by demolition activities shall be segregated, as much as practicable, and placed in dumpsters.
- Upon completion of all demolition activities, the area shall be clean, absent of signs of demolition, construction, temporary construction barriers or demolished structures.
- Exceptions to this requirement shall be specifically defined within the scope of work.

#### 3.8.1.3 Sewage

All sewage will be disposed of through connections to established sanitary systems. Where such systems are not available, chemical toilets or comparable effective units will be used with collected wastes periodically emptied by means of a sanitary pumping service.

No conditions shall be permitted to exist where noticeable odors are present.

| <b>Table 3-2 Requirements for Toilet Facilities</b><br><b>Ratio of Number Workers to Number of Toilets</b> |                                                        |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| <b>NUMBER OF WORKERS</b>                                                                                   | <b>NUMBER OF TOILETS</b>                               |
| 10 or less                                                                                                 | 1 toilet seat and 1 urinal                             |
| 20 or less                                                                                                 | 2 toilet seats and 2 urinals                           |
| More than 20                                                                                               | 2 toilet seats and 2 urinals per additional 15 workers |

Additionally, Project Entities shall ensure that the above ratio of toilet facilities for female workers is independent to that of male employees on site.

Women's facilities shall be clearly identified as such and be equipped with a lock. Use of women's facilities by male employees shall be prohibited.

#### 3.8.1.4 Dust Control

Project Entities shall be responsible for ensuring that positive dust control methods are used.

#### 3.8.1.5 Chemicals and Chemical Waste

Project Entities shall be required to ensure that all chemicals are dispensed without spillage to the ground or water. Periodic inspections of dispensing areas shall be conducted to identify leakage and initiate corrective action. Inspections of dispensing area shall be documented.

Project Entities are to ensure that chemical waste is collected in chemically compatible, corrosive-resistant containers.



Project Entities shall be expected to monitor collection drums and move them to a storage or staging area when contents are within 6 inches of the top.

Project Entities shall be responsible for classifying, managing, storing, and disposing of chemical waste in accordance with federal, state, and local laws and regulations.

#### **3.8.1.6 Hazardous Waste Management and Disposal**

Generated hazardous waste shall be appropriately classified by the responsible party — as determined by contract — and removed for appropriate disposal by a licensed disposal company.

#### **3.8.1.7 Wastewater Disposal**

Project Entities shall be responsible for making certain that none of the wastewater generated is permitted to enter waterways or storm drain systems.

Project Entities are to ensure that all wastewater generated is either treated to remove any contaminants prior to discharge; or captured, stored, and removed from the project site as potentially contaminated wastewater.

Project Entities shall be expected to ensure that generated wastewater is disposed of in accordance with all federal, state and local regulations including project-permit conditions.

#### **3.8.2 Cell Phones**

Unless authorized by Burns & McDonnell and/or its subsidiaries, personal cell phone use is prohibited, unless within designated break and office areas. Cell phones and other non-intrinsically safe devices are prohibited in process areas.

#### **3.8.3 Breaks and Lunches**

##### **3.8.3.1 Break Areas**

All break areas shall be approved by Burns & McDonnell and/or its subsidiaries or the client. Food and drink, other than water, or items used for hydration purposes, shall be confined to designated break areas. Storage of construction materials in break areas is not permitted.

##### **3.8.3.2 Smoking Areas**

Smoking shall be confined to approved, designated smoking areas only.

Smoking areas shall be equipped with a dedicated fire extinguisher and appropriate receptacles for the disposal of cigarettes — e.g., butt cans, etc.

##### **3.8.3.3 Drinking Water**

Project Entities shall be responsible for providing an adequate supply of fresh, potable drinking water in an easily accessible location.

Portable water containers used to dispense drinking water are to be cleaned daily, be capable of being tightly closed, and be equipped with a tap.

All containers used to distribute drinking water shall be sealed.



All containers used to distribute drinking water shall be clearly marked with the nature of their contents and the date of fill.

Containers used to distribute drinking water shall not be used for any other purpose.

Where disposable cups are supplied, a disposal receptacle is to be provided in the immediate vicinity.

The use of pails and dippers or a common drinking cup for dispensing drinking water is prohibited.

If, for any reason, water that is unfit for human consumption is used at the job site, it must be identified and labeled to clearly indicate that the water is unsafe for drinking, washing or cooking.

### 3.8.4 **Washing and Hygiene Facilities**

Project Entities shall be responsible for providing adequate washing facilities for project personnel when exposure to hazardous substances is possible.

## 3.9 **Short Service Employee Program**

### 3.9.1 **General**

Project Entities shall be required to manage their respective Short Service Employee Program at the project level.

Short Service Employee Programs shall meet all applicable **CLIENT NAME** requirements.

### 3.9.2 **Employee Identification**

Project Entity shall require short service employees to wear an approved short service employee decal (conspicuously displayed).

### 3.9.3 **Mentoring**

Project Entities shall be expected to submit their short service employee mentoring process/procedure for review and acceptance.

Project Entities shall ensure that their Short Service Employee Program is designed to provide guidance and development for short service employee personnel.

Project Entities shall ensure that mentors assigned responsibility for short service employees are on site. Suitable alternates may be used in absence of the primary mentor.

Project Entities shall prohibit short service employees from serving as a single-person crew.

### 3.9.4 **Program Evaluation**

Project Entities must assess their respective Short Service Employee Program periodically to ensure effectiveness and uniform application.



### **3.10 Stop Work Authority Program**

#### **3.10.1 Stop Work Authority**

All project personnel shall have the authority and the responsibility to stop a work task or operation that poses imminent danger; or one for which concerns or questions exist, regarding the control of a safety, health, or environmental risk. The site manager (project superintendent) shall be notified when Stop Work Authority is invoked/exercised and mitigation(s) shall be in place before the work task or operation continues.

The site management team shall be responsible for creating a culture in which Stop Work Authority is exercised freely, and without the fear of retaliation.

All project personnel shall have the right to refuse to perform a task/work activity if they believe, in good faith, that they will be exposed to an imminent danger.

"Good faith" means that even if no imminent danger is found to exist, the employee had reasonable grounds to believe that imminent danger existed.

#### **3.10.2 Training**

Stop Work Authority shall be reviewed as part of the Project Safety & Health Orientation.

#### **3.10.3 Interventions**

When an unsafe condition or behavior is identified a Stop Work Intervention shall be initiated.

The Stop Work Intervention shall:

- Be initiated in a positive manner.
- Be coordinated through the supervisor.
- Notify all affected personnel and supervision of the stop work issue.
- Initiate correction of the issue.
- Be documented.

Safety Form C-27, "Stop Work Intervention," shall be used to document all Stop Work Interventions.

#### **3.10.4 Corrective Actions**

The work task or operation associated with the Stop Work Intervention shall not resume until all stop-work issues and concerns have been adequately addressed and mitigations/corrective actions are implemented.

All Stop Work Interventions shall be adequately resolved in a timely manner.

Occasionally, additional investigation and mitigation/corrective actions may be required to identify and address causal factors.





### 3.10.5 Learning

Stop Work Intervention Reports shall be reviewed by the site management team in order to:

- Measure participation.
- Determine the quality of intervention and follow up.
- Trend common issues.
- Identify opportunities for improvement.

### 3.10.6 Non-Retaliation or Discrimination

In the workplace, project personnel may bring up safety and health concerns to their employers without fear of discharge or discrimination, providing the complaint is made in good faith.

Project personnel have a right to seek safety and health on the job without fear of punishment.

Project personnel have the right to be free from retaliation for exercising safety and health rights.

Project personnel have the right to refuse to perform a task they consider to be unsafe, and are protected from retaliation, providing the following conditions are met:

- Project personnel have asked their employer to eliminate the hazard, and the employer failed to do so.
- Project personnel refused to perform a task in "good faith."
- Project personnel genuinely believe that an imminent danger exists.
- Project personnel refusal is not a disguised attempt to harass the employer or disrupt business.
- A reasonable person would agree that the potential for death or serious injury exists.
- The urgency of the hazard is such that there is not adequate time for mitigation through standard enforcement channels.

Any form of retribution or intimidation directed at an individual or company for exercising their Stop Work Authority shall not be tolerated.

### 3.11 Task Safety Observations

The purpose of Task Safety Observation is to identify and correct project safety and health hazards and "at risk" behaviors encountered in the workplace; as well as to provide uniform guidance and requirements to identify and correct hazards or "at risk" behaviors. Task Safety Observations shall be entered into the appropriate Behavioral Based Safety (BBS) database for review and discussion with site leadership.



### 3.11.1 General

Inspections and self-assessments are one of the primary tools used by management to continually improve the Project Safety & Health Program. These on-site activities are one of the best methods of evaluating individual and group behavior related to safety.

Inspections and self-assessments serve two central functions:

- First, they evaluate the existing safety and health system which is in place on the project.
- Second, and more importantly, if performed properly, they can evaluate safety-related behavioral aspects of the individuals and the workforce.

### 3.11.2 Procedure

The site manager shall be responsible for the implementation of the Task Safety Observation Program when Burns & McDonnell and/or its subsidiaries are contractually responsible for safety.

When contractually responsible for safety, Burns & McDonnell and/or its subsidiaries' executive/senior management may conduct Task Safety Observations at their sole discretion.

Burns & McDonnell and/or its subsidiaries' site management shall be required to perform a minimum of three (3) formal Task Safety Observations per week and provide immediate, certain, and positive feedback to those individuals/groups observed.

The requirement to participate in the Task Safety Observation Program applies to, but is not limited to, the following:

- Site manager/construction manager.
- Assistant project manager — when applicable.
- Project superintendent(s).
- Discipline superintendent(s).
- General Foremen.
- Foremen.
- Quality assurance manager — when applicable.
- Site safety manager/specialist — when applicable.
- Field engineer — when applicable.

Subcontractor/contractor supervisors and front-line managers shall be required to perform a minimum of three (3) formal Task Safety Observations per week, when present on site, and provide immediate, certain, and positive feedback to those individuals/groups observed.

Subcontractor/contractor supervisors and front-line managers include, but are not limited to:

- Project/site manager.



- Assistant project/site manager — when applicable.
- Project/general superintendent(s).
- Discipline superintendents(s).
- General foremen.
- Foremen.

A formal Task Safety Observation shall consist of the following process:

- Observe crew at work, noting the safe and “at risk” behaviors.
- Review safe and “at risk” behaviors with crew after observation is complete (immediate).
- Commend safe behaviors (positive/certain).
- Corrective coaching, if necessary (certain), crew shall be involved to make the condition or task safe (positive).
- Encourage continued improvement (certain).
- Completion of the Task Safety Observation Card/Form.
- Workers being observed shall remain anonymous.

Completed Task Safety Observations shall be submitted to the site manager or his/her designee daily.

No later than the fifth day of each month, the previous month’s Task Safety Observations shall be submitted via the Safety Management System.

Negative trends or issues identified are to be targeted for improvement.

Project Task Safety Observation results will be communicated to the workforce.

Improvements made by the workforce will be recognized and/or rewarded at the discretion of the project/site management team.

### **3.11.3 Training**

Personnel required to perform Task Safety Observations shall be trained in the requirements set forth in this program.

Training may be delivered electronically, via an instructor-led class, or at the time of the Project Safety & Health Orientation.

### **3.12 Visitor Access**

Project Entities shall be responsible for making certain that their respective visitors/vendors report to the project field office upon arrival, and sign in using Safety Form C-16, “Visitor Sign-In.”



Project Entities shall be responsible for ensuring their respective visitors/vendors comply with the requirements contained in Chapter 9 of the Project Safety & Health Program, "Personal Protective Equipment."

Project Entities shall be expected to provide an authorized escort for their respective visitors/vendors for the entirety of the visitor/vendor's project access.

Project Entities shall ensure their respective visitors/vendors report to the project field office immediately prior to departure, and sign out using Safety Form C-16, "Visitor Sign-In."

Safety Form C-16, "Visitor Sign-In," shall be used to account for personnel in the event of an evacuation or muster.



## Chapter 4

# Stairways, Ladders and Scaffolds

### Chapter Contents

#### 4 Stairways, Ladders and Scaffolds

##### [Stairways, Ladders and Scaffolds — Resources](#)

##### 4.1 [Ladders](#)

###### 4.1.1 [Definitions](#)

###### 4.1.2 [Inspection and Use](#)

###### [Table 4-1 — Quarterly/Monthly Color Codes](#)

##### 4.2 [Scaffolds](#)

###### 4.2.1 [Definitions](#)

##### 4.3 [Scaffold Inspection and Tagging](#)

###### [Table 4-2 — Scaffold Tagging Color Codes](#)

##### 4.4 [Training](#)





## **Stairways, Ladders and Scaffolds**

### **Stairways and Ladders**

[General Requirements](#)

[Stairways](#)

[Ladders](#)

[Training Requirements](#)

### **Scaffolds**

[Definitions](#)

[Capacity](#)

[Scaffold Platform Construction](#)

[Supported Scaffolds](#)

[Suspension Scaffolds](#)

[Access](#)

[Use](#)

[Additional Requirements](#)

[Pole Scaffolds](#)

[Tube and Coupler Scaffolds](#)

[Fabricated Frame Scaffolds and Carpenters Bracket Scaffolds](#)

[Plasterers and Large Area Scaffolds \(Squares\)](#)

[Bricklayers Square Scaffolds](#)

[Horse Scaffolds](#)

[Form Scaffolds and Carpenters Bracket Scaffolds](#)

[Roof Bracket Scaffolds](#)

[Outrigger Scaffolds](#)

[Pump Jack Scaffolds](#)

[Ladder Jack Scaffolds](#)

[Window Jack Scaffolds](#)

[Crawling Boards \(Chicken Ladders\)](#)

[Step, Platform and Trestle Ladder Scaffolds](#)

[Single-Point Adjustable Suspension Scaffolds](#)

[Two-Point Adjustable Suspension Scaffolds \(Swing Stages\)](#)

[Multi-Point Adjustable Suspension Scaffolds](#)

[Catenary Scaffolds](#)

[Float \(Ship\) Scaffolds](#)

[Interior Hung Scaffolds](#)

[Needle Beam Scaffolds](#)

[Multi-Level Suspended Scaffolds](#)

[Mobile Scaffolds](#)

[Repair Bracket Scaffolds](#)

[Stilts](#)

### **Training**

[Training Requirements](#)

[Recognizing Hazards](#)

[Retraining](#)

### **Manually Propelled Mobile Ladder Stands**

[General Requirements](#)



## 4.1 Ladders

### 4.1.1 Definitions

Refer to [29 CFR 1926 - Subpart X](#), or [29 CFR 1910 - Subpart D](#) for definitions applicable to this chapter.

### 4.1.2 Inspection and Use

Portable ladders shall be inspected by the Project Entity's designated competent person, monthly. Table 4-1, "Quarterly/Monthly Color Codes," shall be used when documenting monthly portable ladder inspections. Safety Form D-4 "Portable Ladder Inspection Log" may be required in addition to quarterly/monthly color-coding, depending on client and/or project entity preference.

| Table 4-1 Quarterly/Monthly Color Codes |                   |
|-----------------------------------------|-------------------|
| QUARTER/MONTH                           | COLOR CODE        |
| January                                 | White             |
| February                                | White and Yellow  |
| March                                   | White and Blue    |
| April                                   | Green             |
| May                                     | Green and Yellow  |
| June                                    | Green and Blue    |
| July                                    | Red               |
| August                                  | Red and Yellow    |
| September                               | Red and Blue      |
| October                                 | Orange            |
| November                                | Orange and Yellow |
| December                                | Orange and Blue   |

Additionally, portable ladders shall be inspected by the end-user prior to use.

Defective ladders shall be withdrawn from service, tagged, or marked "Do Not Use," and removed from the job site.

Metal/aluminum ladders shall be prohibited.

Wooden ladders shall be prohibited, with the exception of job made wooden ladders. Safety Form D-5 "Job Made Ladders Checklist," shall be used to document the inspection of job made wooden ladders.

## 4.2 Scaffolds

### 4.2.1 Definitions

Refer to [29 CFR 1926 - Subpart L](#), or [29 CFR 1910 - Subpart D](#) for definitions applicable to this chapter.



### 4.3 Scaffold Inspection and Tagging

Project Entities shall be required to ensure that scaffolding is inspected by a designated competent person before initial use and prior to each shift thereafter.

Project Entities shall ensure that scaffolding is tagged by a designated competent person, to indicate its suitability for use.

Project Entities shall ensure that scaffold tags are affixed to each scaffold access point in a manner that is readily noticeable.

Scaffolding inspections shall be documented on corresponding scaffold tags and include the inspector's name/initials and date of inspection. When tagging scaffolds Project Entities shall refer to Table 4-2, "Scaffold Tagging Color Codes."

| Table 4-2 Scaffold Tagging Color Codes |  |                         |
|----------------------------------------|--|-------------------------|
| SCAFFOLD TAG COLOR                     |  | PROJECT DEFINITION      |
| Red                                    |  | UNSAFE — Do Not Use     |
| Yellow                                 |  | Warning — Hazard Exists |
| Green                                  |  | Ready to Use            |

Only the scaffold erector is permitted to make modifications to the structure. Scaffold access ladders shall be required. Climbing up the side of scaffolding is not permitted unless the scaffold is designed for such use.

Project Entities shall be responsible for obtaining all permits/licenses and having a registered engineer approve scaffold design when applicable.

### 4.4 Fall Protection

Scaffold decks equal to or greater than 10 feet in height shall require supplemental access protection for the user while ascending or descending the access ladder. Acceptable supplemental protection shall be limited to:

- Self-retracting lifeline attached to an approved anchorage
- Scaffold Ladder cage, either manufactured (preferred), or job-built (when necessary) cages

Personal fall arrest system(s) or fall protection barrier(s) shall be required when use of the scaffold ladder has the potential to expose the user to a secondary fall greater than 6 feet.

Fall protection barriers shall require additional railings, adjacent to the ladder, to prevent falls to lower levels.

### 4.5 Training

Project Entities are to certify employee training using Safety Form C-9, "Certification of Training."



## **Chapter 5**

# **Emergency Action Plans**

### **Chapter Contents**

#### **5 Emergency Action Plans**

##### **[Exit Routes — Resources](#)**

##### **[5.1 Emergency Action Plans](#)**



## Exit Routes

### Design and Construction Requirements for Exit Routes

#### Basic Requirements

The Number of Exit Routes Must Be Adequate

Exit Discharge

Exit Doors Must Be Unlocked

A Side-Hinged Exit Door Must Be Used

The Capacity of an Exit Route Must Be Adequate

Exit Route Must Meet Minimum Height and Width Requirements

An Outdoor Exit Route Is Permitted

### Maintenance, Safeguards, and Operational Features for Exit Routes

The Danger to Workers Must Be Minimized

Lighting and Marking Must Be Adequate and Appropriate

Fire Retardant Properties of Paints or Solutions Must Be Maintained

#### Exit Routes

A Worker Alarm System Must Be Operable

Emergency Action Plans

Application

Written and Oral Emergency Action Plans

Minimum Elements of an Emergency Action Plan

Worker Alarm System

Training

Review of Emergency Action Plan

### Fire Prevention Plans

Application

Written and Oral Fire Prevention Plans

Minimum Elements of a Fire Prevention Plan

Worker Information





## 5.1 Emergency Action Plans

Project Entities shall submit a written Emergency Action Plan using Safety Form E-1, "Emergency Action Plan," prior to commencing work activities.

Project Entity's Emergency Action Plan shall be developed to coordinate with existing facility/owner response plans.

Items addressed in the Project Entity's Emergency Action Plan shall include, but may not be limited to:

- Medical emergencies.
- Fire prevention.
- Hazardous material spills.
- Varying weather conditions.

Project Entities shall review their Emergency Action Plan with affected personnel.

Project Entities shall post their Emergency Action Plan in a conspicuous location to facilitate self-review of the plan, as needed, by affected personnel.

Project Entities shall be expected to update their written Emergency Action Plan, as needed, and to review changes with affected personnel.



## Chapter 6

### Mobile Elevating Work Platforms

#### Chapter Contents

#### 6 Mobile Elevating Work Platforms

##### Mobile Elevating Work Platforms — Resources

##### 6.1 Mobile Elevating Work Platforms

###### 6.1.1 General Requirements

###### 6.1.2 Specific Requirements

###### 6.1.3 Ground Control and Spotter

###### 6.1.4 Fall Restraint

###### 6.1.5 Electrical Clearances

###### Table 6-1 — Alternative Minimum Approach Distances for Voltages of 72.5-kV and Less

###### Table 6-2 — Alternative Minimum Approach Distances for Voltages of More Than 72.5-kV

###### 6.1.6 Required Training



**Mobile Elevating Work Platforms**

**Powered Platforms/Aerial Lifts**

[General Requirements](#)

[Specific Requirements](#)



## **6.1 Mobile Elevating Work Platforms**

### **6.1.1 General Requirements**

Superintendents, general foremen, foremen, or other members of management — i.e., persons supervising workers — shall not operate powered platforms, aerial lifts or scissor lifts.

Powered platforms, aerial lifts and scissor lifts shall only be operated by trained and authorized personnel and within equipment rating/design limitations.

Project Entities shall be required to ensure that powered platforms, aerial lifts and scissor lifts utilized by project personnel are not field modified for uses apart from those intended by the manufacturer; unless the modification has been certified in writing by the manufacturer to be, at least, as safe as the equipment was prior to modification.

### **6.1.2 Specific Requirements**

Powered platforms, aerial lifts and scissor lifts shall be inspected prior to use each day.

Safety Form F-1, "Aerial Lift Inspection," shall be completed and submitted to Burns & McDonnell and/or its subsidiaries to document the inspection, on a weekly basis.

### **6.1.3 Ground Control and Spotter**

Project Entities shall require a ground-person/spotter who is trained in the operation of the powered platform, aerial lift or scissor lift, be present while the equipment is in use.

Ground-persons/spotters may only be assigned responsibility for more than one powered platform, aerial lift and/or scissor lift, when the lifts are visible in the same line of sight and the ground-person/spotter remains capable of both spotting for the lifts and advising others in the vicinity of the overhead hazard.

Each ground-person/spotter shall wear a high-visibility vest while performing their duties.

### **6.1.4 Fall Restraint**

Project Entities shall require that project personnel remain firmly on the floor of powered platforms, aerial lifts and/or scissor lifts.

Project Entities shall prohibit project personnel from standing/sitting on toe boards, mid rails, and top rails of powered platforms, aerial lifts and/or scissor lifts.

Project Entities shall prohibit project personnel from using planks, ladders or other devices to gain elevated work positions while using powered platforms, aerial lifts or scissor lifts.

Project Entities shall require project personnel to use an approved fall restraint system while working from powered platforms, aerial lifts, and scissor lifts. The manufacturer's designated attachment point shall be used to anchor approved fall restraint systems.

Project Entities shall prohibit the use of body belts for fall restraint. Full-body harnesses with shock absorbing lanyard or a self-retracting lifeline shall be required.

Project Entities shall prohibit project personnel from exiting powered platforms and aerial lifts until approval is received from the site management team.



Project Entities shall prohibit project personnel from exiting scissor lifts while at elevation without written approval from the manufacturer and authorization from the site management team.

#### 6.1.5 Electrical Clearances

Project Entities shall be responsible for making certain that powered platforms, aerial lifts and scissor lifts maintain minimum approach distances, when operating near energized lines or equipment, unless the insulated portion of the powered platform, aerial lift or scissor lift is operated by an electrically qualified employee.

Minimum Safe Approach distances for unqualified employees shall be at least 10 feet for lines or energized parts rated 50kV or less. For lines or energized parts rated over 50kV, minimum clearance shall be 10 feet plus 0.4 inches for each 1kV over 50kV.

Refer to Tables 6-1 and 6-2 for Alternative Minimum Approach distances for electrically qualified employees.

| Table 6-1 Alternative Minimum Approach Distances for Voltages of 72.5-kV and Less <sup>1</sup>                                                                                                                                              |                          |      |                         |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------|-------------------------|------|
| NOMINAL VOLTAGE                                                                                                                                                                                                                             | DISTANCE                 |      |                         |      |
| Phase-to-Phase (kV)                                                                                                                                                                                                                         | Phase-to-Ground Exposure |      | Phase-to-Phase Exposure |      |
|                                                                                                                                                                                                                                             | m                        | ft   | m                       | ft   |
| 0.050 to 0.300 <sup>2</sup>                                                                                                                                                                                                                 | Avoid Contact            |      | Avoid Contact           |      |
| 0.301 to 0.750 <sup>2</sup>                                                                                                                                                                                                                 | 0.33                     | 1.09 | 0.33                    | 1.09 |
| 0.751 to 5.0                                                                                                                                                                                                                                | 0.63                     | 2.07 | 0.63                    | 2.07 |
| 5.1 to 15.0                                                                                                                                                                                                                                 | 0.65                     | 2.14 | 0.68                    | 2.24 |
| 15.1 to 36.0                                                                                                                                                                                                                                | 0.77                     | 2.53 | 0.89                    | 2.92 |
| 36.1 to 46.0                                                                                                                                                                                                                                | 0.84                     | 2.76 | 0.98                    | 3.22 |
| 46.1 to 72.5                                                                                                                                                                                                                                | 1.00                     | 3.29 | 1.20                    | 3.94 |
| <b>Notes:</b><br><sup>1</sup> Employers may use the minimum approach distances in this table provided the work site is at an elevation of 900 meters (3,000 feet) or less.<br><sup>2</sup> For single-phase systems, use voltage-to-ground. |                          |      |                         |      |



**Table 6-2 Alternative Minimum Approach Distances for Voltages of More Than 72.5-kV<sup>1, 2, 3</sup>**

| NOMINAL VOLTAGE     | DISTANCE                 |       |                         |       |
|---------------------|--------------------------|-------|-------------------------|-------|
| Phase-to-Phase (kV) | Phase-to-Ground Exposure |       | Phase-to-Phase Exposure |       |
|                     | m                        | ft    | m                       | ft    |
| 72.6 to 121.0       | 1.13                     | 3.71  | 1.42                    | 4.66  |
| 121.1 to 145.0      | 1.30                     | 4.27  | 1.64                    | 5.38  |
| 145.1 to 169.0      | 1.46                     | 4.79  | 1.94                    | 6.36  |
| 169.1 to 242.0      | 2.01                     | 6.59  | 3.08                    | 10.10 |
| 242.1 to 362.0      | 3.41                     | 11.19 | 5.52                    | 18.11 |
| 362.1 to 420.0      | 4.25                     | 13.94 | 6.81                    | 22.34 |
| 420.1 to 550.0      | 5.07                     | 16.63 | 8.24                    | 27.03 |
| 550.1 to 800.0      | 6.88                     | 22.57 | 11.38                   | 37.34 |

**Notes:**

<sup>1</sup> Employers may use the minimum approach distances in this table provided the work site is at an elevation of 900 meters (3,000 feet) or less.

<sup>2</sup> Employers may use the phase-to-phase minimum approach distances in this table provided that no insulated tool spans the gap and no large conductive object is in the gap.

<sup>3</sup> The clear live-line tool distance shall equal, or exceed, the values for the indicated voltage ranges

If there is a potential for contact with energized lines or equipment while operating a powered platform, aerial lift, or scissor lift; then the Project Entity shall ensure that one of the following courses of action are taken:

- The energized lines exposed to contact shall be covered with insulating protective material, capable of withstanding the type of contact that has the potential to be made during the operation.
- The powered platform, aerial lift, or scissor lift shall be insulated; and uninsulated portions of the powered platform, aerial lift, or scissor lift shall maintain the minimum approach distance from live parts.
- The powered platform, aerial lift or scissor lift shall also be positioned so that uninsulated portions of the lift cannot come within the minimum approach distance of the live parts.
- Project personnel shall be protected by implementing the following:
  - Each piece of equipment — e.g., lifts, trucks, trailers, etc. — will be grounded.
  - All pieces of equipment are to be bonded together.
  - Ground mats shall be used around equipment to extend the equipotential zone.
  - Insulating protective equipment or barricades shall be used around the equipotential zone.

**Note:** Insulated booms require electrical testing at voltages and intervals specified in ANSI A92.2. An untested boom, or one that fails a test, is considered non-insulating.



#### 6.1.6 Required Training

Project Entities shall be required to provide training for project personnel regarding hazards associated with the use of powered platforms, aerial lifts and scissor lifts. Training shall, at minimum, include:

- Manufacturer's instructions for operating powered platforms, aerial lifts, and/or scissor lifts, vertically and while in transit.
- How to handle materials on powered platforms, aerial lifts or scissor lifts, including weight limits.
- Other work-site hazards employees may encounter while working from a powered platform, aerial lift or scissor lift — e.g., contact with electrical wires.
- Powered platform, aerial lift and scissor lift equipment defect and/or maintenance needs reporting.

Project Entities shall document training using Safety Form C-9, "Certification of Training," and submit the form to Burns & McDonnell and/or its subsidiaries.

## Chapter 7

# Confined Spaces in Construction

### Chapter Contents

#### 7 Confined Spaces in Construction

##### Confined Spaces — Resources

##### 7.1 Confined Spaces in Construction

###### 7.1.1 General Requirements

###### 7.1.2 Definitions

##### 7.2 Project Entity Site Leadership

##### 7.3 Confined Space — Project Communication and Coordination

###### 7.3.1 Pre-Entry Information Exchange

###### 7.3.2 Post-Entry Information Exchange

##### 7.4 Entry Permit

###### 7.4.1 Permit Contents

###### 7.4.2 Permit Management

###### 7.4.2.1 Preplanning

###### 7.4.3 Recordkeeping

##### 7.5 Confined Space Entry Procedures

###### 7.5.1 Competent Person

###### 7.5.2 Written Program

###### 7.5.3 Classification of Confined Spaces

###### 7.5.4 Preparation for Entry

###### 7.5.5 Changes to Work Environment During Work Activities

###### 7.5.6 Permit-Required Confined Space Program

##### 7.6 Training

###### 7.6.1 Duties of Authorized Entrants

###### 7.6.2 Duties of Attendants

###### 7.6.3 Duties of Entry Supervisors

##### 7.7 Rescue Planning

###### 7.7.1 Project Entity Employee Rescue Personnel



## **Confined Spaces**

### **Confined Spaces in Construction**

- [Reserved](#)
- [Scope](#)
- [Definitions](#)
- [General requirements](#)
- [Permit-Required Confined Space Program](#)
- [Permitting Process](#)
- [Entry Permit](#)
- [Training](#)
- [Duties of Authorized Entrants](#)
- [Duties of Attendants](#)
- [Duties of Entry Supervisors](#)
- [Rescue and Emergency Services](#)
- [Employee Participation](#)
- [Provision of Documents to Secretary](#)

### **Sewer System Entry**

- [Scope and Application](#)
- [Potential Hazards](#)
- [Entry Permits](#)
- [Control of Atmospheric and Engulfment Hazards](#)
- [Entry Procedures](#)
- [Alternate Entry](#)



## **7.1 Confined Spaces in Construction**

### **7.1.1 General Requirements**

All confined spaces shall be classified as permit required unless they have been declassified using Safety Form C-6B, "Confined Space Hazard Evaluation."

Permit-required confined space entry shall not be allowed prior to the completion of a Confined Space Entry Permit and a pre-entry review have been documented and conducted with the entire authorized crew.

Where this procedure applies, and a more stringent provision exists for addressing a confined space hazard — in another applicable Occupational Safety and Health Administration (OSHA) plan or host employer program — the subcontractor must comply with both that requirement and the applicable provisions set forth in this procedure.

Project Entities that intend to enter a confined space shall be responsible for ensuring that a competent person identifies all confined spaces in which one or more of the employees it directs may work; and identifies — through consideration and evaluation, including testing as needed — all the elements of that space which may be potentially hazardous.

Each Project Entity who identifies, or receives notice of, a confined space but has not authorized the employees it directs to work in that space, must take effective measures to prevent those employees from entering that confined space, in addition to complying with all other applicable requirements laid out in this chapter.

If any Project Entity determines that its employees are to enter a permit-required confined space, said Project Entity shall have a written, Permit-Required Confined Space Program which meets, or exceeds, the safety controls prescribed in this chapter; complies with all elements of this chapter; and is approved for implementation at the construction site. The written program shall be made available for inspection by employees and their authorized/competent representatives both prior to, and during, entry operations.

Project Entities shall consult with affected employees and their authorized representatives regarding the implementation of all aspects of the controlling confined space program.

Project Entities shall develop all information required by this chapter and make it available to each affected employee and his/her authorized/competent representatives.

### **7.1.2 Definitions**

Refer to [29 CFR 1926 Subpart AA](#) for definitions applicable to this chapter.

## **7.2 Project Entity Site Leadership**

Project Entity site leadership shall:

- Inform its employees, authorized representatives and the controlling contractor — in a timely manner and in a manner other than posting — of the existence and location of, as well as the danger posed by, each confined space.
- Implement daily task planning, including the execution of this program as applicable on the job site, along with correcting any unsafe acts or conditions they become aware of which could result in hazardous conditions.





- Inform involved employees by posting danger signs — or by any other equally effective means — of the existence and location of, along with the danger posed by, each confined space; and shall post a sign at the entrance of each confined space reading, or using similar language to:

**“DANGER — PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER.”**

### **7.3 Confined Space — Project Communication and Coordination**

#### **7.3.1 Pre-Entry Information Exchange**

The host employer shall provide the following information to the controlling contractor:

- Location of each known confined space.
- Hazards, or potential hazards, in each space or the reason it is a permit-required confined space.
- Any precautions that the host employer, or any previous contractor, implemented for the protection of employees in the confined space.

Safety Form C-6A, “Confined Space Host-Subcontractor/Contractor Information Transfer,” shall be used to document the transfer of information.

The controlling contractor shall:

- Review the host employer’s information concerning the confined space hazards and any previous entry operations.
- Provide the following information to personnel entering a confined space and to any Project Entities at the work site whose activities could foreseeably result in a hazard being introduced into the confined space:
  - The applicable information received from the host employer.
  - Any additional information the controlling contractor possesses concerning the confined space.
  - Precautions implemented to protect employees in the confined space.
  - Obtain all relevant information from the subcontractor relating to confined space hazards and entry operations.
  - Inform the host employer of the confined space program that the subcontractor will follow, including any hazards likely to be confronted and/or created in each confined space.

The controlling contractor and all applicable Project Entities shall coordinate entry operations when more than one company is to perform confined space entry at the same time.

#### **7.3.2 Post-Entry Information Exchange**

The controlling contractor shall debrief each Project Entity that entered a confined space about the entry program followed, as well as any hazards confronted or created in the space(s) during entry operations.



The entry Project Entity shall inform the controlling contractor, in a timely manner, of the confined space program which was followed, along with any hazards confronted or created in the confined space(s) during entry operations.

The controlling contractor shall apprise the host employer of the information exchanged.

If no controlling contractor is present at the work site, the requirements for, and role of, a controlling contractor — as described in this chapter — shall be fulfilled by the host employer or their designee, who arranges to have employees of a different subcontractor perform work.

## **7.4 Entry Permit**

### **7.4.1 Permit Contents**

The entry permit documents compliance with this chapter, authorizes entry to a permit-required confined space, and shall identify the following:

- Permit space to be entered.
- Purpose of the entry.
- Date and authorized duration of the entry permit.
- Authorized entrants within the permit space, by name or by such other means — for example, through the use of rosters or tracking systems — enabling the attendant to determine quickly and accurately the duration of the permit, and which authorized entrants are inside the permit space.
- Means of detecting an increase in atmospheric hazard levels within the confined space.
- Name of each person currently serving as an attendant.
- Name of individual currently serving as entry supervisor, and the signature or initials of each entry supervisor who authorized entry.
- Hazards of the permit space to be entered.
- Measures used to isolate the permit space to eliminate or control all permit space hazards prior to entry.
- Acceptable entry conditions.
- Results of tests and monitoring performed, accompanied by the names or initials of the testers, and an indication of when the tests were performed.
- Rescue and emergency services that can be summoned, if necessary, and the means used to summon those services — e.g., the equipment to use and the numbers to call.
- Communication procedures used by authorized entrants and attendants to maintain contact during the entry.
- Equipment — such as personal protective equipment (PPE), testing equipment, communications equipment, alarm systems, and rescue equipment — to be provided for compliance with this chapter.



- Any other information necessary to ensure employee safety, given the circumstances of the confined space.
- Any additional permits — such as for hot work — that have been issued to authorize work in the permit space.

Safety Form C-7, “Work Permit,” shall be used to meet the permitting requirements of this chapter.

## 7.4.2 Permit Management

### 7.4.2.1 Preplanning

Before entry is authorized, each entry subcontractor is expected to document the completion of measures required in this chapter by preparing an entry permit.

Before entry begins, the entry supervisor identified on the permit must sign the entry permit to authorize entry.

The completed permit shall be made available to all authorized entrants, or their authorized representatives, at the time of entry. This is to be done by posting the permit at the entry portal — or using any other equally effective means — so that entrants are able to confirm that all pre-entry preparations have been completed.

The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.

The entry supervisor shall terminate entry and take the appropriate action(s) — as specified below — when any of the following situations arise:

- Cancel the entry permit when the entry operations covered by the entry permit have been completed.
- Suspend or cancel the entry permit and fully reassess the space before allowing re-entry when a condition that is not allowed under the entry permit arises in or near the permit space; and that condition is temporary in nature, does not change the configuration of the space, and does not create any new hazards within the space.
- Cancel the entry permit when a condition that is not allowed under the entry permit arises in or near the permit space.

### 7.4.3 Recordkeeping

The entry Project Entity shall retain each cancelled entry permit for at least one year to facilitate the review of the Permit-Required Confined Space Program. Any problems encountered during an entry operation are to be noted on the applicable permit to enable appropriate revisions of the Permit-Required Confined Space Program.

## 7.5 Confined Space Entry Procedures

### 7.5.1 Competent Person

Project Entities shall be responsible for designating a competent person to identify all confined spaces in which one or more of their employees will be entering.



Project Entities shall be responsible for classifying each confined space according to the observed hazards.

Project Entities shall be responsible for:

- Posting danger signs at each confined space.
- Informing employees of the existence and location of, as well as the danger posed by each confined space.
- Guarding confined spaces to prevent unauthorized persons from gaining access until entry is authorized.

#### 7.5.2 Written Program

Prior to entry, each Project Entity shall provide a written confined space entry program. The written program shall be available prior to, and during, entry operations.

#### 7.5.3 Classification of Confined Spaces

Declassifying a permit-required confined space shall require the entry Project Entity to:

- Demonstrate that all physical hazards in the space have either been eliminated or isolated, through engineering controls.
- Show that the only hazard posed by the confined space is an actual, or potential, hazardous atmosphere.
- Show that continuous forced air ventilation alone is sufficient to maintain the confined space safe for entry.
- If the ventilation system stops working, entrants shall immediately exit the space safely.
- Verify with monitoring and inspection data that all hazards are controlled.
- Make the supporting information, which was used to declassify the space, available to employees.
- Follow the requirements for non-permit confined space entry.

#### 7.5.4 Preparation for Entry

Project Entities shall be responsible for ensuring that any condition making it unsafe to remove an entrance cover, is eliminated prior to cover removal.

- When entrance covers are removed, the opening shall be immediately guarded by a railing, temporary cover, or other temporary barrier, which will prevent an accidental fall through the opening and will protect each employee working in the space from foreign objects entering the space.

Prior to entry, Project Entities shall be responsible for testing the internal atmosphere of the space, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order —



using a calibrated direct-reading instrument. Any employee entering the space is to have an opportunity to observe pre-entry testing.

Project Entities are expected to ensure atmospheric testing equipment is bump-tested prior to use each day. Safety Form G-8, "Portable Multi Gas Monitor Bump Test," is to be used to document the results of the bump test.

Continuous forced air ventilation shall be used, as follows:

- Confined space entry shall be prohibited until the forced air ventilation has eliminated any hazardous atmosphere.
- Forced air ventilation is to be directed to ventilate the immediate areas where an employee is, or will be, present in the space; and is to continue until all employees have left the space.
- Air supply for the forced air ventilation must be from a clean source and must not increase the hazards in the space.

Atmospheric conditions within the space shall be continuously monitored, unless the Project Entity can demonstrate that periodic monitoring is sufficient. If continuous monitoring is done, make sure monitoring equipment has an alarm which will notify all entrants if an atmospheric threshold is achieved.

If continuous monitoring is not used, periodic monitoring will be required. All monitoring must ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Any employee entering the space must have an opportunity to observe the testing.

If a hazard is detected during entry:

- Each employee shall leave the space immediately.
- The space shall be evaluated to determine how the hazard developed.
- The Project Entity shall implement measures to protect employees from the hazard before any subsequent entry takes place.

Project Entities shall ensure a safe method of entering and exiting the space has been established. If a hoisting system is used, it shall be designed and manufactured for personnel hoisting.

#### **7.5.5 Changes to Work Environment During Work Activities**

When there are changes to a confined space which might increase hazards to entrants, or if there is an indication that the initial evaluation of the space may not have been adequate, the Project Entity shall have the designated competent person reevaluate the space and, if necessary, reclassify it as a permit-required confined space. A space classified as a permit-required confined space may only be reclassified as a non-permit confined space when:

- The Project Entity's designated competent person has completed Safety Form C-6B, "Confined Space Hazard Evaluation," documenting that the applicable requirements have been met.
  - Project Entities shall document that all hazards in a confined space have been eliminated or isolated, through a certification containing the date, location of the space, and signature of the person making the determination. The certification shall be made available to each employee entering the space.





- If the confined space has no actual or potential atmospheric hazards, and all physical hazards within the space have either been eliminated or isolated, without entering the space:
  - Project Entities shall eliminate or isolate the hazards without entering the space unless it is infeasible to do so. If it is necessary to enter the confined space to eliminate or isolate hazards, said entry shall be performed as a permit-required entry.
- If testing and inspection demonstrate that the hazards within the confined space have been eliminated or isolated, the confined space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated/isolated.

#### 7.5.6 Permit-Required Confined Space Program

Entry Project Entities shall:

- Implement the measures needed to prevent unauthorized entry.
- Identify and evaluate the hazards of permit spaces before employees enter them.
- Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:
  - Specifying acceptable entry conditions.
  - Providing each authorized entrant, or that employee's authorized/competent representative, with the opportunity to observe any atmospheric monitoring or testing of permit spaces.
  - Isolating the permit space and physical hazard(s) within the space.
  - Purging, inerting, flushing, or ventilating the permit space as needed to eliminate or control atmospheric hazards.
  - Providing pedestrian, vehicle, or other barriers necessary for protecting entrants from external hazards.
  - Verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry and ensuring that employees are not allowed to enter into, or remain in, a permit space with a hazardous atmosphere; unless the Project Entity can demonstrate that PPE will provide effective protection for each employee in the permit space and provides the appropriate PPE to each employee.
  - Eliminating any conditions that could make it unsafe to remove an entrance cover.

#### 7.6 Training

Project Entities shall be responsible for providing training to each employee whose work is regulated by this chapter and for ensuring that the employee possesses the understanding, knowledge, and skills necessary for the safe performance of the duties assigned to them under this plan.

This training is to result in an understanding of the hazards in the confined space; the methods used to isolate, control, or in other ways protect employees from these hazards; and — for those employees not authorized to perform entry rescues — a comprehension of the dangers of attempting such rescues.



Training required by this chapter shall be provided to each affected employee:

- In both a language and vocabulary that the employee can understand.
- Before the employee is assigned any duties under this plan.
- Before any change in assigned duties.
- Whenever there is a change in confined space entry operations, that presents a hazard about which the employee has not previously been trained.
- When there is any evidence of a deviation from the confined space entry procedures, or there are inadequacies in the employee's knowledge and/or use of these procedures.

Training shall establish employee proficiency in the duties required by this chapter and must introduce new or revised procedures, as needed, to facilitate compliance.

Prior to entering confined spaces, employees shall be trained in:

- Confined Space Program roles and responsibilities.
- Basic knowledge of atmospheric monitoring criteria.
- Permitting methods — permit/non-permit.
- Communication methods.
- Respirator use, if required.
- Fire prevention and the use of applicable fire suppression equipment.
- The hazards and safe work practices specific to each confined space entry.
- Emergency procedures for non-entry rescue and emergency personnel notification requirements for entry rescue.
- Entry supervisor, qualified entrant and attendant responsibilities.

All Confined Space Training is to be documented using Safety Form C-9, "Certification of Training," and submitted to Burns & McDonnell and/or its subsidiaries.

#### **7.6.1 Duties of Authorized Entrants**

Entry Project Entities shall ensure that all authorized entrants understand and are familiar with the hazards they may face during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

Additionally, entry Project Entities shall be responsible for making certain that authorized entrants are able to demonstrate their knowledge of how to:

- Properly use equipment.



- Communicate with the attendant, as needed, thereby enabling the attendant to assess entrant status and alert entrants of the need to evacuate the space.
- Alert the attendant when:
  - There is any warning sign or symptom of exposure to a dangerous situation.
  - The entrant detects a prohibited condition.
- Exit the confined space as quickly as possible when:
  - An order to evacuate is given by the attendant or the entry supervisor.
  - There is any warning sign or symptom of exposure to a dangerous situation.
  - The entrant detects a prohibited condition.
  - An evacuation alarm is activated.

#### 7.6.2 Duties of Attendants

Entry Project Entities shall ensure that each attendant understands and is familiar with the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of hazard exposure.

In addition, all attendants shall:

- Be aware of the potential behavioral effects which may be exhibited by authorized entrants as a result of hazard exposure.
- Continuously maintain an accurate count of authorized entrants in the confined space; and make sure that the method used to identify authorized entrants, accurately reflects which individuals are present in the confined space.
- Remain outside the confined space during entry operations, until relieved by another attendant.
- Communicate with authorized entrants, as needed, to assess entrant status and to alert entrants if they need to evacuate the space.
- Assess activities and conditions, both inside and outside the confined space, to determine if it is safe for entrants to remain in the space.
- Order the authorized entrants to evacuate the confined space immediately under any of the following conditions:
  - If there is a prohibited condition.
  - If it is apparent that an authorized entrant is exhibiting the behavioral effects of hazard exposure.
  - If a situation arises outside of the space which could endanger the authorized entrant(s).



- If the attendant is not able to effectively and safely perform all the duties required under Section 7.6.2.
- Summon rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape confined space hazards.
- Take the following actions when unauthorized persons approach or enter a confined space while entry is underway:
  - Warn the unauthorized persons they must stay away from the confined space.
  - Advise the unauthorized persons they must exit immediately, if they have entered the confined space.
  - Inform the authorized entrants and entry supervisor if unauthorized persons have entered the confined space.
- Perform non-entry rescues, as specified by the employer's rescue procedure.
- Perform no duties that might interfere their primary duty to assess and protect the authorized entrants.

### 7.6.3 Duties of Entry Supervisors

Entry Project Entities shall ensure that each entry supervisor understands and is familiar with the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of hazard exposure.

In addition, they shall:

- Verify — by checking that the appropriate entries have been made on the permit — that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
- Terminate the entry and cancel or suspend the permit, as needed.
- Verify that rescue services are available, that the means used for summoning them are operable, and that the Project Entity will be notified in the event that the services become unavailable.
- Remove unauthorized individuals who enter, or who attempt to enter, the confined space during entry operations.
- Determine, whenever responsibility for a confined space entry operation is transferred, and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with the terms of the entry permit and that acceptable entry conditions are maintained.

## 7.7 Rescue Planning

Prior to initiating a permit-required confined space entry, Project Entities shall:

- Inform each rescue team/service of the hazards they may confront if called on to perform a rescue at the site.



- Provide the rescue team/service selected with access to all permit-required confined spaces from which rescue may be necessary, thus enabling the rescue team/service to develop and practice appropriate rescue operations.
- Provide a written copy of operating and rescue procedures — as required by this chapter — at the work site for the duration of the job.

#### 7.7.1 Project Entity Employee Rescue Personnel

A Project Entity whose employees have been designated to provide confined space rescue and/or emergency services, shall provide all equipment and training at no cost to those employees. Project Entities shall be responsible for the following:

- Providing each affected employee with the PPE needed to conduct confined space rescues safely; and train each affected employee so the employee is proficient in the use of said PPE.
- Training each affected employee to perform assigned rescue duties, as well as ensuring that these employees have successfully completed the required training and have established proficiency as authorized entrants.
- Training each affected employee in basic first aid and cardiopulmonary resuscitation (CPR). The Project Entity shall ensure that at least one member of the rescue team/service holds a current certification in basic first aid and CPR is immediately available.
- Ensuring that designated employees practice performing confined space rescues prior to attempting an actual rescue.
  - Such practice rescues must be conducted at least once every 12 months, by means of simulated rescue operations. In simulated rescue operations, members of the rescue team are to remove dummies, manikins, or real persons from either the actual confined spaces or from representative confined spaces.
  - Practice rescue is not required if the affected employees properly performed a rescue operation in the applicable confined space, or in a similar confined space, at some point in the 12 months prior.
  - Representative confined spaces shall — with respect to opening size, configuration and accessibility — simulate the types of confined spaces in which a rescue may be performed.

Non-entry rescue is required unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant(s).

The Project Entity shall designate an entry rescue team/service whenever non-entry rescue is not possible.

In cases where non-entry rescue is performed, the entry Project Entity shall ensure appropriate retrieval systems or methods are used any time an authorized entrant enters a confined space. Entry Project Entities shall also confirm prior to entry, that emergency assistance is available in the event that non-entry rescue efforts fail.

Retrieval systems shall meet the following requirements:

- Each authorized entrant must use a chest or full-body harness, with a retrieval line attached.





- Retrieval lines must be attached to the harness at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which the subcontractor is able to establish presents a profile small enough for the successful removal of the entrant from the confined space.
  - Wristlets or anklets may be used in lieu of the chest or full-body harness if the Project Entity can demonstrate that the use of a chest or full-body harness is either infeasible or creates a greater hazard; and that the use of wristlets or anklets is the safest and most effective alternative.
- The other end of the retrieval line shall be attached to a mechanical device or fixed point outside of the confined space in a manner that enables the rescuer to take immediate action upon learning that rescue is necessary.
- A mechanical device must be available to retrieve personnel from vertical confined spaces that are more than 5 feet deep.

Equipment that is unsuitable for retrieval shall not be used. Unsuitable retrieval equipment includes, but is not limited to:

- Retrieval lines that have a reasonable probability of becoming entangled with the retrieval lines of other authorized entrants.
- Retrieval lines which will not work due to the internal configuration of the confined space.

If an injured entrant is exposed to a substance which requires that a Safety Data Sheet (SDS) or similar written information be kept at the work site, that SDS/written information shall be made available to the medical facility responsible for treating the exposed entrant.



## **Chapter 8**

# **Process Safety Management and HAZWOPER**

### **Chapter Contents**

#### **8 Process Safety Management and HAZWOPER**

[\*\*Process Safety Management of Highly Hazardous Chemicals — Resources\*\*](#)  
[\*\*HAZWOPER — Resources\*\*](#)



## **Process Safety Management of Highly Hazardous Chemicals**

### **Process Safety Management of Highly Hazardous Chemicals**

#### **Application**

#### **Definitions**

#### **Employee Participation**

#### **Process Safety Information**

#### **Process Hazard Analysis**

#### **Operating Procedures**

#### **Training**

#### **Contractors**

#### **Pre-Startup Safety Review**

#### **Mechanical Integrity**

#### **Hot Work Permit**

#### **Management of Change**

#### **Incident Investigation**

#### **Emergency Planning and Response**

#### **Compliance Audits**

#### **Trade Secrets**

#### **Appendix A — Toxics and Reactives**

#### **Appendix B — Block Flow Diagram and Simplified Process Flow Diagram**

##### **Diagram (a) — Block Flow**

##### **Diagram (b) — Process Flow**

#### **Appendix C — Compliance Guidelines and Recommendations for Process Safety Management**

#### **Appendix D — Sources of Further Information**



## HAZWOPER

**Hazardous Waste Operations and Emergency Response**

**Scope, Application and Definitions**

**Health & Safety Program**

**Site Characterization and Analysis**

**Site Control**

**Training**

**Medical Surveillance**

**Engineering Controls, Work Practices, and Personal Protective Equipment**

**Monitoring**

**Informational Programs**

**Handling Drums and Containers**

**Decontamination**

**Emergency Response by Workers at Uncontrolled Hazardous Waste Sites**

**Illumination**

**Sanitation at Temporary Workplaces**

**New Technology Programs**

**Certain Operations Conducted Under the Resource Conservation & Recovery Act Of 1976**

**Emergency Response Program to Hazardous Substance Releases**

## Chapter 9

### Personal Protective Equipment

#### Chapter Contents

#### 9 Personal Protective Equipment

##### Personal Protective Equipment — Resources

##### 9.1 Personal Protective Equipment (PPE)

###### 9.1.1 General Requirements

##### 9.2 Eye and Face Protection

###### 9.2.1 Basic Eye Protection

###### 9.2.2 Prescription Safety Glasses

###### 9.2.3 Face Shields

###### 9.2.4 Chemical Goggles

###### 9.2.5 Burning Goggles/Face Shield

###### 9.2.6 Welding Hoods

###### 9.2.7 Eye Protection Inspection

##### 9.3 Head Protection

###### 9.3.1 Issuance of Head Protection

###### 9.3.2 Inspection

###### 9.3.3 General Requirements

##### 9.4 Hearing Protection

###### 9.4.1 General Requirements

###### 9.4.2 Training

##### 9.5 Hand Protection

###### Table 9-1 — Hand Protection Reference Guide

##### 9.6 Foot Protection

###### 9.6.1 Basic Foot Protection

###### 9.6.2 Special Purpose Footwear

###### 9.6.2.1 Foot Protectors

##### 9.7 Clothing Policy

###### 9.7.1 Standard Work Clothing

###### 9.7.2 Specialized Work Clothing

##### 9.8 Respiratory Protection

###### 9.8.1 General Requirements

###### 9.8.2 Duration of Respiratory Protection Use

###### 9.8.3 Selection of Respirators

###### 9.8.4 Assigned Protection Factors (APF)

###### Table 9-2 — Respirator Assigned Protection Factor

###### 9.8.5 Fit Testing

###### 9.8.6 Field Tests

###### 9.8.7 Voluntary Use

###### 9.8.8 Inspection, Cleaning, Maintenance and Storage

###### 9.8.9 Respiratory Program Evaluation

###### 9.8.10 Training and Information



**9.9 Personal Hydrogen Sulfide (H<sub>2</sub>S) Monitors****9.9.1 General Requirements****9.9.2 Care, Use and Storage****9.9.3 Proper Placement****9.9.4 Training****9.10 Personal Floatation Devices****9.10.1 Working Over or Near Water, Barges, and Boats****9.10.2 Personal Floatation Devices (PFDs)****9.10.3 Throwable Devices (Type IV PFD)****Figure 9-1 — Personal Floatation Devices**



## Personal Protective Equipment

### General Requirements

- [Application](#)
- [Worker-Owned Equipment](#)
- [Design](#)
- [Defective and Damaged Equipment](#)

### Eye and Face Protection

- [General Requirements](#)
- [Criteria for Protective Eye and Face Protection](#)

### Head Protection

- [General Requirements](#)
- [Criteria for Protective Helmets](#)

### Hearing Protection

- [General Requirements](#)

### Hand Protection

- [General Requirements](#)
- [Selection](#)

### Foot Protection

- [General Requirements](#)
- [Criteria for Protective Footwear](#)

### Clothing Policy

- [Standard Work Clothing](#)
- [Specialized Work Clothing](#)

### Respiratory Protection

- [Permissible Practice](#)
- [Respiratory Protection Program](#)
- [Selection of Respirators](#)
- [Medical Evaluation](#)
- [Fit Testing](#)
- [Use of Respirators](#)
- [Maintenance and Care of Respirators](#)
- [Breathing Air Quality and Use](#)
- [Identification of Filters, Cartridges and Canisters](#)
- [Training and Information](#)
- [Appendix B-2 — Respirator Cleaning Procedures](#)
- [Appendix C — OSHA Respirator Medical Evaluation Questionnaire](#)
- [Appendix D — Information for Workers Using Respirators When Not Required](#)

### Respiratory Protection Program

- [Respirator Selection](#)
- [Training](#)
- [Fit Testing](#)
- [Tests](#)
- [Medical Evaluations](#)
- [Work Area Surveillance](#)
- [Unknown Atmospheres](#)
- [Additional Considerations](#)



**Personal Hydrogen Sulfide (H<sub>2</sub>S) Monitors**

[General Requirements](#)

[Care, Use and Storage](#)

**Personal Floatation Devices**

[Working Over or Near Water](#)



## **9.1 Personal Protective Equipment (PPE)**

### **9.1.1 General Requirements**

Project Entities shall require the use of appropriate personal protective equipment (PPE) in all operations where personnel may be exposed to hazardous conditions, or where the Project Safety & Health Program indicates the need for such equipment to be used to reduce the hazards to project personnel.

## **9.2 Eye and Face Protection**

### **9.2.1 Basic Eye Protection**

Project personnel shall be required to wear ANSI approved industrial safety glasses with side shields, unless in a designated break or office area where no hazards exist that would require their use.

Safety glasses shall meet current ANSI Z87 requirements and bear a legible, permanent “Z87” logo to indicate compliance with the standard.

It shall be the responsibility of the Project Entity site management team to ensure proper fit of the selected eye protection.

### **9.2.2 Prescription Safety Glasses**

Prescription safety glasses shall meet current ANSI Z87 requirements and bear a legible, permanent “Z87” logo to indicate compliance with the standard.

It shall be the responsibility of the Project Entity site management team to ensure proper fit of the selected eye protection.

### **9.2.3 Face Shields**

Project personnel shall be required to use an approved full-face shield to protect themselves from flying particles, splash hazards, or mists. Additional eye protection shall be worn in conjunction with the face shield — e.g., safety glasses, mono goggles, etc.

Tasks that dictate the use of a face shield include, but are not limited to, the following:

- Blowing
- Chipping
- Grinding
- Hot tar work
- Liquid metal work
- Pneumatic tool use
- Handling of hazardous liquids/chemicals
- Scraping



#### 9.2.4 Chemical Goggles

Project personnel shall be required to use approved chemical mono-goggles to protect themselves from the hazards associated with handling or dispensing hazardous liquids/chemicals.

Chemical goggle selection shall be based on manufacturer recommendations as outlined in the applicable Safety Data Sheet (SDS).

#### 9.2.5 Burning Goggles/Face Shield

Project personnel shall be required to wear approved burning goggles/face shield — protective shade number 5 or darker — when using an oxy-fuel gas torch for cutting or burning, to protect themselves from ultra-violet radiation.

#### 9.2.6 Welding Hoods

Project personnel shall be required to wear a welding hood — protective shade number 10 or darker — to protect themselves from ultra-violet rays produced during electric arc welding. Approved safety glasses with side shields shall be worn in addition to the welding hood.

#### 9.2.7 Eye Protection Inspection

Eye and face protection shall be inspected daily by the wearer to ensure serviceability.

### 9.3 Head Protection

Project personnel shall be required to wear an approved hard hat, unless in a designated break or office area where no hazards exist that would require their use.

Hard hats shall meet current ANSI Z89 Standard for Type I/II, Class E/G.

The use of metal hard hats, bump caps and/or cowboy/western-style hard hats is prohibited.

#### 9.3.1 Issuance of Head Protection

An approved hard hat shall be issued to all employees upon hire. All hard hats shall be worn brim forward and shall be labeled with the employee's name on the front.

#### 9.3.2 Inspection

Hard hats shall be inspected daily by the wearer to ensure serviceability.

#### 9.3.3 General Requirements

Hard hats shall conform to the approved, current ANSI Z89 specifications.

Project Entities shall prohibit project personnel from:

- Drilling holes in the shell of the hard hat.
- Altering the shape of the hard hat or brim.
- Removing the suspension straps or cutting/altering them in any way.





- Painting the hard hat.

## 9.4 Hearing Protection

### 9.4.1 General Requirements

Hearing protection shall be made available at no cost to all project personnel whose exposure equals or exceeds 85 dBA TWA and required for all project personnel who work in areas where exposure may equal or exceed the limiting values in [OSHA Standard 1910.95 App A, Table G-16A](#).

If a Project Entity employee has experienced a Standard Threshold Shift (STS), the employee is required to wear hearing protection if the noise exposure equals or exceeds 85 dBA.

Project personnel shall be given the opportunity to select their hearing protectors from a variety of suitable hearing protectors.

Each hearing protector available for selection shall have a Noise Reduction Rating (NRR) sufficient to reduce the noise level below 90 dBA.

Hearing protectors shall be replaced as needed.

Hearing protectors shall be periodically evaluated to ensure that the hearing protection attenuates noise levels to less than 90 dBA, or less than 85 dBA for workers who have experienced a threshold shift. Methods specified in Appendix B of the OSHA Occupational Noise Exposure [Standard](#) shall be utilized.

The adequacy of hearing protector attenuation shall be reevaluated whenever project personnel noise exposures increase to the extent that the hearing protectors initially supplied may no longer provide adequate attenuation. More effective hearing protectors shall be provided, if necessary, based on the results of this evaluation.

Project personnel who are required to wear hearing protectors shall be trained in the proper use, care, and fitting of the hearing protectors issued to them.

### 9.4.2 Training

Project personnel exposed to noise levels at or above a TWA of 85 dBA shall be included in an Annual Hearing Conservation Training Program.

Initial training shall be provided upon assignment to a project that has been identified as having a noise exposure level above the 85 dBA TWA.

Training shall be provided annually thereafter.

## 9.5 Hand Protection

Project personnel shall be required to use appropriate hand protection, unless in a designated break or office area where no hazards exist that would require their use.

Appropriate hand protection shall be selected based upon evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, the hazards/potential hazards identified, and in accordance with the minimum requirements of Table 9-1, "Hand Protection Reference Guide."

**Table 9-1 Hand Protection Reference Guide**

| ACTIVITY/EXPOSURE                                 | GLOVE TYPE                                                 |
|---------------------------------------------------|------------------------------------------------------------|
| Light lifting, moving boxes, etc.                 | Leather or cut-resistant                                   |
| Handling lumber, steel, rebar, etc.               | Leather or cut-resistant                                   |
| Exposure to sharp edges, glass, box cutters, etc. | Cut resistant                                              |
| Exposure to open flame or molten metal, etc.      | Insulating gloves with gauntlet cuff (welding glove, etc.) |
| Low Temperature                                   | Insulating gloves                                          |
| Electrical                                        | Use appropriate PPE for high voltage — NFPA 70E            |
| Chemicals                                         | Refer to SDS/manufacturer recommendations                  |

The Project Entity site management team shall be responsible for evaluating hazard exposures and ensuring affected personnel wear appropriate hand protection.

## 9.6 Foot Protection

### 9.6.1 Basic Foot Protection

Project personnel shall be required to wear safety-toe boots meeting the requirements of ASTM F2413-1, unless in a designated break or office area where no hazards exist that would require their use.

Safety-toe boots shall be made of leather, or equivalent non-porous material.

Safety-toe boots shall extend above the ankle — minimum height of 6 inches.

Sneakers, tennis shoes, sandals, high heels and open-toed shoes shall not be considered approved industrial or construction footwear.

### 9.6.2 Special Purpose Footwear

Project personnel shall be required to wear special purpose footwear to protect themselves from exposure to specific hazards/environments. Hazards/environments requiring special purpose footwear, to which project personnel may be exposed include, but are not limited to:

- Equipment movement.
- Corrosive liquids/materials.
- Thermal extremes — heat/cold.
- Slippery conditions.

The Project Entity site management team shall be responsible for evaluating hazard exposures and ensuring affected personnel utilize appropriate special purpose footwear.



#### 9.6.2.1 Foot Protectors

Project personnel performing tasks/work activities which have the potential to lead to extreme foot injury — e.g., operating ground tamper or chipping concrete with a jackhammer — shall be required to wear metatarsal guards.

### 9.7 Clothing Policy

#### 9.7.1 Standard Work Clothing

Project personnel shall ensure their clothing provides adequate protection for the task/work activity being performed.

Shirts shall completely cover the torso and have sleeves that are, at a minimum, 4 inches in length.

Long pants that fit properly and are in good repair, shall be worn — bell bottoms, large cuffs and/or frayed bottoms are prohibited.

Synthetic materials are not recommended because these materials melt easily, and some may burn rapidly when exposed to a small ignition source.

#### 9.7.2 Specialized Work Clothing

Project personnel shall be required to use specialized work clothing to protect themselves from exposure to specific hazards/environments. Hazards/environments requiring specialized work clothing, to which project personnel may be exposed include, but are not limited to:

- Traffic/equipment movement.
- Corrosive liquids/materials.
- Thermal extremes — heat/cold.
- Toxins.
- Molten metal/open flames.
- Irritants/sensitizers.

The Project Entity site management team shall be responsible for evaluating hazard exposures and ensuring affected personnel utilize appropriate specialized work clothing.

### 9.8 Respiratory Protection

#### 9.8.1 General Requirements

Due to the respiratory hazards associated with chemical and dust exposures, respiratory protection is a crucial part of the Safety & Health Program.

At no time shall any project personnel member be forced to work in a hazardous situation without proper respiratory protection.

Respiratory protection shall comply with federal, state and local regulations (29 CFR 1910.134 & 1926.103).



The nature of the hazard shall be identified to make sure that overexposure does not occur. Relevant factors to consider when identifying the nature of the hazard include:

- Oxygen deficiency.
- Physical and chemical properties of the hazard.
- Physiological effects on the body.
- Concentrations of the toxic substances.
- The permissible exposure limits (PEL).
- Warning properties — e.g., odor, skin or upper respiratory irritation.

When feasible engineering controls are not sufficient to control airborne hazardous materials, the Project Entity shall provide respiratory protective equipment to its employees.

National Institute for Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) safety criteria will be used as guidelines for selecting the equipment. Only NIOSH approved respiratory protective equipment shall be used.

Project personnel who are required to use respirators will be medically screened, properly fit-tested, fitted with the appropriate respirator and filters, and trained.

The effective use of a respirator depends on an individual's ability to wear a respirator, which shall be determined by a physician or other licensed health care professional (PLHCP).

Project personnel are not allowed, under any circumstances, to enter any work area containing an atmosphere with unknown concentrations of a hazardous air contaminant or a measured atmosphere determined to be immediately dangerous to life or health (IDLH).

The IDLH levels for many substances are published by the National Institute for Occupational Safety and Health (NIOSH).

Air monitoring must be performed to determine air contaminant levels prior to respiratory protection equipment selection and prior to entry into an unknown concentration during routine entry or emergency releases of hazardous chemicals.

#### **9.8.2 Duration of Respiratory Protection Use**

The length of time a respirator will be worn by an employee must be evaluated. This evaluation is especially important when using a self-contained breathing apparatus (SCBA), in which the air supply is limited; or when using an air-purifying respirator whose filter cartridges may become clogged, or saturated to the point that they do not protect the worker from gases and vapors. Therefore, a respirator cartridge change-out schedule shall be implemented depending upon the type and concentration of chemicals expected to be present.



### 9.8.3 Selection of Respirators

The two general types of respirators typically used include:

- Air-purifying respirators use cartridges or particulate air filters to remove contaminants from the breathing zone.
- Air-supplying respirators use supplied air from compressed-air tanks or air compressors.
- **Note:** [Respirators for IDLH atmospheres](#). Even with an appropriate respirator, under no circumstances shall an IDLH atmosphere be entered.

### 9.8.4 Assigned Protection Factors (APF)

The protection afforded by respirators depends on the seal of the facepiece to the face; no leakage shall be evident around valves and through or around cartridges or canisters. Depending on these criteria, the degree of protection may be ascertained, and a relative safety factor assigned.

Protection factors are only applicable if all elements of an effective respirator program are in place and being enforced. APFs are used to determine what type of respiratory protection must be worn depending upon the hazardous atmosphere. Respirators may be worn in atmospheres where the contaminants are less than the assigned protection factors (APF) when multiplied by the Occupational Safety and Health Administration's Permissible Exposure Limit.

| Table 9-2 Respirator Assigned Protection Factor <sup>5</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                         |                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------------|
| TYPE OF AIR-PURIFYING RESPIRATOR <sup>1, 2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         | ASSIGNED PROTECTION FACTOR (APF) |
| Maintenance-Free and Dual Cartridge-Half Face                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                         | 10 <sup>3</sup>                  |
| Maintenance-Free and Dual Cartridge-Full Face                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                         | 50 <sup>6</sup>                  |
| Powered Air Purifying                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Loose-Fitting Facepiece | 25                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Half Mask               | 50                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Full Facepiece          | 1000                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Helmet/Hood             | 25 - 1000 <sup>4</sup>           |
| <b>Notes:</b><br><sup>1</sup> Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.<br><sup>2</sup> The assigned protection factors in Table 9-2 are only effective when the employer implements a continuing, effective respirator program, including training, fit testing, maintenance, and use requirements.<br><sup>3</sup> This APF category includes filtering facepieces and half masks with elastomeric facepieces.<br><sup>4</sup> The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators and receive an APF of 25.<br><sup>5</sup> These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134(d)(2)(ii).<br><sup>6</sup> To achieve an APF of 50, a quantitative fit test is required. |                         |                                  |





#### 9.8.5 Fit Testing

Project personnel whose work includes tasks that require respirator use shall be medically cleared to wear a respirator.

Project personnel whose work includes tasks that require the use of a respirator, shall be fit-tested to determine if a proper facepiece-to-face seal has been accomplished. Project Entities shall document fit testing using either Safety Form I-6, "Quantitative Respirator Fit Test," or Safety Form I-7, "Qualitative Respirator Fit Test."

Project Entities shall be required to submit respirator fit test documentation to Burns & McDonnell and/or its subsidiaries.

If a successful fit test cannot be achieved, alternate sizes and manufacturer's equipment shall be tried. If a proper seal remains unattainable, the employee may be offered a powered air-purifying respirator (PAPR), a supplied-air respirator, or shall not be permitted to perform work requiring respiratory protection.

#### 9.8.6 Field Tests

Positive and negative pressure fit tests shall be used to check the seal of the respirator being used in the field. Both tests shall be performed each time a respirator is put on and prior to entering a contaminated area.

Although the positive and negative tests are essential to a good respiratory protection program and shall always be used prior to entering an area of exposure, they are solely to be used as a field test and cannot be substituted for the qualitative or quantitative fit test.

#### 9.8.7 Voluntary Use

Project Entities shall be required to document the voluntary use of respirators by project personnel via Safety Form I-5, "Respirator Not Required Form." Once complete, Safety Form I-5, "Respirator Not Required Form," shall be submitted to Burns & McDonnell and/or its subsidiaries.

#### 9.8.8 Inspection, Cleaning, Maintenance and Storage

Respirators shall be stored in a clean area where they are unlikely to be contaminated by the work in progress. They shall be stored in a secure atmosphere — such as a plastic bag — in a manner that does not deform the shape of the facepiece.

Project personnel shall be responsible for the inspection, cleanliness and maintenance of their own air-purifying respirators. Employees shall inspect their respirators both before and after each use. Cleaning and disinfecting shall be performed after each day's use — or sooner if necessary. Only project personnel who have completed the appropriate training courses and are qualified, shall be permitted to perform maintenance on respirators.

#### 9.8.9 Respiratory Program Evaluation

Project Entities shall be responsible for regularly evaluating the respiratory protection program. Safety Form I-4, "Respirator Program Evaluation Checklist," shall be used to document the evaluation.

Safety Form I-4, "Respirator Program Evaluation Checklist," shall be submitted to Burns & McDonnell and/or its subsidiaries.



#### 9.8.10 **Training and Information**

Project Entities shall provide training to affected personnel prior to requiring use of a respirator in the workplace.

At a minimum, all project personnel using respirators shall be trained in basic respirator practices, their employer's Respiratory Protection Program, the hazards of the job, and related topics required by the OSHA regulations in 29 CFR 1910.134. This training shall be documented using Safety Form I-1, "Respirator Training Record."

### 9.9 **Personal Hydrogen Sulfide (H<sub>2</sub>S) Monitors**

#### 9.9.1 **General Requirements**

Project personnel shall be required to wear a personal hydrogen sulfide (H<sub>2</sub>S) monitor in all areas which have the potential for H<sub>2</sub>S release.

Personal H<sub>2</sub>S monitors shall never be used in place of properly preparing a job by mitigating the H<sub>2</sub>S hazard, or as a replacement for selecting and wearing the proper PPE.

#### 9.9.2 **Care, Use and Storage**

Project personnel shall take proper care of their assigned personal H<sub>2</sub>S monitor and perform the required daily and monthly testing, in accordance with manufacturer's recommendations, to ensure the proper operation of the unit.

Project personnel shall replace their personal H<sub>2</sub>S monitor when it does not function properly, or low battery warnings are present.

When not in use, personal H<sub>2</sub>S monitors shall be placed in a designated storage area, where H<sub>2</sub>S exposure will not occur.

#### 9.9.3 **Proper Placement**

Personal H<sub>2</sub>S monitors shall not be covered by the employee's clothing, hair, hat, equipment, coveralls and/or tools.

Personal H<sub>2</sub>S monitors shall be worn in the employee's breathing zone — defined as a hemisphere forward of the shoulders and within a radius of approximately six to nine inches of the mouth/nose. Personal H<sub>2</sub>S monitors shall not be worn on the brim of a hard hat.

#### 9.9.4 **Training**

Project personnel shall be trained in the proper use, maintenance, storage and limitations of personal H<sub>2</sub>S monitors prior to their use.

### 9.10 **Personal Floatation Devices**

#### 9.10.1 **Working Over or Near Water, Barges, and Boats**

Project personnel working over or near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard (USCG)-approved personal flotation devices.



Project personnel shall inspect personal floatation devices (PFDs) before and after each use, for defects which could alter their strength or buoyancy.

Project personnel shall not use defective units. Defective units shall be removed from site and destroyed.

Project Entities shall ensure that a 30-inch diameter life ring with 150 feet of — 3/8-inch diameter, 600-pound capacity — line is readily available and that travel distance between the life rings does not exceed 200 feet.

All boats shall carry one wearable — Type I, II, or III — USCG-approved PFD for each person onboard as well as each person being towed. All project personnel on the boat shall wear a USCG approved lifejacket or PFD.

All PFDs shall be worn in a manner which does not create a hazard — e.g., loose straps, catch hazards, wrong size, etc.

Project personnel who are required to wear a PFD shall be trained in its use, operation and maintenance.

#### 9.10.2 **Personal Flotation Devices (PFDs)**

All personal floatation devices (PFDs) shall be:

- USCG approved.
- In good and serviceable condition.
- Readily accessible.
- Of the proper size for the intended wearer.

PFDs shall not be stowed in plastic bags, locked or closed compartments, or have other gear stowed on top of them.

All wearable PFDs shall be equipped with retro-reflective tape in accordance with USCG requirements.

Each wearable PFD used at night shall be equipped with a USCG approved, automatically activated light. Lights are not required for PFDs used exclusively during daylight hours.

PFDs shall be inspected before and after each use, for defects which could alter their strength or buoyancy.

#### 9.10.3 **Throwable Devices (Type IV PFD)**

On USCG-inspected vessels, ring buoys are required to have automatic, floating, electric water lights.

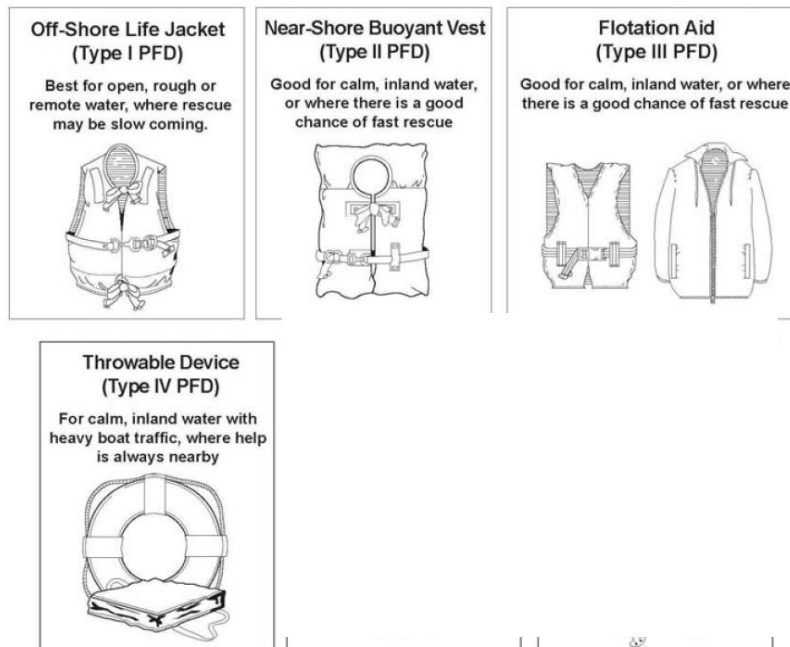
On all other floating plant and shore installations, lights on life rings are required only in locations where adequate general lighting — e.g., floodlights, light stanchions, etc. — is not provided. For these plants and installations, at least one life ring, along with every third ring thereafter shall have an automatic, floating, electric water light attached.

Life rings — rope attachment not required — and ring buoys — rope attachment required — shall be USCG approved; and shall have at least 70 feet of 3/8-inch diameter solid braid polypropylene rope, or equivalent, attached. Throw bags may be used in addition to life rings or ring buoys. Life rings or ring buoys shall be readily available.

All throwable PFDs shall be equipped with retro-reflective tape in accordance with USCG requirements.

Refer to the [United States Coast Guard's PFD Selection, Use, Wear, and Care](#) criteria for additional information relating to the selection, use, wear, and care of personal flotation devices.

**Figure 9-1 Personal Flotation Devices**





## **Chapter 10**

### **Excavations**

#### **Chapter Contents**

##### **10 Excavations**

###### **Excavations — Resources**

###### **10.1 Excavation Requirements**

###### **10.1.1 Determination of Requirements**

###### **10.1.2 Inspection by Competent Person**

###### **10.2 Requirements for Protective Systems**

###### **10.2.1 Protection of Workers in Excavations**

###### **10.3 Appendix A — Soil Classification**

###### **10.4 Appendix B — Sloping and Benching**





## Excavations

### Excavations

- Scope and Application
- Definitions
- Excavation Requirements
- Requirements for Protective Systems
- Protection of Workers
- Design of Sloping and Benching
- Design of Support Systems
- Materials and Equipment
- Installation and Removal of Support
- Sloping and Benching Systems
- Shield Systems
- Appendix A — Soil Classification
- Appendix B — Sloping and Benching
- Appendix C — Timber Shoring for Trenches
- Appendix D — Aluminum Hydraulic Shoring for Trenches
- Appendix E — Alternatives to Timber Shoring
- Appendix F — Selection of Protective Systems

### Underground Construction

- Scope and Application
- Access and Egress
- Check-In/Check-Out
- Safety Instruction
- Notification
- Communications
- Emergency Provisions
- Hazardous Classifications
- Gassy Operations — Additional Requirements
- Air Quality and Monitoring
- Ventilation
- Illumination
- Fire Prevention and Control
- Welding, Cutting and Other Hot Work
- Ground Support
- Blasting
- Drilling
- Haulage
- Electrical Safety
- Hoisting Unique to Underground Construction
- Definitions

### Caissons

- Compressed Air
- Hydrostatic or Air-Pressure Test
- Access
- Man Lock



**Gauges**

**Cofferdams**

**Flooding Control**

**Warning Signals**

**Cofferdam Walkways, Bridges or Ramps**

**Shipping Channels**

**Compressed Air**

**General Provisions**

**Medical Attendance, Examination and Regulations**

**Telephone and Signal Communication**

**Signs and Records**

**Compression**

**Decompression**

**Man Locks and Special Decompression Chambers**

**Compressor Plant and Air Supply**

**Ventilation and Air Quality**

**Electricity**

**Sanitation**

**Fire Prevention and Protection**

**Bulkheads and Safety Screens**

**Definitions Applicable to Compressed Air**

**Appendix A — Decompression Tables**



## **10.1 Excavation Requirements**

### **10.1.1 Determination of Requirements**

Project Entities shall be required to complete and submit Safety Form J-1, "Site-Specific Excavation Plan," prior to performing any excavation activities.

Project Entities shall be responsible for designating a competent person to oversee trenching and excavation activities.

Project Entities shall be required treat all soils as "Type C" when considering sloping, shoring, shielding, etc.; unless reclassified by the Project Entity's designated competent person.

Project Entities shall ensure that classification of soil is based on the results of at least one visual analysis and one manual analysis. Safety Form J-3, "Soil Classification Form," shall be used to document the soil analysis.

Project Entities shall be required to submit Safety Form J-3 to Burns & McDonnell and/or its subsidiaries.

Project Entities shall be responsible for making certain that trenches and excavations over 20 feet in depth, utilize a professional engineer to design the sloping, shoring, or shielding used for personnel protection. The professional engineer shall be required to be licensed in the state in which the project is located.

### **10.1.2 Inspection by Competent Person**

Project Entities shall be responsible for ensuring that any trench or excavation, which is intended to be bodily entered by project personnel, is inspected by their designated competent person. Inspections of trenches and/or excavations shall be made prior to each day's entry.

Project Entities shall be required to use Safety Form J-2, "Daily Excavation Inspection Form," to document trench and excavation inspections. A copy of the completed Safety Form J-2, "Daily Excavation Inspection Form," shall remain at the location of the trench/excavation and shall be updated as often as necessary.

Project Entities shall be required to submit completed Safety Form J-2, "Daily Excavation Inspection Form," to Burns & McDonnell and/or its subsidiaries.

## **10.2 Requirements for Protective Systems**

### **10.2.1 Protection of Workers in Excavations**

## **10.3 Appendix A — [Soil Classification](#)**

## **10.4 Appendix B — [Sloping and Benching](#)**



## Chapter 11

### Medical Services and First Aid

#### Chapter Contents

##### 11 Medical and First Aid

###### Medical and First Aid — Resources

###### 11.1 Medical Services and First Aid

###### 11.1.1 General Requirements

###### 11.1.2 First Aid Kits

###### 11.1.3 Availability of Medical Personnel

###### 11.1.4 Medical Facility Designation

###### 11.1.5 Corrosive Materials

###### 11.2 Injury/Illness Case Management

###### 11.2.1 General Requirements

###### 11.2.2 Injury Care

###### Table 11-1 — Injury Notification



## **Medical and First Aid**

### **Medical Services and First Aid**

- [General](#)
- [First Aid Kits](#)
- [Medical Services and First Aid](#)
- [Availability of Medical Personnel](#)
- [Absence of an Infirmary, Clinic or Hospital](#)
- [Corrosive Materials](#)
- [Injury/Illness Case Management](#)

### **Worker Access to Medical and Exposure Records**

- [Purpose](#)
- [Scope and Application](#)
- [Definitions](#)
- [Preservation of Records](#)
- [Access to Records](#)
- [Trade Secrets](#)
- [Worker Information](#)
- [Transfer of Records](#)





## **11.1 Medical Services and First Aid**

### **11.1.1 General Requirements**

Project Entities shall be responsible for ensuring their employees are fit for duty and have the physical and psychological capacity required to perform their assigned work activities.

Project Entities shall be responsible for obtaining a return-to-work evaluation from a recognized occupational medical provider following a work-related injury, illness or absence. Project Entities shall provide a copy of the work release to Burns & McDonnell and/or its subsidiaries upon the employee's return.

Project Entities shall be responsible for maintaining a workers' compensation program for their employees, including administration and associated case management.

### **11.1.2 First Aid Kits**

Project Entities shall be responsible for providing an adequate supply of readily available first aid supplies.

Project Entities shall be responsible for inspecting first aid kits on a monthly basis, if not more frequently, to ensure that expended items are replaced. Safety Form K-2, "Monthly First Aid Kit Inspection," shall be used to document the inspection.

### **11.1.3 Availability of Medical Personnel**

Project Entities shall be responsible for providing advice and consultation on matters of health.

Project Entities shall be responsible for providing immediate first-aid attention to personnel who suffer minor injuries.

Project Entities shall be responsible for ensuring that select project personnel are trained in first aid and cardiopulmonary resuscitation (CPR).

### **11.1.4 Medical Facility Designation**

Project Entities shall designate an occupational medical facility to evaluate and treat non-emergency occupational injuries and illnesses.

Project Entities shall be responsible for designating a hospital to evaluate and treat emergency occupational injuries and illnesses.

A Project Entity representative shall be responsible for visiting designated medical facilities at the time of project mobilization to meet with the medical staff and discuss levels of care and how they relate to the Occupational Safety and Health Administration (OSHA) recordkeeping requirements.

### **11.1.5 Corrosive Materials**

Where the eyes or body of any person may be exposed to injurious corrosive materials, Project Entities shall be responsible for providing suitable facilities for quick drenching or flushing of the eyes and body, in case of emergency.



When project personnel are exposed to epoxy resins, solvents, hydrocarbons, cement, lime, or other dermatitis-producing substances; ointment recommended by the manufacturer for the specific exposure shall be made available by the Project Entity.

## 11.2 Injury/Illness Case Management

### 11.2.1 General Requirements

Project Entities shall be responsible for developing a case management plan specifically outlining response to work-related injuries and illnesses, including protocols for:

- Incident reporting and notification.
- Obtaining timely medical treatment for injured/ill personnel.
- Return to work.
- Workers' compensation management.

OSHA Recordkeeping Guidelines – CFR 29 1904 – shall be strictly adhered to.

### 11.2.2 Injury Care

The Project Entity's designated competent person shall be responsible for determining whether work-related injuries can be treated with routine first aid administered by properly trained project personnel or an on-site medical provider; and if so, ensure that such treatment is provided.

Advanced or non-routine first aid cases shall be treated at the occupational health and medical facility unless it is an emergency — e.g., life or limb threatening.

Project Entities shall not impede project personnel from seeking evaluation/treatment from a licensed health care professional, if requested.

Project Entities shall be responsible for ensuring a supervisor or a company representative accompanies injured workers to designated occupational medicine providers or emergency medical services providers.

| Table 11-1 Injury Notification                   |                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| INJURED PARTY                                    | WHO TO NOTIFY                                                                                                                                                                                                                                                                                                                   |
| Burns & McDonnell/Subsidiary Employee-Owner (EO) | Burns & McDonnell/Subsidiary Corporate Safety and Health                                                                                                                                                                                                                                                                        |
| Burns & McDonnell/Subsidiary contingent worker   | Burns & McDonnell/Subsidiary Corporate Safety and Health/contingent worker employment firm                                                                                                                                                                                                                                      |
| Project Entity                                   | Subcontractor's site manager or Site Safety and Health professional and Burns & McDonnell/Subsidiary site manager or Burns & McDonnell/Subsidiary Site Safety and Health professional — If the Site Safety and Health professional or the site manager is not available, notify any Burns & McDonnell/Subsidiary representative |
| All of the Above                                 | Burns & McDonnell/Subsidiary site manager shall notify the client                                                                                                                                                                                                                                                               |

## Chapter 12

### Fire Protection and Prevention

#### Chapter Contents

#### 12 Fire Protection and Prevention

##### Fire Protection and Prevention — Resources

##### 12.1 Fire Protection and Prevention

###### 12.1.1 General Requirements

##### 12.2 Fire Classifications and Extinguishers

###### 12.2.1 Fire Classifications

###### 12.2.2 Extinguishers

###### Table 12-1 — Fire Extinguisher Requirements

##### 12.3 Fire Extinguisher Inspections

###### 12.3.1 Monthly Fire Extinguisher Inspections

###### Figure 12-1 — Fire Extinguisher Inspection Tag

###### 12.3.2 Annual Fire Extinguisher Maintenance/Inspections

###### Table 12-2 — Hydrostatic Test Interval for Extinguishers

##### 12.4 Fire Brigades

##### 12.5 Hot Work Permitting

###### 12.5.1 Permit Issuance/Completion

###### 12.5.2 Permit Duration/Validity

###### 12.5.3 Hot Work Permit/Work Permit Guidelines

##### 12.6 Fire Watch Requirements

##### 12.7 Material Storage for Fire Prevention

##### 12.8 Temporary Aboveground Storage Tanks

###### 12.8.1 Monthly Inspection

##### 12.9 Hazardous Material Identification System (HMIS)

###### Figure 12-2 — Hazardous Material Identification System Label

##### 12.10 NFPA 704 Labeling System

###### Figure 12-3 — NFPA 704M Label

##### 12.11 Flammable and Combustible Liquid Storage

###### 12.11.1 Indoor Storage of Flammable Liquids

##### 12.12 Temporary Heating Devices

##### 12.13 Fueling/Refueling

##### 12.14 Training



## **Fire Protection and Prevention**

**Fire Protection**

**Fire Prevention**

**Fire Classifications and Extinguishers**

**Fire Extinguisher Inspections**

**Fire Brigades**

**Hot Work Permitting**

**Fire Watch**

**Material Storage for Fire Prevention**

**Temporary Aboveground Storage Tanks**

**NFPA 704 Labeling System**

**Flammable Liquids**

**Liquefied Petroleum Gas (LP-Gas)**

**Temporary Heating Devices**

**Fueling/Refueling**

**Training**



## 12.1 Fire Protection and Prevention

### 12.1.1 General Requirements

Project Entities shall be responsible for fire protection throughout all phases of work as required by the National Fire Protection Code and all applicable sections of this Project Safety & Health Program.

Project Entities shall ensure that only those work procedures which minimize fire hazards to the maximum extent practicable, are implemented.

## 12.2 Fire Classifications and Extinguishers

Project Entities shall provide their personnel with the fundamentals of fire safety such as, reducing the risk of a fire and establishing minimum requirements for fire extinguishing equipment.

### 12.2.1 Fire Classifications

A fire is created by three primary components: fuel — paper, wood, oil, etc. — oxygen, and an ignition source — sparks, arcs, etc. — if any one of these components are removed the fire will not start or will extinguish.

- **Class A** — Ordinary combustible materials such as wood, cloth, paper, trash, rubber and plastic.
- **Class B** — Flammable liquid, oil, grease, tar, oil-based paint, lacquer and flammable gas.
- **Class C** — Fires involving energized electrical equipment or systems.
- **Class D** — Combustible metals.
- **Class K** — Flammable liquids unique to cooking.

### 12.2.2 Extinguishers

Fire extinguishers are rated according to the classification and size of the fires against which they are effective. An extinguisher's rating consists of a letter indicating the classification of the fire that the extinguisher is effective and a rating number indicating the relative extinguishing effectiveness.

- **Fire Extinguishers Rated for Class A Fires** — The rating number indicates the effectiveness: the higher the number, the more effective the extinguisher. The minimum recommended rating for extinguishers rated for Class A fires is 2A.
- **Fire Extinguishers Rated for Class B Fires** — The rating number represents the average size — in square feet — of the fire the extinguisher is capable of putting out.
- **Fire Extinguishers Rated for Class C Fires** — There is no number used in these extinguisher ratings because Class C fires are either Class A or B fires involving energized electrical wiring and equipment.

Fire extinguishers shall be located throughout the workspace and kept in areas that will be readily accessible in the event of a fire — such as normal paths of travel and/or near exits. The maximum travel distance from any point to a fire extinguisher shall be 75 feet or less.





In addition, project sites shall have fire extinguishers located in areas with potential fire-related hazards, of appropriate size and type for the potential hazards.

Refer to Table 12-1 for a summary of fire extinguisher requirements.

| <b>Table 12-1 Fire Extinguisher Requirements</b> |                                                                      |                                                                |                  |
|--------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------|------------------|
| <b>STANDARD</b>                                  | <b>LOCATION</b>                                                      | <b>TYPE</b>                                                    | <b>DISTANCE</b>  |
| 150(c)(1)(i)                                     | Building Area                                                        | 2A                                                             | 100-Foot Radius  |
| 150(c)(1)(iv)                                    | Each Floor                                                           | 2A                                                             | 100-Foot Radius  |
| 150(c)(1)(iv)                                    | Multi-Story Building                                                 | 2A or Suitable for Hazard                                      | Next to Stairway |
| 150(c)(1)(vi)                                    | 5 Gal. of Flamm./Comb. Liquids<br>or 5 Gal. of Flammable Gas         | 10B                                                            | Within 50 Feet   |
| 150(c)(6)                                        | Open Yard Storage                                                    | 2A or Suitable for Hazard                                      | 100-Foot Radius  |
| 152(d)(1)                                        | Flammable Liquid Storage Room                                        | 20B                                                            | 10 Feet Outside  |
| 152(d)(2)                                        | Outside Flammable Liquid Storage Area                                | 20B                                                            | 25-75 Feet       |
| 152(d)(4)                                        | Vehicles Used for Dispensing or<br>Transporting Flamm./Comb. Liquids | 20B:C                                                          | On Vehicle       |
| 152(g)(11)                                       | Service or Fuel Area                                                 | 20B:C                                                          | Within 75 Feet   |
| 153(l)                                           | LP-Gas Storage Area                                                  | 20B:C                                                          | In Location      |
| 352(d)                                           | Welding, Cutting or Heating Areas                                    | 20-Pound ABC Fire<br>Extinguisher at Each Hot<br>Work Location | Immediate Area   |

## 12.3 Fire Extinguisher Inspections

### 12.3.1 Monthly Fire Extinguisher Inspections

The Project Entity's designated competent person shall be responsible for ensuring that portable fire extinguishing equipment is visually inspected when initially placed in service and is inspected monthly thereafter.

Initial and monthly visual inspection criteria/evaluation of portable fire extinguishing equipment shall include:

- Confirmation that the extinguisher is visible, unobstructed and in its designated location.
- Verification that the locking pin is intact, and the tamper seal is unbroken.
- Examination of the extinguisher for obvious physical damage, corrosion, leakage and/or clogged nozzle.
- Confirmation that the pressure gauge/indicator is in the operable range or position.
- Verification that the extinguisher is full, by means of lifting.
- Verification that the operating instructions on the nameplate are legible and facing outward.
- Verification of the last professional service date on the tag (a licensed fire extinguisher

maintenance contractor must have inspected the extinguisher within the past 12 months).

Fire extinguisher inspection tags shall be affixed to each in-service extinguisher to document and communicate compliance with monthly inspections. Safety Form L-1 “Fire Extinguisher Inspection Log” may be required in addition to fire extinguisher inspection tags, depending on client and/or project entity preference.

**Figure 12-1 Fire Extinguisher Inspection Tag**



The image shows a 'FIRE EXTINGUISHER INSPECTION RECORD' tag. It includes a header for 'EXTINGUISHER NO.' and a table for tracking inspections by year (2020, 2021, 2022, 2023) and month (JAN, FEB, MAR, APR, MAY, JUN, JULY, AUG, SEPT, OCT, NOV, DEC). The tag is designed to be affixed to a fire extinguisher.

Fire extinguishers with missing or expired service tags shall immediately be removed from service.

Damaged and/or discharged fire extinguishers shall be immediately removed from service.

### 12.3.2 Annual Fire Extinguisher Maintenance/Inspections

Project Entities shall be responsible for ensuring annual fire extinguisher maintenance inspections are performed by a professional fire protection company.

Project Entities shall be responsible for ensuring annual fire extinguisher maintenance inspections are verified with a dated inspection tag. Fire extinguishers with missing or expired service tags shall be immediately removed from service.

In addition to monthly and annual inspections, the National Fire Protection Association (NFPA) requires fire extinguishers to be hydrostatically tested. Refer to Table 12-2, “Hydrostatic Test Interval for Extinguishers.”

| Table 12-2 Hydrostatic Test Interval for Extinguishers  |                       |
|---------------------------------------------------------|-----------------------|
| EXTINGUISHER TYPE                                       | TEST INTERVAL (YEARS) |
| Stored-pressure water, loaded system, and/or antifreeze | 5                     |
| Wetting Agent                                           | 5                     |
| AFFF (aqueous film-forming foam)                        | 5                     |
| FFFP (film-forming fluoroprotein foam)                  | 5                     |
| Dry chemical with stainless steel shells                | 5                     |
| Carbon dioxide                                          | 5                     |
| Wet Chemical                                            | 5                     |



|                                                                                               |    |
|-----------------------------------------------------------------------------------------------|----|
| Dry chemical, stored pressure, with mild steel shells brazed brass shells, or aluminum shells | 12 |
| Dry chemical, cartridge-or cylinder- operated, with mild steel Shells                         | 12 |
| Halogenated agents                                                                            | 12 |

#### 12.4 Fire Brigades

Project Entities shall prohibit the use of fire brigades.

#### 12.5 Hot Work Permitting

Project Entities shall be required to request and obtain a hot work permit/work permit when using any equipment, tools, or apparatus capable of generating heat, sparks, or flames in any area of the project site.

Examples of hot work include, but are not limited to, the following:

- Welding
- Burning
- Cutting
- Sawing
- Grinding
- Drilling
- Open flame operations
- Non-explosion proof electrical equipment
- Sandblasting operations
- Internal combustion engines
- Hot tap operations

Project Entities shall prepare a project-specific procedure prior to the performance of any work activity that involves making a connection to existing in-service/pressurized piping or vessels.

Hot work permits/work permits shall not be considered a substitute for an approved hot tap procedure. Refer to API publications 2201: Hot Tap Work Activity Flow.

Project Entities shall be responsible for ensuring that project personnel engaged in hot work operations mitigate fire hazards to the maximum extent practicable.



### 12.5.1 Permit Issuance/Completion

Project Entities shall be responsible for completing all applicable Project Entity sections of Safety Form C-7, "Work Permit," to include atmospheric testing results.

The responsible subcontractor's/contractor's supervisor shall be required to sign the hot work permit/work permit in the space allocated "Permit Issued to," thereby indicating that the project personnel performing the work activity understand the outlined expectations and conditions.

The issuing authority shall be required to review the request for a hot work permit/work permit; determine whether a fire watch is required; then approve the permit by signing in the space allocated "Approval," and indicating the time of issuance in the space allocated "Time Issued."

Project Entities shall be responsible for requesting hot work permit/work permit extensions if the hot work activity must continue beyond the original permit duration.

Project Entities shall be responsible for closing out the hot work permit/work permit upon completion of the work activity, or at the end of the shift, whichever occurs first.

### 12.5.2 Permit Duration/Validity

Project Entities shall ensure that a copy of the issued hot work permit/work permit remains in the immediate vicinity of the hot work activity.

Hot work permits/work permits shall be valid for one shift.

Hot work permits/work permits shall be considered void in the event of an emergent situation which has the potential to adversely impact hot work operations.

Hot work permits/work permits shall be considered void in the event of a Stop Work Intervention.

Project Entities shall be required to return voided hot work permits/work permits to the issuing authority.

Only the original issuing authority may revalidate/reissue a voided hot work permit/work permit.

### 12.5.3 Hot Work Permit/Work Permit Guidelines

Project Entities shall be responsible for testing the atmosphere and certifying in writing, that no flammable gases, liquids or solids; oxygen deficiency; or toxic materials are present at the hot work location.

Project Entities shall be responsible for ensuring atmospheric testing equipment is bump-tested prior to use each day. Safety Form G-8, "Portable Multi Gas Monitor Bump Test," shall be used to document the results of the bump test.

Project Entities shall make sure that defective atmospheric testing equipment is immediately removed from service.

Project Entities shall ensure atmospheric testing is performed in accordance with approved methods.

Project Entity personnel engaged in hot work activity shall be responsible for ensuring the presence of a fully charged fire extinguisher — 20-pound ABC — within 35 feet of the hot work location.



## 12.6 Fire Watch Requirements

Project Entities shall be responsible for ensure that a fire watch is assigned to the hot work location, as indicated by the hot work permit and issuing authority.

Prior to beginning hot work operations, Project Entity personnel engaged in hot work activity shall be responsible for ensuring that a dedicated fire watch is present, as indicated by the hot work permit and issuing authority.

Project Entities shall ensure each individual assigned as a fire watch has been trained in the proper execution and responsibilities of fire watch, including emergency procedures.

Project Entities shall be responsible for ensuring fire watches have been trained in the proper use and limitations of the selected extinguishing equipment.

Project Entities shall be responsible for ensuring that fire watches have been trained in the proper use and limitations of atmospheric monitoring equipment, as applicable.

Project Entities shall ensure fire watches are familiar with the location and nature of the hot work being performed.

Project Entities shall be responsible for ensuring that a fire watch is present for the entirety of each hot work operation and for a minimum duration of 30 minutes following the completion of the hot work operation.

Project Entities shall ensure that project personnel are assigned no other duties while fulfilling the role of fire watch.

Project Entities shall be responsible for ensuring fire watches assigned to more than one hot work location have:

- The ability to communicate effectively with project personnel performing the hot work.
- A clear unobstructed view of the hot work operations.
- Unobstructed access to the areas which may potentially be impacted by hot work operations.

Project Entities shall be required to assign multiple fire watches to locations depending upon potential impact which may result from multiple floors/levels, partition walls, processes, etc.

## 12.7 Material Storage for Fire Prevention

Project Entities shall be responsible for implementing the following material storage practices:

- Housekeeping shall be maintained. Combustible materials shall not be accumulated to the point that a fire hazard is created.
- When storing combustible materials, the height of piles/stacks shall not exceed 20 feet.
- Excessive storage of combustible material in one place shall be prohibited unless proper fire-rated storage cabinets are available or constructed.
- Materials stacked indoors shall leave a minimum of 36 inches between the stack and the sprinkler system.





- The storage of materials, tools, and other objects shall not block firefighting, rescue, or first-aid equipment. Additionally, means of egress, such as exit doors and stairways, shall be kept clear of obstruction.
- Oily rags and waste shall be stored separately in metal containers with self-closing lids.
- Open burning of waste shall be prohibited.
- The locations of trailers, gang boxes and temporary facilities shall be planned with consideration for fire hazards and to prevent any potential firefighting activities from being obstructed.

## 12.8 Temporary Aboveground Storage Tanks

With regard to temporary aboveground storage tanks, Project Entities shall be responsible for ensuring the following:

- Temporary aboveground storage tanks shall be no closer than 20 feet to any building.
- The contents of a temporary aboveground storage tank shall be posted on that tank's shell.
- "No Smoking" or "Flammable - Keep Fire Away" and proper Safety Data Sheet (SDS) hazard warning signs, if applicable, shall be posted on or near each tank.
- Temporary aboveground storage tanks shall either have a secondary method of containment capable of holding 110% of the tank's contents or be of a double-wall construction, or both, depending upon client/facility requirements.
- If rainwater/other liquids accumulate in the secondary containment, it shall be disposed of by a waste management service, not released onto the ground.
- Temporary aboveground storage tank areas shall be guarded with an appropriate barrier to prevent vehicles or heavy equipment from damaging the tank and/or getting too close when refueling.
- Housekeeping shall be maintained; combustible materials must not accumulate in temporary aboveground storage tank areas.
- Smoking shall be prohibited within 25 feet of temporary aboveground storage tank locations.
- A 20-B:C fire extinguisher shall be placed at a distance no less than 25 feet and no greater than 75 feet away from temporary aboveground storage tanks.
- Spill kit(s) shall be immediately available.

### 12.8.1 Monthly Inspection

The subcontractor's/contractor's designated competent person shall be responsible for inspecting aboveground flammable and combustible liquid storage tanks monthly.

Safety Form L-3, "Aboveground Storage and Dispensing Tanks Monthly Inspection Checklist," shall be used to document monthly inspections.

Project Entities shall be required to submit Safety Form L-3, "Aboveground Storage and Dispensing Tanks Monthly Inspection Checklist," to Burns & McDonnell and/or its subsidiaries.

### 12.9 Hazardous Material Identification System (HMIS)

The HMIS helps to satisfy the Hazard Communication Standard (HCS) requirements by providing a format for hazard determinations, offering a basic written HAZCOM, and simplifying the worker training and information process. The HMIS provides clear, recognizable information to workers by standardizing the presentation of chemical information. This is accomplished through the use of color bar system and color codes corresponding to the hazards of a product, assigned numeric ratings indicating the degree of hazard, and alphabetical codes designating the appropriate personal protective equipment (PPE) workers are to wear while handling the material.

Figure 12-2 Hazardous Material Identification System Label

| HAZARDOUS MATERIAL IDENTIFICATION GUIDE                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                            |                                                                                              |                                                                                             |                                                                                               |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                 |
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| <b>CHEMICAL NAME</b><br><div> <div>HEALTH</div> <div>FLAMMABILITY</div> <div>REACTIVITY</div> <div>PERSONAL PROTECTION</div> </div> | <b>PERSONAL PROTECTION INDEX</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                            |                                                                                              |                                                                                             |                                                                                               |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                 |
| <b>HAZARD INDEX</b><br>4 - Extreme Hazard<br>3 - Serious Hazard<br>2 - Moderate Hazard<br>1 - Slight Hazard<br>0 - Minimal Hazard   | <table border="1"> <tr> <td><b>A</b> </td><td><b>G</b> </td></tr> <tr> <td><b>B</b> </td><td><b>H</b> </td></tr> <tr> <td><b>C</b> </td><td><b>I</b> </td></tr> <tr> <td><b>D</b> </td><td><b>J</b> </td></tr> <tr> <td><b>E</b> </td><td><b>K</b> </td></tr> <tr> <td><b>F</b> </td><td><b>X</b> Ask your supervisor for special handling instructions.</td></tr> </table> | <b>A</b>  | <b>G</b>  | <b>B</b>  | <b>H</b>  | <b>C</b>  | <b>I</b>  | <b>D</b>  | <b>J</b>  | <b>E</b>  | <b>K</b>  | <b>F</b>  | <b>X</b> Ask your supervisor for special handling instructions. |
| <b>A</b>                                           | <b>G</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                            |                                                                                              |                                                                                             |                                                                                               |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                 |
| <b>B</b>                                          | <b>H</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                            |                                                                                              |                                                                                             |                                                                                               |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                 |
| <b>C</b>                                         | <b>I</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                            |                                                                                              |                                                                                             |                                                                                               |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                 |
| <b>D</b>                                         | <b>J</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                            |                                                                                              |                                                                                             |                                                                                               |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                 |
| <b>E</b>                                         | <b>K</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                            |                                                                                              |                                                                                             |                                                                                               |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                 |
| <b>F</b>                                         | <b>X</b> Ask your supervisor for special handling instructions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                            |                                                                                              |                                                                                             |                                                                                               |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                                                |                                                                                              |                                                                 |

### 12.10 NFPA 704 Labeling System

"NFPA 704: Standard System for the Identification of the Hazards of Materials for Emergency Response" is a standard maintained and revised by the NFPA. It defines, what is commonly referred to as, the "fire diamond" used by emergency personnel to quickly and easily identify the risks posed by hazardous materials. This helps emergency personnel determine what, if any, special equipment will be used, which procedures will be followed, and/or what precautions will be taken during the initial stages of an emergency response.

The four divisions are typically color-coded as follows:

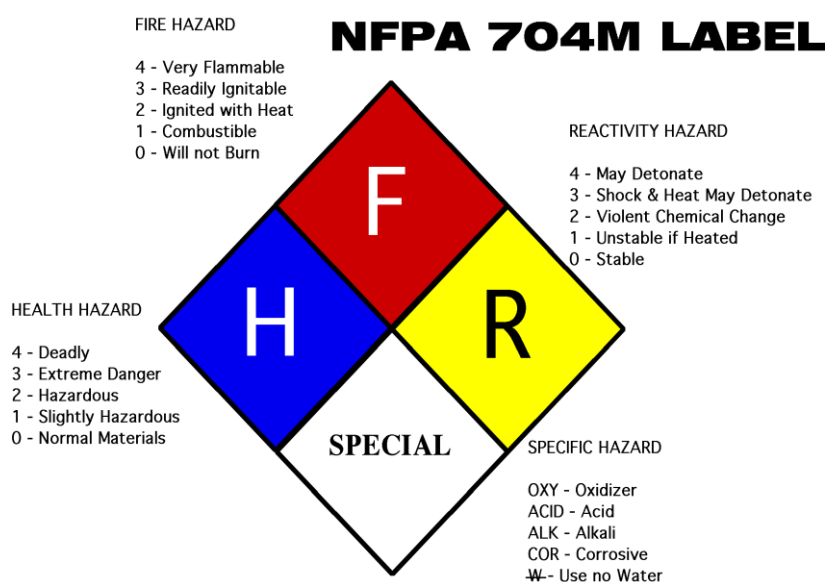
- **Blue** — Indicates level of health hazard.

- **Red** — Indicates level of flammability.
- **Yellow** — Indicates level of (chemical) reactivity.
- **White** — Contains special codes for unique hazards.

Health, flammability, and reactivity sections each contain a number indicating their hazard level. For each of these sections, the hazard level is rated on a scale ranging from zero (no hazard; normal substance) to four (severe risk).

Refer to Figure 12-3 “NFPA 704M Label.”

**Figure 12-3 NFPA 704M Label**



### 12.11 Flammable and Combustible Liquid Storage

When storing flammable and/or combustible liquids, Project Entities shall be responsible for ensuring:

- Small quantities — i.e., 5 gallons or less — of flammable and combustible liquids are stored and transported in approved metal safety cans containing a flash-arresting screen, spring-closing lid and spout cover, and so designed that it will safely relieve internal pressure when subjected to fire exposure.
- Flammable liquids are not to be stored in stairways or areas used for access/egress.
- All liquids are to be considered flammable unless the label clearly indicates that no such hazard exists.
- Materials, apart from the flammable liquids themselves, or equipment are not to be stored in the area where flammable liquids are stored.

#### 12.11.1 Indoor Storage of flammable liquids

Project Entities shall ensure that no more than 15 gallons of flammable liquid is stored in a room,



outside of an appropriate rated fire-rated cabinet.

Approved fire-rated cabinets shall be installed, used, and maintained in accordance with manufacturer recommendations.

### **12.12 Temporary Heating Devices**

Project Entities shall be responsible for making certain that temporary heating devices are in good working condition.

Project Entities shall ensure that proper ventilation procedures are implemented when using a temporary heating device in tight spaces.

Project Entities shall be responsible for ensuring temporary heating devices are not placed near combustible materials.

Project Entities shall be responsible for making sure that temporary heating devices are inspected on a periodic basis, while in use.

Project Entities shall ensure temporary heating devices are not left unattended while in operation.

Job made heating devices are strictly prohibited.

### **12.13 Fueling/Refueling**

Project Entities shall be responsible for implementing safe work practices related to fueling/refueling vehicles and equipment. These safe work practices shall include, but may not be limited to, the following:

- Always concentrate on the task at hand.
- Do not use electronic devices, such as cell phones, while fueling/refueling.
- Turn off the vehicle/equipment's engine when fueling/refueling.
- Never smoke while fueling/refueling.
- Do not overfill the fuel tank.
- Let the engine cool on portable equipment before fueling/refueling.
- Never dispense fuel into a portable container while the container is sitting on/in the vehicle/equipment.
- Clean up fuel spills immediately using the appropriate spill kit.

### **12.14 Training**

Project Entity personnel shall be trained with respect to the requirements of this chapter upon initial assignment.

Project Entities shall document training using Safety Form C-9, "Certification of Training." Once complete, Safety Form C-9 shall be submitted to Burns & McDonnell and/or its subsidiaries.



## Chapter 13

### Compressed Air, Abrasive Blasting, Pneumatics, and Painting

#### Chapter Contents

#### 13 Compressed Air, Abrasive Blasting, Pneumatics, and Painting

##### Compressed Air — Resources

##### 13.1 Compressed Air Operations

##### 13.2 Abrasive Blasting

###### 13.2.1 Exteriors of Equipment in Service

###### 13.2.2 Cone-Roof or Flat-Deck Tanks

###### 13.2.3 Floating-Roof Tanks

###### 13.2.4 Interiors of Tanks and Other Vessels

###### 13.2.5 Lead-Based Paint

###### 13.2.6 Dust Hazards

###### 13.2.7 Housekeeping

##### 13.3 Spray Finishing (Painting)

###### 13.3.1 Pressurized Paint Equipment

###### 13.3.2 Airless Paint Equipment

###### 13.3.3 Epoxy Compounds

###### 13.3.4 Creosote-Based Paint





## Compressed Air

[General Requirements](#)

[Installation and Equipment Requirements](#)



### 13.1 Compressed Air Operations

Project Entities shall be responsible for ensuring that compressors are orientated in a manner which will prevent hydrocarbon gases, exhaust gases and/or any flammable vapors from entering the air intake.

Project Entities shall ensure compressors are equipped with a properly set safety valve, drain valve, high temperature shutdown device and pressure gauge.

- Pressure gauges shall be conveniently located to facilitate routine observation.
- Air receivers shall include a sign or nameplate identifying normal operating pressure and maximum working pressure.

Project Entities shall be responsible for making certain that discharge piping on air compressors is equipped with collection devices to remove oil and water from airlines.

- Discharge lines shall be equipped with coolers, air receivers, or volume tanks and drips installed at low points where liquids will accumulate.
- Drain valves shall be installed in receivers, drips, and piping to facilitate the removal of accumulated oil and water.
- Accumulated liquids shall be drained daily. If compressors are operated more than usual or if humidity is especially high, accumulated liquids shall be drained more frequently.
- Water drains shall be protected from freezing.

Project Entities and their project personnel shall ensure that pneumatic hose connections are secured with a clip or tie wire, to prevent unintentional disengagement.

Project Entities shall require the use of a safety tether/whip check on all pneumatic hoses.

Project Entities shall ensure pneumatic hoses are not used to hoist or lower power tools.

Project Entities shall ensure pneumatic hoses exceeding 1/2-inch ID have a pressure reducing safety device at the source of supply.

Project Entities shall be responsible for ensuring that automatic-start air compressors display a warning sign stating that the unit starts automatically.

Project Entities shall ensure that automatic-start air compressors are locked-out or disabled prior to any work activity being performed on or around the equipment.

Project Entities shall be responsible for making certain that O-rings, seals, diaphragms, and plastics are compatible with lubricants used for maintenance of air compressors.

Project Entities shall require frequent steam cleaning to ensure the removal of potentially explosive material from air systems.

- The use of solvents and/or chemicals is prohibited.

Project Entities shall make sure all air compressors that are driven by liquid-fueled engines are provided with drip pans to collect and remove spilled fuel.



Project Entities shall ensure that all moving parts — such as shafts, couplings, belts, and sheaves — are enclosed to protect project personnel and allow heat to dissipate.

Using compressed air or gas to displace the fluid content of a container shall be prohibited, unless the container is built to American Society of Mechanical Engineers (ASME) code and designed for the pressure that is to be applied.

### 13.2 Abrasive Blasting

Project Entities shall be responsible for ensuring the following, as it relates to abrasive blasting:

Whenever hazardous substances — such as dusts, fumes, mists, vapors, or gases — exist or are produced during construction activity, their concentrations shall not exceed the limits specified by the Occupational Safety and Health Administration's (OSHA's) current permissible exposure limits (PELs).

A hot work permit shall be required prior to the performance of abrasive blasting.

- Atmospheric monitoring shall be conducted in the immediate area in which abrasive blasting is to be performed.
- Atmospheric monitoring shall be conducted immediately prior to the performance of abrasive blasting.
- Abrasive blasting shall be prohibited in atmospheres where combustible gas concentrations exceed 0% of the lower explosive limit (LEL).

Prior to the performance of abrasive blasting, the surface and/or protective coating being blasted shall be known to make a proper evaluation of the potential hazard(s).

Abrasive blasting equipment, hoses and hose connections shall be inspected prior to commencement of operations.

- Inspection shall include:
  - Examination for weak spots in the hose.
  - Holes or breaks.
  - Proper hose connections, in accordance with manufacturer specifications.
  - Breathing air pressure.

When not in use, abrasive blasting hoods shall be stored in accordance with manufacturer's recommendations.

Breathing air shall be monitored for the presence of carbon monoxide.

Abrasive blasting nozzles shall be equipped with a manually operated hand valve — dead man control.

Proper grounding of the air compressor, hose nozzle, sand hopper, and the surface to be blasted shall be required prior to work activities commencing.

Abrasive blasting shall be prohibited in locations where flammable/combustible liquids are present unless appropriate measures have been implemented to protect against static build-up.



Air compressors, sand hoppers, knockout pots, charcoal filters, pot tenders, etc., shall always be located upwind of abrasive blasting activity.

The intake of an air compressor shall be located away from the exhaust of internal combustion engines, abrasive blasting, painting, or other sources of smoke or contaminants.

All material to be blasted shall be properly spaced, landed and secured.

Small objects, loose blocking, etc., shall be removed from all material prior to abrasive blasting activity commencing.

Employees shall keep hands away from the nozzle opening, shall firmly grip the nozzle, and shall watch footing and movements.

Bleed-off all air pressure to the equipment and hose when shutting down the equipment.

Project personnel assigned the task of abrasive blasting shall be qualified and authorized by their employer prior to commencing the operation; and shall be required to wear the following personal protective equipment (PPE) while performing abrasive blasting or blowing loose sand from materials:

- Coveralls, coat or long-sleeved shirt.
- Long pants.
- Leather gloves.
- National Institute for Occupational Safety and Health (NIOSH) approved supplied air helmet.
- Hearing protection.

All PPE shall be inspected prior to use.

Abrasive blasting helpers shall be required to:

- Prevent breathing air lines and hoses from being entangled, cut, crushed or disconnected.
- Cover breathing air hose ends, when not in use, to prevent entry of particulate matter.
- Depressurize equipment in the event of an emergency.
- Utilize the appropriate PPE while assisting the abrasive blaster, handling blast media, or loading the hopper. Appropriate PPE includes, but is not limited to:
  - Chemical goggles and face shield.
  - NIOSH approved negative pressure respirator.
  - Hearing protection.

Abrasive blasters and helpers shall:

- Discuss the operation and work out any necessary procedures and hand signals.



- Keep all food and drink out of the blasting area.

Plume areas resulting from abrasive blasting activity shall be barricaded.

Abrasive blasting media shall be removed from steel before handling or loading.

To the greatest extent possible, project personnel shall avoid working downwind from abrasive blasting operations.

- If it is necessary to work downwind, workers shall wear NIOSH approved dust respirators or air-supplied respirators.
- Wind conditions may cause the hazard area to vary, which shall necessitate the relocation of blasting equipment.

Buildings, equipment, electrical fixtures, and wiring shall be adequately protected prior to abrasive blasting activity commencing.

Abrasive blasting hoses shall be of the static-dissipating type.

- Both the couplings and the nozzle holder shall have no leaks.
- The abrasive blasting nozzle shall be equipped with a deadman operating valve and shall not be tied down or secured in any way that could prevent automatic cutoff.

The air compressor shall be operated below 220 degrees Fahrenheit and be equipped with spark arresters.

#### 13.2.1 Exteriors of Equipment in Service

When tanks, pressure vessels, piping, and other types of equipment are being sandblasted; the discharge of all atmospheric-release safety valves shall, where possible, be directed vertically upwards.

Tests for combustible gas shall be repeated at intervals during the work and after any change in the operating conditions of the equipment being sandblasted.

Remove or protect gauge glasses before sandblasting.

#### 13.2.2 Cone-Roof or Flat-Deck Tanks

When performing abrasive blasting operations on cone-roof or flat-deck tanks, all openings shall be closed, except one to permit tank breathing.

- An open-vent line will satisfy this requirement.
- If breather valves are used, they must be fitted with an 8-foot vertical stack.

The outside of the shell and the stairway may be sandblasted at any liquid level, provided the level remains stationary.

The roof may be sandblasted provided the liquid level remains stationary at the highest practical level.





### 13.2.3 Floating-Roof Tanks

When performing abrasive blasting operations on floating-roof tanks, the roof must be electrically bonded to the shell.

All roof vents must be closed or capped.

The outside of the shell and the stairway may be sandblasted at any level, provided the roof is held stationary.

The roof and upper portion of the inside shell may be sandblasted, provided the roof is held stationary no more than eight feet below the top of the shell.

- The safety line shall extend to the top of the tank and shall be secured for immediate use.
- In all cases, while a floating roof is being sandblasted, two people with a self-contained breathing apparatus (SCBA) shall be stationed on the top of the tank to assist in the event of an emergency.

### 13.2.4 Interiors of Tanks and Other Vessels

All connections, including vent lines, shall be disconnected and blanked-off to prevent the intrusion of combustible substances.

For sandblasting operations conducted inside a tank, the Project Entity shall ensure that all hazards are minimized.

### 13.2.5 Lead-Based Paint

When lead is suspected or confirmed as an ingredient in any paint that is to be sandblasted, a competent person will take a sample to be analyzed for concentration by a qualified laboratory.

The area will be treated as a lead contaminated area and shall be monitored continuously for air quality until the concentration of lead has been determined.

Project personnel shall wear appropriate PPE, including respiratory equipment rated for lead.

Each employee shall be trained in accordance with Lead Standard 29 CFR 1926.62, prior to commencement of work that could potentially expose them to a lead hazard.

### 13.2.6 Dust Hazards

Whenever hazardous substances such as dusts, fumes, mists, vapors, or gases exist or are produced in the course of construction work, a competent person must evaluate the potential health hazards from abrasive blasting operations by considering the composition and toxicity of the abrasive material and the surface being abraded.

When ventilation is used as an engineering control method, the system shall be installed and operated in accordance with the requirements outlined in this chapter.

### 13.2.7 Housekeeping

Abrasive blasting operations may create conditions which result in injuries related to slips, trips and falls.



To avoid potential injuries housekeeping procedures shall include:

- Keeping aisles and walkways clear of steel shot, or similar abrasives, which may create a slipping hazard.
- Prohibiting the accumulation of dust on floors or ledges outside of blasting enclosures.
- Cleaning up dust spills promptly.

### **13.3 Spray Finishing (Painting)**

Project Entities shall be responsible for ensuring the following, as it relates to spray finishing (painting):

Safety Data Sheets (SDSs) for materials being used shall be reviewed and followed by personnel engaged in painting activities.

Equipment shall be inspected daily. When not in use, air hose ends shall be covered to prevent particulate matter from entering the hose.

An adequate number of fire extinguishers shall be present in the painting area.

Safety glasses or goggles and a NIOSH approved respirator for organic vapors shall be worn during spray painting operations including clean up.

Work areas shall be barricaded to protect personnel not involved in the painting operation.

Girders, pipe and other large objects shall be braced or secured before being painted.

Paint and thinners shall not be permitted to come into contact with food, tobacco or skin.

Painters and painter's helpers shall be familiar with the requirements for fire prevention. Proper fire protection shall be in place — minimum of one 20-pound dry chemical fire extinguisher.

Areas where personnel may be exposed to harmful vapors, gases, and/or fumes shall be ventilated to prevent personnel injury, explosion, and/or combustion.

Paints and solvents shall be stored in an orderly fashion in a fireproof cabinet or container.

A bonding system shall be used when transferring liquids from one container to another.

Paint-soaked rags and waste shall be disposed of properly.

Caustic soda shall not be used to remove old paint.

Waste paint and solvents are to be disposed of in a special drum clearly marked "Waste Paint". Paint and/or solvents shall not be poured into drains.

#### **13.3.1 Pressurized Paint Equipment**

Only pressurized paint vessels that have been fabricated and certified in accordance with ASME code shall be used.

Paint pots shall be equipped with a pressure gauge, safety valve — to be checked daily — spray nozzles to be equipped with (deadman) valves which shall not be tied down.



Nozzle, pot, and pressure equipment shall be grounded and periodically checked for continuity.

The safety valves on pressurized equipment must be tested daily.

### 13.3.2 Airless Paint Equipment

All fluid connections shall be checked for tightness and effectively grounded through the hose connections and hose before starting the pump.

All equipment shall be fitted with high-pressure fittings — the use of standard-pressure fittings or equipment shall be prohibited.

High-pressure fluid hoses shall be checked for kinking, bending, or abrasion both before work begins and throughout the job.

The spray gun shall be handled with care, and spray from the gun shall not be directed at any portion of the body, especially when the nozzle of the gun has been removed.

Personnel shall not attempt to change the paint nozzle without first disengaging the trigger of the gun or relieving its fluid pressure.

Personnel shall not be permitted to disconnect the hose of the paint gun without first relieving fluid pressure.

The spray gun shall be equipped with a deadman switch, and the manual control shall not be tied down or secured in any manner which may prevent cutoff when it is released.

The spray gun shall be checked before and during use, to ensure proper automatic cutoff control when the trigger is released. If the gun does not shut-off, the valve is to be checked for dirt, wear, and/or improper adjustment.

### 13.3.3 Epoxy Compounds

All project personnel shall avoid skin contact with uncured epoxy material.

If such contact occurs, the affected body parts shall be washed with soap and water.

Chemical goggles shall be worn when epoxy compounds are mixed or handled.

When metal temperatures are in excess of 150 degrees Fahrenheit, epoxy coating shall not be applied unless approved by the manufacturer.

A fresh air supplied respirator or other respiratory equipment may be necessary when applying these products to a warm surface or during hot weather, especially in ditches or other non-ventilated areas — refer to SDS.

Always obtain and follow the manufacturer's recommendations for applying epoxy and refer to SDS. Do not heat epoxy compounds above recommended temperatures before or after curing because epoxy vapors are combustible and toxic.

### 13.3.4 Creosote-Based Paint

Use caution when creosote or creosote-based paint is used. Contact with either of these paints may blister the skin and/or cause nausea.



Chemical goggles shall be worn and a protective cream, which is not soluble in oil, shall be smeared on all exposed body parts when creosote or creosote-based paint is used.

Refer to SDS for additional information when creosote or creosote-based paint is used.

## Chapter 14

### Equipment for Material Handling and Rigging

#### Chapter Contents

#### 14 Equipment for Material handling and Rigging

##### Equipment for Material Handling and Rigging — Resources

##### 14.1 General Requirements for Equipment

###### 14.1.1 General

##### 14.2 Cranes and Derricks

###### 14.2.1 Definitions

###### 14.2.2 Equipment Knowledge

###### 14.2.3 Calculating Load Capacity

###### 14.2.4 Operational Considerations

###### 14.2.5 Crane and/or Crane Equipment Modification

###### 14.2.6 Crane Inspections

###### 14.2.6.1 Post-Assembly/Initial Inspections

###### 14.2.6.2 Frequent/Pre-Shift Inspections

###### 14.2.6.3 Monthly Inspections

###### 14.2.6.4 Annual Inspections

###### 14.2.6.5 Equipment Modification Inspections

###### 14.2.6.6 Severe-Service or Not-in-Regular-Use Inspections

###### 14.2.7 Crane Inspections Guidelines

###### 14.2.7.1 Barricades and Swing Radius Protection

###### 14.2.7.2 Wire Rope

###### 14.2.7.3 Guarding

###### 14.2.7.4 Mechanical Items

###### 14.2.7.5 Boom and Jib

###### 14.2.7.6 Outriggers

###### 14.2.7.7 Brakes and Operator Aids

###### 14.2.7.8 Crane Cab/Operator's Station

###### 14.2.7.9 Field of Vision

###### 14.2.8 Maintenance Guidelines

###### 14.2.9 Assembly and Disassembly

###### 14.2.10 Power Line Awareness

###### Table 14-1 — Minimum Clearance Distances

###### Table 14-2 — Minimum Clearance Distances While Traveling With No Load

###### 14.2.11 Critical Lifts

###### 14.2.12 Hand Signals

###### 14.2.13 Authority to Stop Operation

###### 14.2.14 Ground Conditions/Stability

###### 14.2.14.1 Ground Conditions

###### Table 14-3 — Allowable Bearing Pressure

###### 14.2.14.2 Stability

###### 14.2.15 Specialty Cranes

###### 14.2.15.1 Overhead Cranes



**14.3 Crane-Suspended Personnel Platforms, Material Hoists, and Elevators**

- 14.3.1 **Use of Crane-Suspended Personnel Platforms**
- 14.3.2 **Equipment Criteria**
- 14.3.3 **Devices**
  - 14.3.3.1 **Controlled Load Lowering**
- 14.3.4 **Proper Operation**
- 14.3.5 **Personnel Platform Criteria**
- 14.3.6 **Personnel Platform Loading and Use**
- 14.3.7 **Attachments and Rigging**
  - 14.3.7.1 **Hooks and Other Detachable Devices**
  - 14.3.7.2 **Rope Bridle**
- 14.3.8 **Trial Lift and Inspection**
- 14.3.9 **Proof Testing**
- 14.3.10 **Work Practices**
- 14.3.11 **Environmental Conditions**
  - 14.3.11.1 **Wind**
- 14.3.12 **Fall Protection**
- 14.3.13 **Traveling Equipment**
- 14.3.14 **Pre-Lift Meeting**
- 14.3.15 **Hoisting Personnel Near Power Lines**
- 14.3.16 **Hoisting Personnel in Drill Shafts**
- 14.3.17 **Hoisting Personnel for Pile Driving Operations**
- 14.3.18 **Hoisting Personnel for Marine Transfer**

**14.4 Conveyors**

- 14.4.1 **General Requirements**

**14.5 Helicopters**

- 14.5.1 **Helicopter Lift Plan Submittal**

**14.6 Rigging Equipment for Material Handling**

- 14.6.1 **Rigger Qualification/Training**
- 14.6.2 **Rigging Equipment Inspection**

**Table 14-4 — Quarterly/Monthly Color Codes**

**14.7 Forklifts/Powered Industrial Trucks**

- 14.7.1 **Operator Training**
- 14.7.2 **Inspection**
- 14.7.3 **Battery Maintenance**



## Equipment for Material Handling and Rigging

### Cranes and Derricks in Construction

Scope

Definitions

Ground Conditions

Assembly/Disassembly — Selection of Manufacturer or Employer Procedures

Assembly/Disassembly — General Requirements

Disassembly — Additional Requirements for Dismantling of Booms and Jibs

Assembly/Disassembly — Employer Procedures — General Requirements

Power Line Safety (Up to 350-kV) — Assembly and Disassembly

Power Line Safety (Up to 350-kV) — Equipment Operations

Power Line Safety (Over 350-kV)

Power Line Safety (All Voltages) — Equipment Operations Closer Than the Table A Zone

Power Line Safety-While Traveling Under or Near Power Lines With No Load

Inspections

Wire Rope — Inspection

Wire Rope — Selection and Installation Criteria

Safety Devices

Operational Aids

Operation

Authority to Stop Operation

Signals — General Requirements

Signals — Radio, Telephone or Other Electronic Transmission of Signals

Signals — Voice Signals — Additional Requirements

Signals — Hand Signal Chart

Fall Protection

Work Area Control

Keeping Clear of the Load

Free Fall and Controlled Load Lowering

Operator Qualification and Certification

Signal Person Qualifications

Qualifications of Maintenance and Repair Employees

Training

Hoisting Personnel

Multiple-Crane/Derrick Lifts — Supplemental Requirements

Design, Construction and Testing

Equipment Modifications

Tower Cranes

Derricks

Floating Cranes/Derricks and Land Cranes/Derricks on Barges

Overhead and Gantry Cranes

Dedicated Pile Drivers

Sideboom Cranes

Equipment With a Rated Hoisting/Lifting Capacity of 2,000 Pounds or Less

Severability



**Appendix A — Standard Hand Signals**

**Appendix B — Assembly/Disassembly — Procedures for Minimizing Boom Movement**

**Appendix C — Operator Certification — Written Examination — Technical Knowledge Criteria**

**Helicopters**

**Helicopter Regulations**

**Briefing**

**Slings and Tag Lines**

**Cargo Hooks**

**Personal Protective Equipment**

**Loose Gear and Objects**

**Housekeeping**

**Operator Responsibility**

**Hooking and Unhooking Loads**

**Static Charge**

**Weight Limitation**

**Ground Lines**

**Visibility**

**Signal Systems**

**Approach Distance**

**Approaching Helicopter**

**Personnel**

**Communications**

**Fires**

**Material Hoists, Personnel Hoists and Elevators**

**General Requirements**

**Material Hoists**

**Personnel Hoists**

**Elevators**

**Base Mounted Drum Hoists**

**General Requirements**

**Overhead Hoists**

**General Requirements**

**Conveyors**

**General Requirements**

**Powered Industrial Trucks (PIT)**

**General Requirements**

**Operator Training**

**PIT Refueling and Battery Changing**

**Lighting for PIT Operating Areas**

**Control of Noxious Gases and Fumes**

**PIT Loading of Vehicles**

**PIT Operations**

**Traveling**

**Loading of the PIT**



**Operation of the PIT**

**Maintenance of PITs**

**Rigging Equipment for Materials Handling**

**General**

**Alloy Steel Chains**

**Wire Rope**

**Natural Rope and Synthetic Fiber**

**Synthetic Webbing (Nylon, Polyester and Polypropylene)**

**Shackles and Hooks**

**Handling Materials**

**Use of Mechanical Equipment**

**Secure Storage**

**Housekeeping**

**Clearance Limits**

**Rolling Railroad Cars**

**Guarding**



## **14.1 General Requirements for Equipment**

### **14.1.1 General**

Superintendents, general foremen, foremen, or other members of management — i.e., persons supervising workers — shall not operate cranes or other load-handling equipment.

All equipment operators shall be specifically trained and qualified to operate each piece of equipment they will be handling.

All equipment for material handling shall be used in accordance with manufacturer recommendations/instruction.

## **14.2 Cranes and Derricks**

### **14.2.1 Definitions**

Refer to [29 CFR 1926 Subpart CC](#) for definitions applicable to this section.

### **14.2.2 Equipment Knowledge**

Project Entities shall be responsible for ensuring that an operator's manual, designated for the crane being used, is present in the crane cab/operator's station.

- The operator's manual shall be reviewed by the operator prior to initial operation of the crane.

Load charts designated for the crane shall be present in the crane cab/operator's station.

- Operators shall be required to review and be familiar with the designated load charts.

Operators shall consider the following factors when consulting load charts:

- The full range of the manufacturer's crane-loading ratings at all stated operating radiuses.
- The effect of optional equipment — e.g., outriggers, counterweight loading, etc. — on the crane.
- Weight of auxiliary equipment — e.g., load blocks, jibs and boom extensions.
- Lists of ratings based on structural, hydraulic, or other factors, rather than exclusively considering stability.
- List of no-load work areas.
- Description of hoist-line reeving requirements on the load chart and/or in the operator's manual.

### **14.2.3 Calculating Load Capacity**

Operators shall consider the following factors when calculating crane load capacity:

- The precise weight of the load, which shall be determined prior to any operation involving the crane.





- Load radius — i.e., the horizontal distance from the center of the crane rotation to the center of the load.
- Boom angle — i.e., the angle formed between the horizontal plane of rotation and the centerline of the boom.
- Boom length, including the jib, swing-away extension, and/or any other attachments which may increase the length of the boom.
- Parts of line.
- Quadrant of operation — i.e., the area of operation in which the lift is being made.
  - **Note:** Different quadrants may have lower lifting capacities.
- Weight of any attachments — jib, lattice extension and/or auxiliary boom point.
- Weight of handling devices — ball, block and/or all necessary rigging.
- Always stay within the rated load capacity and radius. Under adverse field conditions operators must reduce the load capacity until it is determined the crane can safely handle the lift.
- When working at boom lengths or radii between the figures shown on the load capacity chart, the lower capacity rating shall be used.

#### 14.2.4 Operational Considerations

Operators shall not lift a load when wind creates a potentially unsafe or hazardous condition.

If wind exceeds the manufacturer's recommended maximum wind velocity, crane operation shall be halted. Booms shall be lowered or secured under high wind conditions.

When the machine set is not level, crane capacity and structural integrity may be adversely impacted. Always follow the manufacturer's instructions with respect to crane leveling.

Operators shall not engage in any practice or activity that diverts his/her attention — such as using a cellular phone — while operating equipment.

#### 14.2.5 Crane and/or Crane Equipment Modification

Equipment shall comply with the manufacturer's specifications and limitations. Attachments used with cranes shall not exceed the capacity, rating and/or scope recommended by the manufacturer.

Modifications or additions to equipment which may affect capacity or safe operation shall be prohibited unless the manufacturer gives written approval. Under no circumstance shall the original safety factor of the equipment be reduced.

- **Note:** If modifications or changes are made to equipment, then the capacity, operation, and maintenance instruction plates, tags, or decals shall be updated to reflect these changes.



#### 14.2.6 Crane Inspections

This procedure shall in no way eliminate any requirements for crane inspections set forth in the Occupational Safety and Health Administration (OSHA) Standard 1926.1400.

##### 14.2.6.1 Post-Assembly/Initial Inspections

Post-assembly/initial inspections shall be conducted after the crane has been assembled on the project/worksites and/or if significant alterations are made to the crane's configuration while it is on the project/worksites.

- Initial inspection of the crane shall be performed by the operator and/or rental company.
- Manufacturer's guidelines shall be used as the baseline for the post-assembly/initial inspection.
- Special care shall be taken to inspect the brakes, lattice boom —if equipped — and other devices that impact the crane's ability to operate as designed.

Operators shall be required to complete and submit Safety Form N-1C, "Daily Crane Inspection," to document post-assembly/initial inspections of equipment.

##### 14.2.6.2 Frequent/Pre-Shift Inspections

Frequent/pre-shift inspections of all cranes and crane equipment shall be completed prior to daily operations.

Operators shall be required to complete and submit Safety Form N-1C, "Daily Crane Inspection," to document frequent/pre-shift inspections of equipment.

##### 14.2.6.3 Monthly Inspections

Operators shall be required to complete and submit Safety Form N-1C, "Daily Crane Inspection," to document the monthly inspection of equipment.

##### 14.2.6.4 Annual Inspections

A current, annual third-party crane inspection and certification shall be submitted to Burns & McDonnell and/or its subsidiaries prior to the use of any crane on-site.

Annual inspections shall be performed by a qualified crane inspector or by a certified inspection service.

- Annual inspections shall occur every 12 months.
- Equipment without documentation of a current annual inspection shall be prohibited from operating.

##### 14.2.6.5 Equipment Modification Inspections

Equipment modification inspections shall be conducted upon completion of major repairs or modifications that may affect the safe operation of the crane.

Equipment modification inspections shall include both visual inspection and functional testing of the equipment.



Equipment modifications shall be inspected by a qualified crane inspector or a certified inspection service.

#### 14.2.6.6 **Severe-Service or Not-in-Regular-Use Inspections**

Inspections may need to be completed in the unique circumstance that a crane may be exposed to severe service or is not regularly used.

- Severe service includes, but is not limited to, shock loading, unintentionally exceeding the crane load chart, and/or exposure to a hazardous atmosphere.
- Not in regular use refers to a crane that is idle for a period of more than three months.

Operators shall be required to complete and submit Safety Form N-1C, "Daily Crane Inspection," to document severe-service/not-in-regular-use inspections of equipment.

#### 14.2.7 **Crane Inspections Guidelines**

##### 14.2.7.1 **Barricades and Swing Radius Protection**

Barricades shall be set up to protect project personnel from being caught in between the counterweight and the rotating superstructure of the crane.

- Accessible areas within the swing radius of the rear of the crane, either permanently or temporarily mounted, shall be used. A combination of cones/barrels with danger tape may be used as an alternative.

Special attention shall be given to guarding the swing radius while near buildings, delivery trailers, or other structures.

##### 14.2.7.2 **Wire Rope**

Wire rope — including standing ropes — shall be taken out of service when any of the following conditions exist:

- Running ropes either have six randomly distributed broken wires in one lay; or have three broken wires in one strand, in one lay.
- Wear of one-third of the original diameter of outside individual wires.
- Kinking, crushing, bird caging, and corrosion, or any other damage resulting in distortion of the rope structure.
- Evidence of any heat damage, regardless of the cause.
- Reductions in nominal diameter of more than five percent.
- Standing ropes either have more than two broken wires in one lay, in sections beyond end connections; or have more than one broken wire at an end connection.

Operators shall be required to complete and submit Safety Form N-1W, "Monthly Wire Rope Inspection," to document wire rope inspections of equipment.



#### 14.2.7.3 **Guarding**

Reciprocating, rotating, or other moving parts/equipment shall be guarded if such parts are exposed to contact by employees, or otherwise create a hazard.

#### 14.2.7.4 **Mechanical Items**

Inspect tires for cuts, tears and proper inflation.

Check exhaust pipes for guards or insulation in areas where contact by employees, in the performance of normal duties, is possible.

