

TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

<u>SUBSECTION</u>	<u>PAGE</u>
1. GENERAL.....	2
2. SURVEYING.....	5
3. SUBMITTAL PROCEDURES	9
4. PROJECT RECORD DOCUMENTS.....	18
5. 69KV TRANSMISSION CABLE	22
6. EXCAVATION AND FILL	31
7. UTILITY HORIZONTAL DIRECTIONAL DRILLING.....	37
8. UNDERGROUND ELECTRICAL TRANSMISSION	42
9. REFERENCE PUBLICATIONS	54
10. SEQUENCE OF WORK	57

ATTACHMENTS:

- (1.) PRELIMINARY SURVEY
- (2.) SCHEDULE OF VALUES
- (3.) SOIL BORING REPORTS
- (4.) COJ ROW "DAILY CREW LOCATION WORK REPORT"
- (5.) CONSTRUCTION DRAWINGS

TECHNICAL SPECIFICATION

1. GENERAL

- 1.1. General Description: Construct a 400ft 69kV underground duct-bank and transmission circuit from a riser pole located at 8205 Hogan Rd to the San Souci Substation.
- 1.2. Intent: The Contractor shall provide all material, equipment, labor and supervision to accomplish the work as specified herein and on the construction plans, unless otherwise noted. The JEA supplied materials to accomplish the work of this project is specified herein and on the construction plans. The Contractor is responsible under this contract to pick up, inspect, Take inventory, receive, unload, and install these items at the job site.
- 1.3. Location of Project: A vicinity map appears on the cover of the construction drawings. The work will take place in Duval County North of Tiger Hole/Secret Woods. The project area is in easement north of City of Jacksonville rights of way.
- 1.4. Scope of Work: The Contractor shall supply all material to complete the work, including any cable, terminations, and conduits. The Contractor shall also construct a duct-bank consisting of 4x6" and one 2" duct by way of HDD and open trenching. The Contractor shall remove existing duct-bank if it's in conflict with new one. The Contractor shall pull the specified cable, make up terminations, splices and jumpers and commission the cable system.
- 1.5. Engineer & Project Manager, JEA for this work is: Project Representative, JEA for this work is:
- | | |
|---|--|
| Mohsen Shojaeion P.E.
225 N Pearl St
Jacksonville, FL 32202
Transmission and Substation Projects
Phone: (904) 678-7227
Email: Talem@JEA.com | Robert Medley
225N Pearl St
Jacksonville, FL 32202
Transmission and Substation Projects
Phone: (904) 776-7594
Email: medlrm@jea.com |
|---|--|
- 1.6. Pre-Construction Conference and Site Visit: A mandatory pre-bid conference and site visit will be held for the benefit of communication and coordination. Such meeting or visit will be scheduled by the Project Engineer (JEA).
- 1.7. Sequence of Work and Project Schedule: All work shall be performed in an orderly and workmanlike manner. Sequence of work may be scheduled at the discretion of the contractor within the guidelines of these specifications. Normal duty hours for work are from 7 A.M. until 4 P.M., Monday through Friday. Requests for additional work requires written approval from the JEA Project Manager 7 days in advance of the proposed work period.
- 1.7.1 Access to the work site: the Contractor shall coordinate with the JEA Project Representative for jobsite access on the JEA property and San Souci Substation.
- 1.7.2 Public Access: The Contractor shall minimize blocking travel lanes, business or private driveways, and other vehicular access by materials, equipment, or construction activities.

The Contractor shall observe all scheduled JEA holidays, unless approved by the JEA Project Manager. **The project must be complete no later than Dec 12, 2025.**

- 1.8. Surveying: The Contractor SHALL engage the services of a State of Florida Registered Land Surveyor to perform the limits of construction and baselines. Note: All Survey Data for the Construction Drawings was provided by Pickett whose contact is Russell Coby – Phone No. 904-382-9514. Refer to Survey Sub-Section page 3.

The horizontal and vertical datum(s) shall be the North American Datum (NAD) 1983 and North American Vertical Datum (NAVD) 1988 respectively. Any exceptions must be approved by JEA prior to the commencement of work. All work will be required to adhere to the following standards.

- 1.8.1 Vertical: Work shall be Third Order, as outlined in the Federal Geographic Data Committee (FGDC) Geospatial Positioning Accuracy Standards, Part 4: Standards for Architecture, Engineering, Construction (A/E/C) and Facility Management.
- 1.8.2 Horizontal: Work can be done using either standard surveying techniques or Global Positioning Satellite (GPS) system. If standard surveying techniques are used, all horizontal work shall comply with Third Order Class II, as outlined in the Federal Geographic Data Committee (FGDC) Geospatial Positioning Accuracy Standards, Part 4: Standards for Architecture, Engineering, Construction (A/E/C) and Facility Management. If GPS is used, the relative horizontal accuracy shall conform to the Federal Geographic Data Committee (FGDC) Geospatial Positioning Accuracy Standards, Part 2: National Standard for Spatial Data Accuracy.
- 1.8.3 Temporary Construction Easements: TCEs will be acquired by JEA for work around the riser pole. It is anticipated that the permanent easement and TCEs executed by Sep of 2024.
- 1.9 Permits: Contractor shall comply with all permit requirements accompanying these specifications and shall obtain additional permits, if required, at no additional cost to the JEA.
- 1.9.1 Utility Outage Requests: It is expected that circuit 690 must be taken out of service prior to the duct-bank being complete. **The outage will be scheduled from Nov 12, 2025 until Dec 12, 2025.** If this outage must be changed, the contractor must make the request at least 90 day prior to the need date.
- 1.9.2 NPDES Permit: The Contractor shall obtain as necessary a Generic Permit for Storm water Discharge from Large and Small Construction Activities (CGP), and shall develop a Storm water Pollution Prevention Plan (SWPPP) compliant with local, state, and federal rules, laws, and ordinances. Company shall be responsible for implementing the SWPPP, installing and maintaining in a functional manner structural and nonstructural best management practices as described therein, evaluating the effectiveness of the best management practices, and employing additional performance based best management practices as may be deemed necessary by JEA. The Company, at its own expense, shall revise, or include as addendum to the SWPPP measures as maybe required by a local, state, or federal authority to remain compliant with local, state, and federal rules, laws, and ordinances. See the solicitation for additional details. The permit can be applied for online at <https://floridadep.gov/Water/Stormwater>
- 1.9.3 City of Jacksonville Permit : No City permits will be provided to the Contractor for work along Hogan Rd. **Prior to working within the COJ ROW, the Contractor must complete in full and submit a "Daily Crew Location Work Report" to the COJ at the beginning of every workday. This sheet will be included in this package and must be e-mailed, daily, to the published list at the bottom of the worksheet.**
- 1.10 Drawings and Details: The drawings entitled "69kV CIRCUIT 690 UNDERGROUND RECONDUCTOR", which detail the construction for the Transmission Line along with these written specifications, plating and standards, detail the work to be performed.
- 1.11 Subsurface Investigation: A geotechnical exploration of existing conditions where necessary in the general area of the proposed Work has been performed and a report of the findings and recommendations are attached. The attached information of subsurface investigations was conducted by the Owner for the purpose of study and design only. The Owner does not assume any responsibility with respect to the sufficiency or accuracy of the locates or the interpretations made thereof. There is no warranty or guarantee, either expressed or implied, that the conditions indicated by such investigations are representative of those existing throughout the site, or any part thereof, or that unforeseen developments may not occur.
- 1.12 Schedule of Values: See Plan sheet 13 of 13 (Drawing BOM-1).

- 1.13 Material Availability: Material supplied by JEA (conductor, hardware, etc.) will be made available at the beginning of the project and will be issued to the Contractor at JEA's Commonwealth Service Center, 6674 Commonwealth Ave.
- 1.14 Salvage Material and Equipment: The Contractor shall remove the existing 1500kcm aluminum 69kV conductor from the substation riser to a minimum of 10' outside the substation fence, as well as any other placed where the Contractor deems it to be in conflict with the work. This cable shall be cut into 5' sections and deposited into a roll off dumpster as coordinated by the JEA Project Manager. Any additional cable left on reels after pulling shall be cut into 5' sections and also placed in these dumpsters. Any lightning arrestors, terminations, or other miscellaneous equipment shall not be placed in the dumpsters, but shall become the property of the Contractor to be disposed of off JEA/COJ property.
- 1.15 Electrical Clearances (Outages): A thirty (30) days continuous outage is scheduled to allow for the demolition and rebuild of circuit 690. The outage is tentatively scheduled from **Nov 12, 2025 to Dec 12, 2025**. All outages on the JEA Transmission System (including distribution and substation bus outages) shall be granted by JEA Systems Operation and Control Center (SOCC) only. If outages are needed, the contractor shall submit all requests (for an outage) to the JEA project representative. The JEA project representative shall submit all requests to SOCC for approval and, provided the request is granted, the contractor shall cooperate (with SOCC) in the scheduling, timing, duration, and termination.
- 1.16 Hold Tags - Authorized Person Requirements: If outages are needed, the contractor will be required to request hold tags. In order for the contractor to request a hold tag on the JEA system, the individual requesting the hold tag must be an *Authorized Person* as determined by JEA. The contractor will be required to have a knowledgeable employee with a history of electric utility work, preferably a foreman, take and successfully pass the JEA course "Principles of Hold Tags and Grounding for Contractors". The course will be provided at JEA's Westside Service Center, and will take one (1) full day to complete. The prerequisite for the course is "JEA's Substation Entry Training", See section 1.19 of these specifications for additional details. Hold Tag Courses will be administered by Allyn Jones (contact information is below). The contractor must have his employees sign up for the course(s) by contacting the JEA Project Manager upon winning the bid.
- Scott Nordeng: nordsc@jea.com Cell: 904-591-5232
- 1.17 Recall of Line Clearances or Hold Tags: In the event that a transmission or distribution hold tag on an energized or de-energized line must be recalled due to a system emergency, as determined by the JEA, the contractor shall complete only the work necessary to clear the line or equipment, clear his personnel, and release his hold tag as quickly as possible. Any recall shall not constitute a just cause by the contractor for a claim for extras.
- 1.18 Security: Contractor shall be responsible at all times for providing security to the work site, equipment and materials. In addition, the Contractor shall provide site security for contractor worker safety.

1.18.1 NOTE: The Project Limits will have a moderate risk of vandalism. Please be aware and take precautions where necessary.

- 1.19 Access to the Work: Access to perform all work is the responsibility of the Contractor. The Contractor shall display all signs and follow all Florida Department of Transportation (FDOT), City of Jacksonville and CSX Railroad rules and regulations when gaining access to the work. Flagmen shall be used, if required. The Contractor shall repair any damage to all roads, R/W's and adjacent property as directed by and to the satisfaction of JEA. Access to the Transmission Right-Of-Way will be from Public Roads. Any access arrangements crossing private property will be the responsibility of the Contractor.
- 1.19.1 Residential Driveways: **All driveways, both paved and grassed that have been removed, must be steel plated at the end of each workday.**
- 1.19.2 Access to Substation: Prior to construction, it is the responsibility of the Contractor to have every crewmember attend the JEA issued Substation Entry Class prior to performing any work within the substation. The class is offered every second Wednesday of the month and is coordinated by Jim Ayers, with contact information as follows: AYERJL@jea.com 904-665-5362

- 1.19.3 Badging: A JEA contractor's badge will be required to gain entry onto any JEA Substation. Every Employee working at the construction site needs to have a JEA contractor's badge so that they may open and close the gates at a JEA substation. Even if the contractor has a JEA contractor's badge from a previous project, the contractor needs to provide to the JEA Project Engineer the name's, phone numbers, and emails of the employees whom he wishes to have a JEA contractor's badge with access to a JEA substation for this project. Access rights will need to be added by JEA to any badge so that it functions. The process of granting access may take up to three (3) weeks, therefore the request for badge access should be made as soon as possible.
- 1.19.4 Parking: The Contractor will not be able to park any vehicle overnight within the substation, additionally, no personal vehicles will be allowed within the fenced substation property.
- 1.20 Maintenance of Traffic (MOT): The contractor will be responsible for all Maintenance of Traffic (MOT) during construction. There is an allowance for MOT listed in the "SCHEDULE OF VALUES" attachment of Appendix 2. The contractor must inform the JEA Project Engineer if the allowance provided is not sufficient. JEA will only reimburse the contractor for the actual cost of MOT plus 10% for administrative fees. Please provide backup documentation for any MOT costs on the invoice(s).
- 1.21 General Safety Information:
- 1.21.1 Please visit the following site to learn more about JEA's safety related information:
https://www.jea.com/About/Procurement/Contractor_Safety/
- 1.21.2 The winning bid contractor will need to become JEA Safety Qualified at least ten (10) business days after the bid opening by submitting the "Contractor Safety Qualification Questionnaire" found in the link above.
- 1.21.3 Contractor must abide by the JEA Contractor Safe Work Practices Manual.
https://www.jea.com/About/Procurement/Become_a_Vendor/Contractor_Safety/Contractor_Safety_Manual/
- 1.21.4 The contractor's employees need to be drug tested at least thirty (30) days prior to the start of any work. JEA may request for proof of the drug testing before and during the construction.
- 1.21.5 The contractor's employees will need to take safety orientation and/ or training as described in the following link:
https://www.jea.com/About/Procurement/Become_a_Vendor/Contractor_Safety/Safety_Orientation_Training/
- 1.21.6 For any questions regarding JEA's safety requirements, please contact Curtis Stothers (contact information below):
Safety & Health Specialist:
Manager of Safety and Health Services
Curtis Stothers
225 N Pearl St
Jacksonville, FL, 32202
Office: (904) 665-7736
Cell: (850) 855-6177
Email: stotct@jea.com

2. SURVEYING

2.1. GENERAL:

2.1.1. DESCRIPTION:

2.1.1.1. Professional Surveyor: Provide professional surveying and mapping work required for the execution of the Contract including, but not limited to, verification of existing survey data, construction layout, and production of As-Built Drawings. All work shall be performed by a surveyor that is licensed by the State of Florida as a Professional Land Surveyor and Mapper pursuant to F.S. Chapter 472.

2.1.1.2. Boundary Survey: Boundary survey, map, and report certified by a Surveyor and Mapper shall be provided that meets the requirements of Chapter 5J-17 'Minimum Technical Standards', FAC.

2.1.2. REQUIREMENTS:

The Contractor shall retain the services of a Professional Surveyor and Mapper licensed in the State of Florida, approved by JEA, to provide professional surveying and mapping services necessary for the investigation and/or construction including, but not limited to, a control survey. An As-Built survey shall be created and maintained during construction. The original survey was completed by Pickett, which used field monuments as the basis of the control points. The control points shall be verified by the Contractor prior to the start of construction.

2.1.3. Submittals

Provide qualifications of the Surveyor and Mapper:

SD-01 Preconstruction Submittals

Registered Surveyor and Mapper who is proposed by the Contractor to provide the services for this scope of work shall be acceptable to JEA prior to field services being performed.

Submit name, address, and telephone number of the Surveyor and/or Mapper, as appropriate, to JEA for acceptance before starting survey or mapping work.

Submit written acknowledgement from the Surveyor and Mapper stating they have the hardware, software, training, knowledge, and ability to provide the scope of services in the agreement with the Contractor to fully comply with the requirements of this specification and project requirements.

Submit copies of current licenses and registrations.

Submit proposed construction layout.

SD-11 Closeout Submittals

Submit documentation verifying accuracy of survey work.

2.2. SURVEY DOCUMENTS:

2.2.1. SURVEY DESCRIPTION

2.2.1.1. All work, in all forms, shall become property of JEA.

2.2.1.2. The Surveyor and Mapper shall record elevation and coordinates (location) of all new and existing utilities, known and exposed, including, but not limited to, water, wastewater, reclaimed water, storm water, communication, fiber optic cable, electric, gas, and any other structures located within the limits of construction.

2.2.1.2.1. Piping/conduit shall be measured to the centerline and to the top of the pipe (T.O.P) or conduit and at every change in direction or elevation.

2.2.1.2.2. Slopes, where applicable, shall be recorded.

2.2.1.2.3. The top (T.O.D.B) elevations of electrical duct bank shall be recorded.

2.2.1.2.4. Provide existing grade shots along the centerline of the utility route.

2.2.1.3. The Surveyor and Mapper shall record, to 2 decimal places, the elevation and location of all:

Baseline Control Locational Accuracy	Benchmarks	Changes in Direction/Elevation
Tract and Easement Corners	Existing Utilities and Appurtenant Structures	Surface Body Water Levels
Transitions from One Pipe Material to Another	Waterline and Apparent Bottom of all Bodies of Water	Manhole Rims
Manhole Inverts	Slabs on Grade	Equipment Pads (All Four Corners)
Pull/Splice Boxes (All Four Corners)	Meters, All kinds, Meter Boxes	Directional Drills
Bore and Jack Casings	Thrust Blocks	Centerline of Pipelines-Location Top of Pipelines- Elevations
Pipe, Restraints	Piping, at 100-feet Maximum Intervals	Pipes, Abandoned in Place or Removed
Conduit/Pipeline Termini	Duct Bank Termini	Electrical Buried Conduit or Duct Bank by less than one Elevation Shot per 25 Linear Feet
Changes in Conduit Arrangement	Direct Buried Cable Splice Locations	Direct Buried Cable by no less than one Elevation Shot per 25 Linear Feet
Valve Box Rims	Valves (Operating Nut)	Cathodic Protection Test Stations
Anodes	Pole Attachments	Top of Pole
Base of Pole	Other Project Construction Features	

2.2.1.4. The Surveyor and Mapper shall submit a certified survey in both hard and soft copy version. Soft copy versions shall be submitted in AutoCAD 16 format. Hard copy versions are to be submitted in PDF format.