Visually inspect the crane for fluid leaks in lines, tanks, valves, pumps, and other parts of fuel, air, or hydraulic systems.

Check batteries for water level, corrosion, and tight connectors.

Visually confirm that the crane is properly lubricated. The fuel, lubricating oil, coolant, and hydraulic oil reservoirs shall be filled to proper levels.

Inspect sheaves, drums, rigging, hardware and attachments.

Any hook that is deformed, cracked, and/or shows excessive wear must be removed from service.

Check all other functional operating mechanisms, such as locking mechanisms, limit switches, safety devices, hydraulic cylinders, instruments, and lights.

Check all swivels for freedom of rotation.

Confirm guardrails, handholds and steps are secure.

Check anti-skid surfaces on platforms and walkways for damage.

Check platforms and walkways for slippery substances, such as grease, oil, and/or ice.

Check the turntable connections for weld cracks, and loose or missing bolts. If bolts are loose, there is a good chance they have been stretched.

#### 14.2.7.5 **Boom and Jib**

Visually inspect the boom and jib for straightness and any evidence of physical damage, such as cracking, bending, and/or any other deformation of the welds.

Look for corrosion under any attachments that are connected to the chords and lacing.

Look carefully for cracking or flaking of paint, as this may indicate metal fatigue.

On lattice booms, look for bent lacing. If lacing is kinked or bent, the main chord may lose substantial support in that area. When lacing is bent, the ends also tend to draw together which pulls the main chords out of shape.

#### 14.2.7.6 **Outriggers**

Check outriggers to ensure that the beams, boxes, and cylinders are not distorted or cracked.



Check that the welds are not cracked, and that both the beams and cylinders are able to extend and retract smoothly and hold the load.

Check the condition of the floats, and check that they are securely attached. Floats must have the capacity to be securely attached to the outriggers.

Outriggers, when used, shall be extended and tires shall be off the ground.

#### **14.2.7.7 Brakes and Operator Aids**

Inspect and test all brakes and clutches to ensure proper adjustment and operation.

Always inspect boom hoist lockout and other operator aids, such as anti-two-block devices (A2B) and load moment indicators (LMI), for proper operation and calibration when required.

While the engine is running, check all gauges and warning lights for proper readings, and operate all controls to verify they are functioning properly.

During operations, if an operational aid stops working properly, the operator must safely stop operations either until temporary alternative measures are implemented, or until the device is working properly again.

#### **14.2.7.8 Crane Cab/Operator's Station**

Check crane cab/operator's station to confirm the presence of inspection and maintenance records, operator's manual, and appropriate load charts for the loads being lifted.

Check the cab to ensure it is clean and free of clutter.

Check that all controls are labeled to indicate their function.

Verify that controls return to the neutral position when released, unless designed otherwise.

Check that all gauges and warning lights are operable.

Confirm signal horn and back up alarms are operational.

Confirm service/parking brake are operational.

Check that the seat is securely attached and that the cab door operates smoothly.

A fire extinguisher of 5-pound ABC rating, or higher, shall be accessible.

#### **14.2.7.9 Field of Vision**

Check for any broken or cracked window glass which may limit the view of the operator.

- Cab windows shall be comprised of safety glass — or equivalent — with no visible distortions and/or cracks that would interfere with safe operation.

Check that rated load capacities, recommended operating speeds, special hazard warnings — e.g., electrical power line clearance requirements or instructions — are posted and visible to the operator while at the control station.





#### 14.2.8 Maintenance Guidelines

All manufacturer recommended maintenance shall be conducted by a qualified person.

- Deficiencies identified during routine maintenance shall immediately be communicated to subcontractor's/contractor's management team.
  - Deficiencies that have potential to impact safe crane operation shall be repaired prior to returning the equipment to service.

#### 14.2.9 Assembly and Disassembly

Assembly and disassembly of any crane shall be performed under the direction and supervision of the Project Entity's qualified/designated competent person.

- If using a vendor-supplied crane, the vendor will assume responsibility for assembly and disassembly of the crane.

Prior to assembling or disassembling a crane, the Project Entity's qualified/designated competent person shall communicate with the crew to ensure that each crew member is aware of:

- Their role/tasks.
- Hazards associated with their tasks.
- Hazardous locations to avoid.
- Any other specific information deemed necessary.

The operator's manual — located in the crane cab/operator's station — shall provide the manufacturer's plans for assembly and disassembly. Additional guidelines are as follows:

- Assembly/disassembly checklist can be found in the Crane Log Book and shall be completed by the Project Entity's qualified/designated competent person and hazards reviewed with the crew involved.
- If, at any time, the Project Entity's qualified/designated competent person or crewmember becomes uncertain of proper means to complete assembly or disassembly, the operation shall be stopped until the concern is resolved.
- When placing or removing boom pins, employees shall not be positioned under the boom unless site constraints require it and the process has been reviewed with the Project Entity's qualified/designated competent person.
- Ground conditions shall be sufficiently level and bearing.
- Assembly or disassembly shall not occur under power lines.
- Rigging shall be completed by a qualified rigger.

After completion of assembly or any significant crane configuration change, the operator or other competent person shall perform a post-assembly inspection using Safety Form N-1C, "Daily Crane Inspection."



#### 14.2.10 Power Line Awareness

Where overhead lines are present, Project Entities shall be required to do one of the following:

- Ensure all electrical distribution and transmission lines have been temporarily removed, de-energized and visibly grounded.
- Prevent contact with the lines by taking both of the following actions:
  - Establish a 20-foot clearance zone; or use Table 14-1 for establishing a clearance zone.
  - Erect barriers not attached to the equipment to prevent contact with the lines — i.e., protective line covering, warning lines, signs, spotter.

| Table 14-1 Minimum Clearance Distances |                                     |
|----------------------------------------|-------------------------------------|
| VOLTAGE                                | MINIMUM CLEARANCE                   |
| 50-kV or below                         | 10 feet                             |
| Over 50-kV to 200-kV                   | 15 feet                             |
| Over 200-kV to 350-kV                  | 20 feet                             |
| Over 350-kV to 500-kV                  | 25 feet                             |
| Over 500-kV to 750-kV                  | 35 feet                             |
| Over 750-kV to 1,000-kV                | 45 feet                             |
| Over 1,000-kV                          | As established by the utility owner |

| Table 14-2 Minimum Clearance Distances While Traveling With No Load |                                     |
|---------------------------------------------------------------------|-------------------------------------|
| VOLTAGE                                                             | MINIMUM CLEARANCE                   |
| Up to 0.75-kV                                                       | 4 feet                              |
| Over 0.75-kV to 50-kV                                               | 6 feet                              |
| Over 50-kV to 345-kV                                                | 10 feet                             |
| Over 345-kV to 750-kV                                               | 16 feet                             |
| Over 750-kV to 1,000-kV                                             | 20 feet                             |
| Over 1,000-kV                                                       | As established by the utility owner |

Other recommendations for safely operating cranes and equipment when working around power lines include, but are not limited to:

- Use nonconductive taglines to stabilize the load.
- A clearance observer (spotter) may be used to give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by sight.
- If a crane is equipped with a range limiting device, it shall be engaged as a control mechanism.



- Site-specific measures may be taken to limit the crane boom length, working boom angles, swing restricted areas may be restricted, etc.
- If the crane makes contact with power lines:
  - Project personnel shall not touch the crane, load, and discontinue the use of tag lines.
  - Project personnel shall move away from the operations immediately.
  - The operator shall remain at the controls — the cab is grounded and will provide greater protection than attempting to exit the crane.
  - At a minimum, the utility owner shall be contacted and notified of the power line contact. If injuries are suspected, emergency medical services shall be contacted.

#### 14.2.11 Critical Lifts

Critical Lift Plans shall be completed when any of the following conditions are met:

- The lift utilizes two or more pieces of equipment to hoist the load.
- The lift exceeds 70% of the equipment's rated capacity for the configuration in which it is being utilized.
- The lift utilizes special rigging and/or unique conditions are present.
- The lift is over operating systems — e.g., electrical equipment, pipelines, etc. — or occupied buildings/structures.
- The lift is in excess of 50,000 pounds — i.e., 25 tons.
- The lifting/hoisting of personnel.
- The lift director, foreman, operator, or other controlling entity considers the lift to be critical.

Critical lifts shall be planned and documented using Safety Form N-2, "Critical Lift Plan."

If the project manager or Project Entity representative determines that engineering is needed to successfully complete a critical lift, the engineering diagrams must be on-site and available for review by all project personnel involved in the lift.

At a minimum, planning for a critical lift shall include:

- A planning meeting with all persons involved in the critical lift.
- A completed Pre-Task Analysis
- A completed Critical Lift Plan

**Note:** Under no circumstances is an operator to begin critical lift operations prior to the designation of a lift director and a pre-lift meeting.



The lift director shall be responsible for overseeing the critical lift and reviewing the applicable information during the planning meeting.

#### **14.2.12 Hand Signals**

Hand signals to crane and derrick operators shall be those prescribed by the applicable ANSI standard for the type of crane in use. An illustration of the signals shall be posted at the job site, preferably outside of the operator's cab of the crane.

The determination of signals to be used — hand or radio — will be made by the foreman or operator. For critical lifts, the determination of signals to be used will be made by the lift director.

Training of the signal person shall be completed by a qualified employee, such as a supervisor or manager. Training may include hand and/or radio signals and an evaluation of the employees signaling abilities.

#### **14.2.13 Authority to Stop Operation**

Whenever a safety concern exists, the operator has the authority to stop and refuse to handle loads until a qualified person has determined that the safety of the operation is assured.

Furthermore, if any employee or person on the project becomes aware of a safety problem, they must notify the operator by using a stop or emergency stop signal.

#### **14.2.14 Ground Conditions/Stability**

##### **14.2.14.1 Ground Conditions**

Cranes shall not be assembled or used unless ground conditions are firm, drained, and graded to the crane manufacturer's specifications for adequate support and degree of level for the crane. If appropriate conditions cannot be met, additional cribbing, mats, rock or fill shall be used to adequately setup the crane.

Table 14-3 identifies allowable ground bearing pressures and may be used to aid in determining if the soil found on the jobsite has sufficient bearing pressure for crane use, or if alternate supporting methods must be employed.

**Table 14-3 Allowable Bearing Pressure****\*U.S. Army Corps of Engineers EM 1110-1-1905**

On-site competent person (superintendent/operator) to determine ground conditions.  
Refer to manufacturer operator's manual to verify crane's ground bearing pressure.

| BEARING MATERIAL                                                                         | IN-PLACE CONSISTENCY      | NOMINAL BEARING PRESSURE (PSI) |
|------------------------------------------------------------------------------------------|---------------------------|--------------------------------|
| Medium to hard sound rock                                                                | Medium to Hard Sound Rock | 276 - 1,104 PSI                |
| Weathered or broken bedrock of any kind except shale                                     | Soft Rock                 | 138 PSI                        |
| Compact shale or similar rock in sound condition                                         | Soft Rock                 | 138 PSI                        |
| Well-graded mixture of fine and coarse-grained soil: glacial till, hardpan, boulder clay | Very Compact              | 138 PSI                        |
| Gravel, gravel-sand mixtures, boulder gravel mixtures                                    | Very Compact              | 96.6 PSI                       |
|                                                                                          | Medium to Compact         | 69 PSI                         |
|                                                                                          | Loose                     | 41.1 PSI                       |
| Course to medium sand, sand with little gravel                                           | Very Compact              | 55.2 PSI                       |
|                                                                                          | Medium to Compact         | 41.1 PSI                       |
|                                                                                          | Loose                     | 20.7 PSI                       |
| Fine to medium sand, silty or clayey medium to coarse sand                               | Very Compact              | 41.1 PSI                       |
|                                                                                          | Medium to Compact         | 34.5 PSI                       |
|                                                                                          | Loose                     | 20.7 PSI                       |
| Homogeneous inorganic clay, sandy or silty clay                                          | Very Stiff to Hard        | 55.2 PSI                       |
|                                                                                          | Medium to Stiff           | 27.6 PSI                       |
|                                                                                          | Soft                      | 6.9 PSI                        |
| Inorganic silt, sandy or clayey silt, varied silt-clay-fine sand                         | Very Stiff to Hard        | 41.4 PSI                       |
|                                                                                          | Medium to Stiff           | 20.7 PSI                       |
|                                                                                          | Soft                      | 6.9 PSI                        |

**14.2.14.2 Stability**

Cranes shall be level.

Outriggers, when applicable, shall be fully extended.

- **Note:** Newer crane models are equipped with load charts specifically for fully extended, half-extended, and retracted outriggers.

Outrigger pads shall be sized accordingly:

- Rated capacity of the crane in tons divided by five, equals the square footage of support required.





Outrigger pads shall be constructed of sufficient material to withstand deflection/failure during use, as well as to supply sufficient friction to prevent outrigger slip/movement.

When planning to travel with a load, the intended path of travel shall be level within manufacturers' limits, and capable of supporting both the crane and its load.

When relocating/moving crane pads, regardless of the material used, project personnel shall ask for assistance. When possible, the pads shall be moved using equipment to avoid strains and sprains.

#### **14.2.15 Specialty Cranes**

##### **14.2.15.1 Overhead Cranes**

The rated load of the crane shall be plainly marked on each side of the crane, each hoist shall have its rated load either marked on it or its load block and this marking shall be clearly legible from the ground or floor.

- With the exception of floor-operated cranes, an effective audible warning signal shall be provided for any crane that is equipped with a power-traveling mechanism.
- All overhead and gantry cranes in use shall meet the applicable requirements for design, construction, installation, testing, maintenance, inspection, and operation as prescribed in ANSI's B30.2-2005.

#### **14.3 Crane-Suspended Personnel Platforms, Material Hoists, and Elevators**

##### **14.3.1 Use of Crane-Suspended Personnel Platforms**

The use of a crane or derrick to hoist workers on a personnel platform is prohibited; except when the erection, use, and dismantling of conventional means of reaching the worksite — e.g., a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold — would be more hazardous, or is not possible due to structural design or worksite conditions.

Use of crane-suspended personnel platforms shall be approved by Burns & McDonnell and/or its subsidiaries' Corporate Safety & Health. Safety Form N-3, "Suspended Personnel Platform Checklist," shall be completed and submitted to Burns & McDonnell and/or its subsidiaries' for review and approval prior to use of the personnel platform.

If approved, the Project Entity shall ensure:

- The equipment shall be uniformly level, within 1% of level grade, and located on footing that a qualified person has determined to be sufficiently firm and stable.
- Equipment with outriggers or stabilizers shall have their outriggers/stabilizers all extended and locked. The amount of extension shall be the same for all outriggers and stabilizers and in accordance with manufacturer procedures and load charts.
- Employees being hoisted shall remain in direct communication with the signal person — when a signal person is used — or the operator.

##### **14.3.2 Equipment Criteria**

The total load — with the platform loaded, including the hook, load line and rigging — shall not exceed 50% of the rated capacity for the radius and configuration of the equipment, except during proof testing.



When hoisting personnel without a personnel platform the total load — including the hook, load line, rigging and any other equipment that imposes a load — shall not exceed 50% of the rated capacity for the radius and configuration of the equipment, except during proof testing.

When the occupied platform is in a stationary working position, the load and boom hoist brakes, swing brakes, and operator actuated secondary braking and locking features — e.g., pawls or dogs — or automatic secondary brakes shall be engaged.

#### 14.3.3 Devices

Equipment — except for derricks and articulating cranes — with a variable angle boom shall be equipped with both of the following:

- A boom angle indicator, which is readily visible to the operator.
- A boom hoist limiting device.

Articulating cranes shall be equipped with a properly functioning automatic overload protection device.

Equipment with a luffing jib shall be equipped with both of the following:

- A jib angle indicator, which is readily visible to the operator.
- A jib hoist limiting device.

Equipment with telescoping booms shall either be equipped with a device to indicate the boom's extended length clearly to the operator or shall have measuring marks on the boom.

##### 14.3.3.1 Controlled Load Lowering

The load line hoist drum shall have a system, other than the load line hoist brake, which regulates the hoist mechanism's lowering rate of speed. This system or device shall be used when hoisting personnel.

- **Note:** Free fall of the load line hoist is prohibited.

#### 14.3.4 Proper Operation

Personnel hoisting operations shall not commence unless the devices listed in this chapter are in proper working order. If a device stops working properly during such operations, the operator shall safely stop operations. Personnel hoisting operations shall not resume until the device is working properly again. Alternative measures are not permitted.

Direct attachment of a personnel platform to a luffing jib is prohibited.

#### 14.3.5 Personnel Platform Criteria

A qualified person, familiar with structural design, shall design the personnel platform and attachment/suspension system used for hoisting personnel.

Systems used to connect the personnel platform to the hoisting equipment shall allow the platform to remain within 10 degrees of level, regardless of boom angle.

The suspension system shall be designed to minimize any tipping of the platform which may result from the movements of employees occupying the platform.



The personnel platform — excluding the guardrail system and personal fall arrest system anchorages — shall be capable of supporting its own weight and at least five times the maximum intended load without failure.

All welding of the personnel platform and its components shall be performed by a certified welder familiar with the weld grades, types, and materials specified in the platform design.

The personnel platform shall be equipped with a guardrail system which meets the requirements of 29 CFR Part 1926 Subpart M and shall be enclosed at least from the toe board to the mid-rail with either solid construction material or expanded metal with openings no greater than 1/2 inch in size.

Points to which personal fall arrest systems are attached shall meet the anchorage requirements specified in 29 CFR Part 1926 Subpart M.

A grab rail shall be installed inside the entire perimeter of the personnel platform except where access gates/doors are located.

If installed, access gates/doors of all types — including swinging, sliding, folding, etc.— shall:

- Not swing outward.
  - **Note:** If, due to the size of the personnel platform — e.g., a one-person platform — it is infeasible for the door to swing inward and allow safe entry for the platform occupant, then the access gate/door may swing outward.
- Be equipped with a device that prevents unintentional opening.

Headroom shall be sufficient to allow employees to stand upright in the platform.

In addition to the use of hard hats, employees shall be protected by overhead protection on the personnel platform when employees are exposed to falling objects. The platform overhead protection shall not obscure the view of the operator or platform occupants — such as wire mesh with up to 1/2-inch openings — unless full protection is necessary.

All edges exposed to employee contact shall be smooth enough to prevent injury.

The weight of the platform and its rated capacity shall be conspicuously posted on the platform with a plate or other permanent marking.

#### 14.3.6 Personnel Platform Loading and Use

The personnel platform shall not be loaded beyond its rated capacity.

Personnel platforms shall be used only for employees, their tools, and the material necessary for them to do their work. Platforms shall not be used to hoist materials or tools when not hoisting personnel.

During lifts, materials and tools shall be:

- Secured to prevent displacement.
- Evenly distributed within the confines of the platform while it is suspended.



The number of employees occupying the personnel platform shall not exceed the maximum number of individuals the platform was designed to hold, or the number required to perform the work, whichever is less.

#### **14.3.7 Attachments and Rigging**

##### **14.3.7.1 Hooks and Other Detachable Devices**

Hooks used in the connection between the hoist line and the personnel platform — including hooks on overhaul ball assemblies, lower load blocks, bridle legs, and other attachment assemblies or components — shall be:

- Of a type that can be locked, eliminating the throat opening.
- Closed and locked when attached.

Shackles used in place of hooks shall be of the alloy anchor type, and either:

- Have a bolt, nut, and retaining pin in place.
- Of the screw type, with the screw pin secured from unintentional removal.

Where other detachable devices are used, they shall be of the type that is capable of being closed and locked to the same extent as the devices addressed in this chapter. Such devices must be closed and locked when attached.

##### **14.3.7.2 Rope Bridle**

When a rope bridle is used to suspend the personnel platform, each bridle leg shall be connected to a master link or shackle in a manner that ensures that the load is evenly distributed among the bridle legs.

Rigging hardware — including wire rope, shackles, rings, master links, and other rigging hardware — and hooks shall be capable of supporting at least five times the maximum intended load applied or transmitted to that component without failure. Where rotation-resistant rope is used, the slings must be capable of supporting at least ten times the maximum intended load without failure.

Eyes in wire rope slings shall be fabricated with thimbles.

Bridles and associated rigging for suspending the personnel platform shall be used only for the platform and the necessary employees, their tools, and materials required for them to do their work.

The bridles and associated rigging shall not have been used for any other purpose other than hoisting personnel.

##### **14.3.8 Trial Lift and Inspection**

A trial lift with the unoccupied personnel platform loaded at least to the anticipated lift weight shall be made from ground level — or any other location where employees will enter the platform — to each location to which the platform is to be hoisted and positioned.

Where multiple locations are to be reached from a single setup position, one of the following methods shall be used when performing trial lifts:

- Individual trial lifts shall be performed for each location.



- A single trial lift shall be performed in which the platform is moved sequentially to each location.
- **Note:** The trial lift method selected shall correspond with the method that will be used to hoist personnel.

The trial lift shall be performed immediately before each shift in which personnel are to be hoisted. In addition, the trial lift shall be repeated prior to hoisting employees in each of the following circumstances:

- When the equipment is moved and set up in a new location or returned to a location that had been previously used.
- The lift route is changed, unless the competent person determines that the new route presents no new factors affecting safety.

The competent person shall ensure that:

- Safety devices and operational aids required are activated and functioning properly.
- Nothing interferes with the equipment or the personnel platform during the trial lift.
- The lift will not exceed 50% of the equipment's rated capacity at any time during the lift.
- The load radius to be used during the lift has been accurately determined.

Immediately after the trial lift, the competent person shall:

- Conduct a visual inspection of the equipment, base support/ground, and personnel platform, to determine whether the trial lift has exposed any defect or problem or has produced any adverse effect.
- Confirm that, upon the completion of the trial lift process, the test weight has been removed.

Immediately prior to each lift:

- The platform shall be hoisted a few inches with the personnel and materials/tools on board and inspected by a competent person to ensure that it is secure and properly balanced.
- A competent person shall verify that the following conditions exist before allowing the lift to proceed:
  - Hoist ropes shall be free of deficiencies.
  - Multiple part lines shall not be twisted around each other.
  - The primary attachment shall be centered over the platform.
  - If the load rope is slack, the hoisting system shall be inspected to ensure that all ropes are properly seated on drums and in sheaves.

During the trial lift and subsequent inspection(s), any condition that fails to meet one of the above requirements or otherwise creates a safety hazard, shall be corrected before hoisting personnel.





#### 14.3.9 Proof Testing

At each jobsite, prior to hoisting employees on the personnel platform and after any repair or modification, the platform and rigging shall be proof-tested to 125% of the platform's rated capacity. The proof test may be done concurrently with the trial lift.

The platform shall be lowered by means of controlled load lowering, then braked, and held in a suspended position for a minimum of five minutes, with the test load evenly distributed across the platform.

Following the proof test, a competent person shall inspect the platform and rigging to determine if the test has been passed. If any deficiencies are found that pose a safety hazard, the platform and rigging shall not be used to hoist personnel until the deficiencies are corrected, the test is repeated, and a competent person determines that the test has been passed.

Personnel hoisting shall not be conducted until the competent person determines that the platform and rigging successfully passed the proof test.

#### 14.3.10 Work Practices

Hoisting of the personnel platform shall be performed in a slow, controlled, cautious manner, with no sudden movements of the equipment or the platform.

Platform occupants shall:

- Keep all parts of their body inside the platform during raising, lowering and horizontal movement. This provision does not apply to an occupant of the platform, when necessary, to position the platform or while performing the duties of a signal person.
- Not stand, sit on, or work from the top or intermediate rail or toe board, or use any other means/device to raise their working height.
- Not pull the platform out of plumb in relation to the hoisting equipment.

Before employees exit or enter a hoisted personnel platform that is not landed, the platform shall be secured to the structure where the work is to be performed, unless the employer is able to demonstrate that securing to the structure would create a greater hazard.

If the platform is tied to the structure, the operator shall not move the platform until the operator receives confirmation that it is freely suspended.

Tag lines shall be used, when necessary, to control the platform.

#### 14.3.11 Environmental Conditions

##### 14.3.11.1 Wind

When wind speed — sustained or gusts — exceeds 20 mph at the personnel platform, a qualified person shall assess if, in light of the wind conditions, it is safe to lift personnel. If it is not determined to be safe, lifting operations shall not begin — or, if already in progress, shall be terminated.

A qualified person shall determine if, in light of indications of dangerous weather conditions, or other impending or existing danger, it is not safe to lift personnel. If it is not, the lifting operation shall not begin — or, if already in progress, shall be terminated.



#### 14.3.12 Fall Protection

Except over water, employees occupying the personnel platform shall be provided and use a personal fall arrest system.

No lifts shall be made using any of the equipment's other load lines while personnel are being hoisted, except in the case of pile driving operations.

Use of factory-produced boom-mounted personnel platforms that incorporate a winch as original equipment:

- Loads are permitted to be hoisted by such a winch while employees occupy the personnel platform only where the load on winch line does not exceed 500 pounds and does not exceed the rated capacity of the winch and platform.

#### 14.3.13 Traveling Equipment

No personnel shall occupy the personnel platform while the crane is moving — superstructure moving under tires, tracks, or other means — under any circumstances.

#### 14.3.14 Pre-Lift Meeting

A Pre-lift Meeting shall be held to review the applicable requirements of this section and all procedures that will be followed.

This meeting shall be attended by the following parties:

- The equipment operator.
- The signal person — if used for the lift.
- All employees to be hoisted.
- The person responsible for the task to be performed.

The Pre-lift Meeting shall be held prior to the trial lift at each new work location and shall be repeated for any employees newly assigned to the operation.

#### 14.3.15 Hoisting Personnel Near Power Lines

Hoisting personnel within 20 feet of a power line that is up to 350-kV, and/or hoisting personnel within 50 feet of a power line that is over 350-kV, is prohibited.

#### 14.3.16 Hoisting Personnel in Drill Shafts

When hoisting employees into and out of drill shafts that are up to and including 8 feet in diameter, the following requirements shall be met:

- The employee shall either be in a personnel platform or on a boatswain's chair.
- A signal person shall be stationed at the shaft opening.

The employee shall be hoisted in a slow and controlled manner when descending and/or ascending.



- The employee shall use personal fall protection equipment, including a full body harness, attached independent of the crane/derrick.
- The boatswain's chair itself — excluding the personal fall arrest system anchorages — shall be capable of supporting its own weight and at least five times that maximum intended load without failure.
- No more than one employee shall be hoisted at a time.

#### 14.3.17 Hoisting Personnel for Pile Driving Operations

When hoisting an employee in a pile-driving operation the following requirements shall be met:

- The employee shall either be in a personnel platform or boatswain's chair.
- For lattice boom cranes, either:
  - Clearly mark the cable — so that it can easily be seen by the operator — at a point that will give the operator sufficient time to stop the hoist in order to prevent two-blocking.
  - Use spotter, who is in direct communication with the operator, to inform the operator when this point — i.e., the point that will allow the operator sufficient time to stop the hoist and prevent two-blocking — is reached.
- For telescopic boom cranes, both:
  - Clearly mark the cable — so that it can be easily seen by the operator — at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking.
  - Use a spotter, who is in direct communication with the operator, to inform the operator when this point — i.e., the point that will allow the operator sufficient time to stop the hoist and prevent two-blocking — is reached.
- The employee shall be hoisted in a slow and controlled manner, both upon descent and ascent.
- The employee shall use personal fall protection equipment, including a full body harness, independently attached to the lower load block or overhaul ball.
- The boatswain's chair itself — excluding the personal fall arrest system anchorages — shall be capable of supporting its own weight and at least five times the maximum intended load without failure.
- No more than one person shall be hoisted at a time.

#### 14.3.18 Hoisting Personnel for Marine Transfer

When hoisting employees solely for transfer to or from a marine worksite, the following requirements shall be met:

- The employee shall be in either a personnel platform or a marine hoisted personnel transfer device.



If using a marine hoisted personnel transfer device:

- The transfer device shall be used only for transferring workers.
- The number of workers occupying the transfer device shall not exceed the maximum number of people it was designed to hold.
- Each employee shall wear a U.S. Coast Guard personal flotation device that is approved for industrial use.

## **14.4 Conveyors**

### **14.4.1 General Requirements**

Conveyors shall be locked out or otherwise rendered inoperable and tagged out with a "Do Not Operate" tag during repairs and when operation would be hazardous to workers performing maintenance work.

## **14.5 Helicopters**

### **14.5.1 Helicopter Lift Plan Submittal**

Helicopter Lift Plans shall be completed for:

- Loads over 70% of the helicopter's rated capacity for current configuration.
- Lifts over operating systems — e.g., charged electrical equipment, pipelines, etc..
- Lifts over critical structures or buildings.
- Lifts over occupied areas, buildings or facilities.

Safety Form N-7, "Helicopter Critical Lift Plan," shall be completed and submitted to Burns & McDonnell and/or its subsidiaries.

## **14.6 Rigging Equipment for Material Handling**

All rigging equipment for material handling shall be used in accordance with manufacturer recommendations/instruction.

### **14.6.1 Rigger Qualification/Training**

Rigging activities shall be conducted under the supervision of a competent person.

Project Entities shall be responsible for ensuring that project personnel engaged in rigging activities have either been trained by an accredited third-party training organization or have been evaluated and have demonstrated proficiency. Evaluations shall be documented using Safety Form N-10, "Qualified Rigger Evaluation," which shall then be submitted to Burns & McDonnell and/or its subsidiaries.

- A qualified rigger is defined as a person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, successfully demonstrated the ability to solve/resolve problems relating to the subject matter, the work, or the project.



Project Entities shall ensure project personnel involved in rigging operations to meet the definition of a qualified rigger when they have demonstrated the ability and understanding to safely work with the rigging methods and materials in use.

- A qualified rigger shall also have a basic understanding of crane operations and load limitations to prevent an unanticipated load movement for that particular lift.

Project personnel who, during evaluation, fail to demonstrate competence shall not be allowed to participate in rigging activities until they have completed additional training.

Project Entities shall be required to utilize qualified riggers for the following activities:

- Crane assembly/disassembly.
- Rigging or connecting loads to a component or structure and within the load's fall zone.
  - **Note:** A load's fall zone is defined as the area — including, but not limited to, the area directly beneath the load — in which it is reasonably foreseeable that partially or completely suspended materials could fall in the event of an accident.

#### 14.6.2 Rigging Equipment Inspection

Rigging equipment for material handling shall be inspected prior to use on each shift and when necessary while in use to ensure that it is safe to use. Defective rigging equipment shall be removed from service.

Rigging equipment for material handling shall be inspected, by the Project Entity's designated competent person, monthly. Table 14-4, "Quarterly/Monthly Color Codes," shall be used to document monthly rigging equipment inspections.

Safety Form N-11 "Wire Rope Sling/Choker Inspection Report" may be required, in addition to Quarterly/Monthly Color Coding, depending on client and/or project entity preference.

Safety Form N-12 "Chain Sling Inspection Report" may be required, in addition to Quarterly/Monthly Color Coding, depending on client and/or project entity preference.

Safety Form N-13 "Chain Fall and Lever Hoist Inspection Report" may be required, in addition to Quarterly/Monthly Color Coding, depending on client and/or project entity preference.

Safety Form N-14 "Shackle Inspection Report" may be required, in addition to Quarterly/Monthly Color Coding, depending on client and/or project entity preference.

Safety Form N-15 "Synthetic Web Sling/Choker Inspection Report" may be required, in addition to Quarterly/Monthly Color Coding, depending on client and/or project entity preference.



| Table 14-4 Quarterly/Monthly Color Codes |                   |
|------------------------------------------|-------------------|
| QUARTER/MONTH                            | COLOR CODE        |
| January                                  | White             |
| February                                 | White and Yellow  |
| March                                    | White and Blue    |
| April                                    | Green             |
| May                                      | Green and Yellow  |
| June                                     | Green and Blue    |
| July                                     | Red               |
| August                                   | Red and Yellow    |
| September                                | Red and Blue      |
| October                                  | Orange            |
| November                                 | Orange and Yellow |
| December                                 | Orange and Blue   |

## 14.7 Forklifts/Powered Industrial Trucks

### 14.7.1 Operator Training

Project Entities shall be responsible for certifying that each of their forklift/PIT operators have been trained and evaluated.

- Certification shall include the name of the operator, the date of their training, the date of their evaluation, and the identity of the person(s) performing the training or evaluation.

Documentation of the certification shall be transmitted to Burns & McDonnell and/or its subsidiaries via Safety Form C-9, "Certification of Training." Additionally, all forklift/PIT operators shall carry documentation of their training — e.g., card, hard hat sticker, etc. — on their person.

### 14.7.2 Inspection

Project Entities shall be required to ensure that forklifts/PITs are inspected daily.

Daily forklift/PIT inspections shall be documented using Safety Form N-5, "Daily Forklift Inspection," and submitted to Burns & McDonnell and/or its subsidiaries.

- Forklifts/PITs shall not be placed in service if the inspection shows any condition which may adversely affect the safety of the equipment.

### 14.7.3 Battery Maintenance

Project Entities shall be responsible for ensuring all guidelines related to battery maintenance are followed, including, but not be limited to, the following:

- Always remove battery caps slowly and leave open when recharging.



- When charging batteries, acid shall be poured into water; water shall not be poured into acid.
- Battery charging installations shall be in areas designated for that purpose.
- Battery charging facilities shall have an area provided for each of the following:
  - Flushing and neutralizing spilled electrolyte.
  - Fire protection.
  - Protecting the charging apparatus from damage by trucks.
  - Adequate ventilation for dispersal of fumes from gassing batteries.
- A conveyer, overhead hoist, or equivalent material handling equipment shall be provided for handling batteries.
- Reinstalled batteries shall be properly positioned and secured in the truck.
- A carbon tilter or siphon shall be provided for handling electrolyte.
- Care shall be taken to ensure that vent caps are functioning. The battery — or compartment — cover(s) shall be open to dissipate heat.
- Smoking in the battery charging area shall be prohibited.
- Precautions shall be taken to prevent open flames, sparks, or electric arcs in battery charging areas.
- Tools and other metallic objects shall be kept away from the top of uncovered batteries.
- Equipment and/or vehicles shall be turned off, properly positioned, with the brake applied before any attempt is made to change or charge batteries.



## Chapter 15

# Motor Vehicles and Earthmoving Equipment

### Chapter Contents

#### 15 Motor Vehicles and Earthmoving Equipment

##### [Motor Vehicles and Earthmoving Equipment — Resources](#)

##### [15.1 Motor Vehicles Project Program](#)

###### [15.1.1 General Requirements](#)

###### [15.1.2 Site Supervision](#)

##### [15.2 Dump Trucks](#)

##### [15.3 Pneumatic Rubber-Tired Vehicles](#)

##### [15.4 Earthmoving Equipment](#)

###### [15.4.1 General](#)

##### [15.5 Vacuum Truck](#)

###### [15.5.1 General](#)

###### [15.5.2 Bonding and Grounding](#)

###### [15.5.3 Operations](#)

###### [15.5.4 Training](#)

##### [15.6 Drilling, Boring and Direct-Push](#)

###### [15.6.1 Overhead Obstructions](#)

###### [15.6.2 Underground Utilities](#)

###### [15.6.3 Turning or Rotating Machinery](#)

###### [15.6.4 Hydraulic Machinery](#)

###### [15.6.5 Working Safely Around Vehicles](#)

###### [15.6.6 Terrain Hazards](#)

###### [15.6.7 Rig Kill Switch](#)

##### [15.7 Rail Car and Truck Dock Procedures](#)

###### [15.7.1 General Requirements](#)

###### [15.7.1.1 Training](#)

###### [15.7.2 Traffic Crossing](#)

###### [15.7.3 Working Near Railroad Tracks](#)

###### [15.7.4 Rail Dock Procedures](#)

###### [15.7.4.1 Boxcar Loading and/or Unloading](#)

###### [15.7.5 Truck Dock Procedures](#)

###### [15.7.5.1 Truck Dock Facilities and Equipment](#)



## **Motor Vehicles and Earthmoving Equipment**

**Equipment**

**Motor Vehicles**

**Earthmoving Equipment**

**Pile-Driving Equipment**

**Site Clearing**

**Marine Operations and Equipment**

**Definitions**

**Vacuum Truck Operations**

**Drilling, Boring and Direct-Push Operations**

**Rail Car and Truck Dock Procedures**



## 15.1 Motor Vehicles Project Program

### 15.1.1 General Requirements

Project Entities shall be responsible for ensuring that motor vehicles operating on the project fulfill the following requirements:

- At the beginning of each shift, vehicles shall be checked using Safety Form O-1, "Motor Vehicle Inspection," to ensure equipment is in safe operating condition. Defects shall be corrected before vehicles are placed in service.
- When feasible, vehicles shall be backed into parking spots.
- Vehicles shall be equipped with each of the following features:
  - A service brake system, an emergency brake system, and a parking brake system, all of which shall be maintained in operable condition.
  - At least two headlights and two taillights in operable condition.
  - Brake lights in operable condition.
  - A functioning audible warning device at the operator's station.
  - Seats adequate for the number of workers to be carried.
  - [Seat belts](#) and anchorages installed.

Project Entities shall be responsible for making certain that motor vehicles and [equipment](#) have an unobstructed view to the rear unless one of the following is true:

- The vehicle has a reverse signal [alarm](#).
- The vehicle is only backed up when an observer/spotter signals that it is safe to do so.

Project Entities shall ensure that observers/spotters are utilized when their respective project personnel operate motor vehicles or mechanized equipment within three (3) feet of any fixed or moving asset.

- Project employee parking areas are exempted from required use of observes/spotters unless hazards exist.
- Established rights of way designated for normal travel/traffic are exempted from required use of observes/spotters unless hazards exist.

Project Entities shall ensure that vehicles with cabs are equipped with windshields and operable windshield washers/powered wipers.

- Cracked and/or broken glass shall be replaced.

Project Entities shall be responsible for ensuring that vehicles are equipped with operable defogging or defrosting devices.



Project Entities shall make certain that **hauling vehicles** have an adequate cab shield and/or canopy to protect the operator from shifting or falling materials.

Project Entities shall ensure that tools and materials are secured to prevent movement when transported in the same compartment with project personnel.

#### 15.1.2 Site Supervision

Superintendents, general foremen, foremen, or other members of management — i.e., persons supervising workers — including Project Entity supervision, shall be prohibited from operating equipment — e.g., equipment used for load handling, earthmoving, etc.

### 15.2 Dump Trucks

Project Entities shall be required to ensure:

- Dump truck operator's station is clear of the dump area.
- Dump trucks are capable of being locked in position to prevent accidental lowering of the body.
- Operating levers are equipped with a latch or other device to prevent accidental starting or tripping of the mechanism.

### 15.3 Pneumatic Rubber-Tired Vehicles

Project Entities shall be responsible for ensuring:

- All pneumatic rubber-tired motor vehicles are equipped with fenders.
  - Mud flaps may be used in lieu of fenders whenever motor vehicle equipment is not designed to accommodate fenders.

### 15.4 Earthmoving Equipment

#### 15.4.1 General

Project Entities shall be required to ensure:

- Scissor points on equipment are guarded.
- Where necessary for safe operation, spotter(s) — equipped with high-visibility vests, flags, horns or the like — shall be used for moving equipment.

### 15.5 Vacuum Truck

#### 15.5.1 General

Before starting any vacuum truck operations, Project Entities shall ensure that project personnel understand and are aware of:

- The hazards associated with the liquids or substances to be vacuumed or transferred.
- Potential sources of ignition present in/during the operation.





- Flammable atmospheres.
- The permissible exposure limits (PELs) and short-term exposure limits (STELs) of toxic vapors.
- Evacuation and rescue procedures in the event of a toxic gas leak.
- Specific site hazards which may affect the truck operation and/or the safe operation of the vacuum equipment.

#### 15.5.2 Bonding and Grounding

Project Entities shall be responsible for ensuring:

- The complete vacuum transfer system is bonded to ensure a continuous conductive path from the vacuum truck, through the hose and nozzle, to the tank or source container, and grounded to dissipate stray currents to earth.
- Prior to starting transfer operations, vacuum trucks shall be grounded directly to the earth or bonded to another object that is inherently grounded — due to proper contact with the earth — such as a large storage tank or underground piping.

#### 15.5.3 Operations

The vacuum truck operator shall ensure:

- Air-quality monitoring at the work site is conducted at such locations as the discharge area of the vacuum truck venting hose. Testing shall be completed by a qualified person using properly calibrated and adjusted detectors.
- First aid is readily available on site in the event of exposure to toxic gas.
- The manufacturer's instructions are consulted to confirm that the vacuum equipment is designed for the specific transfer operation being conducted.
- All equipment — including tank trucks, vacuum trucks, and pumping equipment — is in safe working condition.
- The tank interior, filter baghouse, and cyclone separators are clean and free of any substances that may chemically react with the liquids to be vacuumed or transferred.
- Either a vacuum hose constructed of conductive material or a thick-walled hose with imbedded conductive wiring, is used when transferring flammable and combustible liquids if the potential for a flammable atmosphere exists in the area of operations.
- Conductive hose shall provide suitable electrical conductance less than or equal to 1 megaohm per 100 feet — as determined by the hose manufacturer.
- Thin-walled, metallic, spiral-wound, conductive hoses shall not be used due to the potential for electrical discharge through the thin plastic that covers the metal spiral.
- Any required permits and inspections for vacuum trucks, equipment, and loading/unloading sites have been obtained/conducted to assure safe operations.



Smoking, or any other source of ignition, shall not be permitted within at least 100 feet — depending on local procedures and atmospheric conditions — of the truck, the discharge of the vacuum pump, or any other vapor source.

To prevent exposure to toxic gases during transfer operations, the following practices shall be observed:

- Vacuum trucks shall not enter tank dike areas until such areas have been checked/monitored and rendered safe.
- Vacuum truck's cargo tanks shall be depressurized.
- All personnel shall leave the cab of the vacuum truck during loading and off-loading operations.
- When transferring flammable liquids or hazardous materials, vacuum truck operators shall remain positioned between the vacuum truck and the source or receiving tank, vessel, or container and within 25 feet of the vacuum truck throughout the transfer process.
- Vacuum truck operators shall monitor the transfer operation and be ready to quickly close the product valve and stop the pump in the event that a line is blocked or release of material through a broken hose or connection.
- Fluids shall never be transferred from one truck to another unless it has been established that no chemical reaction will occur.
- Trucks shall be positioned to minimize exposure to any discharged gases and/or fumes.
- Ensure that discharge lines are long enough and large enough for safe operation.
- Vent lines shall be positioned away from workers and workstations, including control panels, valve handles, gauges, shut-offs, and hose attachment points. If possible, use a vertical exhaust stack to divert exhaust gases away from workers and ignition sources.
- Air-monitoring equipment shall be checked during operations to confirm that venting is proceeding safely.

Vacuum truck operators shall monitor:

- Tank level indicators to avoid overfilling.
- Tank pressure gauges to avoid over-pressurizing receiving tanks or creating excessive vacuum in supply tanks.
- Tank temperature gauges to help identify possible chemical reactions.

Vacuum truck operators shall:

- Minimize the air introduced into the system when pressure loading or unloading by submerging the suction line in liquid or reduce the vacuum pump speed when skimming or nearing the end of a load.
- Maintain a log of transported fluids and any potential residue.
- Use gravity loading and unloading whenever possible.



- Use a vapor recovery system — when available — to avoid venting tanks directly to the atmosphere.

#### 15.5.4 Training

Project Entities shall be responsible for properly training, instructing, and supervising project personnel. Responsibility and training topics shall include, but not be limited to:

- Vacuum truck operators shall be trained and properly licensed in accordance with applicable regulations.
- Vacuum truck operators must be aware of the effect of speeds, turns and the changing center of gravity.
- Vacuum truck operators shall maintain proper distances when operating vacuum trucks inside facilities with restricted clearances.
- Slip, trip and fall awareness.
- The proper use of personal protective equipment (PPE) — such as personal hydrogen sulfide (H<sub>2</sub>S) alarms and air-supplied respirators.
- The hazards of toxic gas exposure and what to do in case of a release.
- A site-specific orientation which shall include:
  - Hazards of the petroleum products, by-products, wastes and materials being transferred.
  - Relevant government and facility safety procedures and emergency response requirements.
  - Safety Data Sheet (SDS) locations.
  - Appropriate PPE use and limitations.

### 15.6 Drilling, Boring and Direct-Push

#### 15.6.1 Overhead Obstructions

Project Entities shall be required to ensure adequate clearance from overhead lines and other obstructions prior to setup and each time the rig derrick or drilling rods are raised, lowered, or moved.

Borings shall not be conducted in locations that will place any part of the rig, rods, or equipment within 20 feet of overhead power lines, even when raised. If any part of the drill rig will be closer than 20 feet to an overhead line, prior arrangements must be made to take the line out of service or have it booted — blanketed and insulated — by the electric utility.

Project personnel shall avoid touching of the rig unnecessarily when it is being raised or lowered.

Project personnel shall not move the rig while it is in a raised position.



### 15.6.2 Underground Utilities

Project Entities shall be responsible for initiating a utility clearance in advance of boring and subsurface activities at each designated work area. Project Entities shall document the utility clearance prior to the start of work — including the ticket number, utilities notified, and the names of all persons granting utility clearance — using Safety Form J-4. It is illegal in some states to perform any subsurface excavation without calling the utilities clearance service for the state — e.g. One Call.

Project Entities shall be required to coordinate with the owner to confirm known locations of underground utilities.

If a utility clearance cannot be obtained for a certain area — such as within plant boundaries — use of non-mechanical methods, such as, hydro-excavation/potholing, air-knifing, or hand-tool methods.

If a significant increase in resistance to drilling or digging occurs in an area where bedrock is not expected, stop work immediately, reassess the situation, reevaluate the data on the locations of underground utilities, and do not proceed until it has been verified that it is safe to do so.

Call the project manager if any uncertainty exists as to whether utility clearance has been established.

Minimize borings in the immediate vicinity of known or suspected underground utilities.

Project Entities shall be responsible for ensuring the following steps are taken when underground utilities are identified:

- Cease drilling or digging immediately.
- Notify the project manager.
- Submit an incident notification through the Safety & Health reporting system.

### 15.6.3 Turning or Rotating Machinery

Project Entities shall ensure the following guidelines are observed:

- Whenever possible, stay at least 2 feet away from turning or rotating machinery — including augers, catheads, engine power take-offs, and drill rods.
- If it is necessary to be closer than 2 feet to turning or rotating machinery, minimize the amount of time in close proximity to the equipment and use caution.
- Near turning or rotating machinery, be aware of where other workers are standing and moving to ensure no one is jostled into the machinery.
- Use caution when wearing loose or baggy clothing.
- Keep clear of the cathead rope at all times. It may break while in use; and it is often coiled on the ground, thus presenting a tipping hazard.

### 15.6.4 Hydraulic Machinery

Project Entities shall be responsible for ensuring the following guidelines are observed:



- Stay at least 2 feet away from hydraulic systems. When under pressure, hydraulic hoses are subject to breaking and whipping around or they may sustain a pinhole leak, which can spray out hydraulic fluid at a high pressure.
- If it is necessary to be closer than 2 feet to hydraulic machinery, minimize the amount of time in close proximity to the equipment and use caution.
- Do not allow the operator to overdrive the equipment, which could cause a blow-out of hydraulic equipment or hoses.

#### 15.6.5 Working Safely Around Vehicles

Project Entities shall be responsible for ensuring the use extra caution when on a site with traffic and/or construction vehicles. The construction area may be present in the following traffic areas and extra precautions shall be taken:

- Highway and road shoulders
- City streets
- Parking lots
- Construction site equipment
- Landfills
- Airports

Precautions taken by those working near other operating equipment or traffic shall include:

- Wearing high-visibility clothing.
- Establishing controlled areas using traffic barricades, cones, or signs.
- Utilization of observers/spotters within established controlled areas.
- Utilization of a flagger for traffic watch and control.
- Remaining cautious and aware of heavy truck and vehicle traffic, as the view of operators of large equipment may be limited. Do not position yourself or your vehicle behind equipment or haul trucks.

Precautions taken by those working near the operating equipment shall include:

- Watching rig operations to know where all machinery and equipment are located.
- Staying visible to the operator as much as possible when working near the operating equipment.
- Keeping out of — or moving cautiously in — areas where work is in progress, including — but not limited to — the following areas:
  - The hoist and derrick.



- Sample driving equipment.
  - Auger and drill rod storage and hoisting areas.
  - Water pump or compressor.
  - Rig exhaust.
- Signaling for the operator to stop work when equipment or the hole must be approached.
  - Venting of rig exhaust and monitoring the air for exhaust gasses when working inside buildings.
  - Working in a position up-wind of vehicle exhaust whenever possible.

#### 15.6.6 Terrain Hazards

The following precautions shall be taken while working around borings, excavations, and backhoe test pits:

- Stay at least 6 feet away from the edge of holes or provide barricades/fall protection.
- Watch for stress cracks, forming in the ground near the edge of the excavation and holes, as a sign of potential soil collapse into the excavation.
- Keep 6 feet away from the soil stockpile as it may be unstable and collapse.

Additional concerns to be aware of and watch for include:

- Stability of the rig.
- Sliding of the rig in muddy conditions.
- Tipping or rolling of the rig on sloping and/or muddy ground.
- Tipping of the rig while the hydraulic leveling jacks are being raised or lowered.
- Tipping of the rig due to poor support structures or timbering under the hydraulic leveling jacks.
- Possible collapse of the rig derrick.
- Possible falling or flying rig and derrick parts.
- Possible breakage of the standard penetration test hammer.
- Possible bending or breaking of drilling rods if the driller is inappropriately stacking the drill rods above the top of the derrick while pulling rods.
- Breaking of hydraulic lines.

When working at quarry and construction sites, project personnel shall take the following precautions:

- Stay well back from precipitous terrain and rock walls.





- Beware of falling rock.
- Coordinate schedules to avoid blasting operations and check in with the quarry operator before entering.

#### 15.6.7 Rig Kill Switch

A discussion shall be held with the driller on each rig at the startup of the field work to discuss the location and use of the kill switch.

### 15.7 Rail Car and Truck Dock Procedures

#### 15.7.1 General Requirements

##### 15.7.1.1 Training

Project Entities shall be responsible for ensuring:

- Appropriate training based on job complexity and potential hazards related to plant's rail system is provided to all applicable project personnel.
- Assessments are used to determine whether personnel have adequately demonstrated that they possess the knowledge and skills required to safely perform their work assignments.

#### 15.7.2 Traffic Crossing

In all cases, pedestrians/project personnel shall cross rails at existing, designated, pedestrian rail crossings where provided.

Additionally, vehicle crossings shall not be used as pedestrian crossings unless they are so identified and/or located, and no other pedestrian crossings exist in the area.

Project Entities shall be responsible for ensuring the following guidelines are enforced:

- If a designated pedestrian crossing is not available:
  - Do not cross within 10 feet of the end of a parked rail car.
  - Do not cross between uncoupled cars.
  - Stop, look and listen prior to proceeding across the tracks.
  - Never step on rails, as they may be slippery.
- When crossing around/through equipment:
  - Never attempt to crawl under rail equipment.
  - Never climb over moving rail equipment.
  - Never attempt to cross in front of moving equipment.



- Never position any body part in a potential pinch point, as rail equipment may move in either direction at any time.

### 15.7.3 Working Near Railroad Tracks

Project Entities shall be responsible for obtaining permission from the railroad supervisor — or designated person — prior to performing work within 25 feet of any railroad track. Permission must also be obtained for equipment which may reach any point within 25 feet of railroad tracks.

Permission must be obtained to take tracks out of service.

### 15.7.4 Rail Dock Procedure

Project Entities shall be responsible for ensuring the following guidelines are implemented in rail dock areas:

- A warning system and operational procedure shall be in place.
- The use of derails or derailing devices shall be included in the warning system.
- Track wells, internal tracks, and loading/unloading areas shall be equipped with audible and visual warning devices that operate while the derail is disengaged.
- Electronic locking devices operated by trained/designated personnel are to be used to lock the derails in place.
- Cars that are spotted shall be secured by chocks, blocks, or the handbrake.
- Employees shall be trained in the use of car shakers, mechanical assists, etc.
- Employees who enter a full, or partially full, bulk car shall be provided with fall protection and/or protected from hazards such as engulfment, material bridging, auger pits, etc.
- Lockout control procedures shall be in place when performing activities where rail car movement may present a hazard.
- Ensure that the railroad company is contacted and made aware of where and when the employees will be working.
- The procedure for moving trains into and out of a facility shall be the responsibility of a trained/ designated person.
- Designated personnel shall inspect the rail dock area and tracks at the beginning of each shift ensuring:
  - The warning system/equipment is properly positioned and functional.
  - Audible and visual warning devices are operating properly while the derail is disengaged.
  - The tracks are clean and free of debris.



The local procedures shall include the designated personnel ensuring all of the following during switching activities:

- The track well is clear, and no one is working in the area around the tracks.
- All pedestrian doors into the track well are secured.
- All dock plates have been removed, bridges have been lifted, and overhead doors have been opened.
- Audible and visual warning devices are operating properly.
- Electronic locking devices are operational.
- A system shall be in place to prevent rail cars from moving once they are in place on the dock.
- Chocks and wheel stops shall be periodically inspected for cracking and other deterioration.
- Hand brake is set.

Powered or portable dock boards, when used, shall be:

- Capable of providing a good fit between the dock edge and the rail car.
- Prevented from slipping.
- Periodically visually inspected for cracking and other forms of deterioration.

#### 15.7.4.1 **Boxcar Loading and/or Unloading**

Project Entities shall be responsible for ensuring the following guidelines are implemented during boxcar loading and/or unloading:

- All doors shall be visually inspected before being opened and/or closed.
- Rail car doors shall be regularly lubricated.
- A mechanical assist which moves parallel with the travel of the door shall be used.
- When opening and closing the door, ensure no other employees are in the line of fire.
- Tank Car Loading and/or Unloading

If located in an area remote from the rail dock, tank car loading and/or unloading shall require separate warning operation.

Cars that are spotted shall be secured by chocks, blocks, or the handbrake.

If the tank car contains a hazardous material, the Project Entity shall be responsible for ensuring the following questions are addressed:

- Are the people loading/unloading it trained in the safe handling of the material?



- Are they trained in emergency procedures?
- Are proper warning signs used during loading and unloading operations?

#### 15.7.5 Truck Dock Procedures

The facility shall have a written safe operating practice for truck dock operations including, but not limited to:

- The spotting, securing and inspecting of trailers prior to loading/unloading activities.
- The covering of trailers or trucks which are loaded or unloaded away from the dock areas — e.g., loading/unloading from ground level, side loading/unloading of open side trailers.

The inspection of trailers prior to any loading or unloading operations shall include:

- Interior items including the floor, sidewalls, doors and roof structure.
- Exterior items including floor cross members and fasteners, top and bottom rails, sidewalls, doors, rear impact bar (ICC bar), and trailer landing gear.

The Dock Safety Procedures shall be posted in a highly visible and easily accessible location.

Standard operating procedure shall ensure:

- Outside tractor drivers do not place or remove trailer control stop signs or perform any other Dock Safety Procedures unless specifically authorized to do so.
- All dock spots are marked with a unique identifier visible to both dock employees and drivers from inside the building, the dock well, and the outside of the dock.

All fork trucks used at the loading dock shall be clearly marked with the vehicle's lifting capacity.

Markings shall use the format CAP: 6,000 pounds.

Trucks with a capacity greater than 8,000 pounds, but less than 10,000 pounds must also be marked "HD" to indicate that they are heavy-duty fork trucks.

Heavy-duty (HD) fork trucks are prohibited from entering standard-duty over-the-road trailers to load and unload material.

HD fork trucks are only used in heavy-duty trailers, which are properly identified and marked as such.

Fork trucks with lifting capacities in excess of 10,000 pounds are prohibited from entering highway trailers except where the trailer floor system has been certified and labeled by the manufacturer to match or exceed the capacity of the fork truck being used.

All trailers shall be chocked and properly restrained prior to any loading or unloading operations.

- Single and double-axle trailers require a chock on each side. Triple-axle trailers require two chocks on each side.
- Moveable axles must be locked in the rearmost position.



It shall be visually verified that trailer dock locks or other automatic restraint systems in use are properly engaged.

Jack stands shall be used properly for dropped trailers.

Either a single, center-mount spreader beam style jack stand or two corner-post style jack stands are required.

The jack stands must be placed under the trailer in a manner that will support the frame — not the floor.

Jack stands shall contact the underside of the trailer frame.

Trailers must have corner-post style jack stands placed under the rear corners if they have an overhang of 6 feet or more or are equipped with adjustable axle positions that cause the rear of the trailer to overhang the rear axles by a distance of 6 feet or more.

Trailers equipped with an air-ride system shall have the system deflated and jack stands placed under the rear corners of the trailer.

#### 15.7.5.1 **Truck Dock Facilities and Equipment**

Chocks and jack stands shall be periodically inspected for cracks, wear and deterioration.

Project Entities shall be responsible to ensure procedures are in place to protect personnel while performing maintenance work on dock plates, dock locks, or other automatic restraint systems. These procedures shall include:

- Prohibiting work from being performed between a parked trailer and the dock plate.
- Requiring that dock plates on either side of the work location be taken out of service, barricaded, or marked with caution tape to prevent other activities from occurring.
- Requiring that trailers on either side of the work location be moved out where possible.
- Requiring that adequate lighting be provided on the dock and in loading areas.



## Chapter 16

### Hand and Portable Powered Tools

#### Chapter Contents

##### 16 Hand and Portable Powered Tools

##### [Hand and Portable Powered Tools — Resources](#)

##### [16.1 Hand and Portable Powered Tools](#)

##### [16.1.1 General Requirements](#)

##### [Table 16-1 — Quarterly/Monthly Color Codes](#)

##### [16.2 Hand Tools](#)

##### [16.3 Abrasive Wheel Grinders](#)

##### [16.4 Powder-Actuated Tools](#)

##### [16.5 Electric Power Tools](#)

##### [16.6 Saws](#)

##### [16.7 Drills](#)

##### [16.8 Pneumatic Tools](#)

##### [16.9 Battery Powered Tools](#)





## **Hand and Portable Powered Tools**

### **Definitions**

#### **Definitions**

### **Hand and Portable Powered Tools and Other Hand-Held Equipment**

#### **General Requirements**

#### **Hand Tools**

#### **Abrasive Wheels and Tools**

#### **Power-Operated Hand Tools**

### **Guarding of Portable Powered Tools**

#### **Portable Powered Tools**

### **Other Portable Tools and Equipment**

#### **Jacks**

#### **Electric Power Tools**

#### **Saws**

#### **Drills**

#### **Pneumatic Tools**

#### **Battery Powered Tools**



## 16.1 Hand and Portable Powered Tools

### 16.1.1 General Requirements

Project Entities shall be responsible for ensuring project personnel are trained on manufacturer's instructions regarding the storage, safe operation, and maintenance of hand and portable powered tools.

Project Entities shall be required to ensure hand and portable powered tools are only used for the purpose for which they were designed.

Project Entities shall ensure that project personnel inspect hand and portable powered tools prior to each use.

Hand and portable powered tools shall be inspected, by the Project Entity's designated competent person, monthly. Table 16-1, "Quarterly/Monthly Color Codes," shall be used when documenting monthly hand and portable powered tool inspections. Safety Form P-2 "Powered Tool Inspection Log" may be required, in addition to Quarterly/Monthly Color Coding, depending on client and/or project entity preference. Safety Form P-3 "Cordless Tool Inspection Log" may be required, in addition to Quarterly/Monthly Color Coding, depending on client and/or project entity preference.

| Table 16-2 Quarterly/Monthly Color Codes |                   |
|------------------------------------------|-------------------|
| QUARTER/MONTH                            | COLOR CODE        |
| January                                  | White             |
| February                                 | White and Yellow  |
| March                                    | White and Blue    |
| April                                    | Green             |
| May                                      | Green and Yellow  |
| June                                     | Green and Blue    |
| July                                     | Red               |
| August                                   | Red and Yellow    |
| September                                | Red and Blue      |
| October                                  | Orange            |
| November                                 | Orange and Yellow |
| December                                 | Orange and Blue   |

Hand and portable powered tools found to be defective shall be tagged "Do Not Use," and removed from service.

Project Entities shall be required to have a hand and portable powered tools policy, that includes, but should not be limited to, the basic expectations outlined in sections 16.2 through 16.9 of this chapter.

## 16.2 Hand Tools

Use the correct type of hand tool for the assigned task.



Always use the tool for its intended purpose.

Keep cutting tools sharp and cover sharp edges with a suitable covering, which will protect the tool and prevent injuries from occurring due to unintended contact with the edge.

Sharp tools — e.g., saws, chisels, knives, etc. — laying on benches shall be pointed away from aisles and handles shall not extend over the edge of the bench top.

Tools with sharp edges must be pointed away from the body when transporting.

Do not carry sharp tools in pockets.

Replace cracked, splintered, or broken handles on files, hammers, screwdrivers, or sledges.

Ensure that the handles of tools, like hammers and axes, fit tightly into the head of the tool.

When using a hammer or a sledge, always check to ensure project personnel will not be struck by the backswing.

Replace worn jaws on wrenches, pipe tools and pliers.

Redress burred or mushroomed heads of striking tools.

Pull on wrenches or pliers. Never push on these tools unless holding the tool with palm open.

Carefully maintain tools. Keep tools clean, dry, and store them properly after each use.

Keep the work environment clean and organized to avoid clutter, which may cause accidents.

Operators shall be positioned so the tool will not cause injury if it falls or slips out of their hands.

Do not apply excessive force or pressure on tools.

When using a cutting tool or a screwdriver, do not hold the stock in the palm of the hand. Always lay the stock on a workbench or in a vice.

Do not throw tools. Tools shall be handed, handle first, directly to other workers.

Do not carry tools in a way that interferes with using both hands on a ladder, while climbing on a structure, or when doing any hazardous work. If working on a ladder or scaffold, tools should be raised and lowered using an approved tool bag and hand line.

Do not leave tools lying on elevated structures, such as a platform or scaffold, as they may be bumped and fall.

When using cutting tools, always cut away from the body.

### **16.3 Abrasive Wheel Grinders**

Check all abrasive wheels for cracks or damage before mounting.

Make sure the operating speed of the grinder does not exceed the rated abrasive wheel speed.

Always use caution when handling and storing abrasive wheels.



Ensure the abrasive wheel hole fits the grinder arbor properly and the flanges are clean, flat, and of the proper type and size for the abrasive wheel being mounted.

Always run abrasive wheels in a protected area prior to grinding.

Always use grinders with manufacturer guards and handles in place.

Pedestal and bench grinders shall be securely fastened on a solid surface.

Adjust tool rests to within 1/8 inch of abrasive wheels. Never adjust rests while wheels are moving. Work rest height shall be on horizontal center line of the machine spindle.

Maintain 1/4-inch wheel exposure with a tongue guard or a movable guard.

Do not use abrasive wheels that have been dropped or otherwise damaged.

Do not use excessive pressure when mounting abrasive wheels between flanges.

Do not wear loose clothing during grinding operations.

#### **16.4 Powder-Actuated Tools**

Project Entities shall provide proof of training for project personnel using powder actuated tools.

Before use, operators shall inspect powder-actuated tools to verify:

- The tool is clean.
- All moving parts operate freely.
- The barrel is free from obstructions.
- Correct shields, guards, or safety attachments, recommended by the manufacturer, are in place.

Never point a powder-actuated tool at anyone, whether it is loaded or unloaded.

Powder-actuated tools shall never be loaded until ready for use. Loaded powder-actuated tools shall not be left unattended.

Powder-actuated tools shall not be used in areas where flammable or combustible atmospheres may be present.

When operating a powder-actuated tool, press and hold the tool firmly against the surface into which the fastening device is being driven.

Never drive a fastener into a spalled or chipped surface.

Never shoot a fastener into a surface unless certain it will contain the fastener.

Always keep hands away from the end of the barrel.

Ensure that cartridges, pins, nails, etc., are of the proper specification for the material on which they are used.



Ricochet or spall guard shall remain in place.

Spent and/or misfired cartridges shall be properly disposed of and shall not be left in the work area.

### **16.5 Electric Power Tools**

Keep floors dry and clean to avoid slipping while working with electric power tools.

Keep cords from presenting a tripping hazard.

Never carry an electric power tool by its cord.

Use electric power tools that are double-insulated or have a three-pronged cord and are plugged into a ground fault circuit interrupter (GFCI) or use of assured grounding program.

Electric power tools shall not be used in wet conditions unless approved for such use.

When appropriate, secure materials with a clamp or vise to keep it from slipping.

Always turn off and unplug electric power tools before making any adjustments, changing accessories, or performing maintenance.

### **16.6 Saws**

When cutting, stand to the side to avoid potential kickbacks.

Check the cutting surface for metal objects, such as nails or screws.

Set the cutting depth as shallow as possible and do not permit the blade to protrude more than a little below the stock being cut.

Always use with both hands when operating a saw to ensure maximum control.

Always wait for the blade to stop moving before setting the saw down on any work surface.

All portable powered saws shall be equipped with a functioning, spring-loaded operating switch that automatically shuts off when the trigger is released.

Never retract the lower guard of a circular saw while the blade is moving.

When using a saw, keep hands away from the blade.

Make sure the power cord is not in line of the saw cut.

Never use a reciprocating saw unless the insulating boot of the saw is in place.

When using any type of saw, always ensure that guards are in place and functioning properly.

### **16.7 Drills**

Keep drill air vents clear to maintain adequate ventilation.

Always keep drill bits sharp.



When using a drill, keep all cords clear of the cutting area, and before each use, inspect cords for frays or damage.

Disconnect the power supply prior to changing or adjusting the bit or attachment.

Tighten the chuck securely and remove the chuck key before starting the drill.

Secure the workpiece being drilled to prevent movement.

Slow the rate of feed just before breaking through the surface.

Drill small pilot holes before drilling large holes.

Clamp stock so the material will not twist or spin.

Do not operate the drill with one hand while holding the material with the other.

Do not use a bent drill bit.

Do not exceed the manufacturer's recommended maximum drilling capacities.

Do not use a hole saw without the pilot drill.

Do not use high speed steel (HSS) bits without cooling or lubricating the bit.

Do not attempt to free a jammed bit by starting and stopping the drill. Unplug the drill then remove the bit from the workpiece.

Do not reach under or around the stock while it is being drilled.

Do not overreach. Always keep proper footing and balance.

Do not raise or lower the drill by its power cord.

Do not use in wet or muddy locations. Use a nonpowered drill instead.

Do not use excessive force to drill into hard material. Reduce drill speed if possible.

Allow the drill bit to cool before changing or adjusting it.

### **16.8 Pneumatic Tools**

Ensure that the compressed air supplied to the tool is clean and dry.

Clean, lubricate, and maintain tools according to the manufacturers' instructions.

For each tool, use only the attachments recommended by the manufacturer for that device.

Be careful to prevent hands, feet, or body from injury in case the machine slips or the tool breaks.

Reduce physical fatigue by supporting heavy tools with a counterbalance wherever possible.

Use the proper hose and fittings of the correct diameter.





Use hoses specifically designed to resist abrasion, cutting, crushing and failure due to continuous flexing.

Check hoses regularly for cuts, bulges and abrasions. Tag and remove defective hoses from service.

Before connecting a tool, the operator shall blow out the air line, holding the hose firmly and blowing away from themselves and others.

Ensure hose connections fit properly and are equipped with a mechanical means of securing the connection — e.g., pinned, clipped or wired.

Do not operate any tool at a pressure above the manufacturer's rating.

Turn off the air pressure to hose when the tool is not in use or when changing power tools.

Do not carry a pneumatic tool by its hose.

Avoid creating tripping hazards, which may result from hoses laid across walkways or curled underfoot.

Pneumatic impact tools must have safety clips and/or retainers for tool bits.

### **16.9 Battery Powered Tools**

Make sure the tool and battery are kept dry and away from wet conditions.

Always set the tool to the proper setting before using it.

Verify that all the safety features, buttons, and/or triggers are working properly.

Make sure to remove the battery when switching attachments.

Always use guards and handles supplied by the manufacturer.

Store batteries and tools either in their case(s) or in a safe, dry area.

Remove batteries from tools while they are in storage for an extended period.

Remove the batteries from chargers after they are fully charged.

Only use charging devices recommended by the manufacturer.



## Chapter 17

### Welding, Cutting and Brazing

#### Chapter Contents

##### 17 Welding, Cutting and Brazing

##### Welding, Cutting and Brazing — Resources

##### 17.1 Arc Welding

##### 17.2 Electrical Shock Hazards

##### 17.3 Welding Material Rigged by Chain Falls, Come-Alongs, and Wire or Nylon Chokers

##### 17.3.1 Inspections

##### 17.4 Gas Welding

##### 17.4.1 Oxygen-Fuel Gas Burning

##### 17.4.2 Lancing

##### 17.4.3 Plasma Arc Cutting

##### 17.5 Welding/Cutting in Enclosed Spaces

##### 17.6 Training

##### 17.6.1 General

##### 17.6.2 Oxy-Fuel Cutting

##### 17.6.3 General Precautions for Welders/Cutters

##### 17.6.4 Cylinder Use

##### 17.6.5 Hoses and Torches

##### 17.6.6 Ignition Control

##### Figure 17-1 — Typical Hot Tap Activity Flow

##### Figure 17-2 — Example Process to Review Whether Hot Tapping Is Appropriate

##### Figure 17-3 — Example Decision Process for Authorizing Hot Tapping



## **Welding, Cutting and Brazing**

### **Gas Welding and Cutting**

- Transporting
- Placing Cylinders
- Treatment of Cylinders
- Use of Fuel Gas
- Fuel Gas and Oxygen Manifolds
- Hose
- Torches
- Regulators and Gauges
- Oil and Grease Hazards
- Additional Rules

### **Arc Welding and Cutting**

- Manual Electrode Holders
- Welding Cables and Connectors
- Ground Returns and Machine Grounding
- Operating Instructions
- Shielding

### **Fire Prevention**

- Designated Safe Location
- Cannot Be Moved
- Flammable Paints
- Fire Extinguishing Equipment
- Fire Prevention Precautions are Not Sufficient
- Walls, Floors, and Ceilings
- Enclosed Spaces
- Containers Which Contain or Have Contained Flammable Liquids
- Drums Containers, or Hollow Structures
- Before Heat is Applied

### **Ventilation and Protection in Welding, Cutting and Heating**

- Mechanical Ventilation
- Welding, Cutting, and Heating in Confined Spaces
- Welding, Cutting, or Heating of Metals of Toxic Significance
- Inert-Gas Metal-Arc Welding
- General Welding, Cutting, and Heating

### **Welding, Cutting and Heating in Way of Preservative Coatings**

- Surface Covered by a Preservative Coating
- Highly Flammable Hardened Preservative Coatings
- Protection Against Toxic Preservative Coatings
- Artificial Cooling



## 17.1 Arc Welding

Project Entities shall be responsible for ensuring project personnel:

- Remove flammable/combustible materials and liquids prior to commencing hot work operations.
- Turn off welding machines when touching electrical components or pulling leads into a new location.
- Route/secure welding leads and hoses 7 feet above grade utilizing non-conductive materials.
- Remove electrodes from electrode holders when unattended.
- Dispose of electrode stubs appropriately.
- Use adequately gauged leads.
- Place welding screens or suitable barricading to provide protection for project personnel.
- Inspect, repair, replace, or remove from service, components found to be in a state of disrepair.
- Prevent burns by:
  - Cooling hot metal promptly.
  - Storing metal when not in use.
  - Never touching the electrode or electrode holder to bare skin.
- Do not watch the electric arc without proper eye protection.

In addition to the minimum personal protective equipment (PPE) requirements outlined in Chapter 9 of this program, Project Entities shall ensure project personnel engaged in arc welding operations use the following PPE:

- Flame-retardant welding jacket
  - The jacket shall be fully fastened. The jacket sleeve shall be tucked into the cuff of the glove while burning overhead and shall be pulled over the cuff while burning at or below the beltline.
  - The collar of jacket shall be fastened.

## 17.2 Electrical Shock Hazards

Project Entities shall be responsible for ensuring project personnel:

- Do not place electrodes in the electrode holder with bare hands, wet gloves, or when working in wet conditions.
- Immediately remove damaged/defective equipment from service.
- Do not dip hot electrodes in water.



- Do not wear metal jewelry while arc welding.
- Keep welding leads away from power supplies and high voltage lines.
- Ground their work as closely as possible to the electrode holder while in use.

### 17.3 Welding Material Rigged by Chain Falls, Come-Alongs, and Wire or Nylon Chokers

Project Entities shall be responsible for ensuring project personnel do not perform welding operations adjacent to nylon and wire chokers, chain falls, and/or come-along chain links.

- Chain falls, come-along chain links, and wire or nylon chokers shall not be used to carry welding current.

Project Entities shall be responsible for ensuring the ground lead of the welding machine is 2/0 AWG (70 MM<sup>2</sup>) cable or larger, directly connected to the workpiece and returned to the welding power source to prevent stray welding current from arcing.

#### 17.3.1 Inspections

Prior to each use, Project Entities shall be responsible for ensuring project personnel inspect the following items for serviceability:

- Electrode holders
- Engine fluids
- Terminal covers/machine connections
- Lead connections
- Lead insulation

**Note:** Welding leads shall not be repaired by splicing or taping, if the damage is located within 10 feet of the electrode holder.

### 17.4 Gas Welding

Project Entities shall be responsible for ensuring the following additional steps are taken to prevent fires in areas where gas welders are used:

- Fuel cylinders shall be located in an area where sparks/slag cannot reach them.
- Hoses shall be inspected for leaks, wear, and protected from vehicle and foot traffic.
- Oxygen shall not be used to remove dust — oxygen increases the likelihood of combustion when any ignition source is still present.
- Grease or oil shall not be used on the connections of compressed cylinders.
- Smoking shall be prohibited near gas welding operations.



In addition to the minimum PPE requirements outlined in Chapter 9 of this program, Project Entities shall ensure project personnel engaged in gas welding operations use the following PPE:

- Flame-retardant welding jacket
  - The jacket shall be fully fastened. The jacket sleeve shall be tucked into the cuff of the glove while burning overhead and shall be pulled over the cuff while burning at or below the beltline.
  - The collar of jacket shall be fastened.

#### 17.4.1 Oxygen-Fuel Gas Burning

In addition to the minimum PPE requirements outlined in Chapter 9 of this program, Project Entities shall ensure project personnel engaged in oxygen-fuel gas burning operations use the following PPE:

- Flame-retardant welding jacket
  - The jacket shall be fully fastened. The jacket sleeve shall be tucked into the cuff of the glove while burning overhead and shall be pulled over the cuff while burning at or below the beltline.
  - The collar of jacket shall be fastened.
- Flame-retardant pants

#### 17.4.2 Lancing

In addition to the minimum PPE requirements outlined in Chapter 9 of this program, Project Entities shall ensure project personnel engaged in lancing operations use the following PPE:

- Extreme heat resistant PPE/safety apparel made from aluminized heat resistant fabrics in a suitable weight, fire retardant full head and face mask/hood, thick fire-retardant mittens/gloves, fire retardant boots and boot protector/linings.
- Respirator/supplied air

#### 17.4.3 Plasma Arc Cutting

In addition to the minimum PPE requirements outlined in Chapter 9 of this program, Project Entities shall ensure project personnel engaged in plasma arc cutting operations use the following PPE:

- Flame-retardant suit
  - The jacket shall be fully fastened. The jacket sleeve shall be tucked into the cuff of the glove while burning overhead and shall be pulled over the cuff while plasma arc cutting at or below the beltline.
  - The collar of jacket shall be fastened.
- Flame-retardant hood or turtleneck





## 17.5 Welding/Cutting in Enclosed Spaces

Project Entities shall be responsible for ensuring proper venting prior to burning or heating any vessel or equipment that has previously been in service.

Project Entities shall be responsible for providing adequate ventilation — 2000 cfm per welder — for their employees performing hot work activity in an enclosed space.

Project Entities shall require the use of appropriate respiratory protection in the absence of adequate ventilation.

Project Entities shall be responsible for ensuring either:

- Fuel gas/oxygen torches and hoses are removed from vessels, closed containers, enclosed spaces, etc.
- Fuel gas/oxygen hoses are disconnected at the cylinder regulators when the hot work operations are discontinued.

Project Entities shall prohibit project personnel from taking compressed gas cylinders into an enclosed or confined space.

## 17.6 Training

### 17.6.1 General

Project Entities shall be responsible for ensuring project personnel engaged in welding, cutting, and brazing operations are familiar with the expectations outlined in sections 17.6.2 through 17.6.6 of this chapter.

Safety Form L-4 “Compressed Gas Storage Checklist” may be utilized depending on client and/or project entity requirements.

### 17.6.2 Oxy-Fuel Cutting

The operator shall be protected from sparks, flying slag and flame brilliance.

Select clear safety glasses and a face shield shaded No. 5 or darker to protect eyes from injury and provide good visibility.

Protective gloves, sleeves, aprons, and shoes shall be worn to protect skin and clothing from sparks and slag. All clothing and protective equipment shall be kept clean and free of oil, grease and other flammable materials.

Adjust clothing where/when necessary to keep out flying sparks and slag. Sparks may lodge in rolled up sleeves, in pockets of clothing or in cuffs of overalls or trousers. Keep sleeves and collars buttoned where necessary.

Non-combustible ear protection may be used to keep stray sparks from entering ears.

Hard hats shall be worn to protect the head from sparks and slag.

The operation shall be shielded with a fire-resistant screen to protect those not directly involved in the operation from radiation injury to the skin or eyes.



All plasma cutting torch and carbon arc operators, as well as persons working in the vicinity of the plasma and arc cutting operation shall be provided with ear protectors or adequate, properly fitted ear plugs.

### 17.6.3 General Precautions for Welders/Cutters

Inspect all tools and equipment prior to use. Worn or damaged hoses, welding leads, and other equipment with defects affecting safe operation shall be repaired prior to use or discarded.

Each welder or cutter shall have at least one 20-pound, ABC, dry powder fire extinguisher within 35 feet of the location where welding or cutting is being performed.

Project personnel shall not weld, cut, or grind drums, containers or hollow structures which have contained toxic or flammable substances until these items have been thoroughly cleaned or purged and tested with an atmospheric monitor.

An approved cartridge-type respirator shall be used to protect against metal fumes when cutting or grinding the following:

- Zinc metal.
- Metal coated with lead or lead-based paint.
- Metal containing mercury or cadmium.
- Hard facing with manganese.

Project personnel shall not stand in water while using an arc-welder. If necessary, stand on a dry platform made of wood or some other non-conductive material. In addition, the following requirements shall be in place during all arc welding operations:

- Electrode holders shall not be dipped in water to cool them.
- Bodies shall be kept insulated from the work and the electrode holder during welding operations.
- Arc-welding machines shall not be used in the rain.

All necessary hot work permits shall be obtained before work begins.

All sparks shall be contained during cutting/welding operations.

When using fire blankets, procedures shall be in place to avoid possible contamination and reuse of the fire blanket.

During gas welding or cutting:

- Wrenches used to open valves of gas cylinders shall be kept with the cylinder or cart.
- The valve of the gas cylinder shall be closed and all gas shall be released from the regulator before removing the regulator.
- All gas cylinders shall be kept in their upright position and secured against falling during use, transportation, and storage. All cylinders — empty or full — must have valve caps in place when not in use.



- Torches shall be lit with a friction lighter, or other approved device, and not by matches or from hot work.
- Cylinders shall not be removed by their valves, and valves shall not be used for any purpose for which they were not designed.
- Oxygen and fuel gas hoses shall be equipped with flashback arrestors, at both the gauge and torch ends.

#### 17.6.4 Cylinder Use

Compressed gas cylinders shall be secured in an upright position.

Unless a recess in the head protects the cylinder valve, the metal cap shall be kept in place to protect the valve when the cylinder is not connected for use.

The threads on a regulator or union shall correspond to those on the cylinder valve outlet. Connections that do not fit shall not be forced.

Cylinder valves shall be opened slowly. A cylinder that is not provided with a hand-wheel valve shall be opened with a spindle key, special wrench, or other tool provided by the gas supplier.

A cylinder of compressed gas shall not be used without a pressure-reducing regulator attached to the cylinder valve, except where cylinders are attached to a manifold, in which case the regulator will be attached to the manifold header.

Before making connection to a cylinder valve outlet, the valve shall be cracked for an instant to clear the opening of particles and dust or dirt.

- **Note:** Always point the valve and opening away from the body and do not point it toward anyone else. Never crack a fuel gas cylinder valve near other welding work or near sparks, open flames, or other possible sources of ignition.

Regulators and pressure gauges shall only be used with gases for which they are designated and intended. Only the manufacturers of cylinders, valves, or attachments shall repair or alter them.

Unless the cylinder valve has first been closed tightly, no attempt shall be made to stop a leak between the cylinder and the regulator by tightening the union nut.

Fuel gas cylinders in which leaks occur shall be taken out of use immediately and handled as follows:

- Close the valve and take the cylinder outdoors, well away from any source of ignition.
- Properly tag the cylinder and notify the supplier.
- A regulator attached to the valve may be used to temporarily stop a leak through the valve seat.
- If a leak occurs at a fuse plug or other safety device, take the following steps:
  - Take the cylinder outdoors and well away from any source of ignition.
  - Open the cylinder valve slightly and permit the fuel gas to escape slowly.
  - Tag the cylinder plainly.



- Post warning signage against approaching with lighted cigarettes or other sources of ignition.
- A competent person shall remain in the area until the cylinder is depressed to ensure that no fire occurs.

Promptly notify the supplier and follow their instructions for returning the cylinder.

No sparks, molten metal, electric currents, excessive heat, or flames shall be permitted to contact compressed gas cylinders or attachments.

Oil or grease shall never be used as a lubricant on valves or attachments of oxygen cylinders. Oxygen cylinders and fittings shall be kept away from oil and grease, and such cylinders or apparatuses shall not be handled with oily hands, gloves, or clothing.

Oxygen shall only be used for the purpose for which it is intended. Oxygen shall never be used as a substitute for compressed air in pneumatic tools, oil preheating burners, starting internal combustion engines, or dusting clothing.

Cylinders shall never be brought into tanks, unventilated rooms or other closed areas.

Before a regulator is removed from a cylinder valve, close the cylinder valve, and release the gas from the regulator.

Regulators or reducing valves shall be used on both oxygen and fuel gas cylinders to maintain a uniform gas supply to the torches at the correct pressure. The oxygen regulator shall be equipped with a safety relief valve, or be so designated that, if the diaphragm ruptures, broken parts will not fly. When opening cylinder valves, workers shall stand to one side and away from regulator gauge faces.

Only regulators listed by agencies such as Underwriters Laboratories, Inc., or a Factory Mutual shall be used on cylinders of compressed gas.

Leaky or creeping regulators are a source of danger and shall be immediately withdrawn from service for repairs. If a regulator shows a continuous creep, indicated on the low-pressure delivery gauge by a steady buildup of pressure when the torch valves are closed, the cylinder valve shall be closed and the regulator shall be removed for repairs.

When regulators are connected but are not in use, the pressure-adjusting device shall be released. Cylinder valves shall not be opened until the regulator is drained of gas and the pressure-adjusting device on the regulator is fully released.

The following procedures shall be followed, in detail, when regulators or reducing valves are being attached to a gas cylinder:

- To blow out dust or dirt that otherwise might enter the regulator, crack the discharge valve on the cylinder by opening it slightly for an instant, then closing it.
  - On a fuel gas cylinder, first see that no open flame or other source of ignition is near; otherwise, the gas may ignite at the valve.
- Connect the regulator to the outlet valve on the cylinder.
  - Be sure that the regulator inlet threads match the cylinder valve outlet threads.



- Never connect an oxygen regulator to a container containing fuel gas, or vice versa.
  - Do not force connections that do not fit easily.
  - Ensure that the connections between the regulators and cylinder valves are gastight.
- Release the pressure-adjusting screw on the regulator to its limit — turn it counterclockwise until it is loose.
- Open the cylinder valve slightly to let the hand on the high-pressure gauge move up slowly.
  - On an oxygen cylinder, gradually open the cylinder valve to its full limit.
  - On a fuel cylinder make no more than 1 1/2 turns of the valve spindle.
- Attach oxygen hose to the outlet of the oxygen regulator and to the oxygen inlet valve on the torch. Attach fuel hose to the outlet of the fuel regulator and to the fuel inlet on the torch.
- Test oxygen connections for leaks. Be sure the fuel torch oxygen valve is closed; then turn oxygen regulator pressure-adjusting screw clockwise to give about normal working pressure.
  - Using soapy water — nonfat soap — or approved leak-test solution, check connections for leaks.
  - At the same time, check the regulator for creeping indicated by an increase in the reading on the low-pressure delivery gauge. If the regulator creeps, it must be replaced or repaired before being used.
- Test fuel connections for leaks. Be sure fuel torch valve is closed and proceed in manner similar described for oxygen above — except that fuel regulator pressure — adjusting screw should be set to produce a pressure of about 10 pounds per square inch (psi).
- If torch is to be used immediately, proceed in the manner described in the following paragraph. Otherwise, close cylinder valves, then open torch valves to release pressure-adjusting screws on regulators.
- To adjust pressures of oxygen and fuel gas prior to using torch, proceed as follows:
  - With all torch valves closed, slowly open oxygen cylinder valve.
  - Open torch oxygen valve.
  - Turn pressure-adjusting screw on oxygen regulator to desired pressure.
  - Close torch oxygen valve.
  - Open acetylene cylinder valve — 1 1/2 turns only.
  - With torch fuel valve closed, turn pressure-adjusting screw on acetylene regulator to desired pressure.



- Purge each line individually.
  - Open the oxygen torch valve and release oxygen to the atmosphere for a few seconds before closing the valve.
  - Then open the fuel torch valve and release fuel to the atmosphere for a few seconds and close the valve.
- Open the torch fuel valve, light flame, and readjust regulator; then close the torch fuel valve.
  - **Note:** Fuel pressure must first be adjusted with torch valve closed to prevent release of acetylene into the air.
- Open torch valves and light the torch according to the procedure described in the instructions provided with the equipment.

#### 17.6.5 Hoses and Torches

Hoses shall be examined carefully — at least daily — for leaks, worn places and loose connections.

Leaks in the hose at the nipple connection shall be repaired by a competent person or by the manufacturer.

Hoses shall never be repaired. When hoses are taped together for convenience and to prevent tangling, no more than 4 out of every 12 inches shall be covered with tape.

If a flashback occurs and burns the hose, that hose shall be discarded.

Only hoses and connections made specially for oxy-fuel welding and cutting shall be used.

White lead, oil, grease or other pipe fitting compounds for making joints shall not be used.

Hoses shall always be protected from damage or interference.

- Protect hoses from being trampled on or run over; avoid tangles and kinks; and place hoses so they will not be tripped over.
- Connections might be pulled off or the cylinders and equipment might be pulled over by a sudden strong tug on the hose.

Hoses shall not be allowed to contact oil or grease.

Hoses shall be protected from flying sparks, hot slag or other hot objects and open flames.

All oxygen and gas hoses used together shall have flashback arrestors with built-in check valves on both lines installed on the torch and regulator ends.

Only Underwriter Laboratories (UL) or Factory Mutual (FM) approved torches shall be used.

Before changing torches, the gas shall be shut off at the pressure-reducing regulators, not by crimping the hose.





To discontinue welding or cutting for a few minutes, closing the torch valves is permissible. If the welding or cutting is to be stopped for a longer period — e.g., during lunch or overnight — proceed as follows:

- Close oxygen and fuel cylinder valves.
- Open torch valves to relieve all gas pressure for the hose and regulator.
- Close torch valves and release regulator pressure-adjusting screws.

Matches or cigarette lighters shall not be used to light torches. Instead, a friction lighter, stationary pilot flame, or other suitable source of ignition shall be utilized. When lighting, the torch tip shall be pointed so no one will be burned when the gas ignites. Butane cigarette lighters shall not be placed on work surfaces where they may be ignited by sparks or hot slag.

Torches shall never be put down until the gases have been completely shut off. Personnel shall not hang torches from regulators or other equipment which may come into contact with the side of gas cylinders. If the flame has not been completely extinguished, it may heat the cylinder or even burn a hole through it.

When extinguishing the flame, the fuel and oxygen valves shall be closed in the order recommended by the torch manufacturer.

#### 17.6.6 Ignition Control

Prior to conducting any hot work:

- Protective coverings used to contain sparks or molten metal shall be noncombustible fire-retardant welding blankets, sheet metal, fire-retardant treated plywood, or equivalent fire-retardant material.
- Any combustibles that are located within 35 feet of the work area shall be relocated. If these combustibles are unable to be relocated, they must be protected by an acceptable fire-retardant covering.
- All openings in walls, open grating, or ducts within 35 feet of the work site, that may be subject to the passage of sparks or molten metal, shall be adequately protected.
- Nearby personnel shall be protected from heat, smoke, slag, etc.
- Hot tapping or other cutting and welding on a flammable gas, liquid transmission, or distribution utility pipeline shall be performed by qualified individuals.
- Check for any flammable/noxious vapors or combustible residue. If any flammable/noxious vapors or combustible residue are found, then purge flammable/noxious vapors and/or clean combustible residue from any systems/components, tanks, containers, or ducts being worked in or on.

**Note:** Hot work is prohibited in areas where combustibles are inadequately protected from ignition sources. Hot work is prohibited on equipment that has combustible coverings or is located near other combustibles. Precautions shall be taken to avoid unintentional operation of automatic detection or suppression systems.



Burns & McDonnell Safety & Health Program



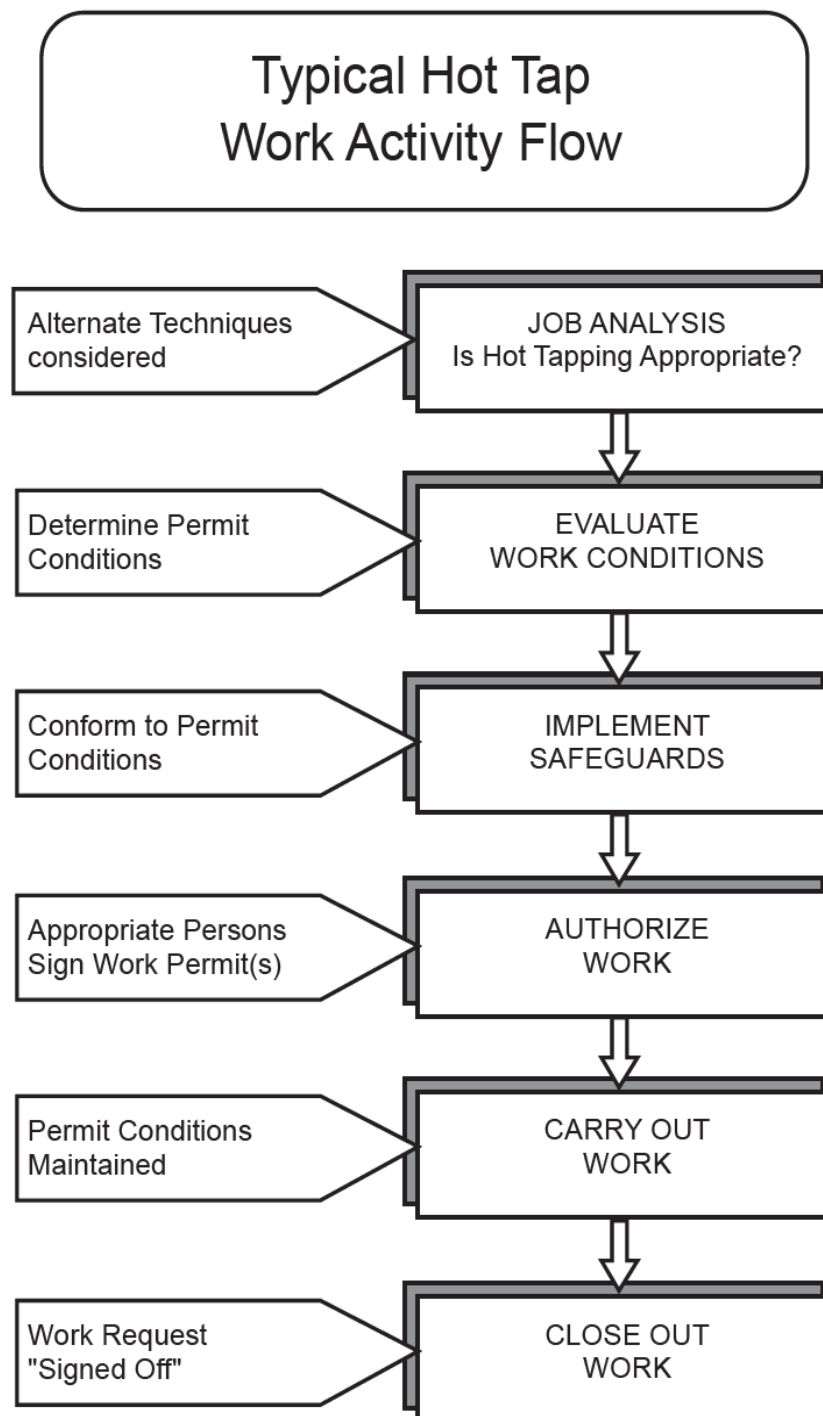
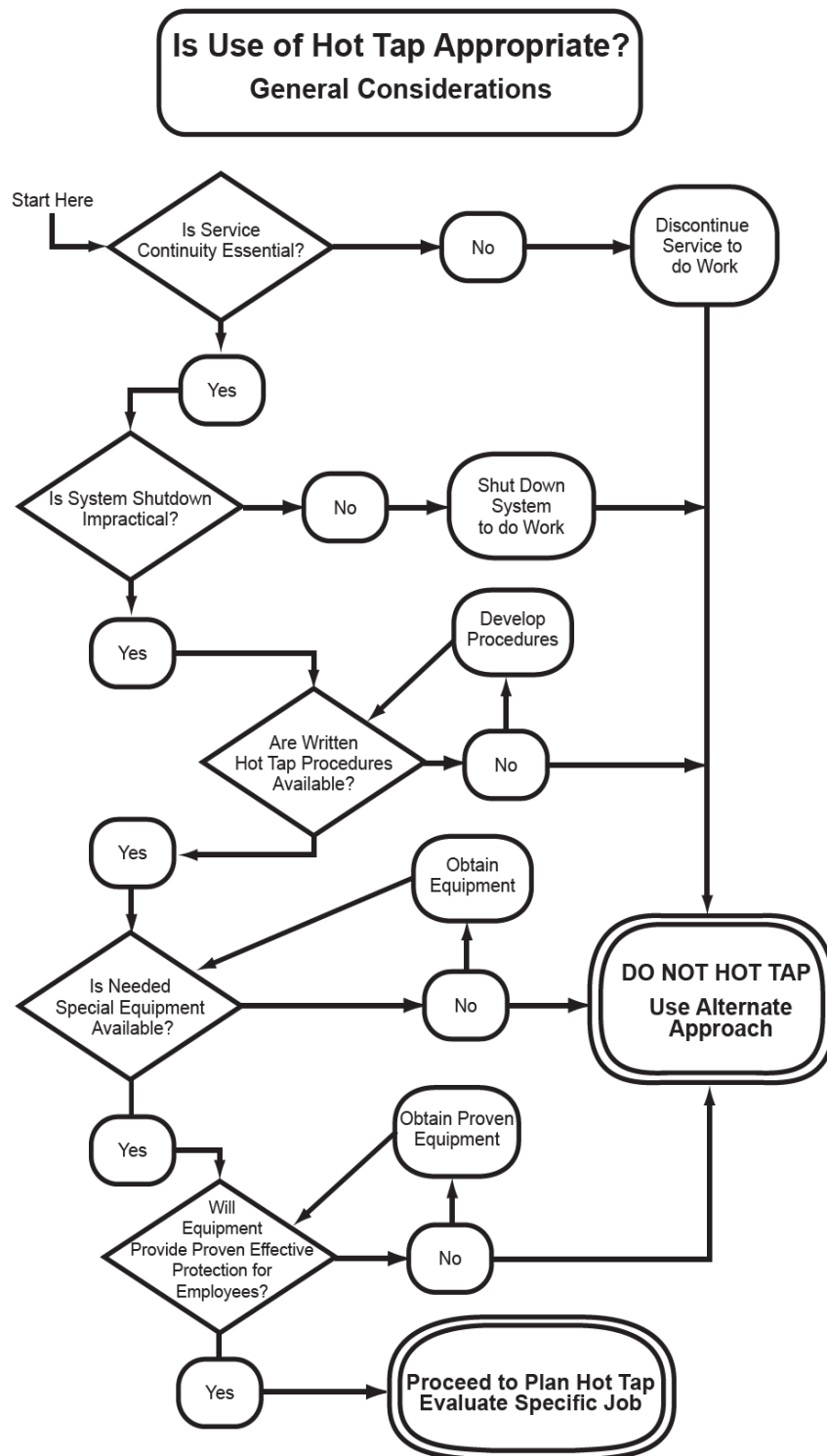
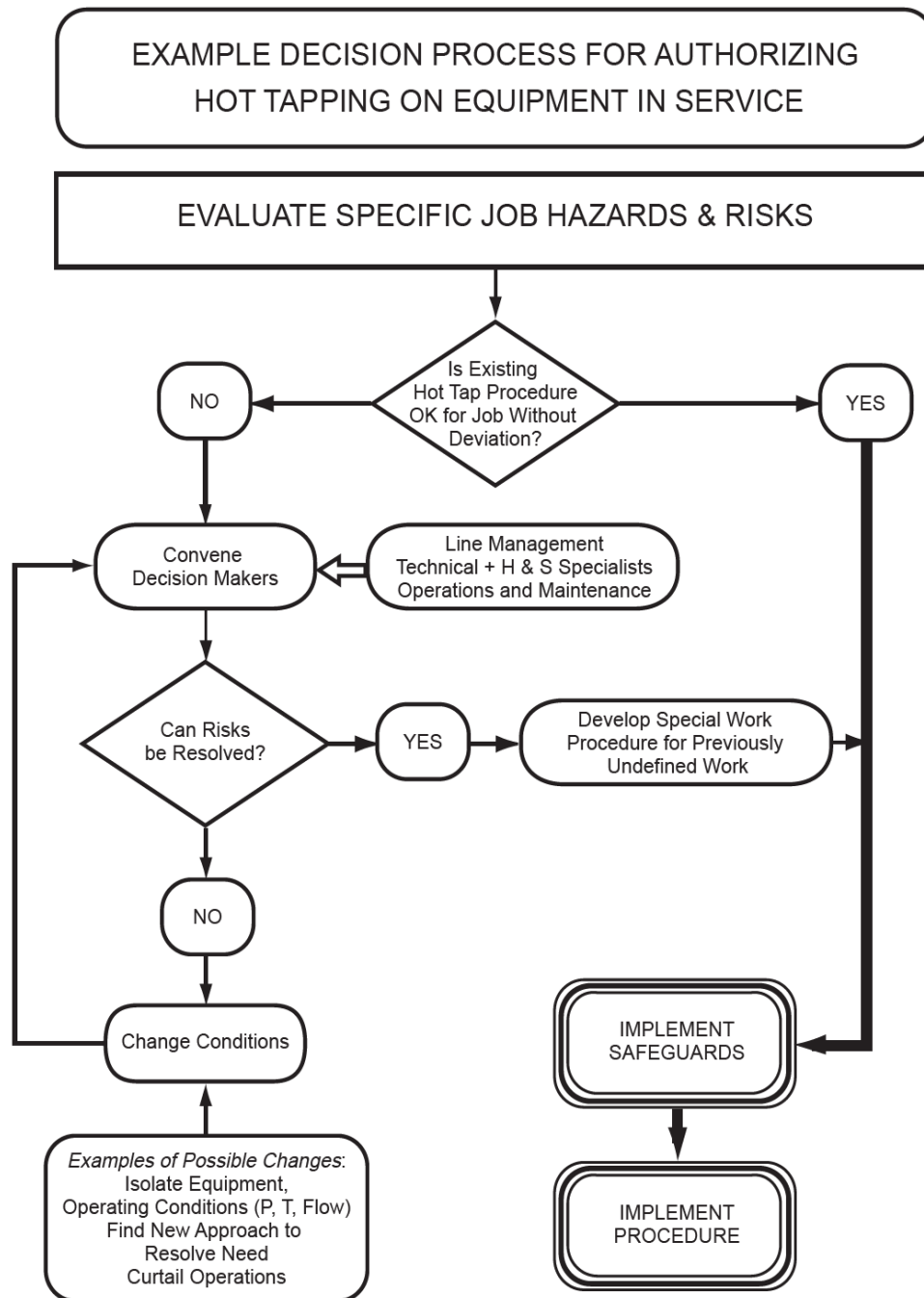
**Figure 17-1 Typical Hot Tap Activity Flow**

Figure 17-2 Example Process to Review Whether Hot Tapping is Appropriate



**Figure 17-3 Example Decision Process for Authorizing Hot Tapping**





## **Chapter 18**

# **Electric Power Generation, Transmission, and Distribution & Telecommunications**

### **Chapter Contents**

#### **18 Electric Power Generation, Transmission, and Distribution & Telecommunications**

##### **Electric Power Generation, Transmission, and Distribution — Resources**

##### **18.1 Electric Power Generation, Transmission, and Distribution**

###### **18.1.1 General**

###### **18.1.1.1 Definitions**

###### **18.1.2 Job Briefing**

###### **18.1.3 Information Transfer**

###### **18.1.4 Personal Protective Equipment**

###### **18.1.5 Crane Lifting Plans**

###### **18.1.6 Substations**

###### **18.1.7 Training**

##### **Telecommunications — Resources**

##### **18.2 Telecommunications**

###### **18.2.1 General**

###### **18.2.1.1 Tower Climbers and Ground Crew Workers**

###### **18.2.2 Work Site Safety Practices**

###### **18.2.3 Zero-Tolerance Policy to Unsafe Work Practices**

###### **18.2.4 Rescue**

###### **18.2.5 Tools and Personal Protective Equipment**

###### **18.2.6 Personal Climbing Equipment**

###### **18.2.7 Vehicle-Mounted Material Handling Devices and Other Mechanical Equipment**

###### **18.2.8 Derrick Trucks and Similar Equipment**

###### **18.2.9 Electrical Vaults, Manholes and Enclosed Spaces**





## Electric Power Generation, Transmission, and Distribution

[General](#)

[Medical Services and First Aid](#)

[Job Briefing](#)

[Hazardous Energy Control](#)

[Enclosed Spaces](#)

[Personal Protective Equipment](#)

[Portable Ladders and Platforms](#)

[Hand and Portable Power Equipment](#)

[Live-Line Tools](#)

[Materials Handling and Storage](#)

[Mechanical Equipment](#)

[Working on or Near Exposed Energized Parts](#)

[Deenergizing Lines and Equipment for Employee Protection](#)

[Grounding for the Protection of Employees](#)

[Testing and Test Facilities](#)

[Overhead Lines and Live-Line Barehand Work](#)

[Underground Electrical Installations](#)

[Substations](#)

[Special Conditions](#)

[Definitions](#)

[Appendix A — Reserved](#)

[Appendix B — Working on Exposed Energized Parts](#)

[Appendix C — Protection from Hazardous Differences in Electric Potential](#)

[Appendix D — Methods of Inspecting and Testing Wood Poles](#)

[Appendix E — Protection from Flames and Electric Arcs](#)

[Appendix F — Work-Positioning Equipment Inspection Guidelines](#)

[Appendix G — Reference Documents](#)



## **18.1 Electric Power Generation, Transmission, and Distribution**

### **18.1.1 General**

#### **18.1.1.1 Definitions**

Refer to [29 CFR 1926.950 - Electric, Power, Transmission, and Distribution](#) for definitions applicable to this chapter.

#### **18.1.2 Job Briefing**

Project Entities shall be required to conduct a Daily Job Briefing with all affected project personnel prior to commencing work activity.

#### **18.1.3 Information Transfer**

Before work begins, the host company shall inform the Project Entity of the characteristics of the host company's installation, as they relate to the safety of the work to be performed including:

- Conditions that are related to the safety of the work to be performed which are known to the host company.
- Information regarding the design and operation of the host company's installation that have potential to negatively impact the Project Entity's ability to facilitate the assessments required by this section.
- Any other known information regarding the design and operation of the host company's installation that is requested by the Project Entity and is related to the protection of the Project Entity's employees.

Prior to commencing work activity, Project Entities shall comply with the following requirements:

- The Project Entity shall ensure that each of its employees receive instruction regarding the hazardous conditions relevant to the employee's work, as communicated to the Project Entity by the host company.
- The Project Entity shall advise the host company of any unique hazardous conditions presented by the Project Entity's work activity.
- The Project Entity shall advise the host company, within two working days, of any unanticipated hazardous conditions found during the Project Entity's work activity, which were previously undisclosed by the host company.

Before beginning work, the Project Entity and the host company shall coordinate their work rules and procedures to ensure that each affected employee is protected.

Confirmation of the information exchange shall be documented using Safety Form R-10, "Host — Contractor Information Transfer."

#### **18.1.4 Personal Protective Equipment**

Fall protection equipment shall be inspected prior to use.



#### 18.1.5 Crane Lifting Plans

Project Entities shall be required to develop a lift plan prior to performing crane lifts.

Project Entities shall be required to review completed lift plans during the Daily Job Briefing/Daily Pre-Task Analysis Meeting to ensure affected personnel are aware of the work activity to be performed, the hazards associated with the work activity, and the required control measures which will be implemented.

Safety Form R-4, "Pre-Lift Crane Permit," and Safety Form R-5, "Pre-Lift Safety Checklist," shall be completed.

Critical Lift Plans shall be completed for all lifts meeting criteria, as defined by Chapter 14, "Equipment for Material Handling and Rigging." Critical lifts shall be planned and documented using Safety Form N-2, "Critical Lift Plan."

#### 18.1.6 Substations

Upon entering an attended substation, project personnel — other than those regularly working in the station — shall report their presence to the individual in charge to receive information on special system conditions which may affect personnel safety.

#### 18.1.7 Training

Project Entities shall be responsible for ensuring that project personnel are trained on, and familiar with, safety-related work practices, safety procedures, and safety requirements as they relate to their respective job assignments.

Project Entities shall submit documentation of training to Burns & McDonnell and/or its subsidiaries using Safety Form C-9, "Certification of Training."



## Telecommunications

[Application](#)

[General](#)

[Training](#)

[Worker Protection in Public Work Areas](#)

[Tools and Personal Protective Equipment](#)

[Rubber Insulating Equipment](#)

[Personal Climbing Equipment](#)

[Ladders](#)

[Other Tools and Personal Protective Equipment](#)

[Vehicle-Mounted Material Handling Devices/Mechanical Equipment](#)

[Materials Handling and Storage](#)

[Cable Fault Locating and Testing](#)

[Grounding for Worker Protection — Pole Lines](#)

[Overhead Lines](#)

[Underground Lines](#)

[Microwave Transmission](#)

[Tree Trimming](#)



## **18.2 Telecommunications**

### **18.2.1 General**

#### **18.2.1.1 Tower Climbers and Ground Crew Workers**

Project personnel shall be provided with, and shall be required to use, appropriate safety equipment.

If proper safety equipment is unavailable or not functioning, work at heights shall be prohibited.

Work activity performed at heights shall be prohibited when weather conditions are of concern.

Project Entities shall ensure the presence of a designated competent person during the performance of work activity.

The Project Entity's designated competent person shall be responsible for making certain that employees are mentally and physically capable of climbing safely. The Project Entity's designated competent person shall have the authority to remove personnel from the climbing team based on their evaluation.

Project Entities shall track employee work schedules, including travel and driving time, to ensure that employees are not climbing while fatigued.

Project Entities shall take special care when training new employees and shall make sure that each new employee is working alongside experienced workers.

Project Entities shall continually seek to enhance the safety skills and awareness of their employees through regular trainings and stand-downs.

### **18.2.2 Work Site Safety Practices**

All Project Entities shall require supervisors to conduct a PTA/Job Briefing meeting at the beginning of each day. The purpose of these meetings shall be to highlight the most important safety issues for the day.

Project Entity supervisors shall utilize the PTA/Job Briefing meeting to review:

- The location of rescue equipment.
- Possible hazards that are specific to the job site.
- Overhead hazards.
- Required personal protective equipment (PPE).
- Any other pertinent topics, including the location of the nearest hospital and how to direct someone to call emergency response services.

Project Entities shall implement work policies and procedures that ensure safe work practices will always be followed.

### **18.2.3 Zero-Tolerance Policy to Unsafe Work Practices**

Project Entities shall be required to adopt a zero-tolerance policy regarding unsafe work practices, particularly, as they relate to free climbing.



#### 18.2.4 **Rescue**

Project Entities shall ensure that an effective fallen worker rescue plan is in place that addresses both self-rescue and aided rescue.

#### 18.2.5 **Tools and Personal Protective Equipment**

Project Entities shall require the use of PPE, protective devices, and special tools required to perform the work activity.

The Project Entity's designated competent person shall inspect personal protective devices, tools, and equipment to ensure they are serviceable and used as required.

#### 18.2.6 **Personal Climbing Equipment**

Project Entities shall require the use of personal fall arrest systems and positioning devices when project personnel are required to perform work activity at positions in excess of 4 feet above the ground, on poles, and on towers. Inspection of this equipment shall be completed daily, using Safety Form V-2, "Fall Protection Equipment Inspection Report and Guide."

#### 18.2.7 **Vehicle-Mounted Material Handling Devices and Other Mechanical Equipment**

Each day, the Project Entity's designated competent person shall be required to perform visual inspections of the equipment that is to be used that day. Safety Form R-3, "Safety Inspection — Hydraulic Boom Trucks/Cranes," shall be used.

#### 18.2.8 **Derrick Trucks and Similar Equipment**

The Project Entity's designated competent person shall be required to perform inspections of derrick trucks and associated equipment at intervals set by the manufacturer, but in no case, less than once per year. Inspection records shall be maintained, including the dates of inspection, necessary repairs made, and corrective actions required, if necessary. Safety Form R-3, "Safety Inspection — Hydraulic Boom Trucks/Cranes," shall be used.

#### 18.2.9 **Electrical Vaults, Manholes and Enclosed Spaces**

Project Entity personnel shall obtain a confined space entry permit prior to entering a manhole or vault. All additional requirements outlined in Chapter 7, Section 1, "Confined Spaces in Construction," shall apply. Safety Form C-7, "Work Permit," or equivalent shall be used.





## Chapter 19

### Electrical Site Specific

#### Chapter Contents

#### 19 Electric Site Specific

Regulatory Safety Standard References: US Occupational Safety & Health Administration (OSHA)

##### 19.1 Electrical Safe Work Practices

###### 19.1.1 Introduction

###### 19.1.2 Personnel Interaction with Electrical Equipment

###### 19.1.3 Responsibilities

###### 19.1.3.1 Host Site Responsibilities

###### 19.1.3.2 Subcontractor Responsibilities

###### 19.1.3.3 Project Manager

###### 19.1.3.4 Construction Site Manager and Startup Manager

###### 19.1.3.5 Employee Responsibilities

###### 19.1.4 Documentation

##### 19.2 Program Definitions

###### 19.2.1 Qualified Person Criteria

###### 19.2.1.1 Qualified Person Stipulations

###### 19.2.2 Unqualified Persons Criteria

###### 19.2.3 General Definitions

##### 19.3 Training Requirements

###### 19.3.1 Electrical Safety Training

###### 19.3.1.1 Additional Retraining

###### 19.3.1.2 Type of Training

###### 19.3.1.3 Electrical Safety Training Documentation

###### 19.3.1.4 Lockout/Tagout (LOTO) Procedure Training

###### 19.3.1.4.1 Initial Training

###### 19.3.1.4.2 Retraining

###### 19.3.1.5 Emergency Response Training

###### 19.3.1.5.1 Contact Release

###### 19.3.1.5.2 First Aid, Emergency Response and Resuscitation

###### 19.3.1.5.3 Training Verification

##### 19.4 General Construction

###### 19.4.1 Portable Cord-and-Plug-Connected Electric Equipment

###### 19.4.1.1 Handling and Storage

###### 19.4.1.2 Grounding-Type Equipment

###### 19.4.1.3 Visual Inspection and Repair Portable Cord-and-Plug-Connected Equipment and Flexible Cord Sets

###### 19.4.1.3.1 Defective Equipment

###### 19.4.1.3.2 Proper Mating

###### 19.4.1.3.3 Conductive Work Locations

###### 19.4.1.3.4 Connecting Attachment Plugs

###### 19.4.1.3.5 Manufacturer's Instructions



- 19.4.1.4 **Power Strips**
- 19.4.1.5 **Ground-Fault Circuit-Interrupter (GFCI) Protection**
  - 19.4.1.5.1 **Outdoors**
- 19.4.1.6 **Assured Equipment Grounding Conductor Program**
  - 19.4.1.6.1 **Testing Ground-Fault Circuit-Interrupter (GFCI) Protection Devices**
- 19.4.1.7 **Portable and Vehicle Mounted Generators**
- 19.4.1.8 **Safe Distribution Systems**
  - 19.4.1.8.1 **Access and Working Space/Working Positions**
- 19.4.1.9 **Underground Locations Containing Multiple Cables**
- 19.4.1.10 **Materials Storage Near Energized Parts/Lines**
- 19.4.1.11 **Vehicle Operations**
- 19.4.1.12 **Wet Cell Storage Batteries**
- 19.5 Supplying Temporary Power**
  - 19.5.1 **Responsibilities**
  - 19.5.2 **General Requirements**
    - 19.5.2.1 **Maintenance of Equipment**
    - 19.5.2.2 **Temporary Construction Wiring**
    - 19.5.2.3 **Batteries and Battery Charging**
  - 19.5.3 **Temporary Wiring**
    - 19.5.3.1 **Temporary Electrical and Use of Power Strips**
  - 19.5.4 **Inspections**
- 19.6 Electrical Safety Management**
  - 19.6.1 **Inspections**
  - 19.6.2 **Electrical Safety Program Procedures**
  - 19.6.3 **Risk Assessment Procedures**
    - 19.6.3.1 **Identifying Hazards**
    - 19.6.3.2 **Risk Assessment**
    - 19.6.3.3 **Hierarchy of Risk Control Methods**
    - 19.6.3.4 **Job Safety Planning and Pre-Job Briefing**
  - 19.6.4 **General Requirements for Electrical Safety-Related Work Practices**
    - 19.6.4.1 **Arc Flash Risk Assessments**
    - 19.6.4.2 **Job Briefing**
    - 19.6.4.3 **Change in Scope**
  - 19.6.5 **Auditing**
    - 19.6.4.1 **Electrical Safety Program Audit**
    - 19.6.4.2 **Field Work Audit**
- 19.7 Establishing an Electrically Safe Work Condition (ESWC)**
  - 19.7.1 **Lockout/Tagout (LOTO) Program**
    - 19.7.1.1 **General**
  - 19.7.2 **Grounding**
    - 19.7.2.1 **Placement**
    - 19.7.2.2 **Capacity**
    - 19.7.2.3 **Impedance**
  - 19.7.3 **Work Involving Electrical Hazards**
    - 19.7.3.1 **General**
    - 19.7.3.2 **Electrically Safe Work Conditions (ESWC)**

**19.8 Energized Electrical Work Permit (EEWP)****19.8.1 Energized Work****19.8.1.1 Infeasibility****19.8.1.2 Equipment Operating at Less Than 50 Volts****19.8.1.3 Normal Operating Condition****19.8.1.4 Energized Electrical Work Permit (EEWP)****19.8.1.4.1 When Required****19.8.1.4.2 Testing & Commissioning Energized Electrical Work Permit (EEWP)****19.9 Working While Exposed to Electrical Hazards****19.9.1 Justification****19.9.2 Hazards****19.9.3 Risk to Employee****19.9.4 Employee Involvement****19.9.5 Employee Protection****19.10 Shock Risk Assessment****19.10.1 General****19.10.1.1 Additional Protective Measures****19.10.2 Shock Protection Boundaries****19.10.2.1 Limited Approach Boundary****19.10.2.1.1 Working at, or Close to, the Limited Approach Boundary****19.10.2.1.2 Entering the Limited Approach Boundary****19.10.2.2 Restricted Approach Boundary****19.11 Arc Flash Protection and Precautions****19.11.1 Arc Flash Risk Assessment****19.11.1.1 General****19.11.1.2 Estimate of Likelihood and Severity****19.11.1.3 Additional Protective Measures****19.11.1.4 Documentation****19.11.2 Arc Flash Boundary****19.11.3 Arc Flash (Personal Protective Equipment) PPE****19.11.3.1 Incident Energy Analysis Method****19.11.3.2 Arc Flash PPE Category Method****19.11.3.3 Equipment Labeling****19.12 Personal and Other Protective Equipment****19.12.1 General****19.12.2 Care of Equipment****19.12.2.1 Movement and Visibility****19.12.2.1.1 Head, Face, Neck, and Chin (Head-Area) Protection****19.12.2.1.2 Eye Protection****19.12.2.1.3 Hearing Protection****19.12.2.1.4 Body Protection****19.12.2.1.5 Hand and Arm Protection****19.12.2.2 Shock Protection****19.12.3 Arc Flash Protection****19.12.3.1 Maintenance and Use****19.12.3.1.1 Foot Protection**



- 19.12.3.2 **Factors in Selection of Protective Clothing**
- 19.12.4 **Arc Flash Protective Equipment**
  - 19.12.4.1 **Arc Flash Suits**
  - 19.12.4.2 **Head Protection**
    - 19.12.4.2.1 **Face Protection**
  - 19.12.4.3 **Hand Protection**
  - 19.12.4.4 **Foot Protection**
  - 19.12.4.5 **Clothing and Other Apparel Not Permitted**
- 19.12.5 **Care and Maintenance and Arc-Rated Arc Flash Suits**
  - 19.12.5.1 **Inspection**
  - 19.12.5.2 **Manufacturer's Instructions**
  - 19.12.5.3 **Storage**
  - 19.12.5.4 **Cleaning, Repairing and Affixing Items**
- 19.13 **Requirements for Insulated Tools**
  - 19.13.1 **General**
- 19.14 **Test Instruments and Equipment**
  - 19.14.1 **Testing**
    - 19.14.1.1 **Rating**
    - 19.14.1.2 **Design**
    - 19.14.1.3 **Visual Inspection and Repair**
    - 19.14.1.4 **Operation Verification**
- 19.15 **Overhead Lines, Substations and Electrical Equipment Rooms**
  - 19.15.1 **Working on or Near Energized Lines or Equipment**
  - 19.15.2 **Guarding Energized Electrical Equipment**
  - 19.15.3 **Fuse Handling**
  - 19.15.4 **Grounding**
  - 19.15.5 **Jumpers**
  - 19.15.6 **Connections and Disconnections**
  - 19.15.7 **Live Dead Live (LDL)**
    - 19.15.7.1 **For High Voltage (Greater Than 480 VAC)**
    - 19.15.7.2 **For Low Voltage (Equal to or Less Than 480 VAC)**
  - 19.15.8 **Electrical Switching Operations**
- 19.16 **Electrical Cables**
  - 19.16.1 **Work on Energized Cables**
  - 19.16.2 **Work on De-Energized Cables**
  - 19.16.3 **Demo of De-Energized Cables From Service**
  - 19.16.4 **Pulling Cables**
  - 19.16.5 **Performing High-Voltage Tests on Cables and Equipment**
- 19.17 **Other Precautions**
  - 19.17.1 **Alertness**
    - 19.17.1.1 **When Electrical Hazards Might Exist**
    - 19.17.1.2 **When Impaired**
    - 19.17.1.3 **Changes in Scope**
    - 19.17.1.4 **Blind Reaching**
  - 19.17.2 **Illumination**
    - 19.17.2.1 **General**



- 19.17.2.2 **Obstructed View of Work Area**
- 19.17.2.3 **Conductive Articles Being Worn**
- 19.17.3 **Conductive Materials, Tools and Equipment Being Handled**
  - 19.17.3.1 **General**
- 19.17.4 **Approach to Energized Electrical Conductors and Circuit Parts**
  - 19.17.4.1 **Confined or Enclosed Workspaces**
  - 19.17.4.2 **Doors and Hinged Panels**
  - 19.17.4.3 **Clear Spaces**
  - 19.17.4.4 **Housekeeping Duties**
  - 19.17.4.5 **Occasional Use of Flammable Materials**
  - 19.17.4.6 **Anticipating Failure**
  - 19.17.4.7 **Overcurrent Protection Modifications**
  - 19.17.4.8 **Routine Opening and Closing of Circuits**
  - 19.17.4.9 **Reclosing Circuits After Protective Device Operation**
  - 19.17.4.10 **Safety Interlocks**
- 19.18 **Alerting Techniques**
  - 19.18.1 **Safety Signs and Tags**
    - 19.18.1.1 **Barricades**
- 19.19 **Electrical Work Best Practices**
- 19.20 **PV Electrical Testing — Preparing for Absence of Voltage Testing**
  - 19.20.1 **Planning**
    - 19.20.1.1 **Determine**
    - 19.20.1.2 **Tools**
    - 19.20.1.3 **Instrumentation**
  - 19.20.2 **Electrical Test Equipment**
    - 19.20.2.1 **CAT-Appropriate Equipment**
    - 19.20.2.2 **High-Altitude Considerations**
    - 19.20.2.3 **Test Leads**
    - 19.20.2.4 **High-Energy Fuse Replacements**
    - 19.20.2.5 **Probes and Probe Accessories**
    - 19.20.2.6 **Personal Protective Equipment**
    - 19.20.2.7 **Digital Multimeter**
- 19.21 **Ground Faults in PV Systems**
  - 19.21.1 **Grounding Types & Protocols**
    - 19.21.1.1 **Equipment Grounding Conductor (EGC)**
    - 19.21.1.2 **Grounding Electrode Conductor (GEC)**
    - 19.21.1.3 **Grounded Conductor**
      - Figure 19-1 — Grounded Conductor**
    - 19.21.1.4 **Negatively Grounded PV System (DC Side)**
    - 19.21.1.5 **DC Ground Faults Hazards**
    - 19.21.1.6 **DC Ground Faults Detection, Diagnosis, and Mitigation**
  - 19.21.2 **Diagnostic Techniques**
    - 19.21.2.1 **Determining the Source**
- Figure 19-2 — Approach Boundaries — Table 130.4(D)(a)**
- Figure 19-3 — Approach Boundaries — Table 130.4(D)(b)**
- Figure 19-4 — Shock Protection Approach Boundaries — Table 130.4(E)(a)**



- Figure 19-5 — [Arc-Flash Hazard PPE Categories — Table 130.7\(C\)\(15\)\(A\)\(b\)](#)
- Figure 19-6 — [Arc-Flash Hazard PPE Categories — Table 130.7\(C\)\(15\)\(B\)](#)
- Figure 19-7 — [Personal Protective Equipment \(PPE\) — Table 130.7\(C\)\(16\)](#)
- Figure 19-8 — [Approach Boundary Diagram](#)
- Figure 19-9 — [Approach Boundary Diagram](#)
- Figure 19-10 — [Likelihood of Arch Flash Incident — Table 130.5\(C\)](#)
- Figure 19-11 — [Likelihood of Arch Flash Incident — Table 130.5\(C\) Continued](#)
- Figure 19-12 — [Risk Assessment Flow Chart](#)
- Figure 19-13 — [Sample Thought Process Flow Chart](#)
- Figure 19-14 — [Arc-Rated Clothing System — Tables H.2 and H.3](#)



**Regulatory Safety Standard References: US Occupational Safety & Health Administration (OSHA)****1926 Subpart K — Construction****1926 Subpart K — Electrical**

- 1926.400 — Introduction
- 1926.401 — Reserved
- 1926.402 — Applicability
- 1926.403 — General Requirements
- 1926.404 — Wiring Design and Protection
- 1926.405 — Wiring Methods, Components, and Equipment for General Use
- 1926.406 — Specific Purpose Equipment and Installations
- 1926.407 — Hazardous (Classified) Locations
- 1926.408 — Special Systems
- 1926.416 — General Requirements
- 1926.417 — Lockout and Tagging of Circuits
- 1926.431 — Maintenance of Equipment
- 1926.432 — Environmental Deterioration of Equipment
- 1926.441 — Batteries and Battery Charging
- 1926.449 — Definitions Applicable to This Subpart

**1910 Subpart S — General Industry**

- 1910.301 — Introduction
- 1910.302 — Electric Utilization Systems
- 1910.303 — General
- 1910.304 — Wiring Design and Protection
- 1910.305 — Wiring Methods, Components, and Equipment for General Use
- 1910.306 — Specific Purpose Equipment and Installations
- 1910.307 — Hazardous (Classified) Locations
- 1910.308 — Special Systems
- 1910.331 — Scope
- 1910.332 — Training
- 1910.333 — Selection and Use of Work Practices
- 1910.334 — Use of Equipment
- 1910.335 — Safeguards for Personnel Protection
- 1910.399 — Definitions Applicable to This Subpart
- 1910 Appendix A — Reference Documents

**1910 Subpart R — Special Industries**

- 1910.268 — Telecommunications
- 1910.269 — Electric Power Generation, Transmission, and Distribution
- 1910.269 Appendix A — Flow Charts
- 1910.269 Appendix B — Working on Exposed Energized Parts
- 1910.269 Appendix C — Protection From Hazardous Differences in Electric Potential
- 1910.269 Appendix D — Methods of Inspecting and Testing Wood Poles
- 1910.269 Appendix E — Protection From Flames and Electric Arcs
- 1910.269 Appendix F — Work-Positioning Equipment Inspection Guidelines
- 1910.269 Appendix G — Reference Documents



## 19.1 Electrical Safe Work Practices

### 19.1.1 Introduction

Safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.

The electrical safety procedures provide a framework for identifying, assessing, and mitigating safety risks associated with working on electrical equipment within the shock or arc flash boundary.

Electricity has long been recognized as a serious workplace hazard. OSHA's electrical standards are designed to protect workers exposed to dangers such as electric shock, electrocution, fires, and explosions.

The processes in this safety procedure are intended to eliminate or minimize electric shock, arc flash and injuries associated with either direct or indirect electrical contact, and to maintain reliable electrical services to all Burns & McDonnell and/or its subsidiaries' projects.

The first choice is to always conduct all electrical work in a de-energized state. The hierarchy of risk control methods shall be used when mitigating electrical risks.

It is Burns & McDonnell's and/or its subsidiaries' policy not to work on energized electrical equipment within a limited approach or arc flash boundary unless it falls into the following categories:

- When de-energizing the equipment introduces additional hazards or increased risk.
- When it is not feasible to de-energize the equipment due to equipment design or operational limitations including startup, troubleshooting and performance testing.
- When the supply voltage is less than 50 volts, and it is determined that there will be no increased exposure to electrical burns or to explosion due to electrical arcs.

All applicable electrical safe work practices shall be completed prior to operating or working on energized electrical equipment. Priority will be given to create an electrically safe condition for all construction work. For routine tasks, sites may develop specific procedures based on this process to simplify the day-to-day process for all workers.

All work on and around energized equipment shall require the completion of an energized work permit to be approved by the construction site manager during the construction phase and the Startup Manager during the startup phase of the project.

Safety Form G-20 "Energized Electrical Work Permit (EEWP-1)," and Safety Form G-21 "Energized Electrical Work Permit (EEWP-2) – Testing & Commissioning," shall be utilized, as applicable, and submitted to Burns & McDonnell and/or its subsidiaries.

When work is to be performed within an arc flash boundary or limited approach boundary, proper procedures as outlined in this program, industry safety standards (NFPA-70E) as well as all local, state, and federal guidelines shall be strictly followed.

Any deviations from this policy must be approved by:

- Burns & McDonnell and/or its subsidiaries' Corporate Safety & Health



- Burns & McDonnell and/or its subsidiaries' electrical safety team
- Site manager
- Site Safety & Health manager
- Project manager

#### 19.1.2 Personnel Interaction with Electrical Equipment

Listed below are some of the human and electrical equipment interactions that may or may not pose the potential of creating an arc flash or shock incident.

Examples of common interactions where an arc flash or shock hazard exists include, but are not limited to the following:

- Racking in or out a circuit breaker.
- Removing or inserting a motor control center (MCC) bucket.
- Operating 480-volt disconnect switches in MCCs.
- Operating a 480-volt molded case circuit breaker.
- Racking in and/or out energized 7.2-kV breakers and generator potential transformer (PT) fuse.
- Online generator and exciter brush maintenance.
- Removing or replacing bolted access covers that expose bare energized conductors or circuit parts.
- Opening or closing hinge covers that expose bare energized conductors or circuit parts.
- Inserting or removing 120-volt AC or 125-volt DC control fuses.
- Inserting or removing 120/240-volt AC motor heater fuses.
- Circuit isolation activities in the switchyard via means of operating disconnect switches and circuit breakers.
- Removing and replacing indicator light bulbs.
- Foreign objects in electrical equipment.
- Performing voltage or current testing.
- Lack of preventive maintenance (PM).
- Close proximity work.
- Deficient design of equipment.
- Insulation failure of shielded cable.



- Human error.

Examples of common interactions that do not create an arc flash or shock hazard include:

- Manipulating a panel-mounted voltmeter switch or ammeter switch.
- Opening or closing a door or cover that does not expose energized conductors.
- Walking or standing in proximity to equipment without interaction.
- Checking clearance tags or locks.

### 19.1.3 Responsibilities

#### 19.1.3.1 Host Site Responsibilities

The host shall inform Burns & McDonnell and/or its subsidiaries and their subcontractors of the following:

- Known hazards that are covered by this program, are related to the subcontractor's work, and which might not be recognized by the subcontractor, their lower-tier subcontractor, or Burns & McDonnell and/or its subsidiaries' employees.
- Information about the host's installation that Burns & McDonnell and/or its subsidiaries and subcontractors need to know in order to make the assessments required by this program. All personnel of Burns & McDonnell and/or its subsidiaries, and/or subcontractor employee(s) shall be aware of energized electrical work being conducted within the facility, whether the task is performed by an internal employee, employee of Burns & McDonnell and/or its subsidiaries, or a subcontractor employee.

This information shall be shared during the required documented information exchange meeting. Each party shall clearly communicate the information they require and the information they expect to provide, including the exchange of Electrical Safety Programs.

When justification of energized work is being proposed, the host shall include the information needed to complete and submit an Energized Electrical Work Permit (EEWP) for the signature of the designated representative. The host shall also provide Burns & McDonnell and/or its subsidiaries or subcontractor with the host's electrical safety-related rules that will be required to be followed if it involves a tie-in with existing processes.

The host, and/or any project personnel shall report observed violations of this program to Burns & McDonnell and/or its subsidiaries. Use of a contract employee does not absolve the host of enforcing its own safe work practices. The host, Burns & McDonnell and/or its subsidiaries, and/or subcontractor may be responsible for limiting access to energized electrical equipment regardless of who is conducting the work.

#### 19.1.3.2 Subcontractor Responsibilities

Burns & McDonnell and/or its subsidiaries and their subcontractors shall ensure that each of their workers is instructed in the electrical hazards communicated by the host site. Burns & McDonnell and/or its subsidiaries and their subcontractors shall ensure that all workers follow the site-specific electrical safe work practices including the host's safety-related work rules. Burns & McDonnell and/or its subsidiaries shall advise the host site of any unique hazards presented by the work, any unanticipated hazards found during the work, and any additional needed measures taken to perform the work.



All Project Entities shall be responsible to ensure creation, documentation, and implementation of an Electrical Safety Compliance Program that directs activity appropriate to the risk associated with electrical hazards.

The Subcontractor's Electrical Safety Compliance Program shall include policies, procedures, and process controls, as well as program implementation through training, auditing, and enforcement appropriate to the risk associated with potential electrical hazards.

Burns & McDonnell and/or its subsidiaries shall inform subcontract employers of known hazards that are related to subcontract employer's work, and that might not be recognized by subcontract employer or its workers.

Burns & McDonnell and/or its subsidiaries shall report observed subcontract employer-related violations of this standard to the subcontract employer.

The subcontract employer shall ensure that each of his or her workers is instructed in the hazards communicated to the subcontract employer by the host or Burns & McDonnell and/or its subsidiaries.

The subcontractor shall ensure that each of his or her workers follows the applicable work practices required by a regulatory body and/or industry standard and safety-related work rules required by Burns & McDonnell and/or its subsidiaries.

The subcontractor shall document and advise Burns & McDonnell and/or its subsidiaries of any unique hazards presented by subcontractor's work, any anticipated hazards found during the course of work, and the measures the subcontractor took to correct any violation to prevent such violation from recurring in the future.

If applicable, this instruction shall be in addition to the basic training required by this program and the project in turn must provide this information to the Project Entity performing the work at the host facility.

The subcontractor shall provide their employees the necessary training on correct work procedures and the necessary personal and other protective equipment to perform the job safely. The subcontractor is responsible for ensuring that their employees implement the project and/or host's lockout/tagout (LOTO) procedures if they are more stringent than their own.

Burns & McDonnell and/or its subsidiaries shall advise the host of the following:

- Any unique hazards presented by the subcontractor's work.
- Hazards identified in the course of work but were not previously communicated by the host.
- The measures the subcontractor took to correct any violations and to prevent such violations from recurring in the future.

Where conditions and situations regarding equipment or procedures need to change as a result of the work being performed by the subcontractor, the subcontractor shall make the host and Burns & McDonnell and/or its subsidiaries aware of the new conditions.

#### 19.1.3.3 Project Manager

The project manager shall be responsible for the implementation of this program.



#### 19.1.3.4 Construction Site Manager and Startup Manager

The construction site manager and startup manager, or their qualified designees, shall review and approve or reject EEWPs within their respective areas of responsibilities and work areas including:

- Scheduling activities so that work can be executed when systems are de-energized.
- Review of construction and start-up activities at project plan of the day (POD) meetings to identify the requirements for working on and around energized systems.
- Ensure personnel have received training appropriate to their assigned electrical tasks and maintain documentation of such training — including training in first aid, automated external defibrillator (AED) and cardiopulmonary resuscitation (CPR).
  - Annual certification is required for CPR & AED.
- Develop and maintain a list of all qualified personnel under their supervision.
- Ensure that personnel are provided with, use, and have been trained on the appropriate personal protective equipment (PPE).
- Ensure that arc flash calculations have been completed according to NFPA 70E have been completed and confirmed.
- Complete EEWPs for site management approval.
- Ensure electrical equipment has existing arc flash labeling or has been field marked with arc flash data as per section 130.5.C NFPA-70E.
- Maintain strict LOTO procedures and managed in accordance with project protocols.
- Create a detailed, written plan — Activity Hazard Analysis (AHA) — to include:
  - Hazards associated with working on energized systems.
  - Level of PPE requirement for the energized work.
  - Any appropriate drawings and/or diagrams.
  - Tools and equipment needed to work on energized equipment.
  - Approach distances.
  - Means of keeping others out of the area.

#### 19.1.3.5 Employee Responsibilities

Qualified personnel are responsible for reading, understanding, and strictly follow the policies and procedures set forth in this document.





#### 19.1.4 Documentation

Where the host has knowledge of hazards covered by this program that are related to the subcontractor's work, a documented meeting shall be conducted between the host and all project contractors. Documentation shall include whether energized work by the Project Entity is permitted.

If energized diagnostic tests are necessary — i.e., startup and commissioning — the general contractor shall inform the host of that requirement. Hazards observed by the general contractor and/or their Project Entities as well as the steps taken to mitigate an injury shall be documented. The training provided to associated employees and the decision of which LOTO procedure to follow shall be documented.

### 19.2 Program Definitions

This program contains only those definitions that are essential to overall compliance and is not intended to include commonly defined general terms or commonly defined technical terms from related codes and standards.

Definitions located in OSHA 29 CFR 1910 Subpart R - Special Industries, 29 CFR 1910 Subpart S - General Industry, 29 CFR 1926 Subpart K - Electrical and NFPA 70E, Article 100 shall apply to terminology used throughout this program.

#### 19.2.1 Qualified Person Criteria

A qualified person shall be trained and knowledgeable in the construction and operation of equipment or a specific work method; they shall also be trained to identify and avoid the electrical hazards that might be present with respect to that equipment or work method.

A qualified person is defined, and by default this person must be competent. The general definition of competent is having sufficient skill, knowledge, or experience for a specific purpose.

A qualified person shall also have the assigned responsibility for all work activities or safety procedures related to custom or special equipment.

In order to be considered qualified for a particular task or work assignment, a Project Entity employee shall possess the skills and knowledge regarding the electrical system involved and the required procedures.

The qualified employee shall have received the safety training identified in NFPA 70E Article 110.6. NFPA 70E Article 110.6(A)(1) lists some of the traits necessary to be considered a minimally qualified person under NFPA 70E requirements, depending on the requirements of the specific tasks — e.g., risk assessment, planning, etc.

##### 19.2.1.1 Qualified Person Stipulations

In order to be qualified, the individual shall be knowledgeable in and have demonstrated skills related to specific hazards, procedural requirements, and work practices created by the task and equipment.

Training and demonstration of skills for each task shall be documented.

A qualified person shall also be familiar with the proper use of the special precautionary techniques, applicable electrical policies and procedures, PPE, insulating and shielding materials, and insulated tools and test equipment.



Any persons permitted to work within the limited approach boundary shall, at a minimum, be additionally trained in the following:

- Skills and techniques necessary to distinguish exposed energized electrical conductors and circuit parts from other parts of electrical equipment.
- Skills and techniques necessary to determine the nominal voltage of exposed energized electrical conductors and circuit parts.
- Approach distances and the corresponding voltages to which the qualified person will be exposed.
- Decision-making process necessary to be able to do the following:
  - Perform the job safety planning process.
  - Identify electrical hazards.
  - Assess the associated risk.
  - Select the appropriate risk control methods.

#### 19.2.2 Unqualified Persons Criteria

Unqualified persons shall be trained in and familiar with, any electrical safety-related practices necessary for their safety. Employees not considered qualified persons must have the knowledge and skills necessary for their safety when interacting with electrical equipment, which includes normal operation of the equipment.

The following is a list of some of the most common situations that unqualified persons may encounter and need to be aware of how to proceed safely:

- **General Potential Hazards** — Understand and recognize potential hazards, including the relationship between exposure to potential electrical hazards and possible bodily injury.
- **Attachment Plugs** — Understand how to properly remove an attachment plug from a receptacle.
- **Damaged Equipment** — Do not use damaged electrical equipment (fixed or portable); damaged cables, cords, or connectors; or damaged receptacles.
- **Impending Failure of Equipment** — Be aware of what the signs of impending failure of electrical equipment may be and do not remain around electrical equipment where there is evidence of impending failure.
- **Receptacle Plugs/Caps** — Do not remove attachment plugs (caps) from receptacles where the combination is not load-break-rated.
- **Tripped Circuit Breakers** — Do not reset a circuit breaker after an automatic trip. Always notify a qualified person to determine the cause.
- **Flammable Materials** — Do not use flammable materials near electrical equipment that can create a spark.



- **Overhead Power Lines** — Be aware of the proper approach distance from overhead power lines.
- **Alerting Techniques** — Be aware of alerting techniques such as safety signs and tags, barricades, and warning attendants. Know to remain outside the shock protection or arc flash protection boundaries when energized work is being performed.
- **Limited Approach Shock Boundary** — Do not cross the limited approach shock boundary unless advised and continuously escorted by a qualified person.
- **Restricted Approach Boundary** — Never cross the restricted approach boundary. All project personnel shall be *given some* basic, commonsense rules for avoiding electrical accidents and injuries. These rules include the following:
  - Do not overload circuits — e.g., by running multiple appliances from a single outlet.
  - Never plug-in equipment with a damaged electrical cord or use an extension cord that has damaged insulation.
  - Never use electrical equipment — e.g., a power tool or appliance — if it is sparking, smoking, or otherwise seems to be malfunctioning.
  - Keep metal objects, large and small, away from electrical equipment.

### 19.2.3 General Definitions

**Arc Flash Boundary** — An approach limit at a distance from exposed live parts within which a person could receive a second degree burn if an electrical arc flash were to occur.