2.2.2. QUALITY ASSURANCE

2.2.2.1. NAD 83 shall be used as the horizontal and vertical datum.

2.2.2.2. The Surveyor and Mapper shall coordinate with JEA and schedule the establishment of the survey control points at the onset of any field work.

2.2.2.3. JEA intends on making random spot checks to verify accuracy of all survey work. If more than 10% of the spot checks are found to be inaccurate, then Surveyor and Mapper must uncover all work performed to date and verify each point taken at their own expense. The Surveyor and Mapper is also responsible for the restoration of surfaces as part of this requirement.

2.2.2.4. Any item that was installed, but not recorded, during construction and is listed in table 2D above must be surveyed post-construction at the Contractor's expense. This includes the restoration of any and all finishes.

2.3. SURVEY FIELD WORK

2.3.1. Execution:

2.3.1.1. Locate, reference, and preserve existing horizontal and vertical control points and property corners shown on the Drawings prior to starting any construction. If the Surveyor and Mapper performing the work discovers any discrepancies that will affect the Project, the Contractor must immediately report these findings to JEA. All survey work shall meet the requirements as defined in Florida Administrative Code 5J-17.

2.3.1.2. Reference and preserve all survey pins/monuments during Construction. If survey pins/monuments are disturbed, it is the responsibility of the Surveyor and Mapper to reset the pins/monuments at the Contractor's expense.

2.3.1.3. If the monuments are disturbed, any Work that is governed by these monuments shall be held in abeyance until the monuments are reestablished by the Surveyor and Mapper. The accuracy of all the Contractor's stakes, alignments, grades, layout, and all other work are the responsibility of the Contractor.

2.3.1.4. The construction layout shall be established from the reference points shown listed on, or derived from, the Drawings. The accuracy of any method of layout shall be the responsibility of the Contractor or the Surveyor and Mapper or jointly. All construction layout staking shall be done such as to provide for easy verification of the Work.

2.3.1.5. The Surveyor and Mapper shall coordinate with existing project control points if they exist.

2.3.1.6. The Surveyor and Mapper shall locate and record all elements listed in table 2D as applicable.

2.3.1.7. Horizontal Directional Drill Support

2.3.1.7.1. Roles and Responsibilities shall be as follows:

2.3.1.7.2. The Surveyor and Mapper shall provide support to the Contractor's Horizontal Directional Drill installation.

2.3.1.7.3. The Horizontal Directional Drill Contractor will be responsible for providing the electronic tracement of the installed facility.

2.3.1.7.4. The electronic tracement for submittal purposes will be performed on the final reaming or pulling of the drill.

2.3.1.7.5. The Surveyor and Mapper in conjunction with the Horizontal Directional Drill Contractor shall stake each directional drill a minimum of every 10 feet (where practical) or individual lengths of bore casing; whichever is the lesser distance. Each stake shall signify the depth of the drill at that location and shall be consecutively numbered and shown as as-built. Provide existing grade elevations at the same intervals and locations.

2.3.1.7.6. Field location of data collection points used by the Contractor shall be coordinated with the Surveyor and Mapper for simultaneous field location so the Surveyor and Mapper can collect the corresponding horizontal location and finished ground elevation for mapping purposes.

2.3.1.7.7. Every directional drill must be identified by a unique name or number and that referenced identifier will be on the corresponding map, profile, and report.

2.3.1.7.8. The Contractor shall provide an As-Built Bore Log with corresponding grade elevations.

2.3.1.8. The Contractor shall not permanently conceal any work until required information has been recorded.

3. SUBMITTAL PROCEDURE

3.1. DEFINITIONS

3.1.1. Submittal Descriptions (SD)

Submittal requirements are specified in the technical sections. Examples and descriptions of submittals identified by the Submittal Description (SD) numbers and titles follow:

SD-01 Preconstruction Submittals

Preconstruction Submittals include schedules and a tabular list of locations, features, and other pertinent information regarding products, materials, equipment, or components to be used in the work.

Certificates of Insurance

Surety Bonds

List of Proposed Subcontractors

List of Proposed Products

Work Plan

Quality Control (QC) plan

Environmental Protection Plan

Detailed Schedule of Values

SD-02 Shop Drawings

Drawings, diagrams, and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials, systems, or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-05 Design Data

Design calculations, mix designs, analyses or other data pertaining to a part of work.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product, or system identical to the material, product, or system to be provided has been tested in accord with specified requirements. Unless specified in another section, testing must have been within three years of date of contract award for the project.

Report that includes findings of a test required to be performed on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report that includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports

Daily logs and checklists

Final acceptance test and operational test procedure

SD-07 Certificates

Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that the product, system, or material meets specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a manufacturer, supplier, installer, or Subcontractor through Contractor. The document purpose is to further promote the orderly progression of a portion of the work by documenting procedures, acceptability of methods, or personnel qualifications.

Confined space entry permits

Text of posted operating instructions.

SD-08 Manufacturer's Instructions

Preprinted material describing installation of a product, system, or material, including special notices and (SDS) concerning impedances, hazards and safety precautions.

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

Submittals required for Guiding Principal Validation (GPV) or Third Party Certification (TPC).

Special requirements necessary to properly close out a construction contract. For example, Record Drawings and as-built drawings. Also, submittal requirements necessary to properly close out a major phase of construction on a multi-phase contract.

3.1.2. Approving Authority

Office or designated person authorized to approve the submittal.

3.1.3. Work

As used in this section, on-site and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction. In exception, excludes work to produce SD-01 submittals.

3.2. SUBMITTALS

3.2.1. Engineer approval is required for all submittals. Submit the following in accordance with this section.

3.2.2. SD-01 Preconstruction Submittals

3.2.3. SD-02 Shop Drawing

3.2.4. SD-03 Product Data

3.3. SUBMITTAL CLASSIFICATION

3.3.1. Engineer Approved.

3.3.1.1. Engineer approval is required for extensions of design, critical materials, variations, equipment whose compatibility with the entire system must be checked, and other items as designated by the JEA Project Manager.

3.3.1.2. Within the terms of the Contract Clause SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, submittals are "shop drawings."

3.4. PREPARATION

3.4.1. Submittal Format

3.4.1.1. Format of SD-01 Preconstruction Submittals

When the submittal includes a document that is to be used in the project, or is to become part of the project record, other than as a submittal, do not apply the Contractor's approval stamp to the document itself, but to a separate sheet accompanying the document.

Provide data in the unit of measure used in the contract documents.

3.4.1.2. Format for SD-02 Shop Drawings

Provide shop drawings not less than 8 1/2 by 11 inches nor more than 30 by 42 inches, except for full-size patterns or templates. Prepare drawings to accurate size, with scale indicated, unless another form is required. Ensure drawings are suitable for reproduction and of a quality to produce clear, distinct lines and letters, with dark lines on a white background.

3.4.1.2.1. Include the nameplate data, size, and capacity on drawings. Also include applicable federal, military, industry, and technical society publication references.

3.4.1.2.2. Dimension drawings, except diagrams and schematic drawings. Prepare drawings demonstrating interface with other trades to scale. Use the same unit of measure for shop drawings as indicated on the contract drawings. Identify materials and products for work shown.

Present shop drawings sized 8 1/2 by 11 inches as part of the bound volume for submittals. Present larger drawings in sets. Submit an electronic copy of drawings in PDF format.

3.4.1.2.3. Drawing Identification

Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph IDENTIFYING SUBMITTALS.

Number drawings in a logical sequence. Each drawing is to bear the number of the submittal in a uniform location next to the title block. Place the Government contract number in the margin, immediately below the title block, for each drawing.

Reserve a blank space, no smaller than 3 inches on the right-hand side of each sheet for the Engineer disposition stamp.

3.4.1.3. Format of SD-03 Product Data

Present product data submittals for each section as a complete, bound volume. Include a table of contents, listing the page and catalog item numbers for product data.

Indicate, by prominent notation, each product that is being submitted; indicate the specification section number and paragraph number to which it pertains.

3.4.1.3.1. Product Information

Supplement product data with material prepared for the project to satisfy the submittal requirements where product data does not exist. Identify this material as developed specifically for the project, with information and format as required for submission of SD-07 Certificates.

Provide product data in units used in the Contract documents. Where product data are included in preprinted catalogs with another unit, submit the dimensions in contract document units, on a separate sheet.

3.4.1.3.2. Standards

Where equipment or materials are specified to conform to industry or technical-society reference standards of such organizations as the American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), or Association of Edison Illuminating Companies (AEIC), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Contracting Officer. State on the certificate that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

3.4.1.3.3. Data Submission

Collect required data submittals for each specific material, product, unit of work, or system into a single submittal that is marked for choices, options, and portions applicable to the submittal. Mark each copy of the product data identically. Partial submittals will not be accepted for expedition of the construction effort.

Submit the manufacturer's instructions before installation.

3.4.1.4. Format of SD-05 Design Data

Provide design data and certificates on 8 1/2 by 11-inch paper.

3.4.1.5. Format of SD-06 Test Reports

By prominent notation, indicate each report in the submittal. Indicate the specification number and paragraph number to which each report pertains.

3.4.1.6. Format of SD-07 Certificates

Provide design data and certificates on 8 1/2 by 11-inch paper.

3.4.1.7. Format of SD-08 Manufacturer's Instructions

Present manufacturer's instructions submittals for each section. Include the manufacturer's name, trade name, place of manufacture, and catalog model or number on product data. Also include applicable federal, military, industry, and technical-society publication references. If supplemental information is needed to clarify the manufacturer's data, submit it as specified for SD-07 Certificates.

Submit the manufacturer's instructions before installation.

3.4.1.7.1. Standards

Where equipment or materials are specified to conform to industry or technical-society reference standards of such organizations as the American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), or Association of Edison Illuminating Companies (AEIC), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Contracting Officer. State on the certificate that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

3.4.1.8. Format of SD-11 Closeout Submittals

When the submittal includes a document that is to be used in the project or is to become part of the project record, other than as a submittal, do not apply the Contractor's approval stamp to the document itself, but to a separate sheet accompanying the document.

Provide data in the unit of measure used in the contract documents.

3.4.2. Source Drawings for Shop Drawings

3.4.2.1. Source Drawings

The entire set of source drawing files (DWG) will not be provided to the Contractor. Request the specific Drawing Number for the preparation of shop drawings. Only those drawings requested to prepare shop drawings will be provided. These drawings are provided only after award.

3.4.2.2. Terms and Conditions

Data contained on these electronic files must not be used for any purpose other than as a convenience in the preparation of construction data for the referenced project. Any other use or reuse is at the sole risk of the Contractor and without liability or legal exposure to JEA. The Contractor must make no claim and waives to the fullest extent permitted by law any claim or cause of action of any nature against JEA, its agents, or its subconsultants that may arise out of or in connection with the use of these electronic

files. The Contractor must, to the fullest extent permitted by law, indemnify and hold JEA harmless against all damages, liabilities, or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.

These electronic source drawing files are not construction documents. Differences may exist between the source drawing files and the corresponding construction documents. JEA makes no representation regarding the accuracy or completeness of the electronic source drawing files, nor does it make representation to the compatibility of these files with the Contractor hardware or software. The Contractor is responsible for determining if any conflict exists. In the event a conflict arises between the signed and sealed construction documents prepared by the Engineer and the furnished source drawing files, the signed and sealed construction documents govern. Use of these source drawing files does not relieve the Contractor of the duty to fully comply with the contract documents, including and without limitation the need to check, confirm and coordinate the work of all contractors for the project. If the Contractor uses, duplicates or modifies these electronic source drawing files for use in producing construction data related to this contract, remove all previous indication of ownership (seals, logos, signatures, initials and dates).

3.5. QUANTITY OF SUBMITTALS

3.5.1. Number of SD-01 Preconstruction Submittal Copies

Unless otherwise specified, submit one set of administrative submittals.

3.5.2. Number of SD-02 Shop Drawing Copies

Submit one copy of submittals of shop drawings.

3.5.3. Number of SD-03 Product Data Copies

Submit in compliance with quantity requirements specified for shop drawings.

3.5.4. Number of SD-05 Design Data Copies

Submit in compliance with quantity requirements specified for shop drawings.

3.5.5. Number of SD-06 Test Report Copies

Submit in compliance with quantity and quality requirements specified for shop drawings, other than field test results that will be submitted with QC reports.

3.5.6. Number of SD-07 Certificate Copies

Submit in compliance with quantity requirements specified for shop drawings.

3.5.7. Number of SD-08 Manufacturer's Instructions Copies

Submit in compliance with quantity requirements specified for shop drawings.

3.5.8. Number of SD-11 Closeout Submittals Copies

Unless otherwise specified, submit one set of administrative submittals.

3.6. PROJECT SUBMITTAL REGISTER

A sample Project Submittal Register showing items of equipment and materials for when submittals are required by the specifications is provided as "Appendix A - Submittal Register."

3.6.1. Submittal Management

Prepare and maintain a submittal register, as the work progresses. Do not change data that is output in columns (c), (d), (e), and (f) as delivered by the JEA Project Manager; retain data that is output in columns (a), (g), (h), and (i) as approved. As an attachment, provide a submittal register showing items of equipment and materials for which submittals are required by the specifications. This list may not be all-inclusive and additional submittals may be required.

Column (c): List specification section in which submittal is required.

Column (d): Lists each submittal description (SD Number and type, e.g., SD-02 Shop Drawings) required in each specification section.

Column (e): Lists one principal paragraph in each specification section where a material or product is specified. This listing is only to facilitate locating submitted requirements. Do not consider entries in column (e) as limiting the project requirements.

Thereafter, the Contractor is to track all submittals by maintaining a complete list, including completion of all data columns and all dates on which submittals are received by and returned by the Government.

3.6.2. Preconstruction Use of Submittal Register

Submit the submittal register. Include the QC plan and the project schedule. Verify that all submittals required for the project are listed and add missing submittals. Coordinate and complete the following fields on the register submitted with the QC plan and the project schedule:

Column (a) Activity Number: Activity number from the project schedule.

Column (g) Contractor Submit Date: Scheduled date for the approving authority to receive submittals.

Column (h) Contractor Approval Date: Date that Contractor needs approval of submittal.

Column (i) Contractor Material: Date that Contractor needs material delivered to Contractor control.

3.6.3. Contractor Use of Submittal Register

Update the following fields with each submittal throughout the contract.

Column (b) Transmittal Number: List of consecutive, Contractor-assigned numbers.

Column (j) Action Code (k): Date of action used to record Contractor's review when forwarding submittals to QC.

Column (l) Date submittal transmitted.

Column (q) Date approval was received.

3.6.4. Approving Authority Use of Submittal Register

Update the following fields:

Column (b) Transmittal Number: List of consecutive, Contractor-assigned numbers.

Column (l) Date submittal was received.

Column (m) through (p) Dates of review actions.

Column (q) Date of return to Contractor.

3.6.5. Delivery of Copies

Submit an updated electronic copy of the submittal register to the JEA Project Manager with each invoice request. Provide an updated Submittal Register monthly regardless of whether an invoice is submitted.

3.7. VARIATIONS

Variations from contract requirements require JEA Project Manager approval, and will be considered where advantageous to JEA.

3.7.1. Considering Variations.

Discussion of variations with the JEA Project Manager before submission will help ensure that functional and quality requirements are met and minimize rejections and resubmittals. When contemplating a variation that results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).

Specifically point out variations from contract requirements in transmittal letters. Failure to point out variations may cause the JEA Project Manager to require rejection and removal of such work at no additional cost to JEA.

3.7.2. Proposing Variations.

When proposing variation, deliver a written request to the JEA Project Manager, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to JEA. Include the DOR's written analysis and approval. If lower cost is a benefit, also include an estimate of the cost savings. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

3.7.3. Warranting that Variations are Compatible.

When delivering a variation for approval, the Contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work.

3.7.4. Review Schedule Extension

In addition to the normal submittal review period, a period of 14 days will be allowed for the JEA Project Manager to consider submittals with variations.

3.8. SCHEDULING

Schedule and submit concurrently product data and shop drawings covering component items forming a system or items that are interrelated. Submit pertinent certifications at the same time. No delay damages or time extensions will be allowed for time lost in late submittals.

3.8.1. Coordinate scheduling, sequencing, preparing, and processing of submittals with performance of work so that work will not be delayed by submittal processing. The Contractor is responsible for additional time required for JEA Project Manager reviews resulting from required resubmittals. The review period for each resubmittal is the same as for the initial submittal.

3.8.2. Submittals required by the contract documents are listed on the submittal register. If a submittal is listed in the submittal register but does not pertain to the contract work, the Contractor is to include the submittal in the register and annotate it "N/A" with a brief explanation. Approval by the JEA Project Manager does not relieve the Contractor of supplying submittals required by the contract documents but that have been omitted from the register or marked "N/A."

3.8.3. Resubmit the submittal register and annotate it monthly with actual submission and approval dates. When all items on the register have been fully approved, no further resubmittal is required.

JEA Project Manager review will be completed within 7 days after the date of submission.

3.9. ENGINEER APPROVING AUTHORITY

When the approving authority is the Engineer, the Engineer will:

- a. Note the date on which the submittal was received.
- b. Review submittals for approval within the scheduling period specified and only for conformance with project design concepts and compliance with contract documents.
- c. Identify returned submittals with one of the actions defined in paragraph REVIEW NOTATIONS and with comments and markings appropriate for the action indicated.

Upon completion of review of submittals requiring Engineer approval, stamp and date submittals. One copy of the submittal will be retained by the JEA Project Manager and one copy of the submittal will be returned to the Contractor.