**Arc Flash Hazard** — A dangerous condition associated with the possible release of energy caused by an electric arc.

**Arc Flash Hazard Analysis** — A study investigating a worker's potential exposure to arc-flash energy, conducted for the purpose of injury prevention and determination of safe work practices along with appropriate PPE.

**Arc Flash Suit** — A complete arc resistant clothing and equipment system that covers the entire body, except the hands and feet — such a suit typically includes pants, jacket, and a “bee-keeper” style hood with a face shield.

**Arc Rating** — The maximum incident energy resistance demonstrated by a material — or a layered system of materials — prior to “breaking open” at the onset of a second-degree skin burn. This rating is assigned to electrical protective clothing and is normally expressed in calories per centimeter squared (cal/cm<sup>2</sup>).

**Balaclava (Sock Hood)** — An arc-rated hood that protects the neck and head except for facial area of the eyes and nose.

**De-Energized** — Free from any electrical connection to a source of potential difference and from electrical charge; not having a potential different from that of earth.

**Electrical Hazard** — A dangerous condition such that contact, or equipment failure can result in electric shock, arc-flash burn, thermal burn, or blast.



**Electrical Safety** — Recognizing hazards associated with the use of electrical energy and taking precautions so that hazards do not cause injury or death.

**Electrically Safe Work Condition (ESWC)** — An electrically safe work condition is not a procedure; it is a state wherein all hazardous electrical conductors or circuit parts to which a worker might be exposed are maintained in a de-energized state for the purpose of temporarily eliminating electrical hazards for the period of time for which the state is maintained.

**Energized** — Electrically connected to or is a source of voltage.

**Exposed (as Applied to Live Parts)** — Capable of being inadvertently touched or approached from closer than a safe distance by a person. It is applied to parts that are not suitably guarded, isolated, or insulated.

**Grounded (Grounding)** — Connected (Connecting) to ground or to a conductive body that extends the ground connection.

**Ground Fault** — An unintentional, electrically conducting connection between an ungrounded conductor of an electrical circuit and the current — carrying conductors, metallic enclosures, metallic raceways, metallic equipment, or earth.

**Incident Energy** — The amount of energy impressed on a surface, a certain distance from the source, generated during an electrical arc event. One of the units used to measure incident energy is calories per square centimeter (cal/cm<sup>2</sup>).

**Incident Energy Analysis** — A component of an arc flash hazard analysis used to predict the incident energy of an arc flash for a specified set of conditions.

**Interrupting Rating** — The highest current at rated voltage that a device is identified to interrupt under standard test conditions.

**Limited Approach Boundary** — An approach limit at a distance from an exposed live part within which a shock hazard exists.

**Live Parts** — Energized conductive components.

**NFPA 70E** — The standard for electrical safety designed by the NFPA at the request of OSHA to ensure that proper procedures and PPE are used during any live equipment work.

**Prohibited Approach Boundary** — An approach limit at a distance from an exposed live part within which work is considered the same as making contact with the live part.

**Restricted Approach Boundary** — An approach limit at a distance from an exposed live part within which there is an increased risk of shock — due to electrical arc-over combined with inadvertent movement — for personnel working in close proximity to a live part.

**Shock Hazard** — A dangerous condition associated with the release of energy caused by contact or approach to live parts.

**Working Near (Live Parts)** — Any activity within a limited approach boundary.

**Working On (Live Parts)** — Intentionally coming in contact with live parts via tools, probes, test equipment, hands, feet, or other body parts regardless of the level of PPE worn.



- There are two categories of “working on.”
  - **Diagnostic (Testing)** — Taking readings or measurements of electrical equipment with approved test equipment that does not require making any physical change to the equipment.
  - **Repair** — Any physical alteration of electrical equipment, such as making or tightening connections, removing, or replacing components, etc.

### 19.3 Training Requirements

Employees facing a risk of electrical shock that is not reduced to a safe level by proper electrical installation per the National Electrical Code and regulatory safety standards shall be trained per the requirements of this program.

The training requirements contained in this section apply to workers who face a risk of electric shock that is not reduced to a safe level by the electrical installation requirements.

Workers in occupations listed below face such a risk and are required to be trained. Other workers who also may reasonably be expected to face comparable risk of injury due to electric shock or other electrical hazards must also be trained.

Employees in the following occupations must be trained:

- Supervisors
- Foremen
- Electrical and electronic engineers
- Electrical and electronic equipment assemblers
- Electrical and electronic technicians
- Electricians
- Operators
- Material handling equipment operators
- Mechanics and repairers
- Painters
- Riggers and roustabouts
- Stationary engineers
- Welders
- Any other employee who would be expected to face a similar risk of injury due to electric shock or other electrical hazards.



Employees in these groups do not require training if their work, or the work of those they supervise, does not bring them close enough to exposed parts of electric circuits operating at 50 volts or more to ground for a hazard to exist.

### 19.3.1 Electrical Safety Training

The training requirements contained in NFPA 70E Article 110.6, and outlined below, shall apply to all employees exposed to an electrical hazard when the risk associated with that hazard is not reduced to a safe level by the applicable electrical installation requirements.

In such instances, employees shall be trained to understand the specific hazards associated with electrical energy and shall be trained in safety-related work practices and procedural requirements, as necessary, to provide protection from the electrical hazards associated with their respective job or task assignments.

Employees shall be trained to identify and understand the relationship between electrical hazards and possible injury and additional electrical training which may be necessary before they are put at risk of an electrical injury.

If any project personnel feel that sufficient training has not been provided, or that the training they completed did not address certain work-specific concerns, they shall express the need for the appropriate training to their employer. before performing tasks.

All project personnel shall be trained to refrain from operating equipment where evidence of impending failure is present. Evidence of impending failure includes arcing, overheating, loose equipment parts, visible damage, unusual noises or odor, and/or deterioration of condition. When any of these indications of impending failure exist, the risk from electrical hazards may be unacceptable.

Employees who may be exposed to unacceptable risk of injury from the use of electricity in the work environment shall be trained to identify the following:

- Situations that may involve unacceptable risk, including recognizing evidence of impending failure.
- The actual or potential hazards involved in the situation.
- The degree or level of the actual or potential hazard.
- How the degree or level of the hazard can determine the seriousness of any potential injury.
- The means of avoiding or mitigating actual or potential exposure to electrical hazards.

Depending upon their job functions and assigned tasks, the employee shall understand the relevant factors, and shall demonstrate the ability to work safely for the tasks that the employee will be performing.

At a minimum, all relevant workers shall be required to be trained in the following:

- Utilizing safe work practices.
- Creating an electrically safe work condition (ESWC).
- Selecting, caring for, and using insulating or insulated tools and equipment, including test instruments.





- Interpreting arc flash hazard equipment labels.
- Determining if energized electrical work is justified.
- Determining if an EEWP is required.
- Selecting, caring for, and using PPE, including the types of arc ratings.
- Selecting and using alerting techniques, such as safety signs and tags, barricades, and attendants.

#### 19.3.1.1 Additional Retraining

Additional retraining in safety-related work practices and applicable changes in this program shall be performed at intervals not to exceed three years. An employee shall receive additional training — or retraining — if any of the following conditions exist:

- Supervision or annual inspections indicate that the employee is not complying with the safety-related work practices.
- New technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that differ from those the employee would normally use.
- The employee needs to review tasks that are performed less frequently than once per year.
- The employee needs to review safety-related work practices that they do not normally use when performing their regular job duties.
- The employee's job duties change.

Retraining is required when there are changes in situations, policies, procedures or equipment.

The Project Entity shall keep track of the tasks that project personnel are qualified to perform and schedule retraining to make certain their qualifications do not lapse.

#### 19.3.1.2 Type of Training

The Qualified Employee Training shall be classroom, on-the-job, or a combination of the two. The type and extent of the training provided shall be determined by the risk to the employee.

It is incumbent on the Project Entity to verify that project personnel have acquired the knowledge and skills necessary to safely perform their job tasks, before they are classified as a qualified worker.

Retraining shall be provided when practices indicate that the employee has not retained or has not acquired the requisite understanding or skill. Employees shall be tested to demonstrate their ability to perform the required tasks in a safe and timely manner.

#### 19.3.1.3 Electrical Safety Training Documentation

The Project Entity shall document that each employee has received the required training. This training compliance certification shall be provided to the Burns & McDonnell site safety manager or designee, prior to allowing any individual to begin work on the project site.



Qualification documentation shall meet the following requirements and shall be made available for audit upon request:

- Qualification documentation shall be made when the employee demonstrates proficiency in the work practices involved.
- Documentation shall be retained for the duration of the individual's employment.
- Qualification documentation shall contain the content of the training, each employee's name, and the dates of training. Content of the training may include one or more of the following: course syllabus, course curriculum, outline, table of contents, or training objectives.

#### **19.3.1.4 Lockout/Tagout (LOTO) Procedure Training**

##### **19.3.1.4.1 Initial Training**

Employees involved in or affected by the LOTO procedures shall be trained in the following:

- The LOTO procedures.
- Their responsibility in the execution of the procedures. Project Entities, including independent contractors, shall provide training for all employees who might be involved in the process of establishing an ESWC.
- Employees shall be trained and be able to understand the process before attempting to establish an ESWC in the field.
- Each employee associated with performing the job must be trained to understand his or her role in the LOTO process and accept individual responsibility for the integrity of the LOTO process.

All employees shall receive additional training whenever the established procedure is changed.

##### **19.3.1.4.2 Retraining**

Retraining in the LOTO procedures shall be performed as follows:

- When the procedures are revised.
- At intervals not to exceed three years.
- When supervision or annual inspections indicate that the employee is not complying with the LOTO procedures.

#### **19.3.1.5 Emergency Response Training**

##### **19.3.1.5.1 Contact Release**

Employees exposed to shock hazards as well as those responsible for the safe release of victims from contact with energized electrical conductors or circuit parts shall be trained in methods of safe release. Refresher training shall occur annually.



#### **19.3.1.5.2 First Aid, Emergency Response and Resuscitation**

Employees responsible for responding to medical emergencies shall be trained in first aid and emergency procedures.

Employees responsible for responding to medical emergencies shall be trained in cardiopulmonary resuscitation (CPR) and the use of an automated external defibrillator (AED). Training shall occur at a frequency that satisfies the requirements of the certifying body.

The Project Entity shall designate who will be responsible for responding to emergencies for electrical incidents that occur within the facility. Whoever is responsible for first aid, the person(s) must be trained for providing that response.

#### **19.3.1.5.3 Training Verification**

Project Entities shall verify that employee training is current. It may be necessary to refresh first aid skills periodically to maintain and update knowledge and skills, even if a certification for CPR or AED is valid.

### **19.4 General Construction**

#### **19.4.1 Portable Cord-and-Plug-Connected Electric Equipment**

Portable electrical equipment is electrical equipment that is cord and plug connected and is capable of being readily moved from one location to another location with relative ease.

Requirements under this program do not include portable cordless equipment that is powered by battery power packs. However, the cord-and-plug-connected battery charger used to recharge the battery power pack for the cordless equipment is included.

##### **19.4.1.1 Handling and Storage**

Project Entities shall be responsible for ensuring:

- Portable equipment is handled and stored in a manner that will not cause damage to the equipment.
- Flexible electric cords connected to equipment are not used for raising or lowering the equipment.
- Flexible cords are not fastened with staples or hung in a fashion that could damage the outer jacket or insulation.
- Flexible cords are only used in continuous lengths without splice or tap where initially installed.
- For all electric power and lighting installations, flexible cords and cables are protected from damage when being used or handled, all flexible cords and cables are supported in place at intervals that ensure that they will be protected from physical damage.
- Extension cords are only permitted to be run through doorways, windows, or similar openings, if they are protected from damage.



#### 19.4.1.2 Grounding-Type Equipment

Project Entities shall be responsible for ensuring:

- Flexible cords used with grounding-type utilization equipment contain an equipment grounding conductor that provides significant protection from shock or electrocution.
- Flexible cords have a grounding-type attachment plug, and that the receptacle supplying the equipment is a grounding-type receptacle.
- Attachment plugs and receptacles are not connected or altered in a manner that would interrupt continuity of the equipment grounding conductor and are not altered in order to allow use in a manner that was not intended by the manufacturer.
- All components of the circuit provide the same integrity as the equipment grounding conductor and none of these devices are altered in a manner not intended by the manufacturer.
- Removal of the grounding pin or twisting the blades or pins of a plug to enable the plug to mate with a receptacle of a different configuration, is prohibited.
- Adapters that interrupt the continuity of the equipment grounding conductor are not used.
- Field-fabricated adapters that use a plug of one configuration on one end and a cord cap of a different configuration on the other end that interrupts the continuity of the equipment grounding conductor is prohibited.

#### 19.4.1.3 Visual Inspection and Repair Portable Cord-and-Plug-Connected Equipment and Flexible Cord Sets

Project Entities shall be responsible for ensuring:

- Cord-and-plug-connected equipment is visually inspected by a designated competent person each month. Table 19-1 "Quarterly/Monthly Color Codes," shall be used to document monthly inspections. Safety Form S-2 "Temporary Cord Set/Light Stringer/Welding Lead Inspection Log" may be required, in addition to Quarterly/Monthly Color Coding, depending on client and/or project entity preference.

Before each use, portable cord-and-plug-connected equipment shall be visually inspected for external defects and for evidence of possible internal damage.

The repair of the receptacle or plug end of an extension cord is covered by product listing requirements and any repairs shall be performed in accordance with the listing requirements.

| Table 19-1 Quarterly/Monthly Color Codes |                  |
|------------------------------------------|------------------|
| QUARTER/MONTH                            | COLOR CODE       |
| January                                  | White            |
| February                                 | White and Yellow |
| March                                    | White and Blue   |
| April                                    | Green            |



|           |                   |
|-----------|-------------------|
| May       | Green and Yellow  |
| June      | Green and Blue    |
| July      | Red               |
| August    | Red and Yellow    |
| September | Red and Blue      |
| October   | Orange            |
| November  | Orange and Yellow |
| December  | Orange and Blue   |

**Exception:** Stationary cord-and-plug-connected equipment and flexible cord sets — extension cords — that remain connected once they are put in place and are installed such that the cord and plug are not subject to physical damage during normal use shall be required to be visually inspected monthly or when they are relocated or repaired.

#### 19.4.1.3.1 Defective Equipment

If there is a defect or evidence of damage that might expose project personnel to injury, the defective or damaged item shall be removed from service. No employee shall be allowed to use the item until a person qualified to perform the repairs and tests necessary to render the equipment safe has done so.

Defective or damaged portable cord-and-plug-connected equipment and flexible cord sets that have been removed from service shall be identified as defective by a tag or other method.

The tag/other method shall remain with the item until a qualified person has completed the necessary repairs and tests to render the equipment safe.

#### 19.4.1.3.2 Proper Mating

When an attachment plug is to be connected to a receptacle, the relationship of the plug and receptacle contacts shall first be checked to ensure that they are compatible.

Attachment plugs and receptacles are to be identified and inspected to ensure proper polarity of connections and to prevent the interconnection of different electrical systems, thereby avoiding potentially dangerous conditions.

#### 19.4.1.3.3 Conductive Work Locations

Portable electric equipment used in highly conductive work locations — such as those with standing water or other conductive liquids — shall be approved for those locations and require that a ground-fault circuit interrupter (GCFI) shall also be used.

**Note:** The risk assessment procedure must also identify when portable tools and equipment powered by sources other than 120-volts AC — such as batteries, air, and hydraulics — shall be used to minimize the potential for injury from electrical hazards for tasks performed in conductive or wet locations.

#### 19.4.1.3.4 Connecting Attachment Plugs

When plugging and unplugging flexible cords and cord-and-plug-connected equipment, employees' hands shall not be wet. In addition, if the condition of the connection could provide a conductive path to



the hand — e.g., if a cord connector is wet from being immersed in water — employees shall only handle the flexible cord and/or cord-and-plug-connected equipment with insulating protective equipment.

Locking-type connectors shall be secured after connection. Locking-type attachment plugs and receptacles, along with some other portable cord connecting devices, are designed to provide a connection that is secure from accidental withdrawal.

#### 19.4.1.3.5 **Manufacturer's Instructions**

Portable equipment shall be used in accordance with the manufacturer's instructions and safety warnings. Any instructions included with the equipment must be followed for its safe operation. Listed equipment has been evaluated for safe use only within the context of these instructions.

Project personnel shall be protected from shock/electrocution hazards by requiring the use of ground fault circuit interrupters (GFCIs) or an Assured Equipment Grounding Conductor Program.

#### 19.4.1.4 **Power Strips**

Do not interconnect power strips with an extension cord or multiple power strips.

Limit use to 15 amps. Power strips are not designed for high-power loads such as space heaters, refrigerators, and microwave ovens. Use wall outlets for such high-power loads.

Inspect surge-suppression devices on a regular basis. Devices without any visual or audible indication, as well as devices manufactured before 1998, shall be removed from service and properly disposed.

Use only power strips equipped with internal breakers/surge protectors for daily electrical use — e.g., computers, monitors.

Do not use extension cords in lieu of an internal breaker/surge-protected power strip.

When selecting an appropriate power strip/surge protector, consider:

- The amperage requirements of the devices to be energized.
- Length of power cord, typically ranging from 3 feet up to 20 feet. Avoid having too much excess cord.

Make sure the power strip is set on its base.

Check each power strip to make sure it is in good condition for use.

Do not install a power strip where it is suspended in mid-air by its power cord or by the cords plugged into it. This results in excessive stress on electrical connections.

Avoid daisy chaining by:

- Replacing power strip in combination with an extension cord or another power strip by a power strip, with a power cord of adequate length to reach an outlet.
- Moving desks and associated equipment to be closer to existing outlets.

If you have bulky transformer plug assemblies, use a power strip that is able to accommodate these assemblies.





Do not permanently mount a power strip shall to any facility surface, unless manufactured for that purpose.

In equipment racks, 120/208-volt utility power to rack-mounted instruments shall be via a special power strip specifically designed to be rack-installed.

If at any time the surge protector or power strip is hot to the touch, remove and replace the unit. The electrical load for this strip shall be evaluated for overloading prior to being returned to service.

Do not locate a surge protector or power strip here the unit would be covered with carpet, furniture, or any other item that will limit or prevent air circulation or in any area where moisture is a concern.

To ensure proper and safe usage:

- Inspect extension cords, power strips and surge protectors before every use. Discard any cord that has exposed wires, cracks, or splices.
- Keep cords unwound and free of kinks when in use.
- Insert plugs fully into the outlet so that no part of the prong is exposed.
- Do not attempt to plug grounded (three-prong) cords into ungrounded (two-slot) outlets.
- Examine electrical wall outlets to ensure there are no cracks, breaks, or loose pins.
- Do not store boxes, bags, and other combustible items in front of electrical outlets or on top of surge protectors. This is not applicable to office furniture or carpet over floor outlets.

#### **19.4.1.5 Ground-Fault Circuit-Interrupter (GFCI) Protection**

Employees shall be provided with GFCI protection where required by applicable state, federal, or local codes and programs. Listed cord sets or devices incorporating listed GFCI protection for personnel identified for portable use shall be permitted.

Listed GFCI protection identified for portable use incorporates open-neutral protection. Open-neutral protection de-energizes the load if there is a loss in continuity in the neutral conductor leading to the device.

An atypical Class A GFCI receptacle installed in a box with a flexible cord will not provide this additional protection. GFCI protection is required for all temporary installations involving construction, remodeling, maintenance, and repair or demolition of buildings, structures, or equipment. However, use of a GFCI device wherever project personnel use cord-and-plug-connected equipment is a best practice.

##### **19.4.1.5.1 Outdoors**

GFCI protection shall be provided when an employee is outdoors and operating or using cord sets — extension cords — or cord-and-plug-connected equipment supplied by 120-volt or greater, 15-, 20-, or 30-ampere circuits.

The required GFCI protection can be achieved using a listed portable GFCI device or a device installed as part of the premises wiring system.



#### 19.4.1.6 Assured Equipment Grounding Conductor Program

A written Assured Equipment Grounding Conductor Program shall be continuously enforced at the site by one or more designated persons to ensure that equipment grounding conductors for all cord sets, receptacles that are not a part of the permanent wiring of the building or structure, and equipment connected by cord and plug are installed and maintained in accordance with the applicable requirements.

The following tests shall be performed on all cord sets, receptacles that are not part of the permanent wiring of the building or structure, and cord-and-plug-connected equipment required to be connected to an equipment grounding conductor:

- All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.
- Each receptacle and attachment plug shall be tested for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal.
- All required tests shall be performed as follows:
  - Before first use on site.
  - When there is evidence of damage.
  - Before equipment is returned to service following any repairs.

##### 19.4.1.6.1 Testing Ground-Fault Circuit-Interrupter (GFCI) Protection Devices

GFCI protection devices shall be tested in accordance with the manufacturer's instructions.

All devices are required to be tested monthly. Safety Form S-1, "GFCI Monthly Testing Log," shall be utilized to document testing.

#### 19.4.1.7 Portable and Vehicle Mounted Generators

Portable and vehicle-mounted generators, used to supply power to cord-and-plug-connected equipment, shall meet the following requirements:

- The generator shall only supply equipment located on the generator or the vehicle and cord-and-plug-connected equipment through receptacles mounted on the generator or the vehicle.
- The noncurrent-carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles shall be bonded to the generator frame.
- In the case of vehicle-mounted generators, the frame of the generator shall be bonded to the vehicle frame.
- Any neutral conductor shall be bonded to the generator frame.

#### 19.4.1.8 Safe Distribution Systems

Branch circuits shall originate in a distribution cabinet or panel board approved for the specific environment where it is located. Covers for the cabinets or control panels shall be appropriately labeled.



Branch circuits shall include a separate equipment grounding conductor that is connected to a grounding system. The grounding conductor will be equal in size and insulation to the load conductors.

Bare conductors and conduit will not be used for branch circuit grounding.

Branch circuits will be protected with overload devices of the appropriate current rating.

Branch circuit conductors will be rated for at least 600 volts.

Each switch, GFCI, over-current device, and receptacle will be identified or arranged in such a manner to indicate the circuit it supplies.

Use attachment plugs or other connectors that are designed to confine electrical arcs when 300 volts or more is to be distributed.

Junction boxes, switch panel boxes, and conduits will be fitted with covers. Covers shall remain in place except for inspection and maintenance functions.

Bushings will be used to protect wiring entering or leaving electrical boxes.

Power distribution centers will be used whenever extension cord runs of greater than 200 feet are required to be used with a large number of portable electrical tools.

#### **19.4.1.8.1 Access and Working Space/Working Position**

Sufficient access and working space shall be provided and maintained around electric equipment to permit ready and safe operation and maintenance of such equipment.

Do not use working space for storage. When normally enclosed energized parts are exposed for inspection or servicing, guard the working space if in a passageway or open space.

At least one entrance shall be provided to give access/egress to the working space around the electrical equipment.

The working space in the direction of access to energized parts operating at 600 volts or less which require examination, adjustment, servicing, or maintenance while energized shall be not less than indicated in the table "Working Space Around Equipment - 600 Volts or Less." In addition, the working space shall be not less than 30-inches wide in front of the electric equipment. Distances shall be measured from the energized parts if they are exposed or from the enclosure front or opening if such are enclosed. Concrete, brick, or tile walls shall be considered grounded.

Working space shall not be required behind the assemblies, such as dead-front switchboards or motor control centers where there are no renewable or adjustable parts such as fuses or switches on the back and where all connections are accessible from locations other than the back.

Working space for over 600 volts shall be in accordance with minimum clearance distance for all type of energized work.

To the extent that other safety-related work conditions permit, do not be perform work in a position from which a slip or fall will cause contact with exposed uninsulated parts energized at a different potential than the person performing the work.

Perform, entry into electrical manholes over 4-feet deep and into unvented cable tunnels, cable chases, and cable/transformer vaults and any other location meeting the definition of a confined space in



accordance with confined space entry. Station an attendant outside the space if the work involves energized circuits with voltages greater than 50 volts. Ensure a communication system is in place to contact between the attendant and the worker inside the confined space.

Use a ladder or other climbing device to enter and exit a manhole or subsurface vault exceeding 4 feet in depth. Never climb into or out of a manhole or vault by stepping on cables and handlers.

Use equipment capable of supporting the weight of the material to lower or retrieve materials and tools into manholes or vaults. Check the equipment for defects before use. Stay clear of the area directly under the opening of the manhole or vault when equipment, materials, or tools are being lowered or removed.

Maintain metallic sheath continuity or treat the cable sheath energized when work is performed on cables in manholes (or buried cable).

#### **19.4.1.9 Underground Locations Containing Multiple Cables**

When multiple cables are present in the work area, identify the cable to be worked on by electrical means, unless its identity is obvious because of distinctive appearance, location, or unique identification.

Protect cables other than those being worked on from damage.

Inspect energized cables that are to be moved for defects prior to moving them.

Where a cable in a manhole has one or more abnormalities that could lead to or be an indication of an impending fault, de-energize the defective cable before any worker works in the manhole, except when service load conditions and a lack of feasible alternatives require that the cable remain energized. In the latter case, workers entering the manhole will be protected from the possible effects of a failure by shields or other devices that are capable of containing the adverse effects of any anticipated fault.

Treat abnormalities such as oil or compound leaking from cable or joints, broken cable sheaths or joint sleeves, hot localized surface temperatures of cables or joints, or joints that are swollen beyond normal tolerances as an indication of an impending fault.

#### **19.4.1.10 Materials Storage Near Energized Parts/Lines**

In areas not restricted to qualified workers only, do not store materials or equipment closer to energized lines or exposed energized parts of equipment than the following distances plus an amount providing for the maximum sag and side swing of all conductors and providing for the height and movement of material handling equipment.

- For lines and equipment energized at 50 kV or less, the distance is 10 feet.
- For lines and equipment energized at more than 50 kV, the distances are 10 feet plus 4 inches for every 10 kV over 50 kV.

In areas restricted to qualified workers, do not store material within the safe working space required to be maintained around energized lines or equipment.

#### **19.4.1.11 Vehicle Operations**

Vehicles and mechanical equipment operated by a qualified worker shall be operated so that the minimum approach distances are maintained from exposed energized lines and equipment.



Ensure a designated worker other than the equipment operator observes the approach distance to exposed lines and equipment.

Give timely warning before the minimum approach distance is reached unless it is certain that the operator can accurately determine that the minimum approach distance is being maintained.

If, during operation of vehicle equipment, the equipment could become energized, comply with at least one of the following requirements:

- Cover the energized lines exposed to contact with insulating protective material that will withstand the type of contact that might be made during the operation.
- Ensure the equipment is insulated for the voltage involved and position the equipment so that its uninsulated portions will not approach the lines or equipment closer than the minimum approach distances specified in this section.

Where the vehicle could become energized in the conduct of work operations, use the following protective measures:

- Use appropriate vehicle grounds identified by green color-coding.
- Bond the vehicle to the best available ground source.
- Bond equipment together to minimize electrical potential differences.
- When available, utilize ground mats to extend areas of equipotential.
- Use insulating protective equipment or barricades to guard against any remaining hazardous potential differences.
- Do not store or dispense flammable gas or liquids under high-voltage lines.
- Cranes and other mobile equipment shall not be parked — when not in use — or refueled under energized high-voltage lines.
- If it is necessary in an emergency to leave equipment in contact with energized high voltage lines, jump, do not step, from the equipment to the ground.
- In generating plants, signs shall be posted in accordance with the Signs and Barricades section of this manual where equipment would travel beneath high-voltage lines. The signs shall indicate the line voltage and the line height above the ground.

#### 19.4.1.12 Wet Cell Storage Batteries

When servicing or changing batteries or responding to a spill, wear appropriate PPE. At a minimum, this includes face shields, chemical goggles, rubber gloves, and rubber aprons or rain suits manufactured of the proper materials.

Batteries of the unsealed type shall be located in enclosures with outside vents or in well ventilated rooms and shall be arranged so as to prevent the escape of fumes, gases, or electrolyte spray into other areas.

Ventilation shall be provided to ensure diffusion of the gases from the battery and to prevent the accumulation of any explosive mixture.



Maintenance on battery systems shall be treated energized work, an EEWP shall be completed prior to working on or performing maintenance a charged battery.

Do not change batteries unless you have received proper training.

Ensure emergency eyewash and safety showers are available and operational in accordance with the Emergency Showers and Eyewash section of this manual. Facilities for quick drenching of the eyes and body shall be provided within 25 feet of battery handling areas. Use thermometers when taking electrolyte cell temperature. Do not use mercury thermometers.

Keep cell vent plugs firmly in place at all times except when adding water or making hydrometer readings. Vent plugs shall be the flame-arrester type.

Use tools with insulated handles for tightening connector bolts.

Remove rings, wristwatches, etc. before working on the battery.

Facility mounted or portable material handling equipment shall be provided and used when changing batteries.

Do not smoke, create open flames or weld in battery charging areas.

Keep tools and metal objects off the top of the batteries to avoid short circuits.

Inside Battery Rooms requirements are as follows:

- Inside battery charging shall maintain sufficient ventilation to ensure diffusion and prevent accumulation of hydrogen. Natural ventilation located near the roof of such rooms, or powered ventilation shall be used. Otherwise, such rooms will be classified as Class I, Division II areas and electrical lighting and fixtures provided to meet that classification.
- Electrical wiring, conduit, and boxes shall resist corrosion. Aluminum or zinc coated, and corrosive protected steel shall be used. Battery racks shall be treated for corrosion resistance or be constructed of fiberglass.
- Racks are rigid frames designed to support cells or trays. They shall be substantial and be made of one of the following:
  - Metal treated so as to be resistant to deteriorating action by the electrolyte and provided with non-conducting members directly supporting the cells or with continuous insulating material other than paint on conducting members.
  - Other construction such as fiberglass or other suitable non-conductive materials.
- Trays shall be constructed or treated to be resistant to deteriorating action by the electrolyte.
- Only authorized and qualified personnel shall be allowed inside battery storage rooms. Signs shall be posted at the entrance prohibiting unauthorized entry and access shall be strictly controlled.
- Floors shall be of acid resistant construction unless protected from acid accumulations.
- Battery rooms shall be clean and kept dry.





- Sufficient workspace shall be provided for inspection and maintenance.

In forklift and other vehicle battery charging areas, the following requirements apply:

- Designate areas for charging of forklift and other vehicle batteries. Ensure signs identify these locations and prohibit smoking and open flames in these areas.
- Ensure areas are ventilated, provided with facilities for flushing or neutralizing spilled electrolyte, and provided with some means of fire protection. At least one fire extinguisher mounted in the area will satisfy this requirement.
- Protect battery charging apparatus from damage that may occur from the forklift or vehicle.
- Ensure that vent caps are functioning. Open the battery (or compartment) cover(s) to dissipate heat.
- Locate single-panel charging installations serving one or two trucks so readily ignited material are not located closer than 20 feet from the truck or the charging equipment. Do not place electrical chargers within storage racking.
- Locate multiple-panel battery-charging installations serving more than two trucks in a separate area along an exterior wall — a cut off room is preferred. Include the following features:
  - Maintain a minimum space separation of 20 feet between any combustibles and the battery chargers if they are not located in a cut off room or locate the battery charges within a cut-off room with fire rated walls.
  - Provide automatic sprinklers designed to deliver an OH-2 density.
  - Provide natural ventilation at high points in the exterior walls or roof.
- In occupancies where lint, combustible dust, and filings may be present, locate battery charging equipment in a separate room with positive pressurization arranged so the buildup of these materials about the charging equipment can be minimized.

When connecting or disconnecting batteries:

- Check all switches and any other current drawing devices of the equipment or vehicle and ensure they are in the OFF position.
- Clear bystanders from the area of the battery.
- Disconnect the grounded cable first; then disconnect the positive cable. After replacing and securing the battery, connect the positive cable first, then the grounding cable.
- Tighten each battery post cable connection before proceeding to the next step.

### **19.5 Supplying Temporary Power**

In order to protect both people and property from the dangers associated with temporary power a comprehensive program must be followed that includes the highest level of principles when working with temporary power in accordance with all industry standards.



This procedure applies to all Burns & McDonnell and/or its subsidiaries' projects. Each project shall develop a Temporary Power Plan for all temporary electrical power and lighting wiring methods.

#### 19.5.1 Responsibilities

The site construction manager and project manager will be responsible for the implementation of this procedure.

#### 19.5.2 General Requirements

NFPA 70E is to be used when working around live equipment. NFPA 70E is the standard for electrical safety designed by the NFPA at the request of OSHA to ensure that proper procedures and PPE are used during any live equipment work.

Electrical system must be inspected and maintained on a regular basis.

Electrical equipment shall not be opened, adjusted, repaired, or otherwise handled until it is de-energized and locked-out according to the lock-out policy.

De-energized equipment shall be tested before anyone works on it.

All metal panels, boxes, covers, conduit, etc., that are part of our electrical system shall be grounded.

All splices and repairs shall be made inside an approved box or approved splice kit. Tape alone is not acceptable.

Metal ladders shall not be used for electrical work.

All electrical equipment that is exposed to flammable gases or vapors, combustible dust, or ignitable fibers must meet hazardous location requirements in order to prevent explosions.

Label all circuit breakers to show what they control. Label all circuit breakers panels to show the voltage they contain.

Panel covers must be kept in place whenever the panel is energized.

All panels shall be equipped with a lockable door so that power can be turned off and locked-out for repairs. Adequate space is needed to open the door at least 90 degrees.

Panels shall be locked so as to prevent unauthorized access.

Circuit breakers that protect hand tool receptacles shall have a maximum rating of 20 amps. Waterproof connectors shall be used, as necessary.

All holes in panel boxes and gaps where circuit breakers are missing shall be securely plugged with a fireproof material.

Circuit breakers shall be matched as closely as possible to the electrical needs they supply.

All temporary electrical services from the warehouse shall be inspected prior to energizing.



#### 19.5.2.1 Maintenance of Equipment

Wiring components and utilization equipment in hazardous locations shall be maintained in a dust-tight, dust-ignition-proof or explosion-proof condition as appropriate. There shall be no loose or missing screws, gaskets, threaded connections, seals, or other impairments to a tight condition.

##### 19.5.2.1.1 Environmental Deterioration or Deteriorating Agents

Unless identified for use in the operating environment, no conductors or equipment shall be located:

- In damp or wet locations.
- Where exposed to gases, fumes, vapors, liquids or other agents having a deteriorating effect on the conductors or equipment.
- Where exposed to excessive temperatures.

Control equipment, utilization equipment and bus ways approved for use in dry locations only shall be protected against damage from the weather during building construction.

##### 19.5.2.1.1.1 Protection Against Corrosion

Metal raceways, cable armor, boxes, cable sheathing, cabinets, elbows, couplings, fittings, supports and support hardware shall be of materials appropriate for the environment in which they are to be installed.

#### 19.5.2.2 Temporary Construction Wiring

Extension cords shall be of the three-wire type and approved for hard or extra-hard service.

All temporary wiring shall be grounded in accordance with National Electrical Code.

Every precaution shall be taken to make any necessary open wiring inaccessible to unauthorized personnel.

All temporary lights shall be protected with guards to prevent contact with the bulb.

Portable electric lighting that is to be used in confined spaces or moist or hazardous locations shall be maximum of 12 volts and have approved covers over the light bulbs.

Extension cords shall be protected against accidental damage and shall not be fastened with staples, nails or wire.

The use of electrical cords for hoisting or lowering any other tool is strictly prohibited.

Special precautions shall be taken in handling of non-seal type batteries so as to prevent escape of fumes, gases, or electrolyte spray. When using this type batteries proper ventilation must be maintained and an approved eye wash station must be within 20 feet of the storage area.

GFCIs shall be used between the power source and all 110-volt, three-wire electrical tools.

##### 19.5.2.3 Batteries and Battery Charging:

Batteries of the unsealed type shall be located in enclosures with outside vents or in well ventilated rooms and shall be arranged so as to prevent the escape of fumes, gases, or electrolyte spray into other areas.



Ventilation shall be provided to ensure diffusion of the gases from the battery and to prevent the accumulation of any explosive mixture.

Maintenance on battery systems shall be treated energized work, an EEWP (EEWP-1) shall be completed prior to working on or performing maintenance a charged battery.

Racks and trays shall be substantial and shall be treated to make them resistant to the electrolyte.

Floors shall be of acid resistant construction unless protected from acid accumulations.

Face shields, aprons and rubber gloves shall be provided for workers handling acids or batteries.

Facilities for quick drenching of the eyes and body shall be provided within 25 feet of battery handling areas.

Facilities shall be provided for flushing and neutralizing spilled electrolyte and for fire protection.

Battery charging installations shall be located in areas designated for that purpose.

Charging apparatus shall be protected from damage by trucks.

When batteries are being charged, the vent caps shall be kept in place to avoid electrolyte spray. Vent caps shall be maintained in functioning condition.

### 19.5.3 Temporary Wiring

Temporary wiring shall be removed immediately upon completion of construction or the purpose for which the wiring was installed.

All lamps for general illumination shall be protected from incidental contact or breakage. Metal-case sockets shall be grounded. Damaged cages/lamps shall be corrected upon notice.

Temporary lights shall not be suspended by their electric cords unless cords and lights are designed for this mean of suspension.

Portable electric lighting used in wet and/or other conductive locations, for example drums, tanks, and vessels shall be operated at 12 volts or less. However, 120-volt lights may be used if protected by a GFCI.

Flexible cords and cables shall be protected from damage. Sharp corners and projections shall be avoided. Flexible cords and cables may pass through doorways or other crush points if protection is provided to avoid damage.

Extension cord sets used with portable electric tool and appliances shall be of three-wire type and shall be designed for hard or extra-hard usage. Flexible cords used with temporary and portable lights shall be designed for hard or extra-hard usage.

Examples of flexible cords suitable for project temporary wiring include hard service cord (types S, ST, SO, STO) and junior hard service cord (types SJ, SJO, SJT, SJTO).

All spider boxes shall have GFCI protection built into the box.

Each project shall develop additional site-specific requirements for temporary power, including the following:



- Locations of all temporary services, spider boxes, circuit breaker panels, etc.
- Labeling and barricading requirements.
- LOTO procedures.
- Emergency contact numbers.

#### 19.5.3.1 Temporary Electrical and Use of Power Strips

Except as specifically modified in this section, all requirements for permanent wiring found in NFPA 70 National Electric Code, Article 590, Temporary Installations shall apply to temporary wiring installations.

Temporary wiring methods are acceptable only if approved based on the conditions of use and any special requirements of the temporary installation.

Temporary electric power and lighting installations is allowed during:

- Construction, remodeling, maintenance, repair, or demolition of buildings, structures, equipment, or similar activities.
- Emergencies and for tests, experiments, and developmental work.

Temporary wiring shall be removed immediately upon completion of construction or purpose for which the wiring was installed.

Suitable disconnecting switches or plug connectors shall be installed to permit the disconnection of all ungrounded conductors of each temporary circuit. Multiwire branch circuits shall be provided with a means to disconnect simultaneously all ungrounded conductors at the power outlet or panelboard where the branch circuit originated. Identified handle ties are permitted.

480-volt splitters must be Underwriter Laboratories (UL) approved as a unit/system. Site assembled 480-volt splitters, even if made from UL-approved components, are not permitted unless tested as a system by a nationally recognized laboratory.

All lamps for general illumination shall be protected from accidental contact or breakage by a suitable luminaire or lamp holder with a guard. Brass shell, paper-lined sockets, or other metal cased sockets shall not be used unless the shell is grounded.

A box is not be required for splices or junction connections where the circuit conductors are multiconductor cord or cable assemblies, if the equipment grounding continuity is maintained with or without the box.

A box, conduit body, or terminal fitting having a separately bushed hole for each conductor shall be used wherever a change is made to a conduit or tubing system or a metal-sheathed cable system.

Flexible cords and cables shall be protected from accidental damage. Sharp corners and projections shall be avoided. Where passing through doorways or other pinch points, protection shall be provided to avoid damage.

Flexible cords and cables entering enclosures containing devices requiring termination shall be secured to the box with fittings designed for the purpose.



Cable assemblies and flexible cords and cables shall be supported in place at intervals that ensure that they will be protected from physical damage. Support shall be in the form of staples, cable ties, straps, or similar type fittings installed so as not to cause damage. Vegetation shall not be used for support of overhead spans of branch circuits or feeders.

Ground fault protection for personnel for all temporary wiring installations shall be provided to comply with criteria found within this manual and NFPA 70 Article 590. This shall apply only to temporary wiring installations used to supply temporary power to equipment used by personnel during construction, remodeling, maintenance, repair, or demolition of buildings, structures, equipment, or similar activities.

For wiring greater than 600 volts, nominal, suitable fencing, barriers, or other effective means shall be provided to limit access only to authorized/qualified personnel.

#### 19.5.4 Inspections

The final design of the Temporary Electrical Plan must be approved by the project manager, site utility locate engineer (for underground temporary power), and electrical general superintendent.

All electrical devices used in constructing temporary electrical wiring systems shall be UL listed/approved.

Splices and taps in conductors shall be made with molded or vulcanized insulation equivalent to the cord being spliced. Rosin-core electrical solder or compression connections shall be used to splice conductors within junction boxes.

Metal enclosures of energized electrical conductors shall be grounded.

Protect conductors routed through walls, doorways, and other pinch points from damage during use and storage. Route conductors over passageways or use floor bridges where possible.

Do not install wiring of any type in ducts used to transport coal dust, other stock, or flammable vapors.

Temporary wiring systems in areas containing coal dust, battery charging rooms, or in other areas where flammable gases/vapors may be present shall contain equipment rated for the class of hazard and be installed per the requirements of that class of hazard.

Dismantle and remove temporary wiring systems when no longer required.

##### 19.5.4.1 Selection and Use of Temporary Lighting

Do not use fluorescent and compact fluorescent (CFL) bulbs. These contain a small amount of mercury and shall not be used in temporary light stringers.

Do not electrically load temporary lighting stringers beyond the manufacturer's specifications (maximum wattage) or wire size ampacity.

Do not plug electrical tools or appliances into a temporary light stringer.

Protect portable lamps for routine area lighting from accidental contact or breakage.

Protect bulbs with suitable fixtures or lamp holders with guards. Bulb sizes shall not negate the protection of the guard of the lamp holder. Where guards are not feasible, the fixture must be elevated at least 7 feet and 6 inches above the normal working surface.





Use a GFCI device with portable electric lighting used in areas that are wet, damp, or moist; or where personnel will be working within grounded metal structures such as drums, tanks, and vessels.

Ensure exposed metal parts on 120-volt AC lighting circuits are grounded.

## 19.6 Electrical Safety Management

Project Entity personnel shall be responsible for understanding and applying the following core safety principles and expectations of performing energized work safely. All applicable Project Entity personnel or other involved project personnel shall be prohibited from engaging in work practices that do not meet the goals of this program.

The safety compliance requirements and principles included in this program include the following:

- Inspecting and evaluating the electrical equipment.
- Maintaining the electrical equipment's insulation and enclosure integrity.
- Planning every job and document first-time procedures.
- De-energizing, if possible.
- Anticipating unexpected events.
- Identifying the electrical hazards and reduce the associated risk.
- Protecting employees from shock, burn, blast, and other hazards due to the working environment.
- Using the right tools for the job.
- Assessing project personnel ability.
- Auditing the principles.

### 19.6.1 Inspections

The Electrical Safety Program includes elements to verify that newly installed or modified electrical equipment or systems have been inspected and comply with applicable installation codes and programs prior to being placed into service.

### 19.6.2 Electrical Safety Program Procedures

Risk assessment procedures shall be utilized before work is started by any Burns & McDonnell and/or its subsidiaries employee or Project Entity personnel that are, or could be exposed to an electrical hazard.

Project Entity procedures shall be specific for the task to be performed and shall contain:

- The safe work practices to be followed shall include, but are not limited to:
  - A defined scope.
  - The hazards and controls including the limits of approach.



- Any applicable work permit.
- The required PPE.
- The required qualifications and number of employees involved.

Project Entity procedures shall also include:

- The required tools and necessary precautionary techniques.
- Electrical diagrams.
- Manufacturer's data sheets where they are warranted.
- Equipment preventative maintenance requirements — as applicable.
- Visual job aids.
- Procedure review during job briefings.

#### 19.6.3 Risk Assessment Procedures

Elements of the risk assessment shall address the employee's exposure to electrical hazards and shall identify the process to be used before work is started:

- Identify hazards.
- Assess risks.
- Implement risk control according to the hierarchy of risk control methods.

##### 19.6.3.1 Identifying Hazards

Project personnel shall be required to identify hazards proactively and to identify, analyze, and minimize electrical work hazards and risks.

As part of the risk assessment process, the Project Entity shall document an appropriate method of protecting the worker from all electrical hazards.

The definition of an electrical hazard includes any of the following:

- Electric shock.
- Arc flash burn.
- Thermal burn.
- Arc blast.

Other known hazards include:

- Flying parts.



- Molten metal.
- Intense light.
- Poisonous oxides.
- Generated pressure waves (blasts).

#### 19.6.3.2 Risk Assessment

The Project Entity shall:

- Document the hazards.
- Estimate the potential severity of injury or damage to health.
- Estimate the likelihood of occurrence of injury or damage to health.
- Determine if protective measures are required.

The risk assessment shall identify risk mitigation and a determination of whether protective measures are necessary. If deemed necessary, the protective measures shall meet the requirements of the safety control categories in the hierarchy of risk controls. All risk assessment procedures shall be documented and available to all project personnel.

Where electrical hazards are involved, the risk assessment procedure shall include both of the following:

- Shock Risk Assessment
- Arch Flash Risk Assessment

Project Entities shall ensure risk assessment procedures address the potential for human error and its negative consequences on people, processes, the work environment, and equipment.

This Project Entity (employee) shall define a limited approach boundary, which implies shock risk for each work task that cannot be completely de-energized and made safe.

- Refer to the Work Classification sheet (EWCR-1 form) in the appendix of this procedure.

The employee performing the task shall be able to identify exposed energized electrical conductors and circuit parts from those that are considered to be effectively guarded, insulated or isolated.

The employee shall also be able to determine the nominal system voltage of the exposed energized components and circuit parts concerned. Nominal system voltage level shall be determined to establish the limited approach boundary, the restricted approach boundary and the rules applicable at each boundary point.

**Note:** An employee who is undergoing on-the-job training for the purpose of obtaining the skills and knowledge necessary to be considered a qualified person, and who in the course of such training demonstrates an ability to perform specific duties safely at his or her level of training, and who is under the direct supervision of a qualified person shall be considered to be a qualified person for the performance of those specific duties. The qualified person shall understand how to select and use the personal and other protective equipment required to perform the task safely.



#### 19.6.3.3 Hierarchy of Risk Control Methods

The primary method of worker protection required by this program is for any applicable equipment to be placed into an ESWC when a hazard or risk of injury exists.

**Note:** When the result of a risk assessment determines that a hazard or risk of injury exists, it is unacceptable to justify energized work simply with the ability to require PPE.

The risk assessment procedure shall require that preventive and protective risk control methods be implemented in accordance with the following hierarchy:

- Elimination
- Substitution
- Engineering controls
- Awareness
- Administrative controls
- PPE

Elimination, substitution, and engineering controls are the most effective methods of reducing risk as they are usually applied at the source of possible injury or damage to health, and they are less likely to be affected by human error.

Awareness, administrative controls, and PPE are the least effective methods used to reduce risk as they are not applied at the source and they are more likely to be affected by human error.

#### 19.6.3.4 Job Safety Planning and Pre-Job Briefing

Before starting any work activity that involves exposure to electrical hazards, the Project Entity's employee in charge shall complete a Job Safety Plan, (Safety Form C-12 "Activity Hazard Analysis") and shall conduct a Pre-Job Briefing, (Safety Form C-10 "Pre-Task Analysis") with all employees involved.

Project Entities shall be responsible for ensuring:

- Job Safety Plans are completed by a qualified person.
- Job Safety Plans are documented to include the following information:
  - A description of the job and the individual tasks.
  - Identification of the electrical hazards associated with each task.
  - A Shock Risk Assessment for tasks involving a shock hazard.



#### 19.6.4 General Requirements for Electrical Safety-Related Work Practices

##### 19.6.4.1 Arc Flash Risk Assessments

Assessments shall be completed and documented for tasks involving an arc flash hazard and shall include at a minimum:

- All work procedures involved.
- Any special precautions to be taken.
- All applicable energy sources and the controls needed to be implemented.

If the task is being conducted for the first time, work procedures shall be developed before work begins.

If the planning reveals shortcomings in the safe work program or procedure, these issues shall be addressed before the task is performed. It shall be verified that the necessary equipment will be available to perform the task.

**Note:** NFPA 70E currently addresses only two hazards directly: electric shock and arc flash burn.

As part of the risk assessment, it shall determine the need for and an appropriate method of protecting employees from all electrical hazards including electric shock, arc flash burn, thermal burn, and arc blast.

Other known hazards — such as flying parts, molten metal, intense light, poisonous oxides, and generated pressure waves (blasts) — shall be included in the Project Entity's documented Arc Flash Risk Assessment.

##### 19.6.4.2 Job Briefing

The Project Entity's Pre-Job Briefing shall cover the Job Safety Plan and the information on the EEWP if a permit is required.

Where exposure to potential electrical hazards is involved, the employee in charge shall be qualified for the tasks to be performed — i.e., for working at the applicable voltage. The Pre-Job Briefing and planning checklist shall be referenced as needed.

The employee in charge must be capable of communicating what is required to the employees involved. In some instances, if the tasks involved require the skills of a licensed electrician, a licensed electrician shall perform the Pre-Job Briefing.

The Pre-Job Briefing shall be performed before the work tasks begin but shall not be performed so far ahead of time that the employees involved might forget what was covered.

The Pre-Job Briefing shall include a discussion of the work procedure so that all parties fully understand the procedure before beginning the task. The Pre-Job Briefing shall also give all employees the opportunity to express any concerns they may have about the task, the procedure, and their safety.

##### 19.6.4.3 Change in Scope

Additional job safety planning and Pre-Job Briefings shall be held if changes occur during the course of the work that might affect the safety of employees. Any deviation from the documented work plan and hazard assessment (Safety Form 3-12 "Activity Hazard Analysis") may put a worker at risk. Any change in



scope, procedure, task, safety, and so forth shall not be made without consideration for the effect of that change on the risk assessment, work permit (EEWP-1), and worker safety.

#### 19.6.5 Auditing

##### 19.6.5.1 Electrical Safety Program Audit

Audits shall be performed at intervals based upon the metrics linked to documented program. It is vital that the auditing and enforcement actions are documented for the benefit of project personnel.

##### 19.6.5.2 Field Work Audit

Field work shall be audited to verify that the requirements contained in these procedures of the Electrical Safety Program are being followed. When auditing determines that the principles and procedures of the Electrical Safety Program are not being followed, appropriate revisions to the training program or revisions to the procedures shall be made.

Auditing field work shall occur where employees are performing required tasks and there is the potential of exposure to electrical hazards.

Observations shall focus on compliance with the electrical safety requirements while workers perform their electrical safety-related tasks and ensuring that workers are using PPE appropriate for the task to be performed.

The procedures being observed become the metrics used to verify the required performance.

When it has been confirmed that the Electrical Safety Program principles or procedures **are not** being followed, corrective action shall be taken. This corrective action shall include:

- Employee qualifications and applicable training status.
- Electrical Safety Program and/or work procedure revision.
- Identification of all applicable electrical hazards.
- Unidentified physical conditions or scope changes.

#### 19.7 Establishing an Electrically Safe Work Condition (ESWC)

Establishing an ESWC shall always be the first choice for any work involving, or in proximity to, electrical systems and equipment.

Establishing an ESWC includes the following:

- Identification and isolation of all potential voltage sources.
- Verification of absence of voltage.
- Creation of temporary protective grounding, if required.

Energized work may be performed if de-energizing introduces additional hazards or increased risks, and the resultant risk is acceptable.

ESWCs shall be established, wherever practicable, prior to performing electrical work.





The main premise of providing an electrically safe work environment for the employee is that equipment shall be placed into an ESWC unless used under normal operation. Both regulatory safety standards and NFPA 70E require this to be the default condition.

This program provides the steps for establishing an ESWC and the method of controlling it. All the requirements in this program must be applied before an ESWC is achieved.

The act of creating an ESWC requires that appropriate PPE be worn, and work procedures be followed. Until verification of the ESWC, it cannot be assumed that equipment is disconnected from energy sources and that it is safe to work on as de-energized.

### 19.7.1 Lockout/Tagout (LOTO) Program

#### 19.7.1.1 General

Refer to Chapter 24 for details of the LOTO Program.

#### 19.7.2 Grounding

Where the possibility of induced voltages or stored electrical energy exists, phase conductors or circuit parts shall be grounded before being touched.

Where it could be reasonably anticipated that the conductors or circuit parts being de-energized might contact other exposed energized conductors or circuit parts, temporary protective grounding equipment shall be applied.

- Energized conductors and equipment in high-voltage installations can induce hazardous voltages in adjacent conductors and equipment that have been de-energized.
- Failure of a conductor support system or conductor may result in a de-energized conductor being inadvertently re-energized.

Protective grounding equipment shall be utilized to protect project personnel from a potentially hazardous voltage.

##### 19.7.2.1 Placement

Temporary protective grounding equipment shall be located and arranged in such a manner as to prevent each employee from being exposed to a shock hazard — i.e., hazardous differences in electrical potential.

The location, sizing, and application of temporary protective grounding equipment shall be identified as part of the job pre-planning.

Employees must fully understand the system and the equipment to be worked on to select the appropriate temporary protective grounding device(s) and to determine their placement. The protective grounding device shall be installed on the conductor at a point between the person and the source of energy. Care shall be taken to properly locate the conductors so that the movement of the conductors from mechanical forces does not cause harm to the employee.

Equipment grounding conductors or equipment grounding terminals are a likely point of attachment for temporary protective grounding equipment.



If the unexpected source of electricity could be from both directions in the electrical circuit, temporary protective grounding equipment must be installed on both sides of the employee.

Employees who work within the area of the DC bus for a battery system must be trained to understand the unique hazards associated with ungrounded DC voltage.

#### 19.7.2.2 **Capacity**

Temporary protective grounding equipment shall be capable of conducting the maximum fault current that could flow at the point of grounding for the time required to clear the fault.

Grounding devices are available in many forms; the clamp and cable types are most commonly used. Some equipment manufacturers provide grounding devices for switchgear, which are built on a frame and are inserted into a space or cubicle that normally holds a circuit breaker or fusible switch.

Temporary safety grounding equipment must also be capable of withstanding the high mechanical stress imposed when conducting fault current. The equipment will have a rating established by the manufacturer and shall be applied within that rating.

Selecting the appropriate temporary grounding device with an established fault-duty rating for the circuit is paramount. Inadequately rated protective grounding equipment can introduce a hazard that otherwise would not exist.

The Project Entity shall be responsible for providing equipment capable of protecting the employee who is put at risk of an injury during energized work. The Project Entity shall verify that the temporary protective grounding equipment issued meets the appropriate consensus program.

#### 19.7.2.3 **Impedance**

Temporary protective grounding equipment and connections shall have an impedance low enough to cause immediate operation of protective devices in case of unintentional energizing of the electric conductors or circuit parts.

Cables shall be of adequate length for the task but shall not interfere with the worker within the defined boundary of the work area.

### 19.7.3 **Work Involving Electrical Hazards**

#### 19.7.3.1 **General**

This section defines the requirements under which an ESWC shall be established.

Work performed on exposed energized electrical conductors or circuit parts is regulated by NFPA 70E-2021 and the regulatory safety standards which require that project personnel work with equipment de-energized and in an ESWC unless operated under a normal condition.

The primary protective strategy during any applicable work scope shall be to establish an ESWC. Once this strategy has been executed, all electrical energy will have been removed from all conductors and circuit parts to which the employee may be exposed.

This section defines the following:

- When an ESWC must be established.



- Requirements for work involving electrical hazards — such as the electrical safety-related work practices, assessments, precautions, and procedures — when an ESWC cannot be established.

All requirements of this section shall apply regardless of whether an incident energy analysis is completed or the tables in NFPA 70E are used in lieu of an incident energy analysis.

Energized electrical conductors and circuit parts must be put into an ESWC before an employee performs work within the limited approach boundary or interacts with equipment where an increased likelihood of injury from an exposure to an arc flash hazard exists.

An ESWC is established when the electrical conductors or circuit parts have been disconnected from energized parts (air gap), locked out/tagged out in accordance with established programs, tested to ensure the absence of voltage, and grounded (as required).

Under both NFPA 70E and OSHA, it is required that work be performed in a verified de-energized state — i.e., ESWC — unless energized work can be justified.

There are two methods of conducting an Arc Flash Risk Assessment when energized electrical equipment is involved.

- The arc flash PPE categories method.
- The incident energy level method.

Regardless of the method selected, an ESWC shall be the primary method used to establish a safe work environment.

#### 19.7.3.2 Electrically Safe Work Conditions (ESWC)

Energized electrical conductors and circuit parts operating at voltages equal to or greater than 50 volts shall be put into an ESWC before an employee performs work if any of the following conditions exist:

- The employee is within the limited approach boundary.
- The employee interacts with equipment where conductors or circuit parts are not exposed but an increased likelihood of injury from an exposure to an arc flash hazard exists.

An ESWC shall document risk controls of administration and elimination from the hierarchy of risk controls. Elimination is considered the most effective form of risk control available.

The boundary for an ESWC shall be the limited approach boundary.

- An EEWP (EEWP-1) is required at the restricted approach boundary or when there is a potential exposure to an arc flash.
  - **Note:** The ESWC is required to be established based on a shock protection boundary.
- It is not permitted to expose an employee to a shock hazard regardless of the ability to use PPE.



## 19.8 Energized Electrical Work Permit (EEWP)

### 19.8.1 Energized Work

Energized work shall be permitted only when the Project Entity is able to demonstrate that de-energization introduces additional hazards or increased risk.

**Note:** Additional hazards and/or increased risks include but are not limited to: interruption of life-support equipment; emergency alarm systems; shutdown of hazardous location ventilation equipment; and chemical, mechanical, or environmental hazards.

#### 19.8.1.1 Infeasibility

Energized work shall be permitted where the Project Entity is able to demonstrate that the task to be performed is infeasible in a de-energized state due to equipment design or operational limitations.

**Note:** Work that might be performed within the limited approach boundary of exposed energized electrical conductors or circuit parts because it is infeasible while de-energized — due to equipment design or operational limitations — include:

- Diagnostics and testing — e.g., start-up or troubleshooting — of electric circuits that can only be performed with the circuit energized.
- Work on circuits that form an integral part of a continuous process that would otherwise need to be completely shut down to permit work on one circuit or piece of equipment.

#### 19.8.1.2 Equipment Operating at Less Than 50 Volts

Energized electrical conductors and circuit parts that operate at less than 50 volts shall not be required to be de-energized where the capacity of the source as well as any overcurrent protection between the energy source and the worker are considered and it is determined that there will be no increased exposure to electrical burns or to explosion due to electric arcs.

This justification for energized work essentially only addresses shock to the employee. Under normal conditions, electrical conductors energized at a voltage less than 50 volts do not present an electrical shock hazard.

This allowance does not apply to any system operating at 50 volts or less which has not first considered whether there is a risk of exposure to electrical burns or explosions from electrical arcs.

If there is a potential for arc flash or thermal burn to occur, working on the energized low-voltage circuit is not permitted unless it has been justified as described above.

#### 19.8.1.3 Normal Operating Condition

Normal operation of electric equipment shall be permitted where a normal operating condition exists. A normal operating condition exists when all of the following conditions are met:

- If equipment meets all of these criteria, there is no reason to assume it is inherently unsafe.
- When equipment is considered to be operating normally or the employee is operating that equipment,
- The risk associated with normal operation is generally considered to be acceptable.



Normal operation of equipment must include assessments for the following conditions:

- The equipment is properly installed.
- The equipment is properly maintained.
- The equipment is used in accordance with instructions included in the listing and labeling as well as in accordance with the manufacturer's instructions.
- The equipment doors are closed and secured.
- All equipment covers are in place and secured.
- There is no evidence of impending failure.

#### 19.8.1.4 Energized Electrical Work Permit — (EEWP-1)

Project Entity's work that does not take place within an ESWC always exposes project personnel to potential injury.

NFPA 70E does not specifically prohibit issuing an EEWP (EEWP-1) for simple or repetitive tasks, however, no energized work shall be considered as "routine" work. even if the employee is trained to understand the risk associated with exposure to the potential electrical hazards that may be involved and is wearing appropriate PPE, as situations can easily change.

##### 19.8.1.4.1 When Required

When energized electrical work is performed an EEWP (EEWP-1) shall be required and documented under any of following conditions:

- When work is performed within the restricted approach boundary.
- When the employee interacts with the equipment while conductors or circuit parts are not exposed but an increased likelihood of injury from an exposure to an arc flash hazard exists

Once energized electrical work is properly justified, the hierarchy of risk controls has been employed, and the justified work can safely be conducted, the basic purpose of the EEWP (EEWP-1) is to ensure that people in responsible positions are involved in the decision whether or not to accept the increased risk associated with working on energized electrical conductors or circuit parts.

An additional benefit of the EEWP-1 is that its review might initiate a decision to perform the work de-energized.

It is good practice to consider the use of an EEWP-1 even when one is not required. This demonstrates that proper consideration was given to all aspects required to protect an employee when diagnostic work is being done.

An EEWP-1 shall be completed anytime energized work is being performed. If the energized electrical work is construction related the appropriate signoffs shall be completed.



#### 19.8.1.4.2 Testing & Commissioning Energized Electrical Work Permit (EEWP-2)

Electrical work determined to be under the control of Startup & Commissioning shall be permitted with a Testing & Commissioning EEWP, (EEWP-2) as long as a qualified person is provided with and uses appropriate safe work practices and appropriate PPE under any of the following conditions:

- Testing, troubleshooting, or voltage measuring.
- Thermography, ultrasound, or visual inspections if the restricted approach boundary is not crossed.
- Access to and egress from an area with energized electrical equipment if no electrical work is performed and the restricted approach boundary is not crossed.
- General housekeeping and miscellaneous non-electrical tasks if the restricted approach boundary is not crossed.

The Testing & Commissioning EEWP (EEWP-2) requires that all safe work practices be followed, and that appropriate PPE be worn, which includes both shock protection PPE and arc flash protection PPE, as necessary. If the energized electrical work is associated with electrical testing or commissioning the appropriate signoffs shall be completed.

**Note:** The EEWP-2 exemptions above limit the work to be conducted to diagnostic tasks. A work function is considered diagnostic when it is used to identify the condition of a piece of equipment, or its parts, to assure the condition of the equipment or to identify and eliminate potential problems.

- This would include the verification of an ESWC. If a planned diagnostic task changes to a repair or modification task, the work shall no longer be considered diagnostic, and an EEWP-1 shall be required if the system cannot be put in an ESWC to perform the new task.

### 19.9 Working While Exposed to Electrical Hazards

The primary protective objective shall be to establish an ESWC through the use of procedures including LOTO from the hierarchy of risk controls to eliminate the hazard.

After the ESWC has been established, no PPE beyond project minimums is required, and unqualified persons shall be permitted to execute the remainder of the work. The only exception to this requirement is when working on exposed energized electrical conductors or circuit parts can be justified.

The point where the ESWC is verified is considered to be energized work. Whether that point is for verification of the ESWC or the energized work is justified, a Shock Risk Assessment and an Arc Flash Risk Assessment shall be conducted and documented.

Until the ESWC is established, an unacceptable risk of injury exists, thus project personnel shall continue to wear protective equipment, until zero energy is confirmed.

Safety-related work practices shall be used to safeguard project personnel from injury while they are exposed to electrical hazards from electrical conductors or circuit parts that are or can become energized.

The specific safety-related work practices shall be consistent with the electrical hazards and the associated risk. Before any person is exposed to the electrical hazards involved, appropriate safety-related work practices shall be determined using both the Shock Risk Assessment and the Arc Flash Risk Assessment.





Only qualified persons shall be permitted to work on electrical conductors or circuit parts that have not been put into an ESWC.

Both a Shock Risk Assessment and an Arc Flash Risk Assessment are required before any person is permitted to approach the exposed energized electrical conductors or circuit parts.

The risk assessment procedure shall determine whether any conductor will remain energized for the duration of the work task.

These risk assessments shall answer the following:

#### 19.9.1 Justification

- Is energized work justified — i.e., does the alternative present a greater hazard, or is it infeasible for the task to be performed de-energized?
- What authorization is necessary to justify executing the work task while the exposed conductor(s) is (are) energized?
- Will energized electrical work impact other work?
- What measures will be taken to minimize the impact of other work?

#### 19.9.2 Hazards

Many workers are unaware of the potential electrical hazards present in their work environment, which makes them more vulnerable to the danger of electrocution.

The employer shall instruct each worker in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.

A variety of possible solutions may be implemented to reduce or eliminate the risk of injury associated with electrical work. Examples of solutions include the use of insulation, guarding, grounding, electrical protective devices, and safe work practices.

This also applies to work on exposed de-energized parts or near enough to them to expose the worker to any electrical hazard they present. Conductors and parts of electric equipment that have been de-energized but have not been locked out or tagged shall be treated as energized parts.

- What is the potential result of equipment failure — i.e., to the employee, equipment, process, environment?
- What is the degree of the shock hazard?
- What is the degree of the arc flash hazard?
- Are there other electrical hazards?

#### 19.9.3 Risk to Employee

- Will the employee be exposed to any of the hazards while performing the work task?



- Is there a risk of injury to the employee?
- Are there situations where the risk of injury is unacceptable?
- Will other project personnel be exposed to an electrical hazard as a result of the work task?

#### 19.9.4 Employee Involvement

- What project personnel are required to be within an approach boundary?
- Is the employee, who is assigned to the task, qualified to perform the specific task on the specific equipment?
- Are unqualified project personnel necessary?
- Are there special considerations due to a host, contractor, and Project Entity relationship?

#### 19.9.5 Employee Protection

- Have all protection techniques from the [hierarchy of risk controls](#) been considered and implemented if appropriate?
- What protective equipment is necessary to minimize the employee's exposure to each hazard?

### 19.10 Shock Risk Assessment

#### 19.10.1 General

A Shock Risk Assessment is the process that identifies exposure to the potential electrical shock hazards, estimates the potential severity of a shock injury, estimates the likelihood of such an injury occurring, then determines if protective measures are required and which protective measure to use.

The results of the [Shock Risk Assessment](#) shall be documented.

The severity of the injury depends on the current flow through the body, the path it takes, and whether the heart is in a vulnerable point in the cardiac cycle.

The Shock Risk Assessment shall determine the voltage of all conductors in the vicinity of the employee's body or of the tool that will be used.

A Shock Risk Assessment shall be performed in order to:

- Identify shock hazards.
- Estimate the likelihood of injury or damage to health and the potential severity of injury or damage to health.
- Determine if additional protective measures are required, including the use of PPE

##### 19.10.1.1 Additional Protective Measures

If additional protective measures are required, these measures shall be selected and implemented according to the hierarchy of risk control and the following shall be determined:



- The voltage to which personnel will be exposed.
- The boundary requirements.
- The personal and other protective equipment required by this program to protect against the shock hazard.

Full elimination of the hazard is often not an option for installed equipment. PPE shall be selected only after all other risk controls have been exhausted.

#### 19.10.2 Shock Protection Boundaries

The shock protection boundaries identified as the limited approach boundary and restricted approach boundary shall be applicable where personnel are approaching exposed energized electrical conductors or circuit parts.

The two shock protection boundaries are:

- 1) Limited Approach Boundary — This is the closest approach distance for an unqualified employee unless additional protective measures are used.
- 2) Restricted Approach Boundary — This is the closest approach distance for a qualified employee unless additional protective measures are used.

The dimension associated with each of these boundaries depends on the maximum voltage to which an employee might be exposed.

##### 19.10.2.1 Limited Approach Boundary

Unless permitted no unqualified person shall be allowed to approach nearer than the limited approach boundary of energized conductors and circuit parts.

Only qualified persons shall be permitted to be within the space defined by the limited approach boundary.

**Note:** An arc flash boundary may be a greater distance from the energized conductor or circuit part than the limited approach boundary. Arc-rated PPE is required for any employee within the arc flash boundary.

##### 19.10.2.1.1 Working at, or Close to, the Limited Approach Boundary

Where one or more unqualified persons are working at, or close to, the limited approach boundary, the designated person in charge of the workspace where the electrical hazard exists shall advise the unqualified person(s) of the electrical hazard and warn them to remain outside of the limited approach boundary.

Signs or barricades may be necessary.

##### 19.10.2.1.2 Entering the Limited Approach Boundary

In some instances, an unqualified person may be required to perform tasks within the limited approach boundary. If this becomes necessary, a qualified person shall ensure that the unqualified person is advised about the location(s) of all exposed energized electrical conductors. The unqualified person shall be advised that the risk of shock or electrocution exists, and a qualified person shall escort the unqualified individual at all times. The unqualified person must not cross the restricted approach boundary under any



circumstances. An arc flash boundary may need to be crossed before entering the limited approach boundary. Arc flash PPE shall be required for any employee within the arc flash boundary.

#### 19.10.2.2 Restricted Approach Boundary

No qualified person shall approach or take any conductive object closer to exposed energized electrical conductors or circuit parts than the restricted approach boundary, unless one of the following conditions applies:

- The qualified person is insulated or guarded from energized electrical conductors or circuit parts operating at 50 volts or more. Insulating gloves and sleeves are considered insulation only with respect to the energized parts upon which work is performed.
- The energized electrical conductors or circuit parts are insulated from the qualified person and from any other conductive object at a different potential.

The restricted approach boundary is the closest approach distance for a qualified person without the use of personal and other shock protective equipment being placed between the person and the conductor.

### 19.11 Arc Flash Protection and Precautions

#### 19.11.1 Arc Flash Risk Assessment

##### 19.11.1.1 General

An Arc Flash Risk Assessment shall be performed in order to:

- Identify arc flash hazards.
- Estimate the likelihood of injury or damage to health and the potential severity of injury or damage to health.
- Determine if additional protective measures are required, including the use of PPE.

Whenever energized electrical conductors or circuit parts are considered to be exposed and an employee is within the limited approach boundary, a potential arc flash hazard is presumed to exist.

A potential arc flash hazard can also be presumed to exist when an employee interacts with energized electrical equipment when conductors or circuit parts are not exposed. However, under normal operating conditions the potential for an arc flash hazard is greatly reduced.

The Arc Flash Risk Assessment shall be reviewed to determine if additional use of the [hierarchy of risk controls](#) might be employed to further lower the risk or incident energy prior to determining the necessary PPE.

PPE shall not be the first or only control element utilized. Properly selected arc-rated PPE limits the severity of an injury but does not necessarily prevent an injury if an incident occurs.

##### 19.11.1.2 Estimate of Likelihood and Severity

The estimate of the likelihood of occurrence and the potential severity of injury or damage to health shall take into consideration the following:



- The design of the electrical equipment, including its overcurrent protective device and its operating time.
- The electrical equipment operating condition and condition of maintenance

The severity of a potential arc flash injury depends upon various factors, including:

- Whether personal and other protective equipment is used.
- The incident energy level that is impinged upon the body.
- Whether the enclosure is open or not.
- Most importantly, where the person is standing in relation to the arc flash — i.e., whether the person is within the arc flash boundary.

#### 19.11.1.3 Additional Protective Measures

If additional protective measures are required, they shall be selected and implemented according to the hierarchy of risk control. When the additional protective measures include the use of PPE, the following shall be determined:

- Appropriate safety-related work practices.
- The arc flash boundary.
- The PPE to be used within the arc flash boundary.

Table 130.5(C) shall be used to estimate the likelihood of an arc flash event occurring to determine if additional protective measures are required.

#### 19.11.1.4 Documentation

The results of the Arc Flash Risk Assessment shall be documented. The use of an EEWP (EEWP-1) even when it is not required, is one of the best methods for documenting that the required risk assessments have been performed. See EEWP-1.

#### 19.11.2 Arc Flash Boundary

The arc flash boundary shall be the distance at which the incident energy equals 1.2 calories per centimeter squared ( $\text{cal}/\text{cm}^2$ ) — or 5 Joules per centimeter squared ( $\text{J}/\text{cm}^2$ ).

An arc fault incident can be the result of an open-air event. However, arc fault events most often occur inside electrical equipment enclosures, and an enclosure can concentrate an arc flash event.

**Note:** NFPA 70E does not limit calculation methods to those listed, and other appropriate techniques may be available.

It is permitted for the arc flash boundary to be determined by Table 130.7(C)(15)(a) or Table 130.7(C)(15)(b) when the requirements of these tables apply.

There are two methods that can be used in an [Arc Flash Risk Assessment](#) to determine the arc flash boundary.



- 1) The incident energy analysis method, which results in an arc flash boundary at a distance where the incident energy is  $1.2 \text{ cal/cm}^2$ .
- 2) The second is the arc flash PPE category method, which results in an arc flash boundary selected directly from the Tables in 130.7(C)(15).

### 19.11.3 Arc Flash PPE

Although there are several methods to conduct an Arc Flash Risk Assessment there are only two methods of selecting the required arc flash PPE.

Either the incident energy analysis method or the arc flash PPE category method must be used for the selection of arc flash PPE:

- 1) The incident energy analysis method.
- 2) The arc flash PPE category method.

Either of these methods shall be permitted, but both shall not be used on the same piece of equipment. The results of an incident energy analysis to specify an arc flash PPE category shall not be permitted.

If an employee's body — or part of the employee's body — needs to be within the arc flash boundary in order for the employee to perform a particular task, an [Arc Flash Risk Assessment](#) shall be performed to determine the amount of incident energy that might be impinged upon the employee and to determine the PPE to be used.

The selection and use of PPE having a rating at least as high as the predicted incident energy that is available from the energy source.

**Note:** The level of the potential arc flash hazard shall be provided in calories per square centimeter ( $\text{cal/cm}^2$ ).

#### 19.11.3.1 Incident Energy Analysis Method

The incident energy exposure level shall be based on the working distance of the employee's face and chest areas from a prospective arc source for the specific task to be performed. Arc-rated clothing and other PPE shall be used by the employee based on the incident energy exposure associated with the specific task.

The incident energy analysis method shall be permitted for any Arc Flash Risk Assessment and may be used in lieu of the PPE category method for the specified equipment. It allows for a more precise determination of PPE for a given distance from a specific electrical system or piece of equipment.

The incident energy analysis predicts the amount of incident energy that might be available from the energy source at the point in the circuit where the work task is to be performed. If the distance between a person and the potential arc source is different from the dimension used by the analysis method, the actual thermal energy might be greater or less than that determined in the analysis.

Any body parts, such as the hands and arms, may require greater protection than the person's chest and torso and shall be protected accordingly.

This may require an additional calculation of the incident energy at the distance the hands will be from the energized source.





The incident energy analysis shall take into consideration the characteristics of the overcurrent protective device and its fault clearing time, including its condition of maintenance.

The incident energy analysis method is the preferred method for PPE selection. In the event the incident energy analysis method has not been performed, such as on existing equipment at a host site, the arc flash PPE category method below can be used as a secondary method.

#### 19.11.3.2 Arc Flash PPE Category Method

The requirements of 130.7(C)(15) shall apply when the arc flash PPE category method is used for the selection of arc flash PPE. This not only includes the specific equipment listed but also, the electrical parameters on the table. This method does not require extensive calculations and it does provide a simple system for determining PPE for the equipment listed on the tables.

The method does not allow for lower PPE categories to be selected for electrical circuit parameters that are lower than the table values. The application of the tables is either a "go" or "no-go."

When conducting the Arc Flash Risk Assessment using the PPE category method, the applicable tables shall be used in the following sequence:

- 1) Determine if an arc flash is likely for the tasks specified in Table 130.5(C).
- 2) If an arc flash is likely, the hierarchy of risk controls must have been exhausted before determining necessary PPE.
- 3) When PPE is to be employed as a risk control, determine the level of PPE necessary from either Table 130.7(C)(15)(a) for AC systems or Table 130.7(C)(15)(b) for open-air DC systems.
- 4) Use Table 130.7(C)(15)(c) to determine the personal equipment needed to achieve the required PPE category. It is critical to understand that the use of the arc flash PPE category method requires strict adherence to the tables.

The arc flash PPE category method cannot be used if the proposed task or the equipment type is not listed in the tables.

The arc flash PPE category method shall not be used if the electrical equipment is in the table but with electrical parameters that exceed any specified value. Such cases require that the incident energy analysis method be used.

The requirements included in the arc flash PPE category method tables are minimum requirements only. It is permissible to require arc flash PPE rated above that required by this minimum program.

It is prohibited to utilize the PPE category method as justification for authorizing energized work. Justifying energized work under the assumption that it is safe to do so, because of the PPE category tables exposes employees to undue hazards and an unnecessary risk of injury.

The arc flash PPE categories tables are only applicable when using the arc flash PPE category method. They do not apply to evaluations conducted using the incident energy analysis method.

If the task is not listed in Table 130.5(C), then an incident energy analysis shall be required. If the equipment type is not listed or if the determined values for working distance, available fault current, or total fault clearing time are outside of the parameters given in Table 130.7(C)(15)(a), then an incident energy analysis shall be required. There shall be no interpolation of the parameters.



### 19.11.3.3 Equipment Labeling

Electrical equipment such as switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers that are in other than dwelling units and that are likely to require examination, adjustment, servicing, or maintenance while energized shall be marked with a label containing all the following information:

Equipment that will be the point of verification of the ESWC or equipment that is justified to be worked on while energized shall carry this label. The information on the label is vital.

This arc rating may be at any level above that required by the Arc Flash Risk Assessment.

## 19.12 Personal and Other Protective Equipment

Regardless of the method used to determine the PPE rating that is required, the following requirements shall apply:

### 19.12.1 General

Employees exposed to electrical hazards when the risk associated with that hazard is not adequately reduced shall be provided with, and shall use, appropriate protective equipment which is designed and constructed for the specific part of the body to be protected and for the work to be performed.

Employees working within the restricted approach boundary, or the arc flash boundary shall wear protective clothing and other PPE in accordance with their employer's hazard analysis tools and documentation.

All parts of the body inside the arc flash boundary shall be protected.

A proper PPE analysis shall identify each electrical hazard involved, the body parts that are within the specific protection boundary, and the severity of the hazard where the body part is to be located.

The employer shall also verify that the PPE supplied is following the applicable NFPA 70E requirements for protective equipment.

Verification that issued PPE complies with industry consensus programs is paramount to providing protection for the employee in the event of a shock or arc flash incident.

### 19.12.2 Care of Equipment

Protective equipment shall be maintained in a safe, clean, and reliable condition and in accordance with manufacturers' instructions.

Protective equipment shall be visually inspected prior to each use.

Protective equipment shall be stored in a manner to prevent damage from physically damaging conditions and from moisture, dust, or other deteriorating agents.

**Note:** Specific requirements for periodic testing of electrical protective equipment shall conform to the manufacturer's instructions as well as the guidance and requirements contained in consensus programs assures that personal and other protective equipment is kept in a suitable condition and ready for use when needed.



Personal and other protective equipment shall be cared for and inspected at regular intervals and prior to use.

#### **19.12.2.1 Movement and Visibility**

When arc-rated clothing is worn to protect an employee, it shall cover all ignitable clothing and shall allow for movement and visibility.

##### **19.12.2.1.1 Head, Face, Neck, and Chin (Head-Area) Protection**

Employees shall wear nonconductive head protection wherever there is a danger of head injury from electric shock or burns due to contact with energized electrical conductors or circuit parts or from flying objects resulting from electrical explosion.

Employees shall wear nonconductive protective equipment for the face, neck, and chin whenever there is a danger of injury from exposure to electric arcs or flashes or from flying objects resulting from electrical explosion.

##### **19.12.2.1.2 Eye Protection**

Employees shall wear protective equipment for the eyes whenever there is danger of injury from electric arcs, flashes, or from flying objects resulting from electrical explosion.

Safety glasses or goggles and face shields and/or hood windows shall be used together.

##### **19.12.2.1.3 Hearing Protection**

Employees shall wear hearing protection when working within the arc flash boundary.

Hearing protection shall not adversely impact the performance of other items of PPE.

##### **19.12.2.1.4 Body Protection**

Employees shall wear arc-rated clothing wherever there is possible exposure to an electric arc flash above the threshold incident energy level for a second-degree burn [ $1.2 \text{ cal/cm}^2$  ( $5 \text{ J/cm}^2$ )].

##### **19.12.2.1.5 Hand and Arm Protection**

Hand and arm protection shall be provided in accordance with the employer's PPE hazard assessment for:

##### **19.12.2.2 Shock Protection**

Employees shall wear rubber insulating gloves with leather protectors where there is a danger of hand injury from electric shock due to contact with exposed energized electrical conductors or circuit parts.

Employees shall wear rubber insulating gloves with leather protectors and rubber insulating sleeves where there is a danger of hand and arm injury from electric shock due to contact with exposed energized electrical conductors or circuit parts.

#### **19.12.3 Arc Flash Protection**

Hand and arm protection shall be worn where there is possible exposure to arc-flash burn.



Where the hands and arms are closer than the working distance, a greater level of protection shall be required. This may require an additional determination of the incident energy at the hand position during the task or arc rating of PPE for the body parts that are nearer to the energized parts.

Sleeves shall not be shortened or rolled up, exposing skin or flammable undergarments.

#### 19.12.3.1 Maintenance and Use

Electrical protective equipment shall be maintained in a safe, reliable condition. Insulating equipment shall be inspected for damage prior to use each day and immediately following any incident that can reasonably be suspected of having caused damage.

Insulating gloves shall be given an air test, along with the inspection.

Electrical protective equipment shall be subjected to periodic electrical tests. Test voltages shall be in accordance with applicable state, federal, or local codes and programs.

The Project Entity shall describe the maintenance and cleaning process, or processes, that ensure the integrity of the apparel, as well as details specific to acceptable conditions, in their hazard assessment.

New insulating equipment shall not be permitted to be placed into service unless it has been electrically tested within the previous 12 months. Insulating equipment that has been issued for service is not new and is required to be retested in accordance with the intervals in this table.

##### 19.12.3.1.1 Foot Protection

Where insulated footwear is used as protection against step and touch potential, dielectric footwear shall be required. Insulated soles shall not be used as primary electrical protection.

#### 19.12.3.2 Factors in Selection of Protective Clothing

Clothing and equipment that provide worker protection from shock and arc flash hazards shall be used. If arc-rated clothing is required, it shall cover associated parts of the body as well as all flammable apparel while allowing movement and visibility.

Clothing and equipment required for the degree of exposure shall be permitted to be worn alone or integrated with flammable, non-melting apparel. Garments that are not arc rated shall not be permitted to be used to increase the arc rating of a garment or of a clothing system.

- **Layering**

- Non-melting, flammable fiber garments shall be permitted to be used as underlayers in conjunction with arc-rated garments in a layered system.
- Garments that are not arc rated shall not be permitted to be used to increase the arc rating of a garment or of a clothing system.

- **Outer Layers**

- Garments worn as outer layers over arc-rated clothing, such as jackets or rainwear, shall also be made from arc-rated material. Flammable garments such as jackets, rainwear, or protective gear such as a harness worn over arc-rated clothing shall be prohibited.



- **Underlayers**
  - Fibers capable of melting, such as acetate, nylon, polyester, polypropylene, and spandex shall not be permitted in fabric underlayers.
  - **Exception:** An incidental amount of elastic used on non-melting fabric underwear or socks shall be permitted.
- **Coverage**
  - Clothing shall cover potentially exposed areas as completely as possible. Shirt and coverall sleeves shall be fastened at the wrists, shirts shall be tucked into pants, and shirts, coveralls, and jackets shall be closed at the neck.
  - Arc-rated clothing shall completely cover all body areas that are within the arc flash boundary. Shirt sleeves shall be fastened at the wrists, and the top button of shirts and/or jackets shall be fastened. Shirt sleeves shall fit under the gauntlet of protective gloves to minimize the chance that thermal energy could enter under the shirt sleeves.
- **Fit**
  - Tight-fitting clothing shall be avoided. Loose-fitting clothing provides additional thermal insulation because of air spaces. Arc-rated apparel shall fit properly such that it does not interfere with the work task.
- **Interference**
  - The garment selected shall result in the least interference with the task but still provide the necessary protection. The work method, location, and task may influence the protective equipment selected.
  - The plan for the work task shall define the protective garments to be worn by the employee. As the plan is developed, the location and position of the employee shall be considered to provide the best chance that the PPE will not interfere with the employee's movements during the work task.

#### 19.12.4 Arc Flash Protective Equipment

##### 19.12.4.1 Arc Flash Suits

Arc flash suit design shall permit easy and rapid removal by the wearer. The entire arc flash suit, including the hood's face shield, shall have an arc rating that is suitable for the arc flash exposure.

When exterior air is supplied into the hood, the air hoses and pump housing shall be either covered by arc-rated materials or constructed of non-melting and nonflammable materials.

An arc flash suit shall be evaluated as a complete system. A suit shall not be considered a combination of individual components which have not been evaluated as a whole. An arc flash suit does not provide protection for an employee's hands and feet, which shall also be covered by adequate arc fault protective equipment.



#### 19.12.4.2 Head Protection

An arc-rated hood or an arc-rated balaclava with an arc-rated face shield shall be used when the back of the head is within the arc flash boundary.

An arc-rated hood shall be used when the anticipated incident energy exposure exceeds 12 cal/cm<sup>2</sup> (50.2 J/cm<sup>2</sup>). Complete protection for the head shall be required when the entire head is within the arc flash boundary. The combination of an arc-rated face shield and balaclava is different from a full arc-rated hood.

##### 19.12.4.2.1 Face Protection

Face shields shall have an arc rating suitable for the applicable arc flash exposure. Face shields with a wrap-around guarding to protect the face, chin, forehead, ears, and neck area shall be used. Face shields without an arc rating shall not be utilized.

Eye protection — safety glasses or goggles — shall always be worn under face shields or hoods.

#### 19.12.4.3 Hand Protection

Heavy-duty leather gloves or arc-rated gloves shall be worn where required for arc flash protection.

**Note:** Heavy-duty leather gloves are made entirely of leather with a minimum thickness of 0.03 inches (0.7 millimeters) and are unlined, or are lined with nonflammable, non-melting fabrics.

Where insulating rubber gloves are used for shock protection, leather protectors shall be worn over the rubber gloves.

#### 19.12.4.4 Foot Protection

Heavy-duty leather footwear or dielectric footwear or both provide some arc flash protection to the feet and shall be used in all exposures greater than 4 cal/cm<sup>2</sup> (16.75 J/cm<sup>2</sup>).

Employees shall not wear footwear made from lightweight materials or from materials that are flammable or may melt and drip. In most cases, heavy-duty leather work boots are satisfactory.

#### 19.12.4.5 Clothing and Other Apparel Not Permitted

Clothing and other apparel — such as hard hat liners and hah-nets — made from materials that do not meet the requirements related to melting or made from materials that do not meet the flammability requirements shall not be permitted to be worn.

Apparel made from materials that are not arc rated shall not be worn.

#### 19.12.5 Care and Maintenance of Arc-Rated Clothing and Arc-Rated Arc Flash Suits

##### 19.12.5.1 Inspection

Arc-rated apparel shall be inspected before each use. Work clothing or arc flash suits that are contaminated or damaged to the extent that their protective qualities are impaired shall not be used. Protective items that become contaminated with grease, oil, or flammable liquids or combustible materials shall not be used.





Any flammable soiling or contamination on the surface of the arc-rated clothing may reduce or even void the arc rating of the apparel. The clothing shall also be free from tears, cuts, or rips. Garments that are not suitable for use shall be removed from service. If corrections can be made, such as laundering or repair using appropriate techniques, the garment may be returned to service; otherwise, the garment shall be disposed of.

#### **19.12.5.2 Manufacturer's Instructions**

The garment manufacturer's instructions for care and maintenance of arc-rated apparel shall be followed. Improper laundering or failure to follow the instruction provided by the manufacturer may diminish the longevity of the product's useful life and reduce the product's protective qualities.

#### **19.12.5.3 Storage**

Arc-rated apparel shall be stored in a manner that prevents physical damage; damage from moisture, dust, or other deteriorating agents; or contamination from flammable or combustible materials. Contaminants such as grease and oil shall be avoided, as contamination reduces the thermal protection provided by the clothing. Exposure to flammable materials shall also be avoided.

#### **19.12.5.4 Cleaning, Repairing and Affixing Items**

When arc-rated clothing is cleaned, manufacturer's instructions shall be followed to avoid loss of protection. When arc-rated clothing is repaired, the same arc-rated materials used to manufacture the arc-rated clothing shall be used to provide repairs.

Manufacturers provide cleaning instructions for their products used for thermal protection. These instructions shall be followed closely to ensure that the performance of the garment is not compromised.

Company logos, replacement garment closures — zippers — and the sewing thread used to attach these items may affect the arc rating of the PPE.

### **19.13 Requirements for Insulated Tools**

#### **19.13.1 General**

The following requirements shall apply to insulated tools:

- Insulated tools shall be rated for the voltages on which they are used.
- Insulated tools shall be designed and constructed for the environment to which they are exposed and the manner in which they are used.
- Insulated tools and equipment shall be inspected prior to each use. The inspection shall look for damage to the insulation or damage that can limit the ability of the tool to perform its intended function or could increase the potential for an incident — e.g., damaged tip on a screwdriver.

When working inside the restricted approach boundary, employees shall select and follow work procedures, which include the use of insulated tools. The term insulated means that the tool manufacturer has assigned a voltage rating to the insulating material.

Qualified persons shall be expected to be competent to inspect an insulated tool for potential damage and shall be capable of determining whether the voltage rating remains intact.



Only tools with a defined voltage rating shall be considered to be insulated. Employees shall look for the markings on the tool prior to using it. Tools with unmarked rubber grips and plastic handles shall not be used in lieu of a properly rated tool.

- **Fuse or Fuse-Holder Handling Equipment** — Fuse or fuse-holder handling equipment, insulated for the circuit voltage, shall be used to remove, or install a fuse if the fuse terminals are energized. Replacing fuses live is energized work and, as such, must be justified.
- **Ropes and Handlines** — Ropes and handlines used within the limited approach boundary shall be nonconductive. Where ropes and handlines are used around energized conductors and circuit parts, they shall be made of nonconductive material to protect employees from potential shock hazards.
- **Fiberglass-Reinforced Plastic Rods** — Fiberglass-reinforced plastic rod and tube used for live-line tools shall meet the requirements of applicable portions of electrical codes and programs dealing with electrical installation requirements.
- **Portable Ladders** — Portable ladders shall have nonconductive side rails when used within the limited approach boundary or where the employee or ladder might contact exposed energized electrical conductors or circuit parts. Nonconductive ladders shall meet the requirements of applicable state, federal, or local codes and programs.
- **Protective Shields** — Protective shields, protective barriers, or insulating materials shall be used to protect employees from shock, burns, or other electrically related injuries while an employee is working within the limited approach boundary of energized conductors or circuit parts that might be unintentionally contacted or where dangerous electric heating or arcing might occur.

When normally enclosed energized conductors or circuit parts are exposed for maintenance or repair, they shall be guarded to protect unqualified persons from contact with the energized conductors or circuit parts.

When qualified persons are performing tasks within the restricted approach boundary and unqualified persons are allowed within the limited approach boundary, the energized conductors and circuit parts shall be guarded to protect the unqualified persons from contacting them and thereby initiating an event.

For equipment to be considered guarded, the unqualified persons must be isolated from, kept away from, or protected from the energized conductors or circuit parts.

- **Rubber Insulating Equipment** — Rubber insulating equipment used for protection from unintentional contact with energized conductors or circuit parts shall meet the requirements of applicable state, federal, or local codes and programs.
- **Voltage-Rated Plastic Guard Equipment** — Plastic guard equipment for protection of employees from unintentional contact with energized conductors or circuit parts, or for protection of employees or energized equipment or material from contact with ground, shall meet the requirements of applicable state, federal, or local codes and programs.
- **Physical or Mechanical Barriers** — Physical or mechanical (field-fabricated) barriers shall be installed no closer than the limited approach boundary distance. While the barrier is being installed, the limited approach boundary distance shall be maintained, or the energized conductors or circuit parts shall be placed in an ESWC.



## 19.14 Test Instruments and Equipment

Test instruments that will be used during the execution of project electrical work shall be managed to facilitate their use. The Project Entity shall determine the manufacturer, type, and model of the test instruments to be used, as well as the types of systems and the locations where they can be used.

The Project Entity shall provide all test instruments. Each test instrument will require its own set of policies and procedures. Procedures and policies shall be developed and refined prior to the use of any test instrument.

### 19.14.1 Testing

Only qualified persons shall perform tasks such as testing, troubleshooting, and voltage measuring on electrical equipment operating at voltages equal to or greater than 50 volts.

Careful consideration shall be given to circuits operating under 50 volts where conditions such as a wet environment or high available fault current are encountered.

If it is determined that an electrical hazard does exist, only those considered to be qualified persons are permitted to perform tasks such as testing, troubleshooting, voltage measuring, or similar diagnostic work after an EEWP-2 permit has been approved and issued.

#### 19.14.1.1 Rating

Test instruments and their accessories shall be as follows:

- Rated for circuits and equipment where they are utilized.
- Approved for the purpose.
- Used in accordance with any instructions provided by the manufacturer.

Using a meter that is inappropriate for the measurement location could initiate an electrocution or arc flash incident. The four categories that shall be employed for indicating the location of use for test equipment are:

- **Category IV (CAT IV):** Three-phase utility connections and outside.
- **Category III (CAT III):** Inside distribution — e.g., feeders and branch circuits.
- **Category II (CAT II):** Single-phase receptacle level — e.g., 30 feet from CAT III locations, 60 feet from CAT IV locations.
- **Category I (CAT I):** Electronic equipment.

#### 19.14.1.2 Design

Test instruments, equipment, and their accessories shall be designed for the environment to which they will be exposed and for the manner in which they will be utilized.

Test instrument accessories, such as probes and leads, that are part of the equipment design shall be treated with the same care as the instrument. Making or modifying accessories shall be prohibited.



Test instruments shall be selected for the conditions of use. Contacting an exposed energized electrical conductor or circuit part with a test instrument to measure voltage normally results in a small arc, immediately before contact is made or when contact is broken. Therefore, such test instruments must not be used in areas where concentrations of flammable gases, vapors, or dusts may occur.

#### **19.14.1.3 Visual Inspection and Repair**

Test instruments, equipment, and all associated test leads, cables, power cords, probes, and connectors shall be visually inspected for external defects and damage prior to each use.

If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item shall be removed from service. No employee shall use it until a person qualified to perform the repairs and tests necessary to render the equipment safe has done so.

If a defect is found during the visual inspection, a tag or label shall be attached to the instrument indicating that the instrument is defective and not to be used. The instrument shall be removed from service until repairs have been made by a qualified person. A defective lead or probe shall not be repaired; it shall be destroyed and replaced with a new one.

#### **19.14.1.4 Operation Verification**

When test instruments are used for testing the absence of voltage on conductors or circuit parts operating at voltages equal to or greater than 50 volts, the operation of the test instrument shall be verified on any known voltage source before and after an absence of voltage test is performed.

Although this verification applies to conductors or circuit parts operating at 50 volts or more, under certain conditions — such as wet contact or immersion — even circuits operating under 50 volts may pose a shock hazard. The 50-volt limit does not rely on the frequency of the circuit — it applies to all frequencies.

### **19.15 Overhead Lines, Substations and Electrical Equipment Rooms**

#### **19.15.1 Working On or Near Energized Lines or Equipment**

If necessary, to work on energized circuits or equipment for continuity of service, the final decision as to whether the job may be done safely is the responsibility of the supervisor who has direct charge of the work. It is his or her responsibility to know that his or her crew is:

- Properly trained for the work on energized equipment that the proper tools and equipment are used.
- Tools and equipment have been tested and are safe.
  - When work is to be performed near overhead lines, the lines shall be de-energized and grounded. If this is not possible, then other protective measures shall be taken before the work is started.
  - Arrangements shall be made with the person or organization that operates or controls the electric circuits when lines are to be deenergized and grounded.
  - Protective measures used — i.e., guarding, isolating, or insulating — shall prevent direct contact by the qualified person or indirect contact through conductive materials, tools, or equipment. Only qualified persons of power transmission and distribution organizations are allowed to install insulating devices on overhead power transmission and distribution lines.



- Correct safety measures are taken.

At least two qualified workers are required to be present while the following types of work are performed on exposed electrical circuits or equipment energized at more than 600 volts:

- Installation, removal, or repair of de-energized lines if a worker is "exposed to contact" with other circuit parts energized at more than 600 volts. The term "exposed to contact" is meant to apply to a worker who is in a working position from which he/she can reach or move a conductive object within the electrical component of minimum approach distances in the minimum approach distances table in this section.
- Installation, removal, or repair of energized equipment such as, but not limited to, transformers, capacitors, and regulators.
- Work involving the use of mechanical equipment other than insulated aerial lifts near energized parts. The term "near" as it applies to non-insulated mechanical equipment that due to its working position can physically contact the energized electrical circuit in question. The contact may be due to either:
  - Inadvertent movement of the equipment to a point within the minimum approach distances (human error).
  - Mechanical failure of the equipment causing the equipment to move to a point within the minimum approach distances.
- Other work that exposes a worker to electrical hazards equal to or greater than those posed by the operations described above.

The following activities are exceptions to the two-person rule and can be safely performed by a single qualified worker:

- Routine switching of circuits where previous experience demonstrates that the conditions present permit the work to be performed safely.
- Work performed with live-line tools if the worker is so positioned as to be neither within reach nor otherwise exposed to contact with energized parts.

Emergency repairs to the extent necessary to safeguard the general public, recognizing that the loss of power can create public safety concerns that outweigh the safety concerns of individual workers as it applies to the two-person rule. Once the emergency to the general public is abated, the two-person rule applies to the remainder of the work.

In accordance with OSHA regulatory requirements, when workers are performing work on, or associated with, exposed lines or equipment energized at 50 volts or more, persons with first-aid training shall be available as follows:

- For field work involving two or more workers at a work location, at least two trained persons shall be available. However, for line-clearance tree trimming performed by line clearance tree trimmers who are not qualified workers, only one trained person need be available if all new workers are trained in first aid within three months of their hiring dates.
- For fixed work locations such as substations and generating stations, the number of trained persons available shall be sufficient to ensure that each worker exposed to electric shock can be reached within four minutes by a trained person. However, where the existing number



of workers is insufficient to meet this requirement — at a remote substation, for example — each worker at the work location shall be a trained worker.

Treat noncurrent-carrying metal parts of equipment or devices, such as transformer cases and circuit breaker housings as energized at the highest voltage to which they are exposed unless verified as grounded before work is performed.

Do not perform maintenance, modification and construction work on electrical circuits and equipment until:

- Proper authorization has been obtained.
- It has been determined that the work can be done in a safe manner.
- The safe work requirements are clearly understood by each person involved in the work.

Remove all exposed conductive articles such as keys watches and jewelry when work is performed within arm's reach of, or potential contact with exposed energized parts.

Nonmetal framed glasses are preferred. You may wear a non-conductive face shield or nonconductive safety glasses over metal-framed glasses.

Restrain badges/lanyards by taping or other means to the worker's clothing to prevent contacting an energized source. Removal of badges/lanyards that have the potential to contact energized electrical circuits is also acceptable.

Take measures to insulate adjacent equipment so that no arc flash potential/shock exists OR establish a boundary area as appropriate.

Use insulated hand tools constructed in accordance with ASTM F1505 and/or with IEC Standard 60900 Live Working-Hand tools for use up to 1,000 VAC. and 1,500 VDC. Uninsulated tools may not be modified by means such as electrical tape and be considered insulated for working on energized parts.

Use insulated hand tools to manipulate exposed energized parts operating at greater than 50 volts up to 1,000 volts.

The use of insulated hand tools does not eliminate the need to use voltage rated gloves or other insulating barriers where a worker may accidentally make contact with exposed energized conductors/parts operating at 50 volts or more. For example, if a worker's hand that was not using the insulated tool, rubber-insulating gloves would be required.

Only electrically qualified workers may work on exposed, uninsulated energized electrical lines, conductors, or equipment.

Only qualified workers may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more.

Consider electrical lines and equipment energized unless properly cleared and verified as required by Clearance Procedure to Safely Control Hazardous Energy Using Group Tagout or business unit specific clearance procedures.

No worker shall approach or take any conductive object closer to exposed energized parts than set forth in the minimum clearance distance for all type of energized work except in one of the following situations:





- The worker is insulated from the energized part.
- The energized part is insulated from the worker and from any other conductive object at a different potential.
- The worker is insulated from any other exposed conductive object, as during the performance of live-line barehanded work.

The table at the beginning of Section 19 of this manual establishes the safe distances to which persons may approach or take conductive objects to exposed energized conductors/parts.

#### 19.15.2 Guarding Energized Electrical Equipment

Guarding of spaces and rooms in which electrical supply lines or equipment are installed shall be restricted to authorized persons under any of the following conditions:

- If, under normal conditions, exposed energized parts at 50 to 150 volts (to ground) are located within 8 feet of the ground or other working surface inside the space or room — this does not include incidental conditions, such as broken or missing light bulbs.
- If energized parts operating at 151 to 600 volts are, under normal conditions, located with 8 feet of the ground or other working surface inside the space or room are guarded only by physical location.
- If energized parts operating at more than 600 volts are located within the space or room and are not enclosed within grounded, metal-enclosed equipment whose only openings are designed so that foreign objects inserted in these openings will be deflected from the energized parts or installed at a height above the ground or any other working surface that provides protection at the voltage to which they are energized corresponding to the protection provided by an 8-foot height at 50 volts.

Where access is restricted to authorized personnel only, access shall be controlled in the following manner:

- The spaces or rooms shall be enclosed within fences, screens, partitions, or walls to minimize the possibility that unqualified persons will enter.
- Signs shall be posted at each entrance to warn unqualified persons to keep out.
- Entrances to rooms and spaces that are not under the observation of an attendant shall be kept locked.
- Guarding shall be provided around all energized parts operating at more than 50 volts (to ground) without an insulated covering unless the location of the energized parts gives sufficient clearance to minimize the possibility of accidental contact. Guidelines for clearances are contained in IEEE C2 *National Electric Safety Code*. Guarding of Energized Parts Within Compartments
- Except for fuse replacement or other necessary access by qualified persons, the guarding of energized parts within compartments shall be maintained during operations and maintenance functions to prevent accidental contact with energized parts and to prevent tools or other equipment from being dropped on energized parts.



- When guards are removed from energized equipment, barriers shall be installed around the work area to prevent personnel who are not working on the equipment from contacting energized parts.

### 19.15.3 Fuse Handling

When installing or removing expulsion-type fuses with one or both terminals energized and/or exposed at more than 50 volts:

- Use tools and/or gloves rated for the voltage.
- Wear arc-rated face shields over safety glasses that are appropriate for the hazard.
- Stay clear of the exhaust path of the fuse barrel.

Work shall be treated as energized work; and an EEWP (EEWP-1) shall be completed prior to replacing or handling the fuse when the employee is within the restricted approach boundary while performing the work.

When exposed to the hazards of electric arcs or electrical flames, do not wear clothing that will burn or melt. See Arc Flash Hazard.

When working within reach of energized conductors and equipment or operating equipment that is known to produce arcs, comply with the PPE requirements as specified in Arc Flash Protection.

Do not wear clothing made of acetate, nylon, polyester, and rayon, either alone or in blends, unless the fabric is treated with an approved fire retardant and documented in test results from a recognized test authority.

### 19.15.4 Grounding

Induced voltage on a conductor can be a dangerous condition. Any line conductor has the potential for induced voltage. These potentially hazardous conditions are caused by various effects that include:

- **Electromagnetic Induction** — Induced voltage on a conductor from adjacent energized lines.
- **Electrostatic Induction** — Induced voltage caused by wind action flowing across conductors.
- **Lightning** — Lightning striking a conductor will cause the charge to flow great distances over the conductor before it dissipates.

To offset these potentially hazardous conditions, proper grounding must be in place that may include system grounding, personal protective grounds, or combinations that must be determined when conducting a documented Pre-Job Briefing — i.e., PTA, JSA, JHA, etc.

Safety precautions shall be taken such that work shall be treated as energized until grounds are installed and an electrical safe work conditions have been established.

**If the line or equipment is not isolated, tested, and grounded properly, it cannot be considered de-energized.**

- Only qualified and authorized personnel will be permitted to install and remove grounds on any previously energized lines or equipment.



- The lines or equipment to be worked on must be de-energized, tested for voltage using an approved testing device and then grounded.
- Personnel must maintain minimum approach distances from all ungrounded parts that may be of differing electrical potentials, unless defined by arc flash hazard labeling.
- Before installing grounds, the surface of the material to which the grounding clamp is to be attached must be cleaned by use of a wire brush or other approved O&M methods, and then applied with a certified hot stick.
- Only approved protective grounding devices shall be used in accordance with approved grounding procedures.
- Temporary protective grounding equipment shall be visually inspected before each use and such inspections shall include visually checking grounding jumpers for broken or loose fittings and chafed or cut insulation. The grounding clamp jaws shall be:
  - Clean.
  - The cable ferrules must be tightened.
  - The grounding clamp must be wire brushed with inhibitor before each use.
  - If grounding equipment is found to be defective, it must be reported to the Supervisor and immediately removed from service.
- Grounds must be tested annually and must be affixed with a tag, preferably metal, indicating the last test date.
- Grounds shall only be installed and removed with a certified hot stick, with a minimum stick length of 8 feet.
- Line grounds shall have signage — i.e., ground flags — attached to at least one grounding jumper indicating that grounds are applied.
- Cubicle grounding applications shall require magnetic signage posted on the cubicle panel indicating that grounds are applied.
- Protective grounds must be removed after the LOTO or clearance is released, and all persons and equipment involved are at a safe (minimum approach) distance from the equipment prior to being energized.
- When electrical testing requires that circuits or equipment be ungrounded, protective grounds shall be removed using an insulated hot stick. Personnel involved in the testing process must wear appropriately rated rubber gloves and apply rubber insulation as necessary to isolate themselves from the hazardous test voltages. If work is to continue after testing, grounds must be reapplied.
- Conductors shall be grounded in the following order:
  - 1) The grounded end shall be attached first to a suitable ground.
  - 2) The nearest phase conductor shall be grounded.



3) The remaining conductors shall be grounded.

- Personnel shall stand as far as possible from the conductor when applying or removing temporary grounds. When removing the grounding cable, personnel shall reverse the order being used to ensure that his or her body does not come in contact with conductors that are grounded. The clamp from the ground source will always be removed last.
- Protective grounding equipment shall be capable of conducting the maximum fault current that could flow at the point of grounding for the time necessary to clear the fault. Qualified personnel will generally install protective grounds that are 2/0 AWG, and such grounds should not exceed 4/0 AWG. In some cases, it may be necessary to use more than one set of grounding jumpers per phase in order to facilitate the maximum fault current that may exist.
- Use grounding jumpers of appropriate length, as grounds should not be coiled when applied.
- When applicable, secure grounding jumpers to minimize the whipping action that can occur when fault current flows through the jumpers.
- Workers shall avoid contact with grounds while in use, nor should grounds enter the minimum approach boundary of another energized circuit or equipment.
- Equipment including but not limited to, vacuum trucks, aerial lifts, cranes, boom devices, dump trucks, elevated equipment, and other heavy rolling stock vehicles that are within the limited approach boundary of energized electrical equipment or circuit parts above 50 volts, shall be electrically grounded prior to the start of any work activities. Grounding of the vehicle will be to a known ground source or to an earth driven ground rod, at a minimum depth of at least 36 inches.
- If any vehicle or mechanical equipment is grounded, the physical contact of such equipment shall always be avoided. Additional precautions, such as use of barricades, dielectric overshoe footwear, or insulation, shall be taken to protect employees from hazardous ground potentials — step and touch potential.
- Mobile equipment and their grounds will be contained inside of a barricaded area.
- Equipment affixed with uninsulated personnel platforms — e.g., aerial lifts, man baskets — must be bonded to conductor with a breakaway ground anytime personnel will physically contact, touch, manipulate or handle exposed de-energized conductor.
- Elevated protective grounds shall only be applied from an approved aerial lifting device or a fiberglass ladder.
- Ensure that temporary skid-mounted equipment is grounded to the client's grounding system.
- After disconnecting a cable from a power source, ground the cable — i.e., cap banks, after testing — to discharge any potential capacitive charge.
- Store ground sets and connection hardware in a clean and dry area when not in service.

#### 19.15.5 Jumpers

Only qualified and authorized workers will troubleshoot energized control circuits.

The use of jumper cables for troubleshooting shall be strictly controlled.



The responsible worker shall keep a log of jumper cable use to include:

- The circuit or component isolated by the jumper.
- The jumper identification number or code.
- The actual location of the jumper's use.
- The date the jumper was installed.
- The date it was removed.
- The person responsible for attaching and removing the jumper.
  - Each jumper will contain an identification number or code.
  - Jumpers will be designed for the voltage and current to be imposed on them.
  - Alligator clips shall have insulated covers.

Do not use jumpers attached by means of alligator clips to bridge the secondaries of in-service energized current transformers. A positive means must be used for attaching the jumper that bridges the secondary terminals.

Use care in attaching and removing jumpers so that short circuits are not created and there is no personnel contact with other energized circuits. Wear flame retardant clothing in accordance with arc flash hazard when performing this task.

On completion of work, return all equipment to a safe condition. Replace all enclosures such as panels, outlet covers, conduit covers, etc., and tighten all bolts/screws. Close and latch electrical panel doors.

Remove all grounds and/or jumper cables when work is completed.

The clearance and hold order shall be removed in accordance with the Clearance Procedure to Safety Control Hazardous Energy Using Group Tagout when the work has been completed and the equipment returned to a safe condition.

#### **19.15.6 Connections and Disconnections**

When connecting de-energized equipment or lines to an energized circuit by means of conducting wire or devices, make the first connection to the de-energized part.

When disconnecting equipment or lines from energized circuits by means of conducting wires or devices, disconnect the source end first.

Keep loose conductors away from exposed energized parts during connection and disconnecting work involving energized circuits.

#### **19.15.7 Live Dead Live**

To ensure absence of voltage or an electrically safe working condition, a Live-Dead-Live (LDL) check shall be performed.



To perform LDL checks three steps must be performed in both high voltage — greater than 480 VAC — and low voltage — equal to or less than 480 VAC.

#### 19.15.7.1 For High Voltage (Greater Than 480 VAC)

- 1) **LIVE** — Check the functionality of the electrical apparatus on a known energized voltage source to verify that the electrical testing apparatus is operational. This check also verifies that the electrical testing apparatus's test probes and test leads are functional.
- 2) **DEAD** — Use the electrical testing apparatus to check and verify whether the circuit and/or equipment to be worked on is de-energized.
- 3) **LIVE** — As a last check to verify the electrical testing apparatus did not fail during the circuit testing, check the electrical testing apparatus again using the known energized voltage source.

#### 19.15.7.2 For Low Voltage (Equal to or Less Than 480 VAC)

- 1) **LIVE** — Check the functionality of the electrical testing apparatus on a known energized voltage/current source to verify that the electrical testing apparatus is operational. This check also verifies that the electrical testing apparatus's test probes and test leads are functional.
- 2) **DEAD** — Use the electrical testing apparatus to check and verify whether the circuit and/or equipment to be worked on is de-energized.
- 3) **LIVE** — As a last check to verify the electrical testing apparatus did not fail during the circuit testing, check the electrical testing apparatus again using the known energized voltage/current source.

In cases where both AC and DC voltage may need to be verified, the LDL check process may have to be repeated twice, so that the user can verify that the electrical testing apparatus is operating properly for both types of voltage.

Follow the manufacturer's instructions for the apparatus being used, including whether to use the auto range function or select a specific voltage.

#### 19.15.8 Electrical Switching Operations

During normal plant operations, obtain permission from appropriate operations personnel before entering the switchyard. The appropriate operations personnel shall approve entry based on work requirements, operational conditions, and the safety considerations of the work to be done.

Supervisors shall ensure that workers under their supervision work within safe boundaries established by the clearance, and in accordance with the most current clearance procedures, practices, and operating letters.

Wear the appropriate arc-resistant clothing and required PPE when conducting switching operations.

Install necessary barricades and barrier tape in accordance with the Signs and Barricades section of this manual.

During outages or heavy maintenance activities in the switchyard, the supervisor shall notify the appropriate operations personnel of work activities daily.





If switching becomes necessary while work is being performed in the switchyard, the appropriate operations personnel shall notify the supervisors and crews of the work being performed to evacuate the switchyard.

When operations personnel become aware of adverse weather that could cause breakers to open automatically, they shall notify the responsible supervisor to evacuate the switchyard.

## **19.16 Electrical Cables**

### **19.16.1 Work on Energized Cables**

Before any work is done on an energized cable, grounded equipment — with which contact can be made — shall be covered with rubber insulating blankets or approved insulating shields.

- Cables with nonmetallic sheaths and those with an insulating jacket over the metallic sheath do not need to be covered.

When working on or around unstable or questionable conductors, an insulated blanket shall be used as an added precaution.

Employees shall wear voltage-rated rubber gloves with leather protectors and stand on rubber mats during the cutting and removing of sheathing or sleeves and moving or testing energized cables.

When work is performed on cables where a metal sheath is present, the metallic sheath continuity shall be maintained, or the cable sheath shall be treated as energized.

Energized cables that are to be moved shall be inspected for defects prior to movement.

The Burns & McDonnell representative and host site representative shall be notified prior to the movement of energized cables operating at or above 480 volts. Cables shall not be moved where such movement requires changing the bend radius, which could lead to cable failure or cable stress.

Wherever a cable exhibits indication of degradation during inspection, the Burns & McDonnell representative and host site representative shall be immediately consulted to facilitate a path forward. Thermography is a valid method of investigating degradations in cable insulation.

### **19.16.2 Work on De-Energized Cables**

Identify the cable and routing with existing drawings, if available.

When cables and equipment are taken out of service to be worked on, the procedures for de-energizing and obtaining LOTO or clearances shall be followed in accordance with LOTO procedure in Chapter 24.

Perform an electrical verification with appropriate test equipment as a final test procedure.

Before making an opening in or removing a part of a sheath or sleeve of a cable, whenever possible personnel should work 'between' grounds. Grounds should be applied at the nearest grounding point on each side of the work location where possible.

The qualified person who will be cutting the cable must perform an independent verification from termination point to termination point.



### 19.16.3 Demo of De-Energized Cables from Service

Verify that cable isolation, de-energization, testing, disconnection, and identification has taken place prior to demo activities. Cables shall be disconnected on each end prior to the start of demo activities.

Demo process shall always start from the source, when possible — i.e., switchgear, junction box, etc. — outward to the load/end device — motor, pump, etc. Never start the demo process in the middle, always start from one end and work to the other.

A designated colored tape is to be applied to the outer jacket every 8 feet of the cable being removed, as this allows personnel to maintain visual verification that the correct cable is to be removed. Cable is to only be cut within the color-coded tape in sections not to exceed 8 feet in length.

A pause session must take place with the crew when cable/conduit penetrate a building wall, floor, beam, or different elevation to reverify the correct cable is being removed from service, as risk of error may increase in such scenarios.

Cable shall be removed from the cable tray and onto the ground — whenever possible — to avoid the potential of damaging adjacent cable when cutting cable and ty-wraps.

### 19.16.4 Pulling Cables

Personnel shall not handle pull-wires or pulling-lines within arm's length of blocks, sheaves, winch drums, and take-up reels.

Conductive materials such as pull-wires, steel pulling-lines, or metal rodding shall not be used in cable trays or conduits where contact with energized equipment is likely.

Wherever possible, personnel shall not remain in a manhole or vault during pulling operations.

### 19.16.5 Performing High-Voltage Tests on Cables and Equipment

When performing a high-potential test on cables or other equipment, exposed areas where contact is possible shall be properly identified and isolated for personnel safety.

Only qualified personnel shall operate high-voltage test equipment. The test equipment operator is responsible for verifying that all safety measures are in position prior to the start of testing activities such as danger signs, barricades, stanchions, or other guards.

Qualified personnel shall confirm that the equipment or cable to be tested is properly isolated.

The high-potential test equipment is to be properly grounded — if applicable — before attaching a lead to any conductor or equipment terminal.

The test equipment operator shall ensure that all other personnel are clear of exposed areas prior to activating the test equipment and the deadman switch shall always remain in the hands of the equipment operator during testing activities.

The operator that performed the test is responsible for bleeding off any charged equipment or conductors and for removing all test equipment grounding that was used during the test.

When the test has been completed, the test equipment operator shall verify that all cables and equipment are returned to normal before authorizing the removal of signage and physical barriers.



## **19.17 Other Precautions**

### **19.17.1 Alertness**

#### **19.17.1.1 When Electrical Hazards May Exist**

Employees shall be instructed to remain alert at all times when they are working within the limited approach boundary of energized electrical conductors or circuit parts operating at voltages equal to or greater than 50 volts, and in work situations where electrical hazards might exist.

#### **19.17.1.2 When Impaired**

Employees shall not be permitted to work within the limited approach boundary of energized electrical conductors or circuit parts operating at voltages equal to or greater than 50 volts, or where other electrical hazards exist, while their alertness is recognizably impaired due to illness, fatigue, or other reasons.

#### **19.17.1.3 Changes in Scope**

Employees shall be instructed to be alert for changes in the job or task that could lead the person outside of the ESWC or expose the person to additional hazards that were not part of the original plan.

During the Pre-Job Briefing, employees shall be instructed about the details and limits of the expected work task. A change in the condition or work environment that was not a part of the original plan might result in unanticipated exposure to an electrical hazard.

Employees shall be trained to stop work when there is any deviation from the planned task. Work shall not proceed until a new job plan or work permit (EEWP-1/EEWP-2) has been provided. A new/revised risk assessment shall be required prior to performing the new task.

#### **19.17.1.4 Blind Reaching**

Employees shall be instructed not to reach blindly into areas that might contain exposed energized electrical conductors or circuit parts where an electrical hazard exists.

The employee must be able to see the location where the task will be conducted. There is no way to assume that the task can be safely performed if employees are unable to see what they are doing. The use of a mirror to see behind an obstruction is also considered blind reaching.

### **19.17.2 Illumination**

#### **19.17.2.1 General**

Employees shall not enter spaces where electrical hazards exist unless illumination is provided that enables the employees to perform the work safely. The Project Entity shall ensure that adequate lighting is provided to perform the work safely. Adequate lighting shall also be included in the risk assessment procedure. Additional illumination may be required due to the darkness of a face shield. Prior to start of work, the work area shall be viewed while wearing the face shield to determine if additional illumination is necessary.

If additional illumination is required, the work permit shall specify the type of additional lighting need to perform the task safely. For example, if the required fixed temporary lighting necessary to perform the task is not available, work shall not begin until it is in place. The improvised use of a flashlight would alter the work plan and could introduce unanticipated risks to employees. Work shall not be performed until the appropriate and sufficient lighting specified on the work permit is available.



#### **19.17.2.2 Obstructed View of Work Area**

Where lack of illumination or an obstruction precludes observation of the work to be performed, employees shall not perform any task within the limited approach boundary of energized electrical conductors or circuit parts operating at voltages equal to or greater than 50 volts or where an electrical hazard exists.

#### **19.17.2.3 Conductive Articles Being Worn**

Conductive articles of jewelry and clothing — such as watchbands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, metal headgear, or metal-frame glasses — shall not be worn within the restricted approach boundary or where they present an electrical contact hazard with exposed energized electrical conductors or circuit parts.

#### **19.17.3 Conductive Materials, Tools, and Equipment Being Handled**

##### **19.17.3.1 General**

Conductive materials, tools, and equipment that are in contact with any part of an employee's body shall be handled in a manner which prevents unintentional contact with energized electrical conductors or circuit parts.

#### **19.17.4 Approach to Energized Electrical Conductors and Circuit Parts**

Control means and methods shall be utilized to ensure that conductive materials do not approach exposed energized electrical conductors or circuit parts than permitted.

##### **19.17.4.1 Confined or Enclosed Workspaces**

When an employee works in a confined or enclosed space — such as a manhole or vault — that contains exposed energized electrical conductors or circuit parts operating at voltages equal to or greater than 50 volts or where an electrical hazard exists, the Project Entity shall provide, and the employee shall use, protective shields, protective barriers, or insulating materials as necessary to avoid unexpected contact with any source of electrical hazards.

Ventilation, emergency evacuation, and atmospheric testing shall be included in the risk assessment procedure. If the assessment determines that the risks could be reduced to an acceptable level by installing barriers, shields, or other isolating devices, then the task may be performed, provided that all hazards identified in the risk assessment procedure are mitigated.

##### **19.17.4.2 Doors and Hinged Panels**

Doors, hinged panels, and similar configurations shall be secured to prevent them swinging into an employee and causing the employee to contact exposed energized electrical conductors or circuit parts which are operating at voltages equal to or greater than 50 volts.

##### **19.17.4.3 Clear Spaces**

Working space required by other codes and programs shall be kept clear to permit safe operation and maintenance of electrical equipment.

The space shall not be used for storage of any items including portable equipment on rollers, hand carts, and other easily removed items.



#### 19.17.4.4 Housekeeping Duties

Employees shall not perform housekeeping duties inside the limited approach boundary where there is a possibility of contact with energized electrical conductors or circuit parts.

To prevent such contact, adequate safeguards — such as insulating equipment or barriers — shall be provided and in place before any housekeeping is conducted.

Electrically conductive cleaning materials — including conductive solids such as steel wool, metalized cloth, and silicon carbide, as well as conductive liquid solutions — shall not be used inside the limited approach boundary unless procedures to prevent electrical contact are followed.

**Note:** The limited approach boundary only exists where there are exposed energized electrical conductors and circuit parts. This requirement does not apply where mitigation strategies have been implemented to prevent employees from accidentally contacting exposed electrical conductors and circuit parts. Arc-rated PPE shall be required if housekeeping duties are being performed within the arc flash boundary.

#### 19.17.4.5 Occasional Use of Flammable Materials

Where flammable materials are present only occasionally, the use of electric equipment capable of igniting them shall not be permitted, unless measures are taken to prevent hazardous conditions from developing.

#### 19.17.4.6 Anticipating Failure

When there is evidence that electric equipment might fail and injure employees, the electric equipment shall be de-energized, unless the Project Entity is able to demonstrate that de-energization introduces additional hazards or increased risk or is infeasible due to equipment design or operational limitations.

Until the equipment is de-energized or repaired, employees shall be protected from hazards associated with the impending failure of the equipment through the use of suitable barricades and other alerting techniques necessary for the safety of employees.

#### 19.17.4.7 Overcurrent Protection Modification

Overcurrent protection of circuits and conductors shall not be modified, even on a temporary basis, beyond what is permitted by applicable portions of electrical codes and programs dealing with overcurrent protection.

All overcurrent devices shall comply with the requirements of the *NEC*. The protection provided may be of the overload, short-circuit, or ground-fault type, or a combination of these types, depending on the application.

#### 19.17.4.8 Routine Opening and Closing of Circuits

Load-rated switches, circuit breakers, or other devices specifically designed as disconnecting means shall be used for the opening, reversing, or closing of circuits under load conditions.

Cable connectors that are not of the load-break type, fuses, terminal lugs, and cable splice connections shall not be permitted to be used for such purposes, except in an emergency.



When non-load-break-rated, devices are used to break electrical load currents in an emergency situation, the entity breaking the load shall be aware of the risk of injury from exposure to potential electrical hazards.

#### **19.17.4.9 Reclosing Circuits After Protective Device Operation**

After a circuit is de-energized by the automatic operation of a circuit protective device, the circuit shall not be manually re-energized until it has been determined that the equipment and circuit can be safely energized.

The repetitive manual reclosing of circuit breakers or re-energizing circuits through replaced fuses shall be prohibited.

When it is determined from the design of the circuit and the overcurrent devices involved that the automatic operation of a device was caused by an overload rather than a fault condition, examination of the circuit or connected equipment shall not be required before the circuit is re-energized.

If an overcurrent device — such as a fuse or circuit breaker — operates, it can be assumed that the rated current has been exceeded or that a short circuit or ground-fault condition exists.

Reclosing a circuit into a short circuit or ground fault may have a disastrous result and is prohibited. The cause of the device operation shall be determined before the circuit is reclosed.

#### **19.17.4.10 Safety Interlocks**

Only qualified persons following the requirements for working inside the restricted approach boundary shall be permitted to defeat or bypass an electrical safety interlock over which the person has sole control, and then only temporarily while the qualified person is working on the equipment.

The safety interlock system shall be returned to its operable condition when the work is completed.

### **19.18 Alerting Techniques**

Individuals who are not involved in the work task may be exposed to an electrical hazard while the work task is being executed. Personnel shall be provided with a warning that an electrical hazard exists to avoid unnecessary exposure to electrical hazards.

#### **19.18.1 Safety Signs and Tags**

Safety signs, safety symbols, or tags shall be used where necessary to warn employees about electrical hazards that might endanger them. Such signs and tags shall meet the requirements of applicable state, federal, or local codes and programs.

##### **19.18.1.1 Barricades**

Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas that contain energized conductors or circuit parts.

Conductive barricades shall not be used where it might increase the likelihood of exposure to an electrical hazard.

Barricades shall be placed no closer than the limited approach boundary.





Where the arc flash boundary is greater than the limited approach boundary, barricades shall not be placed closer than the arc flash boundary.

### 19.19 Electrical Work Best Practices

Electrical work best practices will minimize the risk of arc flash or shock hazards. The following work practices shall be implemented:

- Follow PPE requirements as defined by the equipment arc flash hazard labeling. Contact the HSE manager or designee for equipment that is not labeled.
- Stand to the opposite side of cubicle door hinges that have been secured when operating a switch or breaker. Turn your head away, take a deep breath and look in the opposite direction of the door when manipulating the switch handle.
- Perform a tug test after tightening wires in lugs or terminal blocks.
- Where it is possible, switch remotely to avoid being inside the limited approach boundary. Utilize racking handle cutouts in doors where available.
- Employees shall not wear any jewelry or unapproved clothing.
- Do not reach blindly into equipment where electrical hazards exist.
- Insulate adjacent equipment with appropriately rated insulated material, as much as practical, to eliminate arc-flash and shock hazards, such as insulated blankets, etc.
- Ensure that the work area has adequate illumination.
- A clearance of 36-inch boundary should be maintained around energized electrical equipment to avoid potential fire and tripping hazards.
- Combustible or flammable materials shall not be stored within 36 inches of energized electrical equipment.
- Two or more employees shall not work on different electrical potentials of energized electrical equipment at the same time when they are within arms-reach of each other.
- Inspect the breaker to ensure it is in the open position and with springs discharged — if applicable — before reinstalling a breaker into the cubicle.
- Before working on a capacitor, disconnect it from the voltage source, wait at least five minutes, and discharge any stored energy by applying a ground to exposed terminals.
  - A direct ground shall be left on the terminals after the stored energy drops to a safe level to avoid the potential of stored energy from rebuilding within the equipment.
- Use fuse pullers and voltage-rated gloves to remove fuses.
- Verify electrical equipment through schematics, equipment labeling, and/or one-line drawings prior to the beginning of work.



- A qualified electrical person must remain in the work area if there are energized lifted leads — i.e., during cable testing, if leads are lifted.

## 19.20 PV Electrical Testing — Preparing for Absence of Voltage Testing

OSHA and the NFPA 70E Standard for Electrical Safety in the Workplace both direct workers to deenergize all energized parts to which a worker may be exposed unless energized conditions are required for troubleshooting.

Placing electrical equipment or systems in an ESWC requires that several factors be considered.

### 19.20.1 Planning

Proper planning and preparation will make any type of testing simpler and safer.

- 1) Perform a risk assessment.
  - A risk assessment is required by NFPA 70E Section 110.1(G) Electrical Safety Program, 130.3 Working While Exposed to Electrical Hazards, 130.4(A) Shock Risk Assessment and 130.5 Arc Flash Risk Assessment. The definition of risk assessment in Article 100 incorporates determining the hazards.
- 2) Barriers, barricades, signs and possibly an attendant may be needed to prevent intrusion into the work zone.
- 3) Complete an EEWP.
  - This is required by NFPA 70E Section 130.2(B) Energized Electrical Work Permit.
  - The EEWP incorporates the risk assessments needed, details the required PPE, as well as the precautions needed to protect the worksite. It also contains an authorization to perform energized work, which is critical to worker safety. Management must approve all energized work prior to the task.
    - NFPA 70E has expanded the exemptions for the use of an EEWP in Section 130.1(B)(3), but those exemptions only relieve the worker of having the EEWP signed off by management. All other requirements of Article 130 still apply.
    - Annex J contains an example EEWP. Since it is located in the annex it can be modified as needed to suit a specific task or job condition.

#### 19.20.1.1 Determine

**Before taking a measurement, first determine:**

- 1) Is the troubleshooting or testing for the absence of voltage?
- 2) What test instruments are required to verify the energized or de-energized state?
- 3) Is a safety backup required?
  - Is this individual trained in the proper methods of release, how to contact emergency assistance or CPR/use of an AED?



- Where is the location of the nearest AED?
- Where will the safe work zone be established?
  - Will it be at the limited approach boundary or the arc flash boundary?
- What PPE will be required?
  - What is the voltage of the circuit?
  - What is the arc flash boundary?
  - How much incident energy is possible at your working distance?

#### 19.20.1.2 Tools

##### Tools to be used for electrical safety testing include:

- Low-voltage proximity or non-contact voltage testers
- Electrical testers
- Digital multimeter

Determine what method will be used to establish the arc-rated clothing and PPE required.

An incident energy analysis must be performed by using the labels on the equipment or referencing the Table Method.

Confirm that the following conditions have been established:

- The isolation has been completed and permits have been approved.
- All test instruments are functioning properly.
  - Verify there is no voltage present before beginning work by using a noncontact proximity tester, an electrical tester, or a multimeter.

#### 19.20.1.3 Instrumentation

Low-voltage proximity or non-contact voltage testers:

- Proximity voltage detectors shall be used for an initial test but shall always be followed up with a direct-contact meter.
- NFPA 70E requires that the conductors or circuit parts be tested phase-to-phase and phase-to-ground.
- Proximity voltage detectors only test phase-to-ground.
  - **Note:** This does not apply to medium and high-voltage systems, as proximity voltage detectors are the preferred method of testing.



- Proximity voltage detectors may give a false negative indication — i.e., not light up — if:
  - The insulated test point touches grounded metal.
  - The cable being tested is partially buried.
  - The user is isolated from ground.
  - It is used inside a metal enclosure.
- Proximity testers will not detect the presence of voltage through the shield on shielded cable.
- Proximity varies not just by distance, but also by the strength of the expanding and contracting magnetic field around an energized conductor.
- Distance must account for everything between the tester and the electrical source, including the air, insulation, breaker material, twist locks, and so forth.

### 19.20.2 Electrical Test Equipment

In PV systems electrical current is "wild" and not limited by electronics, which has implications for hidden ground faults, wire sizing, and rapid shutdown. The control measures and best practices to mitigate risks will differ when working with PV versus any other kind of energy generating resource.

Protecting our workers and PV system from electrical hazards requires adherence to safe work practices and ensuring that our test equipment is rated to withstand these potential hazards which means multimeters, test leads, and fuses must all be rated for the application that are intended to be used for.

#### 19.20.2.1 CAT-Appropriate Equipment

Only use a meter that has been rated for the appropriate measurement category (CAT rating) and the voltage level of the intended application. The multimeter must be able to withstand average voltage levels and high voltage spikes and transients that can deliver a shock or produce an arc flash.

#### 19.20.2.2 High-Altitude Considerations

CAT III and IV equipment must be used for PV systems at high altitudes because air becomes less insulating and less dense as you go up, which decreases its cooling ability. This means the breakdown voltage—the minimum voltage causing an insulator to become electrically conductive—decreases with altitude.

- As an example, a 1-centimeter gap between conductors, the breakdown voltage would be 30 kV at sea level, 1.2 kV at 50,000 feet, and 300 V at 150,000 feet.

#### 19.20.2.3 Test Leads

Must be rated to match or exceed the CAT rating of the digital multimeter.

#### 19.20.2.4 High-Energy Fuse Replacements

Always replace high-energy fuses with the same quality part and amperage rating. These fuses are designed to keep energy generated by an electrical short contained within the fuse enclosure.



#### 19.20.2.5 Probes and Probe Accessories

Use retractable probes, probe tip covers, or probes with shorter tips to avoid accidentally touching metal to metal and causing a short circuit.

#### 19.20.2.6 Personal Protective Equipment (PPE)

Wear appropriate PPE, including arc-rated clothing, gloves, safety glasses or goggles, hearing protection, and leather footwear as required for the voltage that is being working on.

- These are just the highlights of how to work safer when maintaining PV systems. Be sure to follow all relevant safety standards and regulations, manufacturers' instructions and your company's safety procedures when testing or servicing electrical equipment.
- A DMM with a low-impedance option shall be used for an LDL test.

#### 19.20.2.7 Digital Multimeter

Multimeters are the best standard test instrument for making accurate contact measurements to determine if a circuit is energized.

All test equipment, and accessories, shall be rated for the circuits they will be connected to.

### 19.21 Ground Faults in PV Systems

DC ground faults are the most common type of fault in PV systems. A DC ground fault is the undesirable condition of current flowing through the equipment grounding conductor in the circuits carrying DC power (before the inverter). Ground faults can lead to significant safety issues, such as arc faults and, in the case of high voltage, arc flashes. In addition to a safety hazard, ground faults create a fire hazard as bare metal is heated by short-circuited current.

#### 19.21.1 Grounding Types & Protocols

##### 19.21.1.1 Equipment Grounding Conductor (EGC)

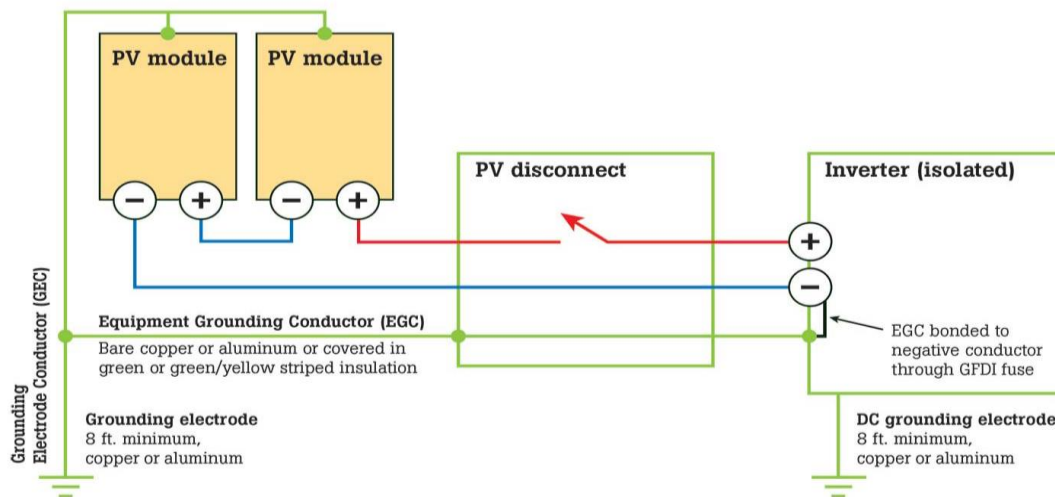
**Equipment Grounding Conductor (EGC)** — The conductive path(s) that provides a ground-fault current path and connects normally non-current-carrying metal parts of equipment together and to the system grounded conductor or to the grounding electrode conductor, or both.

##### 19.21.1.2 Grounding Electrode Conductor (GEC)

**Grounding Electrode Conductor (GEC)** — A conductor used to connect the system grounded conductor or the equipment to a grounding electrode or to a point on the grounding electrode system.

##### 19.21.1.3 Grounded Conductor

**Grounded Conductor** — A system or circuit conductor that is intentionally grounded.

**Figure 19-1 Grounded Conductor**

#### 19.21.1.4 Negatively Grounded PV System (DC Side)

The EGC is used to bond together all conductive parts (modules, racking) and provide a path to the GEC. The GEC connects the EGC, and thus the entire system, to the grounding electrode.

In a DC ground fault, current flows through the EGC or any piece of metal that is grounded due to unintended contact with the grounded conductor. This contact typically occurs due to damaged conductor insulation, improper installation, pinched wires, and water, which can create an electrical connection between the conductor and EGC.

#### 19.21.1.5 DC Ground Faults Hazards

DC ground faults are particularly dangerous in large PV systems because they can go easily undetected. Ground fault protection (GFP) devices do not sense the small — less than 1 amp — current leaking in a ground fault, hence why it is called a “blind spot.” In the event of a second fault with larger current in which the GFP would trip the circuit, the initial DC ground fault becomes a parallel path for massive current.

#### 19.21.1.6 DC Ground Faults Detection, Diagnosis, and Mitigation

The detection of a DC ground fault is difficult, particularly in large PV systems. This is because DC ground faults are often less than the minimum sensitivity of the GFP device. Techniques for detecting DC ground faults include insulation resistance monitoring and residual current detectors (RCDs).

It is advisable to perform a grounding test using an insulation resistance monitor to measure the resistance to ground. This must be performed while the array is in open circuit condition. The test reveals two possibilities — the insulation resistance is above the minimum and the system can start, or the insulation resistance is below the minimum, which indicates damaged insulation and the potential for a ground fault. Also, RCDs can be placed on array conductors to measure abnormal current that would indicate a ground fault.





### 19.21.2 Diagnostic Techniques

Even when the ground fault detection interrupter (GFDI) in the inverter successfully trips the circuit it can be difficult to locate the source of a ground fault.

- First, check if the GFDI is blown through a continuity test. A continuity test is performed by placing the leads of a multimeter on the metal ends of a fuse and turning the dial to resistance. If the resistance is high the fuse is blown and must be replaced.
- Next, perform an insulation resistance test on the conductors using an insulation tester. In this test a voltage is applied on the conductors, generating a current on the wire that is measured — and compared against a baseline for insulation in good condition — to determine the state of the insulation resistance.

#### 19.21.2.1 Determining the Source

Identifying the source of a ground fault can be challenging since a ground fault can occur between the grounded conductor and the EGC or a metallic component at any point in the circuit.

To determine the source of a ground fault:

- 1) Ensure the inverter is isolated from the array by removing the positive and negative conductors.
- 2) Close the DC disconnect to put a live voltage on the conductors.
- 3) Measure the voltage between the positive and negative conductors to determine the open circuit voltage of the array.
- 4) Measure positive to ground and negative to ground.

If there is no ground fault there should be 0 volts to ground from either conductor. If voltage to ground exists from either conductor, check each connection point (DC disconnect, combiner box) all the way back to the array. Once the fault is discovered, replace the wire(s), and keep a record of tests and replacements.

110.1(H) Risk Assessment Procedure. The Electrical Safety Program shall include a risk assessment procedure and shall comply with 110.1(H)(1) through 110.1(H)(3).

#### Elements of a Risk Assessment Procedure:

- The risk assessment procedure shall address employee exposure to electrical hazards and shall identify the process to be used by the employee before work is started to carry out the following:
  - Identify hazards.
  - Assess risks.
  - Implement risk control according to the hierarchy of risk control methods.

#### Human Error:

- The risk assessment procedure shall address the potential for human error and its negative consequences on people, processes, the work environment, and equipment.

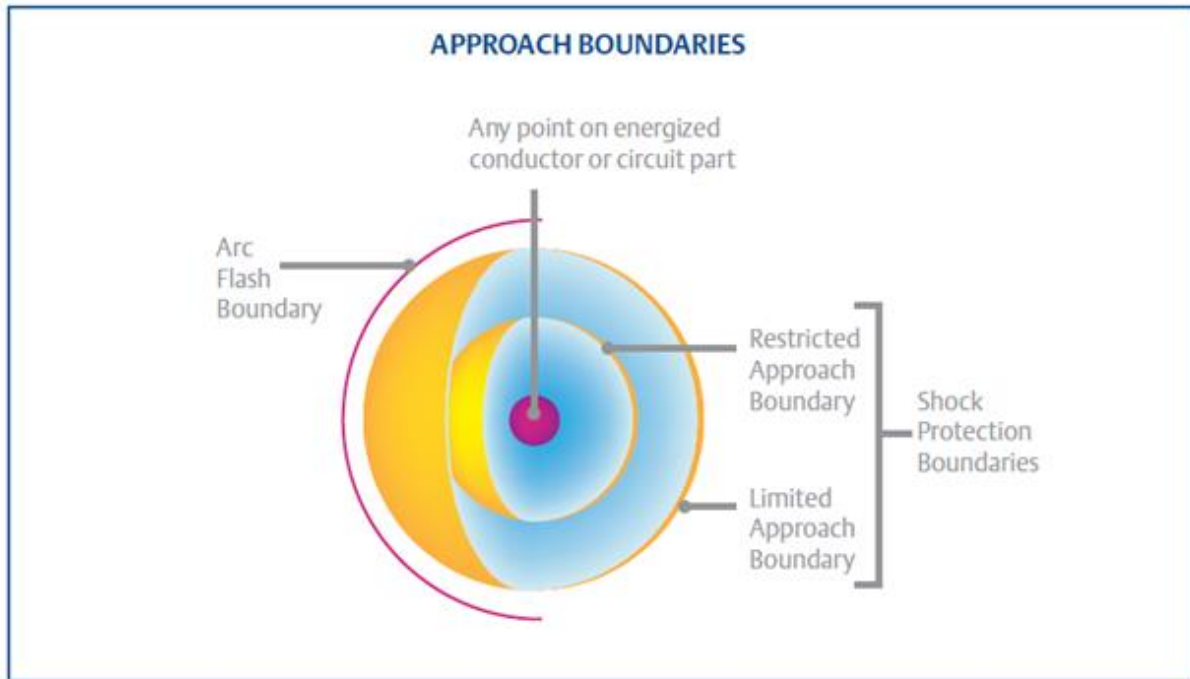


- **Note:** The potential for human error varies with factors such as tasks and the work environment.

#### Hierarchy of Risk Control Methods:

- The risk assessment procedure shall require that preventive and protective risk control methods be implemented in accordance with the following hierarchy:
  - Elimination
  - Substitution
  - Engineering controls
  - Awareness
  - Administrative controls
  - PPE
- **Note:** Elimination, substitution, and engineering controls are the most effective methods to reduce risk as they are usually applied at the source of possible injury or damage to health and they are less likely to be affected by human error. Awareness, administrative controls, and PPE are the least effective methods to reduce risk as they are not applied at the source and they are more likely to be affected by human error.

Figure 19-2 Approach Boundaries — Table 130.4(D)(a)



**Table 130.4(D)(a) Approach Boundaries to Energized Electrical Conductors or Circuit Parts for Shock Protection, for Alternating-Current Systems**

| (1)                                                       | (2)                        | (3)                        | (4)                                                                             |
|-----------------------------------------------------------|----------------------------|----------------------------|---------------------------------------------------------------------------------|
| <b>Limited Approach Boundary<sup>b</sup></b>              |                            |                            |                                                                                 |
| Nominal System Voltage Range, Phase to Phase <sup>a</sup> | Exposed Movable Conductors | Exposed Fixed Circuit Part | Restricted Approach Boundary <sup>b</sup> ; Includes Inadvertent Movement Adder |
| <50 V                                                     | Not specified              | Not specified              | Not specified                                                                   |
| 50 V-50 V <sup>d</sup>                                    | 3.0 m (10 ft 0 in.)        | 1.0 m (3 ft 6 in.)         | Avoid contact                                                                   |
| 151 V-750 V                                               | 3.0 m (10 ft 0 in.)        | 1.0 m (3 ft 6 in.)         | 0.3 m (1 ft 0 in.)                                                              |
| 751 V-15kV                                                | 3.0 m (10 ft 0 in.)        | 1.5 m (5 ft 0 in.)         | 0.7 m (2 ft 2 in.)                                                              |
| 15.1 kV-36 kV                                             | 3.0 m (10 ft 0 in.)        | 1.8 m (6 ft 0 in.)         | 0.8 m (2 ft 7 in.)                                                              |
| 36.1 kV-46 kV                                             | 3.0 m (10 ft 0 in.)        | 2.5 m (8 ft 0 in.)         | 0.8 m (2 ft 7 in.)                                                              |
| 46.1 kV-72.5 kV                                           | 3.0 m (10 ft 0 in.)        | 2.5 m (8 ft 0 in.)         | 1.0 m (3 ft 3 in.)                                                              |
| 72.6 kV-121 kV                                            | 3.3 m (10 ft 8 in.)        | 2.5 m (8 ft 0 in.)         | 1.0 m (3 ft 4 in.)                                                              |
| 138 kV-145kV                                              | 3.4 m (11 ft 0 in.)        | 3.0 m (10 ft 0 in.)        | 1.2 m (3 ft 10 in.)                                                             |
| 161 kV-169 kV                                             | 3.6 m (11 ft 8 in.)        | 3.6 m (11 ft 8 in.)        | 1.3 m (4 ft 3 in.)                                                              |
| 230 kV-242 kV                                             | 4.0 m (13 ft 0 in.)        | 4.0 m (13 ft 0 in.)        | 1.7 m (5 ft 8 in.)                                                              |
| 345 kV-362 kV                                             | 4.7 m (15 ft 4 in.)        | 4.7 m (15 ft 4 in.)        | 2.8 m (9 ft 2 in.)                                                              |
| 500 kV-550 kV                                             | 5.8 m (19 ft 0 in.)        | 5.8 m (19 ft 0 in.)        | 3.6 m (11 ft 10 in.)                                                            |
| 765 kV-800 kV                                             | 7.2 m (23 ft 0 in.)        | 7.2 m (23 ft 0 in.)        | 4.9 m (15 ft 11 in.)                                                            |

Note (1): For arc flash boundary, see 130.5 (A)

Note (2): All dimensions are distance from exposed energized electrical conductors or circuit part to employee.

<sup>a</sup> For single-phase systems above 250V, select the range that is equal to the system's maximum phase-to-ground voltage multiplied by 1.732.

<sup>b</sup> See definition in Article 100 and text in 130.4(D)(2) and informative Annex C for elaboration.

<sup>c</sup> Exposed movable conductors describes a condition in which the distance between the conductor and a person is not under the control of the person. The term is normally applied to overhead line conductors supported by poles.

<sup>d</sup> This includes circuits where the exposer does not exceed 120V.

Figure 19-3 Approach Boundaries — Table 130.4(D)(b)

**Table 130.4(D)(b) Approach Boundaries to Energized Electrical Conductors or Circuit Parts for Shock Protection, Direct-Current Voltage Systems**

| (1)                              | (2)                                     | (3)                        | (4)                                                                             |
|----------------------------------|-----------------------------------------|----------------------------|---------------------------------------------------------------------------------|
| <b>Limited Approach Boundary</b> |                                         |                            |                                                                                 |
| Nominal Potential Difference     | Exposed Movable Conductors <sup>a</sup> | Exposed Fixed Circuit Part | Restricted Approach Boundary <sup>b</sup> ; Includes Inadvertent Movement Adder |
| <100 V                           | Not specified                           | Not specified              | Not specified                                                                   |
| 100 V-300 V                      | 3.0 m (10 ft 0 in.)                     | 1.0 m (3 ft 6 in.)         | Avoid contact                                                                   |
| 301 V-1 kV                       | 3.0 m (10 ft 0 in.)                     | 1.0 m (3 ft 6 in.)         | 0.3 m (1 ft 0 in.)                                                              |
| 1.1 kV-5 kV                      | 3.0 m (10 ft 0 in.)                     | 1.5 m (5 ft 0 in.)         | 0.7 m (2 ft 2 in.)                                                              |
| 5 kV-15 kV                       | 3.0 m (10 ft 0 in.)                     | 1.8 m (6 ft 0 in.)         | 0.8 m (2 ft 7 in.)                                                              |
| 15.1 kV-45 kV                    | 3.0 m (10 ft 0 in.)                     | 2.5 m (8 ft 0 in.)         | 0.8 m (2 ft 7 in.)                                                              |
| 45.1 kV-75 kV                    | 3.0 m (10 ft 0 in.)                     | 2.5 m (8 ft 0 in.)         | 1.0 m (3 ft 3 in.)                                                              |
| 75.1 kV-150 kV                   | 3.3 m (10 ft 8 in.)                     | 2.5 m (8 ft 0 in.)         | 1.0 m (3 ft 4 in.)                                                              |
| 150.1 kV-250 kV                  | 3.4 m (11 ft 0 in.)                     | 3.0 m (10 ft 0 in.)        | 1.2 m (3 ft 10 in.)                                                             |
| 500.1 kV-800 kV                  | 3.6 m (11 ft 8 in.)                     | 3.6 m (11 ft 8 in.)        | 1.3 m (4 ft 3 in.)                                                              |

Note: All dimensions are distance from exposed energized electrical conductors to worker

<sup>a</sup> Exposed movable conductors describes a condition in which the distance between the conductor and a person is not under the control of the person. The term is normally applied to overhead line conductors supported by poles.

**Figure 19-4 Shock Protection Approach Boundaries — Table 130.4(E)(a)****TABLE 130.4(E)(a) Shock Protection Approach Boundaries to Exposed Energized Electrical Conductors or Circuit Parts for Alternating-Current Systems**

| (1)<br>Nominal System Voltage Range,<br>Phase to Phase" | (2)<br>Limited Approach Boundary<br>Exposed Movable Conductor | (3)<br>Limited Approach Boundary<br>Exposed Fixed Circuit Part | (4)<br>Restricted Approach Boundary;<br>Includes Inadvertent Movement<br>Adder. |
|---------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------|
| Less than 50 V                                          | Not specified                                                 | Not specified                                                  | Not specified                                                                   |
| 50 V-150 V                                              | 3.0 m (10 ft 0 in.)                                           | 1.0 m (3 ft 6 in.)                                             | Avoid contact.                                                                  |
| 151 V- 750 V                                            | 3.0 m (10 ft 0 in.)                                           | 1.0 m (3 ft 6 in.)                                             | 0.3 m (1 ft 0 in.)                                                              |
| 751 V- 15 kV                                            | 3.0 m (10 ft 0 in.)                                           | 1.5 m (5 ft 0 in.)                                             | 0.7 m (2 ft 2 in.)                                                              |
| 15.1 kV - 36 kV                                         | 3.0 m (10 ft 0 in.)                                           | 1.8 m (6 ft 0 in.)                                             | 0.8 m (2 ft 9 in.)                                                              |
| 36.1 kV - 46 kV                                         | 3.0 m (10 ft 0 in.)                                           | 2.5 m (8 ft 0 in.)                                             | 0.8 m (2 ft 9 in.)                                                              |
| 46.1 kV - 72.5 kV                                       | 3.0 m (10 ft 0 in.)                                           | 2.5 m (8 ft 0 in.)                                             | 1.0 m (3 ft 6 in.)                                                              |
| 72.6 kV - 121 kV                                        | 3.3 m (10 ft 8 in.)                                           | 2.5 m (8 ft 0 in.)                                             | 1.0 m (3 ft 6 in.)                                                              |
| 138 kV - 145 kV                                         | 3.4 m (11 ft 0 in.)                                           | 3.0 m (10 ft 0 in.)                                            | 1.2 m (3 ft 10 in.)                                                             |
| 161 kV - 169 kV                                         | 3.6 m (11 ft 8 in.)                                           | 3.6 m (11 ft 8 in.)                                            | 1.3 m (4 ft 3 in.)                                                              |
| 230 kV - 242 kV                                         | 4.0 m (13 ft 0 in.)                                           | 4.0 m (13 ft 0 in.)                                            | 1.7 m (5 ft 8 in.)                                                              |
| 345 kV - 362 kV                                         | 4.7 m (15 ft 4 in.)                                           | 4.7 m (15 ft 4 in.)                                            | 2.8 m (9 ft 2 in.)                                                              |
| 500kV - 550 kV                                          | 5.8 m (19 ft 0 in.)                                           | 5.8 m (19 ft 0 in.)                                            | 3.6 m (11 ft 8 in.)                                                             |
| 765 kV - 800 kV                                         | 7.2 m (23 ft 9 in.)                                           | 7.2 m (23 ft 9 in.)                                            | 4.9 m (15 ft 11 in.)                                                            |



**Figure 19-5 Arc-Flash Hazard PPE Categories — Table 130.7(C)(15)(A)(b)****Table 130.7(C)(15)(A)(b) Arc-Flash Hazard PPE Categories for Alternating Current (ac) Systems**

| Equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Arc Flash PPE Category | Arc-Flash Boundary |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------|
| Panelboards or other equipment rated 240 V and below<br>Parameters: Maximum of 25 kA short-circuit current available; maximum of 0.03 sec (2 cycles) fault clearing time; working distance 455 mm (18 in.)                                                                                                                                                                                                                                                                                    | 1                      | 485 mm (19 in.)    |
| Panelboards or other equipment rated 240 V and up to 600 V<br>Parameters: Maximum of 25 kA short-circuit current available; maximum of 0.03 sec (2 cycles) fault clearing time; working distance 455 mm (18 in.)                                                                                                                                                                                                                                                                              | 2                      | 900 mm (3 ft)      |
| 600-V class motor control centers (MCCs)<br>Parameters: Maximum of 65 kA short-circuit current available; maximum of 0.03 sec (2 cycles) fault clearing time; working distance 455 mm (18 in.)                                                                                                                                                                                                                                                                                                | 2                      | 1.5 m (5 ft)       |
| 600-V class motor control centers (MCCs)<br>Parameters: Maximum of 42 kA short-circuit current available; maximum of 0.33 sec (20 cycles) fault clearing time; working distance 455 mm (18 in.)                                                                                                                                                                                                                                                                                               | 4                      | 4.3 m (14 ft)      |
| 600-V class switchgear (with power circuit breakers or fused switches) and 600 V class switchboards<br>Parameters: Maximum of 35 kA short-circuit current available; maximum of 0.5 sec (30 cycles) fault clearing time; working distance 455 mm (18 in.)                                                                                                                                                                                                                                     | 4                      | 6 m (20 ft)        |
| Other 600-V class (277 V through 600 V, nominal) equipment<br>Parameters: Maximum of 65 kA short-circuit current available; maximum of 0.03 sec (2 cycles) fault clearing time; working distance 455 mm (18 in.)                                                                                                                                                                                                                                                                              | 2                      | 1.5 m (5 ft)       |
| NEMA E2 (fused contactor) motor starters, 2.3 kV through 7.2 kV<br>Parameters: Maximum of 35 kA short-circuit current available; maximum of 0.24 sec (15 cycles) fault clearing time; working distance 910 mm (36 in.)                                                                                                                                                                                                                                                                        | 4                      | 12 m (40 ft)       |
| Metal-clad switchgear, 1 kV through 15 kV<br>Parameters: Maximum of 35 kA short-circuit current available; maximum of 0.24 sec (15 cycles) fault clearing time; working distance 910 mm (36 in.)                                                                                                                                                                                                                                                                                              | 4                      | 12 m (40 ft)       |
| Arc-resistant switchgear Type 1 or 2 [for clearing times of 0.5 sec (30 cycles) with a perspective fault current not to exceed the arc-resistant rating of the equipment], and metal-enclosed interrupter switchgear, fused or unfused of arc-resistant-type construction, tested in accordance with IEEE C37.20.7, 1 kV through 15 kV<br>Parameters: Maximum of 35 kA short-circuit current available; maximum of 0.24 sec (15 cycles) fault clearing time; working distance 910 mm (36 in.) | N/A (doors closed)     | N/A (doors closed) |
| Other equipment 1 kV through 15 kV<br>Parameters: Maximum of 35 kA short-circuit current available; maximum of 0.24 sec (15 cycles) fault clearing time; working distance 910 mm (36 in.)                                                                                                                                                                                                                                                                                                     | 4                      | 12 m (40 ft)       |

Note: For equipment rated 600 volts and below, and protected by upstream current-limiting fuses or current-limiting circuit breakers sized at 200 amperes or less, the arc flash PPE category can be reduced by one number but not below arc flash PPE category 1.



**Figure 19-6 Arc-Flash Hazard PPE Categories — Table 130.7(C)(15)(B)****Table 130.7(C)(15)(B) Arc-Flash Hazard PPE Categories for Direct Current (dc) Systems**

| Equipment                                                                                                                                                                                                                                                                                                                                                                                | Arc Flash PPE Category | Arc-Flash Boundary |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------|
| Storage batteries, dc switchboards, and other dc supply sources<br>100 V > Voltage < 250 V<br>Parameters:<br>Voltage: 250 V<br>Maximum arc duration and working distance: 2 sec @ 455 mm (18 in.)                                                                                                                                                                                        |                        |                    |
| Short-circuit current < 4 kA                                                                                                                                                                                                                                                                                                                                                             | 1                      | 900 mm (3 ft)      |
| 4 kA ≤ short-circuit current < 7 kA                                                                                                                                                                                                                                                                                                                                                      | 2                      | 1.2 m (4 ft)       |
| 7 kA ≤ short-circuit current < 15 kA                                                                                                                                                                                                                                                                                                                                                     | 3                      | 1.8 m (6 ft)       |
| Storage batteries, dc switchboards, and other dc supply sources<br>250 V ≤ Voltage ≤ 600 V<br>Parameters:<br>Voltage: 600 V<br>Maximum arc duration and working distance: 2 sec @ 455 mm (18 in.)                                                                                                                                                                                        |                        |                    |
| Short-circuit current 1.5 kA                                                                                                                                                                                                                                                                                                                                                             | 1                      | 900 mm (3 ft)      |
| 1.5 kA ≤ short-circuit current < 3 kA                                                                                                                                                                                                                                                                                                                                                    | 2                      | 1.2 m (4 ft)       |
| 3 kA ≤ short-circuit current < 7 kA                                                                                                                                                                                                                                                                                                                                                      | 3                      | 1.8 m (6 ft)       |
| 7 kA ≤ short-circuit current < 10 kA                                                                                                                                                                                                                                                                                                                                                     | 4                      | 2.5 m (8 ft)       |
| Note: Apparel that can be expected to be exposed to electrolyte must meet both of the following conditions:<br>(1) Be evaluated for electrolyte protection in accordance with ASTM F1296, Standard Guide for Evaluating Chemical Protective Clothing<br>(2) Be arc-rated in accordance with ASTM F1891, Standard Specification for Arc Rated and Flame Resistant Rainwear, or equivalent |                        |                    |

Figure 19-7 Personal Protective Equipment (PPE) — Table 130.7(C)(16)

Table 130.7(C)(16) Personal Protective Equipment (PPE)

| PPE Category | PPE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1            | <b>Arc-Rated Clothing, Minimum Arc Rating of 4 cal/cm<sup>2</sup> (see Note 1)</b><br>Arc-rated long-sleeve shirt and pants of arc-rated coverall<br>Arc-rated face shield (see Note 2) or arc flash suit hood<br>Arc-rated jacket, parka, rainwear, or hard hat liner (AN)<br><b>Protective Equipment</b><br>Hard hat<br>Safety glasses or safety goggles (SR)<br>Hearing protection (ear canal inserts)<br>Heavy duty leather gloves (see Note 3)<br>Leather footwear (AN)                                                                                                                        |
| 2            | <b>Arc-Rated Clothing, Minimum Arc Rating of 8 cal/cm<sup>2</sup> (see Note 1)</b><br>Arc-rated long-sleeve shirt and pants of arc-rated coverall<br>Arc-rated flash suit hood or arc-rated face shield (see Note 2) and arc-rated balaclava<br>Arc-rated jacket, parka, rainwear, or hard hat liner (AN)<br><b>Protective Equipment</b><br>Hard hat<br>Safety glasses or safety goggles (SR)<br>Hearing protection (ear canal inserts)<br>Heavy duty leather gloves (see Note 3)<br>Leather footwear (AN)                                                                                          |
| 3            | <b>Arc-Rated Clothing, Minimum Arc Rating of 25 cal/cm<sup>2</sup> (see Note 1)</b><br>Arc-rated long-sleeve shirt (AR)<br>Arc-rated pants (AR)<br>Arc-rated coverall (AR)<br>Arc-rated arc flash suit jacket (AR)<br>Arc-rated arc flash suit pants (AR)<br>Arc-rated arc flash suit hood<br>Arc-rated gloves (see Note 1)<br>Arc-rated jacket, parka, rainwear, or hard hat liner (AN)<br><b>Protective Equipment</b><br>Hard hat<br>Safety glasses or safety goggles (SR)<br>Hearing protection (ear canal inserts)<br>Leather footwear                                                          |
| 4            | <b>Arc-Rated Clothing Selected so That the System Arc Rating Meets the Required Minimum Arc Rating of 40 cal/cm<sup>2</sup> (see Note 1)</b><br>Arc-rated long-sleeve shirt (AR)<br>Arc-rated pants (AR)<br>Arc-rated coverall (AR)<br>Arc-rated arc flash suit jacket (AR)<br>Arc-rated arc flash suit pants (AR)<br>Arc-rated arc flash suit hood<br>Arc-rated gloves (see Note 1)<br>Arc-rated jacket, parka, rainwear, or hard hat liner (AN)<br><b>Protective Equipment</b><br>Hard hat<br>Safety glasses or safety goggles (SR)<br>Hearing protection (ear canal inserts)<br>Leather footwear |

## Notes:

(1) Arc rating is defined in Article 100.

(2) Face shields are to have wrap-around guarding to protect not only the face but also the forehead, ears, and neck, or, alternatively, an arc-rated arc flash suit hood is required to be worn.

(3) If rubber insulating gloves with leather protectors are used, additional leather or arc-rated gloves are not required. The combination of rubber insulating gloves with leather protectors satisfies the arc flash protection requirement.

Figure 19-8 Approach Boundary Diagram

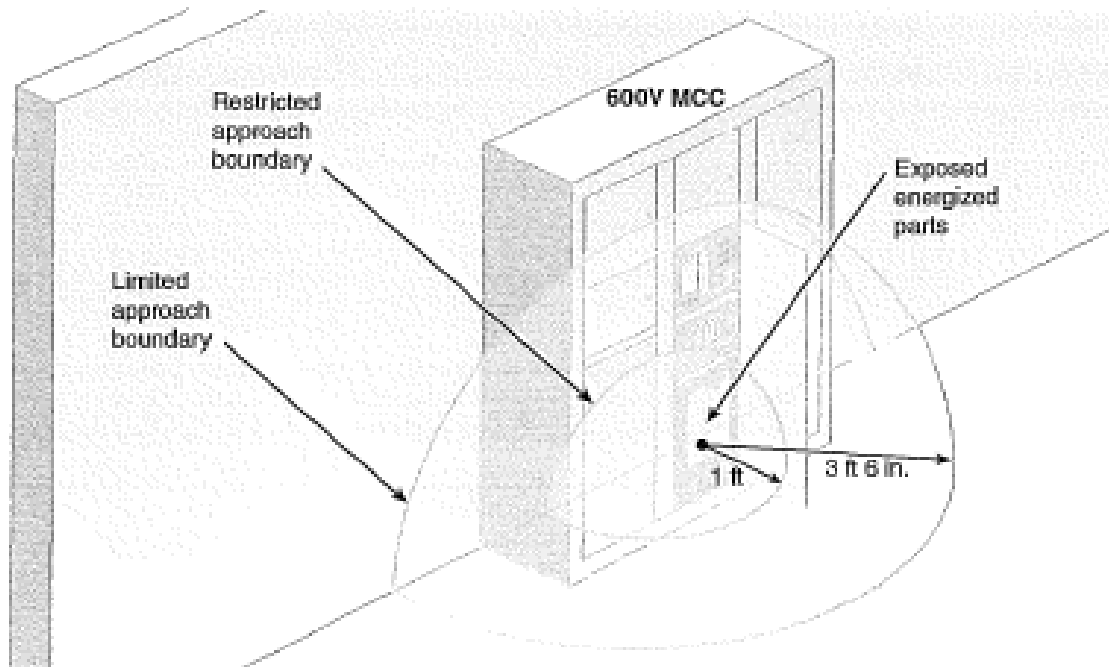
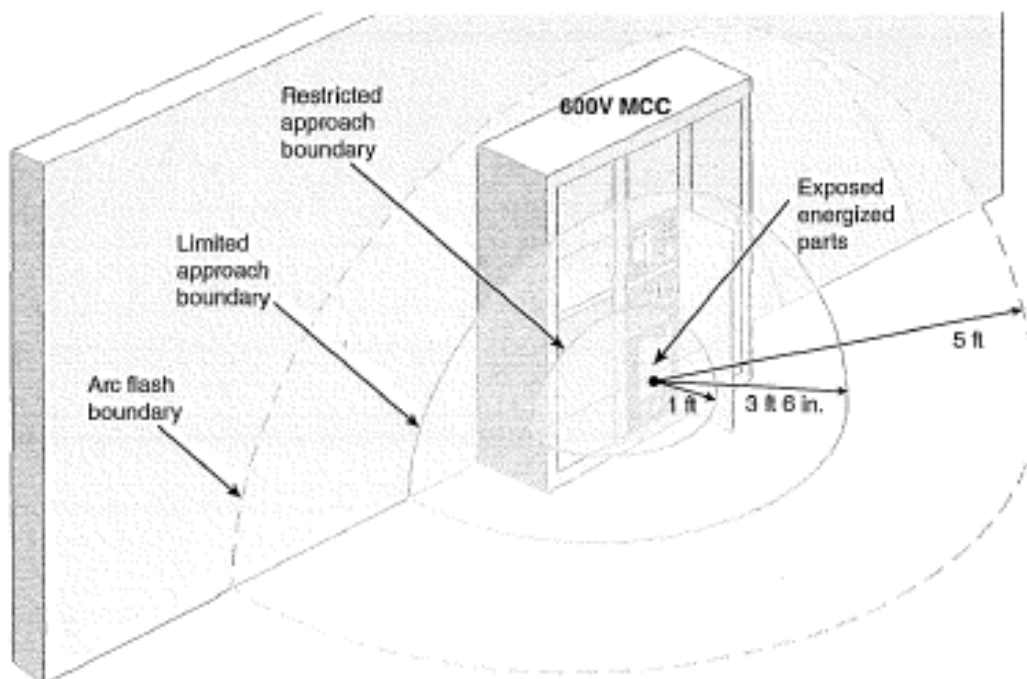


Figure 19-9 Approach Boundary Diagram



**Figure 19-10 Likelihood of Arc Flash Incident — Table 130.5(C)****TABLE 130.5(C)** *Estimate of the Likelihood of Occurrence of an Arc Flash Incident for ac and dc Systems*

| <i>Task</i>                                                                                                                                                                                                                                                        | <i>Equipment Condition</i> | <i>Likelihood of Occurrence<sup>a</sup></i> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------|
| Reading a panel meter while operating a meter switch.                                                                                                                                                                                                              | Any                        | No                                          |
| Performing infrared thermography and other non-contact inspections outside the restricted approach boundary. This activity does not include opening of doors or covers.                                                                                            |                            |                                             |
| Working on control circuits with exposed energized electrical conductors and circuit parts, nominal 125 volts ac or dc, or below without any other exposed energized equipment over nominal 125 volts ac or dc, including opening of hinged covers to gain access. |                            |                                             |
| Examination of insulated cable with no manipulation of cable.                                                                                                                                                                                                      |                            |                                             |
| For dc systems, insertion or removal of individual cells or multi-cell units of a battery system in an open rack.                                                                                                                                                  |                            |                                             |
| For dc systems, maintenance on a single cell of a battery system or multi-cell units in an open rack.                                                                                                                                                              |                            |                                             |
| For ac systems, work on energized electrical conductors and circuit parts, including voltage testing.                                                                                                                                                              | Any                        | Yes                                         |
| For dc systems, working on energized electrical conductors and circuit parts of series-connected battery cells, including voltage testing.                                                                                                                         |                            |                                             |
| Removal or installation of CBs or switches.                                                                                                                                                                                                                        |                            |                                             |
| Opening hinged door(s) or cover(s) or removal of bolted covers (to expose bare, energized electrical conductors and circuit parts). For dc systems, this includes bolted covers, such as battery terminal covers.                                                  |                            |                                             |
| Application of temporary protective grounding equipment, after voltage test.                                                                                                                                                                                       |                            |                                             |
| Working on control circuits with exposed energized electrical conductors and circuit parts, greater than 120 volts.                                                                                                                                                |                            |                                             |
| Insertion or removal of individual starter buckets from motor control center (MCC).                                                                                                                                                                                |                            |                                             |
| Insertion or removal (racking) of circuit breakers (CBs) or starters from cubicles, doors open or closed.                                                                                                                                                          |                            |                                             |
| Insertion or removal of plug-in devices into or from busways.                                                                                                                                                                                                      |                            |                                             |
| Examination of insulated cable with manipulation of cable.                                                                                                                                                                                                         |                            |                                             |
| Working on exposed energized electrical conductors and circuit parts of equipment directly supplied by a panelboard or motor control center.                                                                                                                       |                            |                                             |
| Insertion or removal of revenue meters (kW-hour, at primary voltage and current).                                                                                                                                                                                  |                            |                                             |
| Removal of battery conductive intercell connector covers.                                                                                                                                                                                                          |                            |                                             |
| For dc systems, working on exposed energized electrical conductors and circuit parts of utilization equipment directly supplied by a dc source.                                                                                                                    |                            |                                             |
| Opening voltage transformer or control power transformer compartments.                                                                                                                                                                                             |                            |                                             |
| Operation of outdoor disconnect switch (hookstick operated) at 1 kV through 15 kV.                                                                                                                                                                                 |                            |                                             |
| Operation of outdoor disconnect switch (gang-operated, from grade) at 1 kV through 15 kV.                                                                                                                                                                          |                            |                                             |



Figure 19-11 Likelihood of Arc Flash Incident — Table 130.5(C) Continued

TABLE 130.5(C) Continued.

| Task                                                                                                                                                                                                                                                                                        | Equipment Condition | Likelihood of Occurrence* |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------|
| Operation of a CB, switch, contactor, or starter.                                                                                                                                                                                                                                           | Normal              | No                        |
| Voltage testing on individual battery cells or individual multi-cell units.                                                                                                                                                                                                                 |                     |                           |
| Removal or installation of covers for equipment such as wireways, junction boxes, and cable trays that does not expose bare, energized electrical conductors and circuit parts.                                                                                                             |                     |                           |
| Opening a panelboard hinged door or cover to access dead front overcurrent devices.                                                                                                                                                                                                         |                     |                           |
| Removal of battery nonconductive intercell connector covers.                                                                                                                                                                                                                                |                     |                           |
| Maintenance and testing on individual battery cells or individual multi-cell units in an open rack                                                                                                                                                                                          | Abnormal            | Yes                       |
| Insertion or removal of individual cells or multi-cell units of a battery system in an open rack.                                                                                                                                                                                           |                     |                           |
| Arc-resistant switchgear Type 1 or 2 (for clearing times of less than 0.5 sec with a prospective fault current not to exceed the arc-resistant rating of the equipment) and metal enclosed interrupter switchgear, fused or unfused of arc resistant type construction, 1 kV through 15 kV. |                     |                           |
| Insertion or removal (racking) of CBs from cubicles;                                                                                                                                                                                                                                        |                     |                           |
| Insertion or removal (racking) of ground and test device; or                                                                                                                                                                                                                                |                     |                           |
| Insertion or removal (racking) of voltage transformers on or off the bus.                                                                                                                                                                                                                   |                     |                           |
| Equipment condition considered to be "normal" if all of the following circumstances apply:                                                                                                                                                                                                  |                     |                           |
| (1) The equipment is properly installed in accordance with the manufacturer's recommendations and applicable industry codes and standards.                                                                                                                                                  |                     |                           |
| (2) The equipment is properly maintained in accordance with the manufacturer's recommendations and applicable industry codes and standards.                                                                                                                                                 |                     |                           |
| (3) The equipment is used in accordance with instructions included in the listing and labeling and in accordance with manufacturer's instructions.                                                                                                                                          |                     |                           |
| (4) Equipment doors are closed and secured.                                                                                                                                                                                                                                                 |                     |                           |
| (5) Equipment covers are in place and secured.                                                                                                                                                                                                                                              |                     |                           |
| (6) There is no evidence of impending failure such as arcing, overheating, loose or bound equipment parts, visible damage, or deterioration.                                                                                                                                                |                     |                           |

\*As defined in this standard, the two components of risk are the likelihood of occurrence of injury or damage to health and the severity of injury or damage to health that results from a hazard. Risk assessment is an overall process that involves estimating both the likelihood of occurrence and severity to determine if additional protective measures are required. The estimate of the likelihood of occurrence contained in this table does not cover every possible condition or situation, nor does it address severity of injury or damage to health. Where this table identifies "No" as an estimate of likelihood of occurrence, it means that an arc flash incident is not likely to occur. Where this table identifies "Yes" as an estimate of likelihood of occurrence, it means that additional protective measures are required to be selected and implemented according to the hierarchy of risk control identified in 110.1(H).

Informational Note No. 1: An example of a standard that provides information for arc-resistant switchgear referred to in Table 130.5(C) is IEEE C37.20.7, *Guide for Testing Metal-Enclosed Switchgear Rated Up to 38 kV for Internal Arcing Faults*.

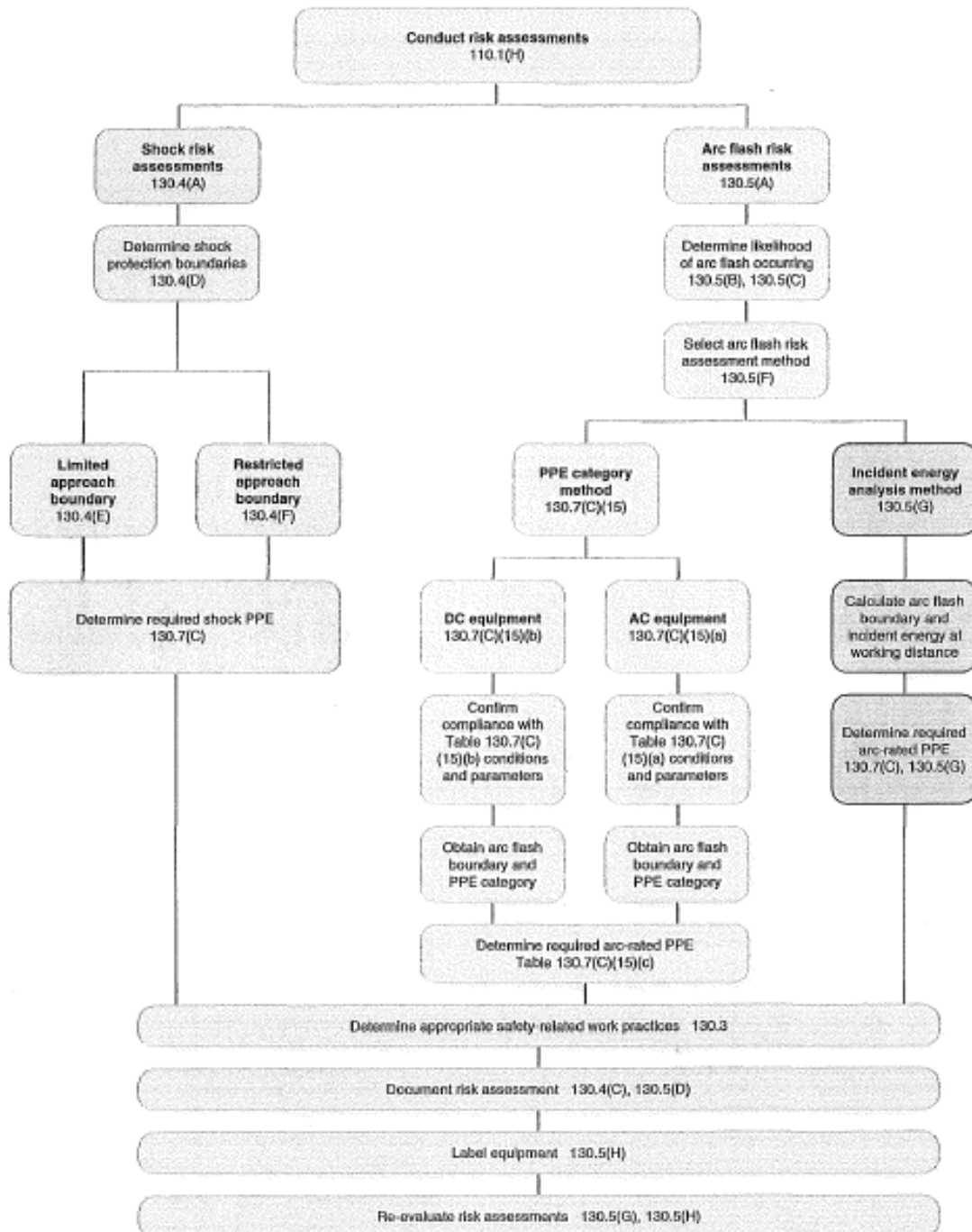
Informational Note No. 2: Improper or inadequate maintenance can result in increased fault clearing time of the overcurrent protective device, thus increasing the incident energy. Where equipment is not properly installed or maintained, PPE selection based on incident energy analysis or the PPE category method might not provide adequate protection from arc flash hazards.

Informational Note No. 3: Both larger and smaller available fault currents could result in higher incident energy. If the available fault current increases without a decrease in the fault clearing time of the overcurrent protective device, the incident energy will increase. If the available fault current decreases, resulting in a longer fault clearing time for the overcurrent protective device, incident energy could also increase.

Informational Note No. 4: The occurrence of an arcing fault inside an enclosure produces a variety of physical phenomena very different from a bolted fault. For example, the arc energy resulting

Figure 19-12 Risk Assessment Flow Chart

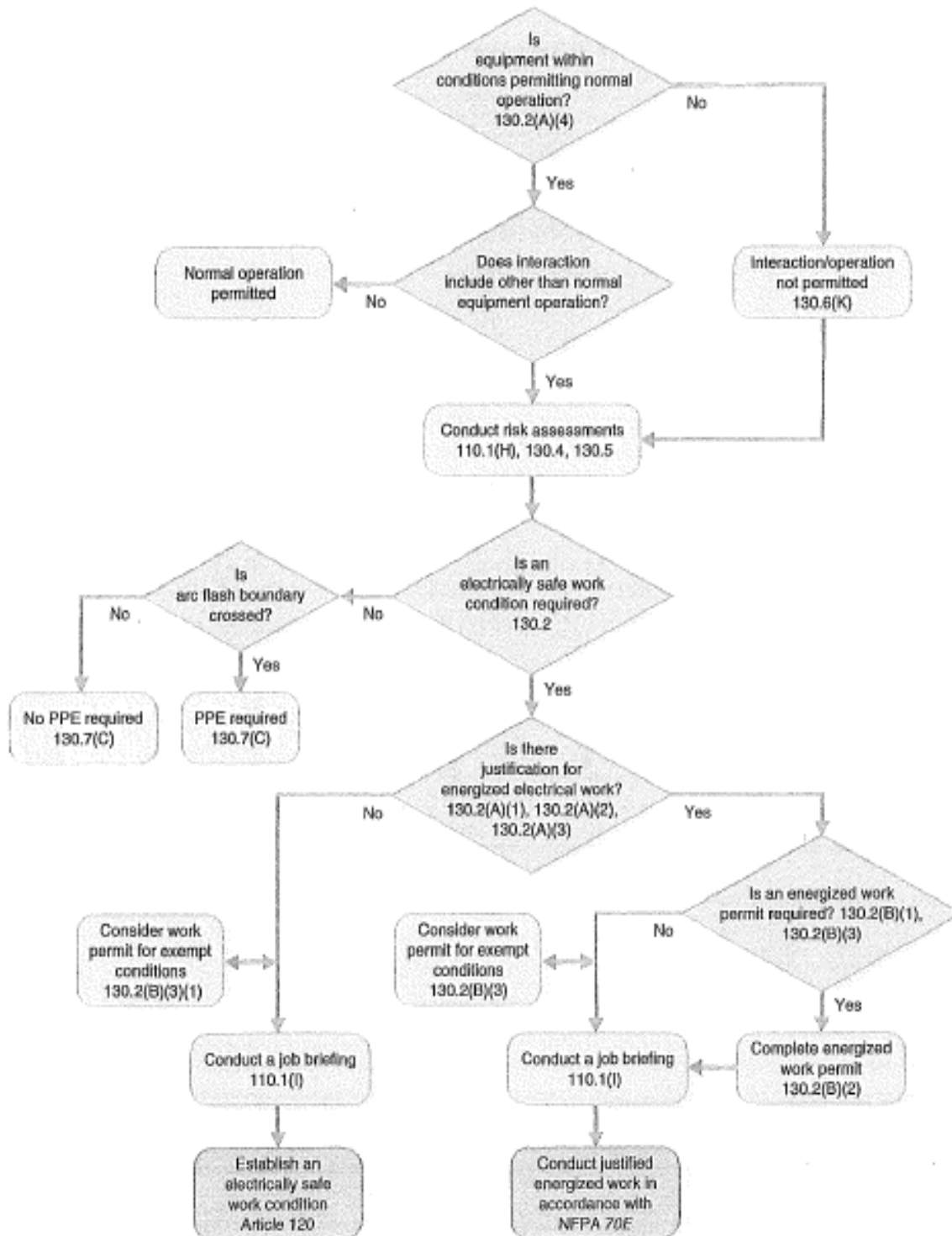
Risk assessment flow chart.





**Figure 19-13 Sample Thought Process Flow Chart**

*A sample thought process flow chart for conducting electrical work.*



**Figure 19-14 Arc-Rated Clothing System — Tables H.2 and H.3****TABLE H.2** *Simplified Two-Category, Arc-Rated Clothing System*

| <i>Clothing<sup>a</sup></i>                                                                                                                                           | <i>Applicable Tasks</i>                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Everyday Work Clothing</b>                                                                                                                                         |                                                                                                                                                                                |
| Arc-rated long-sleeve shirt with arc-rated pants (minimum arc rating of 8)<br><i>or</i><br>Arc-rated coveralls (minimum arc rating of 8)                              | Situations where a risk assessment indicates that PPE is required and where Table 130.7(C)(15)(a) and Table 130.7(C)(15)(b) specify arc flash PPE category 1 or 2 <sup>b</sup> |
| <b>Arc Flash Suit</b>                                                                                                                                                 |                                                                                                                                                                                |
| A total clothing system consisting of arc-rated shirt and pants and/or arc-rated coveralls and/or arc flash coat and pants (clothing system minimum arc rating of 40) | Situations where a risk assessment indicates that PPE is required and where Table 130.7(C)(15)(a) and Table 130.7(C)(15)(b) specify arc flash PPE category 3 or 4 <sup>b</sup> |

<sup>a</sup> Note that other PPE listed in Table 130.7(C)(15)(c), which include arc-rated face shields or arc flash suit hoods, arc-rated hard hat liners, safety glasses or safety goggles, hard hats, hearing protection, heavy-duty leather gloves, rubber insulating gloves, and leather protectors, could be required. The arc rating for a garment is expressed in cal/cm<sup>2</sup>.

<sup>b</sup> The estimated available fault current capacities and fault clearing times or arcing durations are listed in the text of Table 130.7(C)(15)(a) and Table 130.7(C)(15)(b). For power systems with greater than the estimated available fault current capacity or with longer than the assumed fault clearing times, Table H.2 cannot be used and arc flash PPE must be determined and selected by means of an incident energy analysis in accordance with 130.5(G).

### **H.3 Arc-Rated Clothing and Other Personal Protective Equipment (PPE) for Use with Risk Assessment of Electrical Hazards.**

Table H.3 provides a summary of specific sections within the NFPA 70E standard describing PPE for electrical hazards.

Even when using the arc flash PPE category method, the sections identified in Table H.3 should be reviewed to ensure that appropriate PPE is being used to protect employees from the electrical hazards identified for the task involved. This table does not include any clothing below 1.2 cal/cm<sup>2</sup>. There are no requirements to provide the employee with arc flash protection below this incident energy, since an injury from an incident is expected to be survivable and nonpermanent.

Former Table H.3(b), Guidance on Selection of Arc-Rated Clothing and Other PPE When the Incident Energy Exposure is Determined, has been relocated to Article 130 as Table 130.5(D), Selection of Arc-Rated Clothing and Other PPE When the Incident Energy Analysis Method Is Used.



## Chapter 20

### Demolition

#### Chapter Contents

##### 20 Demolition

##### [Demolition — Resources](#)

##### [20.1 Preparatory Operations](#)

- [20.1.1 General](#)
- [20.1.2 Hazardous Materials](#)
- [20.1.3 Access](#)
- [20.1.4 Removal of Materials](#)
- [20.1.5 Mechanical Demolition](#)
- [20.1.6 Protection of the Public](#)



## Demolition

### Preparatory Operations

- Starting Demolition Operations
- Damaged Structure
- Utilities
- Temporarily Relocated Utilities
- Hazardous Chemicals
- Fragmentation of Glass
- Wall Openings
- Floor Openings, Dropped Debris
- Floor Openings, Not Used as Material Drops
- Begin Structure Demolition
- Worker Entrances

### Stairs, Passageways and Ladders

- Means of Access
- Inspection
- Illumination

### Chutes

- Drops Outside of Exterior Walls
- Chute Enclosure
- Gates
- Area Around the End of a Chute
- Guard Rail
- Mechanical Equipment
- Impact of Materials
- Removal of Materials Through Floor Openings

### Removal of Walls, Masonry Sections, and Chimneys

- Falling Masonry
- Wall Condition
- Weather Conditions
- Cutting of Structural or Load-Supporting Members
- Floor Openings
- Skeleton-Steel Construction
- Walkways or Ladders
- Walls Supporting Earth
- Debris Pile

### Manual Removal of Floors

- Openings Cut in a Floor
- Planks
- Walking on Exposed Beams
- Stringers
- Overlapping Planks
- Starting Demolition of Floor Arches
- Clearing Debris Before Demolition

### Removal of Walls, Floors, and Material with Equipment

- Mechanical Equipment



**Floor Openings**  
**Mechanical Equipment Requirements**

**Storage**

**Floor Loads**  
**Flooring Boards**  
**Floor Beams**  
**Floor Arches**  
**Storage Areas**

**Removal of Steel Construction**

**Planking Shall**  
**Hoisting Equipment**  
**Dismantling Steel Construction**  
**Overstressed Structural Member**

**Mechanical Demolition**

**Workers Permitted in the Area**  
**Demolition Ball Shall**  
**Crane Boom and Load-Line**  
**Connection**  
**Pulling Over Walls**  
**Ornamental Stonework Shall**  
**During Demolition**  
**Selective Demolition by Explosive**



## 20.1 Preparatory Operations

### 20.1.1 General

Project Entities shall be responsible for ensuring demolition plans are reviewed/evaluated by a designated competent person. Safety Form T-1, "Demolition Preparatory Checklist," shall be used to document the review and shall, at a minimum, include the following points:

- **Demolition**
  - Prior to starting demolition operations, a designated competent person shall evaluate the possibility of unplanned collapse of any portion of the structure or adjacent structures.
- **Damaged Structure**
  - When project personnel are required to be present within a structure that has been damaged, the walls or floor shall be shored or braced.
- **Utilities**
  - All utilities shall be shut off outside the building line and utility companies shall be notified before demolition work is started.
- **Temporarily Relocated Utilities**
  - If it is necessary to maintain any utilities during demolition, the applicable utilities shall be temporarily relocated and protected.
- **Hazardous Chemicals**
  - If the presence of hazardous chemicals are detected, the hazards shall be eliminated before demolition begins.
- **Fragmentation of Glass**
  - Where hazards exist from fragmentation of glass, such hazards shall be removed with proper PPE.
- **Wall Openings**
  - Wall openings shall be guarded with appropriate fall protection.
- **Floor Openings and Dropped Debris**
  - If debris is dropped through holes in the floor without the use of chutes, the drop area shall be barricaded. Warning signs shall be posted at each level, and debris removal shall not be permitted in this lower area until debris handling ceases above.
- **Floor Openings Which Are Not Used as Material Drops**
  - All floor openings, not used as material drops, shall be covered with material capable of supporting the weight of any load which may be imposed. Coverings shall be properly secured to prevent them being unintentionally displaced. Such coverings shall be labeled as "Hole" or "Opening."





- **Begin Structure Demolition**

- Demolition shall begin at the top of the structure and proceed downward.

#### 20.1.2 **Hazardous Materials**

Before starting demolition, Project Entities shall be responsible for completing a Building Asbestos Survey.

Prior to the start of demolition, Project Entities shall be required to complete a Building Demolition Notification, identifying the locations and types of asbestos present. It shall be the responsibility of the Project Entity to provide a copy of this notification to the state regulatory authority.

Prior to demolition beginning, Project Entities shall be responsible for identifying other hazardous building materials, such as lead paint, in a Pre-Demolition Survey.

Locations of hazardous materials, as identified in a Building Survey Report, shall be provided to other Project Entities performing work activity in the vicinity of the existing hazardous materials. If it is necessary for the hazardous materials to be disturbed, Project Entities shall develop work plans in accordance with federal, state, and local authority.

#### 20.1.3 **Access**

Only those stairways, passageways, and ladders that are designated by the Project Entity as a means of providing access to the structure, shall be used by project personnel. Other accessways shall be entirely closed off.

When a stairway is being used, it shall be properly illuminated and substantially covered, if the protection of employees from overhead hazards is necessary.

Employee entrances into multistory structures that are being demolished, shall be protected by sidewalk sheds, canopies, or both, and shall provide protection from the boundary of the structure for a minimum of 8 feet. All such canopies shall be at least 2 feet wider than the building's entrances or openings and shall be capable of sustaining a load of 150 pounds per square foot.

#### 20.1.4 **Removal of Materials**

When debris is dropped through holes in the floor or deck without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above.

Signs warning of the hazard of falling materials, shall be posted at each level.

No materials shall be dropped to any point outside the structure unless the area is effectively protected.

All material chutes at an angle of more than 45 degrees from the horizontal, shall be entirely enclosed, except for openings equipped with closures at or about floor level for the insertion of materials. The openings shall not exceed 48 inches in height measured along the wall of the chute, and openings shall be kept closed when not in use.

A substantial gate shall be installed in each chute at or near the discharge end. A competent employee shall be assigned to control the operation of the gate and the backing and loading of trucks and dumpsters.

When not in operation, the discharge end of the chute shall be closed off.



The opening of the chute, into which workers dump materials, shall be protected by a guardrail 42 inches above the floor.

Barricades shall be used in conjunction with proper signage.

When dropping material from an elevation, barricades shall be 1.5 times the size of the height — e.g., if dropping material from 15 feet above the ground, the barricade below will be at 27 feet wide.

#### 20.1.5 Mechanical Demolition

Mechanical equipment shall not be used on working surfaces unless those surfaces are of sufficient strength to support such a load.

Project personnel shall not be permitted in any area which can adversely affect demolition operations.

During demolition, inspections shall be made by the Project Entity's designated competent person to detect hazards resulting from weakened or deteriorated decks, floors, walls, or loosened material.

#### 20.1.6 Protection of the Public

Before demolition operations begin, protection of the public, from hazards associated with the demolition operations, shall be provided, as necessary.

Project Entities shall be responsible for implementing methods to reduce and/or control the airborne dust, caused by the demolition operations, that may affect the public. Environmental conditions such as temperature, expected wind speeds, forestry, or wetland areas shall be considered.

Project Entities shall be responsible for the erection of sidewalk-protection roofs whenever material or debris is lifted over a sidewalk that is not closed to the public. The sidewalk-protection roof shall be capable of supporting the maximum intended load that is to be hoisted above the sidewalk.

When an excavation, opening, material pile, or other hazard is located within an area that is used by the public, Project Entities shall be required to warn against this hazard using:

- Red flags or signs during daylight hours.
- Flashing signs, lighted signs, or the equivalent during hours of darkness.

Project Entities shall be responsible for keeping the public out of areas where hazards may exist due to demolition operations. Doors, sidewalks, walkways, etc. that provide access to these areas shall be closed off and marked with appropriate signage to warn pedestrians of hazards.



## **Chapter 21**

### **Steel Erection**

#### **Chapter Contents**

##### **21 Steel Erection**

###### **Steel Erection — Resources**

###### **21.1 General**

###### **21.1.1 Definitions**

###### **21.2 Site Layout, Site-Specific Erection Plan and Construction Sequence**

###### **21.2.1 Site-Specific Steel Erection Plan**

###### **21.3 Approval to Begin Steel Erection**

###### **21.4 Hoisting and Rigging**

###### **21.4.1 Multiple Lift**



## Steel Erection

### Site Layout, Site-Specific Erection Plan and Construction Sequence

- Approval to Begin Steel Erection
- Commencement of Steel Erection
- Site Layout
- Pre-Planning of Overhead Hoisting Operations

### Hoisting and Rigging

- General
- Working Under Loads
- Multiple Lift Rigging Procedure

### Structural Steel Assembly

- Structural Stability
- Additional Requirements
- Walking/Working Surfaces
- Plumbing-Up
- Metal Decking

### Column Anchorage

- General Requirements for Erection Stability
- Repair, Replacement or Field Modification

### Beams and Columns

- General
- Diagonal Bracing
- Double Connections
- Column Splices
- Perimeter Columns

### Open Web Steel Joists

- General
- Attachment of Steel Joists and Steel Joist Girders
- Erection of Steel Joists
- Erection Bridging
- Landing and Placing Loads

### Systems-Engineered Metal Buildings

- Structural Stability Requirements of This Chapter
- Additional Requirements Structural Column
- Rigid Frames
- Construction Loads
- Metal Decking in Girt and Eave Strut-to-Frame Connections
- Ends of All Steel Joists or Cold-Formed Joists
- Purlins and Girts Tie Off
- Purlins Walking/Working Surface
- Construction Loads

### Falling Object Protection

- Securing Loose Items Aloft
- Protection From Falling Objects Other Than Materials Being Hoisted

### Training



Burns & McDonnell Safety & Health Program



**Training Personnel**  
**Fall Hazard Training**  
**Special Training Programs**



## **21.1 General**

### **21.1.1 Definitions**

Refer to [29 CFR 1926 - Subpart R](#) for definitions applicable to this chapter.

## **21.2 Site Layout, Site-Specific Erection Plan and Construction Sequence**

Adequate access roads into and through the site for the safe delivery and movement of derricks, cranes, and trucks, other necessary equipment, material to be erected, and means or methods for pedestrian control. This requirement does not apply to roads outside of the construction site.

A firm, properly graded, drained area, readily accessible to the work with adequate space for safe storage of materials and the safe operation of the erector's equipment.

### **21.2.1 Site-Specific Steel Erection Plan**

Steel erection Project Entities shall be required to submit a Site-Specific Steel Erection Plan for review and acceptance, prior to commencing steel erection operations.

Safety Form U-2, "Site-Specific Steel Erection Plan and Checklist," shall be developed by a qualified person and submitted to Burns & McDonnell and/or its subsidiaries.

## **21.3 Approval to Begin Steel Erection**

Steel erection Project Entities shall not commence steel erection operations without the following written authorizations from Burns & McDonnell and/or its subsidiaries:

- Safety Form U-1, "Concrete and Anchor Bolt Release Form," shall be used to notify the steel erection Project Entity that any repairs, replacements, or modifications to the anchor bolts were conducted with the approval of the project structural engineer of record.
- Safety Form U-3, "Approval to Begin Steel Erection," shall be used to notify the steel erection Project Entity that the concrete in the footings, piers, and walls of the structure foundations has attained 75% of the intended minimum compressive design strength.

## **21.4 Hoisting and Rigging**

Steel erection Project Entities shall ensure that all cranes used for steel erection activities be visually inspected prior to each shift by a competent person; the inspection shall include observation for deficiencies during operation.

### **21.4.1 Multiple Lift**

Steel erection Project Entities shall be required to receive written permission from Burns & McDonnell's and/or its subsidiaries' Corporate Safety & Health Department prior to performing multiple lifts, or "Christmas treeing."

Multiple lifts shall only be authorized if the following criteria are met:

- A multiple lift rigging assembly is used.
- A maximum of five members are hoisted per lift.





- Only beams and similar structural members are lifted.
- All workers engaged in the multiple lift have been trained in these procedures.

Steel erection Project Entities shall prohibit the use of cranes for multiple lifts where such use is contrary to the manufacturer's specifications and limitations.

Steel erection Project Entities shall ensure that components of the multiple lift rigging assembly are specifically designed and assembled with a maximum capacity for total assembly and for each individual attachment point.

Steel erection Project Entities shall be responsible for ensuring the total loads do not exceed:

- The rated capacity of the hoisting equipment specified in the hoisting equipment load charts.
- The rigging capacity specified in the rigging rating chart.

Steel erection Project Entities shall be required to ensure the multiple lift rigging assembly is rigged with structural members:

- Attached at their center of gravity and maintained reasonably level.
- Rigged from the top down.
- Rigged at least 7 feet apart.

Steel erection Project Entities shall be required to ensure structural members on the multiple lift rigging assembly are set from the bottom up.

Steel erection Project Entities shall be required to ensure controlled load lowering whenever the load is over the connectors.



## Chapter 22

### Fall Protection

#### Chapter Contents

##### 22 Fall Protection

###### Fall Protection — Resources

###### 22.1 Fall Protection

###### 22.1.1 General

###### 22.1.2 Definitions

###### 22.2 Same-Level Fall Protection

###### 22.3 Lower-Level Fall Protection

###### 22.4 Floor Openings

###### 22.4.1 Hole Covers

###### 22.4.1.1 General Requirements

###### 22.5 Grating/Guardrail Removal

###### 22.5.1 Floor Grating Removal

###### 22.5.2 Guardrail Removal

###### 22.6 Fall Protection Systems

###### 22.6.1 Guardrail Systems

###### 22.6.2 Personal Fall Arrest Systems

###### 22.6.3 Safety Nets

###### 22.6.4 Positioning Devices

###### 22.6.5 Warning Line Systems

###### 22.6.6 Controlled Access Zones

###### 22.7 Storage/General Use

###### 22.7.1 Inspection

###### 22.8 Site-Specific Fall Protection Plan

###### 22.9 Dropped Object Prevention

###### 22.9.1 Mitigation Methods

###### 22.9.1.1 Securing Items Aloft

###### 22.9.1.2 Barricading

###### 22.9.1.3 Scaffolding

###### 22.9.1.4 Toe Boards

###### 22.9.1.5 Grating

###### 22.9.1.6 Decking

###### 22.9.1.7 Debris Nets

###### 22.9.2 Training

###### 22.9.3 Dropped Object Reporting



## Fall Protection

### Fall Protection and Dropped Object Protection

[Duty to Have Fall Protection](#)

[Fall Protection Systems Criteria and Practices](#)

[Training Requirements](#)

[Appendix A](#)

[Appendix B](#)

[Appendix C](#)

[Appendix D](#)

[Appendix E](#)



## **22.1 Fall Protection**

### **22.1.1 General**

Project personnel located on a walking/working surface — horizontal and/or vertical surface — with an unprotected side or edge which is 6 feet or more above a lower level, shall be protected from falling through the use of guardrail systems, safety net systems, or personal fall arrest systems.

Project Entities shall be responsible for ensuring project personnel practice 100% fall protection. No task or project personnel shall be considered exempt from this requirement.

Project Entities shall be responsible for ensuring project personnel are trained in fall hazard recognition, as well as the use and limitations of fall protection systems. Safety Form C-9, "Certification of Training," shall be used to document training and shall be submitted to Burns & McDonnell and/or its subsidiaries.

Project Entities shall be required to designate a competent person for fall protection criteria, practices, and training using Safety Form C-17, "Competent Person Designation." Safety Form C-17 shall be submitted to Burns & McDonnell and/or its subsidiaries.

### **22.1.2 Definitions**

Refer to [29 CFR - Subpart M](#) for definitions applicable to this chapter.

## **22.2 Same-Level Fall Protection**

Project Entities shall be responsible for ensuring adherence to general requirements including, but not limited to, the following:

- Usable and waste materials shall be stored out of pathways and shall not congest a work area.
- Surfaces shall be kept free of slipping hazards — e.g., grease, oil, chemicals, metal shavings, etc.
- Efforts shall be made to maintain walking surfaces.
- Material shall not be permitted to collect around worktables, desks, threading machines, etc.
- Welding leads, extension cords, air hoses, etc., shall be elevated or otherwise positioned to prevent tripping hazards.

## **22.3 Lower-Level Fall Protection**

Efforts shall be made to install either permanent or temporary guardrails on or around surfaces that are 4 or more feet above floor level.

## **22.4 Floor Openings**

### **22.4.1 Hole Covers**

#### **22.4.1.1 General Requirements**

Project Entities shall be required to ensure hole covers are used to protect project personnel from falling through holes, tripping into openings, and from material falling through holes.



Project Entities shall be responsible for ensuring hole covers are capable of supporting at least twice the weight that may be imposed by personnel, materials, and equipment at any one time. Hole covers shall also be capable of supporting at least twice the maximum axle load of the largest piece of equipment expected to pass over the cover.

Project Entities shall ensure hole covers are secured to prevent unintentional displacement.

Project Entities shall be responsible for ensuring hole covers are marked for identification.

## **22.5 Grating/Guardrail Removal**

### **22.5.1 Floor Grating Removal**

Safety Form D-1, "Floor Grating and Guardrail Removal Permit," shall be requested by, and issued to, Project Entities prior to the removal of any floor grating. The issued "Floor Grating and Guardrail Removal Permit" shall be posted and remain at the location of removal, until the floor grating is replaced.

### **22.5.2 Guardrail Removal**

Safety Form D-1, "Floor Grating and Guardrail Removal Permit," shall be requested by, and issued to, Project Entities prior to the removal of any permanently installed guardrail.

Project Entities shall complete and submit Safety Form D-3, "Perimeter Guardrail Inspection and Turnover," whenever temporary guardrails are erected.

Project Entities shall be required to either remove temporary guardrail systems upon completion of their work activity, or if requested by the controlling contractor, transfer custody of the temporary guardrail systems. Safety Form D-3, "Perimeter Guardrail Inspection and Turnover," shall be used to document the transfer of custody.

## **22.6 Fall Protection Systems**

### **22.6.1 Guardrail Systems**

Project Entities shall be responsible for ensuring the following:

- Standard protection against falls shall be assurance that adequate guardrails — handrail, midrail, and toe boards — are installed on work platforms, scaffolds, and stairways with four or more risers or rising more than 30 inches, whichever is less.
- The top edge height of top rails, or equivalent guardrail system members, shall be 42 inches — plus or minus 3 inches — above the walking/working level.
- Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working level.
- When used, midrails shall be installed at a height midway between the top edge of the guardrail system and the walking/working level.
- Guardrail systems shall be capable of withstanding, without failure, a force at least 200 pounds applied in any outward or downward direction within 2 inches of the top edge, at any point along the top edge.



- Top rails and midrails shall be at least 1/4-inch nominal diameter or thickness to prevent cuts and lacerations.
- If wire rope is used for top rails, it shall be flagged at no more than 6-foot intervals with high-visibility material.

#### 22.6.2 Personal Fall Arrest Systems

Project Entities shall be responsible for ensuring project personnel use personal fall arrest systems in the absence of a complete guardrail system. Requirements for personal fall arrest equipment usage include, but are not limited to:

- A full-body harness with shock-absorbing lanyards or self-retracting lifelines shall be used for personal fall arrest systems.
- Shock-absorbing lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds.
- Self-retracting lifelines shall have a minimum tensile strength of 3,000 pounds.
- Lifelines shall be protected against being cut or abraded.
- Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.
  - Documentation of the design, installation, and approval process shall be transmitted to Burns & McDonnell and/or its subsidiaries prior to use.
- Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and shall be capable of supporting at least 5,000 pounds per employee attached.

Personal fall arrest systems shall be rigged so that personnel can neither free fall more than 6 feet nor contact any lower level.

Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used for employee protection again until a competent person has inspected them and determined that they are undamaged and suitable for reuse.

Project Entities shall provide for prompt rescue of employees in the event of a fall or shall ensure that employees are able to rescue themselves.

#### 22.6.3 Safety Nets

Project Entities shall be required to receive written permission from Burns & McDonnell's and/or its subsidiaries' Corporate Safety & Health Department prior to using safety net systems as part of a Site-Specific Fall Protection Plan.

#### 22.6.4 Positioning Devices

Project Entities shall be required to receive written permission from Burns & McDonnell's and/or its subsidiaries' Corporate Safety & Health Department prior to using positioning devices as part of a Site-Specific Fall Protection Plan.





If approved, positioning devices shall be rigged such that an employee cannot free fall more than 2 feet.

#### 22.6.5 **Warning Line Systems**

Project Entities shall be required to receive written permission from Burns & McDonnell's and/or its subsidiaries' Corporate Safety & Health Department prior to using warning line systems as part of a Site-Specific Fall Protection Plan.

#### 22.6.6 **Controlled Access Zones**

Project Entities shall be required to receive written permission from Burns & McDonnell's and/or its subsidiaries' Corporate Safety & Health Department prior to using controlled access zones as part of a Site-Specific Fall Protection Plan.

### 22.7 **Storage/General Use**

Project Entities shall be responsible for ensuring that personal fall protection equipment and accessories are stored in accordance with manufacturer's recommendations.

Project Entities shall ensure that personal fall protection equipment and accessories are stored in locations where they are not subject to weather, dirt, or debris which could potentially compromise the equipment's integrity.

#### 22.7.1 **Inspection**

Project Entities shall be responsible for ensuring that personal fall protection equipment and accessories are inspected — with all inspections documented — by the Project Entity's designated competent person prior to issuance and monthly thereafter.

- Any component with a defect shall be withdrawn from service immediately, and tagged or marked as unusable, or destroyed. Defects include, but are not limited to, the following:
  - Cuts, tears, abrasions, mold, or undue stretching.
  - Alterations or additions which might affect the component's efficiency.
  - Damage due to deterioration.
  - Contact with fire, acids, or other corrosives.
  - Distorted hooks or faulty hook springs.
  - Tongues unfitted to the shoulder of buckles.
  - Loose or damaged mountings.
  - Non-functioning parts.
  - Wearing or internal deterioration in the ropes.

Documented inspections of fall protection equipment shall be submitted to Burns & McDonnell and/or its subsidiaries via Safety Form V-2, "Fall Protection Equipment Inspection Report and Guide."



Project Entity's project personnel shall be responsible for ensuring that personal fall protection equipment and accessories are visually inspected prior to each use.

- Any component with a defect shall be withdrawn from service immediately, and tagged or marked as unusable, or destroyed. Such defects include, but are not limited to, the following:
  - Cuts, tears, abrasions, mold, or undue stretching.
  - Alterations or additions which might affect its efficiency.
  - Damage due to deterioration.
  - Contact with fire, acids, or other corrosives.
  - Distorted hooks or faulty hook springs.
  - Tongues unfitted to the shoulder of buckles.
  - Loose or damaged mountings.
  - Non-functioning parts.
  - Wearing or internal deterioration in the ropes.

## **22.8 Site-Specific Fall Protection Plan**

Implementation of a Site-Specific Fall Protection Plan shall only be an option for those Project Entities who are able to demonstrate that it is infeasible or creates a greater hazard to use conventional fall protection equipment.

The Project Entity's Site-Specific Fall Protection Plan shall be prepared by a qualified person and developed specifically for the scope of work in which the use of conventional fall protection equipment is infeasible. Justification of infeasibility as it relates to the use of conventional fall protection shall be included in the Site-Specific Fall Protection Plan.

The Site-Specific Fall Protection Plan shall include a documented assessment of other measures that will be taken to reduce or eliminate the fall hazard for personnel who cannot be protected using conventional fall protection systems. The Project Entity shall discuss the extent to which scaffolds, ladders, or vehicle-mounted work platforms can be used to provide a safer working surface, thereby reducing the hazard of falling.

Project Entities shall be required to receive written permission from Burns & McDonnell's and/or its subsidiaries' Corporate Safety & Health Department prior to implementing a Site-Specific Fall Protection Plan in lieu of using conventional fall protection.

Project Entities shall be required to submit their proposed Site-Specific Fall Protection Plan to Burns & McDonnell's and/or its subsidiaries' Corporate Safety & Health Department for review and acceptance prior to implementation and following any modifications.

Modifications to the Site-Specific Fall Protection Plan shall be approved by a qualified person and a copy of the plan with all approved changes shall be maintained at the job site.

The implementation of the Site-Specific Fall Protection Plan shall be under the supervision of the Project Entity's designated competent person.



## **22.9 Dropped Object Prevention**

### **22.9.1 Mitigation Methods**

Project Entities are responsible for ensuring that the potential for dropped objects is mitigated by implementing at least one of the methods outlined in sections 22.9.1 through 22.9.3 of this chapter.

#### **22.9.1.1 Securing Items Aloft**

Tool tethering/tool lanyards shall be required when project personnel are working at elevation.

- Tool lanyards shall be rated and designed for the selected tool.
- Tool lanyards shall be visually inspected for damage each day prior to use.

#### **22.9.1.2 Barricading**

Barricading shall be erected to prevent project personnel from entering areas where overhead work activities are being performed.

- Red danger tape shall be used to demarcate areas of overhead work activity.

Project Entities shall prohibit all project personnel from entering a red barricaded area erected to demarcate overhead work activity.

Project Entities shall ensure signs, tags, labels, etc., are utilized to provide project personnel with adequate information regarding the hazards associated with barricading.

#### **22.9.1.3 Scaffolding**

Project Entities shall be responsible for ensuring that an adequate barrier is applied from the deck scaffolding to the top rail to prevent objects from being displaced to a lower level. The serviceability of this barrier shall be included as part of the evaluation criteria for the scaffold inspection performed by the designated competent person.

#### **22.9.1.4 Toe Boards**

Project Entities shall be responsible for ensuring that toe boards are used to prevent objects from falling to lower levels.

- Toe boards shall be constructed at least 3 1/2 inches in height, have no more than 1/4-inch clearance above the scaffold deck, and be capable of withstanding a force of at least 50 pounds.

#### **22.9.1.5 Grating**

Project Entities shall be responsible for ensuring small objects in their work areas are not displaced to a lower level through voids in steel grating.

#### **22.9.1.6 Decking**

Permanent or temporary decking shall be utilized as a means of protecting personnel, equipment, and property from potential falling objects. Decks and toe boards shall be erected along the exposed edge of the overhead walking/working surface for a length sufficient to protect personnel below.



#### 22.9.1.7 Debris Nets

In applications where debris nets are utilized, nets shall be designed with specific sized webbing approved by the manufacturer for use based on the specific task, location, and type of tools/materials being used.

- Debris nets shall be installed as closely below the work in progress as is deemed practicable, but in no case shall debris nets be installed more than 30 feet below such level.
- Debris nets shall be hung, maintained, and tested in accordance with the manufacturer's instructions.
- Debris nets designed to prevent falling objects shall not be used as fall protection.

#### 22.9.2 Training

Project Entities shall be responsible for ensuring project personnel are trained in dropped object protection.

This training shall include:

- The nature of drop hazards and dropped objects in the workplace.
- Correct use of tool fall prevention items, as well as the limitations and requirements for use while performing elevated work.
- Positive tool/material/equipment control when working at height.
- Proper storage and handling of equipment and materials at height.
- Scaffold/platform housekeeping and maintenance.
- Reporting requirements for incidents and near misses.

#### 22.9.3 Dropped Object Reporting

All dropped tool/object incidents shall be immediately communicated to the Burns & McDonnell and/or its subsidiaries site management team.



## **Chapter 23**

# **Concrete and Masonry Construction**

### **Chapter Contents**

#### **23 Concrete and Masonry Construction**

##### **Concrete and Masonry Construction — Resources**

##### **23.1 Appendix A**

###### **23.1.1 Pre-Cast Concrete**

##### **23.2 Appendix B**

###### **23.2.1 Lift-Slab Operations**



## Concrete and Masonry Construction

### Scope, Application, and Definitions Applicable to this Chapter

[Scope and Application](#)

[Definitions](#)

### General Requirements

[Construction Loads](#)

[Reinforcing Steel](#)

[Post-Tensioning Operations](#)

[Riding Concrete Buckets](#)

[Working Under Loads](#)

[Personal Protective Equipment](#)

### Equipment and Tools

[Bulk Cement Storage](#)

[Concrete Mixers](#)

[Power Concrete Trowels](#)

[Concrete Buggies](#)

[Concrete Pumping Systems](#)

[Concrete Buckets](#)

[Tremies](#)

[Bull Floats](#)

[Masonry Saws](#)

[Lockout/Tagout \(LOTO\) Procedures](#)

### Cast-In-Place Concrete

[General Requirements for Formwork](#)

[Shoring and Re-Shoring](#)

[Vertical Slip Forms](#)

[Reinforcing Steel](#)

[Removal of Formwork](#)

### Appendix A — [Pre-Cast Concrete](#)

### Appendix B — [Lift-Slab Operations](#)

### Appendix C — [Requirements for Masonry Construction](#)





## **23.1 Appendix A**

### **23.1.1 Pre-Cast Concrete**

Project Entities shall prohibit project personnel from being under pre-cast concrete members.

## **23.2 Appendix B**

### **23.2.1 Lift-Slab Operations**

Project Entities shall be responsible for ensuring that project personnel, apart from those considered essential to jacking operations, are prohibited from accessing buildings/structures where such operations are taking place.

Under no circumstances, shall project personnel who are not essential to jacking operations be permitted immediately beneath a slab while it is being lifted.



## **Chapter 24**

### **Hazardous Energy Control Program (Lockout/Tagout)**

#### **Chapter Contents**

#### **24 Hazardous Energy Control Program**

##### **24.1 Hazardous Energy Control Program (Lockout/Tagout)**

###### **24.1.1 Purpose**

###### **24.1.2 Definitions**

##### **24.2 Roles and Responsibilities**

###### **24.2.1 Lockout/Tagout (LOTO) Manager**

###### **24.2.2 Tagging Authority**

###### **24.2.3 Authorized Employee**

###### **24.2.4 Affected Employee**

###### **24.2.5 Other Employees**

##### **24.3 Violations**

##### **24.4 Periodic Inspection**

##### **24.5 Lockout/Tagout (LOTO) Sequence**

###### **24.5.1 Step 1: Identify the Work**

###### **24.5.2 Step 2: Identify Potential Hazardous Energy Sources**

###### **24.5.3 Step 3: Identify Ways to Eliminate the Hazards — Prepare an Isolation Record**

###### **24.5.4 Step 4: Eliminate the Hazards — Isolate Equipment, Release Stored Energy, and Verify Zero-Energy State for All Energy Sources**

###### **24.5.4.1 Satellite Lockbox**

###### **24.5.5 Step 5: Perform Task**

###### **24.5.5.1 Change Management**

###### **24.5.6 Step 6: Lockout/Tagout (LOTO) Release**

###### **24.5.6.1 Emergency Release**

###### **24.5.6.2 Temporary Release for Testing and Positioning**

##### **24.6 Modify Lockout/Tagout (LOTO) Boundary**

##### **24.7 Procedure Modification**

##### **24.8 Lockout/Tagout (LOTO) Awareness Training**



## 24.1 Hazardous Energy Control Program (Lockout/Tagout)

### 24.1.1 Purpose

The purpose of this procedure is to establish the process in which the lockout/tagout (LOTO) and permit-to-work functions shall be administered. The procedure shall also establish the minimum requirements for the lockout of energy-isolating devices whenever work is performed on systems, machines or equipment. This procedure applies to project personnel working on, or supporting, a Burns & McDonnell and/or its subsidiaries project, and are applicable to permanently installed equipment, temporarily installed equipment, and portable equipment.

The goal of any LOTO Program is to eliminate the possibility of the unintentional release of hazardous energy. To control that energy release, a LOTO Program consisting of the following six steps shall be employed:

- 1) Identify the work.
- 2) Identify potential hazardous energy sources.
- 3) Identify methods of eliminating exposure to these hazards.
- 4) Eliminate the hazards.
- 5) Perform the work.
- 6) Restore the system as necessary.

The consistent implementation of these procedures seeks to prevent the unanticipated release of hazardous energy that could threaten the health and safety of project employees or damage equipment. Hazardous energy in this context includes, but is not limited to, electrical, thermal, hydraulic, pneumatic, chemical, stored, residual and potential energy — e.g., from capacitors, batteries, elevated weights, and compressed springs.

These procedures shall be used to confirm that any machine, circuit, or equipment is isolated — i.e., disconnected — from all potentially hazardous energy sources and locked out — tagged — and tested before employees perform any work. This shall prevent the unexpected energization or startup of the machine, circuit, or equipment; or the release of stored energy which could cause injury or property damage.

**Note:** The client's LOTO Program shall be the primary energy-isolation process used when any construction and/or startup work is to be integrated into, or connected with, any of the client's assets that are not under the jurisdiction of Burns & McDonnell and/or its subsidiaries — e.g., any source of permanent energy/power. All efforts shall be made in conjunction with the client's subject matter experts and applicable updated documentation, including but not limited to engineered mechanical and electrical drawings that clearly indicate the boundaries of a system. The project shall define the extent of the project boundaries and all points where construction and existing equipment or systems will be joined together. These boundary limits shall be marked or tagged with a positive means of identification — e.g., System Under Test (SUT) tags, colored tape or hazard warning signage.

**Note:** This procedure shall also be implemented during the construction phase of the project and shall cover any sources of energy that are under the jurisdiction of Burns & McDonnell and/or its subsidiaries.

**Note:** During the construction phase of the project, the site manager and/or his/her designee, shall assume the role and responsibilities of the LOTO manager. In addition, the site construction manager shall hold the same responsibilities as the startup manager and shall determine if the proposed work can be permitted.



### 24.1.2 Definitions

**Affected Employee** — An affected employee is an employee whose job requires him/her to operate or use a machine, system, or equipment on which work is being performed under lockout or tagout; or whose job requires him/her to work in an area in which such work is being performed. These employees are not signed onto the Isolation Record (IR) — LOTO — and so do not service or maintain machinery or perform LOTO activities.

Affected employees shall be trained in the purpose and use of Hazardous Energy Control Procedures. Affected employees shall also be capable of:

- Recognizing when the Energy-Control Procedure is being used.
- Understanding the purpose of the procedure.
- Understanding the importance of not tampering with any components of an isolation and may never start or use equipment that has been locked or tagged out.

If an affected employee is required to work on equipment or systems that are covered under an IR, they must be trained as an authorized employee.

**Authorized Employee** — An authorized employee is a Burns & McDonnell and/or its subsidiaries or Project Entity employee who has been approved and/or designated to physically perform work on equipment or systems that are covered as part of an IR. All authorized employees shall be trained in accordance with the Occupational Safety and Health Administration (OSHA) Hazardous Energy standard and shall demonstrate an understanding and competence in the following areas:

- Hazardous energy source recognition.
- The type and magnitude of hazardous energy sources in the workplace.
- Their responsibilities to confirm their safety as outlined in these LOTO procedures.
- Their responsibilities under the Permit to Work (PTW) Program.

**Control Lock** — A control lock is lock that is placed on a group lockbox by the LOTO manager. This lock is always the first lock placed on a group lockbox and the last lock removed. The control lock confirms to all holders, as well as the LOTO manager and the tagging authority, that no lockout device shall be removed until all holders have completed their work and removed their personal LOTO locks from the group lockbox.

**Client** — A client is the entity that owns, or in some cases operates, the facility where project activities are being conducted. OSHA refers to this entity as the host employer.

**De-Energized** — De-energized means free from any source of hazardous energy. These sources include, but are not limited to: mechanical, chemical, potential, thermal and electrical energy. See the hazardous energy definition below.

**Double Block and Bleed** — The closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

**Employee** — An employee may be a Project Entity employee; any Burns & McDonnell and/or its subsidiaries personnel; or a member of a partnership, corporation, agency, association, or organization.

**Energized** — Connected to a hazardous energy source or containing residual or stored energy.



**Energy-Isolating Device** — An energy-isolating device is a mechanical device that physically prevents the transmission or release of hazardous energy. Energy-isolating devices include, but are not limited to, the following:

- A manually operated electrical circuit breaker.
  - A disconnect switch is a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently.
- A line valve.
  - A blank flange, slip blind, or any similar device used to physically block or isolate energy.
  - A block valve and any similar device used to block or isolate hazardous energy.
- **Caution:** Push buttons, selector switches, DCS or PLC lockouts, and other control circuit type devices are not energy-isolating devices and are not acceptable for LOTO use.

**Group Lockbox** — A box utilized to organize and control lock keys which are used for the isolation of equipment. This box has multiple positions where locks may be attached. The LOTO manager, as well as the appropriate tagging authority will place the keys to the locks, which were used to isolate the required equipment or systems prior to securing the group lockbox with their locks and then sign onto the applicable IR.

**Hazardous Energy Source** — Any electrical, rotational, mechanical, hydraulic, pneumatic, wind, thermal, chemical, nuclear, residual stored energy, gravity, or pressurized liquids or gasses that could cause injury to an employee or property damage.

**Holder** — Any authorized employee who has signed onto the IR is considered a holder. By signing on as a holder, the authorized employee confirms the LOTO is maintained until they have completed their work and signed off. A LOTO cannot be removed without first clearing all holders off the respective IR. All LOTOs must have at least one holder in addition to the LOTO manager as signatories.

**Isolation Record (IR)** — An IR is a package of information used to document a LOTO request for energy isolation and to track the placement and removal of that isolation. All LOTOs must be documented using an IR. IRs are assigned a unique number for tracking purposes. Each IR must contain, at a minimum, the following information:

- Safety Form G-13, "Isolation Record," shall list every mechanical and/or electrical energy-isolation device which shall be used to secure all isolation points for the equipment or system.
- List of authorized employees — e.g., holders — that have signed onto the IR (Safety Forms G-13 and G-13B)
- Piping and instrumentation diagram(s) (P&ID) that showing the physical location of all the energy-isolation devices required to confirm that the equipment placed under LOTO is in a zero-energy state.
  - **Note:** If there is no electrical energy potential then a one-line drawing is not required.
- Electrical one-line drawing(s) showing all energy-isolation devices required to confirm that the equipment under LOTO is in a zero-energy state.
  - **Note:** If there is no mechanical energy potential, then a P&ID is not required.



The applicable documents for each IR shall be kept in individual three-ring binders. These binders shall be kept in the LOTO manager's office.

**Lockout** — Lockout is the placement of a locking device on an energy-isolating device which confirms that the energy-isolating device and the equipment or system being controlled cannot be operated/energized until the lockout device is removed.

**LOTO Committee** — A group of individuals, designated by the Director of Corporate Safety & Health, who will be responsible for maintaining and approving any modifications to LOTO procedures. This committee shall include representatives from Corporate Safety, Construction/Design-Build (CDB), and the global practice (GP) division that is affected.

**Lockout Device** — A lockout device is a device that utilizes a positive means of securing an energy-isolating device in the safe position to prevent the energization of a system, machine or piece of equipment. Such lockout devices are typically individually keyed and numbered locks but can include other devices, such as blind flanges and bolted slip blinds. All energy-isolation devices shall be accompanied by a "Do Not Operate" tag.

**LOTO Manager** — The role of the LOTO manager or their designee shall only be assigned to Burns & McDonnell and/or its subsidiaries personnel. The LOTO manager or designee shall manage the overall LOTO Program during all phases of the project. The assigned LOTO manager may change depending on the phase of the project. Responsibilities of the LOTO manager or their designee include, but are not limited to, the following:

- Identifying isolation points.
- Selecting energy-isolation devices.
- Securing all lockout devices.
- Verifying zero-energy state.
- Confirming that the equipment/system has been restored to an operational state then removing the hazardous energy isolations — i.e., LOTOs.

The LOTO manager or designee shall be trained, shall demonstrate competency in the applicable OSHA/NFPA standards, and shall be responsible for maintaining all LOTO records for the duration of the project. The LOTO manager's responsibilities transfer to the client upon substantial completion or in accordance with the project contract requirements.

**Other Employee** — All employees who are, or may be, in an area where Hazardous Energy Control Procedures may be utilized but are not directly involved with the work or the systems, equipment or machines.

**Permit to Work (PTW)** — A PTW is a documented work authorization process which is required to perform the specific task identified in the permit. The PTW form is preprinted in duplicate. The LOTO manager shall add a unique, sequential, permit number to these documents so as to control and track group and satellite lockboxes.

During construction, the Burns & McDonnell and/or its subsidiaries' site construction manager or designee shall review and issue the PTW on a daily basis. Once the startup phase of the project has begun, the site safety manager shall complete a preliminary review of all requested permits to determine if the work involves equipment or systems that are under the control of the startup group. The PTW shall be reviewed and approved by the startup manager based on the status of the covered equipment or systems and will approve or deny these permit requests daily.





**Personal LOTO Lock** — A single-keyed and uniquely numbered lock which shall be used by an authorized employee to confirm that any LOTO they may be working under remains in place until the work is completed or their shift concludes. A personal LOTO lock is the only lock which shall be permitted to be used by a holder as outlined in this LOTO program. The personal LOTO lock shall be issued by the holder's individual employer and used by the holder to confirm that any LOTO they may be working under will remain in place until the work is completed or their shift is concluded. The holder's name and the lock identification number of each personal LOTO lock shall be recorded on Safety Form G-13B, "Satellite Lockbox Log."

**Satellite Lockbox** — A satellite lockbox is similar in appearance to the group lockbox and is intended to be used when multiple contractors or a large group of authorized employees, that are part of the tagging authority's organization, are required to place their personal LOTO locks onto the satellite lockbox and then sign onto the Satellite LOTO Isolation Record (Safety Forms G-13 and G-13B) Satellite Lockbox Log form. A satellite lockbox shall always be used in conjunction with a group lockbox.

**Startup Manager** — A startup manager is a representative of Burns & McDonnell and/or its subsidiaries whose responsibility it is **to** review and either approve or reject all PTW requests from the tagging authorities for any work activities that are to be conducted on equipment/systems which have been turned over to the startup team and may require hazardous energy isolation on the project. The startup manager directs the tasks that the LOTO manager is responsible for during the isolation and verification processes of the LOTO procedure.

**Startup** — The term startup is used to denote the phase of a project when the construction work is sufficiently complete to allow for the commissioning and initial operation of a system — or a portion of a system. Because the systems under the control of the startup team are subject to unexpected operation, any work that is intended to be conducted on a covered system requires prior approval from the startup manager.

**Tag** — A tag is a prominent warning device that includes a means of attachment, which may be securely fastened to a lockout device, an energy-isolating device, or a system component in accordance with this established procedure. A tag is an indication that the energy-isolating device and the system, equipment, or machine being controlled may not be operated or worked on until the LOTO manager has approved a PTW for such tasks.

Types of tags include the following:

- **"System Under Test" (SUT) — Yellow Tag**
  - "System Under Test" (SUT) tags shall be placed on all system components that are under the control of the LOTO manager and have a hazardous energy potential. No work shall be performed on these systems unless that work has been approved by the construction LOTO manager/designee or the startup manager/designee, through the submission of a complete and accurate PTW for review and approval.
  - **Note:** SUT tags are not numbered.
  - See an example of an [SUT tag](#).
- **"Do Not Operate" (DNO) Tags**
  - The "Do Not Operate" (DNO) tag signifies that an equipment or system is not to be operated or energized by anyone until the isolation has been cleared and returned to startup or construction control. These tags are always used in conjunction with a lockout device.
  - DNO tags shall be placed on all systems, equipment, or mechanisms that, if operated, may contain potentially hazardous energy which could result in the injury of an employee or damage to the covered process equipment or system.



- The DNO tag requires that the equipment remain in the non-operative position.
- In cases where the non-operative position is not readily apparent, it shall be stated on the back of the tag.
- DNO tags shall be placed and removed only by the Burns & McDonnell and/or its subsidiaries' LOTO manager or their designee.
- DNO tags covering all isolations shall be logged using Safety Form G-13, "Isolation Record," and shall include the date they were placed into service, signature of the LOTO manager, and the unique identification details associated with the isolated equipment, system, or component.
- See an example of a [DNO tag](#).

**Tagging Authority** — This is the competent person acting as the primary communication link between the Burns & McDonnell and/or its subsidiaries' site safety manager, the startup manager, the Burns & McDonnell and/or its subsidiaries' LOTO manager, and the various parties working to complete the project. These parties include not only the Burns & McDonnell and/or its subsidiaries' construction and startup personnel, but also all major subcontractors/contractors working on the project.

No individual except the tagging authority may request a LOTO from the LOTO manager. Burns & McDonnell's and/or its subsidiaries' LOTO manager shall determine how many employees from each group or subcontractor shall be trained and designated as a tagging authority; however, there must be a minimum of three tagging authorities for each subcontractor.

The primary responsibility of the tagging authority is to work in conjunction with the LOTO manager to confirm that all IRs are complete and sufficient to protect the authorized employees who are working under the LOTO prior to issuing the PTW submit LOTO permit requests.

The tagging authority's additional roles and responsibilities include, but are not limited to, the following:

- The tagging authority shall certify to the LOTO manager that each authorized employee who is working under the tagging authority's direction has successfully completed all required safety/skills training programs which are commensurate with said worker's level of responsibility and involvement in the LOTO program.
- The tagging authority shall assist the LOTO manager in determining the extent of isolation points in the defined LOTO boundaries.
- The tagging authority shall assist the LOTO manager in determining which energy-isolation devices are required to provide safe working conditions for workers for his/her organization.
- The tagging authority will place their personal LOTO lock on the group lockbox — after the LOTO manager has placed their control lock on the group lockbox. In doing this, the tagging authority and the LOTO manager shall take responsibility for maintaining the isolated equipment in a condition that enables the authorized employees to work safely.
- The tagging authority and the LOTO manager — or designee — shall verify the effectiveness of isolation prior to allowing the authorized employees to sign onto the IR/LOTO Log and begin work on the system. This verification is obtained by using normal starting procedures to ensure that the system/equipment under LOTO is in a zero-energy state — Lock/Tag/Try.
- Once the work is confirmed to have been completed as required, the tagging authority shall request the removal of isolation from LOTO manager.



- The tagging authority may use satellite lockboxes, when necessary, to confirm that all authorized employees are able to safely perform their work. Satellite boxes are always used in conjunction with the designated group lockbox.

**Tagging Authority List** — The Tagging Authority List shall contain all of the Burns & McDonnell and/or its subsidiaries and project subcontractor's/contractor's tagging authorities. This list shall be maintained in the LOTO manager's office and shall identify each company's authorized tagging authority. This information shall be recorded using Safety Form G-11, "Tagging Authority List."

**Tagging Safety Displays** — Tagging safety displays may be displayed throughout the project site. These compliance assurance exhibits are intended to identify and explain the tags and locking devices which have been authorized for use on the project. Visual examples of each type of tag and what they signify may be included in this display. The display can remain posted until the project has been completed and all LOTO responsibilities have been transferred to the client.

**Work** — Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, as well as maintaining and/or servicing systems, machines, or equipment. These activities include lubrication, cleaning or unjamming of system components, machines, or equipment; and adjustments or tool changes where the employee may be exposed to the unexpected energization or startup of the system, machine, or equipment, and the potential release of hazardous energy.

## 24.2 Roles and Responsibilities

All project personnel are ultimately responsible for their own safety while on the job. However, the project LOTO manager is responsible for implementing the Burns & McDonnell and/or its subsidiaries' LOTO Program and must confirm that all authorized employees have been trained to effectively implement this program. The LOTO manager is assisted in carrying out these responsibilities by the individual tagging authorities.

### 24.2.1 Lockout/Tagout (LOTO) Manager

The Burns & McDonnell and/or its subsidiaries' LOTO manager or designee shall:

- Establish and maintain the LOTO office, all necessary LOTO supplies, and all procedural documentation related to any energy isolation work scopes.
- Maintain the Tagging Authority List — using Safety Form G-11, "Tagging Authority List."
- Maintain a record of all training certifications for authorized, affected, and other employees, using Safety Form C-9 "Certification of Training." All employees that are assigned a work task on a LOTO PTW must have completed the required level of LOTO training prior to beginning permitted work.
- The Tagging Authority and Authorized Employee Lists shall be periodically updated by the Burns & McDonnell and/or its subsidiaries' LOTO manager whenever a new employee has joined the project and their LOTO classification indicates they will be working as a holder.
- Complete and maintain all IR packages for the duration of the project.
  - The IR packages shall include at a minimum an IR, LOTO Logs, and the most recent revisions of applicable support documentation — i.e., P&IDs, one-line drawings, manufacturer's safe operating instructions, equipment specifications, and any additional documents that will provide an understanding of the equipment/system operational parameters and hazardous energy potentials.



- Walk down the equipment/system with the tagging authority to identify all isolation points prior to authorizing work to begin, and update all support documentation included in the IR package.
- Determine the appropriate energy-isolation devices that will be needed to securely isolate each source of hazardous energy.
- Confirm that the isolation point has been placed in the required position, as shown on the IR.
- Secure all necessary energy-isolation devices, locking devices, and DNO tags on the equipment/system then place all of the keys to these locking devices in a group lockbox.
  - Once all keys have been deposited in the group lockbox, the LOTO manager shall secure a Burns & McDonnell and/or its subsidiaries' control lock on the box. The control lock shall remain in place until the work has been completed and all authorized employees have removed their personal LOTO locks from the box and signed off the IR and/or LOTO Log.
    - The LOTO manager shall maintain control of all group and satellite lockboxes.
- Confirm — with the tagging authority — that the equipment/system has been verified to be in a zero-energy state, prior to issuing the PTW and allowing work to begin.
- Remove all locking devices, energy-isolation devices, and DNO tags after it has been confirmed that the work is complete and all authorized employees — as well as the tagging authority — have signed off of the IR and/or LOTO Logs.

#### 24.2.2 Tagging Authority

Tagging authorities are the only project personnel that may request a LOTO from the LOTO manager. The tagging authority is the primary communication link between the Burns & McDonnell and/or its subsidiaries' startup manager, the Burns & McDonnell and/or its subsidiaries' LOTO manager, and subcontractor personnel working on the project.

Responsibilities of the tagging authority include, but are not limited to, the following:

- Provide individual training certifications to the LOTO manager indicating that all personnel have completed training commensurate with their level of responsibility and involvement in the LOTO Program.
- Assist the LOTO manager in developing the work-specific IR, identifying all hazardous energy sources, isolation points, and recommending effective means of eliminating these hazards.
- Assist the LOTO manager by physically verifying that all of the locking devices/DNO tags are placed on the proper energy-isolation devices.
- Assist the LOTO manager/designee to verify all isolation points are in a zero-energy state prior to issuing the PTW, allowing personnel to sign the applicable LOTO Log and begin work on a system/equipment.
  - Once an energy source has been isolated and verified to be in a zero-energy state, the tagging authority shall initial each isolation point on the IR.
- Request the removal of isolation from the LOTO manager once it has been confirmed that the work is complete, and the equipment/system is capable of being operated as designed.



#### 24.2.3 Authorized Employee

An authorized employee is an individual that physically performs work on equipment which is covered under LOTO.

The authorized employee must be capable of demonstrating their understanding and competence in the following areas:

- The type and magnitude of hazardous energy sources in the workplace.
- The importance of maintaining a safe work environment — both for themselves and their fellow workers.
- How and when to request and obtain a LOTO.
- The PTW process and how to obtain a PTW.
- The specific process steps involved in implementing the Project LOTO Program.
- How to safely work on a system that is under a LOTO.
- How to release a LOTO upon the completion of work or at the end of a work shift.

#### 24.2.4 Affected Employee

An affected employee is an individual whose job requires him/her to work in an area where work is being performed under LOTO.

The affected employees do not sign onto the IR — LOTO.

Affected employees shall be trained in the purpose and use of Energy-Control Procedures and shall be able to demonstrate a firm understanding of the following:

- The type and magnitude of hazardous energy sources in the workplace.
- The importance of maintaining a safe work environment — both for themselves and their fellow workers.
- The PTW process and how to obtain a PTW.
- What the SUT tags and the DNO tags signify and the appropriate actions to be taken while working in the vicinity of these tags.
- How to recognize when a LOTO is in place and the appropriate actions for them to take to protect themselves and their fellow workers.
- How and when to request and obtain a LOTO.



#### 24.2.5 Other Employees

All employees who are, or may be, in an area where Hazardous Energy Control Procedures may be utilized but are not directly involved with the work, systems, equipment or machines. They should be able to demonstrate a firm understanding of the following:

- What the SUT and the DNO tags signify and the appropriate actions to be taken while working in the vicinity of these tags.
- How to recognize when a LOTO is in place and the appropriate actions for them to take to protect themselves and their fellow workers.

#### 24.3 Violations

The Hazardous Energy Control — i.e., LOTO — Program is designed to afford maximum protection to all employees working on a Burns & McDonnell and/or its subsidiaries' project, regardless of their employer. However, no program is capable of protecting employees if its procedures are not followed; thus, it is imperative that the LOTO procedures are followed consistently.

Failure to comply with any aspect of the LOTO Program shall be considered just cause for disciplinary action, up to and including the discharge of the person(s) involved or their removal from the job site.

Examples of failure to comply include, but are not limited to, the following:

- Working on a system or piece of equipment without obtaining a proper PTW and/or LOTO isolation.
- Working on a system or piece of equipment that is part of an IR without signing on that IR.
- Operating a disconnecting means which has a LOTO device installed.
- Removing locking devices or tags from a system or piece of equipment without proper authorization.
- Failure to remove personal LOTO locks at the end of a shift without prior authorization from the LOTO manager or designee.

**Note:** Only the LOTO manager or their designee are authorized to place or remove locks and tags.

#### 24.4 Periodic Inspection

Burns & McDonnell and/or its subsidiaries shall conduct an annual inspection/audit of the Hazardous Energy Control Procedure to confirm that the procedure and the requirements of OSHA and industry standards are being followed. These inspections shall be conducted to ensure that the Hazardous Energy Control Procedures are being followed at the project level.

The inspection/audit shall be performed by a Burns & McDonnell and/or its subsidiaries' safety professional who is familiar with both the Hazardous Energy Control Procedure and the OSHA/industry standards. The results of this audit, along with any specific recommendations for improvement, shall be detailed in a report sent to Burns & McDonnell and/or its subsidiaries' senior management for review.

#### 24.5 Lockout/Tagout (LOTO) Sequence

The following lockout and tagging procedures shall be followed.





#### 24.5.1 Step 1: Identify the Work

- 1) A crew is told what task they will be performing that day by their supervisor, and together they will fill out a PTW form and a task-specific Activity Hazard Analysis (AHA).
- 2) If the intended task involves any equipment that is under the control of the startup team, the subcontractor's tagging authority shall take the PTW and AHA to the startup manager for review.
- 3) The tagging authority and the startup manager shall discuss whether the proposed work can be performed that day and whether the work will require a LOTO.

If a LOTO is required, the LOTO manager and tagging authority shall proceed with Step 2.

#### 24.5.2 Step 2: Identify Potential Hazardous Energy Sources

- 1) The startup manager/designee and the tagging authority shall review the proposed work that is provided in the PTW and identify all potential energy sources and their isolation points to initiate the development of an IR.
- 2) The startup and LOTO managers shall work with the Burns & McDonnell and/or its subsidiaries' document control team to confirm that the support documentation they are using is the most current project information. All drawings shall become a reference on the IR, and the documents shall be marked with the IR number for further reference for the isolation that will be implemented.

Examples of this information may include:

- Single-line and panel-board drawings.
- 3) Any applicable equipment supplier information including, but not limited to, wiring diagrams, P&IDs, safe operating instructions, and equipment drawings.
    - Project-specific P&IDs.
    - Project-specific Cable Schedules.
    - Equipment tags, labels and signage that are intended to identify disconnecting/isolation means.
  - 4) Any electrical grounds that will be installed shall be identified on the IR. A DNO tag shall be hung on the electrical ground to identify within the IR that ground is associated with the isolation. If the ground is placed inside of a cabinet, the front and rear of the cabinet shall identify that a ground has been placed inside.
  - 5) Clarify any questionable energy sources before proceeding.
    - Update the IR as needed.
  - 6) Review other activities in the work area to identify where and how other personnel could be exposed to any additional sources of hazardous energy.

**24.5.3 Step 3: Identify Ways to Eliminate the Hazards — Prepare an Isolation Record**

- 1) The LOTO manager shall finalize the initial IR package for the requested work and confirm that the following support documents have been included in the final IR package:
  - The final IR, which must include a unique identification number.
  - All drawings/support documentation showing isolation points. All individual support documents shall be numbered to reference the specific IR number.
  - A hardcopy of the IR package which shall be under the exclusive control of the LOTO manager.

**24.5.4 Step 4: Eliminate the Hazards — Isolate Equipment, Release Stored Energy, and Verify Zero-Energy State for All Energy Sources**

- 1) The LOTO manager, and the appropriate tagging authority, shall walk down the IR to confirm all isolation points have been identified. The LOTO manager shall confirm that the isolation points have been placed in the correct position, secure an appropriate energy-isolation device on each of the isolation points, and attach lockout devices and DNO tags.
- 2) Verify that all residual forms of energy have been released once the isolation point has been secured.
- 3) The LOTO manager/designee and the tagging authority shall confirm that the system or equipment covered by the IR is in a zero-energy state. The LOTO manager and tagging authority shall initial the IR confirming that zero-energy state has been achieved. This zero-energy state can be confirmed in several ways, depending on the energy involved. Examples of methods used to confirm zero-energy status include:
  - Open and “rod” all vent/drain valves to confirm that they are open.
  - Block any potential gravity energy sources.
  - Confirm zero voltage with an adequately rated testing instrument for the voltage that may be encountered and test each phase conductor or circuit part to confirm de-energization.
  - Attempt to start equipment using the normal equipment operating controls, such as pushbuttons, selector switches, and electrical interlocks, then verify that the equipment cannot be restarted.
  - Where the possibility of induced voltages or stored electrical energy exists, apply temporary protective grounding that is rated for the maximum potential fault current to the applicable conductors or circuit parts and update the IR showing these as isolation control points.
- 4) The LOTO manager shall place the keys for all lockout devices in a numbered group lockbox.
- 5) The LOTO manager shall place a control lock on the group lockbox.
  - The control-lock key shall remain in the possession of the LOTO manager.
  - The tagging authority shall place their personal LOTO lock on the group lockbox.
- 6) All authorized employees shall have the opportunity to verify that the isolation points are sufficient for employees to perform their work and that all stored energy is in a zero-energy state.



- 7) All authorized employees shall then place their personal LOTO locks on the LOTO group lockbox and sign onto the IR. Once an authorized employee signs onto the LOTO Log they shall become a holder until they sign off of the log and remove their personal LOTO lock.

#### 24.5.4.1 Satellite Lockbox

In some instances, a satellite lockbox may be used in addition to the group lockbox. This approach can be used if a large number of authorized workers are required to perform the work, or if multiple tagging authorities — contractors — are involved.

**Note:** If any satellite boxes are to be used, the same procedures established to manage the group lockbox shall be followed.

The following procedures shall be employed when a satellite lockbox is used:

- 1) The LOTO manager and tagging authority must walk down the energy-isolation and lockout devices as well as confirm the zero-energy state of the system under the IR.
- 2) The LOTO manager, along with the appropriate tagging authority, shall attach lockout devices and DNO tags to all energy-isolation devices.
- 3) The LOTO manager shall place the keys for all lockout devices in a numbered group lockbox.
- 4) The LOTO manager shall place a control lock on the group lockbox.
  - The control-lock key shall remain in the possession of the LOTO manager.
- 5) The tagging authority shall place a personal LOTO lock on the group lockbox.
- 6) Tagging authority shall then place the key to their personal LOTO lock in a satellite lockbox and a second personal LOTO lock on the satellite lockbox.
- 7) All authorized employees shall verify the isolation points are sufficient to perform their work and all stored energy is in a zero-energy state.
- 8) All authorized employees shall then place their personal LOTO locks on the LOTO satellite lockbox and sign onto the Satellite Lockbox Log — i.e., Safety Form G-13B, “Satellite Lockbox Log.” At this point they are considered holders of the LOTO.
- 9) All authorized employees shall remove their personal LOTO lock from the applicable lockbox and sign off of the LOTO Log at the end of their shift.

#### 24.5.5 Step 5: Perform Task

The holders of the LOTO shall perform the work only after they have conducted an AHA and PTA review, which are associated with the PTW. All authorized personnel are required to secure their personal LOTO lock on the lockbox and sign onto the respective LOTO Log after they have reviewed the system isolation with the tagging authority or LOTO manager.

##### 24.5.5.1 Change Management

Any authorized personnel that did not participate in the initial AHA/PTA review must have the details associated with this requirement reviewed with them by the tagging authority prior to starting work.



#### 24.5.6 Step 6: Lockout/Tagout (LOTO) Release

- 1) Once work has been completed, the holders shall:
  - Remove all tools, debris, equipment, and unused materials and perform appropriate housekeeping.
  - Confirm equipment covers, panels, barriers, etc. are properly reinstalled.
  - Notify the tagging authority that the LOTO can be released.
- 2) The tagging authority shall inspect the work and confirm that the task has been completed, the equipment has been restored to an operational status, and the LOTO can safely be released.
  - Perform any quality control tests or checks on the repaired/replaced/installed equipment.
- 3) All holders shall sign off of the appropriate LOTO Log and remove their personal LOTO lock.
- 4) The tagging authority shall verify that all authorized employees have signed off of the LOTO Log. If a satellite lockbox was used, the tagging authority removes his personal LOTO lock from the satellite box and retrieves the key to the personal LOTO lock that the tagging authority had placed on the group lockbox.
- 5) The tagging authority shall take the completed LOTO Log, notify the LOTO manager that the LOTO is ready to be released, and remove their personal LOTO lock from the group lockout box.
- 6) The LOTO manager shall confirm that the work has been completed as permitted and that the LOTO is ready to be released. This must be confirmed before the LOTO manager and tagging authority remove all associated isolation locks, energy-isolation devices, and DNO tags prior to closing the PTW.
- 7) Both the LOTO manager/designee and the tagging authority shall sign off on the IR confirming that each energy-isolation device has been properly removed, and the equipment or system has been properly restored to a safe and operable condition.
- 8) The LOTO manager shall notify the construction manager and/or start-up manager that the system/equipment is available for service.
- 9) All authorized employees and tagging authorities shall sign off on the LOTO Log and remove all personal LOTO locks at the end of each shift.
- 10) At the beginning of each shift, all authorized employees and tagging authorities shall confirm that all isolation points are still secured and shall communicate equipment status, as well as any isolation issues that occurred during the shift.
- 11) When the LOTO has been reconfirmed the tagging authority and all authorized employees shall sign onto the LOTO Log and place their personal LOTO locks on the appropriate LOTO lockbox.
- 12) The above sequence shall continue until the tagging authority has verified all work to be complete. At that time, the LOTO shall be released.

##### 24.5.6.1 Emergency Release

In rare cases, a holder may not be available to remove his/her personal LOTO lock even though the work is thought to be complete. Prior to removing the absent holder's personal LOTO lock, several steps shall be



taken to confirm that the IR can be cleared without placing the absent holder or the equipment, which is under LOTO, in jeopardy.

Safety Form G-3, "Lock Removal Authorization," outlines the steps that shall be followed prior to the removal of an absent holder's personal LOTO lock. These steps are:

- 1) The appropriate tagging authority shall verify that the absent holder is not on site. If the holder is on site and is able to confirm that the work is complete, then he/she shall return to the LOTO office and sign the appropriate Safety Form G-13 to complete the release of the IR.
- 2) The appropriate tagging authority shall attempt to contact the absent holder using the holder's cell number. If the holder can be reached, then he/she shall confirm the status of the IR in question. If the absent holder confirms that the work being performed under the IR is complete, then the tagging authority shall sign off of the LOTO on behalf of the absent holder.
- 3) If the absent holder cannot be contacted, then the tagging authority and the LOTO manager shall inspect the work that was completed under the LOTO and confirm with any other holder that the work has been completed and the system is ready to be returned to service.
- 4) If both the tagging authority and the LOTO manager believe that the absent holder's personal LOTO lock can be safely removed, they shall review their finding with the Burns & McDonnell and/or its subsidiaries' project management team, which may include the site safety manager, startup manager, and the site construction manager.
- 5) If all parties believe that the work has been completed and the absent holder's personal LOTO lock can be removed safely, all parties shall complete Burn & McDonnell Safety Form G-3, "Lock Removal Authorization."
- 6) The absent holder's personal LOTO lock may then be removed.
- 7) The holder shall not be permitted to return to work until he/she has been informed of the emergency LOTO removal and has initialed next to the tagging authority's signature.

#### 24.5.6.2 Temporary Release for Testing and Positioning

Testing defines the process for temporarily releasing a portion of a LOTO boundary to perform an operational check, service, or reposition equipment that is under an active LOTO. All personnel as well as other systems that could be inherently impacted by the testing routine shall suspend their work on the system or equipment to be tested.

- **Note:** The LOTO manager shall suspend access to the group lockbox during the testing activity.

Any LOTO holder may request a release for the testing of equipment, and the requesting LOTO holder shall be on site during the test. Only one qualified holder may request a release for testing on the same equipment or component at a given time. Prior to releasing the LOTO for testing all holders shall sign off of the applicable IR — Safety Forms G-13 and/or G-13B — and the following shall be completed:

- 1) Review scope of testing with LOTO manager.
- 2) Tagging authority shall document the testing process in Safety Form G-11, "Tagging Authority List."
- 3) LOTO manager shall review isolation boundaries.
- 4) LOTO manager shall determine if the equipment can be released for testing.



- 5) LOTO manager shall confirm locks are removed from lockbox and initiate release of locking devices including any grounds that are shown on the IR.
- 6) LOTO manager and tagging authority shall remove locks, tags, and LOTO devices.
- 7) A Pre-Job Briefing shall be conducted with affected personnel prior to testing/repositioning to discuss work scope, protection boundaries, hazards/controls, etc.
- 8) Holder notifies tagging authority when testing/repositioning is complete.
- 9) Equipment shall be placed back under the original LOTO condition if further servicing or maintenance is deemed necessary.

#### 24.6 Modify Lockout/Tagout (LOTO) Boundary

The modification of a boundary defines the process for making changes to LOTO boundaries including increasing and decreasing isolation boundaries.

**Note:** If any device of the active boundary is decreased, work shall be suspended prior to releasing any isolation device.

When isolation devices are added to increase the boundary, current LOTO holders shall not remain on the active LOTO. Any modifications to a LOTO require that all individuals that are currently working under the LOTO or anyone intending to work on the isolation comply with the following points:

- Changes to LOTO boundaries shall be documented on the IR.
- The LOTO manager shall approve any modifications to the existing LOTO boundaries, and such changes shall be effectively communicated to all affected tagging authorities and LOTO holders.
- When a LOTO boundary is increased, all workers shall review the associated IRs and devices, per the new boundary modification, prior to working beyond the scope of the original boundary.
- All LOTO holders shall review and understand the entire boundary of the isolation prior to conducting service or maintenance activities.

#### 24.7 Procedure Modification

This procedure shall periodically require review and possible modification. In order to accomplish this, a LOTO committee shall be established by the Burns & McDonnell and/or its subsidiaries' Director of Corporate Safety & Health. The committee — comprised of CDB/GP Division/Safety — shall be responsible for periodically reviewing this procedure and issuing modifications, as needed, to confirm compliance with the current OSHA regulations and applicable industry standards concerning the LOTO Program. Any such changes shall be discussed and reviewed by senior division management prior to the issuance of the changes for use.

If a specific project team finds it necessary to modify this procedure due to project-specific conditions, the project manager shall submit a completed Safety Form C-14, "Amendment Form," with all necessary justification and support documentation covering the applicable written changes to the startup department manager and the GP Safety lead to discuss those modifications, along with the need for the changes.

If approved, these changes shall be issued as an amendment to the Burns & McDonnell and/or its subsidiaries' LOTO Program for that specific project.





## 24.8 LOTO Awareness Training

Each employee whose work operations are, or may be, in an area where Energy Control Procedures may be used, shall be instructed during the project site orientation or annual compliance training on the Burns & McDonnell and/or its subsidiaries' LOTO Procedures as well as pertinent client energy-isolation requirements.

Instruction shall include, but shall not be limited to, the following:

- Purpose and use of the Energy Control Procedure.
- Recognition and installation of LOTO devices.
- Duty in executing Isolation Procedures.
- Duty of person in charge.
- Authorized and unauthorized removal of locks/tags.
- Lockbox and satellite box requirements.
- Enforcement of execution of LOTO Procedures.
- Release of stored energy.
- Alerting techniques.
- Personnel accounting methods.
- Temporary protective grounding equipment needs and requirements.
- Safe use of test instruments.



## **Chapter 25**

# **Blasting and Explosives**

### **Chapter Contents**

#### **25 Blasting and Explosives**

##### **[Blasting and Explosives — Resources](#)**



## **Blasting and Explosives**

### **Blasting and Explosives**

- General Provisions**
- Blaster Qualifications**
- Surface Transportation of Explosives**
- Underground Transportation of Explosives**
- Storage of Explosives and Blasting Agents**
- Loading of Explosives or Blasting Agents**
- Initiation of Explosive Charges — Electric Blasting**
- Use of Safety Fuses**
- Use of Detonating Cord**
- Firing the Blast**
- Inspection After Blasting**
- Misfires**
- Underwater Blasting**
- Blasting in Excavation Work Under Compressed Air**
- Definitions Applicable to This Chapter**



## Chapter 26

### Hazard Communication Program

#### Chapter Contents

#### 26 Hazard Communication Program

##### 26.1 Hazard Communication Program (HAZCOM)

###### 26.1.1 Hazard Communication Program (HAZCOM)

###### 26.1.2 Introduction

###### 26.1.3 Safety Data Sheets (SDSs)

###### 26.1.4 Labeling

###### 26.1.5 Training

###### 26.1.6 Emergencies

###### 26.1.7 Hazardous Material Identification System (HMIS)

###### Table 26-1 — HMIS Protective Equipment Examples

###### 26.1.8 NFPA 704 Labeling System

###### Figure 26-1 — NFPA 704M Label

###### 26.1.9 Occupational Safety & Health Administration (OSHA) Required Labeling for Globally Harmonized Systems (GHS)

###### Figure 26-2 — Required Label Information

###### Figure 26-3 — GHS Labeling Guide

##### 26.2 HAZCOM Appendix

###### 26.2.1 Asbestos

###### 26.2.2 Arsenic (Inorganic)

###### 26.2.3 Benzene

###### 26.2.4 Cadmium

###### 26.2.5 Chromium VI

###### 26.2.6 Formaldehyde

###### 26.2.7 Lead

###### 26.2.8 Silica

###### 26.2.8.1 Silica Dust in Construction

###### 26.2.8.1.1 General

###### 26.2.8.1.2 Types of Materials Where Silica Can be Found

###### 26.2.8.1.3 Types of Operations Where Silica Dust is Generated

###### 26.2.8.1.4 Silica Exposure Control Plan (SECP)

###### 26.2.8.1.5 Exposure Control Plan (ECP) Training

###### 26.2.8.1.6 Silica Exposure Controls

###### 26.2.8.2 Silica Dust Control Measures

###### 26.2.8.2.1 Visible and Respirable Dust

###### 26.2.8.2.2 Wet Cutting

###### 26.2.8.2.2.1 Maintenance

###### 26.2.8.2.2.2 Electrical Safety

###### 26.2.8.2.3 Vacuum Dust Collection Systems

###### 26.2.8.3 Adjustments in Work Methods and Equipment

###### 26.2.8.3.1 Employee Positioning

###### 26.2.8.3.2 Grinding-Wheel Size

###### 26.2.8.3.3 Construction Work Methods



26.2.8.3.4 **Construction — Specified Exposure Control Methods**

**Table 26-2 — Exposure Control Tasks and Protection**

26.2.8.3.5 **Fully and Properly Implementing Controls Specified on Table 26-2**

26.2.8.3.6 **Respiratory Protection Requirements on Table 26-2**

26.2.8.4 **Alternate Exposure Control Methods — Methods of Compliance — Hierarchy of Controls**

26.2.8.4.1 **Alternate Exposure Control Methods**

26.2.8.4.2 **Permissible Exposure Limit (PEL)**

26.2.8.4.3 **Exposure Assessment**

26.2.8.4.3.1 **General**

26.2.8.4.3.2 **Performance Option**

26.2.8.4.3.3 **Scheduled Monitoring Option**

26.2.8.4.4 **Reassessment of Exposures**

26.2.8.5 **Abrasive Blasting**

26.2.8.6 **Medical Surveillance**

26.2.8.7 **Recordkeeping**

26.2.8.8 **Respiratory Protection**



## **26.1 Hazard Communication Program**

### **26.1.1 Hazard Communication Program**

The purpose of the Hazard Communication Program (HAZCOM) is to safeguard the health of workers by providing a guide for safe compliance, and information concerning health and physical hazards of the chemical materials in use in the workplace.

Burns & McDonnell and/or its subsidiaries are committed to performing work in the safest manner possible while providing the safest possible working conditions for all employees. It is the policy of Burns & McDonnell and/or its subsidiaries that employees receive training on their company's HAZCOM and agree to abide by all of its requirements.

#### **26.1.2 Introduction**

Chemicals are often used during project work and some of these chemicals may pose a hazard to health and cause physical harm if used improperly or carelessly. These chemicals may be used safely with proper knowledge and recognition of the hazards.

While risks of exposure to chemical hazards exist, they can be minimized and controlled. Each potentially exposed employee shall receive chemical hazard training, access to HAZCOM information, and the applicable Safety Data Sheets (SDS).

Burns & McDonnell and/or its subsidiaries' employee owners shall comply with the Burns & McDonnell HAZCOM contained in Chapter 8 of the Corporate Policy Manual. All Burns & McDonnell and/or its subsidiaries' employee owner questions or inquiries regarding the program or chemicals used by company personnel shall be directed to the Corporate Health & Safety Department.

The project manager shall inform any independent contractors retained by Burns & McDonnell and/or its subsidiaries of the presence of hazardous chemicals known to be in the areas where said contractor(s) will be working. This information shall be provided before they begin work.

On projects where multiple employers are contracted by Burns & McDonnell and/or its subsidiaries, a master SDS compilation along with a chemical inventory list — see Safety Form Z-1, "Hazardous Materials Inventory & SDS Listing" — shall be kept for the project. The Hazardous Materials Inventory & SDS Listing identifies each chemical or mixture and the conditions in which that chemical or mixture is stored or used. The list is updated as hazardous chemicals or mixtures are removed from, or introduced to, the project.

During the Pre-Construction Meeting, subcontractors to Burns & McDonnell and/or its subsidiaries shall be informed that for each chemical and/or product brought onto the project by the Project Entity, a copy of the applicable SDS shall be submitted to Burns & McDonnell and/or its subsidiaries at the time of that chemical's arrival. It shall be the responsibility of the subcontractor to notify Burns & McDonnell and/or its subsidiaries. An SDS compilation of all chemicals or products submitted to Burns & McDonnell and/or its subsidiaries shall be maintained along with a title sheet listing these chemicals. All workers on site shall be made aware of this requirement, as well as the location of the SDS compilation, and all workers shall be granted free access to the SDS compilation.

#### **26.1.3 Safety Data Sheets (SDSs)**

Project management shall keep an SDS on file for each hazardous chemical brought onto the project site.





If workers are not able to read English, special effort shall be undertaken to explain the necessary information to them verbally, in their language. Bilingual supervision and/or instructors may be utilized, if needed.

SDSs shall be accessible in the project-management trailer/office, during normal work hours. Applicable SDSs shall also be maintained and available at each subcontractor's/contractor's project-site office.

#### **26.1.4 Labeling**

All containers of hazardous chemicals brought onto the project site shall be labeled. The labels shall identify the hazardous chemicals with the appropriate hazard warnings associated with exposure to that chemical. Labels shall be in English, legible, and prominently displayed on the container. Employees shall not deface or remove warning labels from containers of hazardous chemicals. Employees who deface hazardous warning labels are subject to disciplinary action.

The Hazardous Material Identification System (HMIS) shall be utilized on containers in which transferred hazardous chemicals are stored. The HMIS shall also be used to identify specific hazards in buildings and on projects sites.

Any Project Entity transferring a hazardous chemical from a labeled container to a container that is not labeled — e.g., a can, bucket, bottle, etc. — shall affix the appropriate label onto the new container. Transferred chemicals shall never be left unattended in an unlabeled container. Any unlabeled container found shall be disposed of properly to avoid potential exposure to an unknown chemical.

#### **26.1.5 Training**

All employees who may potentially be exposed to hazardous chemicals under normal operating conditions, while performing non-routine tasks, or under foreseeable emergencies, shall receive training on how to safely use any hazardous chemicals present in their work areas.

All new and transferred employees shall receive training before performing duties in work areas or on projects where hazardous chemicals are present, whenever a new chemical hazard is introduced into their work area, and/or when a changed process alters the threat of chemical exposure.

#### **26.1.6 Emergencies**

If a chemical emergency occurs, the Emergency Action Plan — refer to Safety Form E-1, "Emergency Action Plan" — shall go into effect. Burns & McDonnell and/or its subsidiaries shall notify all appropriate personnel and contractors and shall provide support during the notification of local authorities, as well as during evacuation, spill response, clean up, and return to operations. The designated person indicated in the Emergency Action Plan shall be responsible for directing and coordinating all relief efforts.

If an employee comes into contact with a hazardous chemical and requires medical treatment, a copy of the chemical's SDS shall be forwarded to the hospital immediately upon request.

#### **26.1.7 Hazardous Material Identification System (HMIS)**

The HMIS helps to satisfy the Hazard Communication Standard (HCS) requirements by providing a format for hazard determinations, offering a basic written HAZCOM, and simplifying the worker training and information process. The HMIS provides clear, recognizable information to workers by standardizing the presentation of chemical information. This is accomplished through the use of color bar system and color codes corresponding to the hazards of a product, assigned numeric ratings indicating the degree of hazard, and alphabetical codes designating the appropriate personal protective equipment (PPE) workers are to wear while handling the material.

**Table 26-1 HMIS Protective Equipment Examples**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | PROTECTIVE EQUIPMENT EXAMPLES |                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                               |                                                           |
| <div> <div>Chemical Name</div> <div> <div>Health</div> <div>0</div> </div> <div> <div>Flammability</div> <div>0</div> </div> <div> <div>Physical Hazards</div> <div>0</div> </div> <div> <div>Personal Protection</div> <div>0</div> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                          | A                             | Safety Glasses                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | B                             | Safety Glasses and Gloves                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | C                             | Safety Glasses, Gloves and an Apron                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D                             | Face Shield, Gloves and an Apron                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | E                             | Safety Glasses, Gloves and a Dust Respirator              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | F                             | Safety Glasses, Gloves, Apron and a Dust Respirator       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | G                             | Safety Glasses, a Vapor Respirator                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | H                             | Splash Goggles, Gloves, Apron and a Vapor Respirator      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | I                             | Safety Glasses, Gloves and a Dust/Vapor Respirator        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | J                             | Splash Goggles, Gloves, Apron and a Dust/Vapor Respirator |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | K                             | Airline Hood or Mask, Gloves, Full Suit and Boots         |
| L-Z Custom PPE Specified by Employer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | N                             | Splash Goggles                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | O                             | Face Shield & Eye Protection (Safety glasses)             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | P                             | Gloves                                                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Q                             | Boots                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | R                             | Apron                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | S                             | Full Body Suit                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | T                             | Dust Mask                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | U                             | Vapor Respirator (APR)                                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | W                             | Combination Dust & Vapor Respirator                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Y                             | Full Face Respirator                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Z                             | Airline Hood or Mask (Supplied Air)                       |
| <b>Notes:</b> <ul style="list-style-type: none"> <li>This lettering system indicates the level of PPE to be worn to work safely with a material.</li> <li>Each of the individual PPE icons have been designated with a corresponding letter of the alphabet ranging from 'm' through 'z.'</li> <li>An employer can list appropriate letters to customize the PPE required for handling a specific material.</li> <li>HMIS allows an "*" to designate a material as a carcinogen or as a material known to have an adverse effect given chronic exposure. This designation would appear next to the numerical ranking within the blue health bar.</li> </ul> |                               |                                                           |

**26.1.8 NFPA 704 Labeling System**

The "NFPA 704: Standard System for the Identification of the Hazards of Materials for Emergency Response" is a standard maintained and revised by the National Fire Protection Association (NFPA). It defines the fire diamond used by emergency personnel to quickly and easily identify the risks posed by hazardous materials. This helps determine what, if any, special equipment is to be used, procedures followed, or precautions taken during the initial stages of an emergency response.

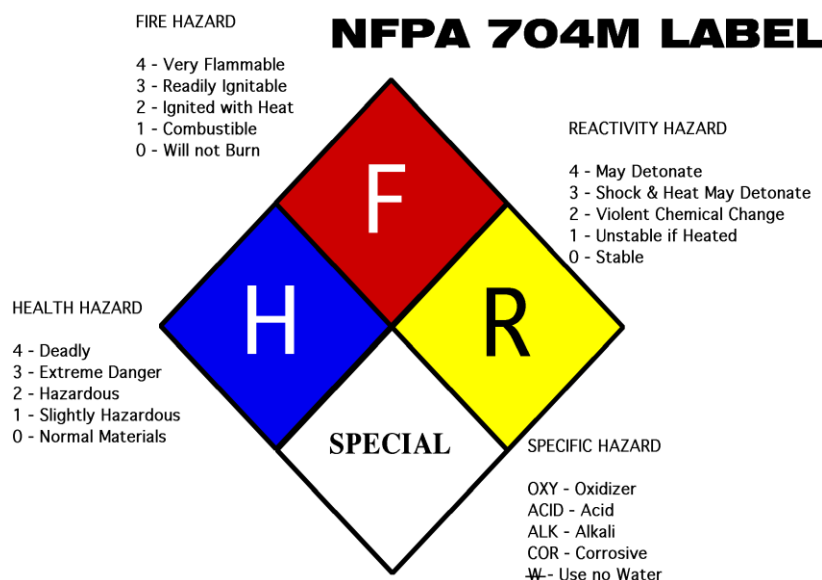
The four divisions are typically color-coded as follows:

- **Blue** — Indicates level of health hazard.
- **Red** — Indicates level of flammability.
- **Yellow** — Indicates level of (chemical) reactivity.
- **White** — Contains special codes for unique hazards.

Health, flammability, and reactivity are each rated on a scale ranging from zero (no hazard; normal substance) to four (severe risk).

See the latest version of NFPA 704 for the specifications of each classification.

**Figure 26-1 NFPA 704M Label**



#### 26.1.9 Occupational Safety and Health Administration (OSHA) Required Labeling for GHS

Figure 26-2, "Required Label Information," provides a sample of the new Globally Harmonized System (GHS)-style labeling using sulfuric acid as the material. There are six required-information areas as follows:

- **Product Identifier** — This represents the name or number used for a hazardous chemical on a label or in the SDS. It provides a unique means by which the user can identify the chemical. The product identifier used shall permit cross-references to be made among the list of hazardous chemicals required in the written HAZCOM, the label, and the SDS.



- **Pictograms** — A pictogram refers to a composition that may include a symbol along with other graphic elements, such as a border, background pattern, or color intended to convey specific information about the hazards of a chemical.
  - There are nine pictograms designated under the HCS for application to a hazard category.
  - As of June 1, 2015, the HCS requires pictograms on labels to alert users of chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard. The pictogram on the label is based on the chemical hazard classification.
- **Signal Word** — The signal word refers to a word used to indicate the relative severity of the hazard and is used on the label to alert the reader to a potential hazard. The signal words used in this category are "Danger" and "Warning." "Danger" is used for more severe hazards, while "Warning" is used for less severe hazards.
- **Hazard Statement** — This is a statement assigned to a hazard class and category describing the nature of the hazard of a chemical, including — where appropriate — the degree of hazard.
- **Precautionary Statement** — A precautionary statements is a phrase describing the recommended measures that must be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling.
- **Supplier Information** — The chemical manufacturer, importer, or distributor shall ensure information provided is in accordance with the HCS — Appendix C. For each hazard class and associated hazard category for the hazardous chemical, the information shall be prominently displayed and in English — other languages may also be included if appropriate.

Signal words, hazard statements, and pictograms have all been harmonized, and assigned to each hazard class and category in the GHS.

Once a chemical has been classified, the relevant harmonized information can be found in HAZCOM 2012, Appendix C.

Figure 26-2 Required Label Information

|                        |                                                                                                                                                                                                       |          |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>2</b>               | <b>1</b> Sulfuric Acid                                                                                                                                                                                | <b>2</b> |
|                        | <b>3</b> Danger! May be harmful if swallowed.<br>Causes severe skin burns and eye<br><b>4</b> damage. Fatal if inhaled. Harmful to<br>aquatic life.                                                   |          |
|                        | Do not breathe dust/fume/gas/mist/vapors/spray. Wear<br>protective gloves/protective clothing/eye protection/face<br>protection. Wear respiratory protection.                                         |          |
| <b>5</b>               | <b>5</b> IF IN EYES: Rinse cautiously with water for several minutes. Remove contact<br>lenses, if present and easy to do. Continue rinsing. Immediately call a POISON<br>CENTER or doctor/physician. |          |
|                        | In case of fire Use water spray, alcohol-resistant foam, dry chemical or carbon<br>dioxide.                                                                                                           |          |
|                        | See Material Safety Data Sheet for further details regarding safe use of this product.                                                                                                                |          |
|                        | <b>6</b> Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA Telephone : +18003255832                                                                                                           |          |
| <b>1</b>               | <b>4</b>                                                                                                                                                                                              |          |
| <b>2</b>               | <b>5</b>                                                                                                                                                                                              |          |
| <b>3</b>               | <b>6</b>                                                                                                                                                                                              |          |
| Product Identifier     | Hazard Statements                                                                                                                                                                                     |          |
| Pictograms             | Precautionary Statements                                                                                                                                                                              |          |
| Signal word, "Danger!" | Supplier Information                                                                                                                                                                                  |          |

The Globally Harmonized System of Classification provides standardized criteria for hazard classification using the categories of physical, health, and environment. The Occupational Safety and Health Administration (OSHA) has added the category for hazards not elsewhere classified. The system also requires hazard communication for employees using standardized labels, pictograms, and SDSs.

Figure 26-3 GHS Labeling Guide

# GHS LABELING GUIDE

United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

### GHS LABEL ELEMENTS

**GHS STANDARDIZED LABEL ELEMENTS**

The pictograms, signal words, and hazard statements can be easily selected from Annex 1 of the GHS Purple Book. These descriptive elements are not subject to variation, and should appear on the GHS label as indicated in the GHS for each hazard category or class in the system. The use of symbols, signal words or hazard statements other than those that have been assigned to each of the GHS hazards would be contrary to harmonization.

**OTHER GHS LABEL ELEMENTS**

Supplemental information: non-harmonized information.

**Product Identifier (ingredient disclosure):** Name or number used for a hazardous product on a label or in the SDS.

**CHEMICAL X**

**HAZARD**

Hazard by inhalation and in contact with skin, irritating to skin. Causes severe eye irritation.

**PRECAUTIONARY STATEMENTS**

Wear protective clothing and eye protection. Wash face with water. Wash clothing with soap and water. Do not breathe dust. Do not get in eyes, on skin, or on clothing. Do not swallow.

**FIRST AID**

Immediately remove any clothing contaminated by the product. Get emergency medical care. Wash eyes with fresh water. Wash affected area of body thoroughly with soap and fresh water.

ACME Chemicals, 123 Main St., Anytown, NY 12345, 800-555-1234

**Signal Words:** "Danger" or "Warning" are used to emphasize hazards and indicate the relative level of severity of the hazard, assigned to a GHS hazard class and category.

**Supplier Identification:** The name, address and telephone number should be provided on the label.

**Hazard Statements:** Standard phrases assigned to a hazard class and category that describe the nature of the hazard.

**Precautionary Statements:** Measures to minimize or prevent adverse effects.

### GHS Pictograms and Hazard Classes

| Pictogram | Hazard Class                |
|-----------|-----------------------------|
|           | Flammable                   |
|           | Explosive                   |
|           | Acute Toxicity (Fatal)      |
|           | Corrosive                   |
|           | Stable Under Pressure       |
|           | Carcinogen                  |
|           | Respiratory Sensitizer      |
|           | Reproductive Toxicity       |
|           | Target Organ Toxicity       |
|           | Aspiration Toxicity         |
|           | Environmental Toxicity      |
|           | Irritant                    |
|           | Acute Toxicity (Harmful)    |
|           | Acute Toxicity (Toxic)      |
|           | Acute Toxicity (Very Toxic) |
|           | Acute Toxicity (Fatal)      |

### Transport Pictograms

\* For the class or explosion, "X" is to be replaced by the indication of the compatibility group or to be left blank if explosion is the subsidiary risk.

| Pictogram | Transport Hazard Class                                                             |
|-----------|------------------------------------------------------------------------------------|
|           | Flammable Liquid                                                                   |
|           | Flammable Gas                                                                      |
|           | Flammable Solid                                                                    |
|           | Self-Heating Substances                                                            |
|           | Pyrophoric (Flammability Combustible)                                              |
|           | Self-Heating Substances                                                            |
|           | Explosives                                                                         |
|           | Substances, which in contact with water, emit flammable gases (Dangerous When Wet) |
|           | Disabling Gases                                                                    |
|           | Disabling Liquids                                                                  |
|           | Disabling Solids                                                                   |
|           | Explosive Division 1.1, 1.2, 1.3                                                   |
|           | Explosive Division 1.4                                                             |
|           | Explosive Division 1.5                                                             |
|           | Explosive Division 1.6                                                             |
|           | Compressed Gases                                                                   |
|           | Acute Toxicity (Poison)                                                            |
|           | Acute Toxicity (Toxic)                                                             |
|           | Acute Toxicity (Very Toxic)                                                        |
|           | Acute Toxicity (Fatal)                                                             |
|           | Corrosive                                                                          |
|           | Organic Peroxides                                                                  |
|           | Marine Pollutant                                                                   |

### GHS Label Example

**Combination packaging for a Category 3 Flammable Liquid**

Additional examples of arrangements of the GHS labels may be found in Annex 7 of the GHS.

**1-METHYL-2-PYRROLIDONE**

**HAZARD**

Flammable liquid and vapor. May be irritating to skin.

**PRECAUTIONARY STATEMENTS**

Keep away from heat, open flames, and other sources of ignition. Do not breathe vapors. Do not get on skin or in eyes. Do not swallow.

**FIRST AID**

Remove contaminated clothing. Wash skin with soap and water. Get medical attention if symptoms persist.

ACME Chemicals, 123 Main St., Anytown, NY 12345, 800-555-1234

**Outer Packaging**

Box with a flammable liquid transport label. Only the UN transport marking is shown and is required for outer packaging.

**Inner Packaging**

Plastic bottle with GHS hazard warning label.

Creative Safety Supply | phone: 1-866-777-1360 | fax: 330-777-0818  
www.creativesafety.com | email: info@creativesafety.com





## 26.2 HAZCOM Appendix

### 26.2.1 Asbestos

[Scope and Application](#)

[Definitions](#)

[Permissible Exposure Limits \(PEL\)](#)

[Multi-Employer Work Sites](#)

[Regulated Areas](#)

[Exposure Assessment and Monitoring](#)

[Engineering Controls and Work Practices](#)

[Respiratory Protection](#)

[Protective Clothing](#)

[Hygiene Facilities and Practices](#)

[Communication of Hazards](#)

[Housekeeping](#)

[Medical Surveillance](#)

[Recordkeeping](#)

[Competent Person](#)

Each employer who has a workplace or work operation where exposure monitoring is required shall perform monitoring to accurately determine the airborne concentrations of asbestos to which employees may be exposed.

Employers shall also ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fibers per cubic centimeter of air (0.1 f/cc) as an 8-hour time-weighted average (TWA).

In addition, employers shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1 fiber per cubic centimeter (1f/cc) as averaged over a sampling period of 30 minutes.

Respirators shall be used in each of the following circumstances:

- All Class I asbestos jobs.
- All Class II work where an asbestos-containing material is not removed substantially intact.
- All Class II and III work not using wet methods, except on sloped roofs.
- All Class II and III work without a negative exposure assessment.
- All Class III jobs where thermal system insulation or surfacing asbestos-containing, or presumed asbestos-containing, material is cut, abraded, or broken.
- All Class IV work within a regulated area where respirators are required.
- All work where employees are exposed above the permissible exposure limit (PEL) or short-term exposure limit (STEL).
- Emergencies.



Employers shall provide and require the use of protective clothing — such as coveralls or similar whole-body clothing, head coverings, gloves and foot coverings — for:

- Any employee exposed to airborne asbestos exceeding the PEL or STEL.
- Work conducted without a negative exposure assessment.
- Any employee performing Class I work involving the removal of over 25 linear or 10 square feet — 10 square meters — of thermal system insulation or surfacing asbestos-containing, or presumed asbestos-containing, materials.

Employers shall provide a Medical Surveillance Program for all employees who — for a combined total of 30 or more days per year — engage in Class I, II, or III work or are exposed at or above the PEL or STEL; or who wear negative-pressure respirators.

#### 26.2.2 Arsenic (Inorganic)

[Scope and Application](#)

[Definitions](#)

[Permissible Exposure Level](#)

[Exposure Monitoring](#)

[Regulated Area](#)

[Methods of Compliance](#)

[Respiratory Protection](#)

[Protective Work Clothing and Equipment](#)

[Housekeeping](#)

[Reserved](#)

[Hygiene Facilities and Practices](#)

[Medical Surveillance](#)

[Worker Information and Training](#)

[Recordkeeping](#)

#### 26.2.3 Benzene

[Scope and Application](#)

[Definitions](#)

[Permissible Exposure Limits \(PEL\)](#)

[Regulated Areas](#)

[Exposure Monitoring](#)

[Medical Surveillance](#)

Employee exposure to gaseous and liquid benzene shall be limited to a PEL of 1 part per million (ppm) as an 8-hour TWA, and an STEL of 5 ppm as averaged over a period of 15 minutes.

A determination of each employee's exposure shall be made from breathing-zone air samples that are representative of full-shift, 8-hour TWA, and 15-minute short-term exposures associated with operations which are most likely to produce exposures above the STEL for each shift. Employers shall conduct periodic monitoring for employees exposed above the action level, PEL, or STEL. Employers shall also monitor for employee exposure when there may be new or additional exposures.

Employers shall institute engineering and work practice controls to reduce and maintain employee exposure at or below the PEL.



Employers shall provide each employee with an appropriate respirator which shall be used when engineering and work practice controls are infeasible or insufficient to reduce employee exposure to permissible levels. When employees may have eye or skin contact with liquid benzene, employers shall also select and provide appropriate protective clothing or other equipment.

Employers shall institute a Medical Surveillance Program for employees who are, or may be, exposed to benzene at or above the PEL and other thresholds for certain numbers of days annually. Employers shall make medical examinations and consultations, including certain laboratory tests, available to each covered employee before initial assignment, at least annually, and in certain other situations. Employees required to use respirators shall also be provided pulmonary function tests every three years.

A medical exam following exposure in an emergency situation may require special elements or actions, including a urinary phenol test, blood tests, and physician's referral to a hematologist/internist for further evaluation or treatment. Employers shall implement a medical removal plan, including medical removal protection benefits, for employees referred to a hematologist/internist.

The employer shall establish a regulated area wherever exposures to concentrations of benzene may exceed, or be reasonably expected to exceed, the PEL or STEL. Regulated areas shall be determined in a manner that minimizes the number of employees within the regulated area, and access shall be limited to authorized persons. Labels or other appropriate forms of warning shall be provided for containers of benzene.

Employees shall also be provided with information and training on benzene at the time of initial assignment and, for employees who may be exposed at or above the action level, at least annually thereafter. The employer shall establish and maintain an accurate record of initial monitoring data or objective data relied upon in place of certain initial monitoring provisions, and a record for each employee subject to medical surveillance requirements.