3.9.1. Review Notations

Submittals will be returned to the Contractor with the following notations:

- a. Submittals marked "approved" or "accepted" authorize proceeding with the work covered.
- b. Submittals marked "approved as noted" or "approved, except as noted, resubmittal not required," authorize proceeding with the work covered provided that the Contractor takes no exception to the corrections.
- c. Submittals marked "not approved," "disapproved," or "revise and resubmit" indicate incomplete submittal or noncompliance with the contract requirements or design concept. Resubmit with appropriate changes. Do not proceed with work for this item until the resubmittal is approved.
- d. Submittals marked "not reviewed" indicate that the submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.
- e. Submittals marked "receipt acknowledged" indicate that submittals have been received by the JEA Project Manager. This applies only to "information-only submittals" as previously defined.

3.10. DISAPPROVED SUBMITTALS

Make corrections required by the Engineer. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the contract drawings or specifications, give notice to the JEA Project Manager as required under the FAR clause titled CHANGES. The Contractor is responsible for the dimensions and design of connection details and the construction of work. Failure to point out variations may cause the JEA Project Manager to require rejection and removal of such work at the Contractor's expense.

If changes are necessary to submittals, make such revisions and resubmit in accordance with the procedures above. No item of work requiring a submittal change is to be accomplished until the changed submittals are approved.

3.11. APPROVED SUBMITTALS

The Engineers approval of submittals is not to be construed as a complete check, and indicates only that the general method of construction, materials, detailing, and other information are satisfactory.

Approval or acceptance by the JEA Project Manager for a submittal does not relieve the Contractor of the responsibility for meeting the contract requirements or for any error that may exist, because under the Quality Control (QC) requirements of this contract, the Contractor is responsible for ensuring information contained within each submittal accurately conforms with the requirements of the contract documents.

After submittals have been approved or accepted by the Engineer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

4. **PROJECT RECORD DOCUMENTS**

4.1. GENERAL

4.1.1. Definitions

4.1.1.1. As-Built Drawings

As-built drawings are the marked-up drawings, maintained by the Contractor on-site, that depict actual conditions and deviations from the Contract Documents. These deviations and additions may result from coordination required by, but not limited to contract modifications; official responses to submitted Requests for Information (RFI's); direction from the JEA; design that is the responsibility of the Contractor, and differing site conditions. Maintain the as-builts throughout construction as marked up hard copies on site and/or marked up PDF files. These files serve as the basis for the creation of the record drawings.

The contractor shall provide professional surveying and mapping work required for the execution of the Contract, Sub-Section 2 Surveying.

4.1.1.2. Record Drawings

The record drawings are the final compilation of actual conditions reflected in the as-built drawings.

4.1.2. Quality Control

Additions and corrections to the contract drawings must be equal in quality and detail to that of the originals. Line colors, line weights, lettering, layering conventions, and symbols must be the same as the original line colors, line weights, lettering, layering conventions, and symbols.

4.2. PRODUCTS

4.2.1. RECORD DRAWINGS

4.2.1.1. Additional Drawings

If additional drawings are required, prepare them using the specified electronic file format applying. The title block and drawing border to be used for any new final record drawings must be identical to that used on the contract drawings.

4.2.1.2. Sheet Numbers and File Names

If a sheet needs to be added between two sequential sheets, append a Supplemental Drawing Designator Adding a drawing sheet and modifying the index sheet.

4.3. EXECUTION

4.3.1. AS-BUILT DRAWINGS

Provide and maintain two black line print copies of the PDF contract drawings for As-Built Drawings. Maintain the as-builts throughout construction as red-lined hard copies on site and/or red-lined PDF files. **Submit As-Built Drawings no later than March 11, 2026.**

4.3.1.1. Markup Guidelines

Make comments and markup the drawings complete without reference to letters, memos, or materials that are not part of the As-Built drawing. Show what was changed, how it was changed, where item(s) were relocated and change related details. These working as-built markup prints must be neat, legible and accurate as follows:

a. Use base colors of red, green, and blue. Color code for changes as follows:

(1) Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes.

(2) Deletions (Green) - Over-strike deleted graphic items (lines), lettering in notes and leaders.

(3) Additions (Red) - Added items, lettering in notes and leaders.

b. Provide a legend if colors other than the "base" colors of red, green, and blue are used.

c. Add and denote any additional equipment or material facilities, service lines, incorporated under As-Built Revisions if not already shown in legend.

d. Use frequent written explanations on markup drawings to describe changes. Do not totally rely on graphic means to convey the revision.

e. Use legible lettering and precise and clear digital values when marking prints. Clarify ambiguities concerning the nature and application of change involved.

f. Wherever a revision is made, also make changes to related section views, details, legend, profiles, plans and elevation views, schedules, notes and call out designations, and mark accordingly to avoid conflicting data on all other sheets.

g. For deletions, cross out all features, data and captions that relate to that revision.

h. For changes on small-scale drawings and in restricted areas, provide large-scale inserts, with leaders to the applicable location.

i. Indicate one of the following when attaching a print or sketch to a markup print:

1) Add an entire drawing to contract drawings

2) Change the contract drawing to show

3) Provided for reference only to further detail the initial design.

j. Incorporate all shop and fabrication drawings into the markup drawings.

4.3.1.2. As-Built Drawings Content

Always keep these working as-built markup drawings current on a weekly basis and at least one set available on the jobsite. Changes from the contract drawings which are made during construction or additional information which might be uncovered during construction must be accurately and neatly recorded as they occur by means of details and notes. Submit the working as-built markup drawings for approval prior to submission of each monthly pay estimate. For failure to maintain the working and final record drawings as specified herein, JEA will withhold 10 percent of the monthly progress payment until approval of updated drawings. Show on the as-built drawings, but not limited to, the following information:

a. The actual location using coordinates, kinds, and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, show by offset dimensions to two permanently fixed surface features the end of each run including each change in direction on the record drawings. Locate valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Also record the average depth below the surface of each run.

b. The location and dimensions of any changes using coordinates.

c. Layout and schematic drawings of electrical circuits and piping.

- d. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures, or utilities if any changes were made from contract plans.
- e. Changes in details of design or additional information obtained from working drawings specified to be prepared or furnished by the Contractor; including but not limited to shop drawings, fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment, and foundations.
- f. The topography, invert elevations and grades of drainage installed or affected as part of the project construction.
- g. Changes or Revisions which result from the final inspection.
- h. Where contract drawings or specifications present options, show only the option selected for construction on the working as-built markup drawings.
- i. If borrow material for this project is from sources on JEA property, or if JEA property is used as a spoil area, furnish a contour map of the final borrow pit/spoil area elevations.
- j. Systems designed or enhanced by the Contractor.
- k. Ground rod resistance in Ohms.
- l. Modifications.
- m. Actual location of anchors, construction, and control joints, etc., in concrete using coordinates.
- n. Unusual or uncharted obstructions that are encountered in the contract work area during construction.
- o. Location, extent, thickness, and size of stone protection particularly where it will be normally submerged by water.

4.3.2. RECORD DRAWING FILES

If additional drawings are required, prepare them to use the specified electronic file format. The title block and drawing border to be used for any new final record drawings must be identical to that used on the contract drawings. JEA will review final PDF record drawings for accuracy and return them to the Contractor for required corrections, changes, additions, and deletions.

4.3.3. RECORD DRAWINGS

Prepare final record drawings after the completion of each definable phase of work as listed in the Contractor Quality Control Plan. Monthly review of working as-built PDF file printouts must cover all sheets revised since the previous review. These PDF drawing files are part of the permanent records of this project. Any drawings damaged or lost must be satisfactorily replaced at no expense to JEA.

4.3.3.1. Final Record Drawing Package

Submit the final record PDF and CAD survey drawing packages for the entire project within 20 days of substantial completion of all phases of work. Submit two sets of ANSI D size PDF and CAD files on separate USB jump drives. The package must be complete in all details and identical in form and function to the contract drawing files supplied by the Government.

4.3.4. FINAL APPROVED SHOP DRAWINGS

Submit final approved project shop drawings 30 days after transfer of the completed facility.

4.3.5. CONSTRUCTION CONTRACT SPECIFICATIONS

Submit final PDF file record construction contract specifications, including revisions thereto, 30 days after transfer of the completed facility.

4.3.6. CLEANUP

Leave premises "broom clean." Sweep paved areas and rake clean landscaped areas. Remove waste and surplus materials, rubbish, and construction facilities from the site.

5. 69KV TRANSMISSION CABLE

5.1. GENERAL

5.1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASSOCIATION OF EDISON ILLUMINATING COMPANIES (AEIC)

AEIC CS9 (2013) Specification for Extruded Insulation Power Cables and Their Accessories Rated Above 46kV Through 345kV AC

INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)

ICEA S-108-720 (2013) Standard for Extruded Insulation Power Cables Rated Above 46kV through 500kV AC

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 404 (2012) Standard for Extruded and Laminated Dielectric Shielded Cable Joints Rated 2500 V to 500,000 V

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2020; ERTA 20-1 2020; ERTA 20-2 2020; TIA 20-1; TIA 20-2; TIA 20-3; TIA 20-4) National Electrical Code

5.1.2. DEFINITIONS

High voltage power cables shall mean all cables rated above 46,000 to 500,000 volts.

5.1.3. GENERAL REQUIREMENTS

Sub-Section 8 UNDERGROUND ELECTRICAL TRANSMISSION applies to work specified in this section.

5.1.4. SUBMITTALS

Submit the following in accordance with Sub-Section 3 SUBMITTAL PROCEDURES:

SD-03 Product Data

Manufacturer's catalog data shall be provided for the following items:

Single Conductor 69 kV 2000kcmil Copper Shielded Cable
Single Conductor 600V 4/0 Copper Ground Cable
Cable Supports and Fittings

Cable Tags
Fireproof Tape
Terminations
Pull Rope
Recommended Pulling Lubricant
Splice Kits (including splice grounding)

SD-06 Test Reports

Submit test Reports in accordance with the paragraph entitled, "Factory Testing", of this section.

Insulation Resistance Test

Submit test Reports in accordance with the paragraph entitled, "Field Testing," of this section.

Qualification Test Reports

SD-07 Certificates

The Contractor shall prepare and submit a Pulling Plan including calculations of pulling tension and sidewall pressure anticipated, and the maximum allowable pulling tension for each pull.

Listing of Products Installed shall be provided showing qualifications of person installing cable terminations to the JEA Project Manager 15 days prior to performing specified work. Proof of a Terminator Certifications issued by the cable termination manufacturer who has provided a manufacturer's approved training program, witnessed the making of test terminations, and examined and tested the test terminations to certify that they are in accordance with all the manufacturer's requirements. Cable termination installer certifications shall be submitted for approval. Cable termination installer certifications shall be in accordance with the paragraph entitled, "Qualifications" of this section. Submittal shall include technician name, experience, training and certification on specific type and classification of cable terminations being provided under this contract. Submittal shall also include an outline of the cable termination installer manufacturer's training program and an expiration date of certification.

Certificates shall be provided for the following showing that the cable manufacturer has made factory-conducted tests on each shipping length of cable. Certified copies of test data shall show conformance with the referenced standards and shall be approved prior to delivery of cable.

Conductor Resistance
Accelerated Water Absorption Test
Water Immersion Test
High-Voltage
Partial Discharge Test
Manufacturer's Testing Schedule

SD-08 Manufacturer's Instructions

Manufacturer's instructions shall be provided showing the recommended sequence and method of installation for the following:

Single Conductor 69 kV Shielded Cable Terminations.

5.1.5. QUALIFICATIONS

Qualifications of cable splicers shall be provided.

Personnel performing High Voltage (HV) terminations shall have 5 years minimum experience in cable terminations of the type used in this project. In addition, the cable splicer shall submit Splicer Certifications

issued by the cable termination manufacturer who has examined and tested a test termination of each type required by this contract for each cable splicer. The certification shall identify which terminations it applies to. If the contractor does not have an individual with the manufacturer's certification as described, each individual with the required 5 years high voltage terminating who is to perform cable terminating shall be required to perform a minimum of one termination of each type in the presence of a manufacturers' representative. Each termination shall be submitted to the manufacturer for testing and subsequent certification. Proof of certification will be verified by the EOR prior to installation of any terminations. Once a termination has been started, the same installer shall complete that particular termination. Each termination shall be started and completed in one continuous work period.

5.1.6. CABLE VOLTAGE RATINGS AND USE

High-voltage power cables shall include single-conductor cables rated as follows, phase-to-phase, for grounded neutral systems:

Cables rated 69,000 volts, shall be used on 69,000-volt, three-phase, 60-hertz distribution systems.

Cables shall be installed in a duct and manhole system.

The primary insulation (Ethylene Propylene Rubber) shall have a performance record demonstrating a minimum of thirty-five (35) years successful operating experience in utility cable applications in the United States.

The ampacity rating of the cable shall be capable of sustained 140 MVA at rated voltage of 69,000V with a 75% Load Factor. The Contractor shall provide the JEA Project Manager in writing the ampacity of the cable at the normal and emergency operating temperatures. Typical assumptions for evaluating ampacity are 90 rho and 20 degrees C.

The temperature for normal operation is applicable to operating load cycles typical of electrical power systems. The temperature for short circuit operation represents the highest conductor temperature attained by any part during a short circuit event. Maximum conductor temperature operations are as follows:

- | | |
|--|---------------------|
| a. Normal Operation | 90 degrees C |
| b. Emergency Operation | 130 degrees C |
| c. Short Circuit Operation | 250 degrees C |
| d. Storage and Working Temperature Range | -40...+90 degrees C |
| e. Installation & Handling Temperature Range | -10...+40 degrees C |

5.1.7. FACTORY TESTING

Certified evidence shall be submitted that the cable manufacturer has made factory-conducted tests on each shipping length (reel) of cable; certified copies of test data shall be submitted in accordance with applicable provisions of the referenced standard. Tests on each length of cable shall include conductor resistance; high voltage; partial discharge test. JEA Project Manager or designee shall have the option of witnessing required factory testing at no additional cost. A Manufacturer's Testing Schedule shall be provided 4 weeks in advance to permit such witnessing, if desired.

Submit certified Qualification Test Reports in accordance with AEIC CS9 showing cable material and manufacturing meet the requirements of the referenced standards.

Prior to manufacturing, data regarding degradation of proposed insulating material and cable performance due to water immersion test as specified in this specification shall be provided to Owner or designee. Information shall indicate A.C. breakdown stress in kV/mm or V/mil versus immersion time. A complete cable description and condition under which cable was tested shall accompany the test information. Accelerated water absorption test shall also be submitted.

5.1.8. SHIPMENT

Listing of products installed shall be submitted.

The shipment of cable shall be made on reels in such a manner that the cable will be protected from mechanical injury. Each end of each length of cable shall be hermetically sealed using heat-shrinkable molded cable end caps to exclude moisture and securely attached to the reel.

The minimum diameter of the reel drum shall be 14 times the overall diameter of the cable. Those reels less than 60 inches in diameter shall have arbor holes sized for 2-1/2 inches spindles; those greater than 60 inches in diameter shall have arbor holes sized for 3-inch spindles. Reel sizes shall accommodate reel lengths specified in purchase order. Each reel shall contain only one length of cable cut to order.

Each reel shall have an arrow and appropriate wording stenciled in plain view on each side to indicate proper rotation of reels. Each reel shall be plainly marked on each side, and on a tag attached to the cable end inside the lagging, with the following information:

- a. Purchaser's order number:
- b. Complete description of cable including manufacturer, cable size, voltage rating, percent insulation rating, insulating material, conductor size(s), year of manufacture.
- c. Actual shipping cable (reel) length.
- d. Reel number (e.g., 1 of 2)
- e. Gross weight (i.e. with reel) and net weight (i.e. cable only).

Reels shall be shipped in a vertical position, sufficiently blocked in the bed of shipping vehicle to preclude movement.

5.2. PRODUCTS

69kV CABLE RATING OVERVIEW

Description	Value
Number of Cores	Single Core
Rated Voltage	69kV
Rated Maximum Voltage	72.5kV
Rated Frequency	60Hz
Normal Operation Temperature	90°C
Emergency Operation Temperature	130°C
Short Circuit Operation Temperature	250°C
Conductor Size	2000 kcmil
Conductor Material	Copper
Conductor Construction	Compressed, Compacted, Stranded
Insulation Material	EPR
Metallic Shield	Copper tape, wires, or flat strap to meet the short circuit performance of 22kA at 49 cycles.
Outer Jacket Material	Linear Low-Density Polyethylene (LLDPE) either of semi conductive tape or with a conductive layer on outside of jacket.
Outer Jacket Color	Black

5.2.1. CONDUCTORS

5.2.1.1. Material

Core (phase) conductor material shall be annealed copper in accordance with ASTM B 8.

5.2.1.2. Stranding

Conductors shall be Class B stranded.

5.2.2. CABLE IDENTIFICATION

Cables shall have printing on the outer jacket showing the cable type, name of the manufacturer, the year in which the cable was manufactured, sequential cable reel length markings and a unique number for identification purposes.

5.2.3. 69 kV 2000kcmil CABLES

5.2.3.1. General; 69 kV Cable

Single conductor 69 kV shielded cable assemblies shall consist of: Conductor core described above, an extruded semiconducting or non-conducting shield over the conductors, 650 mils of ethylene-propylene-rubber (EPR) insulation, an extruded semiconducting insulation shield, and a polyethylene (PE) jacket. The cable shall be rated for minimum 90 degrees C continuous conductor temperature and 130 degrees emergency overload. One additional single conductor 600V 4/0 copper AC cable shall be installed with each set of 3-2000kcmil cables.

5.2.3.2. 69 kV Cable Conductor Shielding (Strand Screen)

The conductor shielding shall be semiconducting thermoset ethylene propylene rubber. The semiconducting shielding shall be in accordance with AEIC CS9. Note: A conductor energy suppression layer is also acceptable. In addition to its energy suppression function, this layer shall provide stress relief at the conductor/primary insulation interface.

5.2.3.3. Insulation; 69 kV Cable

The insulation shall be a high quality, heat, moisture, impact, and ozone resistant flexible thermosetting ethylene propylene rubber-based elastomer. The ethylene content of the elastomer used in the insulation compound shall not exceed 72% by weight of ethylene nor shall the compound contain any polyethylene. The insulation thickness shall be 650 mils. The cable manufacturer shall compound the insulation in its own facility using a closed system to insure maximum cleanliness. The insulation shall be triple tandem extruded with the conductor and insulation screens and be applied in accordance with the above industry standards. Extrusion shall be performed by three in-line extruder heads thereby permitting the measurement and accurate individual control on each layer of compound as the cable is being manufactured.

5.2.3.4. Non-metallic Insulation Shield; 69 kV Cable

The minimum average insulation thickness shall be 650 mils. The minimum and maximum thickness of the insulation shall not vary from the average by more than 10%.

The insulation shall be tested for voids and contaminants per AEIC CS9.

The insulation shield shall be a semiconducting thermoset ethylene propylene rubber compatible with the EPR conductor insulation. The allowable operating temperature shall be greater than or equal to the conductor insulation. The insulation shield shall conform to the requirements of AEIC CS9.

5.2.3.5. Jacket; 69 kV Cable

Polyethylene (PE) shall be extruded to a minimum thickness of 140 mils.

The outer jacket shall be linear low density black polyethylene with three (3) extruded red stripes 120 degrees apart. The jacket shall be free stripping with no void existing between jacket or insulation shield. The jacket shall meet all requirements of ICEA S-108-720.

5.2.3.6. TESTING

Cables shall meet all AEIC CS-9, and ICEA S-108-720 testing requirements.

5.2.3.7. QUALIFICATION

The cable manufacturer shall submit a complete qualification test reports.

5.2.3.8. INSPECTION

All cable will be inspected and approved by purchaser. Any cable not specifically meeting the requirements of this specification without the direct approval of the purchaser may be rejected at the option of the purchaser. Rejected cable will be returned at the supplier's expense.

5.2.3.9. IDENTIFICATION AND MARKING

The manufacturer's name, conductor size, insulation thickness, date of manufacture, cumulative footage figure, type EPR and voltage rating shall be permanently and continuously marked at a minimum of every 24 inches on the jacket of the cable.

5.2.3.10. PACKAGING

The cable ends shall be sealed with a heat shrinkable cap to prevent water or moisture intrusion. Reels shall be non-returnable. All reels shall be labeled with purchaser's name, address, purchase order number, name of supplier, full cable description per 2.3.10 above, manufacturer's reel number, weight of reel and starting and ending sequential footage numbers.

5.2.3.11. WARRANTY

The cable specified shall be warranted for 40 years defects in materials and workmanship when installed in accordance with manufacturer's specifications. This warranty shall include a provision for labor cost reimbursement for a failure during the first 40 years after the cable installation.

5.2.3.12. MANUFACTURER

Single-conductor, ethylene-propylene-insulated, polyethylene-jacketed, shielded cable shall be manufactured by Okonite, Kerite or Prysmian and conform to ICEA S-108-720 and AEIC CS9.

Approved Manufacturers:

**Okonite
Kerite
Prysmian**

5.2.4. TERMINATIONS

Terminations shall be Class 1 per IEEE Std 48.

5.2.5. CABLE SUPPORTS AND FITTINGS

See Sub-Section 8 UNDERGROUND ELECTRICAL TRANSMISSION for Cable supports, related fittings, and accessories.

5.2.6. CABLE TAGS IN FEEDER PULL BOXES AND AT TERMINATIONS

Provide tags for each cable or wire located in feeder pull boxes and at each termination.

5.2.6.1. Polyethylene Cable Tags

Provide tags of polyethylene that have an average tensile strength of 4500 pounds per square inch; and that are 0.035-inch thick, non-corrosive non-conductive; resistive to acids, alkalis, organic solvents, and salt water; and distortion resistant to 300 degrees F. Provide a one-piece nylon, self-locking tie at each end of the cable tag. Ties shall have a minimum loop tensile strength of 175 pound. The cable tags shall have black letters, numbers, and symbols 1 inch high on a yellow background. Letters, numbers, and symbols shall not fall off or change positions regardless of the cable tags orientation.

5.3. EXECUTION

5.3.1. INSTALLATION

High-voltage cables shall be installed in accordance with NFPA 70.

The 600V 4/0 copper cable shall be connected to all system grounds.

The Contractor shall notify the Owner 7 working days prior to testing for phasing and phase rotation of 69 KV high voltage electrical systems. The Contractor shall identify and tag the phasing at equipment and shall provide to the JEA Project Manager in writing, the results of phasing and phase rotation tests. The Contractor shall be responsible for maintaining the phasing and phase rotation tests. The Contractor shall be responsible for maintaining the phasing and shall match the existing phase rotation and phasing when installing conductors in existing electrical systems.

5.3.1.1. Duct Cleaning

Ducts shall be thoroughly cleaned before installation of power cables. A standard flexible mandrel shall be pulled through each duct to loosen particles of earth, sand, or foreign material in the line.

5.3.1.1.1. PVC Duct

Mandrel length shall be not less than 12 inches long and shall have a diameter 1/2 inch less than the inside diameter of the duct. A brush with stiff bristles shall then be pulled through each duct to remove the loosened particles. Brush diameter shall be the same or slightly larger than the diameter of the duct.

5.3.1.2. Pulling Cables in Ducts

A pulling plan shall be submitted. The pulling rope shall be of adequate strength to exceed pulling calculations.

High-voltage cables shall be pulled into ducts with equipment designed for this purpose, including power-driven winch, jamb skid, cable-feeding flexible tube guide, long radius quadrant block cable pulling sheaves, pulling eyes, and lubricants. A sufficient number of trained personnel and equipment with two-way radio communication capability shall be employed to ensure the careful and proper installation of the cable.

Cable reel shall be set up allowing the cable to enter through the opening without reverse bending. Flexible tube guide shall be installed through the opening in a manner that will prevent the cable from rubbing on the edges of any structural member (feeder pull box, duct, etc.).

Two long-radius (30 inches minimum) quadrant block cable pulling sheaves and necessary jamb skid support shall be used at the pulling end to ensure that sidewall pressures during pulling will not be excessive. A dynamometer shall be used in the pulling line to ensure that the pulling force is not exceeded. The pulling force shall not exceed the smaller of allowable tension on pulling device, allowable tension on cable, or the tension which produces the allowable sidewall pressure. The allowable tension on the pulling device is 6000 pounds for pulling eyes. The allowable tension on cable shall not exceed the value computed from the following equation:

$$TM = X N X CM$$

Where: TM = maximum allowable pulling tension in pounds

N = number of conductors in the cable (N=2, not 3, for parallel pulls)

CM = cross-sectional area of each conductor in circular mils

The allowable sidewall pressure is the smaller of 500 pounds per foot of bend radius or the cable manufacturer's recommended maximum value. The pulling plan submittal shall show the calculations for allowable tension and sidewall pressure as well as the anticipated tension and sidewall pressure for each pull in the project.

Cable shall be unreeled from the top or bottom of the reel. Payout shall be carefully controlled. Cable to be pulled shall be attached through a swivel to the main pulling wire by means of a pulling eye installed by the factory.

Pulling eyes shall be attached at the factory to each of the cable conductors.

Minimum bending radius during cable pulling operations shall be 60 inches. For permanent cable bending/racking the minimum bending radius shall be 12 times cable diameter.

Cables shall be liberally coated with Polywater J (or approved equal) cable-pulling lubricant as it enters the tube guide or duct. Lubricant shall be applied per the manufacturer's specifications. Grease and oil lubricants shall not be used. Cables shall be covered with wire-pulling compounds which have no deleterious effects on the cable. Rollers, sheaves, or tube guides around which the cable is pulled shall conform to the 60 inches minimum bending radius of the cable during the pulling operations.

Cables shall be pulled into ducts at a speed not to exceed 50 feet per minute and not in excess of maximum permissible pulling tension specified by the cable manufacturer. Cable pulling using a vehicle shall not be permitted. Pulling operations shall be stopped immediately with any indication of binding or obstruction and shall not be resumed until such difficulty is corrected. Sufficient slack shall be provided for free movement of cable due to expansion or contraction.

Cables in manholes shall be racked as shown on the drawings, and firmly supported on cable racks as indicated.

Cables cut in the field shall have the cut ends immediately sealed to prevent entrance of moisture with heat-shrinkable molded cable end caps. Tape is not acceptable.

5.3.1.3. Terminations

Cables shall be terminated in approved cable terminations, rated Class 1 per IEEE Std 48. Terminations shall be provided with adequate means for making external connections to the cable conductors of single-conductor cables; protecting the cable insulation against moisture, oil, or other contaminant; physically protecting and supporting cables, and maintaining the insulation level of the cable.

Terminations shall be field fabricated from termination kits and in accordance with the termination manufacturer's recommendations for the type, size, and electrical characteristics of the cable.

Installation shall include built-up or prefabricated heat shrink stress-relief cones at the terminals of all shielded cables.

5.3.1.4. Termination and Splice Certification

The Contractor shall secure the services of the manufacturer of the termination and splice kits being used during the installation of this project to witness, examine, and test, and to certify the competence of the technicians performing terminations and splices. The certification shall confirm in writing that the installer has constructed the terminations and splices in accordance with the manufacturer's approved training and/or installation instructions. The certification shall be for a specific time period determined by the manufacturer. Certification for various types of terminations that may be used on the project shall include but not be limited to the following - single conductor 69 kV EPR terminations.

5.3.1.5. Fireproofing

Provide fireproofing (Arc Proofing) for individual cable conductor in feeder pull boxes.

Tightly wrap strips of fireproofing tape around each cable spirally in half-lapped wrapping. The tape shall extend 1 inch into the ducts. To prevent unraveling, random wrap the fireproofing tape the entire length of the fireproofing with pressure-sensitive glass cloth tape.

5.3.1.6. Cable Tag Installation

Install cable tags in each feeder pull box and at each termination as specified. Install cable tags over the fireproofing and position the tags so that they are clearly visible without disturbing any cabling or wiring in the manholes and equipment.

5.3.2. FIELD TESTING

After the installation of power cables has been completed, including terminations, and before the cable is energized, each high voltage cable shall be subjected to field testing in accordance with NETA ACCEPT, NETA MAINT and the following requirements.

Test equipment, labor, and trained technical personnel shall be Contractor provided as necessary to perform the electrical acceptance tests.

The Contractor shall provide Cable Test Report forms prior to commencing Field Testing. All tests shall be recorded on forms.

Arrangements shall be made to have tests witnessed and approved by the Owner and Manufacturer.

Each power-cable installation shall be completely isolated from extraneous electrical connections at cable terminations. Safety precautions shall be observed.

Each power cable shall first be given an insulation resistance test using a megohmmeter with a voltage output of at least 2,500-volts. Test shall be applied for a long enough time to fully charge the cable (no less than one minute). Readings shall be recorded as indicated on forms provided. Minimum reading shall be 5000 megohms at an ambient temperature of 68 degrees F. Readings taken at other than 68 degrees F ambient temperatures shall be corrected accordingly.

Upon successful completion of the insulation resistance test, the cable shall be subjected to a Very Low Frequency (VLF) AC high potential test. General VLF testing measures, parameters, considerations, and results shall adhere to the following:

- 1) Test voltage duration shall be continuous duty for 30 minutes (non-interrupted), per each phase of the cable installation.
- 2) The Contractor shall provide the test equipment and acceptable test form to test the cable capacitance in microfarads and record on a High Voltage AC Hi-pot test form (VLF).
- 3) The Contractor shall provide Tan Delta (TD) in accordance with Section 5.4 of IEEE 400.2.
- 4) The Contractor shall provide the test equipment to generate the test voltages required for the 30-minute test duration and adhere to the following table:

VLF Test Voltage for sinusoidal waveform

Cable Rating phase to phase	Acceptance (phase to ground test values)
	(New cable)
(rms voltage, KV)	(peak voltage, KV)
69	119

- 5) The sinusoidal test frequency shall be 0.1 Hertz.
- 6) The test shall not be performed on cable attached to equipment.

NOTE: Acceptance test values to include but not limited to peak voltage, frequency, and duration with respect to the cable rating shall be identified on the test submittal, with pass/fail results identified per cable installation. Reference IEEE Std 400.2

Terminations shall be clean and dry and shall be tested per IEEE Std 48. Radiographic tests shall be performed on all terminations at the discretion of the Owner to determine if voids exist in the termination. Unacceptable cable, terminations shall be reworked at no additional expense to the Owner.

5.3.3. EXCEPTIONS

Any exception taken to this specification must be specifically stated as an exception to the specification and submitted with the quotation. Failure to comply with requirement will be cause for disqualification of the quotation.

6. EXCAVATION AND FILL

6.1. GENERAL

6.1.1. REFERENCES

The publications listed below form a part of this section to the extent referenced:

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 145	(1991; R 2012) Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
AASHTO T 180	(2017) Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop
AASHTO T 2	(2006) Standard Methods of Sampling of Aggregates

AASHTO T 87 (2008) Standard Method of Test for Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AMERICAN WOOD PROTECTION ASSOCIATION (AWPA)

AWPA C1 (2003) All Timber Products - Preservative Treatment by Pressure Processes

6.1.2. SUBMITTALS

Submit the following in accordance with Section 01 33 00 entitled "Submittal Procedures."

SD-07 Certificates

Certificates for the following shall be submitted to the Engineer in accordance with the paragraph entitled, "Plans," of this section.

Work Plan

Dewatering Plan

Certificates for Proposed Soil Materials shall be submitted to the Engineer in accordance with paragraph entitled, "Proposed Soil Materials," of this section.

6.1.3. QUALITY ASSURANCE

Soil survey for satisfactory soil materials and samples of soil materials shall be furnished by the Contractor. A certified soil-testing service approved by the Engineer shall be provided by the Contractor. Testing shall include soil survey for satisfactory soil materials, sampling and testing soil materials proposed for use in the work, subbase materials at the mixing plant, and field-testing facilities for quality control during construction period.

Testing agencies shall conform to the requirements of ASTM D 3740.

6.1.4. PLANS

A Work Plan shall be submitted including proposed methods of excavation, earth support, utility construction, and backfilling at least 48 hours in advance of the work, for approval by the Engineer. The plan shall be coordinated with the demolition and protection plans of this section.

The Contractor shall provide a Dewatering Plan for proposed dewatering.

6.2. PRODUCTS

6.2.1. STRUCTURAL MATERIALS

Materials used for shoring and bracing, such as sheet piling, uprights, stringers, and cross braces, shall be in good serviceable condition. Any timber used shall be sound and free from large or loose knots.

Pressure-treated timber shall be used where wood sheeting or piling is specified or indicated to be cut and left in place. Timber and treatment shall conform to AWPA C1. Pressure treatment for piles shall conform to AWPA C3.

6.2.2. BACKFILL MATERIAL

Backfill material for trench and manholes shall be non-plastic and consist of sandy clay, sand, gravel, or other satisfactory soil materials.

6.2.2.1. Proposed Soil Materials

Soil materials proposed for use in the work shall be tested. The materials shall be approved by the Engineer prior to start of work, as follows:

MATERIAL	REQUIREMENT	TEST METHOD	NUMBER OF TESTS
Satisfactory soil materials	Sampling	AASHTO T 2	One for each source of material to determine conformance to definition of satisfactory soil materials; additional tests whenever there is any apparent change
	Preparation of samples	AASHTO T 87	
	Sieve analysis of fine and coarse aggregate	ASTM C 136	
	Mechanical analysis of soils	ASTM D 422	
	Moisture-density relations of soil	AASHTO T 180, Method B or D	

6.2.2.2. Satisfactory Materials

Satisfactory soil materials - AASHTO M 145 Soil Classification Groups A-1, A-2-4, A-2-5, and A-3.

6.2.2.3. Unsatisfactory Materials

Unsatisfactory soil materials - AASHTO M 145 Soil Classification Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7, highly organic soils, and soil materials of any classification that have a moisture content at the time of compaction beyond the range of 1 percentage point below and 3 percentage points above the optimum moisture content of the soil material as determined by moisture-density relations test.

6.2.3. TOPSOIL

Topsoil shall be any soil which consists of sandy clay or sandy loam. The topsoil shall be reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and shall be free from stones, stumps, roots, and other objectionable materials larger than 2 inch in any dimension.

6.3. EXECUTION

6.3.1. GENERAL REQUIREMENTS

Before starting earthwork, the location of underground utilities shall be carefully verified by hand methods. Utilities to be left in place shall be protected from damage. Movement of construction machinery and equipment over pipes and utilities during construction shall be at the Contractor's risk.

Excavation, filling, backfilling, and grading shall be to subgrade elevations specified.

Excavated materials suitable for backfill shall be piled in an orderly manner sufficiently distant from excavations to prevent overloading, slides, and cave-ins.

Excavations shall be done in ways that will prevent surface water and subsurface water from flowing into excavations and will also prevent flooding of the site and surrounding area.