#### 26.2.4 Cadmium

##### Scope

##### Definitions

##### Permissible Exposure Limits (PEL)

##### Exposure Assessment and Monitoring

##### Regulated Areas

##### Engineering Controls and Work Practices

##### Respirator Protection

##### Emergency Situations

##### Protective Clothing

##### Hygiene Areas and Practices

##### Housekeeping

##### Medical Surveillance

##### Communication of Hazards

##### Recordkeeping

##### Observation of Monitoring

Where a determination has been conducted showing the possibility of employee exposure to cadmium at or above the action level of 2.5 micrograms per cubic meter of air ( $2.5 \mu\text{g}/\text{m}^3$ ) calculated as an 8-hour TWA, the following is required at a minimum.

Employers shall ensure that no employee is exposed to cadmium at concentrations greater than 5 micrograms per cubic meter of air ( $5 \mu\text{g}/\text{m}^3$ ) averaged over an 8-hour period — i.e., the PEL.



Whenever there has been a change of equipment, process, control, personnel, or a new task has been initiated which may result in additional employees being exposed to cadmium at or above the action level, or may result in employees already exposed at or above the action level being exposed to cadmium above the PEL, the employer shall conduct additional monitoring.

Training shall be provided in accordance with the HCS and additional training shall be provided for employees exposed at or above the action level.

Where exposure to cadmium exceeds the PEL, the employer is required to establish and implement a written compliance program prior to the start of the job.

Where employees are required to use respirators, the employer shall implement a Respiratory Protection Program.

Where airborne concentrations of cadmium equal or exceed the action level, an initial medical examination with biological monitoring shall be made available to each employee within 30 days after initial assignment to the area.

#### 26.2.5 Chromium VI

[Scope](#)

[Action Level](#)

[Permissible Exposure Limit \(PEL\)](#)

[Exposure Assessment and Monitoring](#)

[Regulated Areas](#)

[Engineering Controls and Work Practices](#)

[Respiratory Protection](#)

[Protective Clothing](#)

[Hygiene Areas](#)

[Housekeeping](#)

[Medical Surveillance](#)

[Communication of Hazards](#)

[Recordkeeping](#)

[Exhibit A — Available Engineering Controls and Work Practices](#)

The employer may be exempt from chromium (VI) requirements where the employer has objective data demonstrating that a material containing chromium or a specific process, operation, or activity involving chromium cannot release dusts, fumes, or mists of chromium (VI) in concentrations at or above 0.5 micrograms per cubic meter ( $0.5 \mu\text{g}/\text{m}^3$ ) as an 8-hour TWA under any expected conditions of use. Otherwise, the following is required at a minimum.

Employee exposure to hexavalent chromium — i.e., chromium VI — shall be limited to an airborne concentration of 5 parts chromium (VI) per cubic meter of air ( $5 \mu\text{g}/\text{m}^3$ ) as an 8-hour TWA.

Employers shall determine each employee's initial 8-hour TWA exposure to chromium (VI) through breathing-zone air samples for each shift, each job classification, and each work area. Employers shall conduct periodic monitoring for employees exposed at or above the action level or the TWA and shall conduct additional monitoring when necessary. Exposure may be determined through a performance approach, rather than monitoring. Employees have the right to observe monitoring and shall be notified of results. Employers shall establish a regulated area wherever exposures to airborne concentrations of chromium (VI) may exceed the TWA. Regulated areas shall be demarcated, and access shall be limited to authorized persons.



Employers shall institute engineering and work practice controls to reduce and maintain employee exposure at or below the TWA. Employers shall not be permitted to rotate employees to comply with PELs. Employers shall provide each employee with an appropriate respirator which shall be used when engineering and work practice controls are infeasible or insufficient to reduce employee exposure to permissible levels. Where respirator use is required, employers shall implement a Respiratory Protection Program. When employees might experience chromium (VI)-induced skin or eye irritation, employers shall also provide appropriate personal protective clothing and equipment. Personal protective clothing and equipment shall be properly removed, stored, cleaned and replaced, and appropriate hygiene and housekeeping practices shall be followed.

Employers shall institute a Medical Surveillance Program for all employees who may be exposed to chromium (VI) at or above the action level for at least 30 days a year, or who show signs or symptoms associated with chromium (VI) exposure. Employers shall make medical examinations and consultations available to employees within 30 days after initial assignment, at least annually thereafter, and under other conditions. Employers shall make appropriate arrangements for emergencies, including providing respiratory protection and medical surveillance to employees under these conditions. Chromium (VI) training shall be included as part of the HCS. Recordkeeping is required by the chromium (VI) standard.

#### 26.2.6 Formaldehyde

**Scope**

**Action Level**

**Permissible Exposure Level (PEL)**

**Exposure Monitoring**

**Regulated Areas**

**Methods of Compliance**

**Respiratory Protection**

**Personal Protective Equipment (PPE)**

**Hygiene Protection**

**Housekeeping**

**Emergencies**

**Medical Surveillance**

**Hazard Communication**

**Worker Information and Training**

**Recordkeeping**

Employee exposure to formaldehyde shall be limited to 0.75 ppm as an 8-hour TWA and 2.0 ppm STEL as averaged over a period of 15 minutes. Employers shall identify all employees who may be exposed at or above the action level, or at or above the STEL, and shall measure or use objective data to determine the exposure of each employee so identified.

Periodic monitoring shall be conducted for employees exposed above the action level, 8-hour TWA, or 15-minute STEL. Exposure monitoring shall be required if an employer receives reports of signs or symptoms of respiratory or dermal — i.e., skin-related — conditions associated with formaldehyde exposure. Employees shall be notified of their exposure-monitoring results. Employers shall implement engineering and work practice controls to reduce and maintain employee exposures to formaldehyde to at or below the TWA and the STEL. When engineering and work practice controls are infeasible or insufficient to reduce employee exposure to permissible levels — such as during maintenance activities or vessel cleaning — employers shall provide employees with an appropriate respirator.

If there is any possibility that employees' eyes or skin may become splashed with solutions containing 1% or greater formaldehyde, protective clothing and equipment shall be provided, along with conveniently located eyewashes and quick-drench showers. Employers shall establish regulated areas and restrict



access to authorized employees wherever the concentration of airborne formaldehyde exceeds either the TWA or the STEL. Warning signs shall be posted at all entrances to these restricted areas. For operations involving formaldehyde liquids or gas, a preventive maintenance program shall be required to ensure that all leaks are repaired, and spills are cleaned promptly by employees wearing suitable protective equipment and trained in proper methods for cleanup and decontamination.

In the event of emergencies involving formaldehyde, a plan shall be implemented to ensure that appropriate procedures are followed to minimize injury and loss of life. A Medical Surveillance Program shall be required for employees exposed to formaldehyde in concentrations at or exceeding the action level or exceeding the STEL, as well as for employees who develop signs and symptoms of overexposure to formaldehyde, or who are exposed to formaldehyde in emergencies.

If a physician finds that significant irritation of the mucosa — i.e., mucous membranes — of the eyes or of the upper airways, respiratory sensitization, dermal irritation, or dermal sensitization and recommends restrictions or removal, the employer shall transfer, if possible, the employee to work having no or significantly less exposure to formaldehyde, and maintain the employee's current earnings, seniority, and other benefits.

Containers of formaldehyde shall be marked with precautionary labels. Employers shall provide training to employees on formaldehyde at the time of their initial assignment and annually thereafter. Employers shall establish and maintain accurate records of any objective data relied upon to support an exemption from requirements of the standard or used in place of initial monitoring; records of all measurements taken to monitor employee exposure to formaldehyde; and a record for each employee subject to medical surveillance requirements of this section.

#### 26.2.7 Lead

[Scope](#)

[Action Level](#)

[Permissible Exposure Limit \(PEL\)](#)

[Exposure Assessment and Monitoring](#)

[Engineering and Work Practice Controls](#)

[Respiratory Protection](#)

[Protective Work Clothing and Equipment](#)

[Housekeeping](#)

[Hygiene Facilities](#)

[Medical Surveillance](#)

[Medical Removal Program](#)

[Worker Information and Training](#)

[Signs](#)

[Recordkeeping](#)

[Observations of Monitoring](#)

Each employer who has a workplace or operation covered by this standard shall initially determine if any employee may be exposed to lead at or above the action level of 30 micrograms per cubic meter of air (30  $\mu\text{g}/\text{m}^3$ ) calculated as an 8-hour TWA.

Employers shall ensure that no employee is exposed to lead at concentrations greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{m}^3$ ) averaged over an 8-hour period — the PEL.

Whenever there has been a change of equipment, process, control, personnel, or a new task has been initiated that may result in additional employees being exposed to lead at or above the action level, or





may result in employees already exposed at or above the action level being exposed above the PEL, the employer shall conduct additional monitoring.

Training shall be provided in accordance with the HCS and additional training shall be provided for employees exposed at or above the action level.

Prior to the start of the job, each employer shall establish and implement a written compliance program.

Where employees are required to use respirators, the employer shall implement a Respiratory Protection Program.

Where airborne concentrations of lead equal or exceed the action level at any time, an initial medical examination consisting of blood sampling and analysis shall be made available for each employee prior to initial assignment to the area.

#### 26.2.8 Silica

[Scope and Application](#)

[Definitions](#)

[Specified Exposure Control Methods](#)

[Alternative Exposure Control Methods](#)

[Exposure Assessment](#)

[Methods of Compliance](#)

[Respiratory Protection](#)

[Housekeeping](#)

[Written Exposure Control Plan](#)

[Medical Surveillance](#)

[Communication of Respirable Crystalline Silica Hazards to Employees](#)

[Recordkeeping](#)

[Appendix A — Methods of Sample Analysis](#)

[Appendix B — Medical Surveillance Guidelines](#)

##### 26.2.8.1 Silica Dust in Construction

###### 26.2.8.1.1 General

This section addresses the control of employee exposures to respirable dust containing crystalline silica, which is known to cause silicosis, a serious lung disease, as well as increase the risk of lung cancer and other systemic diseases.

Quartz is the most common form of crystalline silica. In fact, it is the second most common surface material, accounting for almost 12% by volume of the earth's crust. Quartz is present in many materials in the construction industry, such as brick and mortar, concrete, slate, dimensional stone — granite, sandstone — stone aggregate, tile, and sand used for blasting. Other construction materials that contain crystalline silica include asphalt filler, roofing granules, plastic composites, soils, and to a lesser extent, some wallboard joint compounds, paint, plaster, caulking, and putty.

Construction sites often involve many operations occurring simultaneously that can generate respirable silica dust. Therefore, it is important and necessary to utilize effective controls — such as wet methods and/or vacuum dust collection — in order to minimize total exposures to silica-exposed tool operators or potential exposures to other employees.



#### 26.2.8.1.2 Types of Materials Where Silica Can Be Found:

- |                         |                            |                                  |
|-------------------------|----------------------------|----------------------------------|
| • Asphalt               | • Gunit/Shotcrete          | • Roof Tile — Concrete           |
| • Brick                 | • Mortar                   | • Roof Tile — Ceramic/Brick/Clay |
| • Cement                | • Paints containing silica | • Sand                           |
| • Concrete              | • Plaster                  | • Soil — Fill                    |
| • Concrete Block        | • Refractory — Mortar      | • Soil — Top                     |
| • Drywall               | • Stone***                 | • Refractory — Castable Material |
| • Fiber Cement Products | • Refractory Units         | • Stucco/EIF                     |
| • Grout                 | • Rock                     | • Terrazzo                       |

\*\*\*Including: granite, limestone, quartzite, sandstone, shale, slate, cultured, etc.

#### 26.2.8.1.3 Types of Operations Where Silica Dust is Generated:

- |                          |                    |                        |
|--------------------------|--------------------|------------------------|
| • Abrasive Blasting      | • Grinding         | • Sanding              |
| • Bush Hammering         | • Jackhammering    | • Scabbling            |
| • Cutting/Sawing         | • Milling          | • Scarifying           |
| • Demolishing/Disturbing | • Mixing/Pouring   | • Scraping             |
| • Drilling/Coring        | • Polishing        | • Sweeping/Cleaning Up |
| • Earthmoving            | • Sacking/Patching |                        |

The OSHA PEL limits worker exposures to 50 micrograms of respirable crystalline silica per cubic meter of air (50  $\mu\text{g}/\text{m}^3$ ), averaged over an eight-hour day. The OSHA action level for silica is set at 25 micrograms per cubic meter of air (25  $\mu\text{g}/\text{m}^3$ ), averaged over an 8-hour day.

#### 26.2.8.1.4 Silica Exposure Control Plan (SECP)

Project Entities shall develop a documented Silica Exposure Control Plan (SECP) for their scope of work. The objective of the SECP is to prevent, avoid or eliminate any risk of employee exposure to silica. In order to achieve this, an effective program shall be established.

The SECP shall include the following:

- Objectives of the SECP.
- Coordination of work activities, including a description of tasks in the workplace that involve exposure to respirable crystalline silica.
- Appointing an SECP administrator, and a competent person for silica hazard control.



- Risk identification, assessment, workplace walk-through survey of exposed areas, and non-exposed areas.
- Education and training.
- Work procedures, including:
  - A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task.
  - A description of housekeeping measures to limit employee exposure to respirable crystalline silica.
  - A description of the procedures used to restrict access to work areas in order to minimize the number of employees exposed.
- Hygiene Facilities and Decontamination Procedures.
- Health monitoring.
- Documentation.
- SECP Annual Review.

The written Exposure Control Plan (ECP) shall be available for each employee to examine and copy. Copies may be available electronically or physically, depending on location needs and requirements.

The written ECP shall be evaluated at least once per year and as necessary. Situations where reevaluation may be necessary include regulatory updates, changes in equipment, and exposure incidents.

#### 26.2.8.1.5 Exposure Control Plan (ECP) Training

A training program shall be provided for all employees who are exposed to action level respirable crystalline silica. Training shall ensure that employees covered by the written ECP are able to demonstrate knowledge and understanding of the following:

- The health hazards associated with respirable crystalline silica.
- The specific tasks in the workplace that could result in exposure to respirable crystalline silica.
- The specific measures taken to protect employees from exposure to crystalline silica.
- The contents of the respirable crystalline silica rule.
- The purpose of the Medical Surveillance Program.

#### 26.2.8.1.6 Silica Exposure Controls

Following the hierarchy of controls employers shall first use engineering controls, then work practices as the primary methods of keeping exposures at or below the PEL and shall use PPE/respirators as the last line of defense.



- Engineering controls include:
  - Wetting down work operations.
  - Using local exhaust ventilation — such as vacuums — to keep silica-containing dust out of the air and out of workers' lungs.
  - Enclosing an operation — i.e., process isolation.
- Work practices to control silica exposures include:
  - Wetting down dust before sweeping it up.
  - Using the water flow rate recommended by the manufacturer for a tool with water controls.
- Respirators are only permitted when engineering and work practice controls are unable to maintain exposures at or below the PEL.
  - When required to maintain respirable silica dust exposure levels at or below the PEL, respirators shall be provided to those employees who are exposed to the respirable crystalline silica.

For construction, Table 26-2 includes a list of common construction tasks along with exposure control methods and work practices which work well for those tasks and can be used to comply with the requirements of the standard.

#### 26.2.8.2 Silica Dust Control Measures

##### 26.2.8.2.1 Visible and Respirable Dust

Visible dust contains large particles that are easy to see. The tiny, respirable-sized particles — i.e., those that can get into the deep lung — containing silica, pose the greatest hazard and are not visible. Most dust-generating construction activities produce a mixture of visible and respirable particles.

Visible dust shall not be used as a general guide for improving dust suppression efforts. If visible dust is being generated, emissions of respirable silica are probably too high. Measures that control tool-generated dust at the source usually reduce all types of particle emissions, including respirable particles.

Visible dust shall not be exclusively relied upon to assess the extent of the silica hazard. Airborne respirable dust that is not visible to the naked eye may be present.

##### 26.2.8.2.2 Wet Cutting

Most stationary saws are equipped with a water basin that typically holds several gallons of water and a pump for recycling water for wet cutting. If a saw's water supply system is not currently operating, the manufacturer may be able to supply the necessary accessories to reactivate the saw's wet cutting capability. Most suppliers stock these accessories since water cooling prolongs the life of the saw blade and tool. Wet cutting is the most effective method for controlling silica dust generated during sawing because it controls the exposure at its source. Dust that is wet is less capable of becoming or remaining airborne.



#### 26.2.8.2.2.1 Maintenance

To minimize dust emissions from saws equipped for wet cutting, keep pumps, hoses and nozzles in excellent operating condition. Regular saw maintenance reduces silica exposures and ensures optimal operation of the equipment. Saws and dust control devices shall be on a routine maintenance schedule.

#### 26.2.8.2.2.2 Electrical Safety

Use ground-fault circuit interrupters (GFCIs) and watertight, sealable electrical connectors for electric tools and equipment on construction sites.

#### 26.2.8.2.3 Vacuum Dust Collection Systems

When wet methods cannot be implemented, one alternative is the use of vacuum dust collection (VDC) systems. Stationary masonry saws with VDC systems are commercially available and are capable of capturing a substantial amount of dust. With these systems, a vacuum pulls dust from the cutting point through special fittings connected directly to the saw — fixed-blade saws — or, alternatively, through a dust collection device connected to the back of the saw — plunge-cut saws. A dust collector — exterior hood — mounted to the back of a saw requires a high exhaust airflow to ensure good dust capture between the saw blade and dust collector.

With any type of vacuum system, employee protection from respirable dust is only as good as the filter in the vacuum. The less efficient the filter, the more respirable dust will pass through with the vacuum exhaust air. Locating vacuums as far from employees as possible is one way to help limit exposure.

For optimal dust collection, the following measures are recommended:

- Keep the vacuum hose clear and free of debris, kinks and tight bends. Maintain the vacuum at peak performance to ensure adequate airflow through the dust collector and vacuum hoses.
- On vacuums with manual back-pulse filter cleaning systems, activate the system frequently — i.e., several times per day. Empty collection bags and vacuums as frequently as necessary. Dispose of collected dust in a manner that prevents it from becoming re-suspended in the air.
- For best results, set up a regular schedule for filter cleaning and maintenance. For example, institute a rule to clean the filter or change the bag at each break. This will prevent pressure loss and ensure that exhaust airflow stays constant on the VDC system.
- Remember, the absence of visible dust does not necessarily mean that employees are adequately protected from silica exposure.

#### 26.2.8.3 Adjustments in Work Methods and Equipment

Adjustments in work methods and equipment, when possible, can lower exposure levels. For example, the use of jigs to increase the distance between the employee and the point of work can reduce exposure levels. Modifications in construction work methods for pouring, casting, finishing, and installing concrete can reduce the amount of grinding required, which, in turn, can lower exposures.

##### 26.2.8.3.1 Employee Positioning

Where possible, exposures can be reduced if employees work at a greater distance from the grinding point.



#### 26.2.8.3.2 Grinding-Wheel Size

Personnel shall, whenever possible, use a smaller rather than a larger wheel, and use the least aggressive tool that will do the job.

#### 26.2.8.3.3 Construction Work Methods

Where practical, employers can reduce employees' silica exposures by utilizing construction methods and techniques that minimize the amount of grinding required. Examples include:

- Taking steps to minimize pouring/casting flaws and defects by ensuring tighter fitting forms.
- Improved finishing, grinding on pre-cast panels outdoors before installation inside.
- Using factory installed chase and grooves on pre-cast structural concrete.
- Grinding is done while the concrete is still "green."
- Using a hammer and chisel or power chipping equipment to remove most of the mass before using a grinder to smooth the surface.

The use of compressed air to clean surfaces or clothing is strongly discouraged. Using compressed air to clean work surfaces or clothing can significantly increase employee exposure, especially in enclosed and semi-enclosed spaces. Cleaning shall be performed with a HEPA-filtered vacuum or by wet methods.

#### 26.2.8.3.4 Construction — Specified Exposure Control Methods

Table 26-2 is a flexible compliance option which effectively protects workers from silica exposures. It identifies 18 common construction tasks that generate high exposures to respirable crystalline silica and for each task, specifies engineering controls, work practices, and respiratory protection which effectively protect workers. Employers who fully and properly implement the engineering controls, work practices, and respiratory protection specified for a task on Table 26-2 shall not be required to measure respirable crystalline silica exposures to verify that levels are at or below the PEL for workers engaged in the Table 26-2 task(s).

- Table 26-2 in the construction standard matches 18 tasks with effective dust control methods and, in some cases, respirator requirements.
- Employers that fully and properly implement controls on Table 26-2 do not have to:
  - Comply with the PEL.
  - Conduct exposure assessments for employees engaged in those tasks.



Table 26-2 Exposure Control Tasks and Protection

| EQUIPMENT/TASK                             | ENGINEERING AND WORK PRACTICE CONTROL METHODS                                                                                                                                                                                                                                                                                                                                                                                         | REQUIRED RESPIRATORY PROTECTION AND MINIMUM APF |                |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------|
|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                       | ≤ 4 hour/shift                                  | > 4 hour/shift |
| Stationary Masonry Saws                    | <ul style="list-style-type: none"> <li>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>                                                                                                                                                                    |                                                 |                |
|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                       | None                                            | None           |
| Handheld Power Saws (Any Blade Diameter)   | <ul style="list-style-type: none"> <li>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust.</li> </ul>                                                                                                                                                                              |                                                 |                |
|                                            | When used outdoors                                                                                                                                                                                                                                                                                                                                                                                                                    | None                                            | APF 10         |
|                                            | When used indoors or in an enclosed area                                                                                                                                                                                                                                                                                                                                                                                              | APF 10                                          | APF 10         |
| Handheld Power Saws for Fiber Cement Board | <b>For tasks performed outdoors only:</b> <ul style="list-style-type: none"> <li>Use saw equipped with commercially available dust collection system.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector shall provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency.</li> </ul> |                                                 |                |
|                                            | When used outdoors                                                                                                                                                                                                                                                                                                                                                                                                                    | None                                            | None           |
| Walk-Behind Saws                           | <ul style="list-style-type: none"> <li>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>                                                                                                                                                                    |                                                 |                |
|                                            | When used outdoors                                                                                                                                                                                                                                                                                                                                                                                                                    | None                                            | None           |
|                                            | When used indoors or in an enclosed area                                                                                                                                                                                                                                                                                                                                                                                              | APF 10                                          | APF 10         |
| Drivable Saws                              | <b>For tasks performed outdoors only:</b> <ul style="list-style-type: none"> <li>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>                                                                                                                          |                                                 |                |
|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                       | None                                            | None           |
| Rig-Mounted Core Saws or Drills            | <ul style="list-style-type: none"> <li>Use tool equipped with integrated water delivery system that supplies water to cutting surface.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>                                                                                                                                                                       |                                                 |                |
|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                       | None                                            | None           |

Table 26-2 Exposure Control Tasks and Protection

| EQUIPMENT/TASK                                                                   | ENGINEERING AND WORK PRACTICE CONTROL METHODS                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | REQUIRED RESPIRATORY PROTECTION AND MINIMUM APF |                |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------|
|                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ≤ 4 hour/shift                                  | > 4 hour/shift |
| Handheld and Stand-Mounted Drills<br>(Including Impact and Rotary Hammer Drills) | <ul style="list-style-type: none"> <li>Use drill equipped with commercially available shroud or cowling with dust collection system.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector shall provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99%, or greater, efficiency and a filter-cleaning mechanism.</li> <li>Use a HEPA-filtered vacuum when cleaning holes.</li> </ul> | None                                            | None           |
|                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                 |                |
| Dowel Drilling Rigs for Concrete                                                 | <b>For tasks performed outdoors only:</b> <ul style="list-style-type: none"> <li>Use shroud around drill bit with a dust collection system. Dust collector shall have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</li> <li>Use a HEPA-filtered vacuum when cleaning holes.</li> </ul>                                                                                                                                                                                              | APF 10                                          | APF 10         |
|                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                 |                |
| Vehicle-Mounted Drilling Rigs for Rock and Concrete                              | <ul style="list-style-type: none"> <li>Use dust collection system with close-capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector.</li> </ul>                                                                                                                                                                                                                                                                                     | None                                            | None           |
|                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                 |                |
|                                                                                  | <ul style="list-style-type: none"> <li>Operate from within an enclosed cab and use water for dust suppression on drill bit.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                          | None                                            | None           |
| Jackhammers and Handheld Powered Chipping Tools                                  | <ul style="list-style-type: none"> <li>Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.</li> </ul>                                                                                                                                                                                                                                                                                                                                               |                                                 |                |
|                                                                                  | When used outdoors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | None                                            | None           |
|                                                                                  | When used indoors or in an enclosed area                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | APF 10                                          | APF 10         |
| Jackhammers and Handheld Powered Chipping Tools                                  | <ul style="list-style-type: none"> <li>Use tool equipped with commercially available shroud and dust collection system.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector shall provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</li> </ul>                                                                         |                                                 |                |
|                                                                                  | When used outdoors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | None                                            | None           |
|                                                                                  | When used indoors or in an enclosed area                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | APF 10                                          | APF 10         |
| Handheld Grinders for Mortar Removal<br>(i.e., Tuck Pointing)                    | <ul style="list-style-type: none"> <li>Use grinder equipped with commercially available shroud and dust collection system.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector shall provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.</li> </ul>                           |                                                 |                |
|                                                                                  | When used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | APF 10                                          | APF 25         |

**Table 26-2 Exposure Control Tasks and Protection**

| EQUIPMENT/TASK                                        | ENGINEERING AND WORK PRACTICE CONTROL METHODS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | REQUIRED RESPIRATORY PROTECTION AND MINIMUM APF |                |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------|
|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ≤ 4 hour/shift                                  | > 4 hour/shift |
| Handheld Grinders for Other Than Mortar Removal       | <b>For tasks performed outdoors only:</b> <ul style="list-style-type: none"> <li>Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>                                                                                                                                                                                                                               |                                                 |                |
|                                                       | When using water                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | None                                            | None           |
|                                                       | <ul style="list-style-type: none"> <li>Use grinder equipped with commercially available shroud and dust collection system.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector shall provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.</li> </ul>                                                                     |                                                 |                |
|                                                       | When used outdoors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | None                                            | None           |
|                                                       | When used indoors or in an enclosed area                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | None                                            | APF 10         |
| Walk-Behind Milling Machines and Floor Grinders       | <ul style="list-style-type: none"> <li>Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>                                                                                                                                                                                                                                                                          |                                                 |                |
|                                                       | When using water                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | None                                            | None           |
|                                                       | <ul style="list-style-type: none"> <li>Use machine equipped with dust collection system recommended by the manufacturer.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector shall provide the air flow recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</li> <li>When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes.</li> </ul> |                                                 |                |
|                                                       | When using vacuum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | None                                            | None           |
| Small Drivable Milling Machines (Less Than Half-Lane) | <ul style="list-style-type: none"> <li>Use a machine equipped with supplemental water sprays designed to suppress dust. Water shall be combined with a surfactant.</li> <li>Operate and maintain machine to minimize dust emissions.</li> </ul>                                                                                                                                                                                                                                                                                                           |                                                 |                |
|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | None                                            | None           |

Table 26-2 Exposure Control Tasks and Protection

| EQUIPMENT/TASK                                                                                                                                                                                           | ENGINEERING AND WORK PRACTICE CONTROL METHODS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | REQUIRED RESPIRATORY PROTECTION AND MINIMUM APF |                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------|
|                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ≤ 4 hour/shift                                  | > 4 hour/shift |
| Large Drivable Milling Machines<br>(Half-Lane and Larger)                                                                                                                                                | <b>For cuts of any depth on asphalt only:</b> <ul style="list-style-type: none"> <li>Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust.</li> <li>Operate and maintain machine to minimize dust emissions.</li> </ul> <b>For cuts of four inches in depth or less on any substrate:</b> <ul style="list-style-type: none"> <li>Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust.</li> <li>Operate and maintain machine to minimize dust emissions.</li> </ul> |                                                 |                |
|                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | None                                            | None           |
|                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>Use a machine equipped with supplemental water spray designed to suppress dust. Water shall be combined with a surfactant.</li> <li>Operate and maintain machine to minimize dust emissions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                            |                                                 |                |
|                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | None                                            | None           |
| Crushing Machines                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated — e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points.</li> <li>Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote-control station.</li> </ul>                                                                                      | None                                            | None           |
| Heavy Equipment and Utility Vehicles Used to Abrade or Fracture Silica-Containing Materials (e.g., Hoe-Ramming, Rock Ripping) or Used During Demolition Activities Involving Silica-Containing Materials | <ul style="list-style-type: none"> <li>Operate equipment from within an enclosed cab.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | None                                            | None           |
|                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                | None                                            | None           |
| Heavy Equipment and Utility Vehicles for Tasks Such as Grading and Excavating but Not Including: Demolishing, Abrading, or Fracturing Silica-Containing Materials                                        | <ul style="list-style-type: none"> <li>Apply water and/or dust suppressants as necessary to minimize dust emissions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | None                                            | None           |
|                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                    | None                                            | None           |

**Note 1:**

When implementing the control measures specified in Table 1, each employer shall:

- (i) For tasks performed indoors or in enclosed areas, provide a means of exhaust, as needed, to minimize the accumulation of visible airborne dust.
- (ii) For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust.
- (iii) For measures implemented that include an enclosed cab or booth, ensure that the enclosed cab or booth:
  - (A) Is maintained as free from settled dust as is practicable.
  - (B) Has door seals and closing mechanisms that work properly.
  - (C) Has gaskets and seals that are in good condition and working properly.
  - (D) Is under positive pressure maintained through continuous delivery of fresh air.
  - (E) Has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0  $\mu\text{m}$  range — e.g., MERV-16 or better.
  - (F) Has heating and cooling capabilities.

**Note 2:**

Where an employee performs more than one task on Table 1 during the course of a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks on Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.

#### 26.2.8.3.5 Fully and Properly Implementing Controls Specified on Table 26-2

The presence of controls is not sufficient.

Employers are required to ensure that:

- Controls are present and maintained.
- Employees understand the proper use of those controls and use them accordingly.

Employees engaged in Table 26-2 tasks:

- Employees are considered to be “engaged in the task” when operating the listed equipment, assisting with the task, or when they have some responsibility for the completion of the task.
- Employees are not classified as being “engaged in the task” if they are only in the vicinity of a task.

#### 26.2.8.3.6 Respiratory Protection Requirements on Table 26-2

Respirators are required where exposures above the PEL are likely to persist despite full and proper implementation of the specified engineering and work practice controls.

Where respirators are required, they shall be used by all employees engaged in the task for the entire duration of the task.

Provisions specify how to determine when respirators are required for an employee engaged in more than one task.



#### 26.2.8.4 **Alternative Exposure Control Methods — Methods of Compliance — Hierarchy of Controls**

##### 26.2.8.4.1 **Alternative Exposure Control Methods**

For tasks not listed in Table 1, or where the employer does not fully and properly implement the engineering controls, work practices, and respiratory protection described in Table 26-2:

##### 26.2.8.4.2 **Permissible Exposure Limit (PEL)**

Employers shall ensure that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of 50 micrograms per cubic meter ( $50 \mu\text{g}/\text{m}^3$ ), calculated as an 8-hour TWA.

##### 26.2.8.4.3 **Exposure Assessment**

###### 26.2.8.4.3.1 **General**

Employers shall assess the exposure of each employee who is, or may reasonably be expected to be, exposed to respirable crystalline silica at or above the action level in accordance with either the performance option in paragraph (d)(2)(ii) or the scheduled monitoring option in paragraph (d)(2)(iii) below of this section.

###### 26.2.8.4.3.2 **Performance Option**

Employers shall assess the 8-hour TWA exposure for each employee on the basis of any combination of air monitoring data or objective data sufficient to accurately characterize employee exposures to respirable crystalline silica.

###### 26.2.8.4.3.3 **Scheduled Monitoring Option**

Employers shall perform initial monitoring to assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing-zone air samples that reflect the exposures of employees on each shift, for each job classification, in each work area.

Where several employees perform the same tasks on the same shift and in the same work area, employers may sample a representative fraction of these employees in order to meet this requirement. In representative sampling, employers shall sample the employee(s) who are expected to have the highest exposure to respirable crystalline silica.

- If initial monitoring indicates that employee exposures are below the action level, the employer may discontinue monitoring for those employees whose exposures are represented by such monitoring.
- Where the most recent exposure monitoring indicates that employee exposures are at or above the action level but at or below the PEL, the employer shall repeat such monitoring within six months of the most recent monitoring.
- Where the most recent exposure monitoring indicates that employee exposures are above the PEL, the employer shall repeat such monitoring within three months of the most recent monitoring.
- Where the most recent — non-initial — exposure monitoring indicates that employee exposures are below the action level, the employer shall repeat such monitoring within six months of the most recent monitoring until two consecutive measurements, taken seven or more days apart, are





below the action level, at which time the employer may discontinue monitoring for those employees whose exposures are represented by such monitoring, except as otherwise provided in paragraph (d)(2)(iv) of this section.

#### 26.2.8.4.4 **Reassessment of Exposures**

Employers shall reassess exposures whenever a change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional exposures at or above the action level; or when the employer has any reason to believe that new or additional exposures at or above the action level have occurred.

#### 26.2.8.5 **Abrasive Blasting**

Adequate ventilation shall be provided.

#### 26.2.8.6 **Medical Surveillance**

For general industry, a Medical Surveillance Program shall be established for employees who are exposed to the action level of 8-hour TWA of 25 micrograms per cubic meter (25  $\mu\text{g}/\text{m}^3$ ) of respirable crystalline silica.

A baseline medical assessment shall be available to exposed employees within 30 days of initial assignment unless they have received a suitable medical examination within the past three years.

For construction, a Medical Surveillance Program shall be established for employees who would be required to wear a respirator more than 30 days per year due to the silica standard. A suitable prescreen that meets the same requirements is also acceptable.

#### 26.2.8.7 **Recordkeeping**

Accurate records of all air monitoring data, objective data, and medical surveillance shall be maintained as required by the regulation.

#### 26.2.8.8 **Respiratory Protection**

Refer to Chapter 9.

## Chapter 27

### Bloodborne Pathogens

#### Chapter Contents

##### 27 Bloodborne Pathogens

###### Bloodborne Pathogens — Resources

###### 27.1 Bloodborne Pathogen Exposure Control Plan

###### 27.1.1 Employee Exposure Determination

###### Table 27-1 — Job Classification and Task/Procedure

###### 27.2 Compliance Methods

###### 27.2.1 Universal Precautions

###### 27.2.2 Engineering Controls and Work Practices

###### 27.3 Personal Protective Equipment (PPE)

###### 27.4 Housekeeping

###### 27.4.1 General Housekeeping Procedures

###### Table 27-2 — Contaminated Surfaces Cleaning and Decontamination Schedule

###### 27.4.2 Cleaning Guidelines

###### 27.4.3 Regulated Waste

###### 27.4.4 Contaminated Laundry

###### 27.5 Hepatitis B Vaccine, Post-Exposure Evaluation and Follow-Up

###### 27.5.1 Hepatitis B Vaccination

###### 27.5.2 Post-Exposure Evaluation and Follow-Up

###### 27.5.3 Information Provided to the Healthcare Professional

###### 27.5.4 Healthcare Professional's Written Opinion

###### 27.5.5 Procedures for Evaluating the Circumstances Surrounding an Exposure Incident

###### 27.6 Communication of Hazards

###### 27.6.1 Labels and Signs

###### 27.6.2 Information and Training

###### 27.7 Recordkeeping

###### 27.7.1 Medical Records

###### 27.7.2 Training Records

###### 27.7.3 Sharps Injury Log

###### 27.7.4 Evaluation and Review



## **Bloodborne Pathogens**

**Scope and Application**

**Definitions**

**Exposure Control**

**Methods of Compliance**

**HIV and HBV Research Laboratories and Production Facilities**

**Hepatitis B Vaccination and Post-Exposure Evaluation and Follow Communication of Hazards to Workers**

**Recordkeeping**

**Appendix A Sample — Hepatitis B Vaccination Declination Statement**



## 27.1 Bloodborne Pathogen Exposure Control Plan

### 27.1.1 Employee Exposure Determination

Occupational exposure refers to a reasonably anticipated skin, eye, mucous membrane, or parental contact with blood or other potentially infectious materials (OPIM) that may result from the performance of the employee's duties. Employees at risk include anyone whose job might require they be placed in a situation in which there is a reasonable expectation of contact with blood or OPIM. This exposure determination is made without regard to use of personal protective equipment (PPE). Not all employees are expected to incur exposure to blood or OPIM.

| Table 27-1 Job Classification and Task/Procedure                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| JOB CLASSIFICATION                                                                                                                                                                                                                                        | TASK/PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <ul style="list-style-type: none"> <li>Employees designated as responsible for providing first aid or medical assistance — including cardiopulmonary resuscitation (CPR).</li> <li>Maintenance activities with exposure to raw sewage or OPIM.</li> </ul> | <ul style="list-style-type: none"> <li>Provide Bloodborne Pathogens training.</li> <li>Follow Bloodborne Pathogens Control Plan.</li> <li>Provide containers for collection and separation of wastes that may be generated from rendering medical assistance.</li> <li>Provide and require the wearing of appropriate PPE when rendering first aid or other medical assistance.</li> <li>Offer vaccination for hepatitis B.</li> </ul> |

## 27.2 Compliance Methods

### 27.2.1 Universal Precautions

Universal precautions refers to a method of infection control in which all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens. Universal precautions are to be observed in all situations where there is a potential for contact with blood or OPIM.

When in circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious.

### 27.2.2 Engineering Controls and Work Practices

To the extent feasible, engineering controls and work practices shall be used, as follows, to eliminate or minimize employee exposure to bloodborne diseases.

Project Entities shall make hand-washing facilities readily accessible. In situations where this is not feasible, the Project Entity shall provide antiseptic cleaners and towels or antiseptic towelettes. If antiseptic cleaners or towelettes are used, employees shall wash their hands with soap and running water as soon as possible.

Project Entities shall ensure that employees wash their hands as soon as possible after removing gloves or other personal protective devices.

Project Entities shall also ensure that following contact with human blood or potentially infectious material, employees wash exposed skin with soap and water and/or flush mucous membranes with soap and water as soon as feasible.



Contaminated needles and other contaminated sharps shall be prohibited from being shorn or broken.

Contaminated needles and sharps shall not be bent, recapped, or removed except when the Project Entity is able to demonstrate that no feasible alternative exists, or that such action is required by a specific medical procedure. Needle removal or recapping shall be accomplished through the use of a mechanical device or a one-handed technique — e.g., using the needle to scoop up the cap then pushing the cap against a countertop or tray. As soon as possible after use, contaminated sharps shall be placed in containers that are leakproof, puncture-resistant, and properly labeled or color-coded for biohazards.

In work areas where there is a reasonable possibility of occupational exposure, activities such as eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses shall be prohibited.

Food and drink shall not be kept in refrigerators, freezers, cabinets, shelves, or countertops where blood or OPIM are present.

All procedures involving human blood or OPIM shall be performed in a manner that minimizes splashing, spraying, spattering, or aerosolizing the materials.

Employees shall be required to wear appropriate face and eye protection when splashes, sprays, spatters, or droplets of blood or OPIM pose a hazard to the eyes, nose, or mouth.

Employees shall be required to use a one-valve device when performing mouth-to-mouth resuscitation.

Sharps disposal containers shall be inspected and maintained or replaced by employees who are trained for properly handling and disposal of contaminated material every six months, or whenever necessary to prevent overfilling.

Warning labels shall be attached to all parts or equipment that remain contaminated, additionally, all affected employees, servicing representatives, and/or manufacturers — as appropriate — shall be informed of this status.

Employees shall be required to wear appropriate gloves when hand contact with blood, OPIM, mucous membranes, and non-intact skin is anticipated, as well as when handling or touching contaminated items or surfaces.

Employees shall be required to remove disposable gloves as soon as practical when gloves are contaminated or as soon as possible when torn, punctured, or ineffective as a barrier. Disposable gloves shall not be washed for reuse.

Employees shall be required to remove garments immediately or as soon as possible when they are penetrated by blood or OPIM.

Employees shall remove all PPE as soon as it becomes contaminated or when leaving the contaminated area and shall dispose of it in a designated/labeled area or container.

Employees shall be required to place used PPE only in designated areas or containers for storage, washing, decontamination or disposal.

Employees shall be prohibited from picking up broken glassware directly with their hands. Instead, mechanical means such as a dustpan, tongs, or forceps shall be used.

Human blood or OPIM shall not be mouth pipetted/suctioned.



### 27.3 Personal Protective Equipment (PPE)

Project Entities shall ensure appropriate, readily accessible PPE is issued, at no cost, to employees.

PPE shall be considered appropriate if it does not permit blood or other potentially infectious substances and contaminated materials to pass through to or reach an employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time the protective equipment is in use.

The Project Entity shall ensure that all PPE is properly cleaned, laundered, repaired, replaced, or disposed of, as needed, at no cost to employee. PPE shall be provided in the appropriate sizes, at no cost to employees, with training provided by the Project Entity.

PPE may include: gloves, gowns, aprons, face shields, masks, eye protection, mouthpieces, resuscitation bags or other ventilators, and other similar items.

Disposable gloves shall be a standard component of emergency response equipment and shall be donned by all personnel prior to initiating any emergency patient-care tasks involving occupational exposure. Selection criteria shall include dexterity, durability, fit, and the tasks that will be undertaken while the gloves are worn.

The Project Entity shall pay any cost incurred for cleaning, laundering, disposal, repair, and replacement of PPE.

Project Entities shall ensure that appropriate PPE is used.

Hypoallergenic gloves, glove liners, powderless gloves, or similar alternatives shall be readily accessible to those employees who are allergic to the gloves normally provided.

All PPE that has been potentially exposed to blood or OPIM shall be removed prior to leaving the work area. All PPE shall be disposed of by the Project Entity, at no cost to the employee. PPE, when removed, shall be placed in the designated, closable, red biohazard bag, as directed by the site safety manager for disposal at a facility that accepts biohazard waste.

Project Entities shall ensure that employees observe the following precautions for handling and utilizing PPE:

- Garments that have been penetrated by blood or other infectious materials shall be removed immediately, or as soon as feasible.
- Before leaving the work area, contaminated protective equipment shall be placed in appropriately designated areas or containers for storing, washing, decontaminating, or discarding.
- Appropriate gloves shall be worn in any of the following circumstances:
  - When there is a potential for hand contact with blood, OPIM, mucous membranes, and/or non-intact skin.
  - When performing vascular access procedures.
  - When handling or touching contaminated items or surfaces.





- Disposable, single-use gloves — such as surgical or examination gloves — shall be replaced when contaminated, or as soon as feasible when they are torn, punctured, or their ability to function as a barrier is compromised. They shall not be washed or decontaminated for reuse.
- Utility gloves may be decontaminated for reuse if the integrity of the glove is not compromised. However, they shall be discarded if they are cracked, peeling, torn, punctured, exhibit other such signs of deterioration, or when their ability to function as a barrier is compromised.
- Appropriate face and eye protection — such as goggles, glasses with solid shields or chin-length face shields — shall be worn when splashes, sprays, spatters, or droplets of infectious materials pose a hazard to the eyes, nose, or mouth.
- Masks in combination with eye-protection devices — such as goggles or glasses with solid side shields — shall be worn whenever splashes, sprays, spatters, or droplets of blood or OPIM may be generated and eye, nose, or mouth contamination can be reasonably anticipated. These shall be used in accordance with the level of exposure encountered.

An employee may temporarily and briefly decline wearing PPE under rare and extraordinary circumstances, and when — in the employee's professional judgment — it prevents the delivery of healthcare or public safety services, or poses a greater hazard to workers. When the employee makes this judgment, the circumstances shall be investigated and documented to determine whether changes can be instituted to prevent such occurrences in the future.

## 27.4 Housekeeping

### 27.4.1 General Housekeeping Procedures

Project Entities shall ensure that work sites are maintained in a clean and sanitary condition.

Project Entities shall be responsible for ensuring that all equipment, environmental, and working surfaces are cleaned and decontaminated, using appropriate disinfectants and procedures, as soon as feasible after any contact with blood or OPIM occurs.

Contaminated surfaces shall be cleaned and decontaminated according to the following schedule:

| Table 27-2 Contaminated Surfaces Cleaning and Decontamination Schedule |                                                                                                      |                                                                                                                                                                                     |
|------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AREA                                                                   | SCHEDULE                                                                                             | CLEANER                                                                                                                                                                             |
| Areas exposed to blood or OPIM.                                        | As soon as practicable after exposure — area shall be marked off-limits until cleaning is completed. | <ul style="list-style-type: none"> <li>• Qualified and trained personnel, or</li> <li>• Independent cleaning company with expertise in decontaminating exposed surfaces.</li> </ul> |

### 27.4.2 Cleaning Guidelines

Gloves shall be worn when cleaning potentially contaminated materials.

Potentially infectious waste shall be decontaminated prior to clean up. An approved decontaminating agent is 1:10 solution of chlorine bleach — e.g., 1 part Clorox® diluted with 9 parts water.



Large spills of contaminated liquid shall be adsorbed with sorbent powder prior to cleanup.

Contaminated sharps shall be picked up with a dustpan and broom or with tongs. Personnel shall not touch contaminated sharps with their hands.

Sanitary-napkin disposal containers shall be assumed to be contaminated. Gloves shall be worn while removing the disposal bag. The disposal bag shall be discarded as biohazardous waste. Any visible contamination shall be cleaned with a 1:10 chlorine bleach solution or other equally effective germicidal solution.

When disassembling or repairing potentially contaminated equipment or objects, gloves shall be worn and a means of preventing further contamination shall be in place. This may include a bucket to catch fluid, adsorbent to solidify liquids, germicide disinfectant to decontaminate materials, etc. Contaminated equipment may include centrifuges, pipettes, incubators, plumbing drains, etc.

Reusable first aid equipment — such as suture needles, forceps, one-way CPR masks, etc. — shall be disinfected with an appropriate germicide disinfectant after exposure to human blood or OPIM.

Diluted chlorine bleach solutions are effective for a limited length of time and shall be freshly made once a week. Other germicidal solutions may retain their effectiveness for longer periods of time — manufacturer's recommendations shall be consulted for more information.

Personnel who may encounter possible infectious materials frequently are encouraged to compile a response kit. Supplies may be stored in a bucket and the bucket used to decontaminate any reusable equipment. Specific requirements for a response kit may vary depending upon the type of contamination most frequently encountered.

#### 27.4.3 Regulated Waste

Regulated waste refers to:

- Liquid or semi-liquid blood or OPIM.
- Contaminated items that would release blood or OPIM and are capable of releasing these materials during handling
- Contaminated sharps.
- Pathological and micro-biological wastes containing blood or other potential infectious materials.

Contaminated sharps shall be discarded immediately, or as soon as possible, into containers that can be closed, are puncture resistant, are leak proof on the sides and bottom, and are properly labeled. Disposal containers shall be closed prior to moving and shall also be placed in a secondary container if leakage from the original container is possible. The secondary container shall be capable of closing, able to contain all contents, and shall be properly labeled.

Other regulated waste shall be placed in closable containers or bags which are constructed to prevent leakage or breakthrough, color-coded red, and have a biohazard label.

Containers shall be conveniently located in the work area and permanently marked with fluorescent orange or orange-red labels bearing the word "Biohazard" and the biohazard logo. Red bags or containers may be substituted for these labels. If a primary container becomes contaminated, it shall be placed in a secondary, leak proof, puncture-resistant, color-coded container.



#### **27.4.4 Contaminated Laundry**

Contaminated laundry shall be handled as little as possible, and with minimum agitation. It shall be bagged or containerized where it was used and shall not be sorted or rinsed where it was used.

Contaminated laundry shall be placed and transported in bags or containers that are properly labeled for biohazards.

When contaminated laundry is wet and could possibly soak through, or leak from, a bag or container, it shall be placed in leak-proof bags or containers.

Contaminated reusable items, such as sharps, shall not be stored or processed in a manner that requires employees to reach into containers where the contents cannot be seen or safely handled.

Employees shall wear proper PPE when handling contaminated laundry.

### **27.5 Hepatitis B Vaccine, Post-Exposure Evaluation and Follow-up**

#### **27.5.1 Hepatitis B Vaccination**

Project Entities shall be responsible for administering a Hepatitis B Vaccination Program.

The hepatitis B vaccination series shall be made available, at no cost, after training and within 10 days of initial assignment, to employees identified in the exposure determination section of this plan. Vaccination is encouraged unless:

- Documentation exists that the employee has previously received the series.
- Antibody testing reveals that the employee is immune.
- Medical evaluation shows that vaccination is contraindicated.

Project Entities shall ensure that all medical evaluations and procedures including the hepatitis B vaccine, vaccination series, and post-exposure follow-up, including prophylaxis are:

- Made available at no charge to the employee, at a reasonable place and time.
- Performed or supervised by a licensed healthcare professional according to the recommendations of the CDC.

Employees potentially exposed to blood or OPIM may elect to waive their right to the hepatitis B vaccine provided by the employer. Safety Form K-3, "Hepatitis B Vaccination Declination Statement," shall be used to document the employee's decision to waive vaccination.

#### **27.5.2 Post-Exposure Evaluation and Follow-up**

All employees who incur an exposure incident shall be offered Post-Exposure Evaluation and follow-up. The Post-Exposure Evaluation shall be:

- Made available to employees at no cost.
- Made available at a reasonable place and time.



- Performed by/or under supervision of a licensed physician or healthcare professional.
- Provided according to recommendations of the U.S. Public Health Service current at the time evaluations and procedures take place.

All testing shall be conducted by an accredited laboratory at no cost to the employee.

#### 27.5.3 Information Provided to the Healthcare Professional

Project Entities shall be responsible for ensuring that the healthcare professional responsible for an employee's hepatitis B vaccination is provided with the following:

- A copy of Subpart Z, Toxic & Hazardous Substances: Bloodborne Pathogens (1910.1030).
- A description of the exposed employee's duties as they relate to the exposure incident.
- Documentation of the route(s) of exposure and circumstances under which exposure occurred.
- Results of the source individual's blood testing, if available.
- All medical records relevant to the appropriate treatment of the employee — including vaccination status — which are the employer's responsibility to maintain.

#### 27.5.4 Healthcare Professional's Written Opinion

Project Entities shall be responsible for obtaining and providing employees with a copy of the evaluating healthcare professional's written opinion within 15 days of completion.

The healthcare professional's written opinion for HBV vaccination will be limited to whether HBV is indicated for an employee, and if the employee has received such vaccination.

#### 27.5.5 Procedures for Evaluating the Circumstances Surrounding an Exposure Incident

Project Entities shall be responsible for reviewing the circumstances of all exposure incidents to determine the following:

- Engineering controls in use at the time.
- Work practices followed.
- A description of the device being used.
- Protective equipment or clothing that was used at the time of the exposure incident — e.g., gloves, eye shields, etc.
- Location of the incident.
- Procedure being performed when the incident occurred.
- Employee's training.

Project Entities shall be required to ensure that appropriate changes are made to the ECP, as needed.



## **27.6 Communication of Hazards**

### **27.6.1 Labels and Signs**

Project Entities shall be responsible for making sure that biohazard labels are on each container of regulated waste.

Employees shall be required to notify their supervisor if they discover regulated waste containers, refrigerators containing blood or OPIM, contaminated equipment, etc., without proper labels.

Project Entities shall ensure that warning labels are affixed to all containers, including refrigerators and freezers containing blood or OPIM.

- Containers of regulated waste shall be labeled with fluorescent orange or orange-red biohazard warning labels.
- Warning labels shall contain the biohazard symbol and have the word "Biohazard," on it. Warning labels shall be attached to each object by string, wire, adhesive, or another method to prevent loss or unintentional removal of the label. Refer to the standard for label design requirements.

Items to be labeled include:

- Containers of regulated waste.
- Refrigerators and freezers containing blood or other potentially infectious waste.
- Containers used to store, transport, and ship blood or OPIM.
- Portions of contaminated equipment, which are not decontaminated.

### **27.6.2 Information and Training**

Project Entities shall be required to ensure that training is provided at the time of initial assignment to tasks where occupational exposure to blood or OPIM may occur, and that it shall be repeated within 12 months of the previous training. The training program shall be tailored to the education and language level of the employee and offered during the normal work shift.

Training shall contain the following information:

- An accessible copy of the regulation.
- Epidemiology and symptoms of bloodborne diseases.
- Modes of transmission of bloodborne pathogens.
- Employer's Exposure Control Plan and how the employee can obtain a copy of the written plan.
- Methods for recognizing tasks that may involve exposure to blood and OPIM.
- The use and limitations of methods that will prevent or reduce exposure, including appropriate engineering controls, work practices, and PPE.
- The types, proper use, location, removal, handling, decontamination, and disposal of PPE.



- The basis for selection of PPE.
- The hepatitis B vaccine, including information on its efficacy, safety, method of administration, and the benefits of being vaccinated.
- Actions to take and persons to contact in an emergency involving blood or OPIM.
- Procedure to follow if an exposure incident occurs, including the methods of reporting the incident and the medical follow-up that will be made available.
- The Post-Exposure Evaluation and Follow-Up that the employer is required to provide for the employee following an exposure incident.
- An explanation of the signs, labels, and/or color-coding required.
- An opportunity for interactive questions and answers.

## **27.7 Recordkeeping**

### **27.7.1 Medical Records**

Project Entities shall maintain medical records for each employee with occupational exposure in accordance with 29 CFR 1910.1020, "Access to Employee Exposure and Medical Records."

Medical records are strictly confidential and shall not be reported to any person within or outside of the workplace without express written consent.

Project Entities shall be responsible for maintaining medical records for the duration of the employee's employment plus 30 years. Information that shall be retained includes:

- Employee's name and social security number.
- A copy of the employee's hepatitis B vaccination status, including the dates of all the hepatitis B vaccinations and any medical records relative to the employee's ability to receive vaccination.
- A copy of all results of examinations, medical testing, and follow-up procedures.
- The employer's copy of the healthcare professional's written opinion.
- A copy of the information provided to the healthcare professional.

Only the employee, or anyone having the employee's written consent, shall be able to obtain medical records. If the Project Entity ceases to do business, medical and training records shall be transferred to the successor. If there is no successor, the Project Entity shall notify the director of NIOSH for specific directions regarding disposition of the records at least three months prior to intended disposal.

### **27.7.2 Training Records**

Project Entities shall be responsible for retaining accurate training records for three years. Training records shall include the following information:

- Date(s) of training.





- Content or a summary of the training.
- Names and qualifications of trainer(s).
- Names, job titles, and signatures of trainees.

Upon request, employee training records shall be provided to the employee, or the employee's authorized representative, within 15 working days. Such requests shall be addressed to the Project Entity.

#### **27.7.3 Sharps Injury Log**

Project Entities shall establish and maintain a Sharps Injury Log to record illnesses and injuries from contaminated sharps. Safety Form K-4, "Sharps Injury Log," shall be used to document sharps injuries, and shall be maintained per OSHA record-keeping requirements.

#### **27.7.4 Evaluation and Review**

Project Entities shall be responsible for conducting an annual review of their program and its effectiveness.

Project Entities shall be responsible for ensuring that their ECP is modified/revised, as necessary.



## Chapter 28

# Occupational Noise Exposure and Illumination

### Chapter Contents

#### 28 Occupational Noise Exposure

##### 28.1 Occupational Noise Exposure

###### 28.1.1 Administrative or Engineering Controls

###### 28.1.2 Variations in Noise Level

###### Table 28-1 — Permissible Noise Exposure Levels

##### 28.2 Illumination

###### 28.2.1 General

###### Table 28-2 — Minimum Illumination Intensities



## 28.1 Occupational Noise Exposure

### 28.1.1 Administrative or Engineering Controls

When workers are subjected to sound levels exceeding those listed in Table 28-1 below, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of the table, personal protective equipment (PPE) shall be provided and used to reduce sound levels to within the permissible noise exposure levels — listed in Table 28-1.

### 28.1.2 Variations in Noise Level

If the variations in noise level involve maxima at intervals of one second or less, it shall be considered continuous.

Exposure to impulsive or impact noise shall not exceed 140 decibel (dB) peak sound pressure level.

In all cases where the sound levels exceed the values shown herein, a continuing, effective Hearing Conservation Program shall be implemented.

| Table 28-1 Permissible Noise Exposure Levels |                                 |
|----------------------------------------------|---------------------------------|
| DURATION PER DAY (HOURS)                     | SOUND LEVEL (dBA) SLOW RESPONSE |
| 8                                            | 90                              |
| 6                                            | 92                              |
| 4                                            | 95                              |
| 3                                            | 97                              |
| 2                                            | 100                             |
| 1 1/2                                        | 102                             |
| 1                                            | 105                             |
| 1/2                                          | 110                             |
| 1/4 or less                                  | 115                             |

When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect shall be considered, rather than the individual effect of each. Exposure to different levels for various periods of time shall be computed according to the formula set forth below:

$F(e) = (T(1) \text{ divided by } L(1)) + (T(2) \text{ divided by } L(2)) + \dots + (T(n) \text{ divided by } L(n))$  where:

- F(e) = The equivalent noise exposure factor.
- T = The period of noise exposure at any essentially constant level.
- L = The duration of the permissible noise exposure at the constant level (from Table 28-1)

**Note:** If the value of F(e) exceeds unity (1) the exposure exceeds permissible levels.



A sample computation showing an application of the formula is as follows:

A worker is exposed at these levels for these periods:

$$\begin{aligned}
 &110 \text{ dBA @ } 1/4 \text{ hour} && 100 \text{ dBA @ } 1/2 \text{ hour} && 90 \text{ dBA @ } 1 \text{ } 1/2 \text{ hours} \\
 F(e) &= (1/4 \text{ divided by } 1/2) + (1/2 \text{ divided by } 2) + (1 \text{ } 1/2 \text{ divided by } 8) \\
 F(e) &= 0.500 + 0.25 + 0.188 \\
 F(e) &= 0.938
 \end{aligned}$$

**Note:** Since the value of F(e) does not exceed unity (1.0), the exposure is within permissible limits.

## 28.2 Illumination

### 28.2.1 General

Construction areas, ramps, runways, corridors, offices, shops, and storage areas shall be lighted to no less than the minimum illumination intensities listed in Table 28-2 while any work is in progress:

| Table 28-2 Minimum Illumination Intensities |                                                                                                                                                                           |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FOOT-CANDLES                                | AREA OF OPERATION                                                                                                                                                         |
| 5                                           | General construction area lighting.                                                                                                                                       |
| 3                                           | General construction areas, concrete placement, excavation and waste areas, access ways, active-storage areas, loading platforms, refueling, and field-maintenance areas. |
| 5                                           | Indoors: warehouses, corridors, hallways and exit ways.                                                                                                                   |
| 5                                           | Tunnels, shafts, and general underground work areas — 10 foot-candles are required at tunnel and shaft headings during drilling, mucking, and scaling.                    |
| 10                                          | General construction plant and shops.                                                                                                                                     |
| 30                                          | First-aid stations, infirmaries and offices.                                                                                                                              |



## Chapter 29

### Heat Illness Prevention Program

#### Chapter Contents

#### 29 Heat Illness Prevention Program

##### 29.1 General Requirements

##### 29.2 Training

##### 29.3 Body Fluid Replacement

##### 29.4 Heat Assessment

###### 29.4.1 Wet Bulb Globe Temperature (WBGT) Monitoring

###### Table 29-1 — WBGT Index Monitoring for TLV

###### 29.4.2 Physiological Monitoring

###### Figure 29-1 — Heat Index Chart

##### 29.5 Acclimatization

##### 29.6 Rest Breaks

##### 29.7 Sunscreen

##### 29.8 Monitoring Heat Stress

###### 29.8.1 Heat Stroke

###### 29.8.2 Heat Exhaustion

###### 29.8.3 Heat Cramps

###### 29.8.4 Heat Rash

###### 29.8.5 Heat Syncope

##### 29.9 Ultraviolet Radiation/Sun Exposure

###### 29.9.1 Ultraviolet (UV) Rays

###### 29.9.2 Sunlight Exposure

###### 29.9.3 Prevention

###### 29.9.3.1 Sunscreen Performance and SPF

###### 29.9.3.2 Appropriate Clothing



## 29.1 General Requirements

In areas where heat stress may impact employee health and safety, acclimatization and heat stress shall be assessed to establish proper work/rest regimens and fluid replacement. Heat stress and heat strain are conditions resulting from environmental factors including temperature; relative humidity; radiant heat transfer; and air movements, as they are affected by clothing.

The primary objective of the Heat Illness Prevention Program is to prevent heat stroke, which is life threatening and the most serious of the heat-induced disabilities.

Project Entities shall be required to develop a Heat Illness Prevention Program. Safety Form K-5, "Heat Illness Prevention Program," shall be submitted to Burns & McDonnell and/or its subsidiaries.

Project Entities shall designate program administrator(s) to ensure compliance with their Heat Illness Prevention Program.

## 29.2 Training

The Project Entity's designated program administrator(s) shall have received training, developed by the American Red Cross or American Heart Association, in first aid and cardiopulmonary resuscitation (CPR), including training in heat-related illnesses.

While in hot environments, toolbox safety training shall include recognizing, preventing, and treating the signs and symptoms of heat stress. While in potential heat stress conditions, ice shall be readily available to rapidly cool victims.

## 29.3 Body Fluid Replacement

When the Project Entity's program administrator(s), determine heat stress to be a concern, water shall be made available for employee fluid replacement. Balanced, electrolyte solutions to replace fluid and electrolyte loss may be present but shall not be used as a substitute for water. Employees shall be provided with replacement fluids, as needed.

## 29.4 Heat Assessment

The Project Entity's program administrator(s) shall assess employees and weather conditions to determine when to begin heat stress assessment. For employees with permeable work clothing, Wet Bulb Globe Temperature (WBGT) Index or physiological monitoring shall be conducted. For employees in impermeable work clothing, only physiological monitoring shall be conducted to determine appropriate controls.

### 29.4.1 WBGT Monitoring

WBGT Index Monitoring guidelines for the threshold limit values (TLVs) are provided in Table 29-1.



| Table 29-1 WBGT Index Monitoring for TLV                                                                                              |                                                                                                                            |                                                                                                                                              |                                                                                                                              |                                                |
|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
|                                                                                                                                       | TLV BASED ON WBGT READINGS IN DEGREES FAHRENHEIT                                                                           |                                                                                                                                              |                                                                                                                              |                                                |
| Allocation of Work in a Cycle of Work and Recovery                                                                                    | Light                                                                                                                      | Moderate                                                                                                                                     | Heavy                                                                                                                        | Very Heavy                                     |
|                                                                                                                                       | Sitting with light manual work with hands and/or arms; driving; standing with some light arm work; and occasional walking. | Sustained, moderate hand and arm work; moderate arm and leg work; moderate arm and trunk work; light pushing and pulling; or normal walking. | Intense arm and trunk work; carrying; shoveling; manual sawing; pushing and pulling heavy loads; and walking at a fast pace. | Very intense activity at fast to maximum pace. |
| 75 to 100%                                                                                                                            | 87.8                                                                                                                       | 82.4                                                                                                                                         | -                                                                                                                            | -                                              |
| 50 to 75%                                                                                                                             | 87.8                                                                                                                       | 84.2                                                                                                                                         | 81.5                                                                                                                         | -                                              |
| 25 to 50%                                                                                                                             | 89.6                                                                                                                       | 86                                                                                                                                           | 84.2                                                                                                                         | 76.1                                           |
| 0 to 25%                                                                                                                              | 90.5                                                                                                                       | 88.7                                                                                                                                         | 86.9                                                                                                                         | 80.6                                           |
| Adapted from AGCIH 2011 TLV®s and BEI®s, Thermal Stress, Tables 2 and 3.                                                              |                                                                                                                            |                                                                                                                                              |                                                                                                                              |                                                |
| <b>Notes:</b><br>Operations conducted outdoors may expose workers to weather, ecological hazards, and other location-related hazards. |                                                                                                                            |                                                                                                                                              |                                                                                                                              |                                                |

#### 29.4.2 Physiological Monitoring

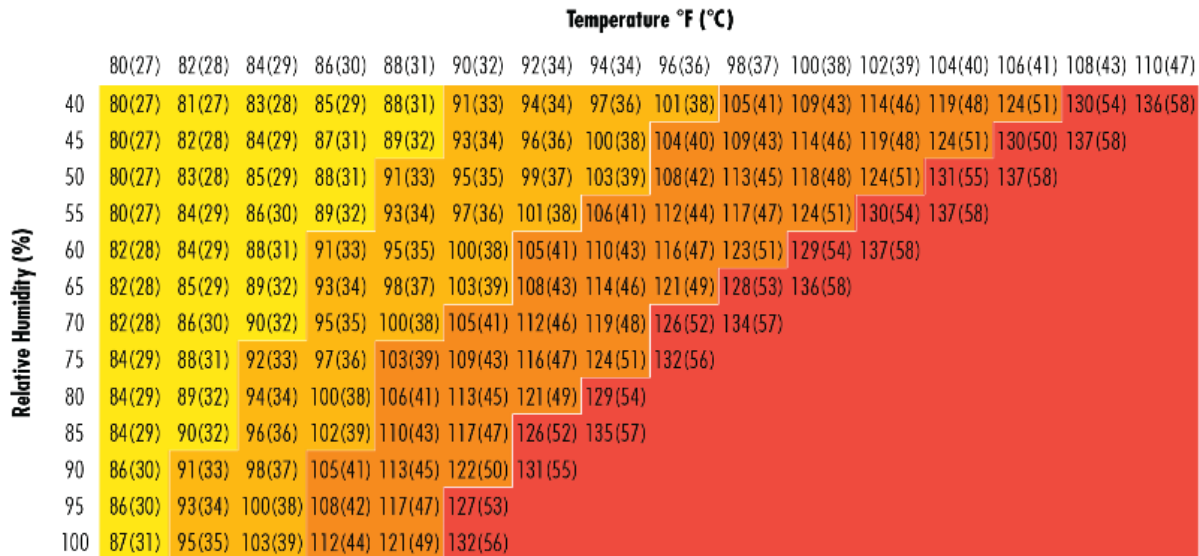
One or more measures may mark excessive heat strain, and an individual's exposure to heat stress shall be discontinued when any of the following occur:

- Sustained — i.e., several minutes — heart rate exceeding 180 beats per minute (bpm) minus the individual's age in years — e.g., 180 minus age — for individuals with assessed normal cardiac performance.
- Body core temperature is greater than 101.3 degrees Fahrenheit for medically selected and acclimatized personnel; or greater than 100.4 degrees Fahrenheit in unselected, un-acclimatized workers.
- Recovery heart rate at one minute after a peak work effort is greater than 120 bpm.
- There are symptoms of sudden and severe fatigue, nausea, dizziness or lightheadedness.

An individual may be at greater risk of heat-related disorders if:

- Profuse sweating is sustained over hours.
- Weight loss over a shift is greater than 1.5% of body weight.
- 24-hour urinary sodium excretion is less than 50 moles.

Figure 29-1 Heat Index Chart



#### Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

|         |                 |        |                |
|---------|-----------------|--------|----------------|
| Caution | Extreme Caution | Danger | Extreme Danger |
|---------|-----------------|--------|----------------|

### 29.5 Acclimatization

A properly designed and applied heat acclimatization program decreases the risk of heat-related illnesses. Such a program, in essence, involves exposing employees to work in a hot environment for progressively longer periods. The following protocol shall be followed:

- For workers who have had previous experience in jobs where heat levels are high enough to produce heat stress, the regimen shall be 50% exposure on day one, 60% on day two, 80% on day three, and 100% on day four.
- For new workers who will be similarly exposed, the regimen shall be 20% on day one, with a 20% increase in exposure each additional day.

### 29.6 Rest Breaks

When heat stress conditions are applicable, all rest breaks shall be taken away from the work area, and in a cooler, shaded, rest area. If these conditions are not available, more frequent rest breaks shall be taken. Persons who are not acclimatized shall be allowed additional breaks.

### 29.7 Sunscreen

Where there is potential for sunburn to skin exposed to solar radiation — short or long term — Project Entities shall be responsible for providing their employees sunscreen with a sun protection factor (SPF) appropriate for their skin type and length of exposure.



## 29.8 Monitoring Heat Stress

Project Entities shall monitor their employees for heat stress by observing the symptoms of workers. See Table 29-2, "Symptoms and Treatment of Heat Stress," for more information about the symptoms of heat stress.

### 29.8.1 Heat Stroke

The most serious heat-related disorder is heat stroke. Heat stroke occurs when the body becomes unable to control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. When heat stroke occurs, the body temperature may rise to 106 degrees Fahrenheit or higher, within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not given.

### 29.8.2 Heat Exhaustion

Heat exhaustion is the body's response to an excessive loss of the water and salt, usually through excessive sweating. Workers most prone to heat exhaustion are those that are elderly, have high blood pressure, and those working in a hot environment.

### 29.8.3 Heat Cramps

Heat cramps usually affect workers who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels; low salt levels in muscles then cause painful cramps. Heat cramps may also be a symptom of heat exhaustion.

### 29.8.4 Heat Rash

Heat rash is a form of skin irritation caused by excessive sweating during hot, humid weather.

### 29.8.5 Heat Syncope

Heat syncope refers to a fainting — i.e., syncope — episode or dizziness that usually occurs with prolonged standing, or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

**Table 29-2 Symptoms and Treatment of Heat Stress**

|                           | HEAT SYNCOPE                                                       | HEAT RASH                                                                                                                                                                                                                                | HEAT CRAMPS                                                                                                   | HEAT EXHAUSTION                                                                                                                                                                                                                                                                                                      | HEAT STROKE                                                                                                                                                                                                                               |
|---------------------------|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Signs and Symptoms</b> | Sluggishness or fainting while standing erect or immobile in heat. | <ul style="list-style-type: none"> <li>A skin irritation caused by excessive sweating during hot, humid weather.</li> <li>Profuse tiny, raised, red, blister-like vesicles on affected areas, along with prickling sensations</li> </ul> | Painful spasms in muscles used during work — e.g., arms, legs, or abdomen — onset during or after work hours. | <ul style="list-style-type: none"> <li>Fatigue, nausea, headache, giddiness.</li> <li>Skin cool, moist and/or clammy.</li> <li>Complexion pale, muddy, flushed or red skin.</li> <li>May faint on standing.</li> <li>Rapid thready pulse and low blood pressure.</li> <li>Oral temperature normal or low.</li> </ul> | <ul style="list-style-type: none"> <li>Life threatening.</li> <li>Red, hot, dry skin.</li> <li>Dizziness.</li> <li>Confusion.</li> <li>Rapid breathing and rapid weak pulse.</li> <li>High oral temperature, as high as 105°F.</li> </ul> |

**Table 29-2 Symptoms and Treatment of Heat Stress**

|                  | HEAT<br>SYNCOPE                                                                                                                                                                      | HEAT RASH                                                                                                                                                                                                                                                                                  | HEAT<br>CRAMPS                                                                                                                     | HEAT<br>EXHAUSTION                                                                                                                                                                                                                                                                                                                                                                            | HEAT STROKE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  |                                                                                                                                                                                      | during heat exposure.                                                                                                                                                                                                                                                                      |                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Treatment</b> | <ul style="list-style-type: none"> <li>Remove to cooler area.</li> <li>Rest lying down.</li> <li>Increase fluid intake.</li> <li>Recovery usually is prompt and complete.</li> </ul> | <ul style="list-style-type: none"> <li>Keep skin clean and dry, preventing infection.</li> <li>Avoid using ointments or creams, as they keep the skin warm and moist, and may make the condition worse.</li> <li>Try to work in a cooler, less humid environment when possible.</li> </ul> | <ul style="list-style-type: none"> <li>Remove to cooler area.</li> <li>Rest lying down.</li> <li>Increase fluid intake.</li> </ul> | <ul style="list-style-type: none"> <li>Remove to cooler area.</li> <li>Remove or loosen tight clothing and apply cool, wet cloths, such as towels or wet sheets.</li> <li>Rest lying down, with head in low position.</li> <li>If person is awake and alert, give a half glass of cool water every 15 minutes. Do not let them drink too quickly.</li> <li>Seek medical attention.</li> </ul> | <ul style="list-style-type: none"> <li><b>Call 911 or local Emergency Medical Services.</b></li> <li>Move the person to a cooler place.</li> <li>Keep the person lying down.</li> <li>Quickly cool the body by wrapping wet sheets around the body and fan it.</li> <li>If ice packs or cold packs are available, wrap them in a cloth and place them on each of the victim's wrists and ankles, in the armpits, and on the neck to cool the large blood vessels.</li> <li>Watch for signals of breathing problems and make sure the airway is clear.</li> </ul> |

## 29.9 Ultraviolet Radiation/Sun Exposure

### 29.9.1 Ultraviolet (UV) Rays

Ultraviolet (UV) rays are a part of sunlight that is an invisible form of radiation. UV rays are able to penetrate and change the structure of skin cells.

The three types of UV rays are:

- **Ultraviolet A (UVA)**

- UVA is the most abundant source of solar radiation at the earth's surface and penetrates beyond the top layer of human skin. Scientists believe that UVA radiation can cause damage to connective tissue and increase a person's risk for developing skin cancer.

- **Ultraviolet B (UVB)**

- UVB rays penetrate less deeply into skin but can still cause some forms of skin cancer.

- **Ultraviolet C (UVC)**

- Natural UVC rays do not pose a risk to workers because they are absorbed by the Earth's atmosphere.



### 29.9.2 Sunlight Exposure

Sunlight exposure is highest during the summer and between 10:00 a.m. and 4:00 p.m. Working outdoors during these times increases the chances of getting sunburned.

Snow and light-colored sand reflect UV light and increase the risk of sunburn.

Project Entity personnel may be at risk of UV radiation even on cloudy days.

### 29.9.3 Prevention

Project Entities shall be responsible for taking the following steps to protect workers from exposure to UV radiation:

- If possible, avoid scheduling outdoor work when sunlight exposure is the greatest.
- Provide employees with training regarding UV radiation including:
  - Their risk of exposure.
  - How to prevent exposure.
  - The signs and symptoms of overexposure.

Project Entities shall be responsible for ensuring their employees observe the following recommendations to protect themselves from UV damage:

- Wear sunscreen with a minimum SPF of 15.
- Wear appropriate clothing.

#### 29.9.3.1 Sunscreen Performance and SPF

SPF refers to the amount of time that persons will be protected from a burn. A sunscreen with an SPF of 15 allows a person to stay out in the sun 15 times longer than they normally would be able to stay without burning.

The SPF also rating applies to skin reddening and protection against UVB exposure.

SPF does not refer to protection against UVA. Products containing Mexoryl, Parsol 1789, titanium dioxide, zinc oxide, or avobenzone block UVA rays.

Sunscreen performance is affected by wind, humidity, perspiration, and proper application.

Old sunscreens shall be thrown away because they lose their potency after one to two years.

Sunscreens shall be liberally applied at least 20 minutes prior to sun exposure.

When sunscreen is applied, special attention shall be given to covering the ears, scalp, lips, neck, tops of feet, and backs of hands.

Sunscreens shall be reapplied at least every two hours.



Some sunscreens may also lose efficacy when applied with insect repellents, necessitating more frequent application when the two products are used together.

When applying sunscreen, the application directions provided on the sunscreen bottle shall be followed.

#### 29.9.3.2 **Appropriate Clothing**

Clothing with a tight weave is more protective than loosely woven clothing.

High-SPF clothing has been developed to provide additional protection for those with photosensitive skin or a history of skin cancer.



## Chapter 30

### Outdoor Biological Exposures

#### Chapter Contents

#### 30 Outdoor Biological Exposures

##### 30.1 Bees, Wasps and Hornets

###### Table 30-1 — Stinging Insects

###### 30.1.1 Exposure Prevention, Symptoms, and Treatment

##### 30.2 Fire Ants

###### Table 30-2 — Fire Ants

###### 30.2.1 Exposure Prevention, Symptoms, and Treatment

##### 30.3 Scorpions

###### Table 30-3 — Scorpion Identification and Range

###### 30.3.1 Exposure Prevention, Symptoms, and Treatment

##### 30.4 Dog Safety

###### 30.4.1 Dog Injury Prevention, Response, and Treatment

##### 30.5 Mosquitos — ZIKA and West Nile Virus

###### 30.5.1 Exposure Prevention, Symptoms, and Treatment

##### 30.6 Poison Ivy, Poison Oak and Poison Sumac

###### Figure 30-1 — Poisonous Plant Locations

###### 30.6.1 Plant Identification

###### Table 30-4 — Poisonous Plant Identification

###### 30.6.2 Exposure Prevention, Symptoms, and Treatment

##### 30.7 Venomous Snakes

###### Table 30-5 — Major Identification Features of Snakes

###### Table 30-6 — Snake Varieties Identification and Ranges

###### 30.7.1 Exposure Prevention, Symptoms, and Treatment

##### 30.8 Venomous Spiders

###### Table 30-7 — Spider Varieties and Ranges

###### 30.8.1 Exposure Prevention, Symptoms, and Treatment

##### 30.9 Ticks

###### Table 30-8 — Tick Varieties Identification and Ranges

###### 30.9.1 Protection and Exposure Prevention

###### 30.9.2 Illnesses, Signs and Symptoms

###### Table 30-9 — Tick-Borne Diseases and Common U.S. Regions

###### 30.9.3 Controls

###### 30.9.4 Clothing

###### 30.9.5 Repellants and Contact Insecticides

###### 30.9.6 Tick Check

###### 30.9.7 Tick Removal

###### 30.9.8 Tick Bite Treatment

### 30.1 Bees, Wasps and Hornets

| Table 30-1 Stinging Insects                                                         |                                                                                     |                                                                                      |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| BEES                                                                                |                                                                                     |                                                                                      |                                                                                     |
|    |    |    |  |
| Honey Bee                                                                           | Bumble Bee                                                                          | Carpenter Bee                                                                        | Sweat Bee                                                                           |
| WASPS                                                                               |                                                                                     |                                                                                      |                                                                                     |
|    |    |    |  |
| Yellow Jacket                                                                       | Common Wasp                                                                         | Mud Dauber                                                                           | Paper Wasp                                                                          |
| HORNETS                                                                             |                                                                                     |                                                                                      |                                                                                     |
|  |  |  |                                                                                     |
| European Hornets                                                                    | Baldfaced Hornet                                                                    | Oriental Hornet                                                                      |                                                                                     |

Stinging insects such as bees, wasps, and hornets are found throughout the United States.

#### 30.1.1 Exposure Prevention, Symptoms, and Treatment

Project personnel shall take the following steps to prevent insect stings:

- Wear light-colored, smooth-finished clothing.
- Avoid perfumed soaps, shampoos, and deodorants.
- Do not wear cologne or perfume.
- Avoid bananas and banana-scented toiletries.



- Wear clean clothing and bathe daily, as sweat may anger bees.
- Wear clothing to cover as much of the body as possible.
- Avoid flowering plants whenever possible.
- Keep work areas clean. Social wasps thrive in places where humans discard food.
- Remain calm and still if a single stinging insect is flying around. Swatting at an insect may cause it to sting.
- If a bee, wasp, or hornet enters your vehicle, stop the car slowly and safely, and open all the windows.

If attacked by several stinging insects at once, run to get away from them. Bees release a chemical when they sting, which may attract other bees.

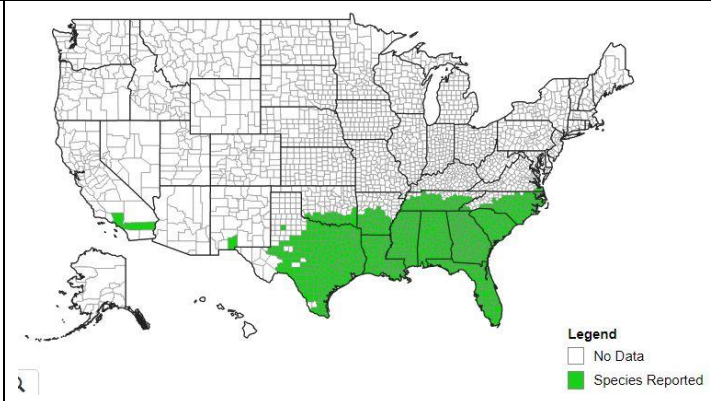
- Go indoors.
- A shaded area is better than an open area when attempting to get away from stinging insects.
- If possible, physically move out of the area.
- Do not attempt to jump into water. Some insects — particularly Africanized Honey Bees — are known to hover above the water, continuing to sting once a person surfaces for air.

**Note:** Project personnel with a history of severe allergic reactions to insect bites or stings are to carry an epinephrine auto-injector (EpiPen) and wear a medical identification bracelet or necklace stating their allergy.

If an employee is stung by a bee, wasp, or hornet the following steps shall be taken:

- Have someone stay with the worker to make sure they do not have an allergic reaction.
- Wash the site of the sting with soap and water.
- Remove the stinger using gauze wiped over the area, or by scraping a fingernail over the area.
- Never squeeze the stinger or use tweezers to remove it.
- Apply ice to reduce swelling.
- Do not scratch the sting as this may increase swelling, itching, and risk of infection.

### 30.2 Fire Ants

| Table 30-2 Fire Ants                                                              |                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  <p>Legend</p> <ul style="list-style-type: none"> <li>No Data</li> <li>Species Reported</li> </ul> |

#### 30.2.1 Exposure Prevention, Symptoms, and Treatment

Project personnel shall take the following steps to prevent fire ant stings and bites:

- Do not disturb, stand on, or stand near ant mounds.
- Be careful when lifting items off the ground, as they may be covered in ants.
- Always look over the area before beginning work, as fire ants may be found on trees or in water.

Project personnel shall take the following steps if they are stung or bitten by fire ants:

- Rub off ants briskly, as they will attach to the skin with their jaws.
- If desired, take antihistamines, which may help.
  - Follow directions on packaging.
  - Drowsiness may occur.

Project personnel shall be taken to an emergency medical facility immediately, if a sting causes any of the following:

- Severe chest pain
- Nausea
- Severe sweating
- Loss of breath
- Serious swelling
- Slurred speech.

**Note:** Project personnel with a history of severe allergic reactions to insect bites or stings are to carry an epinephrine auto-injector (EpiPen) and wear a medical identification bracelet or necklace stating their allergy.

### 30.3 Scorpions

Scorpions typically hide during the day and are active at night. They may hide under rocks, wood, or anything else lying on the ground.

| Table 30-3 Scorpion Identification and Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Arizona Bark Scorpion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Stripebacked Scorpion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p>The average length of mature bark scorpions is 1.5 inches.</p> <p>The Arizona bark scorpion is typically a golden-yellow color or very light brown. It has a slender tail and pincers.</p> <p>In the United States, the Arizona bark scorpion is found in Arizona, California, Nevada, New Mexico and Utah</p> <p>This species has a very painful sting. Although once an extremely feared scorpion that's sting was considered lethal, research suggests that this species probably poses no serious threat to a healthy adult. The sting of this species is, however, considered to be medically significant and can be dangerous and potentially lethal to children or the elderly.</p> | <p>The average length of mature stripebacked scorpions is 2.5 inches.</p> <p>The stripebacked scorpion varies in color from yellowish-tan to brown. As you can see in the picture below, the stripebacked scorpion has two dark gray lines that run the length of its back. Older scorpions tend to be a darker brown, and the stripes may not be as obvious.</p> <p>In the United States, the stripebacked scorpion is found in Arizona, Arkansas, Colorado, Illinois, Kansas, Louisiana, Mississippi, Missouri, Nebraska, New Mexico, Oklahoma, Tennessee, and Texas. It is the most widespread scorpion in the United States.</p> <p>Opinions are varied about the potential danger of the stripebacked scorpion, ranging from it being harmless, to it being reported as extremely painful and potentially dangerous.</p> |





### 30.3.1 Exposure Prevention, Symptoms, and Treatment

Project personnel shall take the following steps to prevent scorpion stings:

- Wear long sleeves and pants.
- Wear leather gloves.
- Shake out clothing or shoes before putting them on.

**Note:** Project personnel with a history of severe allergic reactions to insect bites or stings shall carry an epinephrine auto-injector (EpiPen) and wear a medical identification bracelet or necklace stating their allergy.

Project personnel shall take the following steps if they are stung by a scorpion:

- Contact a qualified healthcare provider or poison control center for advice and medical instructions.
- Ice may be applied directly to the sting site, but do not submerge the affected limb in ice water.
- Remain relaxed and calm.
- Do not take any sedatives.
- Capture the scorpion for identification if it is possible to do so safely.

## 30.4 Dog Safety

Project personnel shall be prohibited from bringing pets to project locations/offices.

Project Entities shall prohibit vendors from bringing pets to project locations/offices.

### 30.4.1 Dog Injury Prevention, Response, and Treatment

Project personnel shall take the following steps to prevent injuries caused by dogs:

- Avoid all dogs — both leashed and stray.
- Be aware that chained dogs are also dangerous. Dogs do not like to be restrained, and a chained dog is only as secure as the chain holding it.
- Do not disturb a dog while it is sleeping, eating, or caring for puppies.
- Be aware that dogs are wary of anything they do not understand; if a person has tools or equipment in their hands, a dog may consider these a threat to its safety.
- Project confidence — dogs react strongly to body language.
- Remain still if a dog approaches to sniff you, and do not reach out to the dog; this may be interpreted as an act of aggression.





- Be aware that dogs are more aggressive when they travel in packs. Even docile dogs often become uncharacteristically violent and vicious when they are in a pack.
- Know how to spot an angry, frightened, or rabid dog, and leave the area immediately when such a dog is spotted. Dogs may attack if they are angry, afraid or rabid.
- If threatened by a dog, remain calm, do not scream, and avoid direct eye contact — staring a strange dog directly in the eyes may be perceived as a challenge.
- When speaking, use a calm and firm voice.
- Do not turn your back on a dog. Dogs tend to attack from the rear; a dog may even wait until a person passes before giving chase.
- While working, face a partner, so as to see any animals, people, or vehicles that may come up from behind.

Project personnel shall take the following steps if attacked or bitten by a dog:

- Do not turn and run — running from a dog triggers its natural chase instinct and increases its aggression, - it is seldom possible for a person to outrun a dog.
- Try to stay still until the dog leaves, or slowly back away until either the dog is out of sight or you have reached safety — e.g., a vehicle, outside a gated/fenced area, etc.
- If attacked, retreat to a vehicle or attempt to place something in the path of the dog.
- If possible, put a solid object between yourself and the dog; or, if you are holding a soft item, such as a jacket, stuff it into the dog's mouth.
- If you are unable to reach your vehicle, try to climb onto the roof of a nearby car, or get on the other side of a nearby gate or doorway, until assistance arrives or the dog leaves.
- Upon falling or being knocked to the ground, curl into a ball with hands over your head/neck and your face protected.
- If there is no chance to retreat or use any of the above techniques, do whatever you can to defend yourself and get out of the situation; kicking is safer than using your hands and arms — assuming you are wearing jeans.
- If a dog grabs a hand or a leg, go limp; the dog may let go.
- If bitten, immediately scrub the site of the bite vigorously with soap and water, seek medical attention as soon as possible, and report the incident to a supervisor and local authorities.
- Report all dog-related incidents to a supervisor, even if such incidents do not result in a bite.

### 30.5 Mosquitoes — ZIKA and West Nile Virus

The West Nile and ZIKA viruses are most often spread to humans from the bite of an infected mosquito. West Nile virus was first reported in the United States in 1999. By 2004, the virus was reported throughout the United States.



Most human infections of West Nile virus — about 80% — cause no symptoms. Approximately 20% of those infected experience flu-like symptoms. Less than 1% of those infected develop severe symptoms.

Project personnel are at risk of exposure to West Nile virus any time infected mosquitoes are biting. Mosquitos are most active in the hours from dusk to dawn, during the months of July through September.

### 30.5.1 Exposure Prevention, Symptoms, and Treatment

Project personnel who have potential for exposure shall:

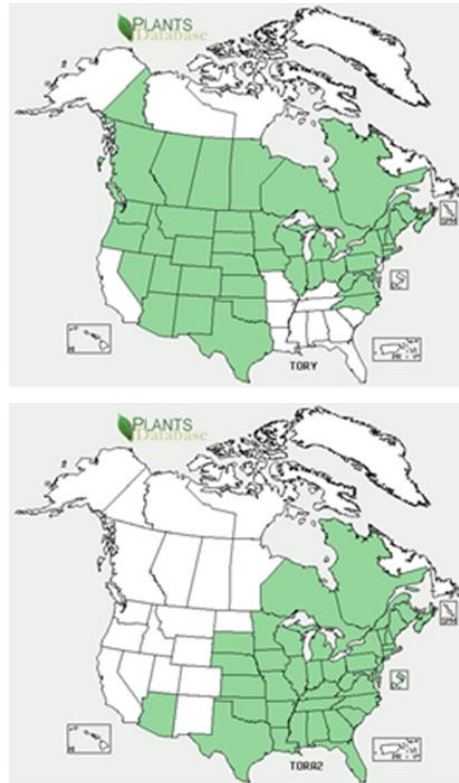
- Use insect repellent when mosquitoes are biting.
- Apply insect repellent containing DEET — more than 20% DEET for longer protection — picaridin, or oil of lemon eucalyptus to exposed skin and to clothing.
- Use permethrin repellents on clothing as directed. Do not apply these repellents to skin.
- Carefully follow label directions for repellent use.
- Do not apply pump or aerosol products directly to the face.
- Spray products onto the hands and carefully rub them over the face, avoiding the eyes and mouth.
- Use a repellent that provides protection for the amount of time that will be spent outdoors and reapply it as needed.
  - **Note:** The percentage of active ingredient in the repellent determines the length of protection.
- Wash skin treated with insect repellent using soap and water after returning indoors.
- Wear protective clothing when mosquitoes are biting, such as long-sleeved shirts, long pants, and socks.
- Spray clothing with products containing DEET, picaridin, oil of lemon eucalyptus, or permethrin, as mosquitoes may penetrate thin clothing.
- Wash clothing treated with insect repellent prior to wearing it again.
- Do not apply repellent to skin that is covered by clothing.

### 30.6 Poison Ivy, Poison Oak and Poison Sumac

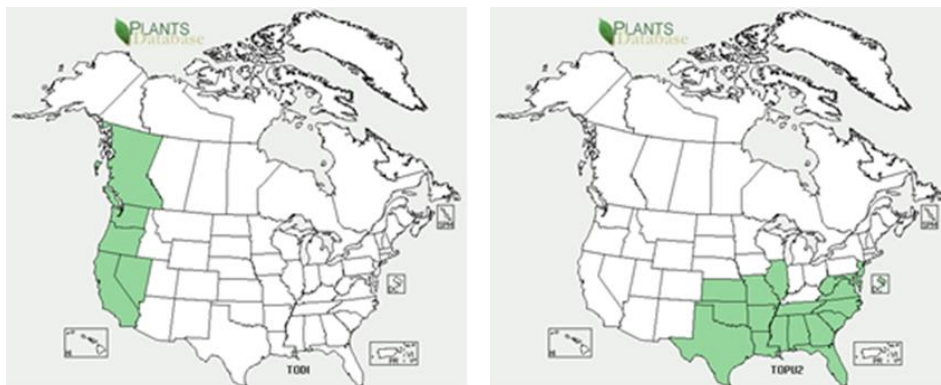
Poison ivy, poison oak, and poison sumac can release urushiol, when leaves or other plant parts are bruised, damaged, or burned. When the oil gets on the skin an allergic reaction — referred to as contact dermatitis — occurs which, in most exposed people, manifests as an itchy red rash with bumps or blisters.

**Figure 30-1 Poisonous Plant Locations**

**Poison ivy** is found across the United States, except California, Alaska, and Hawaii



**Poison oak** is primarily located in the Southeast and on the West Coast.



**Poison sumac** is abundant along the Mississippi River and in boggy areas of the Southeast.



### 30.6.1 Plant Identification

The old saying, "Leaves of three, let it be!" is a helpful reminder when identifying poison ivy and poison oak, but not poison sumac, which usually has clusters of 7 to 13 leaves.

| Table 30-4 Poisonous Plant Identification                                          |                                                                                    |                                                                                      |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Poison Ivy                                                                         | Poison Oak                                                                         | Poison Sumac                                                                         |
|  |  |  |

### 30.6.2 Exposure Prevention, Symptoms, and Treatment

Project personnel can prevent contact with poisonous plants by taking the following steps:

- Wear long sleeves, long pants, boots, and gloves.
- Wash exposed clothing separately from the rest of the laundry using hot water with an oil cutting detergent.
- Use barrier creams.
  - Barrier skin creams, such as a lotion containing bentoquatam, may offer some protection before contact.
  - Barrier creams should be washed off and reapplied twice a day.
- After use, clean tools with rubbing alcohol — e.g., isopropanol or isopropyl alcohol — or soap and lots of water.
  - Urushiol is capable of remaining active on the surface of objects for up to five years.



- Wear disposable gloves during the tool-cleaning process.

Plants that may be poison ivy, poison oak, or poison sumac shall not be burned, as inhaling smoke from burning these plants can cause severe allergic respiratory problems.

Supervisors shall prevent workers from being exposed to burning poisonous plants whenever possible. However, when exposure to burning poisonous plants is unavoidable, Project Entities shall provide employees with:

- A NIOSH-certified half-face piece particulate respirator rated R-95, P-95, or better.
  - These respirators protect against exposure to burning poisonous plants but will not protect against all possible combustion products in smoke, such as carbon monoxide.
  - Respirators shall be worn correctly and consistently when used.
  - For respirators to be effective there must be a tight seal between the user's face and the respirator.
  - Respirators shall be used in the context of the written comprehensive Respiratory Protection Program.

Project personnel who have come into contact with poisonous plants shall:

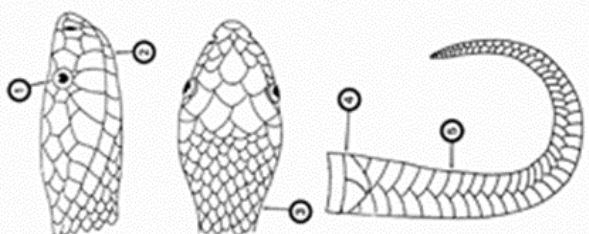
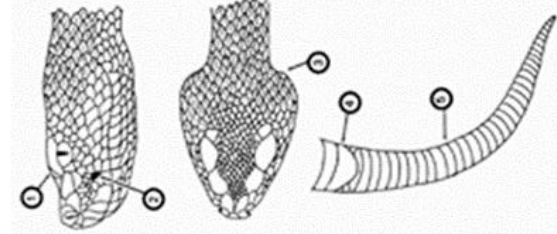
- Immediately rinse skin with rubbing alcohol, specialized poison plant washes, degreasing soap — such as dishwashing soap — or detergent, and lots of water.
- Rinse frequently so that wash solutions do not dry on the skin and further spread the urushiol.
- Scrub under nails with a brush.
- Apply wet compresses, calamine lotion, or hydrocortisone cream to the skin to reduce itching and blistering.
  - Follow the directions on any creams and lotions. Do not apply to broken skin, such as open blisters.
  - Oatmeal baths may also relieve itching.
- An antihistamine such as diphenhydramine (Benadryl) may be taken to help relieve itching.
  - Follow directions on the package.
  - Drowsiness may occur.
- In severe cases or if the rash is on the face or genitals, seek professional medical attention.
- Call 911 or go to an emergency medical facility if the worker is suffering a severe allergic reaction, such as swelling or difficulty breathing, or has had a severe reaction in the past.



### 30.7 Venomous Snakes

Venomous snakes found in the United States include rattlesnakes, copperheads, cottonmouths/water moccasins, and coral snakes. They can be dangerous to project personnel. Although rare, some workers with a severe allergy to snake venom may be at risk of death if bitten. Project Entities shall train their workers about the risk of exposure to venomous snakes, prevention and protection from snake bites, and what to do in the event of a snake bite.

See Table 30-5 and Table 30-6 for a guide to identifying and differentiating between poisonous snakes and non-poisonous snakes.

| Table 30-5 Major Identification Features of Snakes                                                                                                                                                                                  |                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NON-VENOMOUS SNAKE                                                                                                                                                                                                                  | VENOMOUS SNAKE                                                                                                                                                                                                                                    |
| <ol style="list-style-type: none"> <li>1. Round pupils</li> <li>2. No sensing pit</li> <li>3. Head slightly wider than neck</li> <li>4. Divided anal plate</li> <li>5. Double row of scales on the underside of the tail</li> </ol> | <ol style="list-style-type: none"> <li>1. Elliptical pupils</li> <li>2. Sensing pit between eye and nostril</li> <li>3. Head much wider than neck</li> <li>4. Single anal plate</li> <li>5. Single scales on the underside of the tail</li> </ol> |
|                                                                                                                                                   |                                                                                                                                                                |

| Table 30-6 Snake Varieties Identification and Ranges                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RATTLESNAKES                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|  <p><b>Timber Rattlesnake</b></p> | <p>Rattlesnakes are the largest of the venomous snakes in the United States. They can accurately strike at up to one-third their body length. Rattlesnakes use their rattles or tails as a warning when they feel threatened. Rattlesnakes may be found sunning themselves near logs, boulders, or open areas. These snakes may be found in most work habitats including mountains, prairies, deserts, and beaches across the U.S.</p> <p><b>U.S. Geographic Region:</b> Across the entire United States.</p> |





**Kansas Prairie Rattlesnake**



**Eastern  
Diamondback**



**Mojave Rattlesnake**



**Massasauga**



**Western Diamond-Backed Rattlesnake**

### COPPERHEADS



Copperheads vary in color from reddish to golden-tan. The colored bands on their body are typically hourglass-shaped. Most adults are 18 to 36 inches long. They are not typically aggressive but will often freeze when frightened. Workers are more likely to be bitten when they unknowingly step on or near a copperhead. Copperheads are often found in the Eastern states and areas extending as far west as Texas; they are most frequently located in forests, rocky areas, swamps, or near sources of water like rivers.

**U.S. Geographic Region:** Eastern states, extending as far west as Texas.

Copperhead Snake Range



### COTTONMOUTHS/WATER MOCCASINS



Cottonmouth snakes average from 50 to 55 inches long. The adult snake's skin is dark tan, brown, or nearly black, with vague black or dark brown cross-bands. Juveniles have a bold cross-banded pattern of brown or orange with a yellow tail. Cottonmouths are frequently found in or around water. They do not scare easily and will defend themselves when threatened.

**U.S. Geographic Region:** Wetland areas, rivers, lakes, etc., in the southeastern states

Cottonmouth Snake Range





### CORAL SNAKES



These snakes are often confused with non-venomous king snakes, which have similar colored bands although in a different arrangement.

However, if the red bands are touching the yellow bands, then it is a venomous coral snake. Coral snakes tend to hide in leaf piles or burrow into the ground.

**U.S. Geographic Region:** Wooded, sandy, or marshy areas of the Southern United States



#### 30.7.1 Exposure Prevention, Symptoms, and Treatment

Project personnel shall take the following steps to prevent a snake bite:

- Do not attempt to handle any snake.
- Stay away from tall grass and piles of leaves when possible.
- Avoid climbing on rocks or piles of wood where a snake may be hiding.
- Be aware that snakes tend to be active at night and in warm weather.
- Wear boots, snake chaps, and long pants when working in areas where venomous snakes may be present.
- Wear leather gloves when handling brush and debris.

Project personnel shall take the following steps if they are bitten by a snake:

- Seek medical attention as soon as possible — dial 911 or contact local emergency medical services.
- Try to remember the color and shape of the snake, which can help with treatment of the snake bite.
- Remain still and calm. This may slow down the spread of venom.

- Inform your supervisor.
- Apply first aid if you cannot get to the hospital right away.
- Lie or sit down with the bite below the level of the heart.
- Wash the bite with soap and water.
- Cover the bite with a clean, dry dressing.

Project personnel shall NOT do any of the following if they are bitten by a snake:

- Do not pick up the snake or attempt to trap it.
- Do not wait for symptoms to appear after being bitten — seek immediate medical attention.
- Do not apply a tourniquet.
- Do not slash the wound with a knife.
- Do not attempt to suck out the venom.
- Do not apply ice or immerse the wound in water.
- Do not drink alcohol.
- Do not drink caffeinated beverages.

### 30.8 Venomous Spiders

Venomous spiders found in the United States include the black widow, brown recluse, and hobo spiders. Spiders usually are not aggressive, and most bites occur because a spider is trapped or unintentionally contacted.

**Table 30-7 Spider Varieties Identification and Ranges**

**BLACK WIDOWS**



Black widow spiders are found throughout North America but are most common in the southern and western parts of the United States. They are identified by the pattern of red coloration on the underside of their abdomen. They are usually found in workplaces containing undisturbed areas such as under eaves, woodpiles, fences, and other areas where debris has accumulated. They may also be found living in outdoor toilets where flies are plentiful.



Black widow spiders build webs between objects, and bites usually occur when humans come into direct contact with these webs.

A bite from a black widow can be distinguished from other insect bites by the two puncture marks it makes in the skin. The venom is a neurotoxin that produces pain at the bite area and then spreads to the chest, abdomen, or the entire body.

### BROWN RECLUSE SPIDERS



The brown recluse spider, also known as the violin spider, is most commonly found in the Midwestern and Southern states of the United States. It is brown in color with a characteristic dark, violin-shaped — or fiddle-shaped — marking on its head and has six equal-sized eyes — most spiders have eight eyes. Brown recluse spiders are usually found in workplaces with secluded, dry, sheltered areas, such as underneath structures logs, or in piles of rocks or leaves. If a brown recluse spider wanders indoors, they may be found in dark closets, shoes, or attics.



The brown recluse spider cannot bite humans without some form of counter pressure, for example, through unintentional contact that traps the spider against the skin. Bites may cause a stinging sensation with localized pain. A small white blister usually develops at the site of the bite. The venom of a brown recluse can cause a severe lesion by destroying skin tissue — skin necrosis. This skin lesion will require professional medical attention.

### HOBO SPIDERS



The hobo spider is found throughout the Pacific Northwest. It is large and brown with a distinct pattern of yellow markings on its abdomen. Unlike many other similar-looking spiders, hobo spiders do not have dark bands on their legs. To catch their prey, hobo spiders build funnel webs in holes, cracks, and recesses. They may be found in outdoor workplaces with retaining walls, and in foundations, window wells, and stacks of firewood or bricks. Indoors, they can nest between boxes or other storage items, on windowsills, under baseboard heaters or radiators, behind furniture, and in closets. Hobo spiders do not climb like most spiders but are fast runners. These spiders are much more likely to attack if provoked or threatened. The bite of a hobo spider may go unnoticed; however, a moderate to severe, slow-healing wound will develop.



### 30.8.1 Exposure Prevention, Symptoms, and Treatment

Project personnel shall take the following steps to prevent spider bites:

- Inspect or shake out any clothing, shoes, towels, or equipment prior to use.
- Wear protective clothing — such as a long-sleeved shirt, long pants, hat, gloves, and boots — when handling stacked or undisturbed piles of materials.
- Minimize the empty spaces between stacked materials.
- Remove and reduce debris and rubble from around the outdoor work areas.
- Trim or eliminate tall grasses from around outdoor work areas.
- Store apparel and outdoor equipment in tightly closed plastic bags.
- Keep tetanus boosters up to date — every 10 years. Spider bites can become infected with tetanus spores.

Project personnel shall take the following steps if they are bitten by a spider:

- Stay calm. Identify the type of spider if it is possible to do so safely. Identification will aid in medical treatment.
- Wash the bite area with soap and water.
- Apply a cloth, dampened with cold water or filled with ice, to the bite area to reduce swelling.
- Elevate the bite area, if possible.
- Do not attempt to remove venom.
- Notify your supervisor.
- Immediately seek professional medical attention.

### 30.9 Ticks

Ticks are typically found in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to 1/4 inch (6.4 millimeters) in size. In some geographic areas, exposure is not easily avoided.

|                                                            |
|------------------------------------------------------------|
| <b>Table 30-8 Tick Varieties Identification and Ranges</b> |
| <b>AMERICAN DOG TICK</b>                                   |





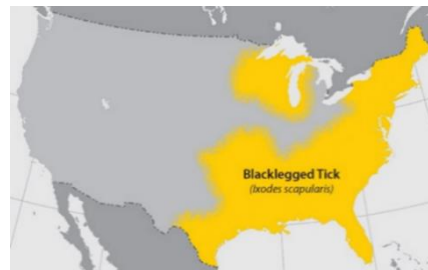
American dog tick is the most commonly identified species responsible for transmitting *Rickettsia rickettsii*, which causes Rocky Mountain spotted fever in humans. The American dog tick can also transmit tularemia. This tick is widely distributed east of the Rocky Mountains and also occurs in limited areas on the Pacific Coast. American Dog Tick larvae and nymphs feed on small rodents. Dogs and medium-sized mammals are the preferred hosts of adults, although it feeds readily on other large mammals, including humans.



### BLACKLEGGED TICK



The blacklegged tick, commonly known as a "deer tick", can transmit the organisms responsible for anaplasmosis, babesiosis, and Lyme disease. This tick is widely distributed in the northeastern and upper midwestern United States. Blacklegged Tick larvae and nymphs feed on small mammals and birds, while adults feed on larger mammals and will bite humans on occasion. It is important to note that the pathogen that causes Lyme disease is maintained by wild rodent and other small mammal reservoirs, and is not transmitted everywhere that the blacklegged tick lives. In some regions, particularly in the southern U.S., the tick has very different feeding habits that make it an unlikely vector in the spread of human disease.



### BROWN DOG TICK



The brown dog tick has recently been identified as a reservoir of *R. rickettsii*, causing Rocky Mountain spotted fever, in the southwestern U.S. and along the U.S.-Mexico border. Brown dog ticks are found throughout the U.S. and

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                     | <p>the world. Dogs are the primary host for the brown dog tick for each of its life stages, although the tick may also bite humans or other mammals</p>                                                                                                                                                                                                                                                                                                                                                                       |
| <b>GULF COAST TICK</b>                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|   | <p>The Gulf Coast tick resides in coastal areas of the United States along the Atlantic coast and the Gulf of Mexico. The Gulf Coast tick can transmit <i>Rickettsia parkeri</i> rickettsiosis, a form of spotted fever. Gulf Coast tick larvae and nymphs feed on birds and small rodents, while adult ticks feed on deer and other wildlife. Adult ticks have been associated with transmission of <i>R. parkeri</i> to humans.</p>                                                                                        |
| <b>LONE STAR TICK</b>                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|  | <p>The Lone Star Tick transmits <i>Ehrlichia chaffeensis</i> and <i>Ehrlichia ewingii</i>, causing human ehrlichiosis, tularemia, and STARI. The lone star tick is primarily found in the southeastern and eastern United States. White-tailed deer are a major host of lone star ticks and appear to represent one natural reservoir for <i>E. chaffeensis</i>. Lone Star Tick larvae and nymphs feed on birds and deer. Both nymphal and adult ticks may be associated with the transmission of pathogens to humans.</p>  |
| <b>ROCKY MOUNTAIN WOOD TICK</b>                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|   | <p>Rocky Mountain wood tick can transmit Rocky Mountain spotted fever and tularemia to humans. This tick is found in the Rocky Mountain states. Adult ticks feed primarily on large mammals. Larvae and nymphs feed on small rodents. Adult ticks are primarily associated with pathogen transmission to humans</p>                                                                                                                                          |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WESTERN BLACKLEGGED TICK                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|  | <p>The western blacklegged tick can transmit the organisms responsible for causing anaplasmosis and Lyme disease in humans. Wild rodents and other mammals are likely reservoirs of these pathogens. This tick is distributed along the Pacific coast of the United States. Larvae and nymphs feed on birds and small rodents, while adult ticks feed on deer and other mammals. Both adult and nymphal ticks are known to transmit disease to humans.</p>  |

### 30.9.1 Protection and Exposure Prevention

Project personnel shall take the following steps to prevent tick bites:

- Wear tightly woven, light-colored clothing with long sleeves and pant legs tucked into boots.
- Spray only outside of clothing with permethrin or permethrin and spray skin with only DEET.
- Frequently check yourself for ticks.
- Where site conditions warrant — e.g., vegetation above knee height, tick-endemic area, etc. — or when tasks warrant — e.g., having to sit/kneel in vegetation — bug-out suits or Tyvek shall be used.
- Avoid tick habitats where possible.
- Reduce the abundance of ticks in an area through habitat disruption or application of acaricide.



- If these controls aren't feasible, contact your local/regional warehouse for preventative equipment such as repellants, protective clothing, and tick removal kits.
- Use the buddy system and perform tick inspections prior to entering the field vehicle. If tick encounters were not anticipated but ticks are observed, do not continue fieldwork until appropriate controls are implemented.

### 30.9.2 Illnesses, Signs and Symptoms

Six notable tick-borne pathogens cause human illness in the United States. These pathogens may be transmitted during a tick bite but transmission normally occurs hours after attachment — a reason to find tick bites and remove ticks quickly. Table 30-10B lists the tick-borne illnesses, in order from most to least common.

| Table 30-9 Tick-Borne Diseases and Common U.S. Regions |                                         |
|--------------------------------------------------------|-----------------------------------------|
| TICK-BORNE DISEASE                                     | COMMON U.S. REGIONS                     |
| Lyme disease (bacteria)                                | Northeast, North Central, Pacific Coast |
| Babesia/Babesiosis (protozoan parasite)                | Northeast, Midwest, Northwest           |
| Ehrlichiosis (bacteria)                                | East, Southeast, Central                |
| RMSF Rocky Mountain Spotted Fever (bacteria)           | Southeast, Atlantic Coast               |
| STARI Southern Tick-Associated Rash Illness (bacteria) | Southeast, Atlantic Coast               |
| Tick-Borne Relapsing Fever                             | Rocky Mountains, Pacific Coast          |
| Tularemia (Rabbit Fever) (bacteria)                    | All States, except Hawaii               |
| Anaplasmosis                                           | Northeast, North Central, Pacific Coast |
| Colorado Tick Fever                                    | Northwest, Rocky Mountains              |
| Powassan Encephalitis                                  | Northeast                               |
| Q fever                                                | Throughout the United States            |

These illnesses may include some or all of the following symptoms: fever; headache; muscle aches; chills; stiff neck; joint aches; nausea; vomiting; abdominal pain; bone pain; diarrhea; fatigue; malaise; weakness; and small, solid, ring-like or spotted rashes.

Symptoms vary based on the illness and typically develop in infected individuals between 3 and 30 days after transmission. Some infected individuals do not exhibit symptoms or may develop only mild symptoms.

Lyme: a rash might appear that looks like a bull's-eye with a small welt in the center. RMSF: a rash of red spots under the skin 3 to 10 days after the tick bite. In both RMSF and Lyme disease, chills, fever, headache, fatigue, stiff neck, and bone pain may develop.

If symptoms appear, contact the site safety and health supervisor and seek medical attention.

### 30.9.3 Controls

Methods for controlling exposure to ticks include the following, in order from most to least preferred:



- Avoiding tick habitats and ceasing operations in heavily infested areas.
- Reducing tick abundance through habitat disruption or application of insecticide.
- Personal protection through use of protective clothing, repellants (DEET), and contact insecticides — permethrin or permethrin.
- Frequent tick inspections and proper hygiene.

**Note:** Vaccinations are not available and preventative antibiotic treatment after a bite is generally not recommended.

When avoiding the habitat or reducing tick abundance is not feasible, project personnel shall implement the following to prevent tick bites:

#### 30.9.4 Clothing

- Wear light-colored clothing so they may be more easily seen before they bite.
- Wear long sleeves and long pants.
- Tuck in your clothes (shirt inside your pants, and pants legs inside your socks or boots)
- Check your clothing frequently for ticks.

#### 30.9.5 Repellants and Contact Insecticides

Use repellents (DEET) on your skin with contact insecticide (permethrin or permethrin) on your clothing only, as directed on the product label; these products are nearly 100-percent effective in preventing tick bites when used together and used correctly.

Apply repellants to all areas of exposed skin. Insects may only need unprotected skin the size of a quarter, repellant on nearby skin or on clothes will not protect this area of skin.

Reapply repellants before the duration of protection expires:

- 5 to 10%: 2-4 hours
- 15%: 6 hours
- 25 to 30%: Up to 8 hours
- 100%: 10+ hours

#### 30.9.6 Tick Check

A tick check shall be performed after field activities in potential tick habitats, before entering the field vehicle.

Have your field partner check your back; the backs of your legs, arms and neck; and your hairline. Shake off clothing as thoroughly as possible before entering the vehicle.



Once the field day is complete, repeat this procedure and perform a thorough self-check at the end of the day, search your entire body carefully for ticks — particularly the groin, armpits, neck and head — and shower.

### 30.9.7 Tick Removal

If a tick has embedded itself into the skin, the tick shall be removed, preferably using a Tick Removal Kit, if available.

Ticks shall be removed quickly, the sooner it is removed the less likely the transmission of potentially infectious organisms, if it is carrying them.

Ticks shall be removed cleanly, to prevent the bite wound from becoming infected.

Ticks shall be removed intact, to prevent the tick's fluids — which may contain infectious organisms — infecting the bite wound. In addition, if intact, the tick may be assessed to determine if it is carrying infectious organisms — see procedures below.

Tweezers used to remove ticks shall be pointed, precision tweezers. Cosmetic tweezers with wide, flat ends may crush the tick, increase the potential of the transmission of potentially infectious organisms — if the tick is carrying them — and make the wound worse. Choose un-rasped fine-pointed tweezers whose tips align tightly when pressed firmly together.

When removing ticks, project personnel shall do the following:

- First disinfect the area.
- Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure.
- Do not twist or jerk the tick as this may cause the tick's mouth parts to break off and remain in the skin. If this happens, remove the mouthparts with tweezers, and consult a healthcare provider if infection occurs.
- Do not grasp, squeeze, crush, or puncture the body of the tick because its fluids — e.g., saliva, hemolymph, gut contents — may contain infectious organisms. Releasing these organisms to the outside of the tick's body or into the bite area may increase the chance of infectious organism transmission.
- Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin.
- Place tick in a zip lock bag, in the event that management or the health-care provider asks for analysis of the tick.
- Thoroughly disinfect the bite wound and wash hands with soap and water.

### 30.9.8 Tick Bite Treatment

Tick bites shall be treated with first aid. Clean and wash hands and disinfect the bite wound site before and after removing the embedded tick. Monitor the site of the bite for the appearance of a rash or early tick-borne illness symptoms which may begin 3 to 30 days after a tick bite.





## Chapter 31

# Severe Weather and Lightning

### Chapter Contents

#### 31 Severe Weather and Lightning

##### 31.1 Lightning

###### 31.1.1 Outdoors

###### 31.1.2 Indoors

###### 31.1.3 Curtailment of Site Activity

###### 31.1.3.1 Yellow Alert

###### 31.1.3.2 Orange Alert

###### 31.1.3.3 Red Alert

###### 31.1.3.4 All Clear

##### 31.2 Tornado

##### 31.2 Flash Floods

##### 31.4 Wild Land Fire

##### 31.5 Tropical Storm and Hurricane Preparedness

###### 31.5.1 Before the Storm

###### 31.5.2 During the Storm

###### 31.5.3 After the Storm

##### 31.6 Earthquakes

###### 31.6.1 Preparation

###### 31.6.2 Action Taken If an Earthquake Strikes

###### 31.6.2.1 Steps to Take During an Earthquake

###### 31.6.2.2 Steps to Take Immediately After an Earthquake



### 31.1 Lightning

Project Entities shall be responsible for monitoring the potential of hazardous weather conditions.

When lightning occurs, Project Entities shall convey the appropriate response actions to ensure that project personnel are able to react quickly and safely.

#### 31.1.1 Outdoors

While outdoors, project personnel shall remain aware of the weather to foresee possible thunderstorms.

Personnel shall be prepared to demobilize and take shelter before thunderstorms are too close.

**Note:** A safe shelter is a substantial building with electricity or plumbing; or an enclosed, metal-topped vehicle with windows up.

Project personnel working outdoors during thunderstorms, or when lightning is possible, shall observe the following precautions:

- Stay off and away from anything tall or high, including rooftops, scaffolding, utility poles, and ladders.
- Stay off and away from large equipment such as bulldozers, cranes, backhoes, track loaders, and tractors.
- Do not touch materials or surfaces that can conduct electricity, including metal scaffolding, metal equipment, utility lines, water, water pipes and plumbing.

Individuals caught outside with no safe shelter anywhere nearby shall take the following actions to reduce their risk:

- Immediately get off elevated areas such as hills, mountain ridges or peaks.
- Never lie flat on the ground, seek shelter under an isolated tree, or shelter under a cliff or rocky overhang.
- Immediately get out and away from ponds, lakes, and other bodies of water.
- Stay away from objects that conduct electricity — e.g., barbed wire fences, power lines, windmills, etc.

#### 31.1.2 Indoors

Project personnel working indoors during thunderstorms, or when lightning is possible, shall observe the following precautions:

- Stay off corded phones, computers and other electrical equipment that put you in direct contact with electricity.
- Avoid plumbing, including sinks, baths, and faucets.
- Stay away from windows and doors, stay off porches.



- Do not lie on concrete floors, and do not lean against concrete walls.

### 31.1.3 Curtailment of Site Activity

Lightning activity shall be monitored using appropriate detection equipment. Project Entities shall be responsible for ensuring the appropriate steps are taken to minimize personnel exposure if lightning threatens during site activities.

#### 31.1.3.1 Yellow Alert

When an approaching storm with lightning is detected — using appropriate detection equipment or NOAA — is within 25 miles of the job site, a Yellow Alert shall be given to all personnel on site.

**Yellow Alert** — This is a warning used to inform crane operators, man lift operators, and personnel working in elevated positions that a storm with potential lightning is approaching. This announcement is for informational purposes only; the intent is that personnel working at elevated positions or performing crane operations understand that lightning activity is imminent.

#### 31.1.3.2 Orange Alert

When an approaching storm with lightning is detected — using appropriate detection equipment or NOAA — is within 15 miles of the job site, an Orange Alert shall be given to all personnel on site.

**Orange Alert** — This is used to alert all personnel involved with crane operations, man lift operations, and those personnel working at elevated locations to stop work, exit elevated positions, and/or secure loads due to inbound lightning activity.

#### 31.1.3.3 Red Alert

When an approaching storm with lightning is detected — using appropriate detection device or NOAA — is within 10 miles of the job site, a Red Alert shall be given to all personnel on site.

**Red Alert** — This is used to alert all site personnel that a storm containing lightning activity is inbound. All personnel shall move to protected areas that are properly grounded without delay.

The following areas are prohibited from use during the 10 Mile Lightning Stand-Down Action Alert unless the area is properly grounded:

- Smoking pits
- Welding shacks
- Exposed rooms/locations
- Tools sheds or shanties

#### 31.1.3.4 All Clear

**All Clear** — An All Clear is a call to go back to continue groundwork.

All Clear will be announced once lightning activity has ceased for a period of 30 minutes and there is no additional lightning activity within the 10-mile — i.e., Red Alert. This determination shall be made using appropriate detection equipment or NOAA.



As lightning moves further away from the job site, beyond the Orange and Yellow Alert radiuses, the announcement will be made for crane operations, man lift operations, and elevated work to recommence.

Once lightning has gone beyond the radius of the Red Alert but not yet reached the Orange Alert, workers on crane operations, man lift operations, and elevated work may return to their work areas but shall not start those operations until the lightning activity has gone beyond the Orange Alert. In between the Orange Alert and Yellow Alert employees must remain aware that a storm is in the area, but all work may resume.

Lightning activity alerts shall be managed by the on-site project management team.

### 31.2 Tornado

**Tornado Watch** — This means tornadoes are possible in the area; remain alert for the approaching storm.

**Tornado Warning** — This occurs when a tornado has been sighted or has been indicated by weather radar. If a tornado warning is issued for a person's area, they shall move to a pre-designated place of safety.

Project Entities shall be responsible for the development of a Tornado Response Plan based on project location and the availability of adequate shelter.

Project Entities shall ensure that project personnel are able to react quickly and safely by conveying the appropriate response actions if a tornado occurs.

### 31.3 Flash Floods

**Flash Flood Watch** — This indicates that a flash flood is possible in the area. Individuals are to stay alert and watch for deteriorating conditions.

**Flash Flood Warning** — This is issued when a flash flood is imminent. Individuals are to take immediate protective actions.

In the event of a flash flood, project personnel shall take the following steps:

- Listen to local radio and TV stations for information and advice.
- Stop work — if advised to evacuate, do so immediately.
- Move to a safe area.
- Do not attempt to drive over a flooded roadway.
- Do not drive into barricaded areas.

### 31.4 Wild Land Fire

In the event of a wild land fire approaching the project site, Project Entities shall follow the preparation or evacuation orders of state, local, and federal authorities.



### 31.5 Tropical Storm and Hurricane Preparedness

**Tropical Disturbance** — This refers to a moving area of thunderstorms in the tropics that maintains its identity for 24 hours or more.

**Tropical Depression** — A tropical cyclone with rotary circulation at the surface, where the highest constant wind speed is 38 mph (33 knots).

**Tropical Storm** — A tropical cyclone characterized by a distinct rotary circulation and constant wind speed ranging from 39 to 73 mph (34 to 63 knots).

**Hurricane** — A tropical cyclone with wind speeds of 74 mph (64 knots) or greater, usually accompanied by heavy rain, thunder, lightning, coastal tidal surges, and possible tornadoes. These storms are also known as typhoons in the Western Pacific and cyclones in the Indian Ocean and South Pacific Ocean.

**Hurricane Watch** — Issued for a coastal area where there is a threat of hurricane conditions within 24 to 36 hours.

**Hurricane Warning** — Issued when hurricane conditions are expected in a specified coastal area within 24 hours or less. If a hurricane warning is issued, actions for the protection of life and property shall begin immediately.

#### 31.5.1 Before the Storm

In the event that a tropical storm or hurricane forms, with predicted landfall affecting a Burns & McDonnell and/or its subsidiaries' project location, Project Entities shall be responsible for completing job-site preparations at least 24 hours before tropical storm force winds are expected. Project Entities shall ensure job-site preparation requirements are met, including — but not limited to — the following:

- Sufficient personnel shall be retained to properly secure and clean the project site.
- Planking shall be removed from scaffolding. Scaffolding framework shall be temporarily dismantled or adequately secured.
- Mobile crane booms shall be lowered and secured. Tower crane booms shall be left free to swing with the wind — weathervane.
- Metal flooring and/or roof deck shall be temporarily removed and secured if concrete placement is incomplete.
- Privacy screens shall be removed from chain-link fencing systems.
- Dumpsters shall be secured.
  - Prior agreements regarding dumpster procedures related to storm events shall be obtained with waste removal vendors. Every effort shall be made to empty the dumpsters of waste prior to a storm event.
- Gravel or other loose building materials shall be secured or removed.
- Equipment, tools, materials, and other potential hazards shall either be removed from the project site or adequately secured.



- Temporary signage, not required for personnel safety, shall be removed. Remaining temporary signage shall be securely anchored.
- Storm drains shall be cleaned.
- Portable restroom facilities shall be emptied and secured.

### 31.5.2 During the Storm

During the storm, the following precautions shall be taken:

- Emergency personnel shall only remain at the facility if it is safe to do so. Local authorities shall be notified if personnel are staying on site.
- Designate times for key staff members to call into conference calls for situation overviews.
- The employee emergency hotline and/or company intranet and website shall be updated with a posting on the status of the facility.
- When safe to do so, the property shall be patrolled continuously.
  - Watch for roof leaks, pipe breakage, fire, or structural damage.
  - Constantly monitor any boilers that must remain online.
- During power failure, turn off electrical switches to prevent re-energization of equipment until necessary checks are completed.
- Remain in a secure room, away from windows.
- Weather and civil service bulletins shall be monitored on either regular or NOAA radio.
- Adequate supplies shall be on hand.

### 31.5.3 After the Storm

After the storm, project personnel shall take the following steps:

- Ensure the storm has completely passed before going out.
- Report downed power lines and stay away from them.
- Use stored water and food.
- Continue listening to a NOAA weather radio or local news for the latest updates.
- Stay alert for extended rainfall and subsequent flooding, even after the hurricane or tropical storm has ended.
- Drive only if necessary; avoid flooded roads and washed-out bridges.
- Keep away from loose or dangling power lines and report them immediately to the power company.





- Stay out of any building that has water around it.
- Use flashlights in the dark.
- Avoid drinking or preparing food with tap water until certain it is not contaminated.
- Wear protective clothing and be cautious when cleaning up to avoid injury.
- Use telephones only for emergency calls.

## 31.6 Earthquakes

### 31.6.1 Preparation

Understand drop, cover, and hold. By following this procedure, it is possible to reduce the risk of injury and death during an earthquake.

The drop, cover, and hold procedure simply consists of the following steps:

- Drop to hands and knees as soon as the shaking starts.
- Cover the head and neck while crawling to a sturdy table or an interior wall.
- Hold on tight with one hand while staying alert to changes.
- **Note:** If the item providing shelter shifts, move out of the way and under another table. No matter what, stay away from all windows and heavy furniture items that are not bolted down.

### 31.6.2 Action Taken If an Earthquake Strikes

Project Entities shall be responsible for ensuring that project personnel can react quickly and safely by conveying the appropriate response actions when an earthquake occurs.

#### 31.6.2.1 Steps to Take During an Earthquake

During an earthquake, project personnel shall take the following steps:

- If indoors, follow the drop, cover, and hold procedure. As you drop down to your hands and knees, look around for a safe place to find cover, such as a nearby table or desk.
  - Cover your head and neck with one hand while crawling to a nearby table or desk. Then, hold on to the table leg or other sturdy item while continuing to cover your head and neck.
  - Once the shaking stops, evacuate the building if it was damaged in any way. Remember to repeat the drop, cover, and hold process through aftershocks, as well.
- If outdoors, do not attempt to run inside. Instead, move away from powerlines, buildings, and other hazards, ideally find an open area. Drop down onto your hands and knees, and remain kneeling, while covering your head, neck, and other vital areas until the shaking stops.
- If driving, bring the vehicle to a stop away from overpasses, powerlines, and other hazards, remain in the vehicle until the earthquake ends. Assess the vehicle and roadway for hazards before continuing. Drive slowly and watch for areas of missing road or other problems caused by the shaking.



### 31.6.2.2 Steps to Take Immediately After an Earthquake

Immediately after an earthquake, project personnel shall take the following steps:

- Remain in the same safe location for several minutes after the earthquake, in case of aftershocks.
- Do not attempt to evacuate or leave your immediate area, unless necessary, or when instructed to do so by a proper authority.
- Check for injuries and administer necessary first aid. Recognize and assist co-workers who are suffering from shock or emotional distress.
- Establish a temporary shelter if rescue teams are expected to be delayed.
- When instructed to exit a building, use stairways; do not attempt to use elevators.



## Chapter 32

### Cold Stress

#### Chapter Contents

##### 32 Cold Stress

###### 32.1 Cold Stress

###### 32.1.1 Training

###### 32.2 Environmental Monitoring

###### 32.3 Protective Clothing and Rest Breaks

###### 32.4 Identification and Treatment of Cold Stress

Figure 32-1 — Cooling Power of Wind on Exposed Flesh

Figure 32-2 — NOAA Wind Chill Chart

###### 32.5 Hypothermia

###### 32.5.1 Early Symptoms

###### 32.5.2 Late Symptoms

###### 32.5.3 Treatment of Hypothermia

###### 32.6 Frostbite

###### 32.6.1 Symptoms of Frostbite

###### 32.6.2 Treatment of Frostbite

###### 32.7 Cold Water Immersion



### **32.1 Cold Stress**

This procedure applies to project personnel who perform fieldwork in cold environments at risk of cold stress injury. Frostbite, hypothermia, and trench foot are the most common cold-induced problems that personnel must be protected against.

Project Entities shall be required to develop a Cold Stress Prevention Program using Safety Form K-6, "Winterization & Preparedness Plan," or equivalent, which shall be submitted to Burns & McDonnell and/or its subsidiaries.

#### **32.1.1 Training**

Project Entities shall be responsible for ensuring project personnel are training on cold stress safety and health procedures, as applicable. The Project Entity's training program shall include, at a minimum, instruction in the following areas:

- Proper first aid treatment.
- Proper clothing practices.
- Proper eating and drinking habits.
- Recognition of impending frostbite.
- Recognition of the signs and symptoms of impending hypothermia or excessive cooling of the body when shivering does not occur.
- Safe working practices.

### **32.2 Environmental Monitoring**

Frostbite and hypothermia are two types of cold injury that project personnel shall be protected against during the performance of field duties. Factors influencing the development of a cold injury include ambient temperature, wind velocity, moisture from the environment, and/or sweating.

Project Entities shall be responsible for monitoring environmental conditions by recording ambient temperature and estimated wind speed. Information contained in Tables 32-1 and 32-2 shall be used to evaluate the possibility of hypothermia occurring among workers on site.

### **32.3 Protective Clothing and Rest Breaks**

Project personnel shall wear appropriate cold weather clothing when temperatures are at or below 40 degrees Fahrenheit to protect exposed skin. These protective items may include coats, thermal suits, gloves, facemasks, and footwear. The objective is to protect all parts of the body, with emphasis on the hands and feet. If windchill is a factor on the work site, the cooling effect of the wind shall be reduced by shielding the work area or requiring workers to wear an outer windbreak-layer garment. Eye protection against glare and ultraviolet light are recommended in snowy and icy conditions.

If heavy work must be done, opportunities for rest breaks shall be provided where workers have the opportunity to remove clothing layers and/or to change into dry clothing. Conversely, work activities shall be planned to minimize time spent sitting or standing still. Rest breaks shall be taken in a warm, dry area. Workers handling evaporative solvents during cold stress conditions shall take special precautions to avoid soaking gloves and clothing because of the added danger of prolonged skin contact and evaporative cooling.



In addition to wearing gloves for hand warmth, the following recommendations are adapted from the Occupational Safety and Health Administration's (OSHA's) 2007 cold-stress Emergency Preparedness Guide:

- Wear at least three layers of clothing.
  - An inner layer of wool, silk or synthetic to wick moisture away from the body.
  - A middle layer of wool or synthetic to provide insulation even when wet.
  - An outer layer for wind and rain protection that allows some ventilation to prevent overheating.
- Wear a hat or hood. Up to 40% of body heat can be lost when the head is left exposed.
- Wear insulated boots or similar waterproof footwear.
- Keep a change of dry clothing available in case work clothes become wet.
- With the exception of the wicking layer, do not wear tight clothing. Loose clothing allows better ventilation of heat away from the body.
- Avoid touching cold metal surfaces with bare skin.
- Monitor your physical condition and that of your co-workers.
- Move into warm locations during work breaks.
- Limit the amount of time outside on extremely cold days.
- Drink plenty of liquids to keep hydrated, avoiding caffeine and alcohol.

#### **32.4 Identification and Treatment of Cold Stress**

When frostbite, hypothermia, or other cold stress symptoms are suspected, treat the patient to relieve symptoms or transport them to a medical facility.

**Figure 32-1 Cooling Power of Wind on Exposed Flesh**

| Wind Speed | Air Temperature (°F) |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|------------|----------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
|            | 40                   | 35 | 30 | 25 | 20 | 15  | 10  | 5   | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |  |
| 5          | 36                   | 31 | 25 | 19 | 13 | 7   | 1   | -5  | -11 | -16 | -22 | -28 | -34 | -40 | -46 | -52 | -57 | -63 |  |
| 10         | 34                   | 27 | 21 | 15 | 9  | 3   | -4  | -10 | -16 | -22 | -28 | -35 | -41 | -47 | -53 | -59 | -66 | -72 |  |
| 15         | 32                   | 25 | 19 | 13 | 6  | 0   | -7  | -13 | -19 | -26 | -32 | -39 | -45 | -51 | -58 | -64 | -71 | -77 |  |
| 20         | 30                   | 24 | 17 | 11 | 4  | -2  | -9  | -15 | -22 | -29 | -35 | -42 | -48 | -55 | -61 | -68 | -74 | -81 |  |
| 25         | 29                   | 23 | 16 | 9  | 3  | -4  | -11 | -17 | -24 | -31 | -37 | -44 | -51 | -58 | -64 | -71 | -78 | -84 |  |
| 30         | 28                   | 22 | 15 | 8  | 1  | -5  | -12 | -19 | -26 | -33 | -39 | -46 | -53 | -60 | -67 | -73 | -80 | -87 |  |
| 35         | 28                   | 21 | 14 | 7  | 0  | -7  | -14 | -21 | -27 | -34 | -41 | -48 | -55 | -62 | -69 | -76 | -82 | -89 |  |
| 40         | 27                   | 20 | 13 | 6  | -1 | -8  | -15 | -22 | -29 | -36 | -43 | -50 | -57 | -64 | -71 | -78 | -84 | -91 |  |
| 45         | 27                   | 19 | 12 | 5  | -2 | -9  | -16 | -23 | -30 | -37 | -44 | -51 | -58 | -65 | -72 | -79 | -86 | -93 |  |
| 50         | 26                   | 19 | 12 | 4  | -3 | -10 | -17 | -24 | -31 | -38 | -45 | -52 | -60 | -67 | -74 | -81 | -88 | -95 |  |

Wind speed based on measures at 33 feet height. If wind speed measured at ground level multiply by 1.5 to obtain wind speed at 33 feet and then utilize chart.

| Risk of Frostbite                                                               |                                                                                        |                                                                                   |
|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Green                                                                           | Yellow                                                                                 | Red                                                                               |
| Slight Danger<br>(frostbite occurs in less than two hours in dry, exposed skin) | Increased Danger<br>(frostbite could occur in 45 minutes or less in dry, exposed skin) | Great Danger<br>(frostbite could occur in 5 minutes or less in dry, exposed skin) |
| Wet skin could significantly decrease the time for frostbite to occur           |                                                                                        |                                                                                   |

Windchill index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The windchill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it shall only be used as a guideline to warn workers when they are in a situation that may cause cold-related illnesses.

**Figure 32-2 NOAA Wind Chill Chart**

|                 |    | Temperature (°F) |    |    |            |     |     |           |     |     |     |     |     |     |     |     |     |     |     |  |  |
|-----------------|----|------------------|----|----|------------|-----|-----|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| Calm            |    | 40               | 35 | 30 | 25         | 20  | 15  | 10        | 5   | 0   | -5  | -10 | -15 | -20 | -25 | -30 | -35 | -40 | -45 |  |  |
| Wind (mph)      | 5  | 36               | 31 | 25 | 19         | 13  | 7   | 1         | -5  | -11 | -16 | -22 | -28 | -34 | -40 | -46 | -52 | -57 | -63 |  |  |
|                 | 10 | 34               | 27 | 21 | 15         | 9   | 3   | -4        | -10 | -16 | -22 | -28 | -35 | -41 | -47 | -53 | -59 | -66 | -72 |  |  |
|                 | 15 | 32               | 25 | 19 | 13         | 6   | 0   | -7        | -13 | -19 | -26 | -32 | -39 | -45 | -51 | -58 | -64 | -71 | -77 |  |  |
|                 | 20 | 30               | 24 | 17 | 11         | 4   | -2  | -9        | -15 | -22 | -29 | -35 | -42 | -48 | -55 | -61 | -68 | -74 | -81 |  |  |
|                 | 25 | 29               | 23 | 16 | 9          | 3   | -4  | -11       | -17 | -24 | -31 | -37 | -44 | -51 | -58 | -64 | -71 | -78 | -84 |  |  |
|                 | 30 | 28               | 22 | 15 | 8          | 1   | -5  | -12       | -19 | -26 | -33 | -39 | -46 | -53 | -60 | -67 | -73 | -80 | -87 |  |  |
|                 | 35 | 28               | 21 | 14 | 7          | 0   | -7  | -14       | -21 | -27 | -34 | -41 | -48 | -55 | -62 | -69 | -76 | -82 | -89 |  |  |
|                 | 40 | 27               | 20 | 13 | 6          | -1  | -8  | -15       | -22 | -29 | -36 | -43 | -50 | -57 | -64 | -71 | -78 | -84 | -91 |  |  |
|                 | 45 | 26               | 19 | 12 | 5          | -2  | -9  | -16       | -23 | -30 | -37 | -44 | -51 | -58 | -65 | -72 | -79 | -86 | -93 |  |  |
|                 | 50 | 26               | 19 | 12 | 4          | -3  | -10 | -17       | -24 | -31 | -38 | -45 | -52 | -60 | -67 | -74 | -81 | -88 | -95 |  |  |
|                 | 55 | 25               | 18 | 11 | 4          | -3  | -11 | -18       | -25 | -32 | -39 | -46 | -54 | -61 | -68 | -75 | -82 | -89 | -97 |  |  |
| 60              | 25 | 17               | 10 | 3  | -4         | -11 | -19 | -26       | -33 | -40 | -48 | -55 | -62 | -69 | -76 | -84 | -91 | -98 |     |  |  |
| Frostbite Times |    | 30 minutes       |    |    | 10 minutes |     |     | 5 minutes |     |     |     |     |     |     |     |     |     |     |     |  |  |

Frostbite Times 30 minutes 10 minutes 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)





NSC Guidelines for work and warm-up schedules can be used with the windchill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; workers shall be monitored for symptoms of cold-related illnesses. If symptoms are not observed, the work duration may be increased.

### **32.5 Hypothermia**

When exposed to cold temperatures, the body begins to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up the body's stored energy. The result is hypothermia, i.e., an abnormally low body temperature. A body temperature that is too low affects the brain, making the victim unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know it is happening and will not be able to do anything about it.

Symptoms of hypothermia can vary depending on how long an individual has been exposed to cold temperatures.

#### **32.5.1 Early Symptoms**

Early symptoms of hypothermia include:

- Shivering
- Fatigue
- Loss of coordination
- Confusion and disorientation

#### **32.5.2 Late Symptoms**

Late symptoms of hypothermia include:

- No shivering
- Blue skin
- Dilated pupils
- Slowed pulse and breathing
- Loss of consciousness

#### **32.5.3 Treatment of Hypothermia**

The following steps shall be taken to treat project personnel who are suffering from hypothermia:

- Alert the supervisor and request medical assistance.
- Move the victim into a warm room or shelter.
- Remove their wet clothing.



- Warm the center of their body first — chest, neck, head, and groin —using an electric blanket, if available; or use skin-to-skin contact under loose, dry layers of blankets, clothing, towels, or sheets.
- Warm beverages may help to increase body temperature, but do not give alcoholic beverages to an individual with hypothermia, and do not attempt to give beverages to an unconscious person.
- After their body temperature has increased, keep the victim dry and wrapped in a warm blanket, including the head and neck.
- If the victim has no pulse, begin cardiopulmonary resuscitation (CPR).

## 32.6 Frostbite

Frostbite is an injury to the body that is caused by freezing. Frostbite causes a loss of feeling and color in the affected areas. It most often affects the nose, ears, cheeks, chin, fingers or toes. Frostbite can permanently damage body tissues, and severe cases may lead to amputation. In extremely cold temperatures, the risk of frostbite is increased in workers with reduced blood circulation and among workers who are not dressed properly.

### 32.6.1 Symptoms of Frostbite

Symptoms of frostbite include:

- Reduced blood flow to hands and feet — fingers or toes can freeze
- Numbness
- Tingling or stinging
- Aching
- Bluish or pail, waxy skin

### 32.6.2 Treatment of Frostbite

Project personnel suffering from frostbite shall do the following:

- Get into a warm room as soon as possible.
- Unless absolutely necessary, do not walk on frostbitten feet or toes — this increases the damage.
- Immerse the affected area in warm, not hot, water — the temperature is to be comfortable to the touch for unaffected parts of the body.
- Warm the affected area using body heat; for example, the heat of an armpit can be used to warm frostbitten fingers.
- Do not rub or massage the frostbitten area; doing so may cause more damage.
- Do not use a heating pad, heat lamp, or the heat of a stove, fireplace, or radiator for warming. Affected areas are numb and can be easily burned.



### 32.7 Cold Water Immersion

Cold water immersion creates a specific condition known as immersion hypothermia. It develops much more quickly than standard hypothermia because water conducts heat away from the body 25 times faster than air. Typically people in temperate climates don't consider themselves at risk from hypothermia in the water, but hypothermia can occur in any water temperature below 70 degrees Fahrenheit.

Survival times can be lengthened by wearing proper clothing — wool and synthetics and not cotton — using a personal flotation device (PFD) — e.g., life vest, immersion suit, dry suit, etc. — and having a means of both signaling rescuers — e.g., strobe lights, personal locator beacon, whistles, flares, waterproof radio, etc. — and having a means of being retrieved from the water.



## Chapter 33

### Working Over or Near Water Hazards

#### Chapter Contents

#### 33 Working Over or Near Water Hazards

##### 33.1 Working Over or Near Water, Barges, and Boats

##### 33.2 Boating Safety

##### 33.3 Responsibilities

###### 33.3.1 On-Site Supervisor

###### 33.3.2 Boat Captain

###### 33.3.3 Boat Operators

###### 33.3.4 Safety Boat

###### 33.3.5 Boat Crew

###### 33.3.6 Safety Captain

###### 33.3.7 Shoreline Worker

##### 33.4 Shoreline Safety

##### 33.5 Personal Floatation Devices (PFDs)

###### 33.5.1 Throwable Devices (Type IV PFD)

##### 33.6 Lifesaving and Safety Skiffs

##### 33.7 Lifesaving Boats

##### 33.8 Access to and From Wharves, Floats, Barges and/or Boats

##### 33.9 Working Surfaces of Barges



### **33.1 Working Over or Near Water, Barges, and Boats**

Employees who will be working over or near water shall be adequately trained in their responsibilities and the safe work practices associated with their task.

Employees who will be working over or near water shall wear (Type I, II, III or V) U.S. Coast Guard (USCG)-approved personal floatation devices (PFDs).

All water-related work activities shall be documented and discussed in the Project Task Plan (PTP) which shall be signed by all members of the crew prior to the start of work activities near or over water.

At least one person in each crew shall be trained in cardiopulmonary resuscitation (CPR), first aid, and basic emergency-response skills.

Employees who are unable to swim shall notify their supervisor.

Employees, who will be performing work over or near water, where the danger of drowning exists, shall not be permitted to work alone at any time.

Warning rope and flags/barricade tape shall be installed a minimum of 10 feet from the water's edge to restrict access.

The individual in charge of the operation shall account for all personnel and safety equipment shall remain in place for the entire operation and until all persons are accounted for.

When preparing to go out on a boat, the operator shall verify that the required safety equipment is onboard and that the boat and other equipment is in good operating condition.

All boats shall carry one wearable (Type I, II, III or V) USCG-approved (PFD) for each person onboard as well as, each person being towed.

All on-water activities shall have a communication plan to ensure prompt and effective communication with boats, shoreline crews, and the on-site supervisor or trip plan holder.

All boat operators and shoreline captains shall be equipped with radios and trained in the use of those radios.

Project Entities shall ensure that hand signals are reviewed with and understood by all personnel, as these signals shall provide a back-up communication system.

### **33.2 Boating Safety**

Project Entities shall be responsible for ensuring that:

- Project personnel review and participate in Barge/Boat Tailgate Safety Meetings, which shall include emergency escape procedures and emergency escape route assignments.
- Ramps to barges/boats are of adequate strength, provided with side boards, well maintained, and properly secured.
- To the extent possible, conditions causing working and walking surfaces used by employees to become slippery are eliminated.



- Active work areas are kept free of equipment and materials which are not in use, and clear of debris which is not necessary for the work in progress.
- The barge/boat has suitable lifeboats to handle the number of people on the barge/boat.
- A first aid kit and blanket, or other suitable covering, is available on the barge.
- Trip Plans are filed before any boat leaves its custodian.
- Boat Crew and Passenger Briefing Checklists are completed before any boat leaves shore and/or any on-water activity takes place.
- Boat Equipment and Service Checklists are completed at the beginning and end of each day of operation.
- All operations that involve the deployment of larger equipment — e.g., booms, anchors, shorelines, etc. — are conducted with a minimum of two appropriately sized boats with at least one boat being assigned safety boat duties.
- Boats have a minimum crew of two — the operator plus one — before leaving shore.
- All personnel in a boat wear a USCG-approved lifejacket or PFD.

Marker buoys shall be required if any area of the watercourse is obstructed from normal navigation — e.g., when any lines, booms, anchors, or other in-water” equipment is tied to shore or across a channel or narrow channels obstructed by work activities. Hazard and information buoys shall be placed upstream and downstream with enough warning distance to allow users to safely navigate the hazard.

If a boat or boats are being used with no shoreline crew or on-site supervisor — e.g., one or more boats going on a river or lake run, site assessment, etc. — then a reliable means of communicating with a control person — trip plan holder — shall be put in place.

In areas where there is neither cellular nor radio service, boat operators shall research communication options — e.g., location of public telephones, satellite telephones, and other means of communication — and devise a communication plan that identifies the means of communication to be utilized in case of an emergency.

No boats are to operate within 440 yards upstream, or 110 yards downstream, of any low-head dam, weir, or water control structure.

Live lines — lines from the boat to any other object — shall be looped — not tied — in such a way that it can be released when under pressure, the lines shall be under the immediate control of a crew member. The boat shall only be tied to the shore.

Parked boats shall be tied to the shore.

Loading and unloading of equipment shall only occur when the boat is secured and stable.

Equipment transported by boat shall be secured in such a way that movement or shifting cannot occur.

Alcohol shall be prohibited in boats and along the shoreline. Operation of the boats by persons impaired by drugs — both prescription and non-prescription — or alcohol shall be prohibited. Drivers suspended from operating a motor vehicle due to an impaired driving conviction shall be prohibited from operating project boats.





Refer to the [United States Coast Guard Navigational Center](#) for additional maritime requirements and safety information.

### **33.3 Responsibilities**

#### **33.3.1 On-Site Supervisor**

Responsibilities of the on-site supervisor shall include:

- Overall site safety.
- Ensuring site control, accident management plan, and appropriate site-safety and first-aid personnel are in place.
- Ensuring compliance with all project guidelines and applicable regulations — e.g., accident reporting, spill reporting, etc.
- Briefing team captains on the operation and their duties.
- Approving Water Activity Hazard Assessment.
- Exercising emergency authority to stop and prevent unsafe activities.

#### **33.3.2 Boat Captain**

The boat captain may also act as a boat operator.

Responsibilities of the boat captain shall include:

- Safety briefing of boat operators.
- Assigning work-boat and safety-boat duties.
- Participating in the Water Activity Hazard Assessment.
- Supervising all boat activities.
- Setting up traffic patterns and speed control for multi-boat operations.
- Ensuring effective communications between boats and shoreline.
- Exercising emergency authority to stop and prevent unsafe activities.

#### **33.3.3 Boat Operators**

Responsibilities of boat operators shall include:

- Ensuring the safety of the boat and crew.
- Ensuring compliance with all boating legislation and WCSS Guidelines.
- Ensuring the Equipment & Service Checklist is completed — pre- and post-use.



- Completing Crew/Passenger Briefing Checklist.
- Supervising equipment loading and securing.
- Filing the Trip Plan with the on-site supervisor — or responsible person if no supervisor or ground support is present.
- Exercising emergency authority to stop and prevent unsafe activities.

#### 33.3.4 **Safety Boat**

Safety boat personnel shall be responsible for:

- Placement of any hazard or information buoys.
- Ensuring all members of the public who are using the water way or immediate shoreline are notified of the operation and how to safely avoid the hazards present.
- Monitoring the water and shoreline activities.
- Acting as a rescue boat.

#### 33.3.5 **Boat Crew**

Responsibilities of the boat crew include:

- Receiving the Crew/Passenger Briefing prior to leaving shore and conducting any on-water activity.
- Completing tasks assigned by the boat captain or boat operator.

#### 33.3.6 **Safety Captain**

The safety captain shall not be assigned to work on a crew.

The safety captain shall be required to:

- Participate in the Water Activities Hazard Assessment.
- Supervise the safety of all personnel.
- Complete Shoreline Crew/Observer Briefing & Checklist.
- Ensure appropriate placement of shoreline safety/rescue stations.
- Exercise emergency authority to stop and prevent unsafe activities.

#### 33.3.7 **Shoreline Worker**

Responsibilities of the shoreline workers shall be assigned by the captain or other team leaders.



### 33.4 Shoreline Safety

Shoreline crew and observer briefing checklists shall be completed before any activity takes place.

If chest waders are worn by personnel working on shore, in or near the water, they shall have a waist belt capable of stopping water from entering the lower portion of the wader.

The buddy system shall be used for any shoreline crews where water entry is required.

Shoreline safety equipment stations shall be in place on any exercise or operation where shoreline crews are working in water.

Full-body harnesses and safety lines shall be used by shoreline crews that enter water with steep banks, and/or are working immediately upstream of weirs, log jams, deep holes, or rapids. These areas shall be avoided, if possible, as equipment deployment sites.

### 33.5 Personal Flotation Devices (PFDs)

When preparing to go out on a boat, the operator shall confirm that all the required safety equipment is onboard.

All boats shall carry one wearable (Type I, II, or III) USCG-approved PFD for each person onboard as well as each person being towed.

All PFDs shall be:

- USCG approved.
- In good and serviceable condition.
- Readily accessible — i.e., in an emergency, personnel shall be able to put the PFD on in a reasonable amount of time.
  - PFDs shall not be stowed in plastic bags, in locked or closed compartments, or have other gear stowed on top of them.
- Of the proper size for the intended wearer.
  - **Note:** Sizing for PFDs is based on body weight and chest size.

Inherently buoyant Type III or better USCG-approved PFDs shall be provided and properly worn — i.e., zipped, tied, latched, etc., in closed fashion — by all persons in the following circumstances:

- On floating pipelines, pontoons, rafts or stages.
- On structures or equipment extending over or next to water except where guardrails, personal fall protection systems, or safety nets are provided for employees.
- Working alone at night and/or when there are drowning hazards, regardless of other safeguards provided.
- In skiffs, small boats, or launches, unless in an enclosed cabin or cockpit.



- Whenever there is a drowning hazard.

### 33.5.1 Throwable Devices (Type IV PFD)

On USCG-inspected vessels, ring buoys shall be required to have automatic, floating, electric, water lights.

On all other floating plant and shore installations, lights on life rings shall be required only in locations where adequate general lighting — e.g., floodlights, light stanchions, etc. — is not provided. For these plants and installations, at least one life ring, and every third life ring, thereafter, shall have an automatic, floating, electric, water light attached.

All PFDs shall be equipped with retro-reflective tape in accordance with USCG requirements.

Life rings — rope attachment not required — and ring buoys — rope attachment required — shall be USCG approved; shall have at least 70 feet of 3/8 inch attached solid-braid polypropylene, or equivalent. Throw bags may be used in addition to life rings or ring buoys.

Life rings or ring buoys shall be readily available and shall be provided in the following locations:

- At least one, no less than 24 inches in diameter on each safety skiff that is up to 26 feet in length.
- At least one 30 inches in diameter on all motorboats longer than 26 feet in length, up to 65 feet in length.
- For motorboats 65 feet in length or longer, a minimum of three life buoys of no less than 30 inches in diameter and one additional for each increase in length of 150 feet or fraction thereof.
- At least one at intervals of no more than 200 feet on pipelines, walkways, wharves, piers, bulkheads, lock walls, scaffolds, platforms, and similar structures extending over or immediately next to water; unless the fall distance to the water is more than 45 feet, in which case a life ring shall be used. The length of line for life rings at these locations shall be evaluated, but the length may not be less than 150 feet.

At navigation locks, an analysis shall be made of the benefits versus the hazards of using floating safety blocks — blocks that may be quickly pushed into the water to protect individuals who have fallen in the water from being crushed by vessels.

- This analysis shall be documented as an AHA.
- If the use of blocks is found acceptable, consideration shall be given to the size and placement of the blocks, the appropriate means of securing and signing the blocks, etc.
- When the use of blocks is found unacceptable, alternative safety measures shall be developed.

### 33.6 Lifesaving and Safety Skiffs

At least one skiff shall be immediately available at locations where employees work over or immediately next to water. Skiffs shall be kept afloat or ready for instant launching.

Personnel trained in launching and operating the skiff shall be readily available during working hours. Lifesaving personnel shall perform a lifesaving drill, including the launching and recovery of the skiff prior to the initiation of work at the site and periodically thereafter — but at least monthly or whenever new



personnel are involved. Safety Form C-30 “Skiff Proficiency Rating” shall be used to document monthly drill. Safety Form C-30 shall be submitted to Burns & McDonnell and/or its subsidiaries.

A lifesaving skiff shall be considered to be immediately available when the following criteria are met:

- The skiff shall be in the water or capable of being quickly launched by a single person.
- There shall be at least one person present who is specifically designated to respond to water emergencies and operate the skiff when there are employees above water.
- When the operator is on break, another operator shall be designated to provide the requisite coverage while employees are above water.
- The designated operator shall either man the skiff at all times or remain in the immediate area so as to quickly reach the skiff and get underway.
- The skiff operator may be assigned other tasks, provided those tasks do not interfere with the operator's ability to quickly reach the skiff and get underway.
- A communication system, such as a walkie-talkie, shall be used to inform the skiff operator of an emergency and to inform the operator of where the skiff is needed.
- The skiff is equipped with both a motor and oars.

Skiffs shall be equipped as follows:

- Four oars — two oars, if the skiff is motor powered.
- Oarlocks attached to gunwales or the oars.
- One ball-pointed boat hook.
- One ring buoy with 70 feet of 3/8-inch solid-braid polypropylene, or equivalent, line attached.
- PFDs in number equaling the skiff rating for the maximum number of personnel allowed on board.
- Fire extinguisher.

In locations where waters are rough or swift, or where manually operated boats are not practical, a power boat suitable for the waters shall be provided and equipped for lifesaving.

Skiffs and power boats shall be constructed of buoyant material capable of floating the boat, its equipment, and the crew.

On vessels — such as skiffs — without permanently mounted navigation lights, portable battery-operated navigation lights shall be available and shall be used for night operations.

### **33.7 Lifesaving Boats**

One or more lifesaving boats, either manually or power-operated, shall be provided, and readily accessible at all times.



Lifesaving boats shall be properly maintained, ready for emergency use, and equipped with the following items:

- Oars and oarlocks attached to the gunwales
- Boathook
- Anchor
- Ring buoy with 50 feet of 600-pound capacity line
- Two life preservers.
- **Note:** Oars shall not be required on boats that are powered by an inboard motor.

Where, because of swift current, lifeboats cannot be used, a line shall be stretched across the stream with tag lines or floating planks trailing in the water at intervals not to exceed 6 feet. If this is impracticable, some other arrangement for providing effective lifelines near the water surface shall be provided.

Project Entities shall ensure that there is, in the vicinity of each barge in use, at least one portable or fixed ladder which reaches from the top of the apron to the surface of the water. If the above equipment is not available at the pier, it shall be furnished during the time that the barge is in use.

### **33.8 Access to and From Wharves, Floats, Barges and/or Boats**

Ramps allowing vehicle access to or between barges shall be of adequate strength, provided with side boards, well maintained, and properly secured.

Unless employees are able to step safely to or from the wharf, float, barge, or river towboat, either a ramp or a safe walkway shall be provided.

When dredge discharge pipelines are used as walkways, they shall be provided with a flat surface walkway at least 12 inches wide, anchored to the pipeline to prevent displacement. A railing providing at least a single rail, or taut rope, 42 to 45 inches high shall be provided along one side. When rope is used, it shall be at least as strong as 3/4-inch diameter Manila, 3/8-inch diameter wire rope, or equivalent.

Catwalks or platforms shall be at least 20 inches wide with railings provided at all locations over bodies of water more than 4 feet deep. Planks used to construct catwalks or platforms at locations that are subject to immersion shall be rough sawn and treated to resist rot. Railings shall be installed in accordance with the Occupational Safety and Health Administration (OSHA) guardrail regulations.

When the upper end of the means of access rests on, or is flush with, the top of the bulwark, substantial steps properly secured and equipped with at least one substantial handrail not less than 34 inches or more than 38 inches above the tread nosing shall be provided between the top of the bulwark and the deck.

Obstructions shall not be laid on or across any gangway, ramp, catwalk, or other such means of access.

The means of access shall be adequately illuminated for its full length.

Jacob's ladders shall be of the double-rung or flat-tread type. They shall be well maintained and properly secured.





A Jacob's ladder shall either hang from its lashings without slack or shall be pulled up entirely.

### **33.9 Working Surfaces of Barges**

Employees shall not be permitted to walk along the sides of covered lighters or barges with coamings that are more than 5 feet high, unless there is a 3-foot clear walkway, or either a grab rail or a taut handline is provided.

Decks and other working surfaces shall be maintained in a safe condition.

Employees shall not be permitted to pass fore and aft, over, or around deck loads, nor shall employees be permitted to walk over deck loads from rail to coaming, unless there is a safe passage.

If it is necessary for an employee to stand at the outboard or inboard edge of the deck load where less than 36 inches of bulwark, rail, coaming, or other protection exists, the employee shall be provided with a suitable means of protection against falling from the deck load.



## **Chapter 34**

### **Lone Worker/Working Alone**

#### **Chapter Contents**

##### **34 Lone Worker/Working Alone**

###### **34.1 Lone Worker/Working Alone**

###### **34.1.1 General**

###### **34.1.2 Definitions**

###### **34.2 Hazard Assessment**

###### **34.3 Communications**

###### **34.4 Training**



### 34.1 Lone Worker/Working Alone

#### 34.1.1 General

The purpose of this chapter is to establish methods to maintain the safety of personnel who are working alone. This includes providing a method for identifying potential hazards, pre-planning to eliminate or protect against these hazards, establishing itineraries and communication plans, and responsibilities for plan implementation and activities. Concern for the lone worker is fundamental to Burns & McDonnell's and/or its subsidiaries' responsibility to providing a safe workplace to all employees. Effective risk assessment plays a major role in controlling or eliminating risks associated with health, violence, travel, or level of work experience.

#### 34.1.2 Definitions

**Effective Means of Communication** — A radio, telephone — landline or cellular — or other electronic communication device.

**Hazard Assessment** — A documented review of working conditions and foreseeable emergency situations — e.g., fire, equipment failure, illness and accidents — in all situations where employees may be working alone and identification of the mitigation and controls necessary to assure worker safety.

**Lone Worker** — An employee is considered to be a lone worker if they have neither visual, nor audible communication with someone who is able to summon assistance in the event of an injury or illness. Some examples of times when employees might work alone are the beginning and end of flexible working periods, holidays, weekends, and after-hours.

### 34.2 Hazard Assessment

Employees who work alone shall be required to fill out an Activity Hazard Analysis (AHA) prior to performing the work activity. The AHA shall:

- Identify and document existing or potential hazards arising from the conditions and circumstances of the work.
- Address hazards and identify control measures in order to minimize risk associated with working alone.
- Specify procedures for emergency response including provisions for contacting appropriate local officials.

The hazard assessment shall identify specific criteria to determine when an employee search is necessary cover all aspects of the work at hand and countermeasures that need to be put in place to minimize the risk associated with the work.

This written hazard assessment shall document and be used to communicate potential hazards to all affected workers. The AHA shall be reviewed with the employee's department head or their designee, as they will be communicating to them during their work activity.

Any type of fieldwork — day, overnight, remotely, etc.— shall require the work supervisor to complete Safety Form C-26, "Trip Itinerary." The Trip Itinerary shall be posted in the site office and a copy shall be taken into the field. Workers and supervisors shall be familiar with their responsibilities prior to any fieldwork being conducted.



- **Note:** When a danger is judged to be imminent due to work being done by a lone worker, the work shall be postponed, and mitigation procedures shall be put in place. The work shall be performed when the risk(s) has been effectively controlled or eliminated.

### 34.3 Communications

Employees working alone shall contact the appropriate authorities prior to commencing work operations, informing them of the future work and details of the work scope.

Employees shall carry an appropriate communication device that, regardless of where the employee is located, is able to communicate back to their supervisor and shall check in at least every two hours, or more frequently if required by the risk assessment of the AHA. Employees shall also carry a backup means of communication in case an unforeseen event occurs leaving them without the use of the primary means of communication. The selected communication device shall be readily available to the employee — i.e., easily within immediate reach — and shall be tested prior to the start of work to verify that it effectively operates in the area/environment.

When the employee contacts their respective supervisor, they shall communicate their current location, in which direction they are heading, their well-being, and the estimated time until completion of their work assignment. The supervisor shall document this information during each call.

If the employee misses a scheduled call, the supervisor shall attempt to contact the employee. If the supervisor cannot contact the employee after a reasonable amount of time, the supervisor shall contact the appropriate authorities and report the employee's last known location and the direction the employee would be traveling to enable the authorities to begin a search for the employee.

If an effective means of communication is not practical or readily available at the work site, the company shall ensure that there is a minimum of two people dispatched to the job, or that a system is in place so that the worker is visited at regular set intervals.

### 34.4 Training

Instruction and training help ensure that staff understand the risks and required safety precautions associated with their work. Training shall include, but shall not limited to:

- Burns & McDonnell and/or its subsidiaries Work Alone standard.
- Identifying and participating in the hazard assessments.
- Requirements and limitations of working alone.
- Use and maintenance of any required personal protective equipment (PPE).
- Instructions on how to perform tasks safely.



## **Chapter 35**

### **Fatigue Management Plan**

#### **Chapter Contents**

##### **35 Fatigue Management Plan**

###### **35.1 General**

###### **35.2 Extended/Unusual Shifts**

###### **35.2.1 General**

###### **35.2.2 When Extended/Unusual Shifts Are Used**

###### **35.3 Fatigue**

###### **35.3.1 Equipment Operators**

###### **35.3.2 Motor Vehicle Operators**

###### **35.3.3 Responsibilities of Project Entities**

###### **35.3.4 Responsibilities of Project Personnel**



### 35.1 General

Managing fatigue also means recognizing and assessing it as a possible factor in workplace incidents. Normal incident investigation questions should provide the investigator with an indication if fatigue may have been a contributing cause of an incident.

Project Entities shall be responsible for ensuring a Fatigue Management Plan (FMP) is implemented whenever work hours exceed:

- 12 hours a day for more than six consecutive days.
- 72 hours in a work week.
- More than 13 consecutive workdays without a full 24-hour break period.

### 35.2 Extended/Unusual Shifts

#### 35.2.1 General

A normal work shift is generally considered to be a work period of no more than ten consecutive hours during the day, five days a week with at least an eight-hour rest. Any shift that incorporates more continuous hours, requires more consecutive days of work, or requires work during the evening shall be considered extended or unusual.

As a matter of policy, no project personnel shall be allowed to work more than 13 days consecutively. Exceptions to this policy shall be planned in advance of the need and shall require approval from the Executive Leadership team.

#### 35.2.2 When Extended/Unusual Shifts Are Used

Extended shifts may be used to maximize scarce resources. Long or unusual shifts are often required during response and recovery phases of emergency situations. These schedules ensure that the appropriate scarce resources are in place and accessible while full mobilization is being developed.

Extended or unusual work shifts may be more stressful physically, mentally and emotionally. Non-traditional shifts and extended work hours may disrupt the body's regular schedule, leading to increased fatigue, stress, and lack of concentration. These effects lead to an increased risk of operator error, injuries and/or accidents.

### 35.3 Fatigue

Society is oriented toward traditional daytime work hours, and work at night often intensifies fatigue and reduces alertness. Workers generally do not acclimate to night work, and sleep patterns will generally be disrupted, thus the non-work periods do not provide full recovery, resulting in sleep deprivation. Studies suggest that it can take up to 10 days to adapt to a nighttime work schedule.

Fatigue is a message to the body telling it to rest. It is not a problem if the person can and does rest; however, if rest is not possible, fatigue may increase until it becomes distressing and eventually debilitating. The symptoms of fatigue, both mental and physical, vary and depend on the individual and their degree of overexertion.

Examples of fatigue symptoms include:

- Weariness





- Sleepiness
- Irritability
- Reduced alertness
- Lack of concentration and memory
- Lack of motivation
- Increased susceptibility to illness
- Depression
- Headache
- Giddiness
- Loss of appetite
- Digestive problems

#### 35.3.1 Equipment Operators

Any employee who shows signs of fatigue or who has reported fatigue shall not be permitted to operate any heavy equipment or vehicle(s) until they have had a minimum of 14 hours of rest.

Rest refers to a period of time during which the employee concerned is off duty; is not performing work, including administrative tasks; and is afforded the opportunity for uninterrupted sleep.

- **Note:** This does not include time for breaks, meals, or travel time to/from work.

#### 35.3.2 Motor Vehicle Operators

Operators of motor vehicles, while on duty, shall meet [U.S. Department of Transportation](#) guidelines.

#### 35.3.3 Responsibilities of Project Entities

Project Entities shall be responsible for:

- Monitoring work activities to ensure that project personnel are attentive and performing their tasks in a safe and efficient manner.
- Presenting information or observations to project personnel at the earliest possible time in order to address the fatigue issues that may arise from their work schedule. This discussion shall include the possibility of changes to an individual's tasks and time requirements — these may be adjusted to minimize the work conditions placed on the worker.

#### 35.3.4 Responsibilities of Project Personnel

Project personnel shall be responsible for:

- Notifying their supervisor(s) when they feel they are getting fatigued and are not fit for duty.



- Notifying their supervisor(s) when they observe a co-worker acting in a manner that indicates the co-worker may be fatigued.
- Reporting any medication being taken, including any over-the-counter medication — such as for cold or flu — as these may impair the employee's ability to work safely and contribute to them becoming fatigued more quickly.



## **Chapter 36**

### **First Line Break**

#### **Chapter Contents**

##### **36 First Line Break**

###### **36.1 First Line Break**

###### **36.1.1 Limitations and Restrictions**

###### **36.2 Line Break Isolation**

###### **36.3 Line Break Permit Requirements**

###### **36.4 First Line Break Operations**

###### **36.5 Training**



### 36.1 First Line Break

Project Entities shall be required to receive written permission from Burns & McDonnell and/or its subsidiaries' Corporate Safety & Health Department prior to performing first line break operations. Safety Form C-28, "Line Break Checklist and Authorization," shall be utilized to request permission to perform first line break operations.

Project Entities shall be required to request authorization for first line break operations at least 48 hours in advance of the planned activity.

Project Entities shall be responsible for the development and implementation of a First Line Break Procedure that meets or exceeds the following requirements:

#### 36.1.1 Limitations and Restrictions

**Hazardous Energy Control** — Line breaking shall only be performed on lines that have been isolated and locked out in accordance with Chapter 24 of this program.

**Confined Spaces** — Line breaking within confined spaces shall be performed in accordance with Chapter 7 of this program.

**Hot Work Operations** — Cutting, welding, or other hot work activity shall be performed in accordance with Chapter 12 and Chapter 17 of this program.

### 36.2 Line Break Isolation

Double isolation shall be required when system design allows.

### 36.3 Line Break Permit Requirements

A completed and approved Line Break Permit — Safety Form C-29, — shall be required prior to the performance of all first line breaks.

- Project Entities shall be responsible for requesting the Line Break Permit from Burns & McDonnell and/or its subsidiaries.
  - In all instances where a Line Break Permit is required, the Project Entity shall also be required to complete and submit an Activity Hazard Analysis (AHA) specifically for the line breaking activity prior to permit approval.
- Burns & McDonnell and/or its subsidiaries shall:
  - Review the permit request and verify that all necessary precautions have been implemented. If necessary, a visual inspection may be conducted prior to final approval.
  - Verify the location, start time and duration of the line break operation. The Line Break Permit shall only be valid for the time and duration identified, but in no instance shall exceed one shift.
  - Upon completion of line breaking operations, the Line Break Permit issuer shall be required to sign-off on the "Final Checkup" section of the Line Break Permit.



### 36.4 First Line Break Operations

Project Entities shall be responsible for ensuring that employees performing first line breaking operations:

- Participate in Hazardous Energy Control in accordance with Chapter 24 of this program.
- Verify operability of the closest safety shower/eyewash station or ensure an adequate portable eyewash station is available and in the immediate area, prior to beginning first line break operations.
- Review the safety data sheet (SDS) for the system's previous contents.
- Barricade the area prior to line breaking activities and maintain barricading while the system is open.
- Utilize required personal protective equipment (PPE).
- Treat all lines as if they are under pressure. Break flanges down and away — e.g., out of the line of fire. The initial break shall be made over containment, when possible. Non-sparking tools shall be required when there is a possibility of exposure to flammable/combustible liquids or vapors.
- The discovery, or suspicion, of plugged or pressurized equipment or piping shall require the cessation of line break operations. Operations shall be consulted to develop a plan for unplugging and depressurizing.
- Upon the completion of repairs, adjustments, etc., the equipment shall be released to operations in accordance with Chapter 24, "Hazardous Energy Control," of this program.

### 36.5 Training

Project Entities shall be required to ensure that employees who conduct line break activities are adequately trained. First Line Break Training shall include, but shall not be limited to, the following:

- Recognizing and understanding potential hazardous situations.
- The proper means and methods for controlling line break operations.
- The Line Break Permit process.
- Communication of line break activities to personnel.
- The limitations of PPE.

Project Entities shall be required to submit documentation of training to Burns & McDonnell and/or its subsidiaries using Safety Form C-9, "Certification of Training."



## Chapter 37

### Hydro-Blasting

#### Chapter Contents

##### 37 Hydro-Blasting

###### 37.1 Hydro-Blasting (High-Pressure Water Jetting)

###### 37.1.1 General

###### 37.1.2 Definitions

###### 37.2 Equipment Definitions and Standards

###### 37.2.1 Care and Maintenance of Equipment

###### 37.3 Protective Clothing and Personal Protection

###### 37.4 Pre-Operating Procedures

###### 37.4.1 Hook-Up

###### 37.5 Operational Procedures

###### 37.5.1 Operational Procedures

###### 37.5.2 Shotgunning

###### 37.5.3 Moleing or Flex Lancing

###### 37.5.4 Rigid Lancing

###### 37.5.5 Proper Operation

###### 37.5.6 Use of Lances and Nozzles

###### 37.6 Operational and Training Requirements

###### 37.6.1 General

###### 37.6.2 Permanent Cleaning Areas

###### 37.6.3 Freeze Precautions





### 37.1 Hydro-Blasting (High-Pressure Water Jetting)

#### 37.1.1 General

The recommended practices described in this chapter are intended to provide guidance on the proper operation of high-pressure water jet cleaning and cutting equipment.

The term high-pressure water jetting covers all water jetting including the use of additives or abrasives at pressures above 70 bar — approximately 1,000 pounds per square inch (psi).

The recommended practices described in this chapter shall also be applicable at lower pressures where there is foreseeable risk of injury. As a guideline, these recommended practices are applicable where the product of pressure times flow exceeds 560 bar × liters per minute — pressure being measured in bar and flow in liters per minute — or 2,000 pounds per square inch (psi) × gallons per minute (gpm) — pressure in psi, flowrate in gpm.

Project personnel required to operate or maintain high-pressure water jetting equipment shall be appropriately trained and shall demonstrate the ability and knowledge required for high-pressure water jetting.

#### 37.1.2 Definitions

**High-Pressure Water Jet Systems** — Systems which have nozzles or other openings whose function is to increase the speed of liquids. Solid particles or additional chemicals may also be introduced, but the exit in all cases will be in a free stream. In terms of these recommended practices, the system shall include the pumps — pressure producing devices — and the hoses, lances, nozzles, valves and safety devices, as well as any heating elements or injection systems attached thereto.

**High-Pressure Water Cleaning** — The use of high-pressure water — with or without the addition of other liquids or solid particles — to remove unwanted matter from various surfaces, where the pressure of the liquid jet exceeds 1,000 psig — i.e., 6.9 megapascals (MPa) — cannot cause injury or require any less attention to the principles of these recommended practices. Adequate precautions, similar to those of these recommended practices, are required at all pressures.

**High-Pressure Water Cutting** — The use of high-pressure water — with or without the addition of other liquids or solid particles — to penetrate into the surface of a material for the purpose of cutting that material, and where the pressure of the liquid jet exceeds 1,000 psi (6.9 MPa) at the orifice.

**Lancing** — An application whereby a lance-and-nozzle combination is inserted into and retracted from the interior of a pipe or tubular product.

**Dump System** — An operator-controlled, manually-operated device or system that rapidly reduces the pressure to a level that yields a pressure flow at the nozzle which is considerably below the risk threshold.

**Moleing** — An application whereby a hose fitted either with a nozzle or with a nozzle attached to a lance is inserted into and retracted from the interior of a tubular product. It is a system commonly intended for cleaning the internal surfaces of pipes or drains. It can be self-propelled by its backward-directed jets, and is manufactured in various shapes, sizes and combinations of forward- and backward-directed jets.

**Nozzle** — A device with one or more openings where the fluid discharges from the system. The nozzle restricts the area of flow of the fluid, accelerating the water to the required velocity and shaping it to the required flow pattern and distribution for a particular application.



**Operator** — A person who has been trained and has demonstrated the knowledge and experience to perform the assigned task.

**Operator Trainee** — A person not qualified, due to the lack of knowledge and/or experience, to perform the assigned task without supervision.

**Shotgunning** — An application whereby a lance-and-nozzle combination can be manipulated in virtually all planes of operation.

**Hose Assembly** — A hose with coupling attached in accordance with manufacturer's specifications.

**Lance** — A rigid metal tube used to extend the nozzle from the end of the hose.

### 37.2 Equipment Definitions and Standards

**Pressurizing Pump** — A pump designed to deliver high-pressure water or other fluid. This is usually based on positive displacement pistons or rubber diaphragm/hydraulic systems, and discharges water into a common manifold to which either flexible hoses, rigid tubing, which connected to lances and nozzles.

- These pumps can be either mobile or permanently mounted.
- The pump shall have a permanently mounted tag — or tags — providing the following information:
  - Product and supplier.
  - Production model and serial number or year of production.
  - Maximum performance in terms of gpm and pressure in psi.
  - An outline of recommended safety procedures.

**Relief System** — The system shall be equipped with an automatic relief device on the discharge side of the pump.

**Automatic Pressure Relief Devices** — These may take the form of:

- Pressure relief valve or bursting disc in holder.
- Automatic pressure-regulating valve — unloading valve.
- Bypass valve.

**Relief Valve or Bursting Disc in Holder** — Usually mounted on the pump discharge chamber to prevent the pressure from exceeding the rated maximum pressure of the whole system.

**Automatic Pressure Regulating Valve (Unloading Valve)** — This limits the pressure at which the pump operates by releasing a preset proportion of the generated flow back to the pump suction chamber or to waste. It may be used to regulate the water pressure from the pump and is individually set for each operation. This device may be integral with the pump hydraulic assembly. When there is no damage and for pumpage, the pressure is brought down to zero.



**Bypass Valve** — Is a device which can be adjusted to control the flow, and thus the pressure, of the jet stream issuing from the nozzle by bypassing the excess flow to another circuit.

**Pressure Gauge** — The system shall be equipped with a gauge indicating the pressure being developed.

- Gauges shall have a scale range of at least 50% above the maximum working pressure of the system.

**Filter or Strainer** — The water system shall be equipped with a filter or strainer to prevent particles from restricting the orifices in the nozzle. The strainer or filter shall be capable of removing particles smaller in size than the smallest orifice in the nozzle, and usually smaller to protect pumps, etc.

**Dry Shut-Off Control Valve** — This operator-controlled valve — normally hand-controlled — automatically shuts off flow to the lance and/or nozzle assembly when released by the operator but retains the operating pressure within the supply line when shut off. This valve shall be used in systems with an automatic pressure-regulating valve.

- Care shall be taken to release the pressure in the dry shut-off valve and line when the pump is shut down otherwise the valve-operating lever may remain alive.
- This valve may alternatively be actuated by a solenoid or pilot pressure mechanism.

**Dump System** — The system shall be equipped with a device which will either shut down the unit, idle it to a safe rpm, bypass the flow or reduce the discharge pressure. The dump system shall be manually controlled only by the nozzle operator. The dump-system actuator device shall be shielded to preclude inadvertent operation. This device shall immediately shut off the high-pressure water stream if the operator loses control.

**Dump Control Valve** — This operator-controlled valve — normally hand-controlled — automatically terminates significant flow to the lance and/or nozzle assembly when released by the operator, thus relieving the operating pressure within the whole system by diverting the flow produced by the pump to atmosphere.

- A valve size shall be selected that will not cause generation of significant backpressure at the maximum possible pumping rate of the pump.
- This valve may alternatively be actuated by solenoid or pilot pressure mechanism.

**Solenoid and Electrically Operated Control Dump Systems** — All electrically controlled dump systems shall be of failsafe design. Voltage of an alternating current (AC) or direct current (DC) dump system handled by personnel shall not exceed 24 volts.

**High-Pressure Hose** — This is a flexible hose that connects two components and delivers the high-pressure fluid to the gun or nozzle components.

- The hose shall have a burst rating of a minimum of 2.5 times the intended working pressure. Operating levels below this ratio shall require a protective shielding around that hose.
- The hose shall be marked on one end with the manufacturer's symbol, and serial number, the maximum permissible operating pressure and test pressure.
- The high-pressure hose shall be tested at 1.5 times working pressure.



**End Fittings and Couplings** — High-pressure hose end fittings and couplings shall be manufactured to be compatible with the hose and tested as a unit.

**Jetting Gun Extension** — This is a length or lengths of tube carrying high-pressure fluid to the nozzle. Each shall be manufactured from suitable material for the application. End connections shall be suitable for the application. The extension is used in conjunction with a control valve.

- The extension shall have a minimum burst strength of at least 2.5 times the highest actual operating pressure used.

**Nozzle** — The nozzle creates the water jet or jets at the required velocity, flow rate, pressure, shape and distribution for a particular application. Combinations of forward- and backward-directed water jets are often used to balance the thrust. Such nozzles may be referred to as tips, jets or orifices.

**Water Jet** — A jet stream of water produced from the individual outlet orifice of a nozzle. The shape of the jet is determined by the form of the orifice while the speed at which it travels is determined by the orifice design, orifice area, and flow. The pressure drop at the orifice is a result of an increase in velocity.

- The two most commonly used jet shapes are the straight jet and fan-shaped jet.

**Straight Jet** — Concentrates the stream of water over a small area of the workpiece by minimizing the spread. A typical application is for cutting.

**Fan Jet** — Spreads the stream of water in one plane, so giving a wide band coverage of the workpiece. A typical application is for cutting, or for general cleaning of matter with higher shear and/or bond strength.

**Jetting Hand Manifold and Spray Bars** — these are pieces of equipment into which individual nozzles are fitted.

**Foot Control Valve** — The operator's control valve may be arranged for actuation by the operator's foot, if desired, either in place of or in addition to hand-control. An adequate guard shall be fitted to prevent accidental operation, and the baseplate must be sufficient to ensure stability while in use.

- If of the dump type — Section IV-J — the layout shall ensure that the dump line, if used, is restrained from whipping when the valve is released.
- An adequate guard shall be fitted to prevent accidental operation and the baseplate area shall be sufficient to ensure stability in use. If on the dump type — Section III--E — the layout shall ensure that the dump line, if used, is restrained from whipping when the valve is released.

**Jetting Gun** — A portable combination of operator's control valve, lance, and nozzle which resembles a gun in layout and outline. The control valve is hand-operated, generally by a squeezing action by the operator, who shall always have control of this device and may be of the dry shut off or dump type.

- The hand control normally takes the form of a trigger or lever which shall be provided with either a guard adequate to prevent accidental operation, or the means of being immobilized in the off position by means of a safety catch.
- The gun may be fitted with a shoulder pad or handgrips to facilitate back-thrust control.



**Retro Gun** — A retro safety gun is fitted with forward- and backward-facing jets. This reduces the thrust experienced by the operator. This type of gun is used mainly for underwater jetting operations.

- The retro-balance jet protection tube shall be sufficiently long or constructed so as to prevent the operator directing a retro-balance jet at himself.

**Changeover Valve** — An operator-controlled valve designed to properly direct high-pressure water flow from the pump to one or more items of equipment at the operator's choice. It shall be designed to withstand the maximum system pressure and can also be power operated.

### 37.2.1 Care and Maintenance of Equipment

**Pump Unit** — The pump unit shall be maintained in accordance with the manufacturer's instructions. Where applicable, this shall include daily checks on the following items:

- **Drive Unit** — Lubricating oil, water, hydraulic fluid and fuel levels.
- **Pump Unit** — Lubricating oil and gear box oil levels.
- **Hydraulic Hose Reel** — Lubricating oil and fluid levels.
- **Condition of Guards and Shields** — Perform a visual inspection.

**Filters and Strainers** — All water filters shall be checked at regular intervals, dependent upon the water supply conditions, and in accordance with pump manufacturer's recommendations.

- Extreme care shall be taken to filter the water source through proper micron filtration, to prevent foreign particles from cutting changeover valves and seating surfaces, and to prevent clogging the changeover-valve operating mechanism. Such clogging may cause a loss of control, which can be dangerous to the operator.

**Hose Assemblies** — All hose assemblies shall be inspected prior to use to ensure the following:

- Correct pressure rating and size.
- Free from external damage — e.g., exposed and broken wires.
- All end fittings and couplings are in good order and of the correct pressure rating for the unit operating pressure.

**Nozzles** — All jetting nozzles shall be kept clean and the orifice shall be checked to ensure that it is not obstructed or damaged prior to installation.

- Defective nozzles shall not be used and shall be replaced or repaired before installation.
- During the startup prior to operation, the nozzle shall be removed from the lance and the system shall be flushed thoroughly, to remove air and foreign particles.



**Jetting Guns and Lances** — Jetting guns and lances shall be checked daily and the trigger mechanism and guard shall be given a thorough visual examination to ensure correct operation. All high-pressure connections shall be observed during operation of the equipment at pressure.

- If a leak is observed, the pump shall be shut down and the connection repaired or replaced before further operation.

**Foot Control Valves** — All foot control valves shall be checked and cleaned daily. The foot mechanism and guard shall be given a thorough visual examination to ensure correct operation.

**Electrical Equipment** — All electrically-operated, high-pressure water jetting units shall be checked daily for external damage with special emphasis placed on connections, junction boxes, switches and supply cables.

- Care shall be taken to ensure that the electrical system is protected from the ingress of water.
- Correct direction of rotation of the electric motor shall be checked on initial installation and after every reconnection.

**Trailers** — Mounted units shall be checked daily examining tires, braking systems, jacking points, towing hitch, lights, safety chains, as well as, checking for structural damage and general cleanliness.

- The units shall only be towed by vehicles fit for the purpose.
- Engine controls all throttle cables and engine stop devices shall be checked daily to ensure that they are functioning properly.

**Maintenance Servicing and Repair** — The following operations shall only be carried out by competent personnel:

- Manufacturer's servicing requirements.

The following items shall be overhauled and checked for correct functioning at manufacturer's recommended intervals:

- Pressure relief valve.
- Bursting disc, if used.
- Pressure control valve.
- Hand- or foot-operated dump control valve or dry shut-off control valve.
- Dry shut-off valve or dump system.
- Changeover valve.

**Tools** — When maintaining or assembling jetting systems, the correct size of tools shall be utilized. The use of adjustable tools having serrated gripping jaws — e.g., pipe wrenches — which can damage equipment, is not recommended, particularly on the crimped portion of a hose fitting.

**Compatibility** — All component parts and fittings shall be checked to ensure they are of the correct size and rating for the unit.





### 37.3 Protective Clothing and Personal Protection

In addition to the personal protective equipment (PPE) requirements outlined in Chapter 9, operators shall also follow the PPE requirements below:

- Operators shall wear suitable waterproof clothing for the type of work being undertaken.
- Garments shall provide full cover to the operator, including arms.
- Liquid- or chemical-resistant suits shall be worn when there is a reasonable probability of injury that can be prevented by such equipment.
- Operators shall wear waterproof boots with steel toes. A metatarsal guard shall be used by jetting gun operators.
- Suitable ear protection shall be issued and worn in accordance with Occupational Safety and Health Administration (OSHA) standards.

### 37.4 Pre-Operating Procedures

**Planning** — Each job shall be preplanned. Personnel familiar with the equipment to be cleaned or the material to be cut, and the work environment shall meet with the personnel that will be doing the work to discuss environmental problems and outline potential hazards of the work area.

**Safety Standards and Emergency Aid Procedures** — Planning and consideration shall be undertaken to ensure that proper safety supplies are available and that there is at least one qualified first-aid provider available.

**Checklist** — A checklist shall be used to ensure that the proper procedures and proper equipment selection are followed.

- **Dump Valve** — All systems shall incorporate at least one fluid shut-off or dump device. The gun operator must always be able to shut down the water jet by releasing pressure on the trigger, switch or foot valve pedal.
- **Warning Barriers** — Barricades shall be erected to encompass the hazard area, and signs shall be posted to warn personnel they are entering a hazardous area.
  - The perimeter shall be outside the effective range of the jet wherever possible.
  - Barriers may be constructed of rope, safety tape, barrels, etc., so long as they provide an effective warning and are highly visible.

#### 37.4.1 Hook-Up

**Hose** — Hoses shall be arranged such that a tripping hazard does not occur. Hoses, pipes, and fittings shall be supported to prevent excessive sway, and/or wear created by vibration or stress of the end connections, when laid on the ground, over sharp objects or on vertical runs.

**Fittings** — All fittings shall be cleaned and lubricated before being installed in the system. All fittings, hoses, and nozzles shall be inspected to confirm they are fit for the purpose.

**Hose** — All hoses shall be checked for evidence of damage, wear and/or imperfections. This check shall be performed periodically during the operation.



**Pre-Flushing** — The system shall be completely flushed with sufficient water to remove any contaminants prior to installation of the nozzle.

**Nozzle** — All orifices shall be checked in all nozzles for any stoppage, and/or damage or imperfections.

**Electrical Equipment** — Any electrical equipment in the immediate area of the operation that presents a hazard to the operator shall be de-energized, shielded, or otherwise made safe.

### 37.5 Operational Procedures

#### 37.5.1 Operational Procedures

**Work Area** — Where practical, workpieces to be jetted shall be removed from plant areas to a high-pressure water jetting area.

- Where this is impractical, cutting or cleaning in a place or adjacent to the installed position may be done with the necessary clearance and permission of the occupier.

**Area Limits** — Area limits applicable to the cutting or cleaning operations shall be defined, and the team shall mark these limits with barriers and notices to warn against access to other personnel.

- Suitable barriers shall be an approved form of hazard warning, rope or tape, as a minimum.
- Alternatively, a suitable barrier shield is acceptable at any reasonable distance.
- Notices shall state, "DANGER-KEEP CLEAR, HIGH-PRESSURE WATER JETTING IN OPERATION," or other suitable wording.

**Corrosive Materials** — Where there is a possibility of encountering corrosive or toxic materials, the operator shall be requested to inform the person in charge of high-pressure water jetting of any precautions that may be necessary, including the collection and disposal of waste materials.

**Work Surface** — Operators shall have good access to the workpiece, a safe working platform, and secure footing. The area in which work is to proceed shall be kept clear of loose items and debris to prevent tripping and slipping hazards.

**Access** — Access by unauthorized persons into the area where high-pressure water jetting is taking place is prohibited. The area shall be cordoned off and warning notices displayed in prominent positions. The perimeter shall be outside the effective range of the jet wherever possible.

**Approaching the Operator** — The operator shall be requested to inform all personnel likely to require access to the area that high-pressure water jetting is in progress. Personnel having reason to enter the water jetting area shall wait until the jet is stopped and make their presence known.

- Personnel wishing to have the jet stopped shall approach a team member other than the jet operator. The jet operator shall not be distracted until the jet has been stopped.

**Side Protection** — Target and side shields shall, where feasible, be suitably placed to safeguard personnel and equipment against contact with grit or solids, removed by the jets.

**Protective Equipment** — All personnel working in or entering the barricaded area while cleaning or cutting is in progress, shall wear the required protective equipment.



**Pressurizing the System** — Pressure on the system shall be increased slowly while being inspected for leaks and/or faulty components. All leaks or faulty components shall be repaired or replaced. The system shall be de-pressurized for repairs.

**Team Operations** — In most jetting operations it is accepted practice to employ a minimum of two persons.

**Supervision** — All high-pressure water jetting operations shall be controlled by a supervisor who is trained in all aspects of the jetting operation.

**Number of Operators** — The operation of the high-pressure water jetting equipment shall be by two or more operators depending on the equipment being used and the nature of the job, these operators shall work as a team with one member in charge.

- The operator of the gun or lance shall take the lead role while jetting is in progress.

**Gun Operator** — One operator from the team shall hold the lance, gun or delivery hose, with the nozzle mounted on it. The primary duty of the gun operator is to direct the jet.

**Second Operator** — The second operator of the team shall attend the pump unit, keep close watch on the first operator for signs of difficulty or fatigue, and watch the surrounding area for intrusion by other persons and/or unsafe situations.

- If required, the second operator shall shut off the pressure until it is safe to continue.
- Caution shall be exercised in shutting off the pressure rapidly as this can cause the gun operator to lose their footing.

**Additional Operators** — Further operators are required in the following circumstances:

- To assist the gun operator with the handling of the lance if it is too long or too heavy for one person.
- Provide communication if the lance operator is out of sight of the pump-unit operator.
- Job rotation — The team members shall rotate their duties during any job to minimize fatigue to the operator holding the lance or gun.

**Team Leader** — The team leader shall be responsible for basic equipment checks as detailed in this chapter, preparation of the working area for safe operation, and obtaining a permit to work where and when required.

**Code of Signals** — Before starting a jetting operation, the team members — one of whom shall be in charge — shall agree on a code of signals to be used during the operation of the equipment.

**Fitness** — The operator and other team members shall be physically and mentally capable of performing the required operations.

**Single-Person Operation** — Single-person operation is allowed where the pressure does not exceed 2,000 psi, and the flow is less than 20 gpm.

- Under single-operator guidelines, all other requirements pertaining to team operations, shall hold.



### 37.5.2 Shotgunning

**Controls** — The person operating the nozzle shall have direct control of the dump system.

**Attendance** — The System 81 shall never be left unattended when pressurized.

**Multiple Operation** — When more than one shotgunning operation is being performed within the same area, either a physical barrier shall be installed or adequate spacing between operators shall be maintained to prevent the possibility of injury from the high-pressure water.

**Target Holding** — Objects to be cleaned shall never be held manually.

**Connection Protection** — The point where the hose connects to the dump system shall be shrouded by a protective device — such as a heavy-duty hose, shoulder guard, etc. — to prevent injury to the operator(s) should hose, pipe, or fitting rupture.

**Minimum Length** — Where practicable, the minimum length of the shotgun lance extension shall be 4 feet, from the triggering device to the nozzle.

**Hose Protection** — Steel braided hoses shall be used on air-operated, fail-safe systems to keep the system from being activated by someone stepping on the hose or running over it.

### 37.5.3 Moleing or Flex Lancing

**Control** — The operator inserting the nozzle shall have direct control of the dump system.

**Reversing** — A positive method shall be used to prevent the nozzle from reversing direction inside the item being cleaned.

**Retrojets** — During manual operations, the entrance to a line or pipe shall not be cleaned with a nozzle containing back jets without adequate shielding.

**Clearance** — The clearance between the outside diameter of the hose, lance-and-nozzle assembly and the inside wall of the item being cleaned shall be sufficient to allow adequate washout of water and debris.

**Pressurization** — During manual operation, the nozzle shall be inserted into the tube prior to pressurizing. Conversely, the system shall be de-pressurized before removal of the nozzle from the tube.

**End Identification** — Hoses shall be conspicuously marked no closer than 24 inches (0.6 meters) from the nozzle to warn the operator of the nozzle location.

**Nozzle Support** — Where the length of the nozzle and rigid coupling is less than the inside diameter of the pipe, to prevent the nozzle turning around 180 degrees and doubling back towards the operator, one of the following methods shall be used:

- A length of rigid pipe of not less than the diameter of the pipe being cleaned shall be fitted directly behind the nozzle
- A suitable safety shield shall be provided to protect the operator.

### 37.5.4 Rigid Lancing

**Control** — The operator inserting the nozzle shall have direct control of the dump system.



**Clearance** — The clearance between the outside diameter of the lance and nozzle and the inside wall of the item being cleaned shall be sufficient to allow adequate washout of water and debris.

**Pressurization** — When under manual operation, the nozzle shall be inserted into the tube prior to pressurizing. Conversely, the system shall be de-pressurized before removal of the nozzle from the tube, unless proper shielding is provided.

**Shields** — When lancing tubes with a rigid lance, a guard shall be installed, where practicable, around the lance, to prevent a lance nozzle from the tube, unless proper shielding is provided.

**Additives** — Any water additive — chemical, detergent, or solid particle — shall be utilized in accordance with the manufacturer's recommendations.

### 37.5.5 Proper Operation

**Startup** — The pump unit shall not be started and brought up to pressure unless each team member is in their designated position, the nozzle is held in or directed at the workpiece, and the lance or gun securely held.

**Adjustments** — Apart from operational procedures no attempt shall be made to adjust any nut, hose connection, fitting, etc. while the system is under pressure. The pumps shall be stopped and any pressure in the line discharged prior to making any such adjustments.

- Care shall be taken to release the pressure in the dry shut-off gun and the line when the unit is switched off.

**Equipment Malfunction** — If for any reason the water flow does not shut off when the trigger or foot pedal is released, work shall cease until the item has been serviced, repaired, or changed, by properly trained personnel.

**Reaction Force** — The operator shall be allowed to experience the reaction force of the jet progressively until the required operating pressure is reached. The lowest pressure that is compatible with the work to be done, shall be used. The pressure shall not be adjusted without the operator first being made aware.

**Effect of Line Pulses** — Operators shall be made aware of the reactive effect of pressure in the line which can transmit a severe jolt to the operator when the dump valve or dry shut-off valve is operated.

- To minimize this effect, total hose lengths shall be kept as short as possible, and damping devices can be introduced into the system.

**Thermo-Plastic Hoses** — Thermo-plastic hoses shall not be used for water jetting unless specifically designed for this purpose.

**Operator Positioning** — While operating, the team members shall be safely positioned and if any other person should enter into the working area, jetting shall be stopped.

**Work Stoppage** — Work shall stop under any of the following circumstances:

- In the event that leaks or damage become apparent.
- If a person becomes aware of any change in conditions or any hazards — whether existing or introduced.
- If plant or work alarms are sounded.



- Any of the recommended practices in this document are not followed.

**Hose Protection** — All hoses shall be protected from being run over and crushed by vehicles, forklift trucks, etc.

**Back Thrust** — The back thrust from a linearly directed jet can be calculated using the following equation:

- Back thrust (lb.) -  $0.052 Q (P)^{0.5}$ 
  - Where:
    - Q is the flow rate in U.S. gpm.
    - P is the jet pressure measured in psi
- **Note:** It is not recommended that any one person be required to withstand a back thrust of more than one-third of their body weight for any extended period of time.

#### 37.5.6 Use of Lances and Nozzles

**Lances** — Lances which are rigid or semi-rigid having nozzles fitted to them with any combination of forward, backward or 90-degree angle jets shall be used with either a dump system or dry shut-off control valve.

- When a flexible lance or nozzle mounted on a hose is in use, the jet shall not be operated at pressure, unless the nozzle is properly positioned inside the workpiece or the operator is protected by screens or proper shielding from the rear-facing jets. If necessary, the lead-in to the workpiece shall be cleared by other methods.

**Flexible Lances** — Flexible lances used to clean pipes where the inside diameter of the pipe is not small enough to prevent the lance from turning back on itself, shall have a piece of rigid straight tube, slightly longer than the diameter of the pipe fitted immediately behind the nozzle to prevent this from happening.

**Distance Indicator** — When an assembly is used which allows the nozzle to enter the workpiece with restricted visibility, the lance, hose, or floor shall be clearly marked in a manner which enables the operator to judge how far the nozzle is in the workpiece before pressure is applied and, conversely, so that pressure is released before the apparatus is completely withdrawn from the workpiece.

**Lance Length** — The length of a rigid lance or combination of lances shall be such that the operator is able to maintain control at all times.

**Jet Pressure** — The nozzle and minimum operating pressure shall be selected by the operators to allow effective and efficient jetting.

**Improper Use** — Should an operator enter a manhole or access port for any purpose — preferably with the jetting machine turned off — the hose shall not be used to support his weight when climbing up or down.

**"T" Pieces** — "T" pieces are devices for producing two equal and opposite jets at the end of the lance and at right angles to the normal flow.

- When using a "T" piece or nozzle carrier, it shall be inserted into a tube, or vessel, or between two surfaces before the system is pressurized. This is necessary to ensure that should one jet be





larger than the other, or one jet become blocked or partially blocked, the operator of the lance will not be spun out of control.

- When a "T" piece is used to provide a balancing jet on a long lance to clean a single surface, it is not always possible to check for equal thrust from both jets in the manner described above; therefore, these lances shall be checked by progressive pressure increases.
- This restraint shall also apply to any form of multi-jet nozzles, the jets issuing water from a radial component.

**Confined Working** — Prior to entry into a confined space for jetting, a certificate of clearance — i.e., permit — shall be obtained to ensure that access is safe.

### 37.6 Operational and Training Requirements

**Qualified Operators** — Only trained personnel shall operate high-pressure water jetting equipment and supervise the training of new operators.

**Training** — A personnel training program shall be developed by each employer and be presented to each employee before assignment to the employee's first high-pressure cleaning job. Such training shall include, as a minimum, coverage of all items listed in this chapter.

**Cutting Action** — The cutting action of a high-pressure water jet and potential hazard it poses to the human body shall be demonstrated through the use of audio/visual aids or actual use of equipment — e.g., by cutting through a piece of lumber, concrete block, etc.

**Personal Protective Equipment (PPE)** — The minimum PPE shall be explained. Instructions shall be given as to when and how specific clothing and other types of protective devices shall be worn according to the type of work performed, location, etc.

**System Operation** — The operation of the system shall be explained pointing out potential problems and proper corrective action.

**Control Devices** — The operation of all control devices shall be explained. The importance of not tampering with any control devices, as well as the importance of keeping them in proper working order shall be stressed.

**Equipment Maintenance** — It shall be pointed out, that valves and seating surfaces in pressure regulating devices encounter high wear during high-pressure water jetting. These items require frequent inspections, maintenance, and/or replacements in order to provide proper operation.

**Hose** — The proper method of connecting hoses including laying out without kinks, protective from excessive wear, and proper tools to use on couplings and fittings shall be explained.

**Stance** — The proper stance for sound footing and how to use the various devices for lancing, shotgunning, and moleing shall be demonstrated.

- The trainee, under close supervision, shall use the various devices while the unit is slowly pressurized.

**Proficiency** — Personnel shall demonstrate knowledge and skill in the proper operation of equipment through practical application.



### 37.6.1 General

System shall be de-pressurized when:

- Not in use.
- Unauthorized or inadequately protected persons the enter barricaded area.
- Replacement or repairs are made to the system.
- Any recommended practices are violated.

**Refresher Training** — Operator retraining shall be conducted on an annual basis, or more frequently if needed.

### 37.6.2 Permanent Cleaning Areas

**Enclosure** — The areas shall be suitably enclosed and warning notices prominently displayed at the access points and perimeters.

**Access** — Access by persons other than the jetting team shall be strictly prohibited while work is in progress. If any unauthorized entry is made, all work shall cease immediately.

**Hazards** — The working area shall be free from hazards likely to trip personnel and be provided with adequate drainage and lighting facilities.

### 37.6.3 Freeze Precautions

**Freeze Precautions** — During periods where there is a risk of freezing, follow manufacturer's recommendations and/or take the following precautions:

- Remove gun or nozzle from delivery hose.
- Pump water from supply tank until level of water is just above the filter.
- Add recommended quantity of anti-freeze into water tank.
- Place delivery hose into water tank and secure.
- Run the pump until the anti-freeze works through the system.
- Move selector level to dump or recycle position until the anti-freeze shows in the water tank.
- If no supply tank is fitted, follow manufacturer's recommendations.

**Warning:** If a pump or hose appears frozen, the pump shall not be engaged, nor shall the engine be started if there is a direct drive to the pump. The pump shall not be started until the system has been thawed out and low-pressure water has been allowed to flow through the system to the nozzle end of the lance. The lance must be removed.



Burns & McDonnell Safety & Health Program



38 Chapter 38 - Reserved



Burns & McDonnell Safety & Health Program



39 Chapter 39 – Reserved



## **Chapter 40**

### **Substance and Alcohol Abuse Prevention Program**

#### **Chapter Contents**

#### **40 Substance and Alcohol Abuse Prevention Program**

##### **40.1 Substance and Alcohol Abuse Prevention Program**

###### **40.1.1 General**

##### **40.2 Testing**

###### **40.2.1 Pre-Site Access/Annual Testing**

###### **40.2.2 Post Incident Testing**

###### **40.2.3 Probable-Cause/Reasonable Suspicion Testing**

###### **40.2.4 Random Testing**

###### **40.2.5 Collections**

###### **40.2.6 Refusal to Test**

##### **40.3 Testing Parameters**

###### **40.3.1 Substance Abuse**

###### **40.3.2 Alcohol Abuse**

###### **40.3.3 Supervisors, Confirmation and Control**

##### **40.4 Sanctions/Consequences Imposed for Failing Drug and/or Alcohol Tests**

##### **40.5 Training**



## **40.1 Substance and Alcohol Abuse Prevention Program**

### **40.1.1 General**

Burns & McDonnell and/or its subsidiaries has the right and obligation to maintain a safe, healthy, and efficient working environment.

The use, sale, purchase, transfer, or possession of an illegal substance in the workplace, and the use, possession, or being under the influence of alcohol poses unacceptable risks for safe, healthy, and efficient operations.

The unlawful manufacture, distribution, consumption, possession, or use of a controlled substance and/or alcohol is prohibited at project locations.

Subcontractors/contractors, and their subcontractors shall be required to comply with requirements as outlined by this chapter for a drug and alcohol-free workplace, unless a more stringent program is defined for the project. By signing a contract agreement with Burns & McDonnell, its subsidiaries, or the owner, the subcontractor/contractor certifies that their employees shall comply with this written Substance Abuse Testing Program.

Subcontractors/contractors, and their subcontractors shall be required to assist Burns & McDonnell and/or its subsidiaries by administering the project requirements for a Substance Abuse Detection and Prevention Program as part of the Project Entity's responsibilities and scope of work.

All costs for substance abuse/alcohol testing shall be included in the subcontractor's/contractor's contract price.

Project personnel entering, working on, or leaving the project work site shall be subject to search in support of the Substance and Alcohol Abuse Prevention Program.

Supplier representatives, home office employees, and field technical representatives who visit the project work site on a short-term basis are not subject to drug and alcohol testing, although such persons are subject to search and/or inspection procedures in support of the Substance and Alcohol Abuse Prevention Program.

## **40.2 Testing**

Subcontractors/contractors, and their subcontractors, including employees, new hires, replacements, and supervisory personnel, are subject to the following substance abuse and alcohol testing:

- Pre-site access/annual testing.
- Post-incident testing.
- Probable-cause/reasonable suspicion.
- Random testing as a condition of contract.

Subcontractors/contractors, and their subcontractors shall be required to send evidence that an employee's substance abuse and/or alcohol test was negative — regardless of the reason for testing — to Burns & McDonnell and/or its subsidiaries utilizing Safety Form C-18, "Substance Abuse Site Access Verification."





#### 40.2.1 Pre-Site Access/Annual Testing

Initial site access of project personnel shall be conditional upon successfully meeting the requirements of the pre-site access substance and alcohol test.

The pre-site access test shall be taken by project personnel within seven days before reporting to the project site.

Only those project personnel who are certified as drug and alcohol-free, in accordance with the requirements of this program, shall be permitted by the subcontractor/contractor to access the project site.

Subcontractor's/contractor's, and their subcontractor's project personnel shall be required to participate in annual testing. Project personnel's pre-site access testing date shall be recognized as the annual testing date.

#### 40.2.2 Post Incident Testing

Project Entities shall be required to submit to post-accident/incident substance abuse and alcohol testing under any of the following circumstances:

- Personnel are either directly, or indirectly involved in an incident that involves a fatality.
- Personnel are either directly, or indirectly involved in an incident that results in any injury to themselves or any other individual on the project site requiring offsite medical evaluation/treatment.
- Personnel are either directly, or indirectly involved in an incident that results in damage to property exceeding of \$8000.
- Citations are issued by legal authorities — e.g., police, sheriffs' department, state police, etc.

Post-incident testing shall be conducted immediately, or as soon as reasonably possible, following an incident.

When post-incident testing is conducted, the involved personnel shall not be allowed return to the project until testing results have been received, reviewed, and the site management team has authorized their return.

#### 40.2.3 Probable-Cause/Reasonable Suspicion Testing

Probable-cause/reasonable suspicion testing shall be required at the time of observable probable cause circumstances, based on objective evidence regarding the individual's conduct in the workplace, that would lead a reasonable person to believe that the employee is demonstrating signs of impairment due to alcohol or other drugs, or is in possession of alcohol, drugs, or other controlled substances.

Safety Form C-19, "Substance Abuse Reasonable Cause Documentation," shall be used to document observations and shall be submitted to Burns & McDonnell and/or its subsidiaries.

A copy of Safety Form C-19, "Substance Abuse Reasonable Cause Documentation," shall be provided to the employee upon request.



#### 40.2.4 Random Testing

Random testing shall be unannounced and unscheduled; upon notification, project personnel shall immediately report to the testing facility.

Random testing shall be conducted each month. The date of such testing shall be selected using a method that randomly selects the date within the time frame specified, so that the date is unpredictable to the potential subjects of the testing.

Supervisors shall not be informed of the names of selected personnel until two hours prior to the actual screening process.

Random selection includes all personnel on the job site the day selected for random testing.

Individuals to be tested shall be chosen using a method of selection that:

- Is truly random, without discrimination or arbitrary selection.
- Randomly selects 10% of subjects from among the pool of each subcontractor and their lower-tiered subcontractor personnel.
- Ensures that project personnel have an equal chance of being selected for testing when a selection takes place each month.
- Can be verified and documented.

#### 40.2.5 Collections

A Pre-Screening — e.g., Insta-Check — Program may be used along with a urinalysis test only with written authorization from Burns & McDonnell and/or its subsidiaries' Corporate Safety & Health.

If for any reason the pre-screening is inconclusive, the specimen shall be sent to the appropriate facility for testing. Project personnel shall be denied access to the project until testing results have been received, reviewed, and the site management team has authorized their return.

Specimen collection and pre-screenings shall be conducted in accordance with the Department of Health and Human Services (DHHS), Substance Abuse and Mental Health Services Administration (SAMHSA), "Mandatory Guidelines for Federal Workplace Drug Testing Programs."

Specimen collection(s) may be conducted at the project work site or at a local clinic approved by Burns & McDonnell and/or its subsidiaries.

Project personnel shall always be escorted to the collection facility by an accompanying supervisor.

All substance analysis in specimens shall only be performed by SAMHSA laboratories certified by DHHS, as outlined in the federal guidelines.

Additionally, specimen collection shall be conducted in accordance with state and federal law.

Specimen collection procedures shall be designed to ensure the security and integrity of the specimen provided by following accepted chain-of-custody guidelines.

Every reasonable effort shall be made to maintain the dignity of anyone submitting a specimen for this program.



#### 40.2.6 Refusal to Test

Refusal to test, or failure to remain and complete the testing procedure, shall carry the same sanctions as a positive test result.

Project personnel selected for a substance abuse/alcohol test shall be required to remain under the supervision of their supervisor, collection site personnel, or a representative from their company from the time of test notification until released.

If project personnel are unable to supply a sample at the time of testing, they shall be required to wait up to three hours, without leaving the testing facility.

Failure to remain and complete the testing procedure shall be considered a refusal to test, which carries the same sanctions as a positive test.

To accommodate this possibility, notification of random testing shall be given in ample time before the end of a shift.

### 40.3 Testing Parameters

#### 40.3.1 Substance Abuse

Department of Transportation (DOT) substance abuse testing parameters and cut-off levels shall be determined by current HHS Guidelines for Federal and Department of Transportation (DOT) workplaces published in the [HHS-SAMSHA Mandatory Guidelines](#) and [DOT Rule 49 CFR Part 40.87](#).

In addition to these substances and cut-off levels, the creatinine level and specific gravity of the specimen shall be measured.

If the creatinine level is less than 20 milliliters per deciliter and the specific gravity is less than 1.003, the sample shall be considered dilute and another collection shall be required.

The second sample shall be requested to be collected the following morning from the time of notification of a diluted sample.

Those samples containing adulterants or considered substituted as determined by the laboratory shall be considered a positive test.

More stringent limits of sensitivity and specificity for each drug of abuse may be defined by the project owner and shall be followed.

#### 40.3.2 Alcohol Abuse

Alcohol abuse testing parameters shall consist of an alcohol test using breath or blood to determine blood alcohol content (BAC). If possible, a breathalyzer-type instrument conforming to the DOT guidelines shall be used. If such an instrument is not available, then a blood draw may be used.

Breath and/or blood collection shall be conducted at the project work site clinic or a local clinic approved by Burns & McDonnell and/or its subsidiaries.

Failure to provide a sufficient breath sample to complete a breath test or refusal to provide a blood sample shall be considered a refusal to test and shall carry the same consequences as a positive test.



The minimum requirement for a positive test result for alcohol shall be a BAC of 0.02 % or 0.02 grams of alcohol per 100 milliliters of blood.

Any initial breath test that indicates a BAC of 0.02% or greater shall be confirmed by an evidential breath testing device operated by a breath-alcohol technician.

The confirmation test shall be performed no sooner than 15 minutes, and no later than 30 minutes following the completion of the initial test.

Two blood samples shall be drawn if the blood is used to determine BAC.

An alcohol concentration of 0.02% or greater from the confirmation breath test, or concentration of 0.02 grams of alcohol per 100 milliliters of blood or greater from the blood samples, shall be considered a positive alcohol test.

#### **40.3.3 Supervision, Confirmation and Control**

All substance abuse testing shall be performed under the control and supervision of a physician with confidentiality protected in accordance with state law and the "American Medical Association's Code of Ethical Conduct for Physicians Providing Occupational Medical Services" or the Medical Review Officer Manual, as developed by the National Institute on Drug Abuse (NIDA).

Laboratories and/or testing facilities shall report all results to the medical review officer (MRO) for verification and medical review.

The MRO shall be a licensed physician responsible for receiving laboratory results generated by a Substance Abuse Testing Program, who has knowledge of substance abuse disorders, and who has received appropriate medical training to interpret and evaluate an individual's medical history, and any other relevant biomedical information, as certified by either the American Medical Association or the American College of Occupational and Environmental Medicine.

#### **40.4 Sanctions/Consequences Imposed for Failing Drug and/or Alcohol Tests**

Immediate removal from the project site shall occur when:

- Project personnel are found to possess, distribute, sell, attempt to sell, or transfer an illegal drug while on project work sites or while performing project business.
- Project personnel are found to be in possession of, or under the influence of, alcohol while on project work sites or while performing project business.
- Project personnel are found to be in possession of contraband or other controlled substances.
- Project personnel are found, through drug and alcohol testing, to have in their body, a concentration of a controlled substance or alcohol that is equal to, or exceeds, the confirmatory test cutoff limits.
- Project personnel refuse to cooperate in providing a specimen or participating in substance abuse or alcohol testing.

#### **40.5 Training**

Project personnel shall be trained in all provisions of this program through classes and/or other methods, as appropriate.



## Burns &amp; McDonnell Safety &amp; Health Program



All supervisory personnel — e.g., site superintendents, site supervisors, foremen — shall receive additional training relative to the detection of signs and symptoms of drug and alcohol use.

| Safety Forms                               |                                                                                                                                  |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| B-2<br>Daily Field Safety & Health Report  | <br>Safety Form B-2<br>Daily Field Safety He  |
| B-3<br>Subcontractor Verification          | <br>Safety Form B-3<br>subcontractor-contr    |
| C-1<br>Violation Notice                    | <br>Safety Form C-1<br>Violation_Notice (1).  |
| C-2<br>Incident Investigation Report       | <br>Safety Form C-2<br>Incident Investigatic  |
| C-2NM<br>Near Miss/Report Only Form        | <br>Safety Form C-2<br>Near Miss Report Or    |
| C-3<br>Monthly Work Hour & Incident Report | <br>Safety Form C-3<br>Work Hour Reportir   |
| C-6<br>Confined Space Permit Flow Chart    | <br>Safety Form C-6<br>Confined Space Perri |
| C-6A<br>Confined Space Host Transfer       | <br>Safety Form C-6A<br>Confined Space Hos  |
| C-6B<br>Confined Space Hazard Assessment   | <br>Safety Form C-6B<br>Confined Space Haz  |
| C-7<br>Permit to Work                      | <br>Safety Form C-7<br>Work Permit (3).doc  |



## EXHIBIT C



## Burns &amp; McDonnell Safety &amp; Health Program



|                                                  |                                                                                                                                                                                                                                                       |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C-8<br>Project Orientation Training              | <br>Safety Form C-8<br>Project Orientation (                                                                                                                       |
| C-9<br>Certificate of Training                   | <br>Safety Form C-9<br>Certification_of_Trai                                                                                                                       |
| C-10<br>Pre-Task Analysis (PTA)                  |  Safety Form C-10<br>Pre-Task Analysis Fr  Safety Form C-10<br>PTA Back.docx     |
| C-11/11A<br>Weekly Work Area Assessment          |  Safety Form C-11<br>Weekly Work Area A  Safety Form C-11A<br>Weekly Work Area A |
| C-12<br>Activity Hazard Analysis                 | <br>Safety Form C-12<br>AHA.docx                                                                                                                                   |
| C-13<br>Weekly Toolbox Safety Training           | <br>Safety Form C-13<br>Weekly Toolbox me                                                                                                                         |
| C-14<br>Amendment Form                           | <br>Safety Form C-14<br>Amendment.doc                                                                                                                            |
| C-15<br>Safety & Health Violation Log            | <br>Safety Form C-15<br>Violation Log.xlsx                                                                                                                       |
| C-16<br>Visitor Sign In                          | <br>Safety Form C-16<br>Visitor Sign In.doc                                                                                                                      |
| C-17<br>Competent Person Designation             | <br>Safety Form C-17<br>Competent Person [                                                                                                                       |
| C-18<br>Substance Abuse Site Access Verification | <br>Safety Form C-18<br>Site Access Verificati                                                                                                                   |

|                                                    |                                                                                                                                     |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| C-19<br>Substance Abuse Reasonable Cause           | <br>Safety Form C-19<br>Reasonable Cause C       |
| C-20<br>Safety & Health Submittals                 | <br>Safety Form C-20<br>Safety and Health S      |
| C-26<br>Lone Worker Trip Itinerary                 | <br>Safety Form C-26<br>Lone worker.docx         |
| C-27<br>Stop Work Intervention                     | <br>Safety Form C-27<br>Stop Work Intervent      |
| C-28<br>Line Break Checklist and Authorization     | <br>Safety Form C-28<br>Line Break Checklist     |
| C-29<br>Line Break Permit                          | <br>Safety Form C-29<br>Line Break Permit.do    |
| C-30<br>Skiff Proficiency Rating                   | <br>Safety Form C-30<br>Skiff Proficiency Rati |
| D-1<br>Floor Grating and Guardrail Removal Permit  | <br>Safety Form D-1<br>Floor Grating and G     |
| D-3<br>Perimeter Guardrail Inspection and Turnover | <br>Safety Form D-3<br>Perimeter Guardrail     |
| D-4<br>Portable Ladder Inspection Form             | <br>D-4<br>Ladder_Inspection.d                 |
| D-5<br>Job Made Ladder Inspection Form             | <br>Safety Form D-5 Job<br>Made Ladder Checkl  |

|                                             |                                                                                                                                              |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| E-1<br>Emergency Action Plan                | <br>Safety Form E-1<br>Emergency Action Plan              |
| F-1<br>Aerial Lift Inspection               | <br>Safety Form F-1<br>Aerial Lift Inspection             |
| G-3<br>Lockout Lock Removal Authorization   | <br>Safety Form G-3<br>Lockout Lock Removal               |
| G-8<br>Portable Multi-Gas Monitor Bump Test | <br>Safety Form G-8<br>Gas Monitor Bump Test              |
| G-11<br>Tagging Authority List              | <br>Safety Form<br>G-11 Tagging Authority                 |
| G-13<br>LOTO Isolation Record               | <br>Safety Form G-13<br>Isolation Record.doc            |
| G-13A<br>Group Lockbox Log                  | <br>G13A Group<br>Lockbox Log.doc                       |
| G-13B<br>Satellite Lockbox Log              | <br>Safety Form G-13b<br>Satellite LOTO Log.doc         |
| G-14<br>Do Not Operate Tag                  | <br>Safety Form G-14<br>Do Not Operate Tag              |
| G-15<br>Caution System Under Test Tag       | <br>Safety Form G-15<br>Caution System Under Test       |
| G-19<br>Electrical Work Classifications     | <br>Safety Form G-19<br>Electrical Work Classifications |

|                                                                                |                                                                                                                                        |
|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| G-20<br>Energized Electrical Work Permit (EEWP-1)                              | <br>Safety Form G-20<br>Energized Electrical        |
| G-21<br>Energized Electrical Work Permit (EEWP-2) –<br>Testing & Commissioning | <br>Safety Form G-21<br>Energized Electrical        |
| G-22<br>Energized Electrical Work Permit Workflow                              | <br>Safety Form G-22<br>Energized Electrical        |
| G-23<br>Photovoltaic Power Generation Isolation                                | <br>Safety Form G-23<br>Photovoltaic Power          |
| G-24<br>LOTO Work Request Form                                                 | <br>G-24 - LOTO Work<br>Request Form.docx           |
| I-1<br>Respirator Training Record                                              | <br>Safety Form I-1<br>Respirator Training        |
| I-4<br>Respirator Program Evaluation Checklist                                 | <br>Safety Form I-4<br>Respirator Program         |
| I-5<br>Respirator Not Required Form                                            | <br>Safety Form I-5<br>Respirator Not Requ        |
| I-6<br>Quantitative Respirator Fit Test                                        | <br>Safety Form I-6<br>Quantitative Respira       |
| I-7<br>Qualitative Respirator Fit Test                                         | <br>Safety Form I-7<br>Qualitative Respirator     |
| J-1<br>Site Specific Excavation Plan                                           | <br>Safety Form J-1 Site<br>Specific Excavation F |

|                                                                                 |                                                                                                                                       |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| J-2<br>Daily Excavation Inspection Form                                         | <br>Safety Form J-2<br>Daily Excavation Inspe      |
| J-3<br>Soil Classification Form                                                 | <br>Safety Form J-3 Soil<br>Classification.doc     |
| J-4<br>Field Safety Checklist Field Intrusive Activities                        | <br>Safety Form J-4<br>Field Safety Checklis       |
| K-2<br>Monthly First Aid Kit Inspection                                         | <br>Safety Form K-2<br>Monthly First Aid Kit       |
| K-3<br>Hepatitis B Statement                                                    | <br>Safety Form K-3<br>Hep B Statement.do          |
| K-4<br>Sharps Log                                                               | <br>Safety Form K-4<br>Sharps Log.docx            |
| K-5<br>Heat Illness Prevention Program                                          | <br>Safety Form K-5<br>Heat illness Preventi     |
| K-6<br>Winterization and Preparedness Plan                                      | <br>Safety form K-6<br>Winterization and P       |
| K-7<br>Cold Weather Checklist                                                   | <br>Safety Form K-7<br>Cold Weather Check        |
| L-1<br>Fire Extinguisher Inspection Log                                         | <br>Safety Form L-1 Fire<br>Extinguisher Inspect |
| L-3<br>Aboveground Storage and Dispensing Tanks<br>Monthly Inspection Checklist | <br>L 3 Above Ground<br>Storage Tank Month       |

|                                                      |                                                                                                                                   |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| L-4<br>Compressed Gas Storage Checklist              | <br>Safety Form L-4<br>Compressed Gas Stc      |
| N-1C<br>Daily Crane Inspection                       | <br>Safety Form N-1C<br>Crane Inspection.doc   |
| N-1W<br>Monthly Wire Rope Inspection                 | <br>N - 1W Wire Rope<br>Inspection.docx        |
| N-2<br>Critical Lift Plan                            | <br>Safety Form N-2<br>Critical lift plan.doc  |
| N-3<br>Suspended Personnel Platform Checklist        | <br>N 3 Suspended<br>Personnel Platform (      |
| N-7<br>Helicopter Critical Lift Safety Plan          | <br>N 7 Helicopter<br>Critical Lift.doc       |
| N-5<br>Daily Forklift Pre-Operation Checklist        | <br>Safety Form N-5<br>Daily Forklift Pre-Op |
| N-8<br>Daily Construction Vehicle Inspection         | <br>Safety Form N-8<br>Construction Equipr   |
| N-10<br>Qualified Rigger Evaluation                  | <br>Safety Form N-10<br>Qualified Rigger Eva |
| N-11<br>Wire Rope Sling/Choker Inspection Report     | <br>Safety Form N-11<br>Wire Rope Sling Chk  |
| N-12<br>Chain Sling Inspection Report                | <br>Safety Form N-12<br>Chain Sling Inspecti |
| N-13<br>Chain Fall and Lever Hoist Inspection Report | <br>Safety Form N-13<br>Chain Fall and Lever |



|                                                      |                                                                                                                                   |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| N-14<br>Shackle Inspection Report                    | <br>Safety Form N-14<br>Shackle Inspection f   |
| N-15<br>Synthetic Web Sling/Choker Inspection Report | <br>Safety Form N-15<br>Synthetic Web Sling    |
| O-1<br>Motor Vehicle Inspection                      | <br>Safety Form O-1<br>Motor Vehicle Inspe     |
| P-2<br>Powered Tool Inspection Log                   | <br>Safety Form P-2<br>Powered Tool Inspe      |
| P-3<br>Cordless Tool Inspection Log                  | <br>Safety Form P-3<br>Cordless Tool Inspe     |
| R-4<br>Pre Lift-Crane Permit                         | <br>Safety Form R-4<br>Prelift Crane Permit.   |
| R-5<br>Pre Lift-Safety Checklist                     | <br>Safety Form R-5<br>Pre-Lift Safety Check |
| R-10<br>Host-Contractor Information Checklist        | <br>Safety Form R-10<br>Host-Contractor Infr |
| S-1<br>GFCI Monthly Testing Log                      | <br>Safety Form S-1<br>GFCI Monthly Testin   |
| S-2<br>Temp. Cord Set//Welding Lead Inspection Log   | <br>Safety Form S-2<br>Temporary Cord Set.   |
| T-1<br>Demolition Preparatory Checklist              | <br>Safety Form T-1<br>Demolition Preparat   |

## EXHIBIT C



## Burns &amp; McDonnell Safety &amp; Health Program



|                                                                |                                                                                                                                           |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <p>U-1<br/>Concrete and Anchor Bolt Release</p>                | <br><p>Safety Form U-1<br/>Concrete and Anchr</p>      |
| <p>U-2<br/>Site Specific Steel Erection Plan and Checklist</p> | <br><p>Safety Form U-2<br/>Site Specific Steel Er</p>  |
| <p>U-3<br/>Approval to Begin Steel Erection</p>                | <br><p>Safety Form U-3<br/>Approval to Begin S</p>     |
| <p>V-2<br/>Fall Protection Equipment Inspection</p>            | <br><p>Safety Form V-2 Fall<br/>Protection Equipme</p> |
| <p>Z-1<br/>Chemical Inventory</p>                              | <br><p>Safety Form Z-1<br/>Chemical Inventory Lis</p>  |

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# EXHIBIT D

## Beaches Energy Services T-Line Repair Phase I

### Client-Provided Work or Equipment

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## 1. Client-Provided Work or Equipment

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- Beaches Energy Services (BES) to provide the following:
  - All access rights and land rights to perform the Work;
  - All permits as required to perform the Work;
  - Outages, clearances and Hot Lines (One Shots) as required to perform the Work;
  - Removal and reinstallation of all Distribution circuits affecting Contractors Work;
  - Secured area for receiving Material and Equipment to complete the Work;
  - R-O-W Clearing as required to support Contractors Work;
  - All public outreach as required to support the Work; and
  - Free and clear access to the work areas

| CITY COUNCIL AGENDA ITEM |                                                                                                                                                 |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| TO:                      | Mike Staffopoulos, City Manager                                                                                                                 |
| FROM:                    | Karen Nelson, Deputy City Manager                                                                                                               |
| DATE:                    | 04/08/2024                                                                                                                                      |
| SUBJECT:                 | Resolution No. 2171-2024 Amending the Position Classification and Pay Plan for Managerial, Professional and Administrative (Nonunion) Positions |

### BACKGROUND

A continuous goal of City Administration is to work with Executive Management to ensure that each position is appropriately classified in alignment with job descriptions, internal equity, and the growing needs of the organization. Based on a recent review, staff recommends the following amendments to the Position Classification and Pay Plan:

**Information Services.** Add a Technical Support Specialist II in Pay Grade 323; eliminate the Network Engineer position in Pay Grade 324; and add the Support Specialist positions to the schedule for qualification advancement.

The Technical Support Specialist II will be responsible for installing, configuring, and maintaining end-user systems, and will provide training and advanced-level support to the Technical Support Specialist I. Additionally, this position will support the Systems Engineer with general level II support and daily infrastructure tasks. The addition of this position to the pay plan will not result in an increase in the total number of authorized positions. Staff intends to reclassify two current employees into the new position to better reflect the daily activities and responsibilities that are being performed by those individuals.

A review of duties and responsibilities in the Network Engineer job description revealed that many of the essential functions are currently being performed by the Systems Engineer and will be supported by the new Technical Support Specialist II. For maximum efficiency, staff recommends removing this position from the pay plan and adding funding to the operating budget for supplemental contract services that may be required for network support. The Network Engineer position is presently unfilled, so the elimination of the job title does not impact any current employees. Staff recommends that the current vacancy be filled with a Technical Support Specialist.

The two Support Specialist positions will be added to the schedule for qualification advancement to provide a career path for advancement as employees gain experience in the position and expand their skillsets.

**Administration.** Reclassify the Legal Assistant position from Pay Grade 322 to 323.

Title II of the Americans with Disabilities Act (“ADA”) requires public entities with 50 or more employees to appoint an ADA Coordinator to coordinate its efforts to comply with and carry out its ongoing responsibilities under Title II and Sec. 504 of the Rehabilitation Act of 1973. The ADA Coordinator fulfills the administrative requirements of ADA compliance, establishes and publishes a grievance procedure to respond to public complaints of noncompliance and serves as the point



person for resolution of said grievances and complaints. Additionally, the ADA Coordinator conducts self-evaluations of programmatic barriers in services, develops transition plans ensuring accessibility, and oversees the transition. In collaboration with officials and administrators, the ADA Coordinator ensures new facilities and renovations comply with ADA regulations. The ADA Coordinator also handles requests for auxiliary aids and services, provides information about accessible programs and services, and serves as an ADA resource.

The City's Legal Assistant has assumed the role of ADA Coordinator. However, the duties of the ADA Coordinator are not included in the job description of the Legal Assistant and the additional responsibilities associated with that role were not contemplated when the job was originally added to the Pay Plan. This amendment serves to reclassify the position by one pay grade to properly reflect the level of responsibility and requisite knowledge, skills, and abilities required to fulfill the role of ADA Coordinator.

**Administration.** Reclassify the administrative positions to operations support positions and add two positions to the schedule for qualification advancement.

The Position Classification and Pay Plan includes three administrative positions: Office Assistant, Administrative Assistant, and Office Administrator. These positions were originally created to provide clerical and administrative support across all departments. Over time, the role of these positions has grown with the changing needs of the City. These positions perform technical, skilled functions in support of the efficient daily operations of the assigned department.

This amendment will reclassify the positions as follows:

|                                |                                       |
|--------------------------------|---------------------------------------|
| Office Assistant / 310         | Eliminate                             |
| Administrative Assistant / 312 | Operation Support Specialist I / 312  |
| New Position                   | Operation Support Specialist II / 314 |
| Office Administrator / 315     | Operations Administrator / 315        |

Additionally, the Operations Support Specialist I and Operations Support Specialist II will be added to the schedule for qualification advancement to provide a career path for advancement as employees gain experience in the position and expand their skillsets.

#### FINANCIAL IMPACT

The financial impact for the remainder of FY2024 is listed below. Staff will monitor the impact of these changes and amend the budget as necessary as part of the FY2024 year-end budget amendment process.

##### Financial Impact by Department:

Administration - \$4,639  
Beaches Energy Services - \$2,650  
Information Services - \$0  
Parks & Recreation - \$1,096  
Police - \$3,060  
TOTAL - \$11,445

##### Financial Impact by Fund:

General Fund - \$8,795  
Meter Service - \$2,650  
TOTAL - \$11,445





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REQUESTED ACTION

Adopt/Deny Resolution No. 2171-2024 amending the Pay and Classification Plan for Managerial, Professional, and Administrative (Nonunion) Positions

ATTACHMENTS

1. Resolution 2171-2024
2. Resolution 2171-2024 Attachment A

Introduced by: \_\_\_\_\_  
Adopted: \_\_\_\_\_

**RESOLUTION NO. 2171-2024**

**A RESOLUTION OF THE CITY OF JACKSONVILLE BEACH, FLORIDA, AMENDING ITS POSITION CLASSIFICATION AND PAY PLAN FOR MANAGERIAL, PROFESSIONAL AND ADMINISTRATIVE (NONUNION) POSITIONS; PROVIDING FOR ADOPTION OF RECITALS, ADOPTION OF THE PLAN, REPEAL OF PRIOR INCONSISTENT RESOLUTIONS, SEVERABILITY, AND AN EFFECTIVE DATE.**

**WHEREAS**, the City Council has adopted a Position Classification and Pay Plan for Managerial, Professional and Administrative (Nonunion) Positions, which establishes job classifications and salary ranges for each position that are competitive with similar positions in the labor market, and

**WHEREAS**, it periodically becomes necessary to update the Position Classification and Pay Plan to ensure positions are properly classified and compensated in accordance with skill levels, job duties, supervisory responsibility, and the relevant job market; and

**WHEREAS**, to reflect best practices and ensure efficient operations, amendments to the Position Classification and Pay Plan are necessary to reclassify four positions in Managerial, Professional, and Administrative; and add one new position title and eliminate one position title in Information Services.

**NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF JACKSONVILLE BEACH, FLORIDA, THAT:**

**SECTION 1. Adoption of Recitals.** The foregoing recitals are deemed true and material parts of this Resolution and are fully incorporated herein by reference.

**SECTION 2. Adoption of the Amended Plan.** The City of Jacksonville Beach, Florida, hereby adopts the amended Position Classification and Pay Plan attached hereto as Attachment A.

**SECTION 3. Repeal of Prior Inconsistent Resolutions.** All prior resolutions, or parts of resolutions, in conflict herewith, are hereby repealed to the extent of the conflict.

**SECTION 4. Severability.** If any section, sentence, clause, or phrase of this Resolution should be held invalid, unlawful, or unconstitutional, said determination shall not be held to impair the validity, force, or effect of any other section, sentence, phrase, or portion of this Resolution not otherwise determined to be invalid, unlawful, or unconstitutional.

**SECTION 5. Effective Date.** This Resolution shall become effective upon passage and adoption by the City Council.

**AUTHENTICATED** this \_\_\_\_ day of May, 2024.

---

Christine H. Hoffman, Mayor

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Sheri Gosselin, City Clerk

Approved as to form and legal sufficiency:

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David Migut, City Attorney

APPENDIX A

A. 14 POSITION CLASSIFICATIONS

| CLASSIFICATION                                  | POSITION TITLE                                              | GRADE              |
|-------------------------------------------------|-------------------------------------------------------------|--------------------|
| EXECUTIVE<br>MANAGEMENT                         | * Chief Financial Officer                                   | 332                |
|                                                 | * Chief Information Officer                                 | 335                |
|                                                 | * Deputy City Manager                                       | 335                |
|                                                 | * Director of Beaches Energy                                | 335                |
|                                                 | * Director of Human Resources                               | 330                |
|                                                 | * Director of Parks & Recreation                            | 330                |
|                                                 | * Director of Planning & Development                        | 330                |
|                                                 | * Director of Public Works                                  | 332                |
|                                                 | * Police Chief                                              | 332                |
| MANAGERIAL,<br>PROFESSIONAL &<br>ADMINISTRATIVE | * Accountant                                                | 320                |
|                                                 | Accounting Technician I                                     | 316                |
|                                                 | Accounting Technician II                                    | 317                |
|                                                 | Accounting Technician III                                   | 318                |
|                                                 | Assistant to the City Manager                               | 317                |
|                                                 | Assistant to the Police Chief                               | 317                |
|                                                 | * Budget Analyst                                            | 318                |
|                                                 | * Budget Officer                                            | 327                |
|                                                 | * City Clerk                                                | 322                |
|                                                 | * Communications Manager                                    | 323                |
|                                                 | * Controller                                                | 327                |
|                                                 | * Customer Accounts Manager                                 | 323                |
|                                                 | Customer Care Lead                                          | 318                |
|                                                 | Customer Care Specialist I                                  | 312                |
|                                                 | Customer Care Specialist II                                 | 314                |
|                                                 | * Customer Care Supervisor                                  | 320                |
|                                                 | * Deputy City Clerk                                         | 317                |
|                                                 | Human Resources Generalist                                  | 318                |
|                                                 | Legal Assistant                                             | <del>322</del> 323 |
|                                                 | <del>Office Operations</del> Administrator                  | 315                |
|                                                 | <del>Office Assistant</del>                                 | 340                |
|                                                 | <del>Office Assistant/Recording Secretary</del>             | 340                |
|                                                 | <del>Administrative Assistant</del> Operations Specialist I | 312                |
|                                                 | <del>Operations Specialist II</del>                         | 314                |
|                                                 | * Payroll and Benefits Administrator                        | 323                |
|                                                 | * Payroll and Benefits Lead                                 | 318                |
|                                                 | Payroll and Benefits Specialist                             | 314                |
|                                                 | Payroll and Benefits Technician                             | 312                |
|                                                 | Recruiter                                                   | 315                |
|                                                 | * Senior Human Resources Generalist                         | 320                |
|                                                 | * Treasury and Compliance Administrator                     | 323                |
|                                                 | * Utilities Accountant                                      | 320                |
|                                                 | * Utility Accounting Lead                                   | 318                |
|                                                 | * Utility Accounting Technician                             | 316                |
|                                                 | * Utility Auditing and Conservation Lead                    | 318                |

APPENDIX A

A. 14 POSITION CLASSIFICATIONS

| CLASSIFICATION           | POSITION TITLE                               | GRADE          |
|--------------------------|----------------------------------------------|----------------|
| PROPERTY AND PROCUREMENT | * Assistant Property & Procurement Officer   | 325            |
|                          | Buyer                                        | 315            |
|                          | Chief Storekeeper                            | 314            |
|                          | Facilities Maintenance Manager               | 320            |
|                          | * Procurement Administrator                  | 321            |
|                          | Procurement Associate                        | 316            |
|                          | * Property and Procurement Officer           | 327            |
| PLANNING AND DEVELOPMENT | * Building Official                          | 326            |
|                          | * CRA Coordinator                            | 322            |
|                          | * Permit Administrator                       | 316            |
|                          | * Planner                                    | 320            |
|                          | * Planning Official                          | 326            |
|                          | * Senior Planner                             | 322            |
| INFORMATION SERVICES     | * Application Services Manager               | 328            |
|                          | * AS400 Systems Analyst                      | 322            |
|                          | * GIS Administrator                          | 324            |
|                          | * GIS Systems Analyst                        | 323            |
|                          | * <del>Network Engineer</del>                | <del>324</del> |
|                          | * SCADA Systems Analyst                      | 325            |
|                          | * Systems Analyst                            | 323            |
|                          | * Systems Engineer                           | 324            |
|                          | Technical Support Specialist I               | 322            |
|                          | <del>Technical Support Specialist II</del>   | <del>323</del> |
|                          | * Technology/Security Services Manager       | 328            |
| PARKS AND RECREATION     | * Assistant Golf Course Superintendent       | 318            |
|                          | * Chief of Parks Development and Maintenance | 326            |
|                          | Events Coordinator                           | 314            |
|                          | Facilities Maintenance Manager               | 320            |
|                          | Golf Accounting Technician                   | 314            |
|                          | Golf Cart/Range Attendant                    | 308            |
|                          | Golf Course Assistant General Manager        | 316            |
|                          | * Golf Course Superintendent                 | 322            |
|                          | Golf Shop Attendant                          | 310            |
|                          | Golf Starter                                 | 308            |
|                          | Grounds Maintenance Supervisor               | 320            |
|                          | * Head Golf Professional                     | 322            |
|                          | Pro Shop Lead                                | 312            |
|                          | Recreation Leader                            | 310            |
|                          | Recreation Supervisor                        | 316            |
|                          | Senior Assistant Golf Professional           | 318            |
|                          | Tennis Court Attendant                       | 309            |

APPENDIX A

A.16 QUALIFICATION ADVANCEMENT CRITERIA

| CLASSIFICATION                                       | POSITION                                | EXPERIENCE                                     | LICENSE/CERTIFICATION/SKILLS                                                                                |
|------------------------------------------------------|-----------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| MANAGERIAL,<br>PROFESSIONAL<br>AND<br>ADMINISTRATIVE | <u>Operations Support Specialist I</u>  | <u>Entry Level</u>                             | <u>Must meet all requirements and demonstrate the ability to perform all essential functions of the job</u> |
|                                                      | <u>Operations Support Specialist II</u> | <u>2 years Operations Support Specialist I</u> | <u>Must demonstrate proficiency in all essential functions of the Operations Support Specialist I</u>       |
|                                                      | Accounting Technician I                 | Entry Level                                    | Must meet all requirements and demonstrate the ability to perform all essential functions of the job        |
|                                                      | Accounting Technician II                | 2 years Accounting Technician I                | Must demonstrate proficiency in all essential functions of the Technician I job                             |
|                                                      | Accounting Technician III               | 3 years Accounting Technician II               | Must demonstrate proficiency in in all essential functions of the Technician I and Technician II jobs       |
|                                                      | Customer Care Specialist I              | Entry Level                                    | Must meet all requirements and demonstrate the ability to perform all essential functions of the job        |
|                                                      | Customer Care Specialist II             | 2 Years Customer Care Specialist I             | Must demonstrate proficiency in all essential functions of the Customer Care Specialist I job               |
|                                                      | Payroll and Benefits Technician         | Entry Level                                    | Must meet all requirements and demonstrate the ability to perform all essential functions of the job        |
|                                                      | Payroll and Benefits Specialist         | 2 Years Payroll and Benefits Technician        | Must demonstrate proficiency in all essential functions of the Payroll and Benefits Technician job          |
|                                                      | Payroll and Benefits Lead               | 3 years Payroll and Benefits Specialist        | Must demonstrate proficiency in all essential functions of the Payroll and Benefits Specialist job          |
|                                                      | Human Resources Generalist              | 2 Years Human Resource Generalist              | Must meet all requirements and demonstrate the ability to perform all essential functions of the job        |
|                                                      | Senior Human Resources Generalist       | 3 years Human Resource Generalist              | Must demonstrate proficiency in all essential functions of the Human Resources Generalist job               |
| <u>INFORMATION SERVICES</u>                          | <u>Technical Support Specialist I</u>   | <u>3 years relevant experience</u>             | <u>Must demonstrate proficiency in all essential functions of the job.</u>                                  |
|                                                      | <u>Technical Support Specialist II</u>  | <u>7 years of relevant experience</u>          | <u>Must demonstrate proficiency in all essential functions of the job.</u>                                  |





| CITY COUNCIL AGENDA ITEM |                                                                                                                                                                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TO:                      | Michael J. Staffopoulos, City Manager                                                                                                                                                                                                 |
| FROM:                    | Allen Putnam, Director of Beaches Energy Services                                                                                                                                                                                     |
| DATE:                    | 05/01/2024                                                                                                                                                                                                                            |
| SUBJECT:                 | Resolution No. 2176-2024 Designating the Director of Beaches Energy Services as Attorney-in-fact for Beaches Energy Services, etc., Relating to Roadway Illumination Service Agreements with the Florida Department of Transportation |

#### BACKGROUND

On several occasions, the City Council has approved Roadway Illumination Services Agreements between the State of Florida, Department of Transportation (hereinafter referred to as the "FDOT") and the City of Jacksonville Beach, Florida, d/b/a Beaches Energy Services, for various projects along state-owned and operated roadways within the service area of Beaches Energy Services. The FDOT has historically requested that the City designate the Director of Beaches Energy Services to serve as attorney-in-fact for Beaches Energy Services and to delegate authority to him to approve and execute documents to complete performance of prior Roadway Illumination Service Agreements.

The terms of any Roadway Illumination Services Agreement could be performed more efficiently if the Director of Beaches Energy Services was able to administratively approve and execute documents, and staff believe it is in the best interest of the City for the FDOT to complete its performance under Roadway Illumination Services Agreements as soon as possible, provided that the amount to be paid by the FDOT to the City is less than \$25,000.

Resolution No. 2176-2024 designates the Director of Beaches Energy Services as the attorney-in-fact for Beaches Energy Services and delegates the Director of Beaches Energy Services the authority to approve and execute any document related and/or necessary to the performance and furtherance of the terms of any Roadway Illumination Service Agreement so long as the amount to be paid by the FDOT to the City is less than \$25,000. It also authorizes the City Manager to endorse or cause the City's endorsement on any FDOT form, including a Corporate Resolution, Delegation, and Special Power of Attorney form or the FDOT Delegation and Special Power of Attorney that may be required to document the City's designation and delegation made.

#### FINANCIAL IMPACT

Any financial impact caused by a Roadway Illumination Services Agreement with the FDOT will be reflected in any future budget adjustments.

#### REQUESTED ACTION

Adopt/Deny Resolution No. 2176-2024 designating the Director of Beaches Energy Services as attorney-in-fact for Beaches Energy Services; delegating signature authority to the Director of Beaches Energy Services for Roadway Illumination Services Agreements and other project-specific documents to complete performance thereof with the Florida Department Of Transportation (FDOT) when the one-time services charge to be paid by the FDOT to the City is



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less than \$25,000; and authorizing the City Manager to endorse any documentation required by the FDOT that evidences the authority granted herein

ATTACHMENTS

1. Resolution No. 2176-2024

Introduced by: \_\_\_\_\_  
Adopted: \_\_\_\_\_

**RESOLUTION NO. 2176-2024**

**A RESOLUTION OF THE CITY OF JACKSONVILLE BEACH, FLORIDA, DESIGNATING THE DIRECTOR OF BEACHES ENERGY SERVICES AS ATTORNEY-IN-FACT FOR BEACHES ENERGY SERVICES; DELEGATING SIGNATURE AUTHORITY TO THE DIRECTOR OF BEACHES ENERGY SERVICES FOR ROADWAY ILLUMINATION SERVICES AGREEMENTS AND OTHER PROJECT-SPECIFIC DOCUMENTS TO COMPLETE PERFORMANCE THEREOF WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) WHEN THE ONE-TIME SERVICES CHARGE TO BE PAID BY THE FDOT TO THE CITY IS LESS THAN \$25,000; AND AUTHORIZING THE CITY MANAGER TO ENDORSE ANY DOCUMENTATION REQUIRED BY THE FDOT THAT EVIDENCES THE AUTHORITY GRANTED HEREIN; PROVIDING FOR ADOPTION OF RECITALS, REPEAL OF PRIOR INCONSISTENT RESOLUTIONS AND COUNCIL DECISIONS, SEVERABILITY, AND AN EFFECTIVE DATE.**

**WHEREAS**, on several occasions, the City Council has approved Roadway Illumination Services Agreements between the State of Florida, Department of Transportation (hereinafter referred to as the "FDOT") and the City of Jacksonville Beach, Florida, d/b/a Beaches Energy Services, for various projects along state-owned and operated roadways within the service area of Beaches Energy Services; and

**WHEREAS**, the FDOT has historically requested that the City designate the Director of Beaches Energy Services to serve as attorney-in-fact for Beaches Energy Services and to delegate authority to him to approve and execute documents to complete performance of prior Roadway Illumination Service Agreements; and

**WHEREAS**, the City Council has determined that the terms of any Roadway Illumination Services Agreement could be performed more efficiently if the Director of Beaches Energy Services was able to administratively approve and execute documents, and that it is in the best interest of the City for the FDOT to complete its performance under Roadway Illumination Services Agreements as soon as possible, provided that the amount to be paid by the FDOT to the City is less than \$25,000.

**NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF JACKSONVILLE BEACH, FLORIDA, THAT:**

**SECTION 1. Adoption of Recitals.** The foregoing recitals are deemed true and material parts of this resolution and are fully incorporated herein by reference.

**SECTION 2. Designation of Attorney-in-fact for Beaches Energy Services and Delegation of Authority to Approve and Execute Documents.** The City Council hereby designates the Director of Beaches Energy Services as the attorney-in-fact for Beaches Energy

Services and delegates the Director of Beaches Energy Services the authority to approve and execute any document related and/or necessary to the performance and furtherance of the terms of any Roadway Illumination Service Agreement subject to the limitations set forth in Section 3 below.

**SECTION 3. Limitation of Designation and Delegation.** The authority conferred hereby on the Director of Beaches Energy Services is limited to documents related or necessary to the performance of any Roadway Illumination Services Agreement wherein the one-time service charge paid by the FDOT to the City is less than \$25,000.00.

**SECTION 4. City Manager to Effectuate.** The City Manager is hereby authorized to endorse or cause the City's endorsement on any FDOT form, including a Corporate Resolution, Delegation, and Special Power of Attorney form or the FDOT Delegation and Special Power of Attorney that may be required to document the City's designation and delegation made by this Resolution. At all times relevant hereto, the City Manager shall be vested with the discretion and authorization to revoke the designation and delegation on behalf of the City.

**SECTION 5. Repeal of Prior Inconsistent Resolutions and Council Decisions.** All prior resolutions or parts of resolutions in conflict herewith are hereby repealed to the extent of the conflict.

**SECTION 6. Severability.** If any section, sentence, clause, or phrase of this Resolution should be held invalid, unlawful, or unconstitutional, said determination shall not be held to invalidate or impair the validity, force, or effect of any other section, sentence, phrase, or portion of this Resolution not otherwise determined to be invalid, unlawful, or unconstitutional.

**SECTION 7. Effective Date.** This Resolution shall become effective immediately upon passage and adoption by City Council.

**AUTHENTICATED** this \_\_\_\_ day of \_\_\_\_\_, 2024.

\_\_\_\_\_  
Christine H. Hoffman, Mayor

\_\_\_\_\_  
Sheri Gosselin, City Clerk

Approved as to form and legal sufficiency:

\_\_\_\_\_  
David Migut, City Attorney



| CITY COUNCIL AGENDA ITEM |                                                                                                 |
|--------------------------|-------------------------------------------------------------------------------------------------|
| TO:                      | Michael J. Staffopoulos, City Manager                                                           |
| FROM:                    | Heather Ireland, Planning and Development                                                       |
| DATE:                    | 03/25/2024                                                                                      |
| SUBJECT:                 | Ordinance No. 2024-8211 Vacating a 14-foot Wide Alley in the Ocean Terrace Subdivision, Block 8 |

#### BACKGROUND

In January 2024, the Planning and Development Department received an application to vacate an existing 14-foot alley located in the Ocean Terrace Subdivision, which runs north to south from the Riptide PUD to Jacksonville Drive. The applicant requested to vacate half of the alley immediately adjacent to their property located at 3810 Tropical Terrace. The alley runs behind 25 separate residential properties in Block 8 of the Ocean Terrace Subdivision. The alley is currently not used by the city and has no infrastructure.

The Planning and Development Department sent a public notice to all property owners whose property may be affected by the proposed alley closing to request comments on the request. At least a week was allowed for responses, and the city did not receive any emails, calls, inquiries, or other correspondence regarding the request. Copies of the application were sent to Beaches Energy, the Fire Marshal, the Police Department, and the Public Works Department for their review, comments, and recommendations concerning the proposed alley closing request. All departments have reviewed the request pursuant to the departmental review criteria, and have recommended approval of the request.

Considering that the City does not maintain any utilities or own any infrastructure within the subject alley, the recommendation of the Planning and Development Department is to vacate the entire alley from the Riptide PUD subdivision to Jacksonville Drive, and permit all adjacent property owners to take ownership of half of the alley immediately adjacent to their lot/property, the same as if the alley were never platted. Since the city is not maintaining the alley, a significant public purpose would be served by vacating the alley, since the adjacent homeowners would be permitted access and be responsible for maintenance, should they choose to utilize and develop the property.

All requests must be approved by ordinance at two separate meetings. The first reading of the ordinance was held on April 15, 2024, and was **approved** by the City Council.

#### FINANCIAL IMPACT

None.

#### REQUESTED ACTION

Adopt/Deny Ordinance No. 2024-8211 on the second reading, vacating a 14-foot wide alley in Ocean Terrace Subdivision, Block 8

#### ATTACHMENTS



City of Jacksonville Beach • 11 North Third Street • Jacksonville Beach, FL 32250

- 1. Application 3810 Tropical Ter
- 2. Aerial Map of Alley
- 3. Ordinance No. 2024-8211 Alley Vacation

|               |             |
|---------------|-------------|
| AGENDA ITEM:  | A.          |
| MEETING DATE: | May 6, 2024 |



# ABANDONMENT OR CLOSING OF A RIGHT OF WAY OR EASEMENT APPLICATION

AS/400 # 24-100134

**RECEIVED**

JAN 19 2024

**PLANNING  
DEPARTMENT**

This form is intended for submittal, along with the \$350.00 nonrefundable application fee, for all requests for the abandonment or closing of a public street or alley right of way, or any public access or utility easement. This application must be submitted to the Jacksonville Beach Planning and Development Department for processing. Following an evaluation of completeness, the Department will send a copy of the application to all property owners who might be affected by the proposed right of way or easement closing along with a request for their comments on the request. If there are no significant objections received from the affected property owners, the Planning and Development Department will request comments and recommendations from the Electric Utility, Fire, Police, and Public Works Department with respect to the effect of the proposed abandonment on their operations. The public comment and departmental review period process may take as much as 45 days to complete. If the administrative review indicates that the right of way or easement can be closed, then all of the information received is compiled into a report to the City Manager for inclusion, with a draft ordinance, on the agenda for consideration by the City Council.

## APPLICANT INFORMATION

Applicant's Name: Bryan Green

Telephone: 904.662.1781

Mailing Address: 3810 Tropical Trail, Jax Beach FL 32250

E-Mail: bgreen@POWER/EVEN CONSTRUCTION, LLC

## PROPERTY INFORMATION

Street Address of Property: 3810 Tropical Terrace (RE 181315-0000)

Legal Description of Property: Lot 12, Block 8, Ocean Terrace  
(Lot, block, subdivision name)

Location of the Right of Way or Easement you are applying to abandon or close: REAR OF PROPERTY.

(Attach a boundary survey or plat of the property)

Reason(s) why you are requesting that this Right of Way or Easement be abandoned: \_\_\_\_\_

NOW-GRASS / USED ALLEY (EASEMENT)

REQUESTING 7' ABANDONMENT (SPLIT THE DISTANCE W/  
NEIGHBOR)

(Attach additional pages if necessary to fully explain why this application should be approved)

Applicant's Signature: [Signature] Date of Application: 12/13/23





## RIGHT OF WAY / EASEMENT ABANDONMENT REVIEW CRITERIA AND PROCEDURES

### REVIEW PROCESS

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. An application for the City of Jacksonville Beach to abandon, vacate or close a public street, alley or utility right of way or easement is submitted to the Planning and Development Department for processing. The application must be accompanied by a \$350.00 nonrefundable processing fee.</p>                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>4. The foregoing review and notification process may take up to 30 days to complete. Once all of the departmental reviews and property owner comments have been received, the Planning and Development Department compiles the information and presents it in writing, along with a staff recommendation and draft ordinance, to the City Manager who then schedules the request for consideration by the City Council.</p> |
| <p>2. Following receipt of the application and fee, Planning and Development Department staff will check the application for completeness. The Planning and Development Department will then send a notice to all of the other property owners who might be affected by the proposed closing to request their comments on the request. Approximately one week is allowed for the other affected property owners to respond.</p>                                                                                                                                                                                                                                                                                                    | <p>5. All requests to abandon a public right of way or easement must be approved by ordinance. In Jacksonville Beach, an ordinance must be considered and approved at two separate City Council meetings ("First" and "Second" Reading). The applicant is required to attend both of these City Council meetings to answer any questions the members might have regarding the application.</p>                                 |
| <p>3. Once the property owners' response period is over, copies of the application will be sent to the Jacksonville Beach Electric Utility Department, Fire Department, Police Department and Public Works Department for their review, comments and recommendations concerning the proposed right of way or easement closing.</p> <p>Those departments may recommend approval, approval with conditions such as retaining an easement in the case of a right of way closing, or disapproval. A recommendation of disapproval by a reviewing department indicates that there is a continuing public purpose that is served by the right of way or easement. In this instance the applicant is notified and process is stopped.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                |

## DEPARTMENTAL REVIEW CRITERIA

### *ELECTRIC UTILITY DEPARTMENT*

1. The Electric Utility Department conducts a records check and field inspection to determine if there are any existing overhead or underground electric facilities located within the right of way or easement that is proposed to be closed. If such facilities are present, the Department will make a determination if the closure can be made without affecting the integrity of electric system.
2. In the case of an alley right of way, if there are electric facilities within the right of way or easement, then the Department will recommend that the application not be approved. In some such instances arrangements may be made for the facilities to be removed or relocated at the applicant's expense.
3. In the case of a partial or complete road right of way closing, the recommendation would be based on a case-by-case determination of accessibility to the Department's facilities.

### *FIRE DEPARTMENT*

1. The primary concern of the Fire Department is access to buildings, fire hydrants or fire department connections.  
  
The Department will generally recommend disapproval of a right of way or easement closing which would make any part of a building to be located in excess of 200 feet from a fire/rescue pumper parked at the street access.
2. All buildings are to be located within 300 feet of a fire hydrant as measured along the travel route of the fire/rescue pumper.

### *PLANNING AND DEVELOPMENT DEPARTMENT*

1. The Planning and Development Department checks all applications to close a public alley or street right of way to ensure that no other properties are left without frontage on another public street.
2. Utilizing an alley or easement as the principal means of access to a lot or parcel of land is not permitted in Jacksonville Beach.
3. The Planning and Development Department compiles the responses received from the other property owners who might be affected by the proposed right of way or easement closing. As a general rule, if an abutting property owner objects, it is considered to be sufficient evidence that the right of way or easement has a public purpose and should be retained as such. An application may wish to discuss the request to close the right of way or easement with the adjacent property owners before submitting an application.
4. In the case of a partial street right of way closing, it is the City's policy to close the section for the entire length of the block and not just the portion which abuts the applicant's property.

### *POLICE DEPARTMENT*

1. The Police Department reviews right of way or easement closing requests to determine that an officer can readily access a business, residence or other property by use of an alternate street or public accessway.

*PUBLIC WORKS DEPARTMENT*

1. The Public Works Department conducts a records check and field survey to ascertain the presence of any existing water, sewer, or storm drainage facilities with the area proposed to be closed. This may include water and sewer lines or drainage pipe, swales or ditches.

2. The Public Works Department evaluates the particular installation to determine if the closure will adversely affect maintenance and repair functions and assess the potential disruption of departmental service delivery activities resulting from future development of the abandoned right of way or easement. The review of drainage system concerns relates to the potential for flooding or increased difficulty in maintaining drains as a result of the closure.

*CITY COUNCIL / CITY MANAGER*

1. Following a review of the information supplied by the reviewing departments, the City Council and City Manager will make a determination if there is an overwhelming public interest in retaining the road or alley right of way or the public easement. This determination will be made by balancing the reasons given by the applicant in support of the closure when weighed against the present or future needs of the City. In other words, **there must be a significant public purpose that will be served if the right of way or easement is turned over to a private owner.**

# MAP SHOWING BOUNDARY & TOPOGRAPHIC SURVEY OF LOT 12 BLOCK 8 AS SHOWN ON MAP OF OCEAN TERRACE

LOT 23  
RIP TIDE  
PLAT BOOK 44,  
PAGES 92-92E

AS RECORDED IN PLAT BOOK 10 PAGE 2 OF THE CURRENT PUBLIC RECORDS OF DUAL COUNTY, FLA.

CERTIFIED TO: ONE ELEVEN CONSTRUCTION, LLC

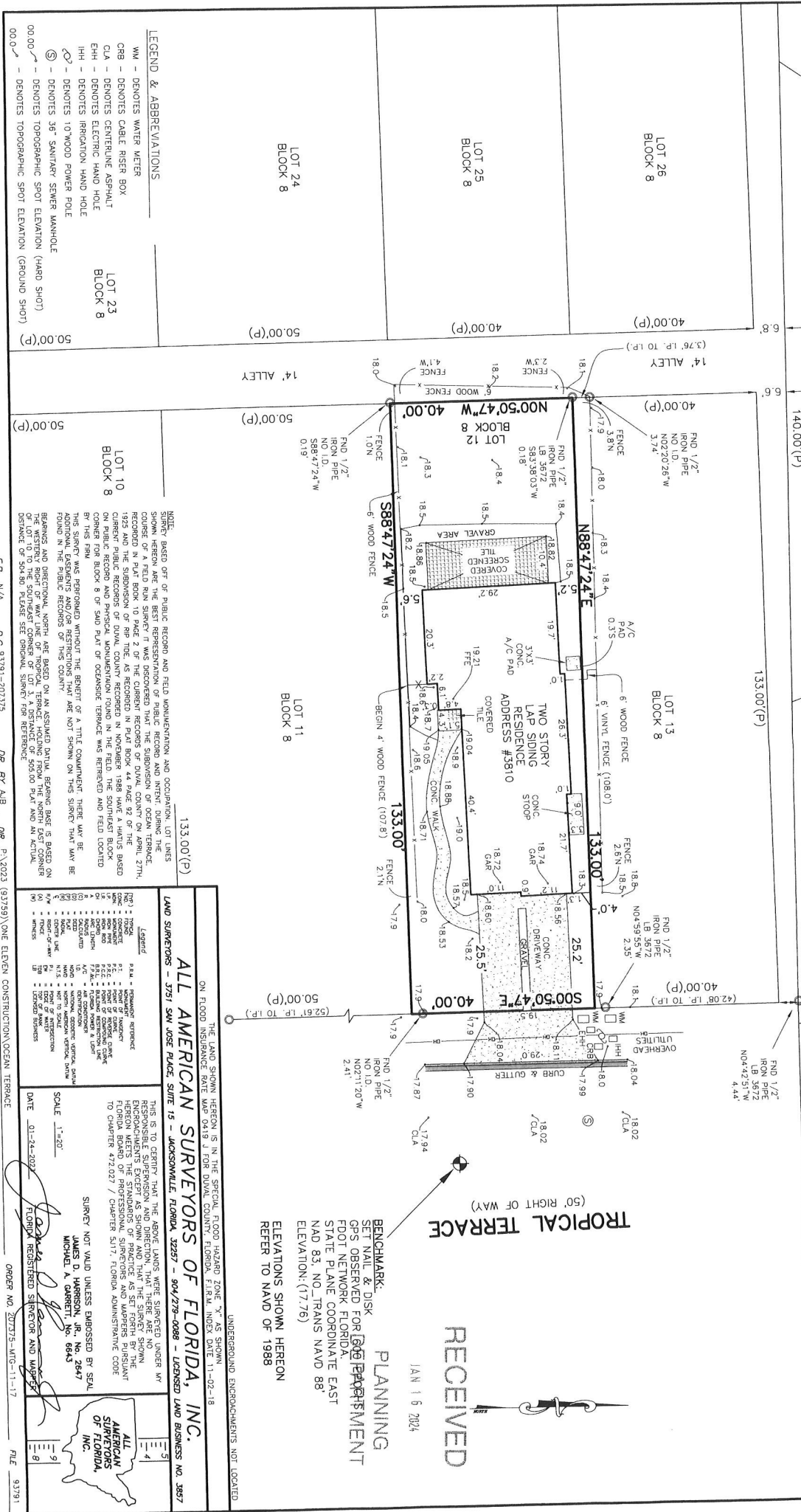
70.00'(P)

45.92'(P)

124.29'(P)

LOT 9  
RIP TIDE  
PLAT BOOK 44,  
PAGES 92-92E

LOT 8  
RIP TIDE  
PLAT BOOK 44,  
PAGES 92-92E



(50' RIGHT OF WAY)  
TROPICAL TERRACE

RECEIVED

JAN 16 2024

BENCHMARK:  
SET NAIL & DISK  
GPS OBSERVED FOR (S&B) PLANNING  
FOOT NETWORK FLORIDA  
STATE PLANE COORDINATE EAST  
NAD 83, NO TRANS NAVD 88  
ELEVATION: (17.76)  
ELEVATIONS SHOWN HEREON  
REFER TO NAVD OF 1988

## LEGEND & ABBREVIATIONS

- WM - DENOTES WATER METER
- CRB - DENOTES CABLE RISER BOX
- CLA - DENOTES CENTRELINE ASPHALT
- EH - DENOTES ELECTRIC HAND HOLE
- IHH - DENOTES IRRIGATION HAND HOLE
- PO - DENOTES 10" WOOD POWER POLE
- SS - DENOTES 36" SANITARY SEWER MANHOLE
- TOPO - DENOTES TOPOGRAPHIC SPOT ELEVATION (HARD SHOT)
- 00.0 - DENOTES TOPOGRAPHIC SPOT ELEVATION (GROUND SHOT)

NOTE: SURVEY BASED OFF OF PUBLIC RECORD AND FIELD MEASUREMENT, AND OCCUPATION. LOT LINES SHOWN HEREON ARE BASED ON THE SUBDIVISION RECORDS AND INTENT. DURING THE COURSE OF THIS FIELD RUN SURVEY IT WAS DISCOVERED THAT THE SUBDIVISION OF OCEAN TERRACE, RECORDED IN PLAT BOOK 10 PAGE 2 OF THE CURRENT RECORDS OF DUAL COUNTY ON APRIL 27TH, 1925 AND THE SUBDIVISION OF RIP TIDE, AS RECORDED IN PLAT BOOK 44 PAGE 92 OF THE CURRENT PUBLIC RECORDS OF DUAL COUNTY RECORDED IN NOVEMBER 1988 WERE BASED ON PUBLIC RECORDS AND PHYSICAL MEASUREMENTS. THEREFORE, THE SUBDIVISION OF LOT 12 BLOCK 8 OF SAID PLAT OF OCEAN TERRACE WAS RETRIEVED AND FIELD LOCATED BY THIS FIRM. BLOCK 8 OF SAID PLAT OF OCEAN TERRACE WAS RETRIEVED AND FIELD LOCATED.

THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE COMMITMENT. THERE MAY BE ADDITIONAL EASEMENTS AND/OR RESTRICTIONS THAT ARE NOT SHOWN ON THIS SURVEY THAT MAY BE FOUND IN THE PUBLIC RECORDS OF THIS COUNTY. BEARINGS AND DIRECTIONAL NORTH ARE BASED ON AN ASSUMED NATURAL BEARING. THIS IS BASED ON THE ASSUMPTION THAT THE SURVEY WAS PERFORMED IN THE NORTH EAST CORNER OF LOT 12 TO THE SOUTHEAST CORNER OF LOT 13. A DISTANCE OF 505.00 PLAT AND AN ACTUAL DISTANCE OF 504.80 PLEASE SEE ORIGINAL SURVEY FOR REFERENCE.

133.00'(P)

ALL AMERICAN SURVEYORS OF FLORIDA, INC.  
ON FLOOD INSURANCE RATE MAP NO. 0418-L FOR DUAL COUNTY, FLORIDA, FIRM INDEX DATE 11-02-18  
LAND SURVEYORS - 3751 SAN JOSE PLACE, SUITE 15 - JACKSONVILLE, FLORIDA 32257 - 904/279-0088 - LICENSED LAND BUSINESS NO. 3857

Legend

|      |                                          |
|------|------------------------------------------|
| WM   | Water Meter                              |
| CRB  | Cable Riser Box                          |
| CLA  | Centerline Asphalt                       |
| EH   | Electric Hand Hole                       |
| IHH  | Irrigation Hand Hole                     |
| PO   | 10" Wood Power Pole                      |
| SS   | 36" Sanitary Sewer Manhole               |
| TOPO | Topographic Spot Elevation (Hard Shot)   |
| 00.0 | Topographic Spot Elevation (Ground Shot) |

THIS IS TO CERTIFY THAT THE ABOVE LANDS WERE SURVEYED UNDER MY PERSONAL SUPERVISION AND DIRECTION, THAT THERE ARE NO ENCUMBRANCES EXCEPT AS SHOWN AND THAT THE SURVEY SHOWN HEREON MEETS THE STANDARDS OF THE PROFESSION OF LAND SURVEYING TO CHAPTER 472.027 / CHAPTER 5417, FLORIDA ADMINISTRATIVE CODE

SURVEY NOT VALID UNLESS ENDORSED BY SEAL

JAMES D. HARRISON, JR., No. 2847  
MICHAEL A. GARRETT, No. 6643

DATE 01-24-2024

SCALE 1"=20'

FLORIDA REGISTERED SURVEYOR AND MAPPER

ORDER NO. 207375-MFG-11-17

91791



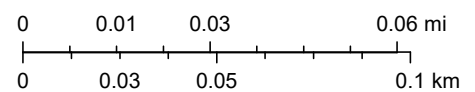
# Land Development Review



March 13, 2024

 Parcels

1:2,257





Introduced by: \_\_\_\_\_  
1st Reading: \_\_\_\_\_  
2nd Reading: \_\_\_\_\_

**ORDINANCE NO. 2024-8211**

**AN ORDINANCE OF THE CITY OF JACKSONVILLE BEACH, FLORIDA, VACATING, DISCONTINUING, ABANDONING, AND CLOSING A CERTAIN FOURTEEN (14) FOOT WIDE PUBLIC ALLEY RUNNING IN A NORTHERLY AND SOUTHERLY DIRECTION THROUGH THAT CERTAIN PROPERTY LOCATED IN THE CITY OF JACKSONVILLE BEACH, FLORIDA, KNOWN AS BLOCK 8, OCEAN TERRACE SUBDIVISION, ACCORDING TO THE PLAT BOOK THEREOF RECORDED IN PLAT BOOK 10, PAGE 2 OF THE CURRENT PUBLIC RECORDS OF DUVAL COUNTY, FLORIDA; PROVIDING FOR LEGISLATIVE FINDINGS, REPEAL OF CONFLICTING ORDINANCES, SEVERABILITY, SCRIVENER'S ERRORS, RECORDING AND NON-CODIFICATION, AND AN EFFECTIVE DATE.**

**WHEREAS**, on December 2, 1996, the Jacksonville Beach City Council adopted Resolution No. 1514-96 setting forth a policy for closing street rights of way and alleys; and

**WHEREAS**, said Resolution established certain principles to apply to the closing or abandonment of rights of ways and alleys; and

**WHEREAS**, said Resolution states that the City's interest will be retained unless there is an overwhelming public interest that is served, and the rights of abutting property owners will not be imparted; and

**WHEREAS**, the alley located in a northerly and southerly direction through the middle of Block 8 of the Ocean Terrace Subdivision is not paved, is not maintained, and there are no utilities located in the alley; and

**WHEREAS**, the alley as platted is no longer needed by the city for any purposes; and

**WHEREAS**, the City Council hereby finds that this Ordinance serves a legitimate government purpose, it is a permissible exercise of the City's powers and authority, and benefits the public health, safety, and welfare of the citizens, residents, and guests of the City of Jacksonville Beach.

**NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF JACKSONVILLE BEACH, FLORIDA:**

**SECTION 1. RECITALS AND LEGISLATIVE FINDINGS.** The above recitals are true and correct and made a part of this Ordinance. Furthermore, the City Council makes the following legislative findings as such pertains to the requested alley abandonment:

(a) The subject alley does not provide the sole means of access to adjoining properties;

- (b) The subject alley is not needed by the City for public use nor to meet future transportation needs;
- (c) The public interest will be served by the abandonment of the subject alley; and
- (d) The rights of the abutting property owners will not be impaired by the City's abandonment of the subject alley.

**SECTION 2. ABANDONMENT.** Those portions of a certain public alley in the Ocean Terrace Subdivision in the City of Jacksonville Beach, Florida, and more particularly described below, be and the same are hereby vacated, discontinued, abandoned, and closed as a public alley, and the owners of the property situated adjacent to and contiguous to the portions of the alley listed below are hereby authorized to enter up and use and enjoy the lands embraced in said portions of the alley to the same extent and purposes as if the same had never been platted.

1. The portion of a fourteen (14) foot wide public alley running in a northerly and southerly direction through Block 8, Ocean Terrace Subdivision as recorded in Plat Book 10, Page 2 of the current public records of Duval County, Florida.

**SECTION 3. CONFLICT.** That all ordinances or parts of ordinances in conflict herewith are repealed to the extent to such conflict.

**SECTION 4. SEVERABILITY.** If any section, subsection, clause, or provision of this ordinance is deemed invalid or unconstitutional by a court of competent jurisdiction, such portion will become a separate provision and will not affect the remaining provisions of this ordinance.

**SECTION 5. SCRIVENER'S ERRORS.** Typographical errors and other matters of a similar nature that do not affect the intent of this Ordinance, as determined by the City Clerk and City Attorney, may be corrected with the endorsement of the City Manager without the need for a public hearing or further action by the City Council.

**SECTION 6. RECORDING AND NON-CODIFICATION.** This Ordinance shall be recorded in the public records of Duval County, Florida. The provisions of this Ordinance shall not be included nor incorporated within the Jacksonville Beach Code of Ordinances.

**SECTION 7. EFFECTIVE DATE.** This ordinance shall take effect upon its adoption and recordation with the Clerk of Circuit Court, Duval County, Florida.

**AUTHENTICATED** this \_\_\_\_ day of \_\_\_\_\_, 2024.

---

Christine H. Hoffman, Mayor

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Sheri Gosselin, City Clerk



Approved as to form and legal sufficiency:

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David Migut, City Attorney



| CITY COUNCIL AGENDA ITEM |                                                                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| TO:                      | Michael J. Staffopoulos, City Manager                                                                                                   |
| FROM:                    | Heather Ireland, Director of Planning and Development                                                                                   |
| DATE:                    | 03/29/2024                                                                                                                              |
| SUBJECT:                 | Ordinance No. 2024-8213 Rezoning property located at 602 N. 1st Street and 135, 129 and 123 N. 5th Avenue to Redevelopment District: RD |

#### BACKGROUND

**Owner:**

Jointly owned by:  
Jax Beach Investment Holding LLC & Duck Dive LLC

**Applicant/Agent:**

Emily G. Pierce  
Rodgers Towers, P.A.  
1301 Riverplace Blvd., Suite 1500  
Jacksonville, FL 32207

**Request:**

Rezoning Application to Rezone property from Central Business District: CBD and Redevelopment District: RD to Redevelopment District: RD Zoning District for property located at: 125 5<sup>th</sup> Ave North, 129 5<sup>th</sup> Ave North, 135 5<sup>th</sup> Ave North, 0 1<sup>st</sup> St. North, and 602 1<sup>st</sup> St. North. (*Mango's bar and adjacent property*), to allow for the redevelopment of the property into a mixed-use restaurant/drinking establishment/office/retail project.

**Staff Analysis:**

The subject property is currently partially occupied by Mangos's Beach Bar, while the remainder to the west is occupied by several small multifamily structures and a small office space. The property has a split zoning, with the western portion used for multifamily being in the Central Business District: CBD zoning district, while the eastern portion is currently in the Redevelopment District: RD zoning district. The current RD zoning is for the portion where Mango's is located. The previous RD zoning district was created in 2014, and was intended to be the home of Surfer the Bar. Surfer has since located to the corner of 1st Street North and 1st Avenue North.

In the past three years, Mango's has been working to improve the building they are currently in, with internal renovations to provide better bathroom space and better traffic flow for customers. The current RD zoning is tied to a very specific site plan and uses, and this has limited the options for Mango's to expand beyond the current envelope of the existing building. The first reason of this rezoning request is to allow Mango's to expand outside their existing footprint. The owners plan to add an addition to the north side of the current structure to accommodate a new men's restroom, as well as expand the covered outside patio area to the south and east.

Under the proposed site plan, the western portion of the property between Mango's and 2nd Street North would be fully redeveloped, removing the existing multifamily structures, and building a new mixed-use structure with a small first floor footprint, and a larger upstairs area. The design

would allow for commercial and retail spaces on the first floor, and new restaurant spaces upstairs, with a large outside seating area all on the second floor. The site plan also addresses traffic circulation and parking. Adequate parking to meet the required parking requirement per the LDC will be provided on site, and a new traffic circulation pattern will be constructed to limit traffic to and from 1st Street North, a predominantly pedestrian oriented street, and make the current driveway on 1st Street a one-way "in only" access. Most traffic will enter and exit on 5th Avenue North and 2nd Street North, as encouraged by the CBD zoning district design standards. Landscaping will be a mix of normally planted landscaping and "urban" or potted landscaping, as is an option allowed in the CBD standards.

The proposed uses outlined in the written description would include a majority of the permitted and conditional uses in the CBD zoning district, but all use would be permitted, and would not require conditional approval, but rather the approval of the RD zoning request would serve as approval. There are a number of specifically prohibited uses as well, and these proposed prohibited uses are those that would be substantially incompatible with their surrounding area and are not intended for the downtown commercial core at large,

**Pursuant to the Land Development Code, the Planning Commission and City Council shall apply the standards in section 34-211(c) to the rezoning application and apply the standards in Section 34- 347(i). to the Preliminary Development Plan. Factors in Section 34-211(c) Applicable to Rezoning Applications:**

1. Whether the proposed amendment is consistent with the comprehensive plan;  
Staff finds that the proposed amendment is consistent with the goals, objectives and policies of the comprehensive plan as identified below.
2. Whether the proposed amendment is in conflict with any portion of the LDC;  
Staff does not find any portions of the proposed rezoning are in conflict with any portion of the Land Development Code.
3. Whether and the extent to which the proposed amendment is consistent with existing and proposed land uses;  
Staff finds that the proposed rezoning is consistent with existing and proposed land uses.
4. Whether and the extent to which there are any changed conditions that require an amendment;  
Staff does not find that there are any changed conditions that require an amendment.
5. Whether and the extent to which the proposed amendment would result in demands on public facilities, and whether and the extent to which the proposed amendment would exceed the level of service standards established for public facilities in the comprehensive plan;  
The applicant would be required to meet the City's utility requirements as they relate to pre-treatment for any food related activities, involving the construction and maintenance of a privately owned grease trap and waste grease storage tank. Solid waste would also be stored per the City's code requirements. Staff finds that the proposed PUD would not exceed any established levels of service. The applicant is proposing a single multiple-user compactor facility for all uses on the property.

6. Whether, and the extent to which, zoning district boundaries are not properly drawn on the official zoning atlas;

Staff finds that the zoning district boundaries are properly drawn on the official zoning atlas.

7. Whether and the extent to which the proposed amendment would result in significantly adverse impacts on the natural environment, including, but not limited to, water, air, stormwater management, wildlife, vegetation, wetlands, and the natural functioning of the coastal environment

Staff finds that the proposed rezoning is located within a previously developed area of the City, on a lot currently developed with structures and paved parking and driveways. The subject site is located in the downtown, which has adequate storm water management facilities. Staff finds that there is no expected impact on the natural environment.

8. Whether and the extent to which the proposed amendment would adversely affect the property values in the area;

Staff does not have data available to determine that there would be any negative affects on property values in the area.

9. Whether and the extent to which the proposed amendment would result in a logical and orderly development pattern;

Staff finds that the proposed amendment would result in logical development by citing a commercial use within an existing developed property within the downtown core, and the use of restaurants is one specifically promoted through the recent adoption of the local "J" bill, thus not creating any new development patterns, but focusing on redevelopment of previously developed and compatible areas.

10. Whether it is impossible to find other land in the city for the proposed use in a zoning district that permits such use as of right.

Although it is possible to site such uses on any vacant lot within the CBD district, the use of RD zoning will allow for the Mango's site to be improved and renovated, and will allow a more cohesive mix of uses sharing a single parking lot and solid waste facility.

**Pursuant to the Land Development Code, the Planning Commission and City Council shall apply the standards in in Section 34- 347(i). to the Preliminary Development Plan.**

Staff finds that the application's Preliminary Development Plan is consistent with the standards outlined in Section 34-347(i) 1 through 13. Standards include land area, permitted uses, prohibited uses, residential density (not applicable), area and setbacks, traffic circulation and parking, off-street parking and loading, open space (not applicable), signage, landscaping, easements, public facilities, and the comprehensive plan.

### **Comprehensive Plan Consistency**

#### Policy LU.1.2.2

An adequate amount of land exists in developed areas or areas being developed for neighborhood and general commercial, office and service, lodging, and industrial use in the City,

or is planned for assembly and redevelopment to meet the needs of the projected resident, seasonal and day visitor populations through the planning period. Future commercial space needs of this type shall be met through in-fill development adjacent to similar uses or through redevelopment in designated areas.

Staff finds the proposed rezoning request will fulfill this land use policy by allowing for additional commercial uses in an existing developed commercial area and through the redevelopment of an existing commercial lot in the CBD Future Land Use category.

#### Policy LU.1.2.3

The intensity of development in areas where in-fill development for commercial, office, service, or industrial use is proposed shall conform to the level of intensity on adjacent properties or as specified in the adopted Community Redevelopment Plans. A market analysis shall be required to accompany any application involving a proposed Future Land Use Map change from a residential land use category to a commercial land use category.

No proposed changes to the Future Land Use map are proposed. The proposed mixed-use project will be consistent with simpler uses within the CBD future land use category and within the surrounding neighborhood. The infill of commercial spaces, with specifically first floor commercial uses, internal parking and re-investment of existing structures is supported in the Downtown Redevelopment Plan.

#### Policy LU.1.2.4

Land development regulations for commercial and industrial areas shall be revised utilizing the Standard Industrial Classification system as the basis for recognizing both the similarities and differences among the various types of economic activity within the community. The range of permitted uses shall be revised, and additional zoning classifications created in necessary to acknowledge the performance characteristics of different land uses.

The proposed RD rezoning will provide for a more coordinated approach to redevelopment via Council specifically approving a list of permitted uses and allowing for the natural market demand to drive the infill development, so long as it conforms to the uses approved and encouraged by City Council.

#### Policy LU.1.2.6

The City recognizes that urban sprawl; as evidenced by the incidence of "leapfrog" development, strip commercial development, and large expanses of low-density, single dimensional land uses presents a fiscally and environmentally unsound urban form. However, in a mature community like Jacksonville Beach, development patterns have long been set. Nevertheless, it is the intent of the City to enforce its land development regulations in a manner which will discourage the development or extension of commercial strips, allow for mixed use development where appropriate, and support the redevelopment or revitalization of existing commercial areas.

The proposed mixed use project would encourage a diversity of uses within the downtown core, allow for the continued re-investment of existing developed commercial land within the fully developed CBD district, help to eliminate blight by redeveloping areas within the Downtown CRA, and encourage the use of existing road, water, sewer and storm water

infrastructure rather than encouraging the extension or increase of existing systems on the periphery of the City.

### Consistency with the Downtown Redevelopment Plan

The proposed redevelopment project serves to meet the following objectives of the Downtown Redevelopment Plan:

- Eliminate the conditions of blight and prevent the spread of blighted conditions
- Encourage the core downtown area to develop as the center for cultural, entertainment, and community activities within the City.
- Increase the tax base in the Community Redevelopment Area to assist in financing public actions to support redevelopment.
- Encourage the re-creation of a compact mixed-use core area, oriented to recreation, entertainment, specialty retail, tourism and housing.
- Encourage the development of a mix of actives in the core area including residential, retail, hotel and office.