6.3.2. PROTECTION OF PERSONS AND PROPERTY

All excavations shall be protected with temporary chain link fencing as indicated, barricaded, and posted with warning signs for the safety of persons. Warning lights shall be provided during hours of darkness.

Structures, utilities, sidewalks, pavements, and other facilities immediately adjacent to excavations shall be protected against damage including settlement, lateral movement, undermining, and washout.

Topsoil removal operations shall be conducted to ensure safety of persons and to prevent damage to existing structures and utilities, construction in progress, trees, and vegetation to remain standing, and other property.

All excavated spoils shall be stored in a way that is safe for all in the area. If it is deemed necessary, excavated materials shall be moved to a designated area until backfill activities take place.

Any utility, including electric distribution and gas piping in which 10 linear feet or more is exposed, must be braced with a rigid structure and nylon strapping every 10 feet.

6.3.3. SHORING, BRACING, AND SHEETING

Shoring and bracing in excavations shall be maintained for the entire length of time excavations will be open. Shoring and bracing shall be carried down with the excavation.

Sheeting used to prevent lateral movement of soil shall be removed in accordance with the requirements.

Untreated sheeting shall not be left in place beneath structures or pavements.

6.3.4. TRENCH EXCAVATION

Trenches shall be of adequate width and depth for the specified purpose. Side slopes of the trenches shall be as nearly vertical as practicable. Care shall be taken not to over excavate. Bottoms of the trenches shall be accurately graded to provide uniform bearing and support for each section of pipe on undisturbed soil at every point along its entire length except where it is necessary to excavate for bell holes and for proper sealing of pipe joints. Bell holes and depressions for joints shall be dug after the trench bottom has been graded to ensure that the pipe rests on the prepared bottom for as much of its full length as practicable. Bell holes and depressions shall be only of such length, depth, and width as required to make the joint. Stones shall be removed, as necessary, to avoid point bearing. Where rock excavation is required in trenches for pipe, the rock shall be excavated to a minimum over depth of 6-inches below the trench depth specified. Except as specified for wet or otherwise unstable material, over depths shall be backfilled with materials specified for backfilling the lower portion of trenches. Whenever wet or otherwise unstable material that is incapable of properly supporting the pipe, as determined by the Engineer, is encountered in the bottom of the trench, it shall be removed, and the trench shall be backfilled to the proper grade with coarse sand, fine gravel, or other suitable, approved material.

Trench excavations in surfaced areas shall be by open cut, unless otherwise shown. The pavement shall be cut by concrete saw or other approved method. Cuts shall be in straight lines parallel to the utility line location and shall be to a depth of at least one quarter of the pavement thickness. The remainder of the pavement shall be broken out. Pavement shall be removed a minimum of 12 inches on each side of the trench and 6 inches beyond where the base course is to be removed.

6.3.5. WATER REMOVAL

Water shall not be permitted to accumulate in excavations. Dewatering systems shall be provided by the Contractor to convey water away from excavations so that softening of foundation bottoms, footing undercutting, and soil changes detrimental to subgrade stability and foundation will not occur. Dewatering plan systems and methods of disposal shall be approved by the Engineer two weeks prior to commencement.

Dewatering shall be continued until construction subject to water pressure has obtained full specified strength and backfill is completed.

Water removal from excavations shall be conveyed to approved collecting or runoff areas. Temporary drainage ditches and other diversions as necessary shall be provided and maintained outside of excavation limits.

Trench excavations for utilities shall not be used for temporary drainage ditches.

6.3.6. EXCAVATION FOR ELECTRICAL UTILITIES

Excavation of trenches for electrical cables and duct lines shall provide vertical walls, unless otherwise approved by the Engineer, and the trench shall be only as wide as necessary for workers to install the cables or ducts. Abrupt changes in grade of the trench bottom shall be avoided. Trenches shall be of a depth to provide a minimum cover over the top of the cables or ducts of 60-inches below finished grade, and at additional depth if necessary, to avoid interference of the electrical cables or ducts with other utilities.

6.3.7. EXCAVATION FOR APPURTENANCES

Excavation for manholes and similar structures shall be sufficient to leave at least 12 inches in the clear between the outer surfaces and the embankment or timber used to hold and protect the walls. Any over depth excavation below such appurtenances that has not been directed will be considered unauthorized and shall be refilled with select bedding material or concrete, as directed by the Engineer, at no additional cost to JEA.

6.3.8. BACKFILLING AND COMPACTION FOR TRENCHING

Where trench sheeting is pulled, withdrawal shall be in increments of not more than 1 foot and backfilling and compaction operations shall be carried on simultaneously with trench sheeting pulling.

Trenches shall not be backfilled until required tests are performed and until the utilities systems, as installed, conform to the requirements for the installation of the various utilities. Trenches improperly backfilled shall be reopened to the depth required for proper compaction, then refilled and compacted as specified, or the condition shall be otherwise corrected as directed.

6.3.8.1. Bedding

Where the trench is excavated in rocks, a minimum of 6 inches of specified bedding material shall be placed on the rock surface before laying conduit or electrical cable.

6.3.8.2. Lower Portion of Trench

Backfill material shall be deposited in 8-inch uncompacted layers and compacted to the density of the adjacent soil until there is a cover of not less than 1 foot. The backfill material in this portion of the trench shall consist of sandy clay, sand, gravel, soft shale, or other approved materials, free from hard clods and stones larger than 1 inch in any dimension.

6.3.8.3. Remainder of Trench

The remainder of the trench shall be backfilled with material that is free of stones larger than 3 inches in any dimension. Backfill material shall be deposited in layers not exceeding the thickness specified, and each layer shall be compacted to the minimum density specified.

Under concrete slabs and paved parking areas:

6-inch layers, 95 percent of maximum density prescribed in AASHTO T 180, Method B or D

Under other areas:

8-inch layers, 90 percent of maximum density prescribed in AASHTO T 180, Method B or D

6.3.9. FILLING AND BACKFILLING

Fill and backfill to contours, elevations, and dimensions indicated. Compact each lift before placing overlaying lift.

6.3.9.1. Backfill and Fill Material Placement

Provide for paved areas and under concrete slabs, except where select material is provided. Place in 6-inch lifts. Do not place over wet or frozen areas. Place backfill material adjacent to structures as the structural elements are completed and accepted. Backfill against concrete only when approved. Place and compact material to avoid loading upon or against the structure.

6.3.10. FIELD QUALITY CONTROL

The Contractor shall arrange his Soil Test work so that sampling and testing may be performed without interruption. Moisture-density relations shall be determined in accordance with AASHTO T 180, Method B or D. Field density tests shall be performed by methods in sufficient number to ensure that the specified density is obtained.

Soil materials shall be tested during construction as follows:

<u>MATERIAL</u>	<u>REQUIREMENT</u>	<u>TEST METHOD</u>	<u>MATERIAL TESTED AND NUMBER OF TESTS</u>
Soil material-in-place after compaction	Density of soil-in-place	ASTM D 1556, Sand Cone Method	At least three daily for each subgrade soil material, and for each layer of soil material; additional test whenever there is in moisture

6.3.11. RESTORATION OF SURFACES

Areas within the limits of earthwork under this section, including adjacent transition areas, shall be uniformly graded. The finished surface shall be smooth within the specified tolerances, compacted, and with uniform levels or slopes between points where elevations are indicated or between such points and existing grades.

Grassed areas:

The finished surface of areas to receive topsoil blend shall be not more than 0.10-foot above or below the specified finish elevations.

Walks:

The surface of areas under walks shall be shaped to line, grade, and cross section, and the finished surface shall be not more than 0.10 foot above or 0.10-foot below the specified finish elevations.

Pavements:

The surface of areas under pavements shall be shaped to line, grade, and cross section, and the finished surface shall be not more than 1/2-inch above or below the specified finish elevations.

6.3.12.DISPOSAL OF EXCESS AND WASTE MATERIALS

Waste materials, including excavated material classified as unsatisfactory soil material, trash, and debris, shall be removed from JEA's property, and legally disposed of, by the Contractor.

7. UTILITY HORIZONTAL DIRECTIONAL DRILLING

7.1. GENERAL

7.1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D3350 (2012) Polyethylene Plastics Pipe and Fittings Materials

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

ANSI Z535.1 (2017) Safety Colors

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926.652 Safety and Health Regulations for Construction; Subpart P, Excavations; Requirements for Protective Systems

7.1.2. SUBMITTALS

Engineer approval is required for all submittals with. Submit the following in accordance with Sub-Section 3 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Statement of Qualifications and Records;
Horizontal Directional Drilling Plan;

SD-03 Product Data

Pipe;
Drilling Fluids;
Additives;
Tracer Wire;
Couplings;

SD-05 Design Data

Secondary Containment Plan;

SD-07 Certificates

Drill Rod

SD-11 Closeout Submittals

Record Drawings
Complete Work Logs of Guided Directional Drill Operations

7.1.3. QUALITY CONTROL

7.1.3.1. Qualifications

Ensure that the field supervisor and workers assigned to this project are experienced in work of this nature and have successfully completed similar projects of similar length, pipe type, pipe size, and soil type using directional drilling in the last three (3) years. As part of the bid submission, submit three project descriptions which include, at a minimum, a listing of the location(s), date of project(s), owner, pipe type and material, size installed, length of installation, manufacturer of equipment used, and other information relevant to the successful completion of the project.

7.1.3.2. Safety

Include in directional drilling equipment machine safety requirements a common grounding system to prevent electrical shock in the event of underground electrical cable strike. Ensure the grounding system connects all pieces of interconnecting machinery; the drill, mud mixing system, drill power unit, drill rod trailer, operator's booth, worker grounding mats, and any other interconnected equipment to a common ground. Equip the drill with an "electrical strike" audible and visual warning system that notifies the system operators of an electrical strike.

7.1.3.3. Horizontal Directional Drilling Plan

Submit supporting calculations, certifications, and material product data demonstrating the strength of the product pipes for acceptance before the beginning of the installation. Demonstrate that the proposed material satisfies the purpose of the utility and withstands the design and construction stresses and pressures. The HDD Plan shall include the following:

7.1.3.3.1. Layout Plan

Provide a plan location of the operation, including entry and exit points, discussing the relationship of the equipment, pipe assembly, and staging areas.

7.1.3.3.2. Utility Profile

Provide a profile of the utility plotted at a scale appropriate for the work.

7.1.3.3.3. Equipment List

Provide a directional drilling equipment list including: drilling rig, drill bit, back-reamer, mud mixing and pumping systems, down-hole tools, guidance system, and rig safety system. Provide calibration records for guidance system.

7.1.3.3.4. Drilling Fluid Management Plan

Provide a drilling fluid management plan to include drilling fluid types and specifications, cleaning and recycling equipment, estimated flow rates, procedures for minimizing drilling fluid escape, and the method/location for final disposal of waste drilling fluids. Provide a frac out control plan, including frac control materials that will be onsite and contact information for emergency personnel.

7.1.3.3.5. Pedestrian Access

When and where installations disrupt pedestrian use of sidewalk for periods exceeding two consecutive days, provide an alternate route that meets current ADA requirements.

7.1.3.3.6. Method and Procedures

Provide an outline of the methods and procedures, describing the pilot hole drilling procedure, the reaming operation, and the pullback procedure, including drawings, schedule of operations, specifications, and method of operation. Include pipe storage and handling details and pipeline assembly and installation procedures.

7.1.3.3.7. Safety Data Sheets

Submit safety data sheets for fluids and additives.

7.1.3.3.8. Revisions

If site conditions change and require modification to the HDD Plan, submit revised drilling plan to achieve successful installation. Explain, in the revised submittal, the anticipated and encountered conditions that mandated the change in plans.

7.1.4. DELIVERY, STORAGE, AND HANDLING

Inspect materials delivered to the site for damage. All materials found during inspection or during the progress of work to have cracks, flaws, surface abrasions, or other defects will be rejected. Remove defective materials from the job site.

Protect stored piping from moisture and dirt and place on level surface. Store plastic piping protected from direct sunlight.

7.2. PRODUCTS

7.2.1. EQUIPMENT

7.2.1.1. Drill Rod

Select the appropriate drill rod to be used. Submit certified statement that the drill rod has been inspected and is in satisfactory condition for its intended use.

7.2.2. MATERIALS

7.2.2.1. Pipe

7.2.2.1.1. HDPE

Install 6-inch diameter high density polyethylene standard inside dimension ratio pipe (HDPE SIDR) with a standard dimension ratio of 13.5 (SIDR 13.5). Provide pipe conforming to ASTM D3350. **Pipe is gray in color.**

7.2.2.1.2. Pipe Elbows

Contractor to utilize elbows that are PVC and have a 12' radius.

7.2.2.2. Drilling Fluids

Use a high-quality bentonite, polymer slurry, water, or some combination of these drilling fluids to ensure hole stability, cuttings transport, bit and electronics cooling, and hole lubrication to reduce drag on the

drill pipe and the product pipe. Use only fluid with a composition which complies with all Federal, State, and local environmental regulations.

7.2.2.3. Additives

Use admixtures as required to address soil conditions and water conditions such as water hardness, acidity, and alkalinity.

7.2.2.4. Tracer Wire

Use a continuous sheathed solid conductor copper wire line, minimum #12 AWG. Sheathing shall be color coded to match the utility.

7.3. EXECUTION

7.3.1. INSTALLATION

Ensure all utilities are located and clearly marked prior to start of excavation or drilling.

7.3.1.1. Drill Set-Up

Design and construct the drill entrance and exit pits.

7.3.1.1.1. Drilling Fluids

Mix the drilling fluid with potable water (of proper pH) to ensure no contamination is introduced into the soil during the drilling, reaming, or pipe installation process. Make any required additive adjustments.

7.3.1.2. Drill Entrance and Exit Pits

Drill entrance and exit pits are required. Maintain at minimum size to allow only the minimum amount of drilling fluid storage prior to transfer to mud recycling or processing system or removal from the site.

Do not allow drilling mud to flow freely on the site or around the entrance or exit pits. Remove spilled mud and restore ground to original condition. Provide shore pits in compliance with OSHA Standards, 29 CFR 1926.652.

Drilling near wetlands or water courses requires secondary containment to prevent drilling fluids from entering the wetlands. Secure written approval of a secondary containment plan from the JEA Project Manager.

7.3.1.3. Drill Entrance and Exit Angle

Ensure entrance and exit angles and elevation profile maintains adequate cover to reduce risk of drilling fluid breakouts and ground exit occurs as specified herein. Entrance and exit angles shall not be less than 15 degrees from the horizontal and not more than 45 degrees from the horizontal.

7.3.1.4. Pilot Hole

The type and size of the pilot string cutting head and the diameter of the drill pipe are at the Contractor's discretion.

Drill the pilot hole along the path shown on the plan and profile drawings. Pilot hole tolerances are as follows:

- a. Vertical Tolerance: Provide minimum cover below channel bottom as specified on the plans. Pilot hole may go deeper if necessary to prevent breakout.
- b. Horizontal Tolerance: Plus or minus - 60 inches from the centerline of the product pipe.
- c. Curve Radius: No curve is acceptable with a radius less than 200 feet.
- d. Entry Point Location: Make pilot hole entry point within plus or minus - 60 inches of the location shown on the drawings or as directed by the Engineer in the field.
- e. Exit Point Location: Make the exit point location within plus/minus - 60 inches of the location shown on the drawings or as directed by the Engineer in the field.
- f. Mandatory pipeline cover requirements are as shown on the drawings or as specified.

7.3.1.5. Guidance Systems

Walkover guidance systems are not acceptable for this project; use a magnetic survey tool locator installed behind the pilot string cutting head and an electric grid (tru-tracker) system for this project. Ensure proper calibration of all equipment before commencing directional drilling operation.

7.3.1.6. Reaming

Conduct reaming operations at the Contractor's discretion. Determine the type of back reamer to be utilized by the type of subsurface soil conditions that are encountered during the pilot hole drilling operation. The reamer type is at the Contractor's discretion.

7.3.1.7. Pull Back

Install a continuous length of tracer wire for the full length of each run of nonmetallic pipe in accordance with ANSI Z535.1. Attach wire to top of pipe in such a manner that it will not be displaced during construction operations.

Support the pipeline during pullback operations in a manner to enable it to move freely and prevent damage. Install the pipeline in one continuous pull.

Minimize torsion stress by using a swivel to connect the pull section to the reaming assembly.

Maximum allowable tensile force imposed on the pull section is not to exceed 90 percent of the pipe manufacturer's safe pull (or tensile) strength.

Minimize external pressure during installation of the pullback section in the reamed hole. Replace damaged pipe resulting from external pressure at no cost to JEA. Buoyancy modification is at the discretion of the Contractor.

7.3.1.8. Drilling Fluids Disposal

Collect drilling fluid returns in the entrance pit, exit pit, or spoils recovery pit. Immediately clean up any drilling fluid spills or overflows from these pits.

Dispose of fluids in a manner that is in compliance with all permits and applicable Federal, State, and local regulations. Contractor shall dispose of fluid off JEA property or county/city right of way.

Conduct disposal in compliance with all relative environmental regulations, right-of-way and workspace agreements, and permit requirements.

7.3.2. FIELD QUALITY CONTROL

7.3.2.1. Daily Work Log

Maintain a work log of construction events and operations including, but not limited to, the following for each day's work:

- a. Hours worked.
- b. Log of each drill rod added or withdrawn during drilling, reaming, and pull back.
- c. Groundwater control operations.
- d. Description of soil conditions encountered.
- e. Tools and equipment in use, drilling fluid, fluid pumping rate, and drilling head location.
- f. Any unusual conditions or events.
- g. Reasons for operational shutdown in event work is halted.

7.3.2.2. Drill Logs

Maintain drilling logs that accurately provide drill bit location (both horizontally and vertically) at least every 10 feet along the drill path. In addition, keep logs that record, as a minimum the following, every 15 minutes throughout each drill pass, back ream pass, or pipe installation pass:

- a. Drilling Fluid Pressure
- b. Drilling Fluid Flow Rate
- c. Drill Thrust Pressure
- d. Drill Pullback Pressure
- e. Drill Head Torque

Make all instrumentation, readings, and logs available to the JEA Project Manager at all times during operation.

7.3.2.3. Field Tests

Perform field tests and provide labor, equipment, and incidentals required for testing. Submit test results, identifying any results that do not meet requirements, to the Contracting Officer within four days of test completion. Provide corrective action and retest pipe not meeting requirements. Provide corrective action as recommended by the pipe manufacturer and subject to approval by the JEA Project Manager.

7.3.3. CLOSEOUT ACTIVITIES

Immediately upon completion of work, remove all rubbish and debris from the job site. Remove all construction equipment and implements of service leaving the entire area involved in a neat condition acceptable to the JEA Project Manager.

Immediately clean "blow holes" or "breakouts" of drilling fluid to the surface and return the surface area to its original condition. Dispose of all drilling fluids, soils, and separated materials in compliance with Federal, State, and local environmental regulations.

Submit an electronic copy and three hard copies of the record drawings to the JEA Project Manager within five days after completing the pull back. Include in the record drawings a plan, profile, and all information recorded during the progress of the work. Clearly tie the record drawings to the project's survey control. Maintain, and submit upon completion, signed complete work logs of guided directional drill operations.

8. UNDERGROUND ELECTRICAL TRANSMISSION

8.1. GENERAL

8.1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) AASHTO HB-17	(2002; Errata 2003; Errata 2005, 17th Edition) Standard Specifications for Highway Bridges
AMERICAN CONCRETE INSTITUTE (ACI) ACI 318M	(2014; ERTA 2015) Building Code Requirements for Structural Concrete & Commentary
ACI SP-66	(2004) ACI Detailing Manual
ASTM INTERNATIONAL (ASTM)	
ASTM B3	(2013) Standard Specification for Soft or Annealed Copper Wire
ASTM B8	(2011; R 2017) Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM C857	(2016) Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
ASTM C990	(2009; R 2014) Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)	
IEEE 81	(2012) Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System
IEEE C2	(2017; Errata 1-2 2017; INT 1 2017) National Electrical Safety Code
IEEE Stds Dictionary	(2009) IEEE Standards Dictionary: Glossary of Terms & Definitions
INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)	
NETA ATS	(2017; Errata 2017) Standard for Acceptance Testing Specifications for

Electrical Power Equipment and
Systems

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA TC 2 (2013) Standard for Electrical
Polyvinyl Chloride (PVC) Conduit

NEMA TC 9 (2004) Standard for Fittings for
Polyvinyl Chloride (PVC) Plastic
Utilities Duct for Underground
Installation

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
NFPA 70

(2019; TIA 19-1; TIA 19-2; TIA 19-3;
TIA 19-4; ERTA 1 2019) National
Electrical Code

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

CID A-A-60005 (Basic; Notice 2) Frames, Covers,
Gratings, Steps, Sump And Catch
Basin, Manhole

UNDERWRITERS LABORATORIES (UL)

UL 83 (2017) UL Standard for Safety
Thermoplastic-Insulated Wires and
Cables

UL 94 (2013; Reprint Sep 2017) UL
Standard for Safety Tests for
Flammability of Plastic Materials for
Parts in Devices and Appliances

UL 467 (2013; Reprint Jun 2017) UL
Standard for Safety Grounding and
Bonding Equipment

UL 510 (2017) UL Standard for Safety
Polyvinyl Chloride, Polyethylene and
Rubber Insulating Tape

UL 514B (2012; Reprint Nov 2014) Conduit,
Tubing and Cable Fittings

UL 651 (2011; Reprint Nov 2018) UL
Standard for Safety Schedule 40, 80,
Type EB and A Rigid PVC Conduit
and Fittings

8.1.2. RELATED REQUIREMENTS

Sub-Sections 4 69kV Transmission Cable, 7 Utility Horizontal Directional Drilling applies to this section, with the additions and modifications specified herein.

8.1.3. DEFINITIONS

- a. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, are as defined in IEEE Stds Dictionary.
- b. In the text of this section, the words conduit and duct are used interchangeably and have the same meaning.

8.1.4. SUBMITTALS

Engineer approval is required for all submittals. Submit the following in accordance with Sub-Section 3 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Copper conductors

Submit modified drawings and engineering calculations associated with design changes required for use of aluminum conductors.

Precast underground structures

SD-03 Product Data

Precast concrete structures

Sealing Material

Pulling-In Irons

Manhole frames and covers

Cable supports (racks, arms and insulators)

SD-06 Test Reports

Cable Installation Plan and Procedure

One copy of the information described below in 8-1/2 by 11-inch binders having a minimum of three rings from which material may readily be removed and replaced, including a separate section for each cable pull. Separate sections by heavy plastic dividers with tabs, with all data sheets signed and dated by the person supervising the pull.

- a. Site layout drawing with cable pulls numerically identified.
- b. A list of equipment used, with calibration certifications. The manufacturer and quantity of lubricant used on pull.
- c. The cable manufacturer and type of cable.
- d. The dates of cable pulls, time of day, and ambient temperature.
- e. The length of cable pull and calculated cable pulling tensions.
- f. The actual cable pulling tensions encountered during pull.

SD-07 Certificates

Cable Installer Qualifications

Directional Boring Certificate of Conformance

8.1.5. QUALITY ASSURANCE

8.1.5.1. Certificate of Competency for Cable Splicer/Terminator

See Sub-Section 4, 69kV Transmission Cables for requirements.

8.1.5.2. Cable Installer Qualifications

See Sub-Section 4, 69kV Transmission Cables for requirements.

8.1.5.3. Directional Boring Certificate of Conformance

Provide certification of compliance with the registered Professional Engineer's design requirements for each directional bore, including: HDPE conduit size and type, bend radius, elevation changes, vertical and horizontal path deviations, conductor size and type and any conductor derating due to depth of conduit. Record location and depth of all directional-bore installed HDPE conduits using Global Positioning System (GPS) recording means with "resource grade" accuracy.

8.1.5.4. Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "must" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the JEA Project Manager. Equipment, materials, installation, and workmanship must be in accordance with the mandatory and advisory provisions of IEEE C2 and NFPA 70 unless more stringent requirements are specified or indicated.

8.1.5.5. Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products must have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period must include applications of equipment and materials under similar circumstances and of similar size. The product must have been for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items must be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section.

8.1.5.5.1. Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

8.1.5.5.2. Material and Equipment Manufacturing Date

Products manufactured more than 3 years prior to date of delivery to site are not acceptable, unless specified otherwise.

8.2. PRODUCTS

8.2.1. CONDUIT, DUCTS, AND FITTINGS

8.2.1.1. Plastic Conduit for Direct Burial and Riser Applications

UL 651 and NEMA TC 2, Schedule 40 or Schedule 80 as indicated.

8.2.1.2. Galvanized Steel Riser Cover

Contractor shall make field measurements and provide a ¼" thick 10' long galvanized steel cover to protect cable risers. Cover shall be sized adequately to cover bottom 6" of conduit from grade, cables, and cable clamps. Conduit shall be fastened to the pole by way of existing bolts, nuts and washers.

8.2.1.3. High Density Polyethylene (HDPE) Electrical Conduit for Directional Boring

See Sub-Section 7 Utility Horizontal Directional Drilling.

8.2.1.4. Duct Sealant

UL 94, Class HBF. Provide high-expansion urethane foam duct sealant that expands and hardens to form a closed, chemically and water resistant, rigid structure. Sealant must be compatible with common cable and wire jackets and capable of adhering to metals, plastics, and concrete. Sealant must be capable of curing in temperature ranges of 35 degrees F to 95 degrees F. Cured sealant must withstand temperature ranges of -20 degrees F to 200 degrees F without loss of function.

8.2.1.5. Fittings

8.2.1.5.1. PVC Conduit Fittings

UL 514B, UL 651.

8.2.1.5.2. PVC Duct Fittings

NEMA TC 9.

8.2.2. LOW VOLTAGE INSULATED CONDUCTORS AND CABLES

Insulated conductors must be rated 600 volts and conform to the requirements of NFPA 70, including listing requirements. Wires and cables manufactured more than 12 months prior to date of delivery to the site are not acceptable.

8.2.2.1. Conductor Types

Cable and duct sizes indicated are for copper conductors and THHN/THWN unless otherwise noted. Conductors No. 10 AWG and smaller must be solid. Conductors No. 8 AWG and larger must be stranded. All conductors must be copper.

8.2.2.2. Conductor Material

Unless specified or indicated otherwise or required by NFPA 70, wires in conduit, other than service entrance, must be 600-volt, Type THWN/THHN conforming to UL 83. Copper conductors must be annealed copper complying with ASTM B3 and ASTM B8.

8.2.2.3. In Duct

Cables must be single-conductor cable.

8.2.2.4. Cable Marking

Insulated conductors must have the date of manufacture and other identification imprinted on the outer surface of each cable at regular intervals throughout the cable length.

8.2.3. TAPE

8.2.3.1. Insulating Tape

UL 510, plastic insulating tape, capable of performing in a continuous temperature environment of 80 degrees C.

8.2.3.2. Buried Warning and Identification Tape

Provide detectable tape in accordance with Sub-Section 6 EXCAVATION AND FILL.

8.2.4. PULL ROPE

Plastic or flat pull line (bull line) that exceeds the contractors calculated tensions.

8.2.5. GROUNDING AND BONDING

8.2.5.1. Driven Ground Rods

Provide copper-clad steel ground rods conforming to UL 467 not less than 3/4 inch in diameter by 10 feet in length.

8.2.5.2. Grounding Conductors

Stranded-bare copper conductors must conform to ASTM B8, Class B, soft-drawn unless otherwise indicated. Insulated conductors must be of the same material as phase conductors, except that conductors must be rated no more than 600 volts. Aluminum is not acceptable.

8.2.6. UNDERGROUND STRUCTURES

Provide precast concrete underground structures as indicated, conforming to ASTM C857 and ASTM C478. Top, walls, and bottom must consist of reinforced concrete. Walls and bottom must be of monolithic concrete construction. Locate duct entrances and windows near the corners of structures to facilitate cable racking. Covers must fit the frames without undue play. Form steel and iron to shape and size with sharp lines and angles. Castings must be free from warp and blow holes that may impair strength or appearance. Exposed metal must have a smooth finish and sharp lines and arises. Provide necessary lugs, rabbets, and brackets. Set pulling-in irons and other built-in items in place before depositing concrete. Install a pulling-in iron in the wall opposite each duct line entrance. Cable racks, including rack arms and insulators, must be adequate to accommodate the cable.

8.2.6.1. Precast Concrete Structures, Risers and Tops

Precast units must be the product of a manufacturer regularly engaged in the manufacture of precast concrete products, including precast manholes.

8.2.6.1.1. General

Structures must be identified with the manufacturer's name embedded in or otherwise permanently attached to an interior wall face.

8.2.6.1.2. Design for Precast Structures

ACI 318M. Design for the following soil parameters/site conditions:

- a. Vertical design loads must include full dead, superimposed dead, and live loads including a 30 percent magnification factor for impact. Live loads must consider all types and magnitudes of

vehicular (automotive, industrial, or aircraft) traffic to be encountered. The minimum design vertical load must be for H20 highway loading per AASHTO HB-17.

b. Horizontal design loads must include full geostatic and hydrostatic pressures for the soil parameters, water table, and depth of installation to be encountered. Also, horizontal loads imposed by adjacent structure foundations, and horizontal load components of vertical design loads, including impact, must be considered, along with a pulling-in iron design load of 6000 pounds.

c. Each structural component must be designed for the load combination and positioning resulting in the maximum shear and moment for that particular component.

d. Design must also consider the live loads induced in the handling, installation, and backfilling of the manholes. Provide lifting devices to ensure structural integrity during handling and installation.

8.2.6.1.3. Construction

See drawings for details. Structure top, bottom, and wall must be of a uniform thickness of not less than 6 inches. Thin-walled knock-out panels for designed or future duct bank entrances are not permitted. Provide quantity, size, and location of duct bank entrance windows as directed, and cast completely open by the precaster. Size of windows must exceed the nominal duct bank envelope dimensions by at least 12 inches vertically and horizontally to preclude in-field window modifications made necessary by duct bank misalignment. However, the sides of precast windows must be a minimum of 6 inches from the inside surface of adjacent walls, floors, or ceilings. Form the perimeter of precast window openings to have a keyed or inward flared surface to provide a positive interlock with the mating duct bank envelope. Provide welded wire fabric reinforcing through window openings for in-field cutting and flaring into duct bank envelopes. Provide additional reinforcing steel comprised of at least two No. 4 bars around window openings. Provide drain sumps a minimum of 12 inches in diameter and 4 inches deep for precast structures.

8.2.6.1.4. Joints

Provide tongue-and-groove joints on mating edges of precast components. Shiplap joints are not allowed. Design joints to firmly interlock adjoining components and to provide waterproof junctions and adequate shear transfer. Seal joints watertight using preformed plastic strip conforming to ASTM C990. Install sealing material in strict accordance with the sealant manufacturer's printed instructions. Provide waterproofing at conduit/duct entrances into structures, and where access frame meets the top slab, provide continuous grout seal.

8.2.7. CABLE SUPPORTS (RACKS, ARMS, AND INSULATORS)

The metal portion of racks and arms must be zinc-coated after fabrication.

8.2.7.1. Cable Rack Stanchions

Cable Rack Stanchions as required by the Contract Drawings.

8.2.7.2. Rack Arms

Cable rack arms must be steel.

8.2.7.3. Insulators

Insulators for metal rack arms must be dry-process glazed porcelain.

8.2.7.4. Polyethylene Cable Tags

Provide tags of polyethylene in accordance with Sub-Section 5 69kV TRANSMISSION CABLES.

8.3. EXECUTION

8.3.1. INSTALLATION

Install equipment and devices in accordance with the manufacturer's published instructions and with the requirements and recommendations of NFPA 70 and IEEE C2 as applicable.

8.3.2. CABLE INSPECTION

Inspect each cable reel for correct storage positions, signs of physical damage, and broken end seals prior to installation. If end seal is broken, remove moisture from cable prior to installation in accordance with the cable manufacturer's recommendations.

8.3.3. CABLE INSTALLATION PLAN AND PROCEDURE

Obtain from the manufacturer an installation manual or set of instructions which addresses such aspects as cable construction, insulation type, cable diameter, bending radius, cable temperature limits for installation, lubricants, coefficient of friction, conduit cleaning, storage procedures, moisture seals, testing for and purging moisture, maximum allowable pulling tension, and maximum allowable sidewall bearing pressure. Perform pulling calculations and prepare a pulling plan and submit along with the manufacturer's instructions in accordance with SUBMITTALS. Install cable strictly in accordance with the cable manufacturer's recommendations and the approved installation plan.

Calculations and pulling plan must include:

- a. Site layout drawing with cable pulls identified in numeric order of expected pulling sequence and direction of cable pull.
- b. List of cable installation equipment.
- c. Lubricant manufacturer's application instructions.
- d. Procedure for resealing cable ends to prevent moisture from entering cable.
- e. Cable pulling tension calculations of all cable pulls.
- f. Cable percentage conduit fill.
- g. Cable sidewall bearing pressure.
- h. Cable minimum bend radius and minimum diameter of pulling wheels used.
- i. Cable jam ratio.
- j. Maximum allowable pulling tension on each different type and size of conductor.
- k. Maximum allowable pulling tension on pulling device.

8.3.4. UNDERGROUND STRUCTURE CONSTRUCTION

Provide precast construction as indicated on Construction Drawings. Horizontal concrete surfaces of floors must have a smooth trowel finish.

8.3.4.1. Precast Concrete Construction

Set commercial precast structures on 12 inches of level, 90 percent compacted 57 stone, extending 18 inches beyond the structure on each side. Compact granular fill by a minimum of four passes with a plate type vibrator. Installation must additionally conform to the manufacturer's instructions. Contractor shall provide wellpoints minimum 48 hours in advance of installation of Precast Concrete structures and leave wellpoints for duration of installation until backfill is complete.

8.3.4.2. Cable Racks, Arms, and Insulators

Cable racks, arms and insulators must be sufficient to accommodate the cables.

8.3.5. UNDERGROUND CONDUIT AND DUCT SYSTEMS

8.3.5.1. Requirements

Run conduit in straight lines except where a change of direction is necessary. Provide numbers and sizes of ducts as indicated. Route grounding conductor into risers with the conduit. Ducts must have a continuous slope downward toward underground structures, laid with a minimum slope of 4 inches per 100 feet. Depending on the contour of the finished grade, the high point may be at a terminal, a manhole or between manholes. Provide ducts with end bells whenever duct lines terminate in structures.

Perform changes in ductbank direction as follows:

- a. 60" Short-radius manufactured 90-degree duct bends may be used only for pole or equipment risers, unless specifically indicated as acceptable.
- b. The minimum manufactured bend radius must be 48 inches for ducts of less than 3-inch diameter, and 60 inches for ducts 3 inches or greater in diameter.
- c. 144" Medium-radius manufactured 90-degree and 45-degree duct bends may be used only where called out in plans.
- d. As an exception to the bend radius required above, provide field manufactured long sweep bends having a minimum radius of 20 feet for a change of direction of more than 5 degrees, either horizontally or vertically, using a combination of curved and straight sections. Maximum manufactured curved sections: 30 degrees.