### Staff Recommendation

Staff has reviewed the rezoning request against the Land Development Code and adopted 2030 Comprehensive Plan, and finds that it is consistent with both. The proposed RD Rezoning would allow for the redevelopment and expansion of commercial uses within an existing property that is currently used for a bar and older multifamily housing stock. The additional uses and new commercial structure will help generate more economic growth in the downtown core, and help to realize the vision of the Council for a thriving downtown area. Staff recommends **approval** of the request.

### Community Redevelopment Agency and Planning Commission Review and Recommendation

The CRA reviewed and considered the rezoning application at their regular meeting held on April 22, 2024, and recommended that City Council **approve** the application and adopt the rezoning ordinance, with the condition that the project use enhanced pedestrian elements on the First Street side of the property.

The Planning Commission reviewed and considered the rezoning application at their regular meeting held on April 22, 2024, and also recommended that the City Council **approve** the application and adopt the rezoning ordinance.

### FINANCIAL IMPACT

None.

### REQUESTED ACTION





City of Jacksonville Beach • 11 North Third Street • Jacksonville Beach, FL 32250

Approve/Disapprove Ordinance No. 2024-8213 on the first reading approving the rezoning for property located at 602 N. 1st Street and 135, 129 and 123 N. 5th Avenue to Redevelopment District: RD, and schedule a second reading for May 20, 2024

ATTACHMENTS

1. Ordinance No. 2024-8213 Redevelopment District RD Rezoning Mangos

Introduced by: \_\_\_\_\_  
1st Reading: \_\_\_\_\_  
2nd Reading: \_\_\_\_\_

**ORDINANCE NO. 2024-8213**

**AN ORDINANCE OF THE CITY OF JACKSONVILLE BEACH, FLORIDA ESTABLISHING A REDEVELOPMENT DISTRICT: RD ZONING DISTRICT WITHIN THE CITY OF JACKSONVILLE BEACH, FLORIDA, AS PROVIDED UNDER CHAPTER 34 OF THE CODE OF ORDINANCES OF SAID CITY; PROVIDING FOR REPEAL OF CONFLICTING ORDINANCES, SEVERABILITY, AND AN EFFECTIVE DATE.**

**WHEREAS**, the City Council of the City of Jacksonville Beach, Florida, heretofore enacted and established a Land Development Code and Zoning Atlas for said City; and

**WHEREAS**, the owners of certain lands in the City, more particularly described herein, have applied to the City Council for the rezoning of those lands from Central Business District: CBD and Redevelopment District: RD, to Redevelopment District: RD; and

**WHEREAS**, the City Council has considered the application, project narrative, all relevant support materials, the staff report, the recommendation of the Planning Commission, and public testimony given at the public hearings.

**NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF JACKSONVILLE BEACH, FLORIDA:**

**SECTION 1.** That the City Council has considered the adoption of this ordinance based on one or more of the factors listed in Section 34-211(c) of the Land Development Code and hereby finds that this amendment will not result in an adverse change in the community in which it is located.

**SECTION 2.** That the City Council has considered the adoption of this ordinance based on the standards listed in Section 34-347(i) of the Land Development Code and hereby finds that the preliminary development plan for the RD complies with the standards therein.

**SECTION 3.** That the Land Development Code and Zoning Atlas previously adopted by the City Council of the City of Jacksonville Beach, Florida, be and the same is hereby amended and, as amended, shall henceforth read as follows:

That all of the certain territory in the City of Jacksonville Beach, Florida, described in the "Legal Description of Applicant's Property" attached to the project narrative that is heretofore zoned as CBD and RD be and the same is hereby designated as Redevelopment District: RD, so that henceforth the same shall be classified and construed to be embraced within the meaning and subject of the general provisions of the Redevelopment District: RD zoning category as provided in Article VII, Section 34-347 of the Jacksonville Beach Land Development Code (Chapter 34 of the Code of Ordinances of the City of Jacksonville Beach, Florida), subject to the following additional limitations:

- A. The rezoning application dated March 7, 2024, attached hereto as Exhibit A (including project narrative description dated April 2, 2023, and Preliminary RD Development Plan titled "Site Plan" dated April 2, 2024 attached thereto), which have been submitted to the City of Jacksonville Beach Planning and Development Department, are hereby adopted and incorporated as part of this amendment to the Jacksonville Beach Land Development Code and Zoning Atlas.
- B. The project shall be generally carried out in accordance with the presentments of the rezoning application, project narrative, and preliminary site development plan.

**SECTION 4.** All ordinances or parts of ordinances in conflict herewith be and the same are, to the extent the same may be in conflict, hereby repealed.

**SECTION 5.** It is the intention of the City Council that if any section, subsection, clause, or provision of this Ordinance is deemed invalid or unconstitutional by a court of competent jurisdiction, such portion will become a separate provision and will not affect the remaining provisions of this Ordinance.

**SECTION 6.** This ordinance shall take effect upon its adoption and recordation with the Clerk of Circuit Court, Duval County, Florida.

**AUTHENTICATED** this \_\_\_\_ day of \_\_\_\_\_, 2024.

\_\_\_\_\_  
Christine H. Hoffman, Mayor

\_\_\_\_\_  
Sheri Gosselin, City Clerk

Approved as to form and legal sufficiency:

\_\_\_\_\_  
David Migut, City Attorney



# REZONING APPLICATION RECEIVED

Ordinance No. 2024-8213-Exhibit A

PC No. 4-24AS/400# 24-100012PC HEARING April 22

MAR 07 2024

This form is intended for use by persons applying for a change in the boundaries of a specific property or group of properties under the person or persons control. A rezoning is not intended to relieve a particular hardship, nor to confer special privileges or rights on any person, but to make necessary adjustments in light of changed conditions. No rezoning may be approved except in conformance with the Jacksonville Beach 2030 Comprehensive Plan Elements. An application for a rezoning shall include the information and attachments listed below, unless the requirement for any particular item is waived by the Planning and Development Director. All applications shall include a \$1,000.00 filing fee, as required by City Ordinance. A separate fee for advertising costs will be assessed accordingly.

## APPLICANT INFORMATION

Land Owner's Name: Jax Beach Investment Holding LLC & Duck Dive, LLCTelephone: 904.962.5035Mailing Address: 1440 Beach Avenue

Fax: \_\_\_\_\_

Atlantic Beach, FL 32233

E-Mail: \_\_\_\_\_

Applicant Name: Emily G. PierceTelephone: 904.346.5787Mailing Address: Rogers Towers, P.A.

Fax: \_\_\_\_\_

1301 Riverplace Blvd., Suite 1500Jacksonville, FL 32207E-Mail: epierce@rtlaw.com

**NOTE: Written authorization from the land owner is required if the applicant is not the owner.**

Agent Name: Emily G. PierceTelephone: 904.346.5787Mailing Address: Rogers Towers, P.A.

Fax: \_\_\_\_\_

1301 Riverplace Blvd., Suite 1500Jacksonville, FL 32207E-Mail: epierce@rtlaw.com

Please provide the name, address and telephone number for any other land use, environmental, engineering, architectural, economic, or other professional consultants assisting with the application on a separate sheet of paper.

## REZONING DATA

Street address of property and/or Real Estate Number: #173937-0000; 173938-000; 173939-000; 174174-0000; 174174-0050

Legal Description (attach copies of any instruments references, such as but not limited to deeds, plats, easements, covenants, and restrictions): See legal description attached as Exhibit 5.

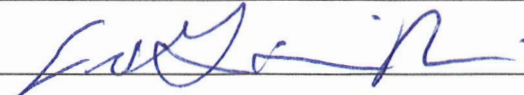
Current Zoning Classification: CBD/RDFuture Land Use Map Designation: CBDProposed Zoning Classification: RD

## REQUIRED INFORMATION

Attached?

Yes No

1. A copy of the relevant Duval County Property Assessment Map, showing the exact location of the land proposed for the amendment, with the boundaries clearly marked; ☒ ☐
2. An 8½" x 11" vicinity map identifying the property proposed for amendment; ☒ ☐
3. An aerial photograph, less than twelve (12) months old, of the land proposed for amendment, with the boundaries clearly marked; ☒ ☐
4. For a rezoning, include a narrative description of the proposed amendment to the Zoning Map designation and an explanation of why it complies with the standards governing a rezoning the LDC. ☒ ☐

Applicant Signature: Date: 3/7/2024

**Agent Authorization**Date: 12-20-23

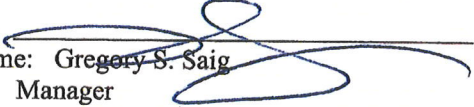
City of Jacksonville Beach  
 Planning and Development Department  
 11 North 3<sup>rd</sup> Street  
 Jacksonville Beach, FL 32250

Re: **Agent Authorization for the following site location:**

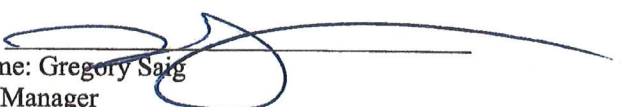
**123 5<sup>th</sup> Avenue North (RE # 173939-0000); 129 5<sup>th</sup> Avenue North (RE # 173938-0000); 135 5<sup>th</sup> Avenue North (RE # 173937-0000); 0 1<sup>st</sup> Street North (RE # 174174-0050); 602 1<sup>st</sup> Street North (RE # 174174-0000)**

You are hereby advised that the undersigned are the owners of the property described above. Said owners hereby authorize and empower Rogers Towers to act as agents to file application(s) for a rezoning for the above referenced property and in connection with such authorization to file such applications, papers, documents, requests and other matters necessary for such requested change.

JAX BEACH INVESTMENT HOLDING LLC, a  
 Florida limited liability company

By:   
 Name: Gregory S. Saig  
 Its: Manager

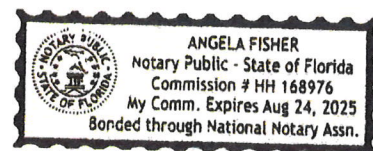
DUCK DIVE, LLC, a Florida limited liability company

By:   
 Name: Gregory Saig  
 Its: Manager

STATE OF FLORIDA  
 COUNTY OF St. Johns

The foregoing instrument was acknowledged before me by means of ☒ physical presence or ☐ online notarization this 20<sup>th</sup> day of December, 2023, by Gregory S. Saig as Manager of both JAX BEACH INVESTMENT HOLDING LLC and DUCK DIVE, LLC, on behalf of the companies. He (check one) ☐ is personally known to me, or ☒ has produced a valid driver's license as identification.

 (SEAL)  
 Notary Public, State of Florida and county aforesaid  
 Name: Angela Fisher  
 My Commission Expires: 8-24-25  
 My Commission Number is: HH168976



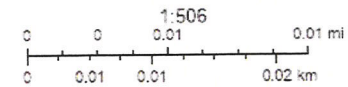


JAXGIS Property Information

Letter ANSI A Landscape



January 8, 2024



| RE #       | Owner         | Address      | Zip Code | Transaction Price | Transaction Year | Acres | Book-Page  | Map Panel | Legal Descriptions                      | Flood Zone                         | AshSite | EDA Level      | Evacuation Zone | Planning District | Noise Zone | APZ | Civ HH Zone | MI HH Zone | Lighting Reg | Civ Notice Zone | MI Notice Zone |
|------------|---------------|--------------|----------|-------------------|------------------|-------|------------|-----------|-----------------------------------------|------------------------------------|---------|----------------|-----------------|-------------------|------------|-----|-------------|------------|--------------|-----------------|----------------|
| 1741740000 | DUCK DIVE LLC | 602 1ST ST N | 32250    | \$2500000         | 2020             | 0.16  | 1921001019 | 9433      | 3-28 33-2S-29E .179 PABLO BEACH NORTH S | 0.2 PCT ANNUAL CHANCE FLOOD HAZARD |         | NOT DISTRESSED | ZONE A          | 7                 | NA         | NA  | NA          | NA         | NA           | NA              | NA             |

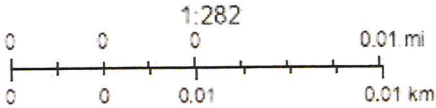


| RE # | Owner | Address | Zip Code | Transaction Price | Transaction Year | Acres | Book-Page | Map Panel | Legal Descriptions      | Flood Zone | AshSite | EDA Level | Evacuation Zone | Planning District | Noise Zone | APZ | Civ HH Zone | MI HH Zone | Lighting Reg | Civ Notice Zone | MI Notice Zone |
|------|-------|---------|----------|-------------------|------------------|-------|-----------|-----------|-------------------------|------------|---------|-----------|-----------------|-------------------|------------|-----|-------------|------------|--------------|-----------------|----------------|
|      |       |         |          |                   |                  |       |           |           | 73FT LOTS<br>7.8 BLK 62 |            |         |           |                 |                   |            |     |             |            |              |                 |                |

Letter ANSI A Landscape



March 7, 2024



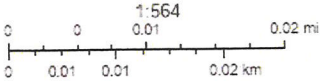
| RE #           | Owner               | Legal<br>Name<br>2 | Mail<br>Address<br>1        | Mail<br>Address<br>2 | Mail<br>Address<br>3 | Mail City             | Mail<br>State | Mail<br>Zip | Acres | Legal<br>Descriptions                                                       | Property<br>Use | Property<br>Use Desc | Exemptions | Building<br>Improvement<br>Value |
|----------------|---------------------|--------------------|-----------------------------|----------------------|----------------------|-----------------------|---------------|-------------|-------|-----------------------------------------------------------------------------|-----------------|----------------------|------------|----------------------------------|
| 174174<br>0000 | DUCK<br>DIVE<br>LLC |                    | 3948 S<br>3RD ST<br>STE 373 |                      |                      | JACKSONVILLE<br>BEACH | FL            | 32250       | 0.16  | 3-28 33-2S-29E<br>.179 PABLO<br>BEACH<br>NORTH S 52FT<br>LOTS 7,8 BLK<br>62 | 3300            | NIGHT<br>CLUB/BAR    | N/A        | 103368                           |



JAXGIS Property Information  
Letter ANSI A Landscape



January 8, 2024



| RE #        | Owner                            | Address       | Zip Code | Transaction Price | Transaction Year | Acres | Book-Page  | Map Panel | Legal Descriptions                   | Flood Zone                         | AshSite | EDA Level      | Evacuation Zone | Planning District | Noise Zone | APZ | Civ HH Zone | MI HH Zone | Lighting Reg | Civ Notice Zone | MI Notice Zone |
|-------------|----------------------------------|---------------|----------|-------------------|------------------|-------|------------|-----------|--------------------------------------|------------------------------------|---------|----------------|-----------------|-------------------|------------|-----|-------------|------------|--------------|-----------------|----------------|
| 173937 0000 | JAX BEACH INVESTMENT HOLDING LLC | 135 5TH AVE N | 32250    | \$1033300         | 2018             | 0.1   | 1860200721 | 9433      | 15-50 33-2S-29E FLAGLER TRACT LOT 38 | 0.2 PCT ANNUAL CHANCE FLOOD HAZARD |         | NOT DISTRESSED | ZONE A          | 7                 | NA         | NA  | NA          | NA         | NA           | NA              | NA             |



JAXGIS Property Information  
Letter ANSI A Landscape



January 8, 2024

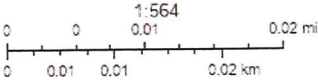
| RE #        | Owner                            | Address       | Zip Code | Transaction Price | Transaction Year | Acres | Book-Page  | Map Panel | Legal Descriptions                        | Flood Zone                         | AshSite | EDA Level      | Evacuation Zone | Planning District | Noise Zone | APZ | Civ HH Zone | MI HH Zone | Lighting Reg | Civ Notice Zone | MI Notice Zone |
|-------------|----------------------------------|---------------|----------|-------------------|------------------|-------|------------|-----------|-------------------------------------------|------------------------------------|---------|----------------|-----------------|-------------------|------------|-----|-------------|------------|--------------|-----------------|----------------|
| 173938 0000 | JAX BEACH INVESTMENT HOLDING LLC | 129 5TH AVE N | 32250    | \$1033300         | 2018             | 0.1   | 1860200721 | 9433      | 15-50 33-2S-29E .110 FLAGLER TRACT LOT 39 | 0.2 PCT ANNUAL CHANCE FLOOD HAZARD |         | NOT DISTRESSED | ZONE A          | 7                 | NA         | NA  | NA          | NA         | NA           | NA              | NA             |



JAXGIS Property Information  
Letter ANSI A Landscape



January 8, 2024

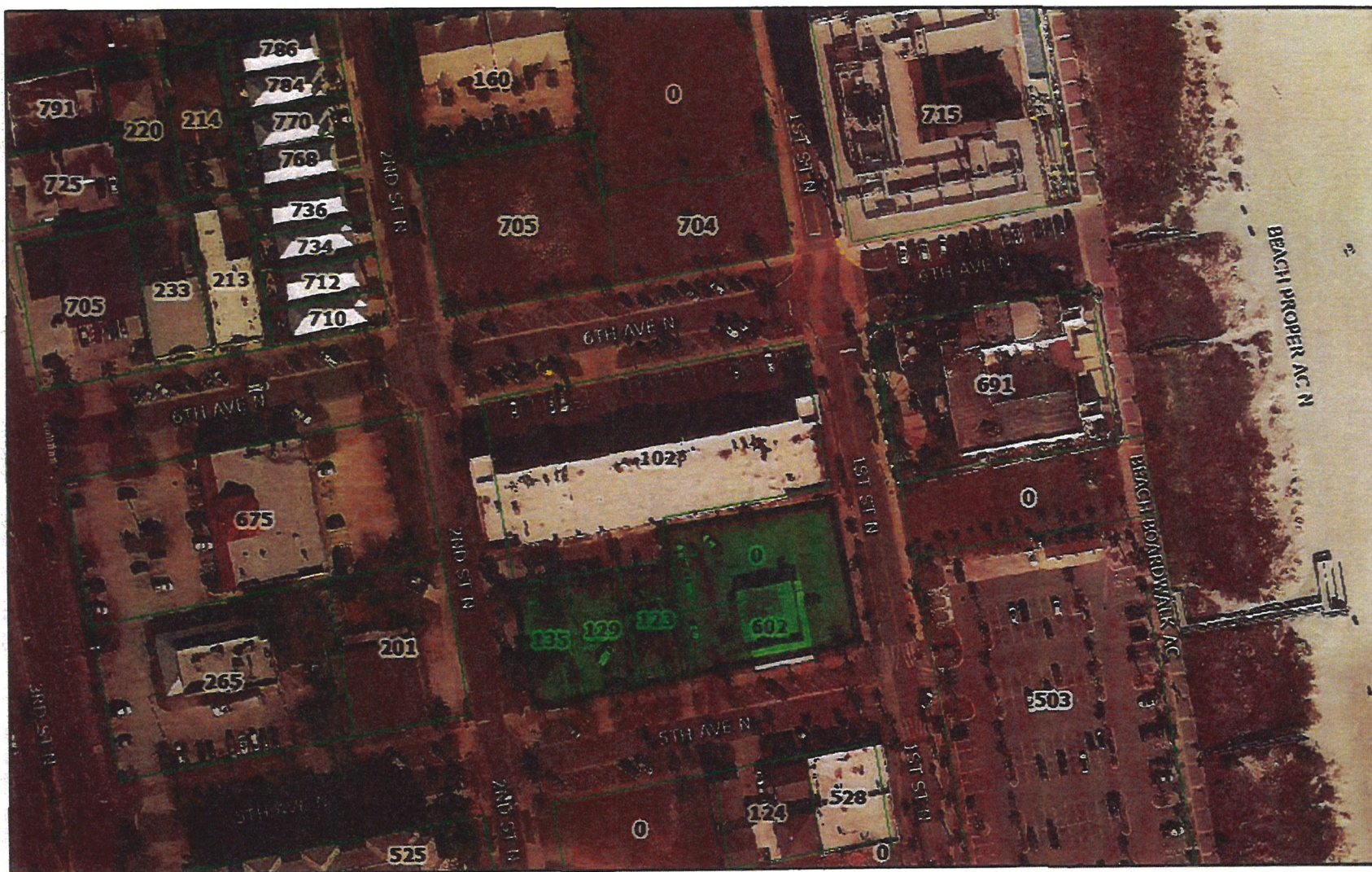


| RE #        | Owner                            | Address       | Zip Code | Transaction Price | Transaction Year | Acres | Book-Page  | Map Panel | Legal Descriptions                   | Flood Zone                         | AshSite | EDA Level      | Evacuation Zone | Planning District | Noise Zone | APZ | Civ HH Zone | MI HH Zone | Lighting Reg | Civ Notice Zone | MI Notice Zone |
|-------------|----------------------------------|---------------|----------|-------------------|------------------|-------|------------|-----------|--------------------------------------|------------------------------------|---------|----------------|-----------------|-------------------|------------|-----|-------------|------------|--------------|-----------------|----------------|
| 173939 0000 | JAX BEACH INVESTMENT HOLDING LLC | 123 5TH AVE N | 32250    | \$1033300         | 2018             | 0.1   | 1860200721 | 9433      | 15-50 33-2S-29E FLAGLER TRACT LOT 40 | 0.2 PCT ANNUAL CHANCE FLOOD HAZARD |         | NOT DISTRESSED | ZONE A          | 7                 | NA         | NA  | NA          | NA         | NA           | NA              | NA             |

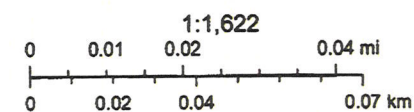


## EXHIBIT 2 & 3

## Duval Map



January 8, 2024



**EXHIBIT 4****NARRATIVE DESCRIPTION**

**Jax Beach Mixed-Use Project  
Proposed Rezoning to RD District and  
Preliminary Development Plan  
April 2, 2023**

**Existing FLUM Designation: CBD  
Existing Zoning: CBD/RD  
Proposed Zoning: RD**

**I. INTRODUCTION**

Jax Beach Investment Holding LLC and Duck Dive, LLC (collectively, "Owner") propose to rezone approximately .76 acres of property from Central Business District ("CBD") to Redevelopment District ("RD"). The property is located at 135 5<sup>th</sup> Avenue North (RE# 173937-0000), 129 5<sup>th</sup> Avenue North (RE# 173938-0000), 123 5<sup>th</sup> Avenue North (RE# 173939-0000), 602 1<sup>st</sup> Street North (RE# 174174-0000), and 0 1<sup>st</sup> Street North (RE# 174174-0050) and sits approximately one block from the Atlantic Ocean (collectively, the "Property").

The Property is located within the CBD functional land use category according to the Future Land Use Map ("FLUM") series adopted as part of the City of Jacksonville Beach ("City") 2030 Comprehensive Plan and is zoned CBD. The Property comprises the southern half of the block bounded by 1st Street North, 6th Avenue North, 2nd Street North, and 5th Avenue North. It is located within the North subdistrict of the RD Zoning District. The Property is within an urban infill area and is currently occupied by Mango's Beach Bar and three (3) two-story residential buildings, two of which are residential and one of which is an office. Due to the location and the unique and innovative development plan, the Owner requests this RD rezoning to permit the redevelopment of the Property into a mixed-use development with the west half of the Property being a multi-tenant plaza intended for a mix of restaurant, office, and commercial retail uses and the east half of the Property remaining as a bar (the "Project").

The eastern half of the Property was previously the subject of Ordinance 2014-8058, which permitted retail commercial uses. That rezoning has since expired.

The following is a description of the proposed RD rezoning with the Preliminary Development Plan ("PDP") in support. Also included is an explanation of why the proposed development complies with the standards governing RD rezonings and PDPs pursuant to the City's Land Development Code ("LDC").

**II. REDEVELOPMENT DISTRICT**

The proposed development is consistent with the objectives of the Jacksonville Beach Community Redevelopment Plan, is consistent with the 2030 Comprehensive Plan, and furthers the purpose of the RD zoning district by providing for creative design and planning. The proposed development will be constructed in accordance with the following provisions of the PDP set forth below.

**III. PRELIMINARY DEVELOPMENT PLAN**

**A. The names, address and telephone number of the owners of record of the land proposed for development.**

Owner: RE #s 173937-0000, 173938-0000, & 173939-0000  
Jax Beach Investment Holding LLC  
1440 Beach Avenue  
Atlantic Beach, FL 32233

RE #s 174174-0000 & 174174-0050  
Duck Dive, LLC  
3948 S 3<sup>rd</sup> Street Ste 373  
Jacksonville Beach, FL 32250

**B. The name, address, and telephone number of the developer, if different from the owner, and an explanation of the difference.**

There is no difference between the Owner and developer.

**C. The name, address and telephone number of the agent of the applicant, if there is an agent.**

Applicant/Agent: Rogers Towers, P.A.  
c/o Emily G. Pierce  
1301 Riverplace Blvd., Ste 1500  
Jacksonville, FL 32207  
[epierce@rtlaw.com](mailto:epierce@rtlaw.com)  
904-346-5787

**D. The name, address, and telephone number of all land use, environmental, engineering, economic, or other professionals that are assisting with the application.**

Architect: Joe Cronk  
Cronk Duch Architecture, LLC  
1936 San Marco Boulevard, Studio 101  
Jacksonville, FL 32207  
[joe@cronkduch.com](mailto:joe@cronkduch.com)  
(904) 302-9848

Engineer: Joseph P. Loretta, V.P., Operations Manager  
Halff  
9995 Gate Pkwy N Suite 200  
Jacksonville, FL 32246  
[jloretta@halff.com](mailto:jloretta@halff.com)  
(904) 441-8365



**E. The name, address and legal description of the land on which the preliminary development plan is proposed to occur, with attached copies of any instruments referenced, such as but not limited to deeds, plats, easements, covenants and restrictions.**

The Property includes the parcels and addresses set forth above. The legal description and deeds are attached hereto as **Exhibit “5.”**

**F. A copy of the relevant Duval County Property Assessment Map, showing the exact location of the land proposed for development, with the boundaries already marked.**

The assessment map is attached hereto as **Exhibit “1.”**

**G. An eight and one-half (8 ½) by eleven (11) vicinity map locating the proposed land for development.**

The vicinity map is attached hereto as **Exhibit “2.”**

**H. A statement of the planning objectives to be achieved by the planned redevelopment activity and its consistency with the Jacksonville Beach Community Redevelopment Plan. The statement shall include a detailed description of the character of the proposed development, including information relative to the architectural style of the proposed development.**

1. *Description of Character of Proposed Development.*

The Property is located within an urban infill area, one (1) block from the Atlantic Ocean. The Property is currently the site of Mango’s Beach Bar and three, two-story units, two of which are residences and one of which is being utilized as office space. Mango’s Beach Bar has been a Jacksonville Beach institution for over sixty-five (65) years. The surrounding zoning districts include: CBD to the north, south, east and west. The eastern half of the Property was rezoned in 2014 to RD pursuant to Ordinance 2014-8058. The 2014 RD zoning permitted a mixed-use development that would have consisted of office/retail space and a new concept bar. Because a building permit was not applied for within eighteen (18) months following the adoption of the rezoning ordinance, the zoning designation of RD is now void.

Following the expiration of the RD zoning on the eastern half of the Property, the Owners decided to address redevelopment of the entire site and engaged architects from Cronk Duch Architecture and engineers from Halff to assist with the development of a cohesive vision for the Property. Consistent with its location and the surrounding uses, the Project concept contemplates a new mixed-use development on the western half of the Property and improvements to the existing use on the eastern half of the Property.

As illustrated on **Exhibit “A”** (the Jax Beach Mixed Use Vision Plan), **Exhibit “B”** (the Parcel 1 Ground Floor and Second Floor Plans), and **Exhibit “C”** (the Jax Beach Mixed Use Site Plan) Parcel 1 (the western portion of the Property) will consist of two (2) new multi-tenant, mixed-use two (2) story buildings connected under one roof intended for office and commercial retail uses on the ground floor and a restaurant use on the second floor including both indoor and outdoor dining space. The ground floor of Parcel 1 will include retail space, the elevator lobby, and a preparation area and cooler/freezer space for the restaurant. The second floor of Parcel 1 will include a mix of both enclosed and open/covered space. The building on Parcel 1 will be approximately 13,500 square feet.

As shown on both **Exhibit “A”** and **Exhibit “C,”** Parcel 2 will consist of the redevelopment and expansion of Mango’s Beach Bar to include a larger outside patio which may be fully or partially covered and which will face both 5<sup>th</sup> Avenue North and 1<sup>st</sup> Street North along with a new men’s restroom. Mango’s will remain the popular “beach dive bar” that it is but will get some much-needed improvements with the addition of a new men’s restroom, the expanded outdoor space and new landscaping.

The Project utilizes varying heights throughout the Property to maximize architectural aesthetics, consumer experiences and ocean views, while ensuring consistent building mass and scale with the surrounding area.

There are three primary access points: one on 2<sup>nd</sup> Street North, one on 5<sup>th</sup> Avenue North; and an entrance-only on 1<sup>st</sup> Street North. There will also be a dedicated covered valet drop-off space on Parcel 1 serving the upstairs restaurant which will exit onto 5<sup>th</sup> Avenue North. The valet design will allow for a covered drop-off area and for staging for the new restaurant. The Property will include 41 on-site parking spaces (inclusive of 2 handicapped accessible spaces). The Property also includes a dedicated bike rack area. There are approximately ten (10) additional angled parking spaces available to patrons immediately adjacent to the Property on 5<sup>th</sup> Avenue North with additional spaces across 5<sup>th</sup> Avenue North and public parking within the Jacksonville Beach Pier lot across 1<sup>st</sup> Street North.

## 2. Consistency with Jacksonville Beach Community Redevelopment Plan.

The Jacksonville Beach Community Redevelopment Plan, adopted in January 1987 by the Jacksonville Beach Community Redevelopment Agency, sets out specific objectives to guide the redevelopment of the Jacksonville Beach Redevelopment Area (the “Community Redevelopment Plan”). The proposed redevelopment is consistent with the general purpose and intent of the Community Redevelopment Plan and specifically furthers the following objectives:

### *General Objectives:*

- a. *Eliminate the conditions of blight and prevent the spread of blighting conditions.*

The Project features a holistic approach to the redevelopment of the Property. The project will provide on-site parking along with new commercial retail and office uses, and a second story restaurant on historically underutilized land. The Project

will also include renovations to a long-standing Jacksonville Beach institution, Mango's Beach Bar. As shown on **Exhibit "A"** the new development and improvements to Mango's Beach Bar will be architecturally compatible with the new development ensuring a cohesive development which will help with the prevention of blighting conditions in the area.

- b. *Encourage the core downtown area to develop as the center for cultural, entertainment and community activities within the City.*

The Project's mix of uses, including both new uses and the preservation of a Jacksonville Beach icon, the removal and replacement of existing rundown buildings with new attractive, site appropriate construction and its proximity to the Jacksonville Beach Pier and Seawalk Pavilion will encourage resident and visitor participation in the area. This mix of uses furthers the Community Redevelopment Plan's vision for the area north of 5<sup>th</sup> Avenue North and east of 2<sup>nd</sup> Street to include a mix of both residential and commercial uses.

*Economic Objectives:*

- a. *Increase the tax base in the Community Redevelopment Area to assist in financing public actions to support redevelopment.*

The Project contemplates new construction along with renovations to Mango's which will result in an increase in the tax base of the CRA.

- b. *Encourage the re-creation of a compact mixed-use core area, oriented to recreation, entertainment, specialty retail tourism and housing.*

The Project features a cohesive compact design that will incorporate new commercial retail and office uses, a restaurant, surface parking and improvements to Mango's Beach Bar all within the Central Business District. This integrated and thoughtfully designed Project should encourage resident and visitor participation in the area.

*Land Use Objectives:*

- a. *Encourage the development of a mix of activities in the core area including residential, retail, hotel and office.*

This Project includes a mix of new retail, office and restaurant uses and the renovation of a popular existing use and has been designed in a cohesive, compact way in order to foster resident and visitor participation in the area and should act as a catalyst to further redevelopment in the core area.

- b. *Provide guidance to moderate building heights in the core oceanfront area and residential densities elsewhere in the community redevelopment area.*

As set forth below, the Project sets a maximum building height of thirty-five (35) feet, less improvements otherwise permitted by the City's Charter and LDC, with



varying roof heights to add architectural interest to the site while ensuring consistent building mass and scale with the surrounding area.

- c. *Control the amount of land zoned for commercial use to stabilize predominately residential areas and concentrate commercial activity in the core area.*

The proposed mix of commercial and office uses are appropriate for the Property and the surrounding location as they are located within the commercial core area of the CBD.

*Circulation and Parking Objectives:*

- a. *Maintain the existing street pattern with improvements as necessary to accommodate new development.*

The existing street pattern will remain. The Project will include a 41-space surface parking area consistent with the requirements of the CBD/RD zoning district. The existing access point on 1<sup>st</sup> Street North will be converted to an entrance-only access and will be signed accordingly.

*Urban Design Objectives:*

- a. *Promote standards of high quality in new development and rehabilitation consistent with the desired image of Jacksonville Beach.*

The Project has been thoughtfully designed to integrate the various proposed uses with each other and with the surrounding area. The proposed design is consistent with the vision for the redevelopment of the CRA area to eliminate “poor building conditions” in the area.

- b. *Promote compatibility and integration among public and private developments.*

The Project includes a mix of commercial, retail and restaurant uses in a compact design that is compatible with the surrounding uses. The mix of uses provides multiple opportunities for interaction by visitors and residents alike.

**I. A statement of the applicant's intention with regard to the form of ownership contemplated for the development when construction is completed, e.g., sale or lease of all or some of the development including rental units, condominiums, or fee simple conveyance.**

The Project contemplates leasing to multiple tenants.

**J. A description of the proposed development, including:**

- 1. *The number and type of residential dwelling units.*

The proposed Project does not include residential uses.

2. The approximate gross density for the residential development.

The proposed Project does not include residential uses.

3. The amounts of land and building square footages for nonresidential developments, by type of use, including any portions to be reserved for public use.

The proposed building square footages are consistent with the goals of the Community Redevelopment Plan and are comparable to the existing development in the surrounding area.

*Proposed Square Footage (not to exceed):*

Parcel 1 – 13,500 square feet, includes air-conditioned areas, along with covered and uncovered seating areas as described below (note that specific square footages for the spaces are approximates):

Ground Floor

Retail: ±2,800 heated sq. ft.

Restaurant/Kitchen related uses (dish & primary prep, cooler/freezer, office): ± 1,200 heated sq. ft.

Stairwells and elevator (both floors): ± 1,000 sq. ft.

Covered, unheated space: ± 3,500 sq. ft.

Second Floor

Restaurant: ± 6,000 heated sq. ft.

Restaurant covered, unheated space: ± 2,500 sq. ft.

Parcel 2 (Mango's) – 4,300 square feet, including bar and covered/uncovered seating area:

Night club/bar: ± 2,600 heated sq ft

Covered/uncovered, unheated space: ± 1,700 sq ft

The proposed square footages for each use may be allocated to another use on a one (1) to one (1) square foot basis or as otherwise agreed to by the P&DD.

**K. A concept plan showing the location of all proposed buildings, the proposed traffic circulation system, and parking facilities.**

The site plan showing the location of structures, the traffic circulation, access points and parking is attached hereto as **Exhibit "C"** (Jax Beach Mixed-Use Site Plan)

**L. A tentative development schedule indicating:**

1. The approximate date when construction of the development can be expected to begin.

Development is anticipated to be accomplished in one (1) or more phases. It is contemplated that an application for a development permit for a development plan will be submitted for within one (1) year of the approval of this RD rezoning or as otherwise allowed herein. Construction is expected to begin following issuance of the permit by the City.

2. The stages in which the development will be built and the approximate date when construction on each stage can be expected to begin.

The development is anticipated to occur in one (1) or more phases. It is contemplated that an application for a development permit for a development plan will be submitted for within one (1) year of the approval of this RD rezoning or as otherwise allowed herein.

3. The approximate date when each stage of development will be completed.

Subject to market conditions and financing, development is anticipated to begin no later than 2025 and subject to the tolling and other time provisions herein is estimated to be completed by 2028.

**IV. STANDARDS**

This RD zoning district shall comply with the following standards:

**A. Permitted Uses.**

1. General commercial retail uses, including, but not limited to specialty retail outlets and similar uses which may include outside sales displays.
2. Bakery products manufacturing, in conjunction with the retail sale of the baker products on the same site.
3. Jewelry manufacturing, in conjunction with the retail sale of the jewelry on the same site.
4. Handbag and other personal leather goods manufactured in conjunction with the retail sale of the finished product on the same site.
5. Travel agencies.

6. Retail trade establishments as follows: Building materials, hardware and garden supplies; general merchandise stores; apparel and accessory stores; home furniture, furnishing and equipment stores; drug stores; florists/plant stores; tobacco stands and newsstands; optical goods stores; and miscellaneous retail goods.

7. Restaurants, cafes, and similar dining/eating establishments with either indoor or outdoor sales and service, or both. Such establishments may also include the sale and service of all alcoholic beverages, including liquor, beer or wine, with indoor or outdoor service, or both. These uses shall be permitted notwithstanding the distance requirements in section 34-393(2) or the supplemental requirements in section 34- 407(a) and (b).

8. A bar, lounge, night club, tavern or similar establishment or facility, which includes the retail sale and service of all alcoholic beverages, including liquor, beer or wine for on-premises or off-premises consumption or both. Such facility may include inside or outside sale and service of such alcoholic beverages, or both. These uses shall be permitted notwithstanding the distance requirements in section 34-393(2) or the supplemental requirements in section 34-407(a) and (b). Additionally, notwithstanding the limitations set forth in section 34-407(b), the outdoor seating area for any such use may exceed twenty-five (25) percent of the total enclosed area of the bar.

9. Microbreweries.

10. Financial institutions, insurance and real estate offices.

11. Personal service establishments as follows: Photographic studios; beauty and barber shops; shoe repair shops and shoe-shine parlors; tax preparation services; and miscellaneous personal services.

12. Business service establishments as follows: Advertising; business and consumer credit reporting and collections; mailing reproduction; commercial art and photography and stenographic services; personnel supply, excluding labor and manpower pools and similar temporary help services; computer programming, data processing and other computer services; and miscellaneous business services.

13. Automotive parking, including surface and/or structured parking.

14. Dance, music, gymnastics, cheer, martial arts, acting, and photography studios/schools and similar uses.

15. Amusement and recreation service establishments as follows: Physical fitness facilities; coin operated amusement devices; or membership sports and recreation clubs.

16. Business and professional offices as follows: Landscape architect; building contractors and subcontractors (no storage of vehicles, equipment, or materials); doctors, chiropractors, dentists and miscellaneous health offices and clinics; legal services; engineering, architecture, accounting, research management, and similar uses.

17. Museums, art galleries, art studios, and similar uses.

18. Government uses.

19. Essential services, including water, sewer, electrical, gas, communications antennae, and similar uses.

20. Pharmacy.

21. Any other permitted use allowed in the CBD or RD zoning districts.

**B. Prohibited Uses:**

The following uses are specifically prohibited:

1. Manufacturing, except for activity related to the production of items designed for sale at retail on the premises such as arts and crafts, jewelry, or bakery goods.

2. Outdoor storage yards of any kind, including junk yards.

3. Wholesale trade, warehouse, and distribution establishments.

4. Cemeteries.

5. Mobile home parks.

6. Motor vehicle repair, services, and garages.

7. Transportation and transportation service establishments, except terminal and service facilities for passenger transportation.

8. Petroleum and petroleum products receiving, storage/and distribution.
9. Veterinary services and kennels.
10. Recreational vehicle or travel trailer parks.
11. Commercial and industrial laundries.
12. Cold storage and ice processing plants.
13. Contract construction establishments.
14. Rooming and boarding houses.

**C. Area and setback requirements:**

1. Minimum lot area and width: None.
2. Maximum lot coverage by buildings: 90%.
3. Building setbacks:
  - a) *Front* - zero (0) feet minimum; ten (10) feet maximum. Outdoor covered areas shall count as the building for purposes of determining the front setback and frontage buildout.
  - b) *Side* - zero (0) feet minimum.
  - c) *Rear* - zero (0) feet minimum.
4. Maximum building height: Thirty-five (35) feet. The height limitation contained in this RD rezoning does not apply to spires, belfries, cupolas, flag poles, antennas, water tanks, fire towers, cooling towers, ventilators, chimneys, radio and television towers, and elevator hoist ways, not intended for human occupancy. Should the maximum height under the City's Charter and/or LDC increase subsequent to the approval of this RD rezoning, the Project may be developed in accordance with those provisions through an RD zoning amendment pursuant to the standards and procedures for a rezoning.

**D. Traffic circulation control and parking.** Vehicular access to the Property shall be by way of 5th Avenue North, 2nd Street North, and 1st Street North, substantially as shown on the site plan. The access on 1<sup>st</sup> Street North shall entrance-only and shall be marked as such. A valet and staging area which will consist of a covered drop-off area for the restaurant with an exit onto 5th Avenue North shall also be permitted substantially as



shown on the site plan.

**E. Building and site design and lot layout standards.** The mixed-use buildings which will include the retail and restaurant uses on Parcel 1 shall be located on the site as generally shown on **Exhibit “B”** (the Ground Floor and Second Floor Plans), and **Exhibit “C”** (the Jax Beach Mixed Use Site Plan) with the architectural character being similar to the renderings set forth in **Exhibit “A”** (the Jax Beach Mixed Use Vision). While there may be multiple building entrances, the “fronts” of all of the buildings on the Property shall be deemed to be that portion of the building facing 5th Avenue North. The fronts of the buildings will include architectural elements such as changes in exterior finish materials, windows, recesses, popouts, covered areas, variations in roof lines, and overhangs that emphasize entrances, include changes in volume, and provide visual interest and relief along the fronts of the buildings. The ground floor of the building at the corner of 2<sup>nd</sup> Street North and 5<sup>th</sup> Avenue North will have a corner entrance. The renovated building on Parcel 2 ties architecturally and aesthetically with the new buildings on Parcel 1. As set forth above, outdoor covered/uncovered seating areas shall count as a part of the building for purposes of determining the front setback and frontage buildout. Therefore, none of the building setbacks vary by more than five (5) feet from the adjacent buildings.

The buildings generally meet the *Storefront Character* standards set forth in section 34-345(e)(7)h, with the exception of the following: (1) section 34-345(e)(7)h.1 requires corner building entrances on corner lots; and (2) section 34-345(e)(7)h.3, which requires large transparent display windows which cover a minimum of forty percent and a maximum of eighty percent of the ground floor of each storefront’s linear frontage.

- With regard to the corner entrance requirement, the new building located on Parcel 1 will include a corner entrance; however, Mango’s Bar on Parcel 2 will not include a corner entrance. Mango’s is an existing building with an existing covered patio and an intervening parking area facing the corner of 5<sup>th</sup> Avenue North and 1<sup>st</sup> Street North. While there will be improvements to the bar in the form of a larger outdoor patio, the addition of a men’s room and exterior/architectural renovations. The renovations will not include major changes to the structure and layout of the existing building, nor will the building be relocated to the corner of the lot.
- With regard to the ground floor display window requirement, those portions of the buildings on Parcel 1 facing 5<sup>th</sup> Avenue North will meet the requirement; however, that portion of the westernmost building facing 2<sup>nd</sup> Street North will not include transparent display windows. That portion of the building will house the restaurant’s coolers, freezers and storage area. This area is critical to support the restaurant but does not lend itself to large transparent windows both for aesthetic reasons and to aid in temperature control. On Parcel 2, Mango’s is an existing building and there are no major structural changes being proposed. The ground floor windows will remain as is.

**F. Screening, mechanical equipment, and rooftop mechanical equipment.** Trash, recycling receptacles, loading docks, service areas and other similar areas shall be located

in the parking areas, shall not be visible from 1st Street North, and shall be screened to minimize sound and visibility from adjacent streets and uses. Mechanical equipment at ground level shall be screened or otherwise incorporated into the building's overall design. Any screening shall be at least one (1) foot higher than the largest object to be screened, but in no event shall be more than ten (10) feet higher. Rooftop mechanical equipment shall be integrated into the overall mass and design of the building by screening or by recessing the equipment into the roof structure.

**G. Off street parking and loading.**

1. The PUD will comply with the City's parking requirements by providing at least forty-one (41) onsite parking spaces (inclusive of two dedicated handicapped parking spaces) along with a dedicated bike parking area. It should be noted that there are an additional ten (10) off-site street parking spaces located immediately in front of the Property along 5th Avenue North with additional street and surface lot parking spaces locating within walking distance of the Property.
2. The parking area shall be setback at least ten (10) feet from the corner and at least one (1) foot from the property line with curbing or wheel stops adjusted accordingly.
3. Subject to review and approval of the Planning Department, as long as the interior landscape area is equal to or greater than ten (10%) percent of the total paved area, interior landscaping for the parking lot may be modified to be located along the perimeter of the parking area or elsewhere within the PUD and landscape islands/areas may be modified, relocated or removed, in order to increase drive-aisle widths, to provide for better turning radii, to facilitate fire access and to enable better onsite maneuverability by vehicles.

**H. Signage:** All signage shall be consistent with the goals, objectives, and policies of the adopted Community Redevelopment Plan and the standards of Chapter 34, Article VIII, Division 4 of the LDC.

**I. Landscaping:** Subject to the modifications permitted in Section IV.G. above, landscaping shall be consistent with the landscape standards for the CBD zoning district as set forth in Section 34-345(e)(6) of the LDC.

**J. Environmental:** The stormwater management and flood protection standards shall be consistent with the goals, objectives, and policies of the Community Redevelopment Plan and the standards in Chapter 34, Article VIII, Division 5 of the LDC.

**K. Utility easements:** Easements for the orderly extension and maintenance of public utility systems shall be required where they are necessary and adequately service the development.

**L. Adequate public facilities:** There shall be adequate potable water, sanitary sewer, stormwater management, solid waste, parks, roads, police, fire and emergency management services facilities to service the development. The application shall comply with the standards in Article X of the LDC, Adequate public facilities standards. Solid waste may be collected in off-site dumpsters and/or trash compactors.

**M. Comprehensive plan consistency.** In addition to furthering the objectives of the Community Redevelopment Plan, the proposed redevelopment is consistent with and furthers the general purpose and intent of the 2030 Comprehensive Plan, specifically contributing to the following goals, objectives, and policies:

*Future Land Use Element:*

**Goal LU.1** - Provide for a continued high quality of life in Jacksonville Beach by planning for population growth, public and private development and redevelopment, energy conservation; and the proper distribution, location, and extent of land uses by type, density, and intensity consistent with efficient and adequate levels of services and facilities, and the protection of natural and environmental resources.

The redevelopment of the Property within an urban infill area furthers Goal LU.1 by ensuring that the City continues to grow in a compact, efficient way where there are adequate levels of services and facilities. The Central Business District has been recognized by the City as an appropriate location for retail, restaurant, office and commercial uses.

**Policy LU.1.2.2** - An adequate amount of land exists in developed areas or areas being developed for neighborhood and general commercial, office and service, lodging, and industrial use in the City, or is planned for assembly and redevelopment to meet the needs of the projected resident, seasonal and day visitor populations through the planning period. Future commercial space needs of this type shall be met through in-fill development adjacent to similar uses or through redevelopment in designated areas.

The redevelopment of the Property through the conversion of underutilized property into retail, restaurant, office and commercial uses, consistent with the Property's CBD designation and adjacent to similar uses, furthers Policy LU.1.2.2.

**Policy LU.1.2.3** - The intensity of development in areas where in-fill development for commercial, office, service, or industrial use is proposed shall conform to the level of intensity on adjacent properties or as specified in the adopted Community Redevelopment Plans. A market analysis shall be required to accompany any application involving a proposed Future Land Use Map change from a residential land use category to a commercial land use category.

This Project furthers the intent of Policy LU.1.2.3. As set forth above, this infill

redevelopment Project is consistent with the Community Redevelopment Plan and is consistent with the intensity of development in the surrounding CBD/RD designated areas.

**Policy LU.1.2.6** - The City recognizes that urban sprawl; as evidenced by the incidence of "leapfrog" development, strip commercial development, and large expanses of low-density, single dimensional land uses presents a fiscally and environmentally unsound urban form. However, in a mature community like Jacksonville Beach, development patterns have long been set. Nevertheless, it is the intent of the City to enforce its land development regulations in a manner which will discourage the development or extension of commercial strips, allow for mixed use development where appropriate, and support the redevelopment or revitalization of existing commercial areas.

The proposed redevelopment Project is an infill project which will make use of underutilized property located within the CBC FLUM category, thus furthering the intent of Policy LU.1.2.6 to avoid urban sprawl.

**Policy LU.1.3.1** - It is the intent of the City that the land use proposals in the adopted Downtown and South Beach Community Redevelopment plans currently being implemented are made a part of this Future Land Use Element by reference and development within these designated areas shall be carried out under the Planned Unit Development or Redevelopment District provisions in the City's land development regulations.

The Applicant is utilizing the RD zoning district in order to ensure compliance with the intent of the CBD FLUM category, the Community Redevelopment Plan and Policy LU.1.3.1.

**Policy LU.1.3.2** - Future redevelopment activities shall be consistent with sound planning principles; limitations of the natural environment including sensitivity to problems posed by topographic and soil conditions, conservation-protected lands such as estuarine wetlands and the beach, and conservation-restricted lands such as palustrine wetlands and flood prone areas including the coastal zones; as well as the desired community character and the goals, objectives, and policies relating to the development of the land embodied in the other Elements of this Plan.

The proposed redevelopment of the Property furthers the intent of Policy LU.1.3.2 by avoiding any impacts to wetlands or environmentally sensitive areas and by proposing a Project that is consistent with, and complementary to, the surrounding community character.

**Objective LU.1.4** - Future land development activities shall be directed to appropriate areas as described in this Future Land Use Element or as depicted on the Future Land Use Map. All future land use shall be consistent with sound planning principles and the limitations of the natural environment including sensitivity to problems posed by greenhouse gas generation, topographic and soil conditions, conservation-protected lands such as estuarine wetlands and the beach, and conservation-restricted lands such as palustrine wetlands and

flood prone areas including the coastal zones. Future land development activities shall be considerate of the need to preserve and protect historic resources; the desired community character, and the goals, objectives, and policies relating to the development of the land embodied in the other Elements of this Plan.

The proposed redevelopment of the Property furthers the intent of Objective LU.1.4 by avoiding any impacts to environmentally sensitive areas, by avoiding any impacts to protected historical resources and by proposing a Project that is consistent with, and complementary to, the surrounding community character.

**Policy LU.1.5.10 - Central Business District (CBD):** The Central Business District (CBD) land use category is intended to provide a central core for the city, with a diversity of uses, and to promote flexibility in design and quality in development while preserving public access to the beach recreational area. It is coterminous with the jurisdictional area of those lands within the Downtown Redevelopment Area. The CBD category allows medium to high density residential, commercial, industrial, recreational, and entertainment uses, as well as transportation and communication facilities. The exact location, distribution, and density/intensity of various types of land use in the Redevelopment Area will be guided by the site development plans approved as part of the Downtown Redevelopment Plan.

The proposed redevelopment Project furthers the intent of Policy LU.1.5.10 by utilizing the RD zoning district to specify the site design and lot layout standards for the Project to ensure consistency with the CBD FLUM designated area of the City, along with consistency with the Community Redevelopment Plan and Downtown Redevelopment Plan.

**Policy LU.1.7.2 - Encourage development/redevelopment at an appropriate scale, form, and density/intensity to support more economical and efficient public bus transit service.**

The proposed redevelopment of the Property is at an appropriate scale, form and intensity consistent with the uses located within the Central Business District such that it will support the economical and efficient use of the public bus transit service consistent with Policy LU.1.7.2.

**Objective LU.1.9 - Design of Commercial and Industrial Developments.** Commercial and industrial development/ redevelopment will be designed to enhance access and circulation, and result in a positive and attractive built environment.

As demonstrated by the Jax Beach Mixed Use Vision Plan, the Jax Beach Mixed Use Site Plan, and the Parcel 1 Ground Floor and Second Floor Plans attached as **Exhibits “A,” “B,” and “C”** to the application, the design of the Property will result in a positive and attractive built environment which will enhance access and circulation to the site consistent with Objective LU.1.9.

**Policy LU.1.9.1 - The City shall promote pedestrian amenities and upgrades in association with new development/redevelopment and gateway corridors (Beach Boulevard, A1A, and Penman), including, but not limited to, the provision of sidewalk and bike path connections, walk lights, benches, bus shelters and bicycle parking.** The City of Jacksonville Beach Bus Shelter Task Force in cooperation with the JTA will determine the shelter locations and

design suitable to the City's design context, with a goal of upgrading three existing transit stops per year.

The redevelopment Project includes a bike rack and safe and efficient pedestrian circulation to and from the parking lot and the existing sidewalks in furtherance of Policy LU.1.9.1.

### *Transportation Element*

**Objective TE 1.4** - Provide for safe and convenient traffic flow and parking.

The parking lot and internal circulation for the Project has been designed to provide for the safe and convenient flow of patrons' vehicles, emergency vehicles and pedestrians consistent with Objective TE 1.4.

**Policy TE 1.4.1** - Except in any portions of the City where provisions of the Land Development Code may allow for:

- The provisions of consolidated or free standing parking facilities, or for
- Contributions for the provision of pedestrian, bicycle or transit facilities in lieu of compliance with on-site parking requirements;

The City shall ensure adequate vehicular access to new development by requiring new developments to provide on-site parking.

The proposed redevelopment Project provides on-site parking and bike parking consistent with the requirements of the CBD/RD zoning district and thus, complies with Policy TE 1.4.1.

**Policy TE 1.4.2** - Promote parking strategies that support overall transportation goals and objectives.

The proposed redevelopment Project furthers Policy TE 1.4.2 by providing on-site parking and bike parking consistent with the requirements of the CBD/RD zoning district.

**Policy TE 1.5.1** - The City shall maintain provisions for handicapped access in its site plan review procedures.

The proposed redevelopment Project furthers the intent of Policy TE 1.5.1 by providing for handicapped accessible parking spaces.

**Policy TE 1.5.2** - Parking for disabled persons shall be required in conjunction with new development requiring on-site parking. Specific requirements for handicapped accessible spaces shall be enacted to be consistent with ADA standards, and shall be enforced through provisions of the City's building code.



The proposed redevelopment Project furthers the intent of Policy TE 1.5.2 by providing for handicapped accessible parking spaces.

**Objective TE 1.9** - Provide for a safe, comfortable and attractive pedestrian environment with convenient interconnection to public transportation.

As demonstrated by the Jax Beach Mixed Use Vision Plan and the Jax Beach Mixed Use Site Plan attached as **Exhibits “A” and “C”** to the application, the design of the Property provides for a safe, comfortable and attractive pedestrian environment, including shade structures, well-marked pedestrian paths, and sidewalk connectivity consistent with Objective LU.1.9.

**Policy TE 2.1.2** - The City shall require new development and redevelopment to provide for bicycle access and parking and supporting multimodal connections, where feasible, to the larger, Citywide network.

As demonstrated by the Jax Beach Mixed Use Site Plan attached as **Exhibit “C”** to the application, the Project provides for bicycle access and parking on-site, consistent with Policy TE 2.1.2.

**Policy TE 3.1.3** - The City shall require developers of commercial property to provide for convenient and safe access by and securing of bicycles on-site.

As demonstrated by the Jax Beach Mixed Use Site Plan attached as **Exhibit “C”** to the application, the Project provides for bicycle parking on-site, consistent with Policy TE 3.1.3.

**N. Time limitations.** The receipt of a development order for this RD zoning shall expire at the end of one (1) year after the date of its initial approval, which is to begin the day after the appeal period ends, unless an application for a development permit for a development plan has been submitted to the planning and development director. Only one (1), one (1) year extension shall be granted by the city council upon written application to the planning and development director. Written application requesting the extension shall be submitted to the planning and development director no later than thirty (30) working days before the date that the development order is to expire. The timelines and year-long extension herein shall be in addition to any pause, tolling and/or extension provided by federal, state or local law regarding state of emergencies, including but not limited to such relief offered in section 252.363, *Florida Statutes* (2023). Once a timely application for a development permit for a development plan has been submitted any subsequent application may be filed notwithstanding the time provisions herein.

**O. Minor deviation and amendments to PDP.** Minor deviations and amendments to the PDP shall be allowed pursuant to the RD zoning district provisions as provided for in Section 34-347 of the LDC.

**P. Development plan.** An application for development plan shall be filed according to the time limitations set forth in section IV.N. of this RD rezoning.

**Exhibit 5**  
**Legal Description**

LOTS 7 AND 8, BLOCK 62, PABLO BEACH NORTH, ACCORDING TO THE MAP OR PLAT THEREOF, AS RECORDED IN PLAT BOOK 3, PAGE(S) 28, OF THE CURRENT PUBLIC RECORDS OF DUVAL COUNTY, FLORIDA.

TOGETHER WITH:

LOT 38, 39, AND 40 OF FLAGLER TRACT, ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK 15, PAGE(S) 50, OF THE PUBLIC RECORDS OF DUVAL COUNTY, FLORIDA.

This Instrument Prepared By:

M. Scott Noble  
Edwards Cohen  
200 W. Forsyth Street, Suite 1300  
Jacksonville, Florida 32202

RE Property ID Nos. 173937-0000, 173938-0000, 173939-0000

**SPECIAL WARRANTY DEED**

**THIS INSTRUMENT**, made effective as of the 14 day of November, 2018, between Gregory S. Saig, whose address is 1440 Beach Avenue, Atlantic Beach, FL 32233 and Bryce P. Hadlow, whose address is 114 South Street, Neptune Beach, FL 32266, conveying non-homestead property (collectively, "Grantor"), and Jax Beach Investment Holding LLC, a Florida limited liability company, whose address is 1440 Beach Ave., Atlantic Beach, Florida 32233 ("Grantee").

(When used herein, the terms "Grantor" and "Grantee" shall be construed to include masculine, feminine, singular or plural as the context permits or requires, and shall include heirs, personal representatives, successors or assigns.)

**WITNESSETH:**

That the said Grantor, for and in consideration of the sum of Ten Dollars and other good and valuable consideration, to him in hand paid by the said Grantee, the receipt and adequacy of which is hereby acknowledged, has granted, bargained and sold to the said Grantee, its successors and assigns forever, that certain parcel of land located in Duval County, Florida and more particularly described as follows (the "Property"):

*Lot 38, 39, and 40 of FLAGLER TRACT, according to the Plat thereof as recorded in Plat Book 15, Page(s) 50, of the Public Records of Duval County, Florida.*

TOGETHER WITH all the tenements, hereditaments, easements and appurtenances thereto belonging or in anywise appertaining.

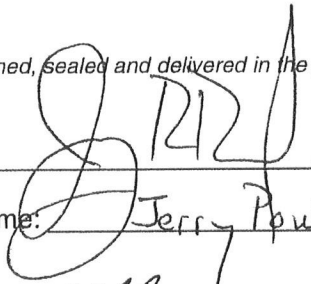
TO HAVE AND TO HOLD, the same in fee simple forever.

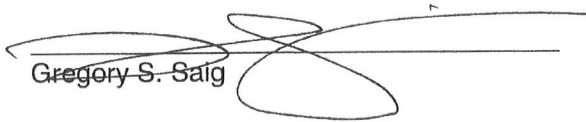
Grantor hereby covenants with said Grantee that Grantor is lawfully seized of the Property in fee simple; that Grantor has good right and lawful authority to sell and convey the Property; and that Grantor does hereby fully warrant title to the Property, and will defend the same against the lawful claims of all persons claiming by, through or under Grantor, but none other.

This conveyance of the Property is made subject to taxes for the year 2019 and subsequent years, and restrictions and encumbrances of record which are not reimposed by this reference.

IN WITNESS WHEREOF, Grantor has executed this instrument as of the day and year first above written.

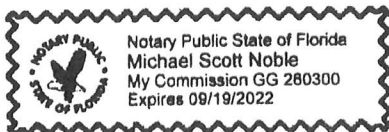
Signed, sealed and delivered in the presence of:

  
 Name: Jerry Power Jr  
  
 Name: M. S. Noble

  
 Gregory S. Saig

STATE OF FLORIDA  
 COUNTY OF DUVAL

The foregoing instrument was acknowledged before me this 14 day of November, 2018, by Gregory S. Saig. He/She ☐ is personally known to me OR ☒ produced FLDL as identification.



[Notary Seal]

  
 Notary Public, State of Florida  
 Name: \_\_\_\_\_  
 Commission Number: \_\_\_\_\_  
 My Commission Expires: \_\_\_\_\_

Signed, sealed and delivered in the presence of:

Leanna Butler

Name: Leanna Butler

Bonnie Kudela

Name: Bonnie Kudela

Bryce P. Hadlow  
Bryce P. Hadlow

STATE OF GEORGIA  
COUNTY OF Colquitt

The foregoing instrument was acknowledged before me this 14<sup>th</sup> day of November, 2018, by Bryce P. Hadlow. He/She ☐ is personally known to me OR ☒ produced DRIVERS License as identification.

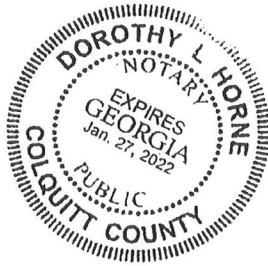
Dorothy L. Horne  
Notary Public, State of Georgia

Name: Dorothy L. Horne

Commission Number: \_\_\_\_\_

My Commission Expires: Jan. 27, 2022

[Notary Seal]



Prepared By and Return To:  
David T. Abraham, Esq.  
St. Johns Law Group  
104 Sea Grove Main Street  
St. Augustine, Florida 32080

Parcel Nos.: 174174-0000 and 174174-0050  
Consideration: \$2,500,000.00

**PERSONAL REPRESENTATIVE'S DEED**

**THIS DEED** is made and executed as of the 28<sup>th</sup> day of April, 2020, by **John B. Kowkabany and Eva K. Wheatley, Personal Representatives of the Estate of Nadime K. Kowkabany, deceased**, which estate is being administered in the Circuit Court in and for Duval County, Florida, in File Number 2019-CP-398, whose addresses are 1506 Prudential Drive, Jacksonville, Florida 32207 and 321 So. Danbury Road, Fruit Cove, Florida 32259, joined by: (i) **John B. Kowkabany and Eva K. Wheatley, as Trustees of the Nadime K. Kowkabany Revocable Trust dated June 22, 2017 (the "Trust")**, which is the sole direct beneficiary of the Estate; and by (ii) **the beneficiaries of the Trust: (a) John B. Kowkabany, a married man, (b) Eva K. Wheatley, a married woman, (c) Nadiene K. Macomb, a married woman, each individually, and (d) John B. Kowkabany and Eva K. Wheatley, as Trustees of the Donna M. Kowkabany Trust. The foregoing constituting all of the direct and indirect beneficiaries of the Estate of Nadime Kowkabany, deceased**, whose addresses are 1506 Prudential Drive, Jacksonville, Florida 32207, 321 So. Danbury Road, Fruit Cove, Florida 32259, 14 East Bay Street, Jacksonville, Florida, and c/o 1506 Prudential Drive, Jacksonville, Florida 32207, respectively, ("**Grantor**"), to **Duck Dive, LLC, a Florida limited liability company**, whose mailing address is 3948 South 3<sup>rd</sup> Street, Suite 373, Jacksonville Beach, Florida 32250 ("**Grantee**").

**GRANTOR**, for and in consideration of the sum of Ten and No/100 Dollars (\$10.00) and other good and valuable consideration paid by Grantee to Grantor, the receipt and sufficiency of which are hereby acknowledged, hereby grants, bargains, sells and conveys to Grantee and Grantee's heirs, executors, administrators, successors and assigns forever, the following described real property located in Duval County Florida:

**Lots 7 and 8, Block 62, Pablo Beach North, according to the map or plat thereof, as recorded in Plat Book 3, Page(s) 28, of the Current Public Records of Duval County, Florida.**

Grantor warrants that the subject property is commercial property, was continuously utilized for business purposes and was not the decedent's homestead or the homestead of any minor child or beneficiary of the Estate, within the meaning set forth in the constitution of the state of Florida, nor is it contiguous to or a part of homestead property.

**TOGETHER** with all the easements, tenements, hereditaments and appurtenances thereto, and all improvements now located on the Land, if any;

**TO HAVE AND TO HOLD** the same in fee simple forever.

This conveyance is made subject to the following:

1. Notice of Recording of City of Jacksonville Beach Ordinance No. 2008-7959 recorded in Official Records Book 14840, Page 1307, Public Records of Duval County, Florida.



2. Ordinance No. 2014-8058 recorded in Official Records Book 18979, Page 905, Public Records of Duval County, Florida.

3. Taxes for the year 2020 and subsequent years, which are not yet due and payable.

Subject to the matters described above, Grantor specially warrants the title to the Land and will defend the same against the lawful claims of all persons claiming by, through or under Grantor, but against none other.

**GRANTOR** has caused this instrument to be duly executed as of the day and year first written above.

Signed in the presence of these witnesses:

Witness: Nicole C. Turbell  
Print Name: Nicole C. Turbell

Witness: Rince Parthen  
Print Name: Rince Parthen

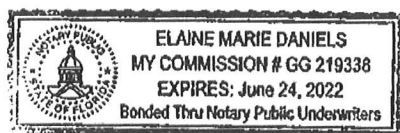
John B. Kowkabany  
John B. Kowkabany, as Personal Representative and Beneficiary of the Estate of Nadine K. Kowkabany, deceased, as Trustee of the Nadine K. Kowkabany Revocable Trust dated June 22, 2017, and as Trustee of the Donna M Kowkabany Trust

STATE OF FLORIDA  
COUNTY OF DUVAL

The foregoing instrument was acknowledged before me by means of ☒ physical presence or ☐ online notarization, this 28th day of April, 2020, by John B. Kowkabany, as Personal Representative and Beneficiary of the Estate of Nadine K. Kowkabany, deceased, and as Trustee of the Nadine K. Kowkabany Revocable Trust dated June 22, 2017, and as Trustee of the Donna M. Kowkabany Trust, who is personally known to me or who has produced \_\_\_\_\_.

Elaine Marie Daniels  
Signature of Notary Public

[NOTARY SEAL]



Witness: Nicole C. Turbell  
Print Name: Nicole C. Turbell  
Witness: Rina B. B. B. B.  
Print Name: Rina B. B. B. B.

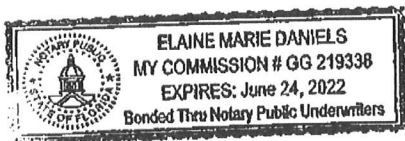
Eva K. Wheatley  
Eva K. Wheatley, as Personal Representative and Beneficiary of the Estate of Nadine K. Kowkabany, deceased, and as Trustee of the Nadine K. Kowkabany Revocable Trust dated June 22, 2017, and as Trustee of the Donna M. Kowkabany Trust

STATE OF FLORIDA  
COUNTY OF DUVAL

The foregoing instrument was acknowledged before me by means of ☒ physical presence or ☐ online notarization, this 28th day of April, 2020, by Eva K. Wheatley, as Personal Representative and Beneficiary of the Estate of Nadine K. Kowkabany, deceased, as Trustee of the Nadine K. Kowkabany Revocable Trust dated June 22, 2017, and as Trustee of the Donna M. Kowkabany Trust, who is personally known to me or who has produced \_\_\_\_\_.

Elaine Marie Daniels  
Signature of Notary Public

[NOTARY SEAL]



Witness: Nicole C. Timbrell  
Print Name: Nicole C. Timbrell  
Witness: Imela Barakat  
Print Name: Imela Barakat

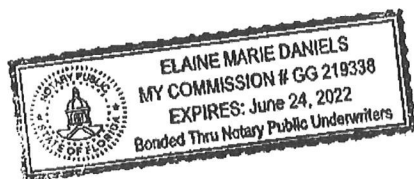
Nadiene K. Macomb  
Nadiene K. Macomb, as Beneficiary of the Estate  
of Nadine K. Kowkabany, deceased

STATE OF FLORIDA  
COUNTY OF DUVAL

The foregoing instrument was acknowledged before me by means of ☒ physical presence or ☐ online notarization, this 29 day of March, 2020, by Nadiene K. Macomb, as Beneficiary of the Estate of Nadine K. Kowkabany, deceased, who is personally known to me or who has produced \_\_\_\_\_.

Elaine Marie Daniels  
Signature of Notary Public

[NOTARY SEAL]



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# JAX BEACH MIXED USE VISION

---

**CRONK DUCH**  
ARCHITECTURE & PLANNING

JACKSONVILLE PALM BEACH MIAMI BEACH

 **halff**

**CD**<sup>+</sup> urban  
studio

EXHIBIT A









































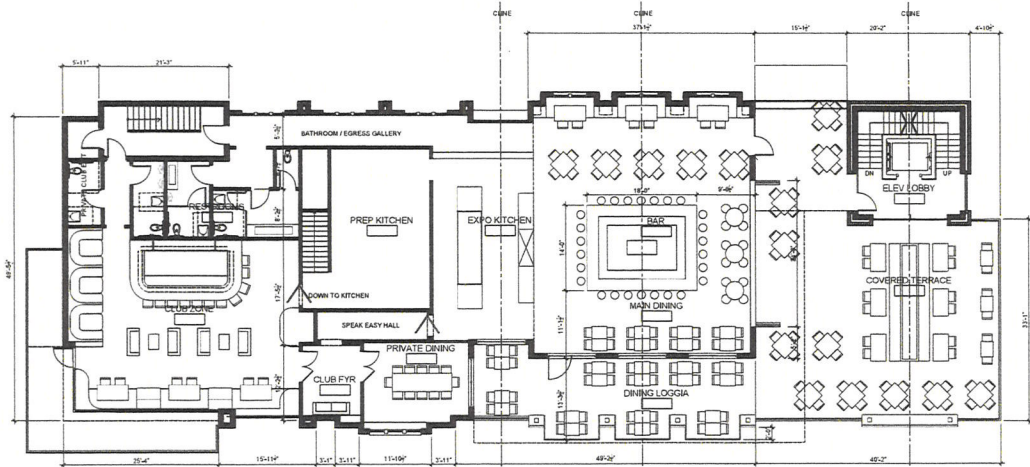






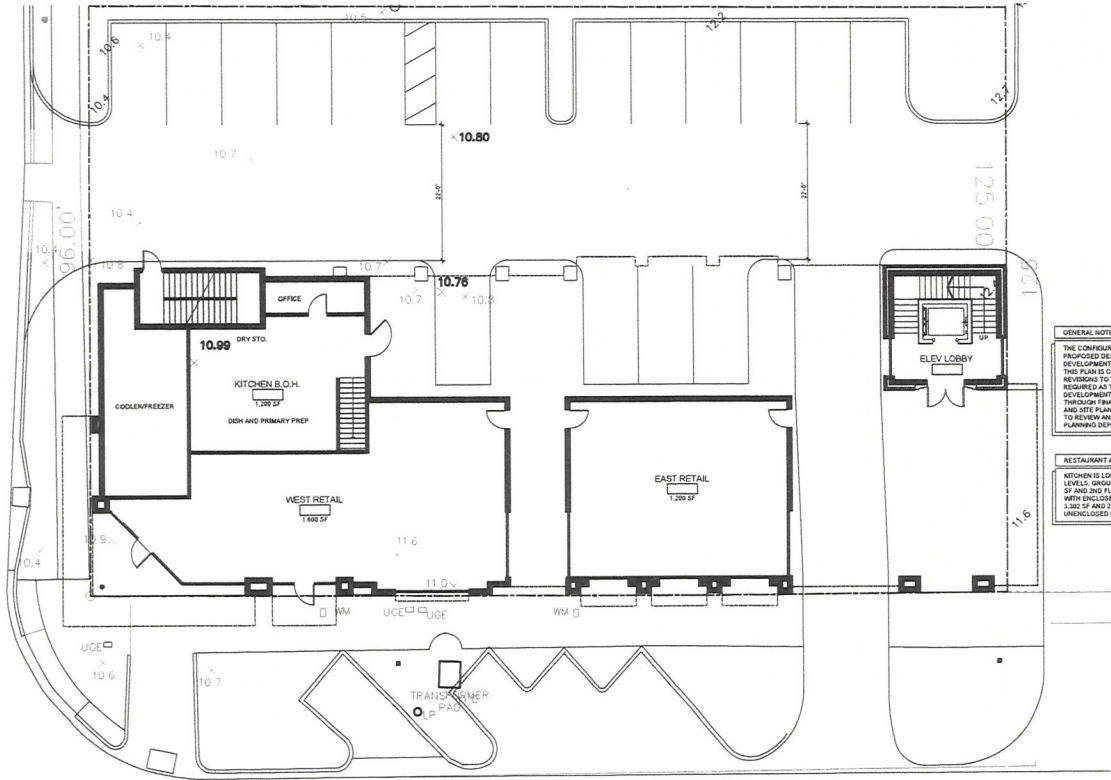
EXHIBIT B

DO NOT MEASURE DRAWINGS  
NOTIFY ARCHITECT OF ANY AND ALL DISCREPANCIES  
PRIOR TO CONSTRUCTION. SEE GENERAL NOTES



2 SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"



1 GROUND FLOOR PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTE  
THE CONFIGURATION AND PROPOSED DESIGN OF THE DEVELOPMENT AS SHOWN ON THIS PLAN IS CONCEPTUAL AND NOT TO BE USED FOR THE DEVELOPMENT PROCESS THROUGH FINAL ENGINEERING AND SITE PLAN REVIEW. SUBJECT TO REVIEW AND APPROVAL OF THE PLANNING DEPARTMENT.

RESTAURANT AREA NOTE  
KITCHEN IS LOCATED IN BOTH LEVELS. GROUND FLOOR AT 1,390 SF AND 2ND FLOOR AT 1,390 SF WITH ENCLOSED DINING AREA OF 1,390 SF AND 2,390 SF UNENCLOSED OUTDOOR SPACE.

CD+urban

MEP ENGINEER

STRUCTURAL

REVISION

| NO. | DESCRIPTION |
|-----|-------------|
|     |             |
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ARCHITECT'S SEAL

PROJECT NAME  
DESIGN DEVELOPMENT  
PROJECT NUMBER  
18-1-1

DATE: 01/09/24  
AS SHOWN  
DATE: 01/09/24  
HDS

MIXED USE  
JACKSONVILLE BEACH, FL  
JACKSONVILLE BEACH  
MIXED USE

GROUND FLOOR PLAN  
A1.1

LAND USE TABLE:

ACREAGE

|             |         |
|-------------|---------|
| Parcel 1 AC | 0.33 AC |
| Parcel 2 AC | 0.43 AC |
| TOTAL       | 0.76 AC |

BUILDING SQUARE FOOTAGE

|                       |               |
|-----------------------|---------------|
| Parcel 1 Building SF* | 13,500 SF +/- |
| Parcel 2 Building SF* | 4,300 SF +/-  |

\*Includes AC area MU, stairwell, along with covered and uncovered seating.

PARKING REQUIREMENTS

|                        |           |
|------------------------|-----------|
| Parcel 1 (1/500 SF-MU) | 27 STALLS |
| Parcel 2 (1/500 SF-MU) | 9 STALLS  |
| TOTAL                  | 36 STALLS |

PROVIDED PARKING

43 STALLS (2HC)

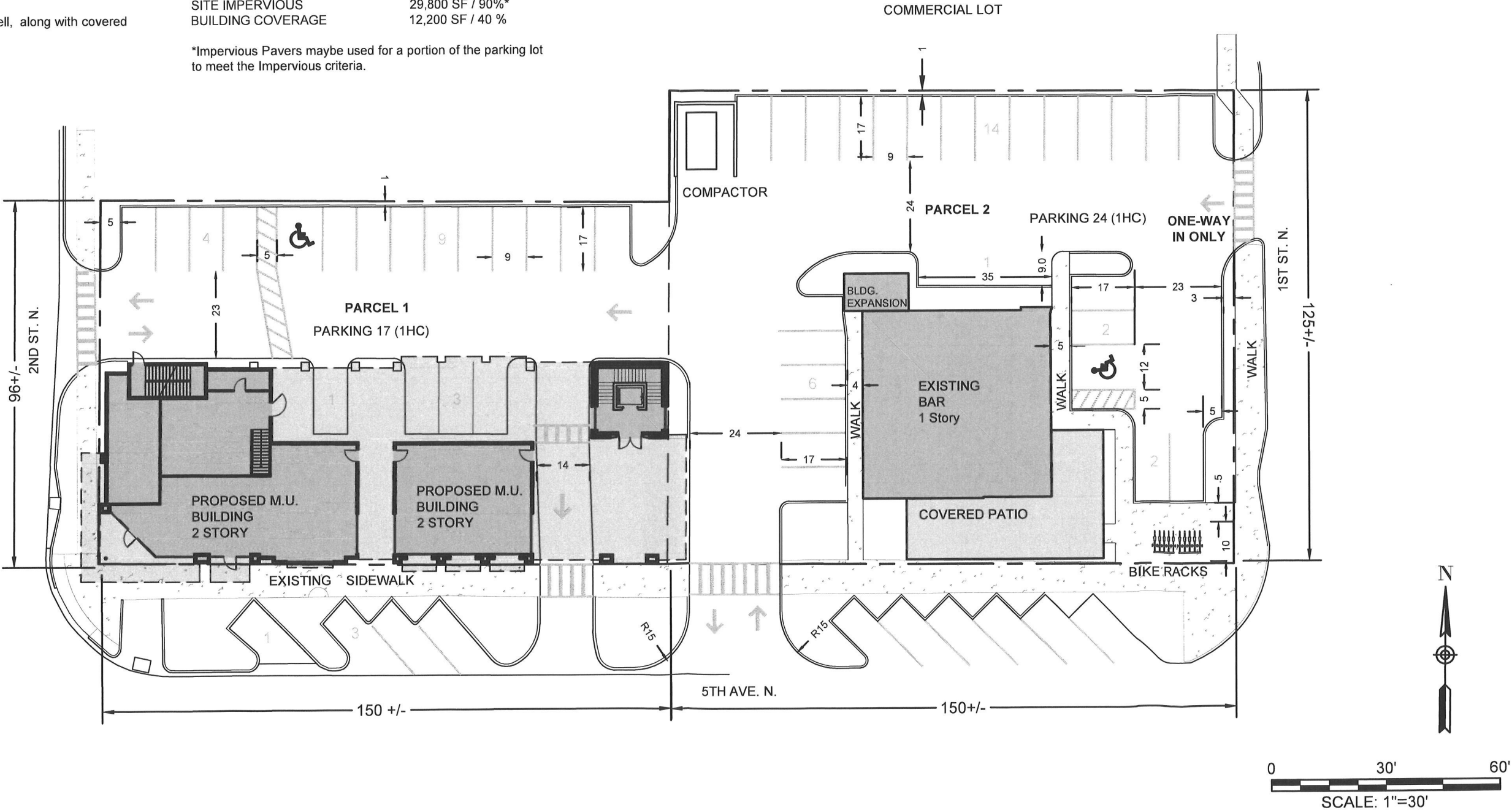
TOTAL LOT COVERAGE

|                   |                  |
|-------------------|------------------|
| SITE IMPERVIOUS   | 29,800 SF / 90%* |
| BUILDING COVERAGE | 12,200 SF / 40 % |

\*Impervious Pavers maybe used for a portion of the parking lot to meet the Impervious criteria.

- PROPOSED UNDER ROOF BUILDING AREA
- PROPOSED CONDITIONED BUILDING AREA
- SIDEWALK

PUD Note: This site plan shows the proposed PUD layout, including parking, landscaping and building layouts. The configuration of the development is conceptual and revisions to the Site Plan, including the internal circulation, location of landscaping and final building layouts, may be required to be changed as the proposed development proceeds through final engineering, subject to the review and approval of the Planning Department."



| CITY COUNCIL AGENDA ITEM |                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------|
| TO:                      | Michael J. Staffopoulos, City Manager                                                                       |
| FROM:                    | Heather Ireland, Planning and Development                                                                   |
| DATE:                    | 03/29/2024                                                                                                  |
| SUBJECT:                 | Ordinance No. 2024-8214 Transmittting the 2050 Comprehensive Plan to the State Agencies for Official Review |

### BACKGROUND

In 2022, the City began the process of updating the 2030 Comprehensive Plan and outdated Land Development Code to follow on the progress made in creating organizational Core Values, and a city-wide Vision, Mission, and Strategic Plan. The staff have been working with a project team from Kimley-Horn as a consultant to the project. The project started with the development of a project website ([www.cojbupdate.com](http://www.cojbupdate.com)) that was designed to provide documents and resources, post meeting information, and to collect input from stakeholders. In the fall/winter of 2022, staff and the consultant team hosted a series of five stakeholder workshops focused on collecting input from citizens, businesses, city board members, City Council, and staff. The workshops were well attended, and in addition to the information collected at the workshops, the consultant collected feedback from stakeholder submissions through the project website.

In 2023, the project team analyzed and organized all the information collected at the stakeholder workshops and began the process of developing recommendations for changes to the Comprehensive Plan and Land Development Code. A series of topic specific workshops were held with the City Council that focused on the parking standards, zoning standards, and supplemental standards sections of the Land Development Code. Updated future land use and zoning maps were completed and posted to the project website as well. A second round of stakeholder workshops was held in May and June 2023 to present a summary of the proposed changes to both the Comprehensive Plan and Land Development Code that were developed following the first round of workshops and the review of several documents and the updated data and analysis, and best practices on a variety of topics.

During the remainder of 2023, the project team completed the updated required data and analysis sections of each element of the Comprehensive Plan, and completed work to update all required and relevant maps and tables. Finally, the goals, objectives, and policies in the 2030 Comprehensive Plan were updated and edited into Visions, Intents, and Strategies to modernize the document and better align it with the City's Vision, Mission, and Strategic Plan.

In 2024, a final set of workshops were held with City board members and City Council members to review the draft 2050 Comprehensive Plan, answer questions, take feedback, and talk through outstanding issues. The draft document was also posted to the project website and made available for review. On April 8, 2024, City Council was briefed on the progress of the project and future hearing dates, and the status of the update to the Land Development Code.

A summary of changes/updates to the individual elements of the Comprehensive Plan is provided in the attached table. Document-wide changes to the Comprehensive Plan include the addition of a definitions section, updated maps and tables, State Statute compliance, removal of outdated





references and dates, and the transition from Goals, Objectives, and Policies to Visions, Intentions, and Strategies.

Staff and the consultant team continue to work on changes to the Land Development Code based on the updated Comprehensive Plan, workshops, community feedback, review of best practices from around the state, and Florida Statutory requirements. The next round of workshops will be scheduled to review the proposed updated Land Development Code sections that are undergoing major changes. Ideally, the 2050 Comprehensive Plan and updated Land Development Code will be adopted at the same time to ensure that consistency is maintained. The target date for final adoption of both is the end of 2024.

The 2050 Comprehensive Plan was reviewed and considered by the Planning Commission (acting as the City's Land Planning Agency) on Monday, April 22, 2024. The Planning Commission recommended that the City Council **approve** the Planning and Development Department to transmit the 2050 Comprehensive Plan to the State agencies for review. Upon receipt, the State has 30 days to review and provide comment.

#### FINANCIAL IMPACT

None.

#### REQUESTED ACTION

Approve/Disapprove Ordinance No. 2024-8214 on the first reading to transmit the 2050 Comprehensive Plan to the State Agencies for official review, and schedule a second reading for a future date to be determined

#### ATTACHMENTS

1. Ordinance No 2024-8214 2050 Comprehensive Plan Transmittal and Adoption
2. 2050 Comprehensive Plan - 4.23.2024
3. 2050 Comprehensive Plan Updates

Introduced by: \_\_\_\_\_  
1st Reading: \_\_\_\_\_  
2nd Reading: \_\_\_\_\_

**ORDINANCE NO. 2024-8214**

**AN ORDINANCE OF THE CITY OF JACKSONVILLE BEACH, FLORIDA, TRANSMITTING PROPOSED AMENDMENTS TO THE 2030 COMPREHENSIVE PLAN AND ALSO TRANSMITTING A NEW MAP SERIES AND DATA AND ANALYSIS TO THE STATE OF FLORIDA'S VARIOUS AGENCIES FOR REVIEW AND COMMENT; PROVIDING FOR ADOPTION OF SAID AMENDMENTS AND ADOPTING A 2050 COMPREHENSIVE PLAN WITH VISIONS, INTENTS, AND STRATEGIES UPON RECEIPT OF SAID COMMENTS AND COMPLETION OF THE STATE REVIEW PROCESS; PROVIDING DIRECTIONS TO THE PLANNING AND DEVELOPMENT DEPARTMENT; PROVIDING FOR PURPOSE AND INTENT; AND PROVIDING FOR REPEAL OF CONFLICTING ORDINANCES, SEVERABILITY, SCRIVENER'S ERRORS, AND AN EFFECTIVE DATE.**

**WHEREAS**, pursuant to Section 163.3167, Florida Statutes, the City of Jacksonville Beach ("City") is required to maintain a comprehensive plan to guide its future development and growth; and

**WHEREAS**, in October 1990, the City Council adopted a Comprehensive Plan for the City by Ordinance No. 7474; and

**WHEREAS**, the City of Jacksonville Beach has the authority to amend its Comprehensive Plan pursuant to Section 163.3184, Florida Statutes; and

**WHEREAS**, Section 163.3184, Florida Statutes, provides that a local government shall, following an advertised public hearing, transmit by affirmative vote of not less than a majority of the members of the governing body present at the hearing, proposed comprehensive plan amendments to the applicable reviewing agencies and local governments; and

**WHEREAS**, on April 22, 2024, the City's Planning Commission, acting as the Local Planning Agency, at an advertised public hearing, unanimously recommended transmittal of the proposed amendments in application PC# 06-24, to the Florida Department of Commerce; and

**WHEREAS**, on May 6, 2024, the Jacksonville Beach City Council voted to direct the Planning and Development Director to transmit the proposed 2050 Comprehensive Plan, via this ordinance, and authorized the transmittal of same for review by the Florida Department of Commerce and other State Agencies; and

**WHEREAS**, after receiving comments from the reviewing agencies, Section 163.3184(3)(c)1., Florida Statutes, requires a local government to hold a second public hearing on whether to adopt one or more comprehensive plan amendments; and

**WHEREAS**, the proposed amendments have been reviewed, the changes proposed therein are deemed to be appropriate, and the City has been instructed by the Florida Department of Commerce that it may proceed with the adoption of the 2050 Comprehensive Plan within the 180 days as required by Florida Statutes.

**NOW, THEREFORE, BE IT ORDAINED BY THE CITY OF JACKSONVILLE BEACH, FLORIDA:**

**SECTION 1. TRANSMITTAL AUTHORIZED.** Pursuant to Sections 163.3184 and 163.3191, Florida Statutes, the City Council hereby approves for transmittal, by the Planning and Development Director, to the Florida Commerce Department, the Northeast Florida Regional Council, the St. Johns River Water Management District, the Florida Department of Environmental Protection, the Florida Department of State, the Florida Department of Transportation, the City of Jacksonville, the City of Neptune Beach, the City of Atlantic Beach, and St. Johns County for their review and comment, the proposed 2050 Comprehensive Plan, consisting of changes to the text and maps of the City's Comprehensive Plan, dated January 2024, on file with the City's Planning and Development Department.

**SECTION 2. ADOPTION OF COMPREHENSIVE PLAN.** Having received and considered the agency comments and State report in accordance with Florida Statutes, and having revised, if necessary, the initial set of amendments as deemed appropriate and held publicly advertised hearings, the City Council hereby approves and adopts the 2050 Comprehensive Plan and revised map series and data and analysis, including without limitation, a revised Future Land Use Map, on file with the City's Planning and Development Department. The Comprehensive Plan, as amended therein, shall hereafter be known as the 2050 Comprehensive Plan.

**SECTION 3. PURPOSE AND INTENT.** The purpose and intent of this Ordinance is to carry out the adoption procedures set forth in the Community Planning Act, Sections 163.3161 through 163.3248, Florida Statutes, Chapter 166 Florida Statutes, as amended, and the City's Code of Ordinances for amendments of the City's Comprehensive Plan, in order to preserve and enhance the orderly growth of the City, encourage the most appropriate use of land, water, and resources consistent with the public interest, overcome present deficiencies, and effectively address future problems which may result from the use and development of land within the City of Jacksonville Beach.

**SECTION 4. CONFLICTING ORDINANCES.** That all ordinances or resolutions previously adopted by the City in conflict with this Ordinance, or parts thereof, are repealed to the extent inconsistent herewith.

**SECTION 5. SEVERABILITY.** If any section, subsection, clause, or provision of this Ordinance is deemed invalid or unconstitutional by a court of competent jurisdiction, such portion will become a separate provision and will not affect the remaining provisions of this Ordinance.

**SECTION 6. SCRIVENER'S ERRORS.** Typographical errors and other matters of a similar nature that do not affect the intent of this Ordinance, as determined by the City Clerk and City Attorney, may be corrected with the endorsement of the City Manager without the need for a public hearing or further action by the City Council.

**SECTION 7. EFFECTIVE DATE.** This amendment shall take effect on the forty-sixth day following its adoption, in accordance with the law.

**AUTHENTICATED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2024.**

\_\_\_\_\_  
Christine H. Hoffman, Mayor

\_\_\_\_\_  
Sheri Gosselin, City Clerk

Approved as to form and legal sufficiency:

\_\_\_\_\_  
David Migut, City Attorney

# **City of Jacksonville Beach**

2050 Comprehensive Plan

April 2024

# Table of Contents

- I. Introduction
- II. Definitions
- III. Future Land Use Element
- IV. Transportation Element
- V. Housing Element
- VI. Public Facilities Element
  - Wastewater Management Subelement
  - Solid Waste Subelement
  - Stormwater Management Subelement
  - Potable Water Subelement
  - Ground Water Aquifer Recharge Subelement
- VII. Conservation & Coastal Management Element
- VIII. Recreation & Open Space Element
- IX. Intergovernmental Coordination Element
- X. Capital Improvements Element
- XI. Public School Facilities Element
- XII. Property Rights Element
- XIII. Historic Preservation Element



# **I. Introduction**

## **Introduction**

### **Planning Timeframes**

The Jacksonville Beach 2050 Comprehensive Plan is an update and replacement of the City's former 2030 Comprehensive Plan. The planning timeframes for the 2050 Comprehensive Plan are six years for the short term (2024-2030), and 20 years for the long term (2030 -2050). The *2050 Comprehensive Plan -Data & Analysis* document was prepared in support of the adopted Visions Intents, and Strategies and Maps of the 2050 Comprehensive Plan, and the analyses contained therein are based on this planning horizon and utilized the most current data available at the time of that document's preparation in 2022 and 2023.

### **Population Projections**

Estimates and projections by Shimberg Center for Housing Studies, based on 2010 and 2020 U.S. Census data and population projections by the Bureau of Economic and Business Research, University of Florida ("BEBR") indicate the City of Jacksonville Beach to have a 2021 population of 24,075. The 2020 population estimates were 23,830 which indicate a 1.03% increase in population. The projections estimate a 2025 resident population in Jacksonville Beach of 25,070 residents. Compared to a 2021 population estimate of 24,075, this indicates a 4% increase in population. The population estimates show that the growth rate slows after 2025, however, by 2050 it is projected 27,242 people will reside in Jacksonville Beach. It should be noted that during the data collection years, a global pandemic, as a result of the COVID-19 virus occurred (during 2019-2021) which may skew the population and housing data in this report.

### **Plan Elements**

The 2050 Comprehensive Plan consists of adopted Visions, Intents, and Strategies, together with certain Maps, for the following elements:

- I. Future Land Use
- II. Transportation Element
- III. Housing Element
- IV. Public Facilities Element
  - a. Wastewater Management Subelement
  - b. Solid Waste Subelement
  - c. Stormwater Management Subelement
  - d. Potable Water Subelement
  - e. Ground Water Aquifer Recharge Subelement
- V. Conservation & Coastal Management Element
- VI. Recreation & Open Space Element
- VII. Intergovernmental Coordination Element
- VIII. Capital Improvements Element

- IX. Public School Facilities Element
- X. Property Rights Element
- XI. Historic Preservation Element

## **Maps**

The following Future Condition Maps are also adopted as part of the 2050 Comprehensive Plan:

1. Future Land Use
2. Transportation Concurrency Management Area (TCMA)
3. Functional Classifications of Roadways
4. Potable Water System
5. Conservation Land
6. Coastal High Hazard Area (CHHA)
7. Future Land Use Map with CHHA
8. Waterbodies
9. Florida Land Use Classification System (FLUCCS)
10. Soil & Topography
11. Recreation & Open Space
12. Recorded Historic Structures

## **II. Definitions**

# 2050 Comprehensive Plan

## Terms & Definitions

**Active Recreation** – An area that is specifically for physical activity which can be used actively such as an area with workout equipment (indoor or outdoor), dog park, looped sidewalk, jogging/biking path, playground, various sport courts and ball fields, and pools (indoor or outdoor).

**Accessory Dwelling Unit (ADU)** – A singular dwelling unit that is accessory to the principal dwelling unit on the property. ADUs are smaller in size than the principal dwelling unit and include a full working kitchen. Refer to the City's Land Development Code for more specific ADU criteria.

**Affordable Housing** – According to Florida State Statute 420.0004 housing where monthly rents or monthly mortgage payments including taxes, insurance, and utilities do not exceed 30 percent of that amount which represents the percentage of the median adjusted gross annual income for the households.

**Arterial Roadway** – Road which is used to move large volumes of traffic rapidly between population centers, around population centers, or from one section of the urban area to another.

**Bikeability** – The extent to which the actual and perceived environment is conducive and safe for bicycling.

**Coastal High Hazard Area (CHHA)** – The Coastal High Hazard Area (CHHA) for Jacksonville Beach shall consist of the area below the elevation of the Category 1 storm surge line as established by a Sea, Lake, and Overland Surges from Hurricanes (SLOSH) computerized storm surge model (Sec. 163.3178(2)(h), F.S.) as depicted in the 2050 CHHA Map.

**Collector Roadway** – A road designed primarily to connect local streets with arterials or to provide access from residential areas to major destination points such as shopping or employment centers and which may be expected to carry a significant volume of traffic.

**Community Park** – A larger park meant to serve a larger geographic area than the surrounding neighborhood. These parks are typically between 5-25 acres in size and provide a diverse range of recreation and leisure activities defined to meet a variety of community-based recreation needs.

**Community Redevelopment Area (CRA)** – A dependent special district in which any future increases in property values are set aside to support economic development projects within that district. The City has two (2) CRA districts (Downtown Redevelopment Area and South Beach Redevelopment Area), in which a five-member board appointed by City Council (Community Redevelopment Agency) is in charge of the redevelopment.

**Complete Streets** – Complete Streets shall serve the transportation needs of transportation system users of all ages and ability, including but not limited to, cyclists, motorists, transit riders, pedestrians, and freight handlers.

**Comprehensive Plan** – The comprehensive plan is the guiding document of the City, required per State Statutes, that establishes the visions, intents and strategies for the future economic, social, physical, environmental and fiscal development of the City that reflects community commitments to implement the plan and its elements.

**Conservation Protected** – All undeveloped estuarine wetland areas, any undeveloped area within a fifty-foot strip upland of the designated estuarine wetland area, the sandy portion of the beach, and any areas landward of the sandy beach designated by the Federal Emergency Management Agency as lying within a V or velocity coastal hazard zone.

**Conservation Restricted** – All designated palustrine or upland wetland areas and any areas designated by the Federal Emergency Management Agency as lying within an A or special flood hazard area.

**Existing Single Family** – A single-family home, in any zoning designation, that existed prior to the adoption of the 2050 Comprehensive Plan.

**Historically Significant Housing** – The structure must be at least 50 years old. must be associated with a historical event, a significant person, an example of notable architecture, or provide information important to understanding history and prehistory. The land development code will define this further if the City enacts an historic preservation/cultural resources ordinance.

**Intent** – An objective, what the City hopes to achieve.

**Land Development Code (LDC)** – Ordinances enacted by the City to regulate any aspect of development and redevelopment. The Comprehensive Plan guides LDC regulations.

**Level Of Service (LOS)** – An indicator of the extent or degree of service provided by, or proposed to be provided by a facility based on and relative to the operational characteristics of the facility. LOS shall indicate the capacity per unit of demand for road, potable water supply, sanitary sewer, solid waste collection, stormwater management, or recreation and open space facilities.

**Live Local Act** – Also known as SB 102, is a Florida Senate bill which makes various changes and additions to affordable housing related programs and policies at both the state and local level.

**Local Street** – A road used primarily for access to abutting properties within a subdivision.

**Missing Middle Housing** – Typically refers to a type of residential housing which contains multiple dwelling units in a condensed area such as rows of townhomes, duplexes, triplexes, fourplexes, and bungalow courts.

**Mixed Use** – A development or redevelopment project containing a mix of compatible uses intended to support diversity in housing, walkable communities, the need for less automobile travel and a more efficient use of land. Uses within a particular mixed-use project shall be consistent with the future land use designations set forth in

**Mobility** – The ability to freely move or be moved, applicable to all modes of transportation (pedestrian, bicycle, public transit, aviation, private vehicles, etc.). Typically, mobility is used in the context of encouraging alternative modes of transportation to private cars.

**Multimodal Transportation** – Refers to transportation that considers various modes (walking, cycling, public transit, etc.) and connections, accessibility, and infrastructure among modes.

**Neighborhood Park** – A smaller park that serves as a social and recreational focal point for a neighborhood. Neighborhood parks are generally 1 to 5 acres in size and accessible by foot or bicycle with a service radius of about 0.5 miles. Typically serves a population of up to 5,000 persons.



**Passive Recreation** – A form of recreation that is defined as a more relaxing activity, typically emphasizing enjoyment of natural resources and providing a reprieve from the built environment. Examples include picnic tables, park benches, sunbathing at the beach, open park space existing in its natural form, or visiting a local historical site.

**Redevelopment** – Any new construction on a site that has pre-existing use(s).

**Resilience, resilient, or resiliency planning**– The capacity of individuals, communities, businesses, and systems within a City to survive, adapt, and grow no matter the chronic stresses (climate change, affordable housing, food and water shortages, etc.) and acute shocks (natural hazards, coastal hazards, infrastructure failure, etc.) they experience. Resilience planning requires a City to look holistically at their capacities and their risks to prevent and reduce the impact of shocks and stresses on the City's people, economy, infrastructure, and natural environment.

**Smart Growth** – Overall approach of development, and conservation strategies, that help the City protect the health and natural environment while making the community more attractive, economically stronger, socially diverse, and resilient to climate change. Smart growth principles include, but are not limited to, promoting infill development, encouraging mixing land uses to promote walkability and bikeability, creating a diversity of housing stock, providing a variety of safe and reliable transportation options, preserving critical environmental areas, and fostering a strong sense of place.

**Strategy** – A policy detailing how the City is going to achieve the subject vision.

**Sustainability** – The ability to meet the social, economic, and environmental needs of the present generation without diminishing the ability for future generations to meet their social, economic, and environmental needs. Sustainability, sustainable planning, and sustainable principles require a holistic, systems-thinking approach that considers immediate and long-term impacts.

**Transportation Concurrency Exemption Area (TCEA)** --

**Urban Trail** – A multi-use trail, within and throughout the built urban environment, for pedestrians, joggers/runners, bicyclists, roller bladers, and skateboarders.

**Vision** – Broad-based goals of the City.

**Walkability** – The ability to safely walk to services and amenities within a reasonable distance, typically defined by pedestrian-oriented infrastructure (pedestrian-scale lighting, first floor commercial uses, activating street frontages, street trees, shade trees, etc.), wide and well-maintained sidewalks, and mixed-use development.

**Workforce Housing** – As defined by Florida Statutes.

### **III. Future Land Use Element**

DRAFT

## Future Land Use Element

### Vision FLU.1

Ensure that the character, density, intensity and location of all land uses provide a system for sustainable smart growth and redevelopment that enhances the quality of life and safety for all residents of the City of Jacksonville Beach.

#### Intent FLU 1.1

Future growth, development, and redevelopment will be managed through the preparation, adoption, implementation and enforcement of land development code (LDC) regulations in accordance with Chapter 163.3202, Florida Statutes.

**Strategy FLU 1.1.1** – The City will continue to cooperate with Florida state or regional agencies having regulatory or permitting authority over land development activity in Jacksonville Beach by requiring submittal of approvals from outside agencies prior to issuance of local development permits.

**Strategy FLU 1.1.2** – The City shall continue to review, revise as necessary, and enforce regulatory measures to promote and enhance the quality of life and visual appearance of the City such as sign controls, tree preservation, landscaping requirements, and nuisance laws.

#### Intent FLU 1.2

The City shall encourage and promote development and redevelopment that utilizes smart growth policies, resiliency planning, and sustainability principles to improve the character and built environment of the City.

**Strategy FLU 1.2.1** – Future multi-family residential development, including single-family attached development, shall provide active recreation for the residential use. Developments proposing three (3) to nine (9) units shall pay in lieu of providing the required active recreation space. Developments proposing ten (10) or more units shall either provide 150 square feet of active recreation per dwelling unit or pay in lieu of providing the required active recreation space. Payment in lieu of is to be determined by the Planning and Development Department and assessed annually.

**Strategy FLU 1.2.2** – Future single family residential subdivisions shall provide 250 square feet of active recreation per dwelling unit or pay in lieu of providing the required active recreation space. Payment in lieu of is to be determined by the Planning and Development Department and assessed annually.

**Strategy FLU 1.2.3** – The City shall promote pedestrian amenities and upgrades in association with new development/redevelopment and gateway corridors (Beach Boulevard, A1A, and Penman), including, but not limited to, the provision of sidewalk and bike path connections, pedestrian-scale lighting, benches, bus shelters, wayfinding, and bicycle parking. The City of Jacksonville Beach, in cooperation with the JTA, will determine upgrades and future new locations of public transit shelters and design suitable to the City’s design context, with a goal of upgrading three existing transit stops per year.

**Strategy FLU 1.2.4** – New development and redevelopment located adjacent to an existing or planned urban trail shall acknowledge and incorporate the urban trail into their site design through accentuating the trail, providing additional bike parking, and/or enhancing the visual appearance of the development that fronts along the trail.

**Strategy FLU 1.2.5** - All future land development shall be carried out in a manner to promote mobility and the minimum level of service standards as set forth in the Transportation Element.

**Strategy FLU 1.2.6** – Where permitted by the future land use designation, the City shall encourage development of vertically mixed-use buildings that provide office, commercial, and retail uses are on the ground floor so to activate the pedestrian realm and foster a walkable built environment, and residential dwelling units on the second floor and above.

**Strategy FLU 1.2.7** – Where there is not an urban trail or existing sidewalk, the City shall require new development or redevelopment projects that front along City or state right-of-way to include a minimum of five-foot wide sidewalks within the public right-of-way, subject to approval by the City of Jacksonville Beach Planning and Development Department.

**Strategy FLU 1.2.8** – There shall be no allowable increase in density or intensity of land located in vulnerable areas, as defined in the Coastal High Hazard Area (CHHA) Map.

**Strategy FLU 1.2.9** – The City shall prohibit the siting of new adult congregate living facilities, community residential homes, group homes, homes for the aged, hospitals, mobile home parks and nursing homes, as defined in the Land Development Regulations, within the Coastal High Hazard Area (CHHA). Such facilities already existing within the CHHA shall be discouraged from expanding.

**Strategy FLU 1.2.10** – Recognizing majority of the City is impacted by the CHHA, the City shall ensure that future development and redevelopment projects are built in accordance with the most recent hazard mitigation techniques and building codes, as defined in the Land Development Regulations.

**Strategy FLU 1.2.11** - Future land development shall be carried out in a manner which will conserve, manage, and protect natural resources; and maintain and enhance the natural balance of ecological functions in the coastal areas of Jacksonville Beach as set forth in the Coastal Management Element.

**Strategy FLU 1.2.12** – Future land development shall be carried out in a manner which will protect air and water quality, conserve the water supply, protect the natural functions of floodplains, and native vegetation communities and wildlife habitats in accordance with the visions, intents, and strategies set forth in the Conservation Element.

**Strategy FLU 1.2.13** – It shall be the policy of the City that no new development will be permitted in areas designated as Conservation-Protected or located within 50 feet of an area so designated. These areas will include the estuarine wetlands and beach seaward of the bulkhead. This is not applicable to redevelopment of existing building footprints.

**Strategy FLU 1.2.14** – Encourage the maintenance, restoration and adaptive reuse of existing developed areas, including buildings, infrastructure and other assets, to reduce energy use and Vehicle Miles Traveled (VMTs).

**Strategy FLU 1.2.15** – The potential for reducing Vehicle Miles Traveled (VMTs) and GHG emissions should be considered in all location and investment decisions for new public facilities.

**Strategy FLU 1.2.16** – The City shall require all new development and redevelopment to comply with the Americans with Disabilities Act (ADA).

**Strategy FLU 1.2.17** – The Planning and Development Department shall monitor approaches, innovations and lessons learned regarding planning issues in other communities, including but not limited to resiliency planning, transportation, and affordable housing, and be available to discuss these findings as local strategies are considered in the community and the City of Jacksonville Beach.

### **Intent FLU 1.3**

The City shall encourage and promote infill development and redevelopment.

**Strategy FLU 1.3.1** – The City shall promote redevelopment of underutilized or deteriorated properties.

**Strategy FLU 1.3.2** – The City shall encourage development and redevelopment at an appropriate scale, form, and density/intensity to support more economical and efficient public bus transit service.

**Strategy FLU 1.3.3** – The intensity of development in areas where in-fill development for commercial, office, service, or industrial uses is proposed shall be similar in scale to that of the directly adjacent properties, or as specified in the adopted Community Redevelopment Plans.

**Strategy FLU 1.3.4**—It is the intent of the City that the land use proposals in the adopted Downtown and South Beach Community Redevelopment plans currently being implemented are made a part of this Future Land Use Element by reference and development within these designated areas shall be carried out under the Planned Unit Development or Redevelopment District provisions in the City's land development regulations.

**Strategy FLU 1.3.5** – Future redevelopment activities shall be consistent with sound planning principles, such as the desired community character and the visions, intents, and strategies relating to the development of the land embodied in this element and the comprehensive plan.

**Strategy FLU 1.3.6**—Future redevelopment activities shall limit negative impacts on the natural environment, including topographic and soil conditions, conservation-protected lands such as estuarine wetlands and the beach, and conservation-restricted lands such as palustrine wetlands and flood prone areas including the coastal zones.

**Strategy FLU 1.3.7** – The City shall support and encourage redevelopment of the core downtown area, also known as the Central Business District (CBD) zoning district boundaries, in accordance with its Downtown Vision Plan and detailed site design regulations. These design regulations shall be incorporated into the *Central Business District: CBD Zoning District* regulations of the Jacksonville Beach Land Development Code, and shall address such aspects as building design and frontage requirements, landscaping, required parking, and location of parking facilities and driveways.

#### **Intent FLU 1.4**

The City shall identify and incentivize strategies for preserving residential neighborhood character.

**Strategy FLU 1.4.1** – On lots with a single-family residential home within a multi-family zoning designation, the City shall update the LDC to allow accessory dwelling units (ADUs). ADUs shall be subject to conditions specified in the LDC.



**Strategy FLU 1.4.2** – The City shall work with private developers to provide residents with a diversity of housing stock that meets the needs of all residents and provides neighborhood character, a sense of place, and a lively community.

**Strategy FLU 1.4.3** – The City will encourage retention of existing building stock in established neighborhoods.

#### **Intent FLU 1.5**

As expanded upon in the Housing Element, the City shall encourage affordable housing options in all residential land uses and, where appropriate, commercial and industrial land uses.

**Strategy FLU 1.5.1** – The City Council may approve the development of housing that is affordable, as defined and in accordance with State Statute 102, Chapter 420.0004, Florida Statutes, as amended, on any parcel in a residential, commercial, or industrial land use and zoning category.

#### **Intent FLU 1.6**

The City of Jacksonville Beach will consult and coordinate with neighboring jurisdictions concerning major land use decisions where potential impacts warrant, in accordance with the vision, intent, and strategies set forth in the Intergovernmental Coordination Element.

#### **Intent FLU 1.7**

It shall be the policy of the City that Conservation-Restricted lands (floodplains when located upland from the estuarine wetlands and palustrine wetlands) may be developed provided the development meets Strategy FLU 1.2.12 and Strategy FLU 1.7.1

**Strategy FLU 1.7.1** – Development of conservation-restricted lands adjacent to conservation-protected wetlands shall provide a 50 foot buffer to reduce the extent of development impacting those areas.

#### **Intent FLU 1.8**

Future development and redevelopment shall be in an efficient manner that supports the use designation as set forth on the Future Land Use Map in this Plan. The development, redevelopment, and land use patterns shall

1. Enforce the residential densities and limitations upon the type and intensity of uses,
2. Respect the predominantly residential character and compact, beachfront scale of the City,
3. Address non-conforming uses,

4. Protect coastal and environmental resources, and
5. Encourage healthy and sustainable living conditions.

### **Land Use Categories:**

The City of Jacksonville Beach requires a mix of land uses to ensure a viable community. The following land use categories are generally permissible within the City.

Siting of public schools and churches within Residential, Commercial Limited, Community Commercial, and Commercial Professional Office land use categories will not require a comprehensive plan amendment. All existing and/or historic single-family residential homes are allowable in all land uses and shall not be classified as a non-conforming use.

#### **Recreation/Open Space (ROS)**

The Recreation and Open Space land use shall include open space, public and private parks, passive and active recreation areas, and supporting facilities. Permitted uses shall include government and public safety uses, public passive and active recreation activities, and private passive and active recreation activities.

#### **Conservation (CON)**

The Conservation land use designation shall include those lands so designated on the Future Land Use Map (FLUM). Generally these lands include areas generally composed of open land, water, marsh, wetlands, and environmentally sensitive areas. Most conservation lands are publicly owned, however they may also be privately owned. The intent of the Conservation land use is for the natural and open character of these areas to be retained so that adverse impacts are prohibited. Permitted uses are limited to the uses allowed by the LDC.

Further descriptions of the Conservation land use category can be found in the Conservation & Coastal Management Element including provisions (allowances) as may be regulated and permitted by State and Federal agencies.

If it is impractical to designate an area containing conservation resources as Conservation due to size, location, or other factors, the City shall have the option of obtaining a conservation easement from the property owner(s) to protect the area. The City shall support the acquisition of natural areas or open space through the use of Transfer of Development Rights (TDR) or through publicly funded programs, including the acquisition and development of facilities that promote and educate the public about the economic, cultural and historic heritage of the City. The applicant for a development shall bear the burden of proof in determining that development shall not adversely impact conservation resources.

### **Conservation/Beach (CB)**

The Conservation/Beach land use designation shall include those beach lands so designated on the Future Land Use Map (FLUM). Generally, these lands include areas generally composed of beach, dunes, and the easterly boundary of the City. The beach lands are publicly owned. The intent of the Conservation/Beach land use is for the natural and open character of the beach to be retained so that adverse impacts are prohibited. Passive recreation is an allowable use in this land use designation.

### **Low Density Residential (LDR)**

This land use category is intended for single-family residential development with a maximum density of six (6) units per acre.

### **Medium Density Residential (MDR)**

This land use is intended for medium dense urban areas within the City. This category is limited to a density ranging between seven (7) to twenty (20) units per acre. In addition to residential uses, this land use category may also include limited commercial uses as a conditional use, defined by the conditional use process in the LDC.

### **High Density Residential (HDR)**

This land use is intended for very dense urban areas within the City. This category is limited to a density ranging between twenty-one (21) to forty (40) units per acre. In addition to encouraging the preservation of existing and historic single family residential uses as provided for in Intent FLU 1.4, this land use category shall encourage vertically mixed-use buildings where redevelopment is appropriate, by allowing commercial uses, as permitted in the Commercial Professional Office (CPO) zoning designation, on the ground floor of predominately residential buildings to encourage the implementation of Strategy TE1.2.12 and Intent TE 1.6.

### **Commercial Professional Office (CPO)**

This land use category is intended to apply to commercial areas targeted for limited commercial and office development adjacent to arterial roadways. Business and professional offices, mixed-use developments, health offices and clinics, institutional and multi-family housing development, up to twenty (20) units per acre, are all allowed within this land use category. This category permits supporting neighborhood commercial retail and services such as restaurants, and personal services.

### **Commercial Limited (CL)**

This land use category is intended to apply to commercial areas that can exist within close proximity to residential areas without creating an adverse effect on the development and character of such areas. Locational standards established in the Land Development Code will ensure these uses do not disrupt residential neighborhoods, but rather, serve the daily needs of contiguous neighborhoods. These uses may include convenience goods, personal services, and other low intensity retail and office-professional commercial uses. New Commercial Limited uses shall not be allowed as secondary uses in existing single-family residential neighborhoods when such uses would constitute an intrusion.

Multi-family residential development may also be allowed within the Commercial limited land use category provided that it be designed and built to encourage a range of mobility options to residents and visitors. For CL designated parcels on 3rd Street within one block of designated mass transit routes, densities of up to 40 units per acre are permissible, so long as the development meets the intent and requirements of Florida Senate Bill 102 (The "Live Local Act"). In all other CL Future Land Use areas, the maximum allowable residential density shall be 20 units per acre.

Commercial Limited sites should abut a roadway classified as a collector or higher facility on the adopted highway functional classification system map, which is part of the 2050 Comprehensive Plan. Sites with two or more property boundaries on transportation rights-of-way will be considered preferred locations for neighborhood serving uses.

### **Community Commercial (CC)**

This land use category is intended to apply to areas appropriate for general commercial use that will meet the retail and service needs of Jacksonville Beach residents. These areas should be immediately accessible to the city's major road network.

This type of development offers a wide range of goods and services including general merchandise, apparel, food and related items. Neighborhood commercial scale uses and projects may be part of a commercial node and are shopping centers developed with a variety of small department stores as its primary anchor. Uses include offices, retail and wholesale of motor vehicle supplies and parts, car rentals, leasing, carwashes, retail trade, hotels, motels, boarding houses, fast food establishments, etc. entertainment and other similar types of commercial development. In addition, warehousing, light manufacturing and fabricating could be permitted provided it is part of a retail sales or service establishment, and the use must be located on a road classified as a collector or higher on the Functional Highway Classification Map. The manufacturing and fabrication uses may be developed as supporting freestanding uses

within the area Community Commercial node, or as separate general commercial projects.

Multi-family development may also be allowed within the Community Commercial land use category. LDC regulations shall include standards for minimum setbacks and buffer zones between different types of land uses allowed in this category, as well as locational criteria for such uses. For CC designated parcels on Beach Boulevard within one block of designated mass transit routes, densities of up to 40 units per acre are permissible, so long as the development meets the intent and requirements of Florida Senate Bill 102 (The “Live Local Act”).

In all other CC designated Future Land Use areas, the maximum allowable residential density shall be 20 units per acre.

### **Commercial Services (CS)**

The Commercial Service land use category is intended to apply to areas appropriate for general commercial use, retail uses, wholesale trade and storage, and limited light industrial uses. Allowable uses include ornamental nurseries, veterinary services and kennels, yard services, light manufacturing, auto and boat repairs, communication and utility services. Also allowable are business and professional offices, personal services and laboratories. Hotels, motels and restaurants are permitted uses as supportive commercial. This land use category is being phased out of the City, therefore there shall not be any new land use amendments to this designation.

### **Central Business District (CBD)**

The Central Business District (CBD) land use category is intended to provide a central core for the City, with a diversity of uses, urban context, and to promote flexibility in design and quality in development while preserving public access to the beach recreational area. It is coterminous with the jurisdictional area of those lands within the Downtown Redevelopment Area. The CBD category allows medium to high density residential, commercial, industrial, recreational, and entertainment uses, as well as transportation and communication facilities. The exact location, distribution, and density/intensity of various types of land use in the Redevelopment Area will be guided by the site development plans approved as part of the Downtown Redevelopment Plan.

### **Marina Mixed-Use (MMU)**

The Marina Mixed-Use land use category is intended to provide for a mix of water-dependent and water related uses that support the one public access marina that serves the residents of Duval County and is accessible in Jacksonville Beach.

The Marina Mixed-Use (MMU) land use category is created to provide an appropriate location for both recreational and commercial boat storage, water access, and water related commercial uses located on the Intracoastal Waterway. Uses allowed in the Marina Mixed-Use land use category include dry boat slips, wet boat slips, boat ramps, restaurants, offices, personal and business services, light manufacturing, water transportation retail sales, boat repair, storage/warehousing, ancillary marina uses, public and private parks, hotels, and townhouses and multiple-family residential and related accessory uses. This category permits supporting marina based commercial retail and services.

Multi-family development may also be allowed within the Marina Mixed-Use land use category. Land development regulations shall include standards for minimum setbacks and buffer zones between different types of land uses allowed in this category, as well as locational criteria for such uses. For MMU designated parcels, residential densities of up to 15 units per acres are permissible.

Expanded and new water-dependent and water related mixed uses should be located in areas with the least impact on the natural habitat and wildlife and shall comply with Strategy FLU 1.2.13.

Existing marinas should preserve a public access walkway and public access boat launch and public parking.

### **South Beach District (SBD) (Mixed-Use)**

The City shall continue its support and participation in the development of the Southend District, a 372-acre mixed use area located in the southern portion of the City. This district is controlled by the Jacksonville Beach Southend Redevelopment Area Downtown Development of Regional Impact (DRI). The range and intensity of permitted land uses within this Future Land Use category are as follows:

**Table FLU 1: South Beach District Future Land Use Categories.**

| <b>Land Use</b>              | <b>Acreage Range</b> | <b>Intensity</b>         |
|------------------------------|----------------------|--------------------------|
| Residential, Single Family   | 190-210 acres        | 0-6 dwelling units/acre  |
| Residential, Multiple Family | 15-19 acres          | 7-20 dwelling units/acre |
| Commercial                   | 80-87 acres          | .35 FAR                  |
| Office                       | N/A                  | .35 FAR                  |
| Lodging                      | 0-3 acres            | .35 FAR                  |



## **Industrial (IND)**

Industrial uses are generally the most likely to produce adverse physical and environmental impacts on adjacent residential areas such as noise, land, air and water pollution and transportation conflicts. For this reason, industrial land uses should be buffered by other less intense transitional land uses, such as office, warehouse or open space, etc., to protect residential and other sensitive land uses; i.e., schools, health care facilities, etc.

These uses shall be located with convenient access to the transportation network which includes major highways. Site access to roads classified as arterial or higher on the Highway Functional Classification Map is preferred.

The following uses are typical in the Industrial Land Use designation: Light industrial uses, warehousing, essential services, general public services, manufacturing, outdoor storage, and similar uses. Heavy metal fabrication, batch plants, chemical or petroleum manufacturing or refining, rubber or plastics manufacturing, or other use generating potentially harmful environmental or nuisance impacts shall be prohibited.

## **Public/Institutional (INS)**

The Public/Institutional land use category includes schools, churches, general government buildings; clubs, lodges and fraternal organizational buildings; cemeteries, and health and safety buildings and uses. Nursing homes, group care homes, homes for the aged or orphans and other uses normally associated therewith are also permitted within the land use category. All types of public facilities; i.e., institutional, communication, utilities, and transportation are combined into one category on the Future Land Use Map. Only major existing plants and facilities are depicted.

Siting of public schools and churches within Residential, Commercial Limited, Community Commercial, and Commercial Professional Office land use categories will not require a plan amendment.

Siting of other public facilities that are allowed in commercial, industrial and residential categories as supporting uses will not require a plan amendment. Some major uses, however, because of the scale and potential community impacts, may only be sited in this plan category, subject to the provisions of this and other elements of the 2050 Comprehensive Plan.

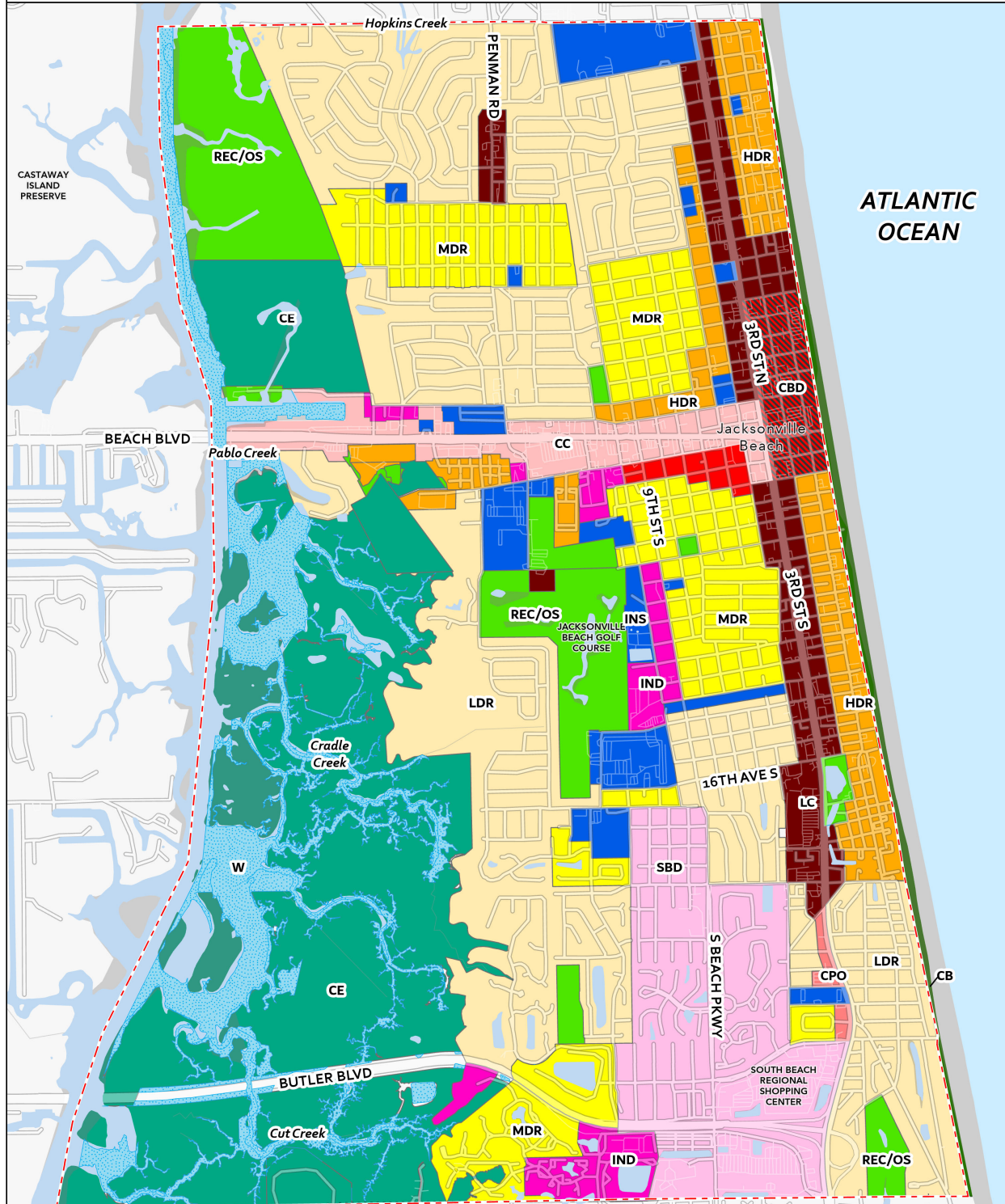
**Table FLU 2:** Residential allowable density of each land use designation.

| <b>Future Land Use Designation</b>   | <b>Allowable Density<br/>(dwelling unit(s)/acre)</b> |
|--------------------------------------|------------------------------------------------------|
| Low Density Residential (LDR)        | Maximum 6 du/ac                                      |
| Medium Density Residential (MDR)     | 7 - 20 du/ac                                         |
| High Density Residential (HDR)       | 21 – 40 du/ac                                        |
| Marina Mixed Use                     | Maximum 15 du/ac                                     |
| South Beach District (Mixed Use)     | Single-Family: 0-6 du/ac<br>Multi-Family: 7-10 du/ac |
| Commercial Professional Office (CPO) | 20 du/acre*                                          |
| Commercial Limited (CL)              | 20 du/acre*                                          |
| Community Commercial (CC)            | 20 du/acre*                                          |
| Central Business District (CBD)      | 7-40 du/ac*                                          |

\*Per the July 1, 2023 Senate Bill 102, commonly referred to as the Live Local Act, this density is subject to increase, provided the provisions within the Live Local Act are met. Additional details on potential implications of the Live Local Act can be found in the Housing Element.

# CITY OF JACKSONVILLE BEACH

## FUTURE LAND USE



**Legend**

  City Boundary

**Future Land Use**

Conservation & Open Space

- Conservation / Beach (CB)
- Conservation / Estuarine (CON)
- Recreation / Open Space (ROS)
- Water (W)

Residential

- Low Density Residential (LDR)
- Medium Density Residential (MDR)
- High Density Residential (HDR)

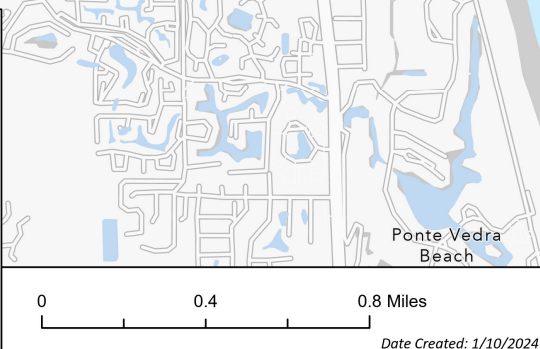
Commercial

- Community Commercial (CC)
- Commercial Professional Office (CPO)
- Commercial Service (CS)
- Commercial Business District (CBD)
- Limited Commercial (LC)

Other

- Industrial (IND)
- Public/Institutional (INS)
- South Beach District (SBD)

Data Source: City of Jacksonville Beach



## **IV. Transportation Element**

## Transportation Element

### Vision TE 1

Provide a safe, efficient, and convenient transportation network that prioritizes non-motorized forms of mobility for all residents and visitors and is mindful to the environmental amenities within the City.

#### Intent TE 1.1

Maintain, to the extent possible, level of service (LOS) target on all roadways within the City of Jacksonville Beach.

**Strategy TE 1.1.1** – Recognizing that the City is located within a Transportation Concurrency Exemption Area (TCEA), the City shall recognize the Level of Service target standards for City, FDOT, and City of Jacksonville roadways. The City shall maintain minimum peak hour levels of service, to the extent possible, recognizing the overall mobility goals of the City, as follows:

| Authority                  | Road Type                             | Minimum Level of Service Target |
|----------------------------|---------------------------------------|---------------------------------|
| City of Jacksonville Beach | Minor Arterial, Collector, and Local  | D                               |
| City of Jacksonville Beach | Constrained                           | Maintain                        |
| FDOT                       | Freeway Through Lanes                 | D                               |
| FDOT                       | Freeway General Use Lanes (Collector) | E                               |
| FDOT                       | Principal Arterial                    | D                               |
| FDOT                       | Constrained                           | Maintain                        |
| City of Jacksonville       | Minor Arterial and Collector          | E                               |
| City of Jacksonville       | Constrained                           | Maintain                        |

In the table above, “maintain” is defined as continuing operating conditions at a level such that significant degradation does not occur based on conditions existing at the time of comprehensive plan adoption. Significant degradation means an increase in average annual daily traffic volume of 10 percent above the maximum service volume. “Constrained” roadways that meet or exceed the level of service standards that would be applicable based on their road type, “maintain” does not apply until the roadway is operating below the applicable minimum level of service standard.

**Strategy TE 1.1.2** – The City shall enforce the LOS provisions adopted in the TCEA, as applicable.

## **Intent TE 1.2**

Manage growth in an environmentally sound and efficient manner through the joint consideration of land use, redevelopment, and transportation decisions that prioritize and incentivize multimodal transportation.

**Strategy TE 1.2.1** – The City shall implement the City of Jacksonville Beach Urban Trails Master Plan as amended.

**Strategy TE 1.2.2** – The City shall establish a fund (“Urban Trails Fund”) that is exclusively used to build trail segments identified in the Urban Trails Master Plan.

**Strategy TE 1.2.3** - New development or redevelopment, excluding individual single-family homes owned by a person or person(s), adjacent to planned trail segments shall provide the planned trail segment as noted in the City’s Urban Trails Master Plan. If providing the segment is not feasible, the City shall require a payment in lieu of, into the Urban Trails Master Plan fund, to further the goals of the City’s Urban Trails Master Plan.

**Strategy TE 1.2.4** – The City shall encourage enhanced landscaping and hardscaping fronting a Primary Trail. Said enhancements may include bicycle parking.

**Strategy TE 1.2.5** – The City shall pursue establishing city-wide bicycle parking requirements for multifamily, commercial, and mixed-use development projects, with enhanced requirements along Primary Trails.

**Strategy TE 1.2.6** – The City of Jacksonville Beach Urban Trails Master Plan and the official Urban Trails Master Plan map are hereby adopted by reference. The City shall review the official Urban Trails Master Plan map every two (2) years, ensuring the map stays accurate, active, and relevant to the City.

**Strategy TE 1.2.7** – The City shall review their mobility fee calculation with consideration of incorporating multimodal transportation infrastructure impacts and needs.

**Strategy TE 1.2.8** – The City shall prioritize and encourage mobility (biking, walking, public transportation) within and throughout the City.

**Strategy TE 1.2.9** – The City shall, through the Land Development Code (LDC), incentivize mobility infrastructure, including, but not limited to, bicycle parking, urban trail paths, transit service, bicycle lanes, and sidewalks.



**Strategy TE 1.2.10** – The City shall integrate multimodal infrastructure improvements and/or urban trails with scheduled or identified road, intersection, and/or right-of-way improvements.

**Strategy TE 1.2.11** – The City shall identify and implement land use redevelopment incentives that promote the use of bicycles, walking, and transit.

**Strategy TE 1.2.12** – The City shall support and fund mobility improvements that encourage trip reduction and the use of non-vehicular modes of transportation.

**Strategy TE 1.2.13** – The City shall establish and implement complete streets to simultaneously accommodate users (pedestrians, bicyclists, transit riders, and motorists) of all ages and abilities, and improve public health and safety, active mobility, and environmental quality. Complete streets are understood to include, but are not limited to, buffered bike lanes, multimodal trails, good sidewalk design, lighting, median islands/refuges, crosswalks, and bus shelters.

### **Intent TE 1.3**

The City shall coordinate with other agencies, local governments, and state agencies in their efforts to implement planning and programming activities for transportation facilities and alternative transportation modes.

**Strategy TE 1.3.1** – The City shall continue to work with the City of Jacksonville on the maintenance of local roads and any necessary traffic engineering improvements.

**Strategy TE 1.3.2** – The City shall work with The City of Jacksonville and FDOT to develop and implement a system for the deployment and operation of Intelligent Transportation Systems (ITS) detection, monitoring, and driver notification hardware, and the establishment of a Beaches Traffic Management Center, as the first steps toward the implementation of a Beaches Intelligent Transportation System for congestion management, incident management, and emergency evacuations.

**Strategy TE 1.3.3** – The City shall maintain an active role on the policy board of the North Florida Transportation Planning Organization (NFTPO) and strive to assure that a fair share of NFJTPO funds are expended in the beaches area.

### **Intent TE 1.4**

The City shall provide for adequate future right-of-way requirements by maintaining current minimum standards.

**Strategy TE 1.4.1** – The City shall continue to enforce established minimum right-of-way standards for private and public roadways. For new roadway facilities the established right of way requirements that are to be enforced are as follows:

- a) Arterial roadways – 150 foot right of way
- b) Collector roadways – 100 foot right of way
- c) Local roadways with surface drainage – 60 foot right of way
- d) Local roadways with subsurface drainage – 50 foot right of way

**Strategy TE 1.4.2** – No existing rights-of-way for roads on the State Highway System shall be abandoned, vacated, or otherwise conveyed from public ownership without the approval of the Florida Department of Transportation (FDOT).

**Strategy TE 1.4.3** – The City shall protect existing and proposed rights of way from development via strict enforcement of the minimum building and parking area setback regulations of the LDC.

#### **Intent TE 1.5**

Provide for safe and convenient transportation and parking.

**Strategy TE 1.5.1** – The City shall promote parking strategies that support the overall City vision and promote mobility.

**Strategy TE 1.5.2** – The City shall require that all new streets be constructed and paved to accessible standards prior to their dedication to the City.

**Strategy TE 1.5.3** – Except where warranted at mid-block locations for pedestrian safety, the City, in conjunction with the City of Jacksonville and FDOT, shall require that traffic signals be erected only at the intersection of two arterial streets, the intersection of an arterial street and a collector street, or the intersection of two collector streets.

**Strategy TE 1.5.4** – To modify peak hour travel demand and reduce the number of vehicle miles traveled per capita within the City, the City shall encourage and promote multimodal transportation and public transportation.

**Strategy TE 1.5.5** – The City shall maintain provisions for handicapped access in its site plan review procedures.

**Strategy TE 1.5.6** – ADA standard parking for handicap persons shall be required in conjunction with new development or redevelopment, requiring on-site parking.

**Strategy TE 1.5.7** – The City shall ensure, through LDC regulations, public works, site plan review, etc., that sidewalks are constructed or reconstructed in conformance with ADA design standards that ensure pedestrian mobility for all persons.

**Strategy TE 1.5.8** – In cooperation with Jacksonville Transit Authority (JTA), the City shall ensure that the transit facilities, vehicles, and services available within the City are in conformance with ADA accessibility standards.

#### **Intent TE 1.6**

The City shall sustain and coordinate its transportation system in a comprehensive manner which includes consideration of future development as portrayed on the Future Land Use Map, population growth, housing and employment patterns, population densities, and land uses.

**Strategy TE 1.6.1** – All future land development shall be carried out in a manner to maintain the minimum LOS for the various roadways as set forth in this element. Through enforcement of its LDC, the City shall require development applications to assess the operating condition of road facilities impacted by the proposed development.

**Strategy TE 1.6.2** – The City may require new development to provide operational improvements to the City's transportation system to mitigate their impacts on the system, to ensure smooth traffic flow, and to aid in the elimination of hazards. Improvements may include, but are not limited to, adding turn lanes, deceleration lanes, signing, signals, pavement marking, sidewalk expansion, and urban trails.

#### **Intent TE 1.7**

Support the JTA in their provision of efficient public transit within Jacksonville Beach, and to and from adjacent communities in Duval County, including the accommodation of the special needs of the transportation disadvantaged.

**Strategy TE 1.7.1** – When appropriate, the City shall assist JTA in the establishment of appropriate minimum LOS standards for routes serving the city.

**Strategy TE 1.7.2** – The City shall assist JTA in the planning and implementing of an employer sponsored jobs access transit service linking existing JTA transit routes to employment centers in Jacksonville Beach and Ponte Vedra.

**Strategy TE 1.7.3** – The City shall assist JTA, or a similar entity, in the continuation and increased efficiency of the "Beach Buggy" (a community shuttle) or a similar service.

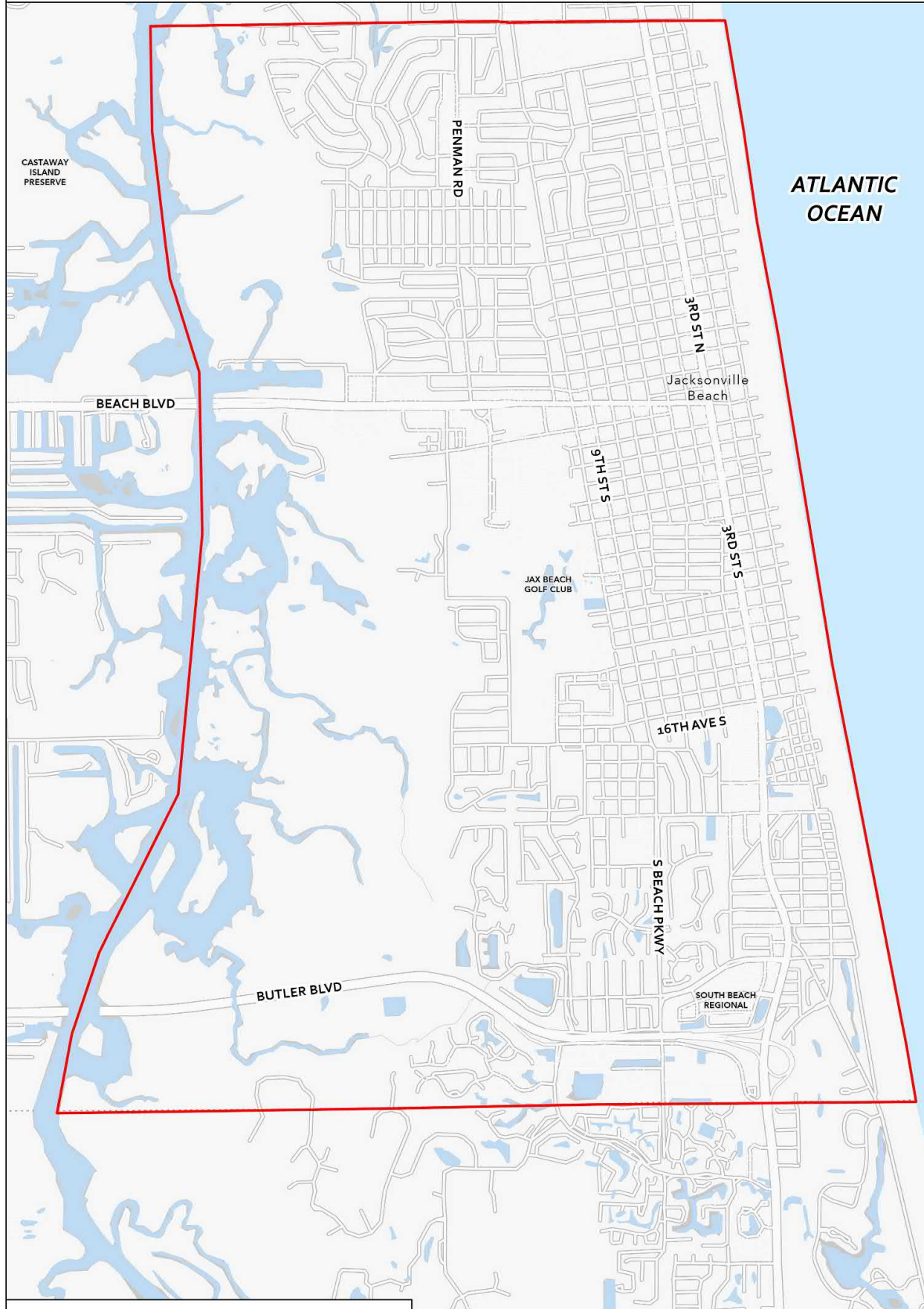
**Strategy TE 1.7.4** – The City shall support JTA in the planning and implementation of a “Ride Request” service that would link existing JTA transit routes to area hospitals.

**Intent TE 1.8**

Provide for a safe, comfortable and attractive pedestrian environment with convenient access to public transportation and multimodal transportation.

**Strategy TE 1.8.1** – The City shall require new development and redevelopment to support alternative modes of transportation through such measures as, but not limited to, the provision of sidewalks, bikeways, transit stops, connectivity corridors, or other facilities to support alternative modes, such as parking management systems and park-and-ride facilities.

**Strategy TE 1.8.2** – The City shall require developers of commercial property to provide for convenient and safe access and storage of bicycles on-site.