8.3.5.2. Treatment

Ducts must be kept clean of concrete, dirt, or foreign substances during construction. Field cuts requiring tapers must be made with proper tools and match factory tapers. A coupling recommended by the duct manufacturer must be used whenever an existing duct is connected to a duct of different material or shape. Ducts must be stored to avoid warping and deterioration with ends sufficiently plugged to prevent entry of any water or solid substances. Ducts must be thoroughly cleaned before being laid. Plastic ducts must be stored on a flat surface and protected from the direct rays of the sun.

8.3.5.3. Conduit Cleaning

As each conduit run is completed, for conduit sizes 3 inches and larger, draw a flexible testing mandrel approximately 12 inches long with a diameter less than the inside diameter of the conduit through the conduit. After which, draw a stiff bristle brush through until conduit is clear of particles of earth, sand, and gravel; then immediately install conduit plugs. For conduit sizes less than 3 inches, draw a stiff bristle brush through until conduit is clear of particles of earth, sand, and gravel; then immediately install conduit plugs.

8.3.5.4. Multiple Conduits

Separate multiple conduits by a minimum distance of 9 inches

8.3.5.5. Conduit Plugs and Pull Rope

New conduit indicated as being unused or empty must be provided with plugs on each end. Plugs must contain a weephole or screen to allow water drainage. Provide a plastic pull rope having 3 feet of slack at each end of unused or empty conduits.

8.3.5.6. Conduit and Duct Without Concrete Encasement

Depths to top of the conduit must be not less than 60 inches below finished grade. Provide not less than 6 inches clearance from the conduit to each side of the trench. Grade bottom of trench smooth; where rock, soft spots, or sharp-edged materials are encountered, excavate the bottom for an additional 3 inches, fill and tamp level with original bottom with sand or earth free from particles, which would be retained on a 1/4-inch sieve. The first 6-inch layer of backfill cover must be sand compacted as previously specified. The rest of the excavation must be backfilled and compacted in 3-to-6-inch layers. Provide color, type, and depth of warning tape.

8.3.5.6.1. Directional Boring

Provide Directional boring in accordance with sub-section 7 Utility Horizontal Directional Drilling.

8.3.5.7. Duct Sealing

Seal all electrical penetrations for radon mitigation, maintaining integrity of the vapor barrier, and to prevent infiltration of air, insects, and vermin.

8.3.6. CABLE PULLING

Pull cables down grade with the feed-in point at the manhole of the highest elevation. Use flexible cable feeds to convey cables through manhole opening and into duct runs. Do not exceed the specified cable bending radius when installing cable under any conditions. Cable must have a bending radius not less than 12 times the overall diameter of the completed cable. If basket-grip type cable-pulling devices are used to pull cable in place, cut off the section of cable under the grip before splicing and terminating.

8.3.6.1. Cable Lubricants

Use lubricants that are specifically recommended by the cable manufacturer for assisting in pulling jacketed cables. This design was based on the use of **Polywater J lubricant**; therefore the Contractor must use this product unless otherwise specified by the JEA Project Manager.

8.3.7. CABLES IN UNDERGROUND STRUCTURES

Install cables utilizing the long wall between penetrations. Form cables to closely parallel walls, not to interfere with duct entrances, and support on brackets and cable insulators. Support cable splices in underground structures by racks on each side of the splice. Locate splices to prevent cyclic bending in the spliced sheath. Install cables at middle and bottom of cable racks, leaving top space open for future cables, except as otherwise indicated for existing installations. Provide one spare three-insulator rack arm for each cable rack in each underground structure.

8.3.7.1. Cable Tag Installation

Install cable tags in each manhole as specified, including each splice. Tag wire and cable provided by this contract. Install cable tags over the fireproofing, if any, and locate the tags so that they are clearly visible without disturbing any cabling or wiring in the manholes.

8.3.8. CABLE END CAPS

Cable ends must be sealed at all times with coated heat shrinkable end caps. Cables ends must be sealed when the cable is delivered to the job site, while the cable is stored and during installation of the cable. The caps must remain in place until the cable is spliced or terminated. Sealing compounds and tape are not acceptable substitutes for heat shrinkable end caps. Cable which is not sealed in the specified manner at all times will be rejected.

8.3.9. FIREPROOFING OF CABLES IN UNDERGROUND STRUCTURES

Fireproof (arc proof) wire and cables which will carry current at 2200 volts or more in underground structures.

8.3.9.1. Fireproofing Tape

Tightly wrap strips of fireproofing tape around each cable spirally in half-lapped wrapping. Install tape in accordance with manufacturer's instructions.

8.3.10. GROUNDING SYSTEMS

NFPA 70 and IEEE C2, except provide grounding systems with a resistance to solid earth ground not exceeding 10 ohms.

8.3.10.1. Grounding Electrodes

Provide cone pointed driven ground rods driven full depth plus 12 inches, installed to provide an earth ground of the appropriate value for the particular equipment being grounded. If the specified ground resistance is not met, an additional ground rod must be provided in accordance with the requirements of NFPA 70. Should the resultant (combined) resistance exceed the specified resistance, measured not less than 48 hours after rainfall, notify the JEA Project Manager immediately.

8.3.10.2. Grounding Connections

Make grounding connections which are buried or otherwise normally inaccessible, by exothermic weld.

a. Make exothermic welds strictly in accordance with the weld manufacturer's written recommendations. Welds which are "puffed up" or which show convex surfaces indicating improper cleaning are not acceptable. Mechanical connectors are not required at exothermic welds.

8.3.10.3. Grounding Conductors

Provide bare grounding conductors, except where installed in conduit with associated phase conductors. Ground cable sheaths, cable shields, conduit, and equipment with No. 4/0 AWG unless otherwise indicated. Ground other noncurrent-carrying metal parts and equipment frames of metal-enclosed equipment. Ground metallic frames and covers of handholes and pull boxes with a braided, copper ground strap with equivalent ampacity of No. 6 AWG. Provide direct connections to the grounding conductor with 600 v insulated, full-size conductor for each grounded neutral of each feeder circuit, which is spliced within the manhole.

8.3.11. EXCAVATING, BACKFILLING, AND COMPACTING

Provide in accordance with NFPA 70. See Sub-Section 6 EXCAVATION AND FILL.

8.3.11.1. Reconditioning of Surfaces

8.3.11.1.1. Unpaved Surfaces

Restore to their original elevation and condition unpaved surfaces disturbed during installation of duct. Preserve sod and topsoil removed during excavation and reinstall after backfilling is completed. Replace sod that is damaged by sod of quality equal to that removed.

8.3.12. FIELD QUALITY CONTROL

8.3.12.1. Performance of Field Acceptance Checks and Tests

Perform in accordance with the manufacturer's recommendations and include the following visual and mechanical inspections and electrical tests, performed in accordance with NETA ATS.

8.3.12.1.1. Grounding System

Visual and mechanical inspection
Inspect ground system for compliance with contract plans and specifications.

Electrical tests
Perform ground-impedance measurements utilizing the fall-of-potential method in accordance with IEEE 81. On systems consisting of interconnected ground rods, perform tests after interconnections are complete. On systems consisting of a single ground rod perform tests before any wire is connected. Take measurements in normally dry weather, not less than 48 hours after rainfall. Use a portable ground resistance tester in accordance with manufacturer's instructions to test each ground or group of grounds. The instrument must be equipped with a meter reading directly in ohms or fractions thereof to indicate the ground value of the ground rod or grounding systems under test. Provide site diagram indicating location of test probes with associated distances, and provide a plot of resistance vs. distance.

8.3.12.2. Follow-Up Verification

Upon completion of acceptance checks and tests, show by demonstration in service that circuits and devices are in good operating condition and properly performing the intended function. As an exception to requirements stated elsewhere in the contract, the Contracting Officer must be given 5 working days advance notice of the dates and times of checking and testing.

9. REFERENCE PUBLICATIONS

9.1. GENERAL

9.1.1. REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date, and title. The document number used in the citation is the number assigned by the standards producing organization (e.g., ASTM B564 Standard Specification for Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

9.1.2. ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
444 North Capital Street, NW, Suite 249
Washington, DC 20001
Ph: 202-624-5800
Fax: 202-624-5806
E-Mail: info@aaashto.org
Internet: <https://www.transportation.org/>

AMERICAN CONCRETE INSTITUTE (ACI)
38800 Country Club Drive

Farmington Hills, MI 48331-3439
Ph: 248-848-3700
Fax: 248-848-3701
Internet: <https://www.concrete.org/>

AMERICAN WOOD PROTECTION ASSOCIATION (AWPA)
P.O. Box 361784
Birmingham, AL 35236-1784
Ph: 205-733-4077
Fax: 205-733-4075
Internet: <http://www.awpa.com>

ASSOCIATION OF EDISON ILLUMINATING COMPANIES (AEIC)
600 North 18th Street
P.O. Box 2641
Birmingham, AL 35291
Ph: 205-257-3839
Fax: 205-257-2540
Internet: <https://aeic.org/>

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: <https://www.astm.org/>

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
445 and 501 Hoes Lane
Piscataway, NJ 08854-4141
Ph: 732-981-0060 or 800-701-4333
Fax: 732-981-9667
E-mail: onlinesupport@ieee.org
Internet: <https://www.ieee.org/>

INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)
P.O. Box 493
Miamitown, OH 45041-9998
E-mail: info@icea.net
Internet: <https://www.icea.net/>

INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)
3050 Old Centre Ave. Suite 101
Portage, MI 49024
Ph: 269-488-6382
Fax: 269-488-6383
Internet: <https://www.netaworld.org/>

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
1300 North 17th Street, Suite 900
Arlington, VA 22209
Ph: 703-841-3200
Internet: <https://www.nema.org>

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

1 Batterymarch Park
Quincy, MA 02169-7471
Ph: 800-344-3555
Fax: 800-593-6372
Internet: <https://www.nfpa.org>

U.S. GENERAL SERVICES ADMINISTRATION (GSA)
General Services Administration
1800 F Street, NW
Washington, DC 20405
Ph: 1-844-472-4111
Internet: <https://www.gsaelibrary.gsa.gov/ElibMain/home.do>
Obtain documents from:
Acquisition Streamlining and Standardization Information System (ASSIST)
Internet: <https://assist.dla.mil/online/start/>; account registration required

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Internet: <https://www.archives.gov/>
Order documents from:
Superintendent of Documents
U.S. Government Publishing Office (GPO)
732 N. Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800 or 866-512-1800
Bookstore: 202-512-0132
Internet: <https://www.gpo.gov/>

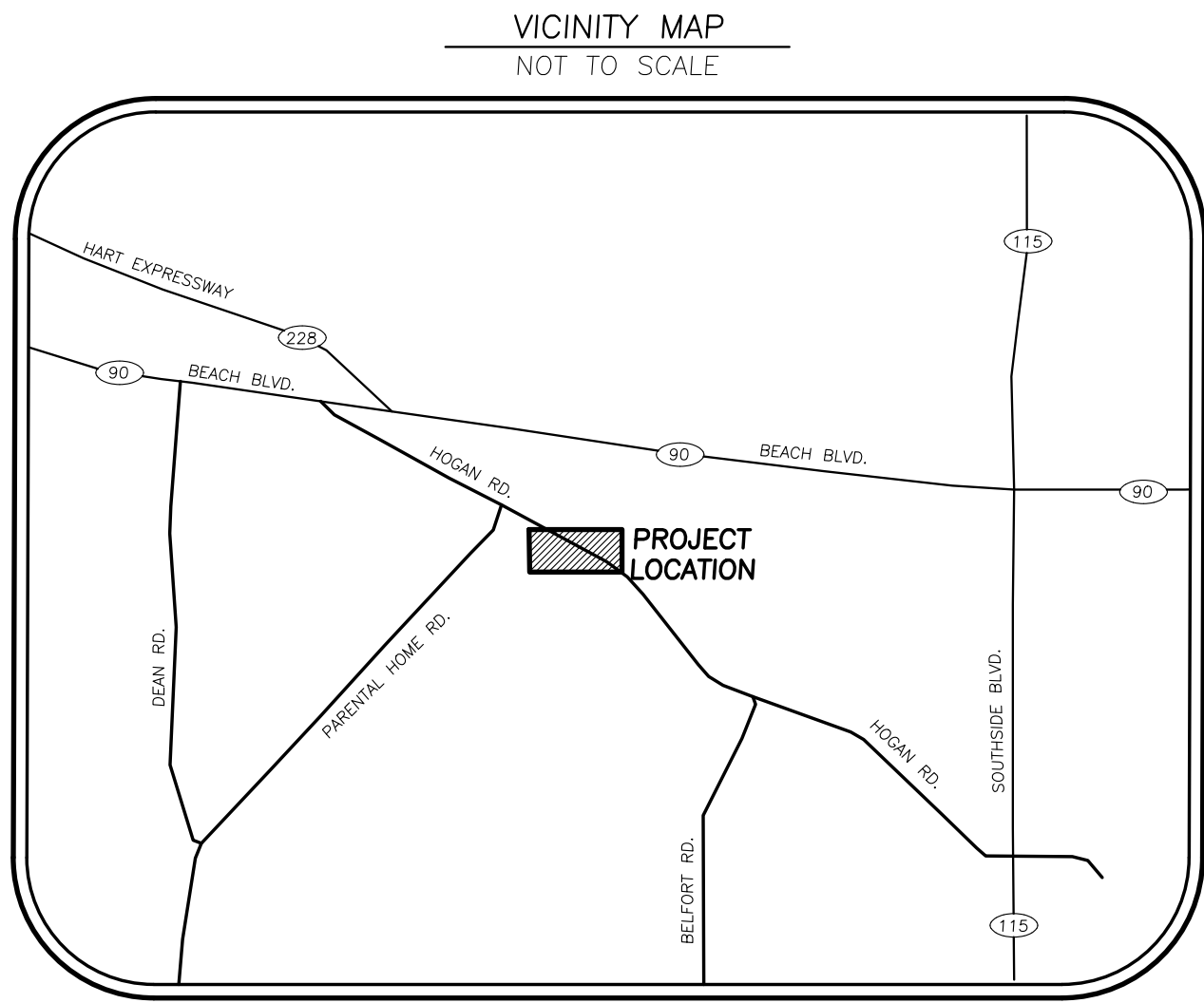
UNDERWRITERS LABORATORIES (UL)
2600 N.W. Lake Road
Camas, WA 98607-8542
Ph: 877-854-3577 or 360-817-5500
E-mail: CustomerExperienceCenter@ul.com
Internet: <https://www.ul.com/>
UL Directories available through IHS at <https://ihsmarkit.com/>

10. SEQUENCE OF WORK

- 1.1. Acquire long lead material – Cable, Elbows, Conduit, Terminations, Splices, etc.
- 1.2. Survey Baselines and Locates
- 1.3. Mobilize
- 1.4. HDD
- 1.5. Install trench and conduits on riser side.
- 1.6. BEGIN OUTAGE on CIRCUIT 690
- 1.7. Coordinate with Chad Yeager (Investment and recovery) for dumpster. Demo cable at substation and riser location.
- 1.8. Open trench and install concrete encased, pipes, 5'R 90°, 12'R45° and 4'R22.5° elbows to substation.
- 1.9. Open trench and install pipes, 5'R 90° and 12'R45° elbows to riser.
- 1.10. Pull 2000kcm CU Cable
- 1.11. Install terminations and all cable accessories.
- 1.12. Run VLF test.
- 1.13. Relay setting and phasing by JEA.
- 1.14. END OUTAGE
- 1.15. Remove, return, and dispose of material as required.
- 1.16. Cleanup and complete punch list item
- 1.17. Demobilize.
- 1.18. Provide As Built.

BOUNDARY AND TOPOGRAPHIC SURVEY

8170 HOGAN ROAD, JACKSONVILLE FLORIDA



SHEET LAYOUT

SHEET 1.....COVER
SHEET 2.....BOUNDARY & TOPOGRAPHIC DETAILS
SHEETS 3-4.....UTILITY DESIGNATION DETAILS

LEGEND & ABBREVIATIONS:

= BACKFLOW PREVENTER	-TB- = TOP OF BANK
= BURIED TELEPHONE PEDESTAL	-TS- = TOE OF SLOPE
= CONCRETE MONUMENT	-X- = CHAINLINK FENCE
= ELECTRIC MANHOLE	-BE- = BURIED ELECTRIC LINE
= FIRE HYDRANT	-FOC- = BURIED FIBER OPTIC LINE
= DOWN GUY	-BTE- = BURIED TELEPHONE LINE
= HAND HOLE	-BCL- = BURIED COMMUNICATION LINE
= IRON PIPE	-OHL- = OVERHEAD UTILITY LINE
= IRON ROD	-WL- = WATER LINE
= LIGHT POLE	PB = PLAT BOOK
= MAILBOX	(P) = PLAT
= MONITORING WELL	(M) = MEASURED
= NAIL W/DISC	ID = IDENTIFICATION
= UTILITY POLE	LB = LICENSED BUSINESS
= POST/BOLLARD	SSMC = SOUTHEASTERN SURVEYING & MAPPING CORPORATION
= NON-TRAFFIC SIGN	
= SERVICE POLE	

DESCRIPTION:

A portion of Lot 11, HOGAN FARMS, according to plat thereof recorded in Plat Book 6, Page 98 of the current Public Records of Duval County, Florida.