### Legend

Transportation Concurrency Management Area

Data Source: City of Jacksonville

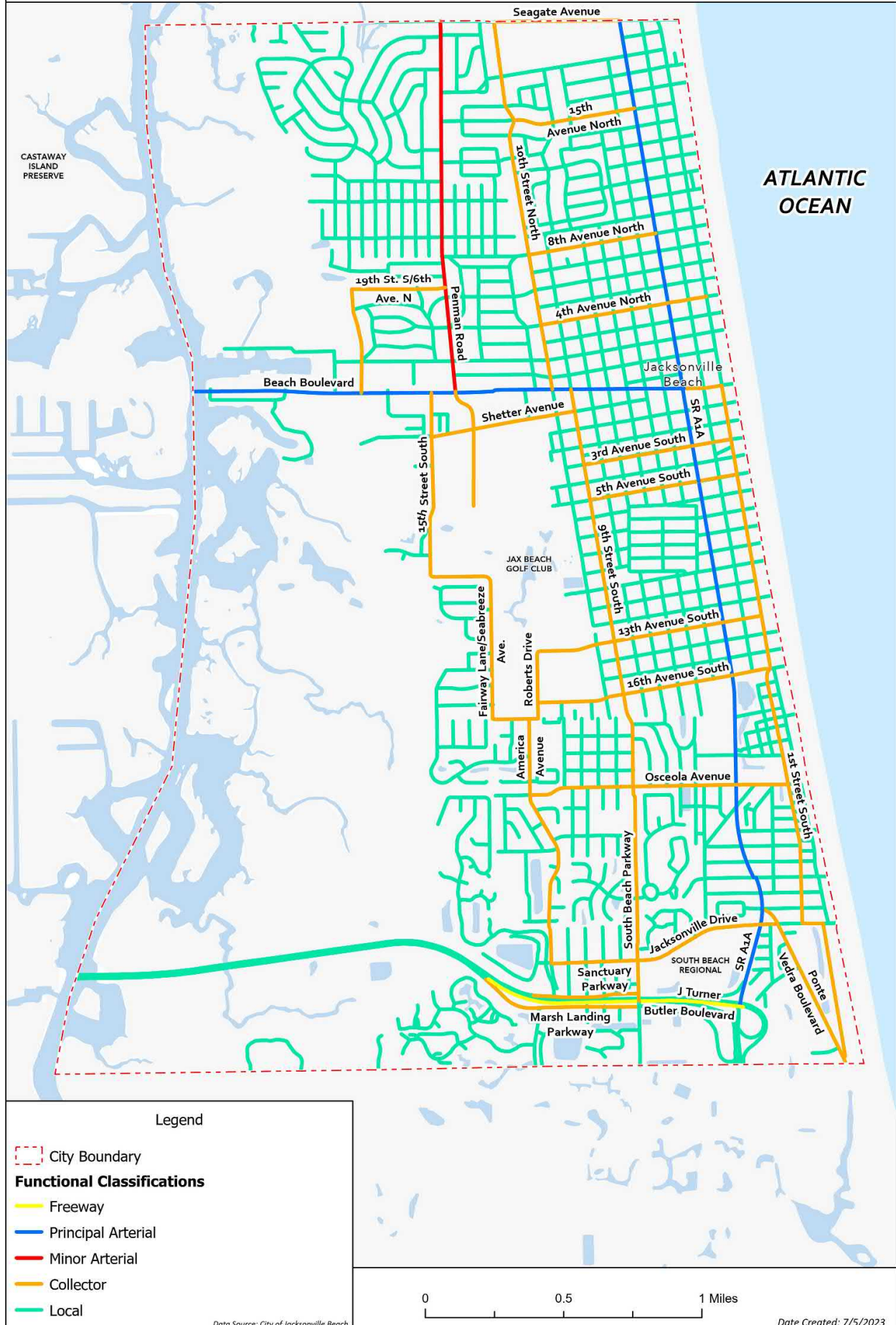
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Date Created: 7/5/2023



# CITY OF JACKSONVILLE BEACH

## FUNCTIONAL CLASSIFICATIONS OF ROADWAYS





## **V. Housing Element**

## Housing Element

### Vision H 1

The City shall encourage diverse, safe, sanitary, energy efficient, and affordable housing options for the City's residents and future residents through cost efficient intents and strategies.

#### Intent H 1.1

The City will promote a range of housing options to ensure residents and future residents can afford and select housing that reflects their preferences, economic circumstances, seasonal status, and special housing needs.

**Strategy H 1.1.1** – The City shall assist the private and public sector in providing new dwelling units between 2025 and 2050 for an estimated 873 new households projected to reside in the City.

**Strategy H 1.1.2** – The City will utilize the Land Development Code (LDC) and review processes to promote housing diversity and affordability by ensuring new development and redevelopment evaluate the following issues:

- A. Identity and character of the area and surrounding properties
- B. Housing style
- C. Housing ownership style (fee simple, rental, etc.)
- D. Housing type (multi-family, single-family, and single-family attached)
- E. Community population (income and age)
- F. Housing price

**Strategy H 1.1.3** – The City shall facilitate the maintenance, redevelopment, and quality of housing units within the City through conservation, rehabilitation, education, compliance, and enforcement of zoning regulations and building code standards including the provisions to upgrade substandard housing.

**Strategy H 1.1.4** – The City shall maintain a listing of existing housing assistance programs and make this list available to the general public, developers, engineers, contractors, and other involved in housing production.

**Strategy H 1.1.5** – The City shall support the efforts and initiatives of the City of Jacksonville Housing and Community Development Commission and the Florida Housing Coalition; and, where feasible, assist with the efforts to determine needs, and to develop sites and programs on a region-wide basis for housing for very low, low, and moderate-income persons.

**Strategy H 1.1.6** – The City shall pursue alternative methods of fulfilling the “missing middle” housing within the City. Methods may include permitting Accessory Dwelling Units (ADUs), tiny homes, and bungalow courts in certain zoning districts.

**Strategy H 1.1.7** – The City shall provide accelerated application review and other incentives for proposed housing developments intended for affordable housing, workforce housing, and persons with special housing needs including the elderly (persons age 60 years or older), the handicapped, and low-income residents.

#### **Intent H 1.2**

The City shall provide the adequate supporting infrastructure throughout Jacksonville Beach to support the provision of housing by the private sector.

**Strategy H 1.2.1** – The condition of infrastructure (roads, sewer, water) facilities shall be reviewed periodically as a means of measuring the City’s capability of sustaining future growth, development, and redevelopment and to ensure that proposed housing development sites have an adequate level of public services and facilities prior to approval, or contain a plan for the installation of necessary services.

#### **Intent H 1.3**

The City shall consider the resilience and adaptability of both existing housing and new housing within the City to ensure housing meets the needs of the current and future populations.

**Strategy H 1.3.1** – The City shall explore a Transfer of Development Rights program (TDR) for properties located within the Coastal High Hazard Areas (CHHA).

**Strategy H 1.3.2** – The City shall discourage the development of housing for low-income residents, elderly residents, or special needs households in vulnerable locations such as the CHHA.

**Strategy H 1.3.3** – The City shall explore ways to incorporate innovative land uses through the LDC, such as clustered development, traditional neighborhood development compact development, energy efficient design, low impact design, and other sustainable development practices, strategies, and techniques.

#### **Intent H 1.4**

The City shall provide equitable treatment for all residents of Jacksonville Beach.

**Strategy H 1.4.1** – The City shall discourage redevelopment and demolition practices that significantly reduce existing housing stock in older, established neighborhoods and that result in the loss of character and/or the displacement of very low, low, and moderate-income residents or special needs households.

**Strategy H 1.4.2** – Where feasible, the City shall ensure that comparable relocation housing is available in accordance with federal regulations, regardless of whether federal funding is involved in the activity.

**Strategy H 1.4.3** – The City shall ensure that all adopted and proposed regulations shall at a minimum maintain and encourage diversity in housing types.

**Strategy H 1.4.4** – The City shall pursue incorporating a recreation impact fee or a minimum required active recreation level of service for new residential developments to encourage active lifestyles for all City residents.

Consistent with FS 163.3177(6)(h)(1), the following intergovernmental coordination strategies are provided specific to Housing.

**Intent H 1.5** – The City will continue to participate in the coordination of regional housing strategies with local, regional, state, and federal housing agencies and non-profit organizations.

**Strategy H 1.5.1** – The City will continue to participate in regional housing initiatives to inventory, monitor, and maintain the quality and quantity of the region's housing supply.

**Strategy H 1.5.2** – The City will continue to coordinate with the City of Jacksonville, other local municipalities and private organizations on the development of a regional housing committee focused on resolving the complex economic, social, and development issues related to the region's housing needs.

**Strategy H 1.5.3** – The City shall coordinate with the Jacksonville Housing and Community Development Commission (JHCDC), the Jacksonville Housing Authority, and private organizations for cooperative funding partnerships. Options available for consideration shall include:

1. Development contributions
2. State Housing Initiatives Partnership (SHIP) funds
3. Grants
4. Community Development Block Grants (CDBG) funds
5. HOME Investment Partnerships
6. Emergency Solutions Grant
7. Neighborhood Stabilization Grants
8. National Housing Trust Fund (HTF)

9. Public Private Partnerships including opportunities with non-profit organizations

**Strategy H 1.5.4** – The City shall coordinate with the City of Jacksonville on the implementation and delivery of state and federal public housing programs, grants, and other initiatives within the City of Jacksonville Beach.

**Strategy H 1.5.5** – The City shall coordinate with the City of Jacksonville and other local and regional partnerships to inform the community about available housing programs and initiatives available to affordable housing.

DRAFT

## **VI. Public Facilities Element**



# **Wastewater Management Subelement**

*Public Facilities Element*

## **Wastewater Management Subelement**

### *Public Facilities Element*

#### **Vision WM 1**

Provide wastewater treatment and collection that meets the health and safety needs of the community.

##### **Intent WM 1.1**

The City shall ensure that adequate treatment and pumping capacity exists or will be made available at the time a development order is issued by maintaining, improving and expanding service to accommodate the levels of service for appropriate population groups as established in this element, reducing infiltration and inflow to the system in accordance with this element, and expanding the Pollution Control Plant in accordance with this element.

**Strategy WM 1.1.1** – Maintain system to accommodate an average generation rate of 150 gallons per capita per day.

**Strategy WM 1.1.2** – Maintain system as needed to accommodate a minimum level of service for seasonal visitors of 100 gallons per capita per day.

**Strategy WM 1.1.3** – Reduce infiltration/inflow by continuing to perform maintenance on existing sewer lines and manholes.

**Strategy WM 1.1.4** – The City will maintain its concurrency management system, to closely monitor absorption of sewage treatment capacity and will provide for timely expansion of the Pollution Control Plant to meet anticipated demand, if needed.

##### **Intent WM 1.2**

The City shall continue to carry out its preventative maintenance program to maintain its lift stations pursuant to the following strategies.

**Strategy WM 1.2.1** – Repair and improve older lift stations as needed to ensure adequate capacity and reduce overflow and expand pumping to accommodate projected peak flows, and measured infiltration/inflow in service areas.

**Strategy WM 1.2.2** – Continue on-going infiltration/inflow maintenance program to identify problem areas quickly.

**Strategy WM 1.2.3** – Develop a routine of cleaning and other appropriate maintenance programs by allocating a percentage of budget for maintenance of system.

### **Intent WM 1.3**

The City shall develop a capital improvement program integrating sewer systems, future growth, and redevelopment needs.

**Strategy WM 1.3.1** – The prioritization of facilities should be based on a hierarchy of needs including:

1. Projects needed to protect the health and safety of the residents of the City; projects needed to correct existing deficiencies and maintain adequate Levels of Services.
2. Projects necessary to meet new growth needs.
3. Projects that contribute to economic or system efficiency.

### **Intent WM 1.4**

Develop policies that promote the long-term maintenance of the wastewater system or encourage innovative techniques.

**Strategy WM 1.4.1** – Continue to use treatment plant effluent for irrigation of the municipal golf course, ball fields, and other city facilities.

**Strategy WM 1.4.2** – Develop a program with the goal of removal and abandonment of remaining septic tanks, as feasible.

# **Solid Waste Subelement**

## *Public Facilities Element*

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## **Solid Waste Management Subelement**

### *Public Facilities Element*

#### **Vision SW 1**

Ensure the public health and safety by encouraging the provision of sufficient capacity at Duval County landfills to meet the disposal needs of Jacksonville Beach.

#### **Intent SW 1.1**

The City of Jacksonville Beach shall continue to provide its residents and visitors with solid waste collection and disposal based on the minimum level of service as established by this element.

**Strategy SW 1.1.1** – The City shall establish a minimum level of service for solid waste collection and disposal planning of 7.2 pounds per capita per day as an average generation rate.

**Strategy SW 1.1.2** – The City shall ensure that an agreement for private solid waste collection service is in effect to provide manpower and equipment, as necessary, to collection service is in effect to provide manpower and equipment, as necessary, to collect up to 7.2 pounds of solid waste per capita per day on average for disposal by the City of Jacksonville.

**Strategy SW 1.1.3** – The City will continue to rely on the City of Jacksonville to dispose of the solid wastes generated within the City limits without regard to levels of service in accordance with the Interlocal Agreement between the City of Jacksonville and the City of Jacksonville Beach.

**Strategy SW 1.1.4** – The City, through its Public Works Department, shall continue to promote the proper disposal of potentially hazardous wastes with the goal of reducing the amount of such waste entering the solid waste stream. The program shall be developed in cooperation with the private franchise waste haulers under contract with the City; and shall include education about, and enforcement of, existing local, state, and federal laws governing illegal dumping, public education on what constitutes a hazardous waste product, and will provide information on the City of Jacksonville's Hazardous Waste Mobile Collection Program (schedule and locations) to ease collection and proper disposal of household hazardous wastes, training programs for public and private employees on the identification and handling of hazardous wastes, and identification and cleanup of old dump sites if any exist.

### **Intent SW 1.2**

The City shall encourage technological innovations in waste disposal, recycling, reduction, and reuse through conformance with Florida statutes in accordance with this element.

**Strategy SW 1.2.1** – Continue residential recycling program to maintain a level where thirty (30) percent of the wastes generated are recycled, annually.

### **Intent SW 1.3**

The City shall ensure that City residents pay a reasonable charge for garbage collection and disposal.

**Strategy SW 1.3.1** – The City shall coordinate with Neptune Beach and Atlantic Beach to ensure that Jacksonville will continue to provide disposal facilities at no tipping cost to the City of Jacksonville Beach vehicles.

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# **Stormwater Management Subelement**

*Public Facilities Element*

## **Stormwater Management Subelement**

### *Public Facilities Element*

#### **Vision SM 1**

Protect the public health, and safety and welfare of the citizens of Jacksonville Beach by ensuring adequate storm drainage facilities.

#### **Intent SM 1.1**

Maintain Levels of Service to meet City of Jacksonville Beach codes, St. Johns River Water Management District (SJRWMD) regulations, and Florida Department of Transportation (FDOT) requirements.

**Strategy SM 1.1.1** – The City shall utilize adopted levels of service for stormwater management systems constructed or reconstructed under development orders issued by Jacksonville Beach, according to the following schedule:

1. Major outfall facilities (trunk storm sewers, canals, waterways, natural drainage features and culvers of major outfalls) shall be designed and constructed to accommodate a 25-year, 24-hour frequency storm.
2. Major components of storm drainage systems in new residential subdivisions, or residential redevelopment, shall be designed and constructed to accommodate 25-year, 24-hour frequency storm and all other components of the stormwater system shall accommodate a 10-year, 24-hour frequency storm.
3. Stormwater management systems for all other types of new development and redevelopment shall be designed and constructed to accommodate a 10-year, 24-hour frequency storm.
4. Stormwater treatment shall be provided for a volume equivalent to either retention or detention with filtration, of the run-off from the first one inch of rainfall; or as an option, for facilities with a drainage area of less than 100 acres, the first one-half inch of run-off pursuant to Chapter 17-25, Florida Administrative Code. No discharge from any stormwater facility shall cause or contribute to a violation of water quality standards as provided in Section 17.302 of the Florida Administrative Code.

In existing developed areas where stormwater facilities are retrofitted, and in which standard treatment methods are impractical, appropriate Best Management Practices, as described in Florida Land Development Manual: A Guide to Sound Land and Water Management (DER, 1988), shall be utilized.

**Strategy SM 1.1.2** – Continuing to require securing approval of the on-site stormwater management system for applicable projects of all types from SJRWMD and FDOT, where appropriate for projects on the state highway system, before issuing any local development or construction permits.

#### **Intent SM 1.2**

The City shall approach storm drainage on a city-wide basis and maintain its user-based financing mechanism to fund necessary improvements and continued maintenance.

**Strategy SM 1.2.1** – The City shall continue to correct existing drainage facility deficiencies and provide for future facility needs for the entire City and the projected growth of the City.

**Strategy SM 1.2.2** –The City shall continue to implement the stormwater user fee program.

#### **Intent SM 1.3**

The City will continue to implement appropriate measures to improve storm drainage system performance through systemic maintenance of the existing facilities in accordance with this element and by protecting the integrity of the natural drainage features present within its jurisdiction.

**Strategy SM 1.3.1** – The Public Works Department will include funds in its operating budget to maintain the various drainage ditches under the control of the City on a routine basis.

**Strategy SM 1.3.2** – The City shall encourage FDOT to develop and implement a regular maintenance program of the drainage ditches under their ownership and control.

**Strategy SM 1.3.3** – Applicants for development permits for projects which discharge stormwater to surface waters of the Pablo Creek Basin shall retain, or detain with filtration, stormwater runoff from the first one inch of rainfall, or to implement “Best Management Practices” as recognized by the Florida Department of Environmental Protection. An applicant with a “stormwater to wetland discharge permit” issued by the Florida Department of Environmental Protection must show that the design for a stormwater to wetlands facility complies with the performance criteria established by rule. These include ownership, pretreatment for the first one inch of rainfall, no disruption of normal hydroperiod, bleed-down time, and prevention of channelized flow.

# **Potable Water Subelement**

## *Public Facilities Element*

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## Potable Water Subelement

### *Public Facilities Element*

#### **Vision PW 1**

Provide sufficient water supply, treatment, and transmission capacity to ensure the public health, welfare, and safety for the citizens of Jacksonville Beach.

#### **Intent PW 1.1**

Provide adequate water supply and treatment to serve the future growth and needs of Jacksonville Beach.

**Strategy PW 1.1.1** – The City shall develop and update the Capital Improvements Program, as necessary to ensure sufficient water supply for the projected population.

**Strategy PW 1.1.2** – The City shall routinely reevaluate the rate structure to determine if and when increases in rates will be necessary and investigate other funding options.

**Strategy PW 1.1.3** – The City shall continue to educate the public and update existing programs on water resource conservation to minimize consumption.

**Strategy PW 1.1.4** – The City shall continue to monitor source water for salt water intrusion into the City's water supply and update the Subregional Flow and Transport Model.

**Strategy PW 1.1.5** – The City shall ensure sufficient capacity to meet fire flow requirements to serve future needs.

**Strategy PW 1.1.6** – Prior to approval of any development permit application for new development, the Planning and Development Department shall consult with the Public Works Department to determine whether adequate water supply exists to serve the new development, or will exist no later than the anticipated date of issuance of a Certificate of Occupancy for that development. No Development Permit application shall be approved for new development unless it is confirmed by the Public Works Department that adequate water supplies will be available.

**Strategy PW 1.1.7** – The City of Jacksonville Beach 10-Year Water Supply Facilities Work Plan (2018 – 2028) is hereby adopted by reference.

**Strategy PW 1.1.8** – The City shall maintain a Water Supply Facilities Work Plan that is coordinated with the St. Johns River Water Management District's (SJRWMD) North Florida Regional Water Supply Plan (NFRWSP). Within 18 months of adoption of any subsequently updated North Florida Regional Water Supply Plan, the City shall update its Water Supply Facilities Work Plan and related comprehensive plan policies as necessary.

**Strategy PW 1.1.9** – The City shall continue to implement its Water Conservation Plan submitted to the SJRWMD as part of the City's consumptive use permitting (CUP) process.

#### **Intent PW 1.2**

Provide adequate maintenance and repair of critical water distribution system components.

**Strategy PW 1.2.1** – The City shall continue to Replace existing 2-inch galvanized water mains with 2-inch or 6-inch PVC mains and provide additional fire hydrants throughout the City, pending availability of funds.

**Strategy PW 1.2.2** – The City shall continue to Replace existing 6-inch unlined cast iron water mains with 6-inch PVC mains and provide additional fire hydrants, pending availability of funds.

**Strategy PW 1.2.3** – The City shall maintain a valve and hydrant exercising program to identify, replace, and repair any defective valves and/or hydrants.

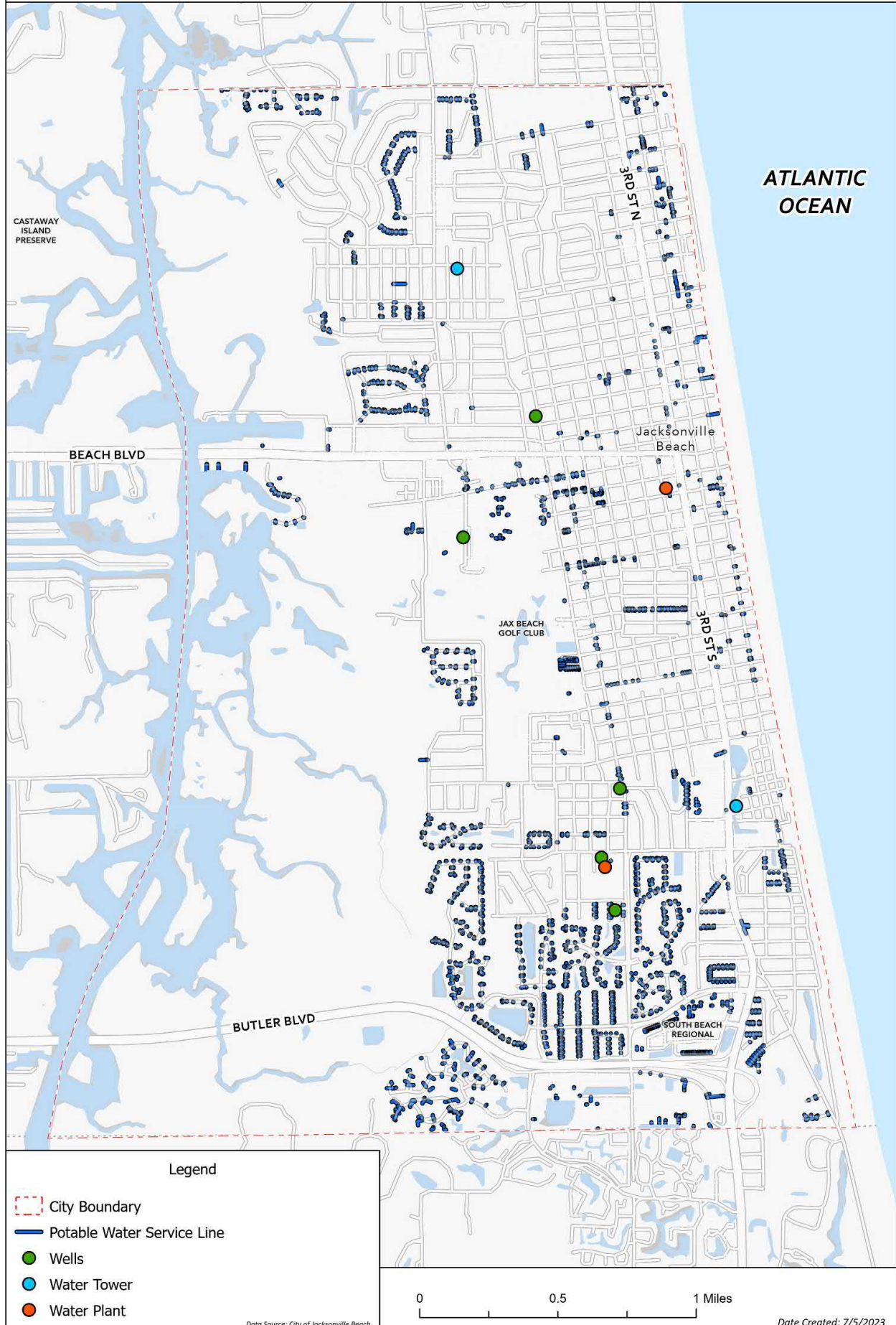
**Strategy PW 1.2.4** – The City shall maintain existing elevated potable water supply tanks.

**Strategy PW 1.2.5** – Provide additional fire hydrants where necessary throughout the City on existing water mains, pending availability of funds.

**Strategy PW 1.2.6** – The City shall increase water quality by eliminating dead end mains through looping within the system.

**Strategy PW 1.2.7** – The City shall increase hydraulic capacity by increasing infrastructure size, decreasing friction within the pipes, and removing dead ends within the system.





# **Ground Water Aquifer Recharge Subelement**

*Public Facilities Element*

## **Groundwater Aquifer Recharge Subelement**

### *Public Facilities Element*

#### **Vision AR 1**

The City shall maintain its groundwater aquifer resources to assure an adequate supply of good quality groundwater for uses by its residents.

#### **Intent AR 1.1**

The City shall assist in efforts to reduce draw-down from the Floridian aquifer through the implementation of potable water conservation activities in accordance with this element.

**Strategy AR 1.1.1** – The City shall continue to enforce Section 553.14, F.S. governing water usage standards for plumbing fixtures in new installations and, where appropriate, for substantial rehabilitation of existing installations.

**Strategy AR 1.1.2** – The City shall continue to enforce regulations encouraging and providing guidelines for the use of xeric landscape techniques to minimize demand for irrigation water.

**Strategy AR 1.1.3** – The City shall continue involvement in local water conservation efforts and efforts by the St. Johns River Water Management District (SJRWMD), including compliance with mandatory restrictions, public relations and education, and rate structuring.

#### **Intent AR 1.2**

The City shall act to ensure that there will be an adequate supply, of a quality sufficient for its intended use, of groundwater from the surficial aquifer to meet existing and future demands from this source.

**Strategy AR 1.2.1** – The City shall continue to enforce existing requirements which result in the reservation and maintenance of open and/or landscaped areas, on-site stormwater retention facilities, and other standards; including, but not limited to setback requirements, minimum landscaping requirements, stormwater retention standards, floodplain zoning, and other requirements related to discharges into the storm sewer system.

**Strategy AR 1.2.2** – The City shall examine the potential for expansion of the treated effluent pumping system, and will evaluate other potential installations of this type to further return treated water to the shallow aquifer recharge system.

#### **Intent AR 1.3**

The City shall continue to implement the Senate Bill 64 Compliance Plan.

**Strategy AR 1.3.1** – The City shall continue to develop and test solutions both independently and in conjunction with Atlantic Beach and Neptune Beach.

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## **VII. Conservation & Coastal Management Element**

## **Conservation and Coastal Management Element**

### **Vision CCM 1**

The City shall encourage the protection, preservation, and enhancements of its natural environment to maintain or enhance air quality, vegetative communities, wildlife habitats and the natural functions of soils, fisheries, wetlands and estuarine wetlands.

#### **Intent CCM 1.1**

Areas of native vegetation, wildlife habitat, marine resources, and coastal wetlands shall be protected, conserved, restored, and enhanced by implementing the provisions of this element.

**Strategy CCM 1.1.1** – Natural vegetation and habitats shall be protected through conservation, restoration, and enhancement. The impact of proposed development and redevelopment in areas of natural vegetation shall be minimized by maintaining such vegetation or requiring on-site mitigation where no practical alternative to destruction is feasible.

**Strategy CCM 1.1.2** – All undeveloped areas of natural vegetation within a 50-foot strip landward of the salt marsh shall be designated conservation-protected and shall remain as an undisturbed buffer region providing habitat adjacent to the marsh. The edge of the salt marsh shall be defined by the Mean High Water (MHW), or the landward extent of the salt marsh vegetative association, if more landward than the MHW.

**Strategy CCM 1.1.3** – No new land subdivision or redevelopment will be approved unless all of the lots proposed for development contain uplands large enough for the proposed development activity and all required buffers and conservation-protected areas. Existing single-family homes are exempt from this strategy.

#### **Intent CCM 1.2**

Water quality of the Pablo Creek estuarine system shall be maintained and improved, as based on EPA water quality index procedures as specified by the Florida Department of Environmental Regulation.

**Strategy CCM 1.2.1** – The City shall comply with the vision, intent, and strategies of the Wastewater Sub-element of this Comprehensive Plan, as to maintain and improve the water quality of the Pablo Creek estuarine system.

**Strategy CCM 1.2.2** - All new marshfront development shall utilize natural vegetation within the 50-foot conservation-protected buffer area to filter runoff, thereby approximating a natural hydrological regime. Channelized discharge of stormwater runoff shall be specifically discouraged. Appropriate standards to



address these issues shall be incorporated into the City's land development code (LDC) regulations.

**Strategy CCM 1.2.3** - The dredging of new boat basins shall be in strict compliance with all existing State and Federal regulations.

All dredged material shall be disposed of in approved upland containment areas. The Army Corps of Engineers, SJRWMD and Department of Environmental Protection shall continue to regulate those activities that fall within their jurisdictions and, to that extent, will provide the administration and enforcement necessary to fulfill this policy.

**Strategy CCM 1.2.4** - Boat stripping and maintenance activities using zinc or copper compounds shall be strictly segregated from waterfront locations to minimize the introduction of these elements to the estuary.

**Strategy CCM 1.2.5** - Applicants for development permits for projects which discharge stormwater to surface waters of the Pablo Creek Basin shall retain, or detain with filtration, stormwater runoff from the first one inch of rainfall, or to implement "Best Management Practices" as recognized by the Florida Department of Environmental Regulation. Prior to civil review, an applicant must provide the City with a "stormwater to wetland discharge permit" issued by the Florida Department of Environmental Protection.

### **Intent CCM 1.3**

The City shall meet or exceed the minimum air quality levels established by the Florida Department of Environmental Regulation.

**Strategy CCM 1.3.1** - The City shall work to minimize the adverse effects of automotive emissions by implementing the Comprehensive Plan, encouraging alternative transportation modes, and prioritizing redevelopment in locations where there are existing facilities.

### **Intent CCM 1.4**

The City shall act within its authority to protect surface waters within its limits in accordance with this Comprehensive Plan.

### **Intent CCM 1.5**

The City shall protect the natural functions of the 100-year floodplain so that the flood-carrying and flood storage capacity are maintained.

**Strategy CCM 1.5.1** - The City shall identify and recommend to the State and the SJRWMD floodplains that would warrant acquisition under the Florida Forever Program.

#### **Intent CCM 1.6**

The City's conservation-protected wetlands shall be protected from physical and hydrologic alteration. No net loss of estuarine wetlands shall be permitted without mitigation, preferably on-site.

**Strategy CCM 1.6.1** - All undeveloped estuarine wetland areas, as delineated under Florida DER and/or SJRWMD criteria, shall continue to be designated as conservation-protected areas on the Future Land Use Map. All palustrine wetlands are classified as conservation-restricted areas and are depicted on the Conservation Land Map.

**Strategy CCM 1.6.2** - The City shall amend, adopt and uphold LDC regulations to ensure that:

1. Site plans for new development and redevelopment identify the location and extent of wetlands located on the property;
2. Site plans provide measures to assure that normal flows and quality of water will be provided to maintain wetlands after development or redevelopment; or
3. Where alteration of wetlands is necessary in order to allow reasonable use of property, either the restoration of disturbed wetlands will be provided or additional wetlands will be created to mitigate any wetland destruction; and
4. To the maximum extent possible, all wetland mitigation will be performed "on-site."

**Strategy CCM 1.6.3** - The City shall cooperate with the Florida Department of Environmental Protection the SJRWMD, and the U.S. Army Corps of Engineers to improve compliance with existing dredge and fill permit regulations.

#### **Intent CCM 1.7**

All native vegetation communities, wildlife habitats, and native fauna shall be identified, managed, and protected.

**Strategy CCM 1.7.1** - The City shall work to maintain a comprehensive inventory of ecological communities within its incorporated limits which shall include species, populations, habitat conditions, occurrences, and disturbances; and shall recommend acquisition through the Florida Friendly Program of the most vulnerable communities.

**Strategy CCM 1.7.2** - No new subdivision will be approved unless all of the lots proposed for development contain uplands large enough to contain the proposed activity and all required buffers, preservation, and active recreation areas.

**Strategy CCM 1.7.3** - Development proposals that cannot preserve the required buffer regions (as required in Intent FLU 1.6) or percentages of the native vegetation on the site shall submit a mitigation plan in conjunction with the site plan. Mitigation may take several forms, including the creation of new habitats of the same type destroyed, restoration of previously disturbed areas, and/or purchase for the preservation of habitat similar to that destroyed. To the maximum extent possible, all mitigation must be performed "on-site." Mitigation areas shall be planted with native, drought tolerant plant species.

**Strategy CCM 1.7.4** - The City shall protect endangered and rare species by use of conservation easements, transfer of development rights, fee simple acquisition, and zoning.

**Strategy CCM 1.7.5** - The City shall assist in the application of and compliance with all local, state and federal regulations that pertain to endangered and rare species.

**Strategy CCM 1.7.6** - The City shall consult with the Florida Fish and Wildlife Conservation Commission (FWC) prior to the issuance of any building permit that would result in an adverse impact to any endangered or rare species.

#### **Intent CCM 1.8**

The City shall continue to protect and conserve the natural functions of existing soils, fisheries, lakes, floodplains, estuarine marshes, and marine habitats.

**Strategy CCM 1.8.1** - The City shall protect and conserve the natural functions of existing soils, fisheries, lakes, floodplains, estuarine marshes, and marine habitats through the implementation of the policies regarding these resources set forth in the various elements of this Plan and enforcement of existing local, state, and federal regulations designed to protect and conserve these functions.

**Strategy CCM 1.8.2** - The City shall consider lands with aquatic grass beds as a priority when selecting environmentally sensitive lands for acquisition and use as a public preserve for passive recreation.

#### **Intent CCM 1.9**

The City shall protect ground water resources.

**Strategy CCM 1.9.1** - In accordance with Florida Statutes for water supply planning, the City shall cooperate with SJRWMD in the evaluation and updates of applicable data and analysis of current and project water needs for at least a 10-year period, initiate Comprehensive Plan Amendments, and update the City's Water Supply Facilities Work Plan as necessary.

**Strategy CCM 1.9.2** - The City shall implement water conservation, use, and supply protection programs consistent with the SJRWMD Plans and the City's Water Supply Facilities Work Plan.

## **Vision CCM 2**

Through incentives, regulations, and engineering solutions, the City shall ensure that the development and redevelopment of property reduces flood risk which results from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea-level rise.

### **Intent CCM 2.1**

The City shall act to protect, conserve, restore, and enhance its beach and dune system by adopting management practices, construction and redevelopment standards which align with the Duval County Local Mitigation Strategy (LMS) and will enhance its performance in accordance with the Comprehensive Plan.

**Strategy CCM 2.1.1** – The City shall continue to plan and implement mitigation strategies, including those projects delegated to the City in the Duval County Local Mitigation Strategy.

**Strategy CCM 2.1.2** - Construction seaward of the Coastal Construction Control Line (CCCL) shall be strongly discouraged. Any development which does occur, including construction of coastal or shore protection structures, shall be carried out in strict compliance with City, Federal, and SJRWMD regulations. The City shall also require vulnerability reduction measures for all new development, redevelopment, and infrastructure in these areas, such as additional hardening, higher floor elevations or incorporation of natural infrastructure for increased resilience.

**Strategy CCM 2.1.3** - The City, in cooperation with Duval County, shall request for the Florida Department of Environmental Protection to reestablish the Coastal Construction Control Line (CCCL) every five (5) years.

**Strategy CCM 2.1.4** - The City shall encourage and support Beach Renourishment projects administered by the U.S. Army Corps of Engineers.

**Strategy CCM 2.1.5** - Responsibilities of the City may include, but not be limited to, providing irrigation and fertilization as necessary to ensure the continued health of dune stabilizing vegetation; replacing vegetation as needed; and constructing and maintaining pile supported wooden dune walkovers at public beach access points.

**Strategy CCM 2.1.6** - Wind erosion shall be controlled through stabilization of the berm, using the most effective methods to improve the performance of the beach fill.

**Strategy CCM 2.1.7** - Foot traffic across the stabilized berm should be eliminated by maintaining existing or constructing new elevated walkways or crossovers at each point of public access so that the vegetation which provides long term stability remains undisturbed.

## **Intent CCM 2.2**

Rise in sea level projected by the Federal Government (National Oceanic and Atmospheric Administration) shall be taken into consideration in all future decisions regarding the design, location, and development of infrastructure and public facilities in the potentially affected areas.

## **Intent CCM 2.3**

The City shall ensure that future development and redevelopment will minimize the exposure of population, particularly vulnerable populations, and property to storm damage and sea level rise by adopting and enforcing requirements pursuant to the standards established by the Duval County Mitigation Plan, this Comprehensive Plan Element, and FL State Statute to regulate development within Coastal High-Hazard Areas (CHHA) and curtail public funding within these areas.

**Strategy CCM 2.3.1** - The City's Floodplain Management and Stormwater Ordinance shall comply with the minimum building elevations of the FEMA Flood Insurance Rate Maps and the building requirements of the National Flood Insurance Program. The Ordinance shall be in full compliance with guidelines established by the SJRWMD and shall specifically restrict discharge of rainwater into ditches that may flood evacuation routes.

**Strategy CCM 2.3.2** - The Coastal High Hazard Area (CHHA) for Jacksonville Beach shall consist of the area below the elevation of the Category 1 storm surge line as established by a Sea, Lake, and Overland Surges from Hurricanes (SLOSH) computerized storm surge model (Sec. 163.3178(2)(h), F.S.) as depicted in the 2050 CHHA Map.

**Strategy CCM 2.3.3** - The Duval County Local Mitigation Strategy (LMS) Plan shall be reviewed and updated on a five-year basis, beginning the calendar year which follows the adoption of this planning element. In the revisions, the City Manager or a similarly appropriate personnel, shall identify specific actions that could be implemented to reduce exposure to natural hazards.

**Strategy CCM 2.3.4** - City-funded public facilities shall not be built in the CHHA, unless the facility is for public access or resource restoration.

**Strategy CCM 2.3.5** - Undeveloped city-owned lands within the CHHA shall be designated "conservation-protected areas" on the Future Land Use Map, and the coastal high-hazard areas shall be shown on the zoning maps.

**Strategy CCM 2.3.6** – The City shall align with and enhance Florida Building Code design and construction standards to ensure the integrity of new, existing, and redeveloped buildings.

**Strategy CCM 2.3.7** - Undeveloped upland areas adjacent to the estuarine marshes shall be designated for conservation or low density residential use to provide an adequate buffer bordering the marsh and to reduce the extent of development in flood prone areas. Residential development shall be required to comply with minimum flood elevation requirements. The placement of fill in these areas shall be limited to only that which is absolutely necessary and enhances the public health, safety and welfare.

**Strategy CCM 2.3.8** - All new construction, substantial improvements; or reconstruction, redevelopment, or repair of damaged structures shall comply with the provisions of the existing coastal zone requirements. In the event a structure is damaged by any cause to an extent exceeding 50 percent of its assessed value, the entire structure and not just the repaired portion must be brought into compliance with these requirements.

**Strategy CCM 2.3.9** - Repair or reconstruction of existing seawalls must be accompanied by beach fill, or performed in anticipation of beach renourishment or reconstruction.

**Strategy CCM 2.3.10** - The City shall identify structures in the CHHA, inventory their assessed value, judge the utility of the land for public access, and make recommendations for acquisition or the transfer of development rights when post-disaster opportunities arise.



## **Intent CCM 2.4**

The City's hurricane and extreme weather evacuation time shall align with the Statewide Evacuation Study Program, Northeast Florida Study and shall be adjusted and re-examined following the release of updated studies.

**Strategy CCM 2.4.1** - The City shall notify each resident household of evacuation procedures prior to each hurricane season. Hotels, short-term rentals, condominiums, and the like shall post this notification conspicuously in each unit. Each new dwelling unit shall be posted with this information when a Certificate of Occupancy is issued. Landlords and property managers shall provide this notice to tenants of rental units upon execution of a lease or rental agreement.

**Strategy CCM 2.4.2** - Future improvements to emergency evacuation route roads shall reduce or eliminate hindrances likely to result from flooding by increasing the resiliency capacity.

**Strategy CCM 2.4.3** - The City shall review the Statewide Regional Evacuation Study Program, Northeast Florida Study, and incorporate pertinent data and directives related to hurricane evacuation from Jacksonville Beach.

## **Intent CCM 2.5**

The City shall consider in all decision-making processes whether the action or decision will increase, reduce or mitigate flood potential from sea level rise, high tide and storm surge, including:

1. Comprehensive Plan and Land Development Code amendments. The City shall evaluate its policies and regulations on a periodic basis to consider amendments to reduce and/or mitigate flooding impacts and shall ensure amendments do not increase the extent and depth of flood potential.
2. Land use and zoning amendment decisions. Density offsets in the CHHA shall not result in an increase in density or intensity within areas forecasted to flood due to sea level rise or high tide events forecasted through 2050 based on high risk scenario.
3. Subdivision, Planned Unit Development and Site Plan reviews. The City shall ensure all applicable policies and regulations are enforced during development review procedures and shall evaluate opportunities for offering incentives for exceeding minimum standards.
4. Budgetary Process, Strategic Plans and Departments. The City shall consider opportunities to reduce and/or mitigate flood impacts in preparing its budget, evaluating public projects and determining priorities by Department.

5. Infrastructure Improvements. The City shall give high priority to infrastructure improvements and other engineering solutions that will increase public health and safety by improving flood resiliency.

#### **Intent CCM 2.6**

The City shall implement the following redevelopment and development principles, strategies and engineering solutions to reduce the extent of real property and structures located in designated flood zones.

**Strategy CCM 2.6.1** - The City shall evaluate land acquisition opportunities based on the following guiding principles:

- a. Identify and prioritize sites that are determined the most vulnerable to flooding based on modeling, projected sea-level-rise effects, and/or recorded repetitive structural damage
- b. Prioritize sites that maximize public benefits, including shoreline access, recreation, conservation, mitigation and other objectives of the Comprehensive Plan
- c. Reduce acquisition costs by seeking out willing sellers through voluntary land acquisition or the transfer of development right
- d. Coordinate with regional, state and federal agencies and non-profit programs on funding acquisition priorities
- e. Pursue options to assemble acquisition lands to maximize effectiveness and reduce infrastructure demands

**Strategy CCM 2.6.2** - The City shall identify opportunities to reduce density/intensity of existing development in flood zones:

- a. Prioritize potential sites appropriate for less than fee simple purchase of partial development rights following the same principles as for fee simple acquisition.
- b. Prioritize sites that are suitable for conversion to less susceptible and/or lower intensity land uses in conjunction with fee simple purchase of partial development rights.
- c. Evaluate opportunities for public/private partnerships to implement drainage improvements, selective seawall construction or other engineering solutions in conjunction with reduction of density/intensity.

**Strategy CCM 2.6.3** – The City shall amend its floodplain regulations to require the elevation of new structures and substantially repaired/improved structures located in flood zones to a minimum of 1.5 feet above applicable base flood elevation standards.

**Strategy CCM 2.6.4** - The City shall limit public expenditures that would facilitate development within areas vulnerable to projected flooding from sea level rise through 2050 and high tides, and shall encourage local governments, agencies and service providers to implement the same strategy.

**Strategy CCM 2.6.5** - The City shall ensure that drainage swales, ditches, stormwater retention areas and urban conveyance systems are maintained to achieve maximum design capacity and flow. The City shall conduct periodic inspections of private drainage systems under its regulatory jurisdiction to ensure enforcement of permitting conditions relating to operation and maintenance of drainage systems, and shall encourage the SJRWMD to conduct similar inspections for systems under its jurisdiction.

**Strategy CCM 2.6.6** - The City shall coordinate with the Florida Department of Transportation (FDOT), Duval County, the Duval County School District and other government agencies that own development sites, control right-of-way or provide services in order to evaluate opportunities for partnering on drainage improvements and to encourage designs that minimize and mitigate flood impacts.

#### **Intent CCM 2.7**

The City shall evaluate and adopt regulations to require or incentivize the following site development techniques and best management practices to reduce losses due to flooding and resulting insurance claims:

**Strategy CCM 2.7.1** - The City shall implement and uphold regulations that reduce the extent of required impervious surfaces. This includes revised minimum and maximum off-street parking ratios, additional parking flexibility including compact, bicycle, and golf-cart parking credits, shared parking ratios for uses with different peak periods, and the use of pervious materials for driveways, parkways and sidewalks.

**Strategy CCM 2.7.2** – Where feasible, the City shall require shared access points and cross-connections between developments, particularly along 3<sup>rd</sup> Street, and where the result would be a reduction of impervious surface.

**Strategy CCM 2.7.3** - Support regulatory and financial incentives for elevating the first floor of structures on pilings in A-zones to allow for parking beneath the structure. Implement the same strategy for elevating the first-floor structures above minimum regulatory requirements in V-zones, as necessary, to locate parking below structures.

**Strategy CCM 2.7.4** – The City shall incorporate flood mitigation strategies into their landscaping and development standards.

**Strategy CCM 2.7.5** – The City shall continue to provide public education on flood protection, best management practices and the National Flood Insurance Program via its website, citizen engagement, workshops, and other outreach methods.

**Intent CCM 2.8**

The City shall maintain flood-resistant construction requirements that are consistent with, or more stringent, than the Florida Building Code and applicable flood plain management regulations set forth in 44 C.F.R., Part 60.

**Intent CCM 2.9**

Construction activities seaward of the coastal construction control lines established pursuant to and consistent with S.161.053 shall be consistent with Chapter 161, Florida Statutes.

**Intent CCM 2.10**

The City shall continue to participate in the National Flood Insurance Program Community Rating System (CRS) administered by FEMA and shall periodically evaluate program options for improving its rating to maximum insurance premium discounts for their residents.

**Vision CCM 3**

The City shall maintain and improve the public access, level of service (LOS) and resiliency of public land use along the shorelines and coastal resources of the City.

**Intent CCM 3.1**

Shoreline land uses which incorporate public uses and access to shorelines and coastal resources shall be incentivized and prioritized during development and redevelopment.

**Strategy CCM 3.1.1** - City development regulations shall assure that land uses along the oceanic and estuarine interfaces (shorelines) are limited to those uses which incorporate public uses and access to the shorelines and coastal resources.

**Strategy CCM 3.1.2** - Expanded or new water-dependent and water-related uses shall be located in areas that have low vulnerability to environmental degradation and impacts on the natural habitat and wildlife. The location of any future marinas proposed within the City shall be consistent with the Duval County Manatee Protection Plan and the Duval County Maritime Management Plan.

### **Intent CCM 3.2**

Public access to the beachfront shall be maintained, and the availability and diversity of parking for beach visitors shall be improved.

**Strategy CCM 3.2.1** - Existing public access to the beach shall be maintained by new development or redevelopment. New beachfront development or redevelopment shall show on their site plans existing provisions for beach access, and the proposed development or redevelopment shall continue the current form of access, modify it in an equivalent form on-site, or donate to the City an improved provision for public access elsewhere in the City.

**Strategy CCM 3.2.2** - New beachfront development or redevelopment shall not result in a net loss of public parking for beach visitors. Replacement parking must be no less convenient for beach visitors than that it replaces.

**Strategy CCM 3.2.3** – The City shall encourage and pursue providing bicycle parking, and other types of multi-modal transportation parking, at all public beach access locations. Similarly, development and redevelopment that impacts public beach access shall be required to provide bicycle parking as required by the City's LDC.

**Strategy CCM 3.2.4** — Where feasible, the City shall expand public parking through the development of new parking areas, expansion of existing parking areas, and/or development of a parking garage.

### **Intent CCM 3.3**

Public access to the Pablo Creek marshfront shall be maintained and improved by restricting the development of additional marina sites in accordance with the State Marina Siting Plans.

**Strategy CCM 3.3.1** - The City shall not encourage the development of additional marina sites prior to full utilization of existing sites. Expansion of existing facilities adjacent to existing sites shall emphasize dry storage. All additional marina development shall be carried out in strict compliance with current State regulations, and the environmental consequences of such development shall be weighed carefully against the public benefit received. Criteria for location and operation shall include (a) existence of not less than four (4) feet of natural depth below the mean low water level, (b) sufficient upland to support the facility and for adequate parking, (c) fuel spill protection, (d) wake control, (e) sewage pump-out facilities, and (f) permanent predesignated spoil areas. No new upland area shall be created for marina developments, unless carried out in strict compliance with existing State and federal regulations; nor shall such activity receive the

support of the City without careful consideration of the associated environmental costs and public benefits.

**Strategy CCM 3.3.2** - The City shall continue to support efforts of Duval County towards the acquisition, and development for passive recreation, of the salt marsh wetlands lying along the east side of Pablo Creek, south of the City's Bird and Wildlife Sanctuary and north of 2<sup>nd</sup> Avenue North.

#### **Intent CCM 3.4**

The LOS standards adopted elsewhere in this Comprehensive Plan for facilities in the coastal area and the additional standards under this objective shall be applied whenever development orders or permits are requested.

**Strategy CCM 3.4.1** - The master drainage plan should include the designation of conservation or buffer zones separating upland development and existing stormwater outfalls from the estuarine marsh to minimize the impacts of future development on the estuarine environment. A program schedule for increased maintenance of the drainage ditches by regular clearing to decrease the quality of runoff routed to the marsh by reducing detention time prior to its release shall be included in the drainage plan.

**Strategy CCM 3.4.2** - Flood-proofing of potable water lines and sewerage, and the continuous improvement of storm drainage as detailed in the Public Facilities Element, shall be required to facilitate post-disaster redevelopment.

#### **Intent CCM 3.5**

The City shall manage coastal resources and natural systems without regard to political boundaries.

**Strategy CCM 3.5.1** - The City shall review the comprehensive plans of adjacent coastal communities, as well as those of Duval and St. Johns Counties, to determine if coastal resources, particularly the beaches, coastal wetlands, areas of native upland vegetation, and the Pablo Creek estuarine system, are being managed in a consistent manner.

**Strategy CCM 3.5.2** - The City shall coordinate development in the coastal zone with all adjacent communities and coastal municipalities which may be impacted by such development, and shall forward copies of development proposals to potentially affected jurisdictions for review and comment.

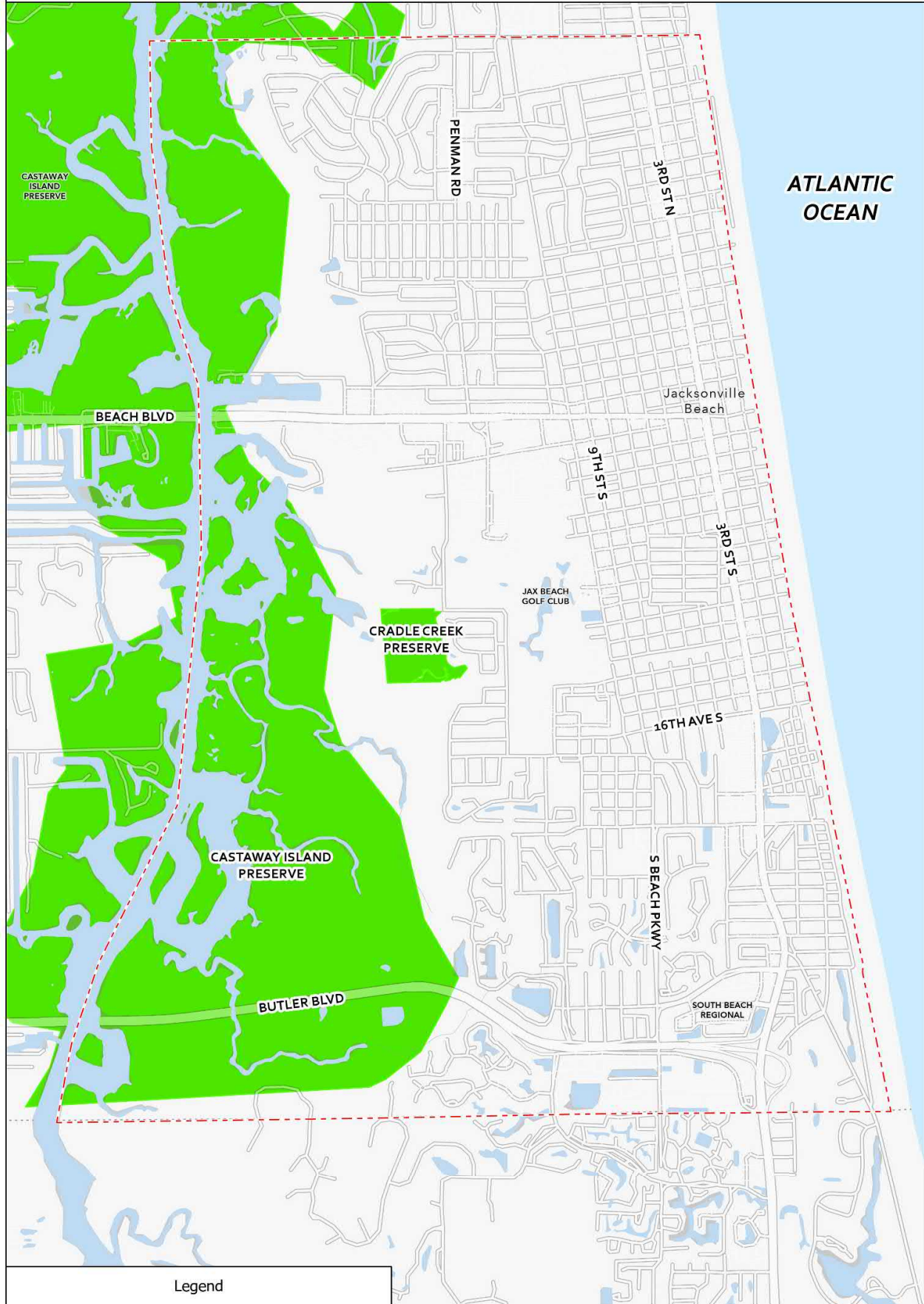
**Strategy CCM 3.5.3** - The City shall cooperate with State and regional efforts to coordinate management of the Pablo Creek estuarine system, including participation in watershed community workshops, basin-wide stormwater planning, and development of best management practices.



**Strategy CCM 3.5.4** - The City shall align all conservation and coastal management intents and strategies with the intergovernmental element of the Comprehensive Plan. The City shall assist regional, local, federal, non-profit and the like efforts to create conservation and coastal management master plans and policies.

**Strategy CCM 3.5.5** - The City, in cooperation with adjacent coastal communities, shall establish a mechanism to develop a county-wide beach and dune management plan to demonstrate a commitment to regional beach resources, and to insure the long-term maintenance of a viable dune system throughout Duval County's beaches.

DRAFT



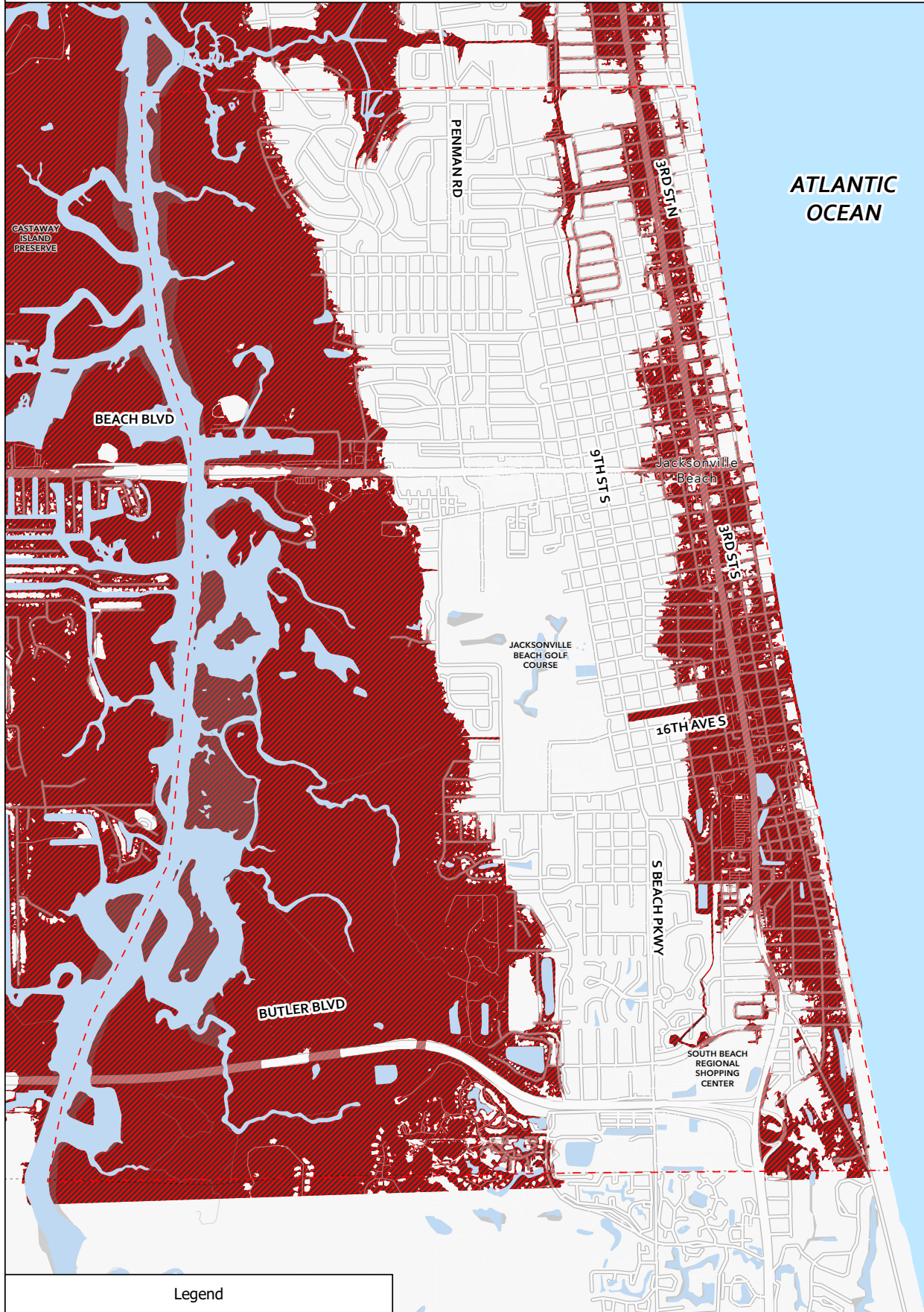
### Legend

- City Boundary
- Conservation Lands

Data Source: City of Jacksonville Beach

0 0.5 1 Miles

Date Created: 7/5/2023



### Legend

- City Limits
- Coastal High Hazard Area

Data Source: NEFRC, Maximum of Maximum Storm Surge Inundation for Category 1 Storm Surge

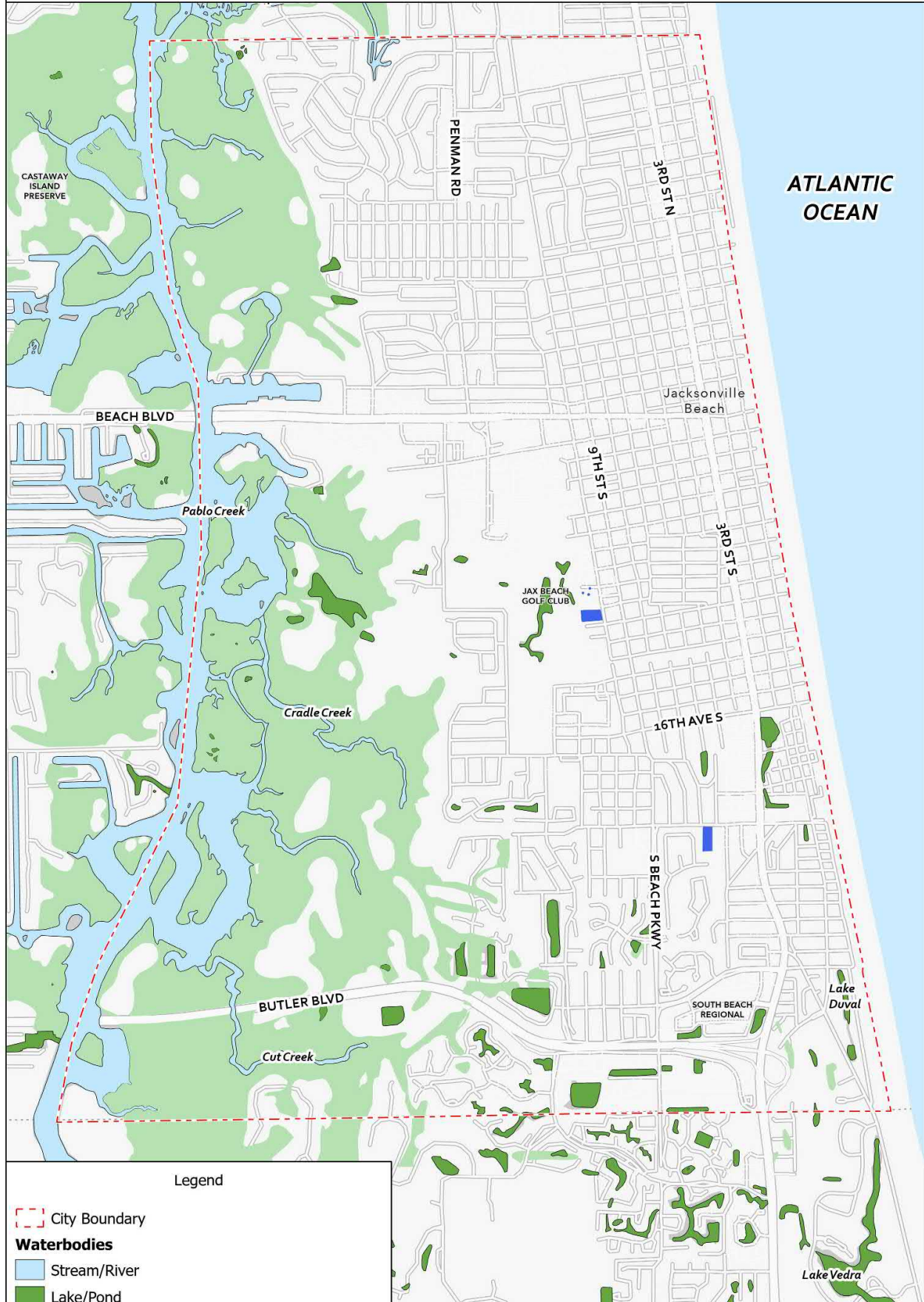
0 0.5 1 Miles

Date Created: 2/28/2024



# CITY OF JACKSONVILLE BEACH

## WATERBODIES



**Legend**

- City Boundary
- Waterbodies**
  - Stream/River
  - Lake/Pond
  - Reservoir
  - Swamp/Marsh

Data Source: US Fish & Wildlife Service

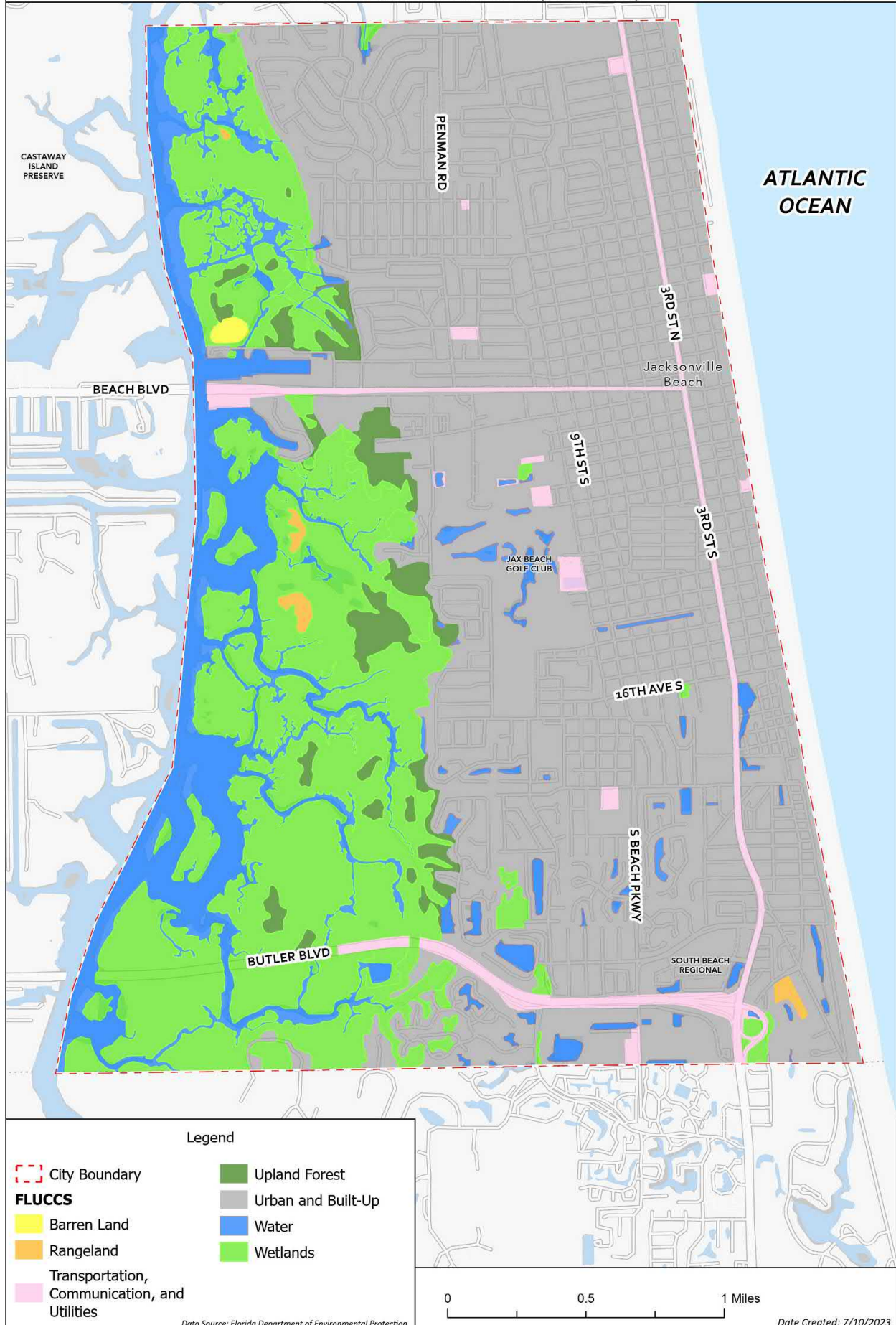
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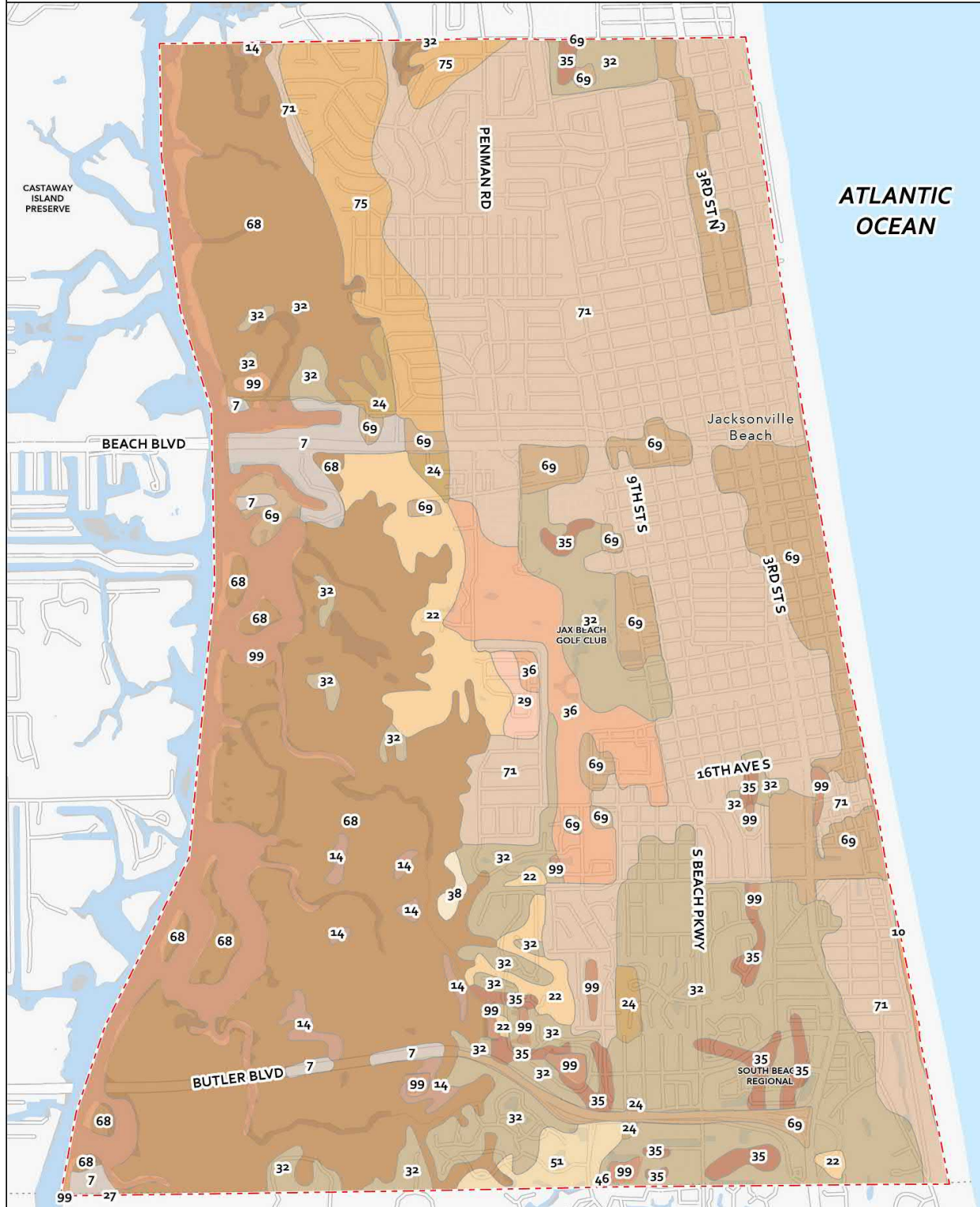
# CITY OF JACKSONVILLE BEACH

## FLORIDA LAND USE AND COVER CLASSIFICATION SYSTEM (FLUCCS)



# CITY OF JACKSONVILLE BEACH

## SOIL & TOPOGRAPHY



| City Boundary |                                                                         |
|---------------|-------------------------------------------------------------------------|
|               | City Boundary                                                           |
| Soils         |                                                                         |
|               | 7 - Arenes, nearly level                                                |
|               | 10 - Beaches, very frequently flooded                                   |
|               | 14 - Boulogne fine sand, 0 to 2 percent slopes                          |
|               | 22 - Evergreen-Wesconnett complex, depressional, 0 to 2 percent slopes  |
|               | 24 - Hurricane and Ridgewood soils, 0 to 5 percent slopes               |
|               | 27 - Kershaw fine sand, 2 to 8 percent slopes                           |
|               | 29 - Kureb fine sand, 2 to 8 percent slopes                             |
|               | 32 - Leon fine sand, 0 to 2 percent slopes                              |
|               | 35 - Lynn Haven fine sand, 0 to 2 percent slopes                        |
|               | 36 - Mandarin fine sand, 0 to 2 percent slopes                          |
|               | 38 - Mascotte fine sand, 0 to 2 percent slopes                          |
|               | 46 - Ortega fine sand, 0 to 5 percent slopes                            |
|               | 51 - Pelham fine sand, 0 to 2 percent slopes                            |
|               | 68 - Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded |
|               | 69 - Urban land                                                         |
|               | 71 - Urban land-Leon-Boulogne complex, 0 to 2 percent slopes            |
|               | 75 - Urban land-Hurricane-Albany complex, 0 to 5 percent slopes         |
|               | 99 - Water                                                              |

Data Source: US Department of Agriculture

0 0.4 0.8 Miles

Date Created: 7/5/2023



## **VIII. Recreation & Open Space Element**

## Recreation and Open Space Element

### Vision OS 1

The City shall provide and encourage well planned, active and passive recreation and open space ensuring a comprehensive system of parks, recreational facilities, and open space that meets the health, safety and welfare needs of the City residents and visitors and which enhances the natural environment of the City.

### Intent OS 1.1

The City shall maintain the adopted levels of service (LOS) for recreation and open space needs by implementing those improvements identified by the Parks and Recreation Department as being necessary to maintain those adopted LOS.

#### Strategy OS 1.1.1

The adopted parks and recreation LOS standards shall be as follows:

**Table OS 1:** Parks and recreation standards

| Classification | Acres/1,000 Residents | Minimum Size | Service Area                  | Population Served |
|----------------|-----------------------|--------------|-------------------------------|-------------------|
| Neighborhood   | 2.0 acres             | 2.0 acres    | 0.25 mile to 0.50 mile radius | Up to 10,000      |
| Community      | 2.0 acres             | 2.0 acres    | 0.5 mile to 3 mile radius     | Up to 25,000      |

#### Strategy OS 1.1.2

The adopted parks and recreation facility LOS standards shall be as follows:

**Table OS 2:** Parks and recreation facility standards

| Facility                          | Standard                      |
|-----------------------------------|-------------------------------|
| Baseball/Softball Fields          | 1 field per 3,000 residents   |
| Basketball Courts                 | 1 court per 5,000 residents   |
| Boat Ramps                        | 1 ramp per 12,500 residents   |
| Equipped Play Areas (playgrounds) | 1 area per 5,000 residents    |
| Football Fields                   | 1 field per 10,000 residents  |
| Golf Courses                      | 18 holes per 25,000 residents |
| Recreation Center & Gym           | 1 center per 25,000 residents |

| Facility                             | Standard                               |
|--------------------------------------|----------------------------------------|
| Soccer Fields                        | 1 field per 10,000 residents           |
| Swimming Pools and Splash Pads       | 1 pool/splash pad per 30,000 residents |
| Court Sports (Tennis and Pickleball) | 1 court per 2,000 residents            |
| Volleyball Courts                    | 1 court per 8,500 residents            |
| Hiking/Exercise Trail                | 1 mile per 6,000 residents             |

### **Strategy OS 1.1.3**

The City's Parks and Recreation Department shall annually review the LOS standards to ensure they correspond to the City's needs.

### **Strategy OS 1.1.4**

The City shall maximize available funds and pursue grants, foundations, and other public/private funding sources for the development, expansion, and maintenance of park and public space resources.

### **Intent OS 1.2**

The City shall protect existing and future recreation and open spaces for the residents and visitors of the City.

### **Strategy OS 1.2.1**

The City shall not allow the conversion of park and recreational open space areas into other public or private uses, except where the public interest overrides the conservation of these lands; and then only allowable after a public hearing and demonstration by the City that the converted area will be replaced within one year by recreation or open space land of a similar size, location, and type of uses.

### **Intent OS 1.3**

The City shall connect parks, public spaces, and neighborhoods through active recreation infrastructure (multi-modal paths, sidewalks, urban trails, kayak launches, etc.) accessible by all ages and abilities.

### **Strategy OS 1.3.1**

The City shall prioritize implementation of the Urban Trails Master Plan.

### **Strategy OS 1.3.2**

Where redevelopment, new development, or infrastructure improvements (sidewalk, roadway, intersection, right-of-way expansion, etc.) occurs, the City shall encourage and, where feasible, require implementation of the Urban Trails Master Plan.

## **Intent OS 1.4**

The City shall pursue creating a park fund through impact fees for new development and redevelopment.

### **Strategy OS 1.4.1**

The City shall provide incentives to private developers for the provision of recreational facilities within developments by providing support to developers, as well as including bonus provisions in the land development code to encourage developers to provide recreation facilities.

### **Strategy OS 1.4.2**

The City shall establish an in lieu of fund for development that cannot provide the land development code required recreation and open space ("park fund").

### **Strategy OS 1.4.3**

The City shall utilize the park fund to improve existing recreation facilities, enhance open space, preserve new open space and acquire additional recreation and open space should the opportunity arise.

## **Intent OS 1.5**

The City shall utilize its recreation and open space to provide a family friendly environment for its residents and visitors.

### **Strategy OS 1.5.1**

The City shall manage and maintain its public parks to ensure accessibility, safety and usability for all ages and abilities.

### **Strategy OS 1.5.2**

The City shall encourage and promote family friendly festivals and events.

## **Intent OS 1.6**

The City shall ensure that public access to the beachfront and Atlantic intracoastal Waterway is maintained and improved.

#### **Strategy OS 1.6.1**

New beachfront development or redevelopment shall not result in a net loss of public parking for beach visitors. Replacement parking must be no less convenient for beach visitors than that is replaced.

#### **Strategy OS 1.6.2**

Through the LDC, the City shall encourage and implement that where feasible beach access points shall provide adequate bicycle parking to encourage multi-modal transportation and orderly bicycle parking.

#### **Strategy OS 1.6.3**

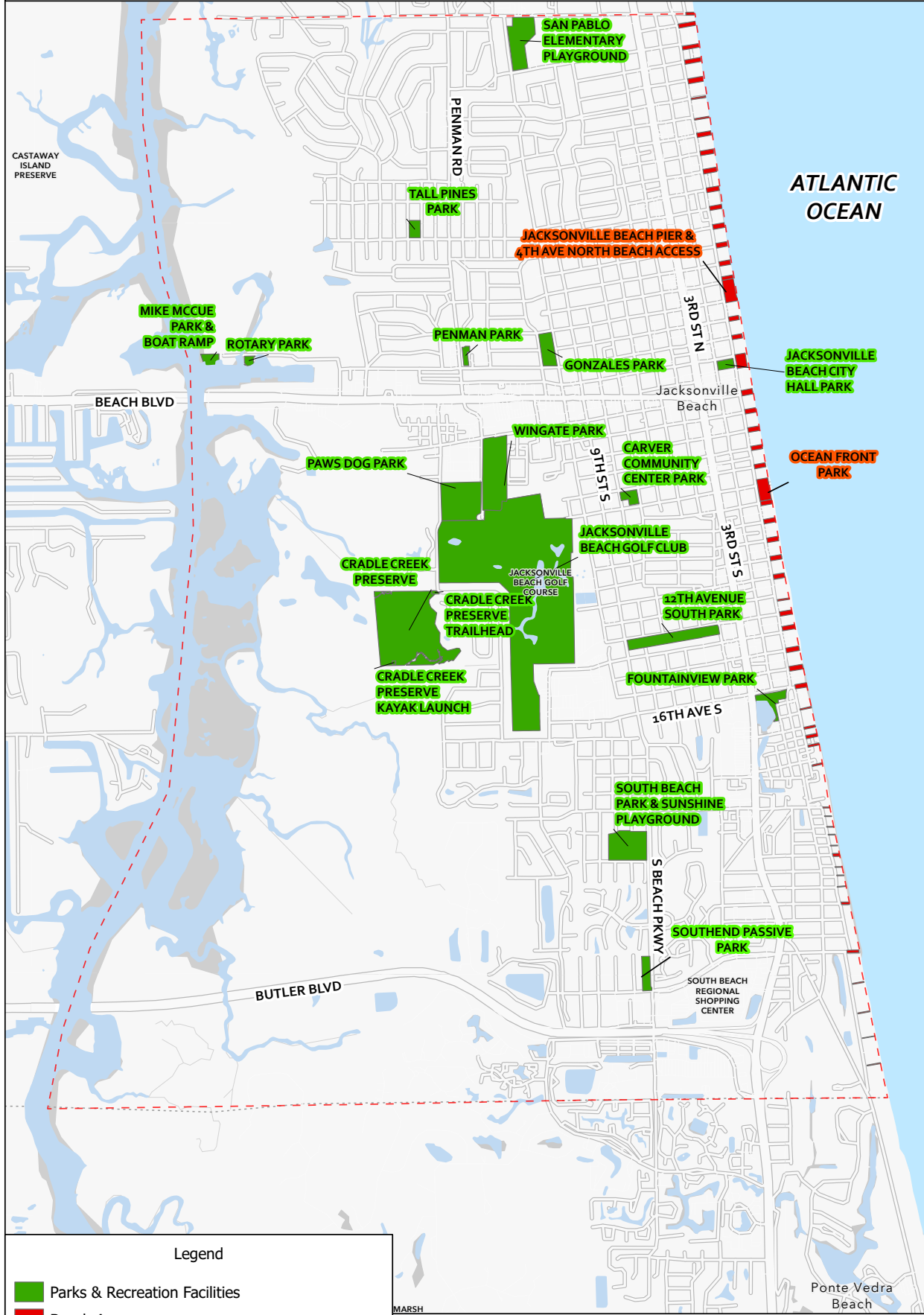
The City shall continue to discourage the development of additional marina sites prior to the full utilization of existing sites. Expansion of facilities adjacent to existing sites should pursue dry storage. All additional marina development should be in strict compliance with existing regulations, and the environmental consequences of such development should be carefully weighted against the public benefit achieved.

#### **Intent OS 1.7**

The City shall continue to support and encourage efforts to coordinate the provision of parks and facilities with other government agencies to provide a wide variety of active and passive recreation and open space.

#### **Strategy OS 1.7.1**

The City shall work with Duval County Public Schools (DCPS) to explore the option of DCPS fields, playgrounds, and open space within the City being used as additional recreation and open space for residents during the periods of time that school is not in session.



**Legend**

- Parks & Recreation Facilities
- Beach Accesses
- City Limits

0 0.5 1 Miles



## **IX. Intergovernmental Coordination Element**

## Intergovernmental Coordination Element

### Vision IC 1

Implement the goals, objectives and policies of the Comprehensive Plan through continued collaboration and partnership with surrounding municipalities and agencies (Federal, State, & Local) to maintain quality of life for the City's residents and visitors.

#### Intent IC 1.1

The City shall continue the dissemination of information to adjacent jurisdictions, agencies and districts and improve the effectiveness of planning activities through intergovernmental coordination.

**Strategy IC 1.1.1**—The City shall continue to coordinate with the Northeast Florida Regional Council and ensure that all neighboring jurisdictions are consulted with before making major land use decisions which would have a regional impact.

**Strategy IC 1.1.2** – The City will continue to coordinate with adjacent jurisdictions by providing received large scale land use and rezoning application packets for review and comments.

**Strategy IC 1.1.3**—The City shall coordinate with adjacent jurisdictions (including municipalities and neighboring St. Johns County) to monitor the effect of each plan on the other jurisdictions. Special attention will be devoted to monitoring level of service provisions of the respective plans and their impacts on adjacent communities.

**Strategy IC 1.1.4** – The City shall continue to partner with neighboring jurisdictions and adhere to existing interlocal agreements to resolve conflicts as they arise.

#### Intent IC 1.2

The City shall continue to coordinate with the City of Jacksonville and neighboring jurisdictions on land use planning, unified development policies, and special projects.

**Strategy IC 1.2.1** – The City will continue to participate in the coordination of regional housing strategies with local, regional, state, and federal housing agencies and non-profit organizations.

**Strategy IC 1.2.2** – The City shall participate in regional housing initiatives to inventory, monitor, and maintain the quality and quantity of the region's housing supply.

**Strategy IC 1.2.3** – The City will continue to coordinate with Duval County, other local municipalities to help provide affordable housing options for the area.

### **Intent IC 1.3**

The City shall coordinate with neighboring jurisdictions and agencies to ensure the level of service of public facilities and amenities outside of and within the City' jurisdiction is sustained, or improved, for current and future populations.

**Strategy IC 1.3.1** – The City shall continue to coordinate with neighboring jurisdictions and the School District staff in the County-wide planning process, especially in population estimation and demographic analysis, park and recreation planning, development review and the analysis of impact fees. Continue to participate with Duval County Public Schools of district-wide public-school facilities concurrency.

**Strategy IC 1.3.2** – The City will continue to coordinate with Duval County Public Schools (DCPS) to administer the school concurrency process. The City will also encourage the School District to focus on the health, safety, and welfare of the students within the City.

**Strategy IC 1.3.3** – The City shall make an effort to coordinate with the DCPS for the citizens to utilize school recreation facilities to increase the amount of open space and recreation available to the city residents.

**Strategy IC 1.3.4** – The City shall coordinate with FDOT when planning and constructing improvements to ensure completed vision plans such as the urban trails plan are incorporated into the FDOT's work plan for improvements.

**Strategy IC 1.3.5** – The City shall coordinate with FDOT on a regular basis to stay well-informed on upcoming roadway improvements or studies to ensure the urban trails plan is incorporated within the plan.

**Strategy IC 1.3.6**—The City shall continue to coordinate with City of Jacksonville to ensure the City's solid waste continues to be disposed of in a responsible manner as described in the Public Facilities Element.

**Strategy IC 1.3.7**—The City shall continue the existing partnership with the City of Jacksonville as it relates to the City of Jacksonville's Pier.

**Strategy IC 1.3.8** – The City shall maintain the interlocal agreement addressing the joint Beaches' sewer outfall system and explore other joint wastewater management improvements.

**Strategy IC 1.3.9** – The City shall seek to maintain the existing agreement with Jacksonville for cost sharing of beach maintenance costs as a regional recreation resource.

**Strategy IC 1.3.10** – The City should engage with a consultant or the Northeast Florida Regional Council to study the feasibility of a beach improvement district to cover beach access and maintenance.

### **Intent IC 1.5**

Continue to coordinate with regional and State agencies having permit or approval power over environmentally sensitive land and natural resources.

**Strategy IC 1.5.1** – The City will participate in the development of updates to the St. Johns River Water Management District’s (SJRWMD) North Florida Regional Water Supply Plan and in other water supply development related initiatives facilitated by the SJRWMD that affect the City. The City will also coordinate with the SJRWMD on issues including, but not limited to, water conservation, storm water runoff and effluent re-use.

**Strategy IC 1.5.2** – Maintain contact with officials at the Department of Environmental Protection (DEP) as well as any other State regulatory agency having approval or other power concerning environmental issues.

# **X. Capital Improvements Element**

## Capital Improvement Element

### Vision CI 1

Implement a capital improvement planning program that provides and maintains in a timely, efficient, and fiscally sustainable manner public facilities and services which protect the public health, safety and welfare, adequately serve existing, new development, and redevelopment and is consistent with the City's Comprehensive Plan.

#### Intent CI 1.1

The City shall utilize the Capital Improvement System for construction of public services, capital facilities, and infrastructure systems needed to:

1. Implement the Comprehensive Plan's planning framework
2. Implement the Urban Trails Master Plan
3. Accommodate the needs of current and future populations
4. Maintain and achieve the adopted Level of Service (LOS) standards
5. Meet existing service deficiencies by replacing obsolete or worn-out facilities and infrastructure

**Strategy CI 1.1.1** – In accordance with Section 163.3177(3)(b)1, Florida Statutes, the City shall annually update the Five-Year Schedule of Capital Improvements based on the following criteria:

1. Is the project needed to fulfill the vision of the comprehensive plan?
2. Is the project needed to protect the public health and safety; fulfill the City's legal commitments; or provide full or improved use of existing facilities?
3. Does the project improve existing facilities; mitigate future improvement costs; provide services to developed areas; or promote redevelopment?
4. Is the City capable of maintaining the facility on an on-going basis?

**Strategy CI 1.1.2** – The City shall include all projects identified in other elements of this plan estimated to cost more than \$100,000.

**Strategy CI 1.1.3** – The City shall manage the fiscal budgeting and delivery of public services by coordinating the following components of the Capital Improvement System:

1. **Annual Budget**
2. **Capital Improvement Program (CIP)**
3. **Capital Improvement Schedule (CIS)**



**Strategy CI 1.1.4** – The City’s Capital Projects Team shall continue to consist of the City Manager, Public Works Director, Planning and Development Director, Parks and Recreation Director, Beaches Energy Service Director, Chief Financial Officer, City Engineer and Budget Officer. They shall continue to meet bimonthly to monitor the progress of each ongoing project, identify possible future projects, and to resolve early any problems that may arise.

## **Intent CI 1.2**

The City shall provide for its financial demand and operational needs through effective and proactive fiscal planning to meet the needs of current and future populations.

**Strategy CI 1.2.1** – The City shall identify opportunities for generating revenues for the City’s operations and annual budgeting. Potential revenue generation opportunities include:

1. Grants and similar resources
2. In lieu of fees for required off-street parking and required residential development active recreation space

**Strategy CI 1.2.2** – The City shall maximize financial resources and improve operational and work project efficiencies by coordinating public service and infrastructure system work efforts. Specific attention should be given to coordinate implementation of the Urban Trails Master Plan with public service and infrastructure system work efforts. Examples of such coordinated enhancements include:

1. Street projects that include utility, stormwater, sidewalk and/or trail, and streetscape enhancements
2. Utility projects that include community parks, sidewalks, stormwater, and road enhancements

**Strategy CI 1.2.3** – Proposed Plan amendments and/or requests for new development or redevelopment shall be evaluated according to the following criteria, as to whether the proposed action would:

- a) Contribute to a condition of public hazard
- b) Contribute to the growth of public facility deficits
- c) Generate public facility demands that can be accommodated by the increases proposed in the 5-Year schedule of improvements
- d) Conform with the land use pattern shown on the Future Land Use Map
- e) Address the accommodation of new development and redevelopment facility demands
- f) Be financially feasible, in the case of public facility provisions

- g) Affect the public facilities of those municipalities and other jurisdictions with whom the City has interlocal agreements

**Strategy CI 1.2.4** – The City shall proactively plan for and fund climate-resilient infrastructure that meets the needs of present generations and progresses the City towards a sustainable future that meets the needs of future generations.

### **Intent CI 1.3**

The City shall ensure that future development will minimize the exposure of population and property to storm damage by restricting development in coastal high-hazard areas, curtailing public funding of facilities within these areas, and aligning public funding with the conservation and coastal management elements of the comprehensive plan.

**Strategy CI 1.3.1** - City-funded public facilities shall not be built in the coastal high-hazard area, unless the facility is for public access or resource restoration.

**Strategy CI 1.3.2** – Construction projects within the designated redevelopment areas shall be in accordance with the adopted land uses specified in the Community Redevelopment Plans.

### **Intent CI 1.4**

The City shall continue its present system of fees and investigate the potential benefits and costs of installing new fees where deemed necessary to ensure that private developments continue to assist in defraying the cost of providing and maintaining the minimum levels of service and enhancing mobility for present and future residents of the City.

**Strategy CI 1.4.1** – The City shall retain its present user fees for water, sewer, solid waste collection, electric service, and selected recreational activities; capital improvement charges for new water, sewer, and electric service; and permit fees throughout the planning period and shall annually monitor such fees and charges during the budgeting process to ensure that the rates are adequate.

**Strategy CI 1.4.2** – The City shall maintain a stormwater utility and collect an adequate monthly user fee from the owners of all developed properties as necessary to provide revenues sufficient to finance the development of a comprehensive stormwater management plan, necessary capital improvements, and a systematic annual maintenance program.

### **Intent CI 1.5**

The City shall ensure that the capacity of schools is sufficient to support residential development order approvals at the adopted level of service (LOS) standards.

**Strategy CI 1.5.1** – The LOS standards shall be applied consistently by the City and by Duval County Public Schools (“DCPS”) district-wide to all schools of the same type.

**Strategy CI 1.5.2** – The City hereby adopts by reference the DCPS Master Facility Plan Recommendations, “A Bold Plan for DCPS” adopted 2019, and the DCPS Strategic Plan Goals 2021-2026.

DRAFT

# **XI. Public School Facilities Element**

## **Public School Facilities Element**

### **Vision PS 1**

The City shall collaborate and coordinate with the Duval County Public Schools (DCPS) to ensure that the public school system offers a high-quality educational environment, provide accessibility for all its students, and ensure adequate school capacity to accommodate existing and future population.

#### **Intent PS 1.1**

The City shall establish coordination review procedures to ensure consistency of its Comprehensive Plan with the plans of the DCPS, the Interlocal Agreement, the County, and the other municipalities.

##### **Strategy PS 1.1.1**

It is the intent of this element that the strategies included herein shall be applied to the City, unless specifically noted.

##### **Strategy PS 1.1.2**

Staff from the City shall meet in joint workshop sessions with staff from DCPS and the other municipalities on an as needed basis, but at a minimum of twice per year, to provide opportunities to discuss issues of mutual concern.

##### **Strategy PS 1.1.3**

City Council will meet with the DCPS and the legislative bodies of the other municipalities on an annual basis in a joint workshop or meeting session to discuss issues regarding coordination of land use and school facilities planning, including population and student growth, development trends, school sitings, school needs, school concurrency, co-location and joint-use opportunities, and ancillary infrastructure improvements needed to support and ensure safe student access.

##### **Strategy PS 1.1.4**

The City shall coordinate and base its plans upon consistent projections of the amount, type, and distribution of population growth and student enrollment which are consistent with those of the DCPS and the other municipalities. The Interlocal Agreement shall establish the methodology to be used to determine school enrollment projections to be use in preparing the DCPS 5 Year Capital Plan, and the methodology to be used to determine school enrollment and capacity to be used in concurrency testing. At a minimum, the methodology shall include consideration of both students anticipated from projected new housing stock and enrollment projected to occur from existing housing stock, and that each of these

components of projected student enrollment be set out for each Concurrency Service Area by type of school, or a functional equivalent. To ensure that the City's Capital Improvement Plan and the Concurrency Management System are financially feasible, the City shall confirm that the student enrollment projections from new housing stock in each Concurrency Service Area are consistent with the population projections for that Concurrency Service Area. The City will annually revise its Five-year population projections and update information and provide those revised projections and information to the DCPS and the other municipalities in order that DCPS annually update its school enrollment projections.

#### **Strategy PS 1.1.5**

At the time of adoption of the 2050 Comprehensive Plan, the City shall coordinate and share data with DCPS including an inventory of reserved capacity that existed prior to the effective date of the City's School Concurrency Ordinance, approval and a projection of the number of these residential units that are anticipated to receive certification of occupancy approval in the next five years, and the identification of any development orders issued which contained a requirement for the provision of a school site as a condition of the development approval.

#### **Strategy PS 1.1.6**

On an ongoing basis, the City will provide the DCPS with data, including information regarding the type, number, and location of residential units which have received zoning approval, site plan approval, a building permit, or a Certificate of Occupancy and a draft Capital Improvements Plan (CIP) with the final version of the CIP to be submitted by the City to the DCPS after official adoption. Information regarding the conversion or redevelopment of housing or other structures into residential units that are likely to generate new students shall be provided.

#### **Strategy PS 1.1.7**

By December of each year, the City, shall consider for adoption of the DCPS Five-Year Capital Facilities Plan to the extent that it relates to school capacity to ensure maintenance of a financially feasible capital improvements program and to ensure level of service standards will continue to be achieved and maintained within each year of the subsequent five-year schedule of capital improvements. If the City determines that the DCPS Five Year Capital Facilities Plan is not financially feasible, then the City shall notify the DCPS that the Five Year Capital Facilities Plan is not financially feasible, and request that DCPS modify the Five Year Capital Facilities Plan to make it financially feasible.



## **Intent PS 1.2**

The City shall coordinate with DCPS and the other municipalities to establish a process of coordination and collaboration between the City and the DCPS in the planning, siting and construction of educational facilities, so that timing is proper and the site location is compatible with the surrounding area, concurrent with necessary service and infrastructure, and consistent with the comprehensive plan.

### **Strategy PS 1.2.1**

The City will coordinate with the DCPS to assure that proposed public school facility sites in the City are consistent with the applicable land use categories and policies of the Comprehensive Plan. Pursuant to Florida Statutes, the City will consider each site, within its boundaries, as it relates to environmental, health, safety, and welfare concerns, as well as the effects on adjacent property.

### **Strategy PS 1.2.2**

The City will coordinate with the DCPS for the selection of future school sites within the City as to aspects related to:

- (a) Acquisition of school sites which:
  - i. Allow for future expansions to accommodate future enrollment, in accordance with the adopted level of service (LOS) standards and other facility needs;
  - ii. Coordinate with the City's development and redevelopment objectives; and
  - iii. Are deemed beneficial for joint uses, as identified by the DCPS and the City, to the extent feasible; and
- (b) Coordination of the location, phasing, and development of future school sites to ensure that site development occurs in conjunction with the provision of required infrastructure to serve the school facility

### **Strategy PS 1.2.3**

Public schools shall be located so as to provide direct access to collector or arterial roadway system, where feasible.

### **Strategy PS 1.2.4**

The City shall coordinate with the DCPS to evaluate and seek to locate potential sites where the co-location of public facilities, such as parks, libraries, and community centers, with schools can be accomplished.

### Strategy PS 1.2.5

As stated in the Future Land Use Element, schools are an allowable land use in residential, Commercial Limited, Community Commercial, and Commercial Professional Office future land use designations, subject to the following criteria:

- (a) In the planning, land acquisition, and development of new school sites, or significant renovations, expansions and potential closures of existing schools, the City will evaluate the following factors:
  - i. Whether the area contains or will contain a student population density sufficient to support the school;
  - ii. Whether a school in that location would be consistent with sound facility planning, including consideration of overall costs and design;
  - iii. Whether the school site is of sufficient size to accommodate the required parking and circulation of vehicles;
  - iv. Whether anticipated unacceptable impacts to the environment and significant environmental constraints would preclude a school on the site;
  - v. Whether development of the school would result in unacceptable impacts on archaeological or historic sites listed in the National Register of Historic Places or, should a historic preservation ordinance be adopted, impact the designation by the City as locally significant;
  - vi. Whether the site location is located within the area of velocity flood zone regulated by Section 333.03(3), F.S., regarding coastal high hazard areas as delineated by the City;
  - vii. Especially for elementary schools, but generally for all school levels, whether the site is proximate to and within walking distance of the residential neighborhoods the school is intended to serve, thereby encouraging the use of schools as focal points for neighborhoods;
  - viii. Whether the location has access to major roads, the urban trails system, and/or sidewalks and multi-modal connectivity;
  - ix. Whether the new school site, significant renovation, expansion or potential closure will support community redevelopment and revitalization;

- x. Whether the new school site, significant renovation, expansion or potential closure will increase or diminish the current and projected level of service within the concurrency service area, and contiguous concurrency service areas.
- (b) The facility shall be of a design, intensity, and scale to serve the surrounding neighborhood and be compatible with the surrounding land uses and zoning.

#### **Strategy PS 1.2.6**

The City shall protect schools from the intrusion of incompatible land uses as determined by the City's Land Development Regulations, by providing the DCPS the opportunity to participate in the review process for all proposed developments adjacent to schools.

#### **Strategy PS 1.2.7**

The City shall coordinate with the DCPS to ensure that the future school facilities are located outside areas susceptible to hurricane and/or storm damage, and/or areas prone to flooding, or as consistent with Chapter 1013 F.S., regarding flood plain and school building requirements.

### **Intent PS 1.3**

The City shall coordinate with the DCPS to enhance community and neighborhood design through establishing effective school facility design and siting standards thereby encouraging the siting of school facilities to serve as community focal points and to be compatible and integrated with the surrounding land uses.

#### **Strategy PS 1.3.1**

The City shall coordinate with the DCPS in order to provide consistency with the City's Comprehensive Plan and public school facilities program, and to provide for the following desirable outcomes:

- (a) Greater efficiency by the placement of schools to take advantage of the existing and planned roads, water, sewer, parks, and drainage systems;
- (b) Improved student access and safety by coordinating the construction of new and expanded schools with roads, the urban trail system, bicycle lanes and paths, and sidewalk construction programs;
- (c) The location and design of schools with parks, ball fields, libraries, and other community facilities to take advantage of shared use opportunities; and

- (d) The expansion and rehabilitation of existing schools to support neighborhoods and redevelopment.

#### **Strategy PS 1.3.2**

The City shall coordinate with DCPS to seek to provide for the shared-use and co-location of school sites and local government facilities with similar facility needs, such as libraries, parks, and recreation facilities, and health care facilities. The City will look for opportunities to co-locate and share local government facilities when preparing updates to the Comprehensive Plan's schedule of capital improvements and when planning and designing new, or renovating existing, community facilities.

#### **Strategy PS 1.3.3**

Should the City create a historic preservation ordinance, where continued use of an existing school that is considered a locally significant building is not feasible, the City shall seek to coordinate with DCPS to provide for the adaptive reuse of that locally significant building.

#### **Strategy PS 1.3.4**

New residential developments adjacent to schools shall be required to provide a direct access that is safe for pedestrian and/or bicycle travel to existing and planned school sites and shall connect to the neighborhood's existing pedestrian and/or multi-modal (e.g., urban trails, bike lanes, bike path, etc.) network. Residential developments which are age-restricted (55+) and therefore, as deemed by an official letter from the City, are exempt from school concurrency are therefore also exempt from this policy.

#### **Strategy PS 1.3.5**

To allow for the safety of pedestrians and bicyclists, the City shall coordinate with the DCPS to ensure that pedestrian and bicycle facilities are provided adjacent to school sites located in the City.

#### **Strategy PS 1.3.6**

The City, and the DCPS, is encouraged to utilize and work with the nationally funded Safe Routes to School (SRTS) program to promote students walking and biking to school where feasible.

## **XII. Property Rights Element**

## **Property Rights Element**

### **Vision PR 1**

The City will respect judicially acknowledged and constitutionally protected private property rights, in accordance with the legislative intent of the Community Planning Act established in Chapter 163, Florida Statutes.

#### **Intent PR 1.1**

The City will ensure that private property rights are considered in local decision making.

#### **Strategy PR 1.1.1**

The following private property rights shall be considered in local decision making.

1. The right of a property owner to physically possess and control his or her interests in the property, including easements, leases, or mineral rights.
2. The right of a property owner to use, maintain, develop, and improve his or her property for personal use or for the use of any other person, subject to state law and local ordinances.
3. The right of the property owner to privacy and to exclude others from the property to protect the owner's possessions and property.
4. The right of a property owner to dispose of his or her property through sale or gift.



## **XIII. Historic Preservation Element**

## Historic Preservation Element

### Vision HP 1

To protect the City's cultural heritage by way of identification, documentation, and preservation of its archaeological, architectural, historic, and cultural resources.

#### Intent HP 1.1

The Planning and Development Department should encourage the surveying of existing cultural resources within the City.

**Strategy HP 1.1.1** – The Planning and Development Department shall pursue and consider grant funding from the Florida Division of Historical Resources.

**Strategy HP 1.1.2** – The City shall encourage the surveying of all structures 50+ years or older and maintaining inventory of said surveyed structures. Catalogued properties will be reviewed for historical significance and potential for inclusion into the Florida master Site File. This data shall also be utilized in the review of all development proposals, to determine and prevent adverse effects on historic resources.

**Strategy HP 1.1.3** – The City shall preserve, when appropriate, identified historically significant housing through city action or support for private actions and support the identification of historically significant housing by cooperation of the Planning and Development Department with the Jacksonville Historic Landmarks Commission.

**Strategy HP 1.1.4** – The City shall establish principles and standards to guide techniques and strategies for conservation, rehabilitation, and demolition programs.

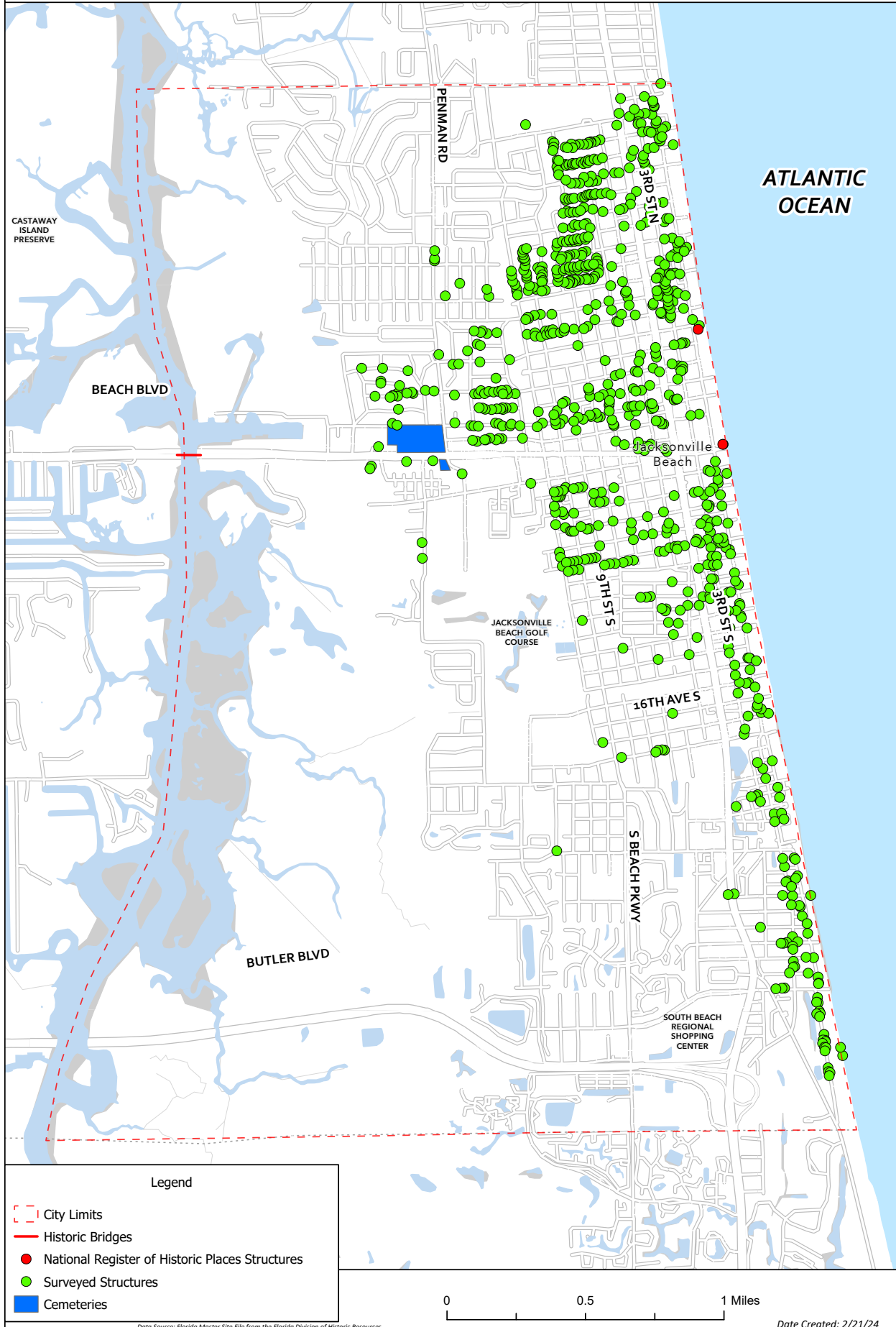
### Vision HP 2

The Planning and Development Department should encourage the City to become a Certified Local Government (CLG).

#### Intent HP 2.1

The Planning and Development Department should encourage the creation of a historic review board in order to fulfil the requirements for a CLG.

**Strategy HP 2.1.1** –The Planning and Development Department should investigate updating the Land Development Code (LDC) to allow for a historic review board and allow for historic structure protection.



# 2050 Comprehensive Plan Updates

## Broad Overview

| Element     |                                     | Updates                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Entire Plan |                                     | Updated all maps<br>Switched from Goals, Objectives, and Policies to Visions, Intents, and Strategies<br>Ensured State Statute compliance for the entire plan<br>Removed outdated references (dates, FSS, and thresholds)<br>Added a definitions section to the Comprehensive Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| II          | Future Land Use                     | Defined the intent of each land use category<br>Removed Floor Area Ratio (FAR) references<br>Added an active recreation requirement to new subdivisions and new residential developments<br>Adopted by reference the Urban Trails Map and added language encouraging the Urban Trails Master Plan incorporation into new development/redevelopment<br>Added language regarding the Live Local Act<br>In the CL land use category: limited the allowable 40 units/acre to only affordable per SB 102<br>In the CC land use category: limited the allowable 40 units/acre to only affordable per SB 102<br>In the CS land use category: added language that the City is phasing out this land use, so there will not be any new land use amendments to CS<br>Added hazard mitigation techniques, that will be further defined in the LDC, for development and redevelopment in the Coastal High Hazard Area (CHHA)<br>Added the Marina Mixed-Use land use category |
| III         | Transportation                      | Added language encouraging the Urban Trails Master Plan incorporation into new development/redevelopment<br>Added language to encourage and incentivize multimodal infrastructure<br>Added language to encourage complete streets designs with new development/redevelopment<br>Encourage the creation of an urban trails fund                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| IV          | Housing Element                     | Added language encouraging innovative residential development and affordable housing<br>Added language to pursue alternative methods of filling the 'missing middle' housing<br>Added language to discourage the redevelopment and demolition practices that significantly decrease housing stock<br>Added language to ensure neighborhood character is protected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| V           | Public Facilities Element           | Updated language based on current data, master plans, and pertinent documents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| VI          | Conservation and Coastal Management | Combined the Conservation and Coastal Management Elements<br>Added language to incentivize sustainable development and redevelopment<br>Added language to encourage the City to proactively plan for and pursue funding for climate-resilient infrastructure<br>Added language to restrict new residential development in the CHHA<br>Added language to promote best management practices to reduce losses due to flooding                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| VII         | Recreation and Open Space           | Added level of service (LOS) standards for recreation facilities (pickleball court, tennis courts, playgrounds, etc.)<br>Added language encouraging the Urban Trails Master Plan incorporation into new development/redevelopment<br>Added language to encourage multimodal infrastructure and provide incentives to encourage it<br>Added language encouraging prioritization and protection of recreation and open space for residents<br>Added language to encourage a park fund<br>Added language to prioritize connecting parks, public spaces, and neighborhoods                                                                                                                                                                                                                                                                                                                                                                                           |
| VIII        | Intergovernmental Coordination      | Updated out of date references                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| IX          | Capital Improvements                | Updated out of date references                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| X           | Public Schools Facilities           | Updated out of date references                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| XI          | Property Rights                     | Did not need to update-recently updated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| XII         | Historic Preservation               | Added this element which encourages the City to protect its historic and cultural resources                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



| CITY COUNCIL AGENDA ITEM |                                                                            |
|--------------------------|----------------------------------------------------------------------------|
| TO:                      | Michael J. Staffopoulos, City Manager                                      |
| FROM:                    | Steve Sciotto, Fire Marshal                                                |
| DATE:                    | 04/15/2024                                                                 |
| SUBJECT:                 | Ordinance No. 2024-8215 Amending Chapter 10, Article, III, Section 10-3.03 |

#### BACKGROUND

The 8<sup>th</sup> Edition of The Florida Fire Prevention Code (FFPC) was adopted by the State this year. In turn, the City of Jacksonville Beach needs to update Chapter 10, Article III, Section 10-3.03 of the City's Code of Ordinances to reflect the change.

There are 2 major code changes to the FFPC:

1. Bars, restaurants, and other assembly occupancies are required to have fire sprinkler systems if they have an occupancy load of 100 or greater. The old code required a fire sprinkler system if the occupancy load was 300 or greater.
2. Energy Storage Systems is a new chapter that has been added to the FFPC code book. It regulates the installation of Green Energy Battery Systems and how close they can be near windows, if they can be installed inside houses, how many batteries can be stored, etc.

The proposed revision to the City's Code is as follows:

#### **Sec. 10-3.03. - Codes adopted.**

The Florida Fire Prevention Code (FFPC) is adopted in its entirety as an addition to the text of this chapter. The text of this adopted model code shall be fully enforceable as other regulations adopted under the provisions of this chapter as if the same were incorporated and set forth at length herein. Model codes adopted pursuant to this chapter shall not waive any provisions of this chapter or be less restrictive than its provisions. ~~The 6<sup>th</sup> Edition of the FFPC is adopted through December 31, 2020. The 7<sup>th</sup> 8<sup>th</sup> Edition of the FFPC will be~~ is adopted effective January 1, 2024 June 1, 2024.

#### FINANCIAL IMPACT

None.

#### REQUESTED ACTION

Approve/Disapprove Ordinance No. 2024-8215 on the first reading amending Chapter 10 - Fire and Life Safety, Article III. - Fire Prevention and Life Safety, Section 10-3.03. - Codes Adopted, and schedule a second reading for May 20, 2024

#### ATTACHMENTS

1. Ordinance No. 2024-8215

Introduced by: \_\_\_\_\_  
1st Reading: \_\_\_\_\_  
2nd Reading: \_\_\_\_\_

**ORDINANCE NO. 2024-8215**

**AN ORDINANCE OF THE CITY OF JACKSONVILLE BEACH, FLORIDA, AMENDING CITY CODE OF ORDINANCES CHAPTER 10, ARTICLE III, SECTION 10-3.03. "CODES ADOPTED;" PROVIDING FOR ADOPTION OF RECITALS AND LEGISLATIVE FINDINGS, REPEAL OF CONFLICTING ORDINANCES, SEVERABILITY, SCRIVENER'S ERRORS, CODIFICATION, AND AN EFFECTIVE DATE.**

**WHEREAS**, the City of Jacksonville Beach ("City") has the authority to adopt this Ordinance pursuant to Article VIII of the Constitution of the State of Florida and Chapter 166, Florida Statutes; and

**WHEREAS**, Chapter 10 of the City's Code of Ordinances is titled "Fire and Life Safety." In summary, Article III "Fire Prevention and Life Safety," Section 10-3.03 "Codes Adopted," states the Florida Fire Prevention Code (FFPC) is adopted in its entirety as an addition to the text of the chapter and states which editions are adopted. The last time the edition portion of this section was updated was in 2020, via Ordinance No. 2020-8153, which adopted FFPC Editions 6 and 7; and

**WHEREAS**, Section 10-3.03 needs to be updated to the current edition of the FFPC; and

**WHEREAS**, the City Council hereby finds that this Ordinance serves a legitimate government purpose, it is a permissible exercise of the City's powers and authority, and benefits the public health, safety, and welfare of the citizens, residents, and guests of the City of Jacksonville Beach.

**NOW, THEREFORE, BE IT ORDAINED BY THE CITY OF JACKSONVILLE BEACH, FLORIDA:**

**SECTION 1. RECITALS AND LEGISLATIVE FINDINGS.** The above recitals and legislative findings are ratified, correct, and made a part of this Ordinance.

**SECTION 2. CHAPTER 10, ARTICLE III, SECTION 10-3.03 OF THE CODE OF ORDINANCES, CITY OF JACKSONVILLE BEACH, FLORIDA, IS HEREBY AMENDED TO READ AS FOLLOWS:<sup>1</sup>**

The Florida Fire Prevention Code (FFPC) is adopted in its entirety as an addition to the text of this chapter. The text of this adopted model code shall be fully enforceable as other regulations adopted under the provisions of this chapter as if the same were incorporated and set forth at length herein. Model codes adopted pursuant to this chapter shall not waive any provisions of this chapter or be less restrictive than its provisions. ~~The 6<sup>th</sup> Edition of the FFPC is adopted through December 31, 2020. The 7<sup>th</sup> 8<sup>th</sup> Edition of the FFPC will be~~ is adopted effective January 1, 2024 June 1, 2024.

<sup>1</sup> ~~Strikethrough~~ text indicates deletions, underline text indicates additions.



**SECTION 3. CONFLICTING ORDINANCES.** That all ordinances, resolutions previously adopted by the City in conflict with this Ordinance, or parts thereof, are repealed to the extent inconsistent herewith.

**SECTION 4. SEVERABILITY.** If any section, subsection, clause, or provision of this Ordinance is deemed invalid or unconstitutional by a court of competent jurisdiction, such portion will become a separate provision and will not affect the remaining provisions of this Ordinance.

**SECTION 5. SCRIVENER'S ERRORS.** Typographical errors and other matters of a similar nature that do not affect the intent of this Ordinance, as determined by the City Clerk and City Attorney, may be corrected with the endorsement of the City Manager without the need for a public hearing or further action by the City Council.

**SECTION 6. CODIFICATION.** The City Council intends that this ordinance will be made a part of the City of Jacksonville Beach Code of Ordinances.

**SECTION 7. EFFECTIVE DATE.** This ordinance shall take effect and be enforceable in all aspects immediately upon final reading and approval by the City Council for the City of Jacksonville Beach as authenticated herein.

**AUTHENTICATED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, A.D., 2024.**

\_\_\_\_\_  
Christine H. Hoffman, Mayor

\_\_\_\_\_  
Sheri Gosselin, City Clerk

Approved as to form and legal sufficiency:

\_\_\_\_\_  
David Migut, City Attorney



| CITY COUNCIL AGENDA ITEM |                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------|
| TO:                      | Michael J. Staffopoulos, City Manager                                                 |
| FROM:                    | David Migut, City Attorney                                                            |
| DATE:                    | 04/05/2024                                                                            |
| SUBJECT:                 | Ordinance No. 2024-8216 Proposed Amendments to the City of Jacksonville Beach Charter |

#### BACKGROUND

Ordinance No. 2024-8216 proposes three amendments to the Charter of the City of Jacksonville Beach for various reasons. First, one of the proposed amendments regarding gender neutrality was voted down by the electorate on the November 2022 ballot, presumably due to poor wording of explanation. This language has been revised to be more clear as to its intent.

Second, after Council Member/Mayor Pro Tem Cory Nichols resigned in December 2023, the City Council discussed an additional Charter amendment regarding how to fill a vacancy caused by a council member other than by recall for the remainder of the unfulfilled term of office.

The last proposed Charter amendment is to address and delete existing language in Section 23 of the Charter that states that City Council shall elect a person to fill a vacancy in the office of mayor, as such language conflicts with existing language in Section 5 of the Charter that states that if a vacancy occurs in the office of mayor, the mayor pro-tem shall act as mayor.

#### FINANCIAL IMPACT

None.

#### REQUESTED ACTION

Approve/Disapprove Ordinance No. 2024-8216 on the first reading submitting to the electors of the City of Jacksonville Beach proposed amendments to the City of Jacksonville Beach Charter, and schedule a second reading for May 20, 2024

#### ATTACHMENTS

1. Ordinance No. 2024-8216 Charter Amendments

Introduced by: \_\_\_\_\_  
1st Reading: \_\_\_\_\_  
2nd Reading: \_\_\_\_\_

**ORDINANCE NO. 2024-8216**

**AN ORDINANCE OF THE CITY OF JACKSONVILLE BEACH, FLORIDA, SUBMITTING TO THE ELECTORS OF JACKSONVILLE BEACH PROPOSED AMENDMENTS TO THE CHARTER OF THE CITY OF JACKSONVILLE BEACH; PROVIDING BALLOT TITLES, SUMMARIES AND TEXT FOR THE PROPOSED AMENDMENTS; PROVIDING DIRECTIONS TO THE CITY CLERK; PROVIDING FOR SEVERABILITY; PROVIDING FOR AN EFFECTIVE DATE FOR APPROVED AMENDMENTS; PROVIDING FOR AN EFFECTIVE DATE FOR THE ORDINANCE.**

**WHEREAS**, over several months from April 2021 through January 2022, the members of the City of Jacksonville Beach City Council, in a series of public meetings, studied and reviewed the City of Jacksonville Beach Charter (the "Charter") and received public input regarding proposed amendments to the Charter; and

**WHEREAS**, on the November 2022 ballot, several proposed amendments to the Charter were submitted to the electorate for consideration. One of the proposed amendments contained in this Ordinance regarding gender neutrality was voted down by the electorate, presumably due to poor wording of explanation; and

**WHEREAS**, after Council Member/Mayor Pro-Tem Cory Nichols resigned in December 2023, the City Council also discussed in several public meetings an additional Charter amendment regarding how to fill a vacancy caused by a council member other than by recall for the remainder of the unfulfilled term of office; and

**WHEREAS**, City Council has discussed a Charter amendment to address and delete existing language in Section 23 of the Charter that states that City Council shall elect a person to fill a vacancy in the office of mayor, as such language conflicts with existing language in Section 5 of the Charter that states that if a vacancy occurs in the office of mayor, the mayor pro-tem shall act as mayor; and

**WHEREAS**, the City Council has determined that the Charter should be updated and revised in various sections along these lines; and

**WHEREAS**, Section 166.031, Florida Statutes, provides that the governing body of a municipality may, by ordinance, submit to the electors of said municipality proposed amendments to its charter, which amendments may be to any part or to all of its charter except that part describing the boundaries of such municipality; and

**WHEREAS**, the City Council finds it to be in the best interests of its citizens to submit said proposed Charter amendments to the voters at the municipal election on November 5, 2024.

**NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF**

## JACKSONVILLE BEACH, FLORIDA:

**Section 1.** The City Council of the City of Jacksonville Beach, pursuant to Section 166.031, Florida Statutes, hereby proposes and approves amendments to the Charter of the City of Jacksonville Beach to be submitted to the electorate for consideration, which proposed amendments and the complete text thereof, as amended, are set forth in Section 3 below. Additions are shown with underlining, deletions are shown with ~~striketrough~~ type, and asterisks (\*\*\*) indicate an omission from the existing text which is intended to remain unchanged.

**Section 2.** Such election shall be held in conformity with the laws of the State of Florida and the Charter and ordinances of the City of Jacksonville Beach now in force relating to elections in the City of Jacksonville Beach. The Supervisor of Elections of Duval County is hereby requested to coordinate all matters to said referendum election with the City Clerk. The proposed charter amendments shall be submitted to the voters at the November 5, 2024, election.

**Section 3.** The proposed amendments, the ballot title, and the wording of the substance of the proposed amendments to the Charter, as contained in this Ordinance, shall appear on the ballot in the form of questions affixed to this Ordinance as Exhibit 1.

**Section 4.** The City Clerk is hereby directed to ensure that all advertising, translation, and notice requirements are complied with and to coordinate all activities necessary to conduct the referendum election called for in Section 2 of this Ordinance with the Supervisor of Elections for Duval County.

**Section 5.** If any section, subsection, sentence, clause, phrase, or portion of this Ordinance is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a separate, distinct, and independent provision and such holding shall not affect the validity of the remaining portion hereto. Further, the lack of approval by a majority of electors of one or more separate amendments to this Charter, as set forth in Section 3 herein, shall not be deemed to affect the validity of any amendments that may be approved by a majority of the electors.

**Section 6.** All ordinances and Charter provisions, or parts of ordinances and Charter provisions in conflict herewith are hereby repealed.

**Section 7.** This Ordinance shall take effect immediately and pursuant to the City's Charter. The revised Charter provisions proposed for approval in this Ordinance shall become effective upon their approval at a referendum election of the electors of the City of Jacksonville Beach in accordance with Section 166.031, Florida Statutes. If the electors reject an amendment, the rejected amendment shall not take effect.

AUTHENTICATED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, A.D., 2024.

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Christine Hoffman, Mayor

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Sheri Gosselin, City Clerk

Approved as to form and legal sufficiency:

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David Migut, City Attorney

DRAFT

## **EXHIBIT 1**

### **Explanation of Ballot Title, Question, Summary, and Text References**

#### **Question 1 – Job Descriptions and Duties**

A. **Explanation.**

This Charter amendment would eliminate all gender pronoun references associated with job descriptions or duties in the City Charter.

B. **Ballot Proposal:** The ballot title and question for Question #1 are as follows:

REMOVING PRONOUN REFERENCES AS ASSOCIATED WITH  
JOB DESCRIPTIONS OR DUTIES REFERENCED IN THE CITY  
CHARTER

Approve to amend the Charter by removing he/she, him/her, and his/her gender pronoun references that are associated with job descriptions or duties in the City Charter.

\_\_\_\_\_ Yes

\_\_\_\_\_ No

C. **Text References:** Chapter 1, Sections 3(a), 4, 5, and 6; Chapter 3, Sections 15, 18, 19, and 24; Chapter 5, Sections 26, 28, 29, 31, and 33; Chapter 6, Section 37; all of the City of Jacksonville Beach Charter to be amended as set forth in those sections in the “All Proposed Changes” document below. (Underline text is added to the Charter; strikethrough text is deleted; unmarked text is existing).

#### **Question 2 – City Council Vacancies**

A. **Explanation.**

This Charter amendment would allow the city council to select a person to fill any vacancy in the office of a city council member caused by other than recall for the remainder of the unfulfilled term of that office.

B. **Ballot Proposal:** The ballot title and question for Question #2 are as follows:

ALLOWING COUNCIL TO FILL VACANCIES IN COUNCIL  
OFFICE FOR REMAINDER OF TERM

Approve to amend the Charter by allowing the city council to select a person to fill any vacancy in the office of a city council member caused by other than recall for the remainder of the unfulfilled term of that office.

\_\_\_\_\_ Yes

\_\_\_\_\_ No



- C. **Text References**: Chapter 4, Section 23 of the City of Jacksonville Beach Charter to be amended as set forth in that section in the “All Proposed Changes” document below. (Underline text is added to the Charter; strikethrough text is deleted; unmarked text is existing).

**Question 3 – Vacancy in the Office of the Mayor**

A. **Explanation.**

This Charter amendment would eliminate an existing discrepancy in the City Charter to make it clear that if a vacancy occurs in the office of the mayor, the mayor pro-tem shall act as mayor for the unexpired term.

- B. **Ballot Proposal**: The ballot title and question for Question #3 are as follows:

CLARIFYING THAT THE MAYOR PRO-TEM FILLS A VACANCY  
IN THE OFFICE OF THE MAYOR

Approve to amend the Charter by deleting conflicting language to make it clear that if a vacancy occurs in the office of the mayor, the mayor pro-tem shall act as mayor for the remainder of the unexpired term.

\_\_\_\_\_ Yes

\_\_\_\_\_ No

- C. **Text References**: Chapter 4, Section 23 of the City of Jacksonville Beach Charter to be amended as set forth in that section in the “All Proposed Changes” document below. (Underline text is added to the Charter; strikethrough text is deleted; unmarked text is existing).

# City of Jacksonville Beach Charter – Proposed Amendments

(Additions underlined; deletions ~~strikethrough~~)

## CHAPTER I. - GENERAL PROVISIONS

### Section 3. Creation, salary and composition of council.

- A. Except as otherwise provided in this Charter, all powers of the city shall be vested in a council composed of a mayor and six (6) other members, three (3) of which shall be at-large members and three (3) of which shall be district members. The boundary for each of the three (3) districts is described in Appendix "A" of this Charter. The district boundaries shall be reapportioned every ten (10) years commencing with the 1990 Official Florida State and Federal Census. Each reapportionment shall be completed by the city council by ordinance enacted within six (6) months of the date of official publication of the most recent Official Florida State and Federal Census. District boundaries shall be reapportioned to create districts of nearly equal population. Districts shall be arranged in a logical and compact geographic pattern and shall promote fair representation. The mayor and the three (3) at-large members of the council shall be qualified electors of the city and shall be nominated and elected from the city at-large and the three (3) district council members shall be qualified electors of the city and shall also be residents of the district which they represent and shall be nominated and elected from the district they represent. The mayor and all council members shall be elected in the manner hereinafter provided. The term of office of the mayor and all council members shall be for four (4) years next following their election or until their successors are elected and qualified. A person serving as the mayor shall be limited to serving two (2) consecutive full-terms on the council. A person serving as council member shall be limited to serving two (2) consecutive full-terms as council member, after which they are eligible to seek qualification to run for an additional two (2) consecutive terms as mayor. The maximum number of terms a council member moving from a city council seat to mayor may serve is a total of four (4) consecutive terms. The maximum number of terms a mayor can serve on the council is two (2) consecutive terms. An individual who has served two (2) consecutive terms as Mayor shall not seek a consecutive term as a council member. A term shall be considered a full-term if the elector has served two or more years of their first four (4) year term and any portion of their second consecutive four (4) year term. Members of the city council and the mayor shall be bona fide residents of the City of Jacksonville Beach and, where applicable, the districts they represent and not a resident of any other city or district. Should any council member or the mayor move from the City of Jacksonville Beach, or, where applicable, the district they represent, during the term of office for which they were elected, then, in that event that office shall automatically become vacant from the date of such removal. The mayor or any member of the council ceasing to possess any of the qualifications specified in this Charter, or convicted of a felony while in office, or removed from office by recall election, shall immediately forfeit ~~his~~that office.

#### **Section 4. Mayor; duties and powers.**

There is hereby created the office of mayor of the City of Jacksonville Beach, who shall be nominated and elected as above provided. ~~He~~The mayor shall have all the powers and functions of a ~~councilman~~ council member of the City of Jacksonville Beach, and shall also have the powers and perform the duties conferred and imposed upon him~~the office~~ by this Charter and the ordinances of the city.

The mayor shall preside at all meetings of the council and shall have a voice and a vote in the proceedings of the council, but no veto power. ~~He~~The mayor may use the title of mayor in any case in which the execution of legal instruments or writing or other necessity arising from the City Charter or from the general laws of the state so require but this shall not be considered as conferring upon him~~the mayor's office~~ the administrative or judicial functions of mayor under the general laws of the state, except that the mayor shall have the power to perform marriage ceremonies. ~~He~~The mayor shall be recognized as the official head of the city by the courts for the purpose of serving civil processes upon the city, by the government in the exercise of military law, and for all ceremonial purposes.

In time of public danger or emergency, the mayor ~~on his own authority~~ may, by proclamation, take command of and govern the city for a period not to exceed seventy-two (72) hours. If the public danger or emergency requires that governance of the city by the mayor ~~and his government of the city by proclamation~~ should be extended, this may be authorized for a period not to exceed five (5) days by the affirmative vote of at least five (5) ~~councilmen~~council members.

#### **Section 5. Mayor pro-tem.**

At its first meeting following a regular municipal election and certification by the Supervisor of Elections, the council shall choose from its membership a vice-chairman who shall have the title of mayor pro-tem. If a vacancy occurs in the office of mayor, or in case of ~~his~~the mayor's absence or disability, the mayor pro-tem shall act as mayor for the unexpired term, or during the continuance of the absence or disability. Whenever the mayor pro-tem succeeds to the office of mayor for the remaining portion of an unexpired term, it shall create a vacancy in the council, which vacancy shall be filled in accordance with the provisions of this Charter.

#### **Section 6. Meetings of council.**

The council shall meet as may be prescribed by ordinance or resolution, but not less frequently than once each month. Special meetings shall be called by the clerk upon the request of the mayor. A council member may request a special meeting by contacting the city clerk and stating the reason for ~~his~~the request. The city clerk shall inform the city manager, who will then determine whether a majority of the other members of the council support the request. If they do, the special meeting will be called by the clerk. At least forty-eight (48) hours' notice of all special meetings shall be given to each council member, but such notice may be waived by any council member

who verbally agrees to attend such meeting. Service of such notice shall be made either electronically via email, in person, or by leaving a copy at the residence of the council member being served. Any such notice shall state the subject to be considered at the special meeting and no other subject shall be considered. All meetings of the council and of committees thereof shall be open to the public and conducted in accordance with state law and the rules of the council. The rules of the council shall provide that the public shall have a reasonable opportunity to be heard at any such meetings of the council or its committees regarding any matter to be considered.

### **CHAPTER III. - ELECTIONS**

#### **Section 15. - Municipal elections.**

Beginning with the next election after adoption:

- (a) *Primary election.* When more than two candidates are running for the same elective office, a primary election shall be held only for the municipal offices that have more than two candidates running for the same seat. Such primary election date shall be set according to Florida Statutes Chapters 99.061(2) and 100.061.

If a candidate receives a majority of the votes cast for any particular seat or office at the primary election, ~~he or she~~ the candidate shall be declared elected to said seat or office and ~~his or her~~ that candidate's name shall not be placed on the ballot in the general election. However, if no candidate receives a majority of the votes cast for any particular seat or office at the primary election, the two (2) candidates for each seat of the council, as well as candidates for mayor, receiving the two (2) highest number of votes for that seat or for the office of mayor shall have their names placed on the ballot for that seat or office at the general election.

#### **Section 18. - Officers to be elected.**

The city council shall be divided into six (6) groups or seats as follows:

Seat 1 - At-Large

Seat 2 - At-Large

Seat 3 - At-Large

Seat 4 - District 1

Seat 5 - District 2

### Seat 6 - District 3

In qualifying for election to city council each candidate shall designate the seat for which ~~he or she~~the candidate intends to run on the council. One candidate shall be elected for each seat. Any number of candidates may qualify for any one seat, but no person shall qualify at the same time for more than one seat. Any candidate qualifying for a district seat shall be a qualified elector and a bona fide resident of that district at the time the candidate qualifies. Candidates for mayor shall also designate and qualify for their particular office.

Each unopposed candidate shall be declared elected to office and ~~his or her~~the candidate's name shall not be placed on the ballot.

At the general election, the candidate receiving the highest number of votes for each council seat and for the office of mayor, respectively, shall be declared elected to such representative seat of the council or the office of the mayor. In both the primary and general elections, all electors shall be instructed to vote for each separate seat or office.

### Section 19. - Nominations.

Any qualified elector of the city may be nominated to be a candidate for mayor and an at-large council seat in the city by petition of any ten (10) electors of the city. Any qualified elector of the city and any resident of the district may be nominated for a district council seat from the district within which the nominee resides by petition of any ten (10) electors residing in the district in which the candidate intends to run. Any candidate qualifying for mayor or an at-large council seat must be a bona fide resident of the city for at least six (6) months prior to qualifying. Any candidate qualifying for a district seat must be a bona fide resident of the city and the district the candidate is running in for at least six (6) months prior to qualifying. A candidate seeking to qualify for nomination to elected office shall file his-qualification papers with and pay the qualifying fees to the city clerk at any time after noon of the first day for qualifying and no later than noon on the last day of qualifying. The dates for qualifying are set pursuant to Section 99.061, Florida Statutes. Any person nominated but not qualified, as provided for in this Charter shall not have their name printed on the ballot. The petitions shall be in the following form:

"We, the undersigned ten (10) electors and residents of District \_\_\_\_\_ of the City of Jacksonville Beach, hereby nominate \_\_\_\_\_ (name) \_\_\_\_\_, (seat number of council member) \_\_\_\_\_ to be voted for at the election to be held on the \_\_\_\_\_ day of \_\_\_\_\_ (month) \_\_\_\_\_, A.D. \_\_\_\_\_ (year) \_\_\_\_\_ and we individually certify that we are qualified to vote at such election.

|      |       |       |
|------|-------|-------|
| Name | _____ | _____ |
|      | _____ | _____ |

|  |       |       |
|--|-------|-------|
|  | _____ | _____ |
|  | _____ | _____ |
|  | _____ | _____ |

## ACCEPTANCE OF NOMINATION

I HEREBY ACCEPT the nomination for the office of \_\_\_\_\_ (seat number of council member) and state that I am qualified to be a candidate for the office and agree to serve if elected.

\_\_\_\_\_  
(Signature of Candidate)

I HEREBY CERTIFY that the above petition was filed with me on the \_\_\_\_\_ day of \_\_\_\_\_, A.D. 20\_\_\_\_.

\_\_\_\_\_  
City Clerk"

Simultaneously with the filing of the nomination petition and acceptance with the city clerk, the nominated candidate shall pay over to the city clerk the required filing fee, which consists of a filing fee and an election assessment. The amount of the filing fee for each elected office shall be three (3) percent of the annual salary of the office. The amount of the election assessment is one (1) percent of the annual salary of the office sought. Any candidate may withdraw ~~his~~their nomination not later than the deadline for qualifying by filing a notice of withdrawal with the city clerk. Any candidate who has not withdrawn ~~his~~their nomination by the deadline for qualifying cannot have ~~his~~their name removed from the official ballot.

## Section 23. - Vacancies.

Should any vacancy occur in the council ~~or in the office of mayor~~ other than by the recall provisions of the City Charter, the city council shall elect a person to fill the vacant office ~~until the next regular municipal election~~ for the remainder of that official's unfulfilled term.

## Section 24. – Oath of Office.

Every officer of the city shall, before entering upon the duties of ~~his~~ office, take and subscribe to the following oath or affirmation, to be filed and kept in the office of the city clerk:

"I, \_\_\_\_\_ solemnly swear (or affirm) that I will support the Constitution and will obey the



laws of the United States and of the State of Florida; City of Jacksonville Beach, and will faithfully discharge the duties of the office of \_\_\_\_\_."

## **CHAPTER V. - CITY MANAGER**

### **Section 26. - Qualifications; appointment; term of office.**

The council shall appoint an officer whose title shall be city manager, and who shall be the chief administrative officer for the execution of the executive and administrative functions of the council under the direction and supervision of the council. The city manager shall at the time of ~~his or her~~their appointment, have graduated with a college degree from an accredited four-year college and in addition shall be chosen by the council solely on the basis of ~~his~~ executive and administrative qualifications with special reference to ~~his~~ actual experience in, or ~~his~~ knowledge of, accepted practice in respect to the duties of ~~his~~ office as hereinafter outlined, without regard to ~~his~~ political belief. ~~he~~ The city manager need not be a resident of the city or state at the time of ~~his~~ appointment, but ~~he~~ shall be required to reside within the city during ~~his~~ tenure in office. No person elected to membership on the council shall, subsequent to such election, be eligible for an appointment as city manager until one year has elapsed following the expiration of the term for which ~~he~~the person was elected.

### **Section 28. - Responsibility of city manager; powers of appointment and removal.**

The city manager shall be responsible to the council for the proper administration of all affairs of the city placed in ~~his~~the city manager's charge under this Charter, and to that end, and except as otherwise provided herein, ~~he~~the city manager shall have the power to appoint and, subject to the limitations of the budget, fix the compensation of and remove all officers and employees in the administrative services of the city, provided that such action in respect to the heads of such departments of the city as may be designated by ordinance, shall be approved by vote of a majority of the members of the council before becoming effective. The city manager may authorize the head of a department, or officer responsible to ~~him~~the city manager, to appoint and remove subordinates in such department or office. Appointments made by or under the authority of the city manager shall be on the basis of executive and administrative ability, merit, fitness and of the training and experience of such appointees in the work which they are to perform. All such appointments shall be without definite term unless for provisional, temporary or emergency service.

### **Section 29. - Discharge, suspension, etc., of officers and employees.**

Any officer or employee of the city may be removed, discharged, suspended, demoted, reduced in pay, or fined, by the city manager or ~~his~~ designee. Any fulltime regular employee working a minimum of 40 hours per week on a consistent basis (except, department directors, city attorney, city clerk or contract, temporary, probationary employees) may appeal a termination or suspension decision of the city manager or ~~his~~ designee by following the grievance/appeal

policies as outlined in the Personnel Policies or appropriate collective bargaining contract covering the appellant's position. Terminations due to layoffs are not subject to appeal.

### **Section 31. – Duties of the city manager.**

It shall be the duty of the city manager to act as chief conservator of the peace within the city; to supervise the administration of the affairs of the city; to see that the ordinances of the city and the laws of the state are enforced; to make such recommendations to the council concerning the affairs of the city as may seem to him desirable; to keep the council advised of the financial condition and future needs of the city; to prepare and submit to the council the annual budget estimate; to prepare and submit to the council such reports as may be required by that body; and to perform such other duties as may be prescribed by this Charter or required by him by ordinance or resolution of the council, not inconsistent with this Charter. Nothing herein shall be construed to confer or impose upon the city manager any of the powers, duties, or functions herein provided to be exercised or performed by any other elective or appointive officer of the city.

### **Section 33. – Investigations by city council or city manager.**

A committee authorized by the city council and/or the city manager shall have the power to inquire into the conduct of any department, office, or officer of the city and to make investigations as to municipal affairs, and for that purpose may subpoena witnesses, administer oaths, and compel the production of evidence. Any such subpoena is enforceable by a court of competent jurisdiction and subject to such penalties as may be deemed appropriate by such court. Failure of any city employee to cooperate with any such investigation or to produce evidence as requested under the provisions of this section shall be grounds for termination by the city manager or city council as applicable unless such termination is otherwise superseded by any contractual or collective bargaining rights enjoyed by the employee or otherwise prohibited by law. Any officer, person, or committee conducting the investigation shall report to the city council all violations or neglect of duty, or any misfeasance, malfeasance or nonfeasance in office, or improper conduct on the part of any city official that may come to his or its knowledge be discovered. No member of any investigative committee shall be an employee of the city, an elected official, or a relative of an employee or an elected official or have any personal interest in the subject being investigated.

## **CHAPTER VI. – CITY ATTORNEY**

### **Section 37. – Duties of city attorney.**

The city attorney shall act as the legal advisor and counselor for the municipality and all of its officers in matters relating to their official duties. HeThe city attorney shall prepare and review all ordinances, resolutions, contracts, bonds, and other instruments in which the municipality is concerned and shall endorse on each ~~his~~the city attorney's approval of the form and correctness thereof. When required so to do by the city council, the city attorney shall prosecute and defend, for and on behalf of the city, all complaints suits, controversies, and proceedings in which the city

is a party. ~~He~~The city attorney shall furnish the officers or the heads of any departments of the city ~~his~~the city attorney's opinion on any question of law relating to their respective powers and duties.

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