SURVEYOR'S DESCRIPTION:

A PARCEL OF LAND LYING AND BEING PART OF LOT 11, HOGAN FARMS, AS RECORDED IN PLAT BOOK 6, PAGE 98, OF THE CURRENT PUBLIC RECORDS OF DUVAL COUNTY, FLORIDA; SAID PARCEL BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE EASTERLY RIGHT-OF-WAY LINE OF JASON SCOTT DRIVE, THE SOUTHERLY RIGHT-OF-WAY LINE OF HOGAN ROAD AND THE NORTHWEST CORNER OF SAID LOT 11; THENCE ALONG THE SOUTHERLY RIGHT-OF-WAY LINE OF HOGAN ROAD, A 66 FOOT RIGHT-OF-WAY AS NOW ESTABLISHED, S61°27'49"E A DISTANCE OF 200.00'; THENCE S28°39'31"W A DISTANCE OF 240.95'; THENCE N°61°27'49"W A DISTANCE OF 200.00' TO THE EASTERLY RIGHT-OF-WAY OF JASON SCOTT DRIVE, A 50' RIGHT-OF-WAY AS RECORDED IN PLAT BOOK 46, PAGE 62-62A "HOGAN OAKS UNIT TWO" OF THE CURRENT PUBLIC RECORDS OF DUVAL COUNTY, FLORIDA; THENCE ALONG THE EASTERLY RIGHT-OF-WAY LINE OF JASON SCOTT DRIVE; N28°39'31"E A DISTANCE OF 240.95' TO THE INTERSECTION SOUTHERLY RIGHT-OF-WAY OF HOGAN ROAD AND THE POINT OF BEGINNING.

CONTAINING 48,190± SQ. FT. OR 1.11± ACRES, MORE OR LESS.

SURVEYOR'S REPORT:

- Utility locations shown hereon are based on field locations of markings by Southeastern Surveying & Mapping Corp. Field markings are based on signals received from Ground Penetrating Radar (GPR) and electronic equipment. Locations are approximate and Test Holes should be performed for verification.
- Easements or rights of way that appear on recorded plans or that have been furnished to the surveyor by others have been incorporated into this drawing with appropriate notation. Other easements may be discovered by a search of the Public Records.
- Minimum Horizontal Accuracy for this survey is in accordance with the STANDARDS OF PRACTICE set forth by the Board of Professional Surveyors and Mappers in Chapter 5J-17 requirements of Florida Administration Code. The map and measurement methods used for this survey meet or exceed this requirement. The dimensions shown hereon are in United States survey feet and decimals thereof.
- This survey does not determine ownership of the lands shown hereon.
- Underground foundations, if any, have not been located.
- Survey map and report or the copies thereof are not valid without the original signature and seal or the electronic signature and seal of a Florida Licensed Surveyor and Mapper.
- The electronic signature shown hereon is in compliance with Florida Administrative Code 5J-17.062 and Florida Statute 472.025.
- Features shown by symbol as indicated in the legend are not to scale.
- Additions or deletions to survey maps or reports by other than the signing party or parties is prohibited without written consent of the signing party or parties.
- Bearings shown hereon are based upon Southerly Right-of-way of Hogan Road (South 61°27'49" East). Bearings and distances shown hereon are measured unless otherwise noted.
- Vertical information shown hereon refers to North American Vertical Datum 1988. Obtained using Real Time Kinematic GPS observations using the Florida Department of Transportation Florida Permanent Reference Network.
- Horizontal positions for all features shown on the map are relative to North American Datum of 1983 (NAD83), 2011 adjustment, State Plane Coordinate System, Florida East Zone; distances shown are GRID distances.
- This Survey was performed without benefit of an abstract, title search, title opinion or title commitment. A title search may reveal additional information affecting the parcel as shown.
- Improvements and Topographic features shown hereon are limited to areas per specific instructions of the client.
- Right of Way information shown hereon was determined by found monumentation, recorded plats, recorded Right of Way Maps, and information obtained on the Duval County Property Appraisers web site.
- The above described parcel contains 48,190± square feet or 1.10± acres, more or less.
- Adjacent property information shown hereon was not furnished to this surveyor, and was compiled using latest available data. No attempt was made by this Surveyor to verify its accuracy.

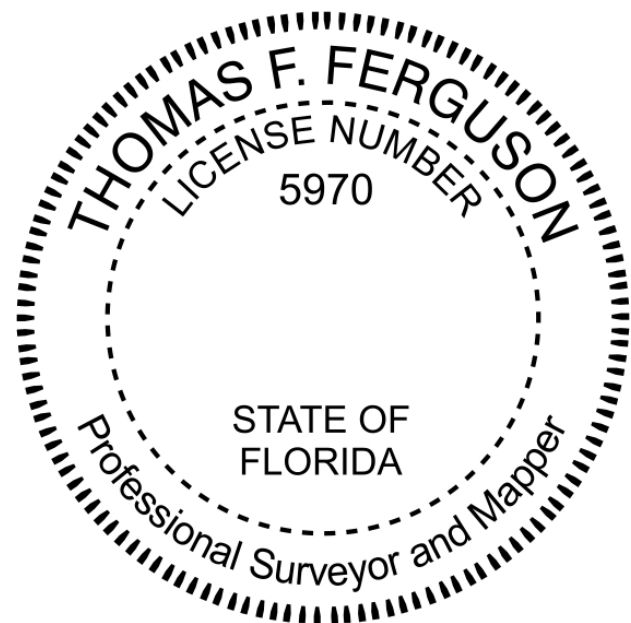
NOTICE OF LIABILITY:

This survey is certified to those individuals shown on the face thereof. Any other use, benefit or reliance by any other party is strictly prohibited and restricted. Surveyor is responsible only to those certified and hereby disclaims any other liability and hereby restricts the rights of any other individual or firm to use this survey, without express written consent of the surveyor.

Thomas F
Ferguson

Digitally signed by Thomas F Ferguson
DN: c=US, o=Florida,
dnQualifier=A01410C0000017A34FD3
2C70000442E, cn=Thomas F Ferguson
Date: 2024.06.14 11:43:17 -04'00'

Thomas F. Ferguson, PSM
Registered Land Surveyor
Number 5970



Certified to:

Pickett and Associates, LLC

DRAWING NUMBER
69169001
SHEET
NUMBER

1 OF 4

Boundary & Topographic Survey

Project:

8170 Hogan Road
Jacksonville, Florida

Field Date:

06/14/2024

Drawn By:

JLVM

Scale:

1" = 20'

BY

JLVM

REVISION

JLVM

REVISION DATE

12/20/2023
06/14/2024

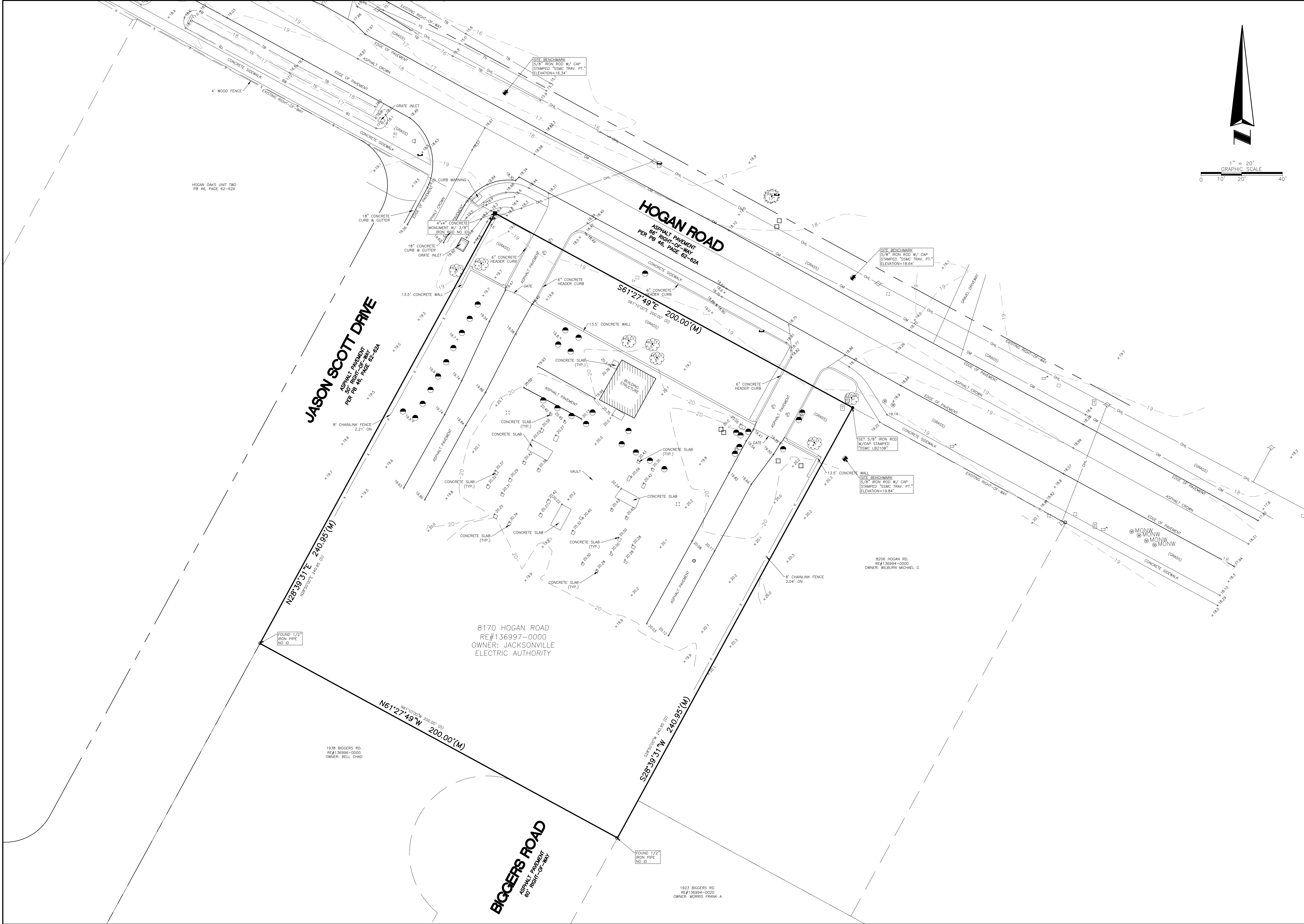
ADDED UTILITY DESIGNATION 50658-50666

NOT VALID WITHOUT SHEETS 1 THROUGH 4

SOUTHEASTERN SURVEYING
AND MAPPING CORPORATION
10000
Jacksonville, Florida 32256
(904) 737-5980
e-mail: info@southeasternsurveying.com
Certification Number 1162106

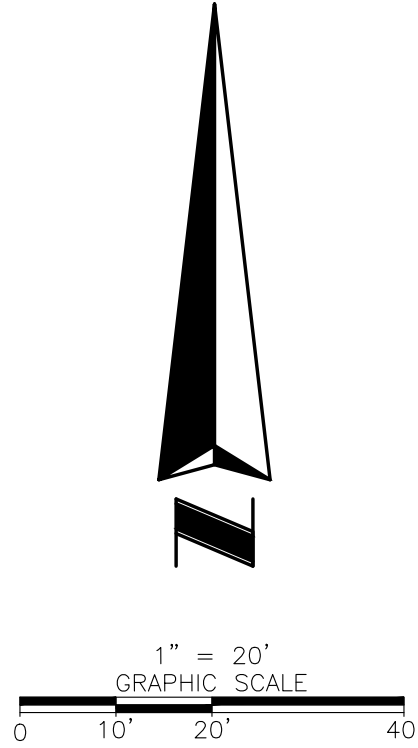
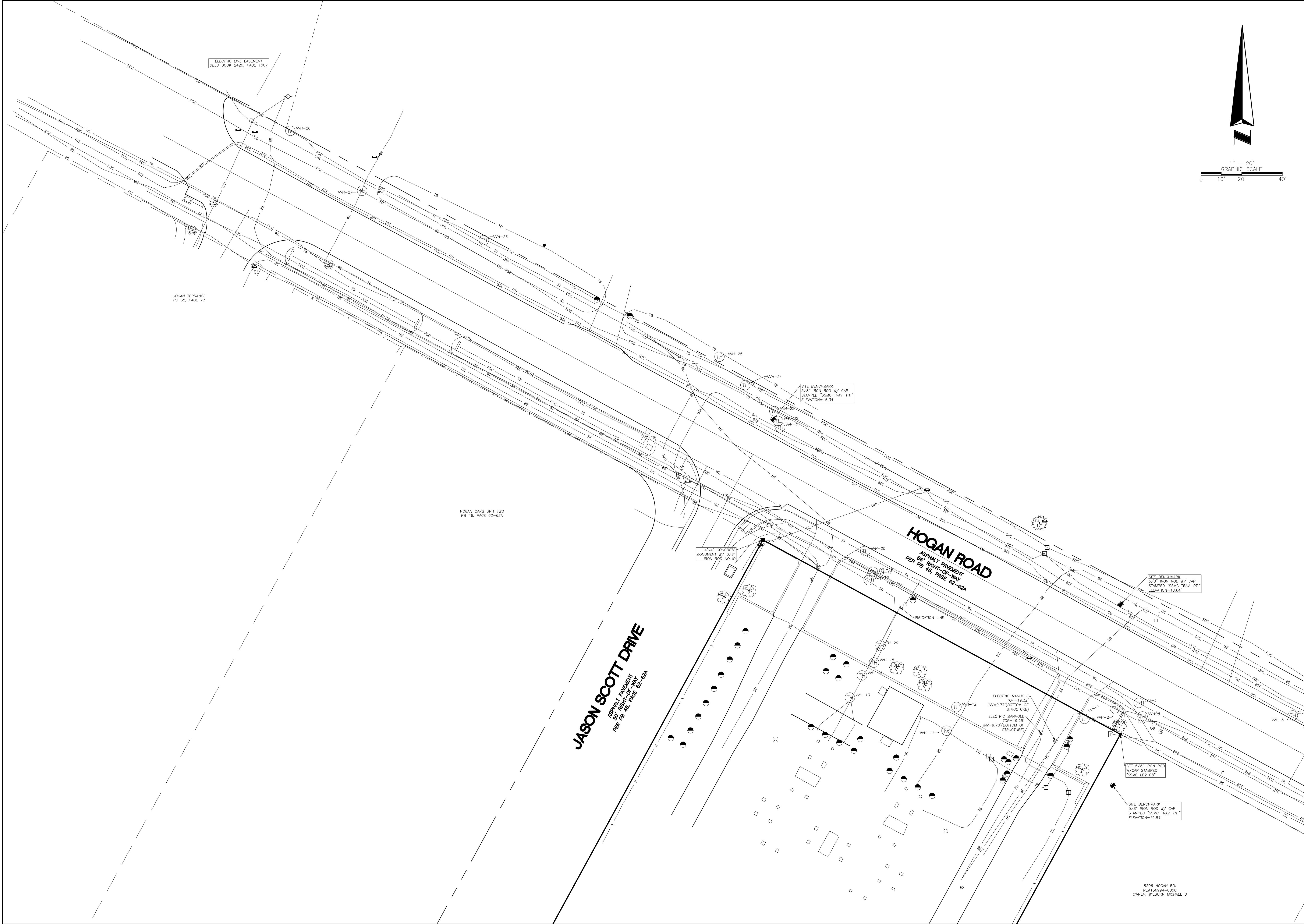


\\192.168.3.7\Share\PROJECTS\2023\03-21-2023 (113064) SANS SOULI SUBSTATION JEA - PICKETT\PROJECT DATA\69169001.dwg



DRAWING NUMBER 69169001 SHEET NUMBER 2 OF 4	SEE SHEET 1 FOR NOTES, LEGEND AND DESCRIPTION.		Boundary & Topographic Survey		Project: 8170 Hogan Road Jacksonville, Florida		REVISION		BY	SOUTHEASTERN SURVEYING AND MAPPING CORPORATION 10000 Highway 90 Jacksonville, Florida 32256 e-mail: info@southeasternsurveying.com Certification Number 125106		SHEET NUMBER 2 OF 4 NOT VALID WITHOUT SHEETS 1 THROUGH 4	
	Field Date: 06/14/2024		Drawn By: JLM		Scale: 1" = 20'		REVISION DATE		BY	SOUTHEASTERN SURVEYING AND MAPPING CORPORATION 10000 Highway 90 Jacksonville, Florida 32256 e-mail: info@southeasternsurveying.com Certification Number 125106		SHEET NUMBER 2 OF 4 NOT VALID WITHOUT SHEETS 1 THROUGH 4	
	Project:		Adding VHM		Added Utility Designation 50668-50666		Revision		BY	SOUTHEASTERN SURVEYING AND MAPPING CORPORATION 10000 Highway 90 Jacksonville, Florida 32256 e-mail: info@southeasternsurveying.com Certification Number 125106		SHEET NUMBER 2 OF 4 NOT VALID WITHOUT SHEETS 1 THROUGH 4	

\\192.168.3.7\Share\PROJECTS\2023\03-21-2023 (113064) SANS SOLUCI SUBSTATION JEA - PICKETT\PROJECT DATA\69169001.dwg



SEE SHEET 1 FOR NOTES, LEGEND AND DESCRIPTION.		DRAWING NUMBER 69169001 SHEET NUMBER 3 OF 4	
Project: 6170 Hogan Road Jacksonville, Florida		Field Date: 06/14/2024 Drawn By: JLM Scale: 1" = 20'	
Boundary & Topographic Survey		REVISION DATE 12/20/2023 06/14/2024	
BY JLM		REVISION ADDITION VHM ADDITION UTILITY DESIGNATION 50668-50666	
SOUTHEASTERN SURVEYING AND MAPPING CORPORATION 8206 Hogan Rd. Jacksonville, Florida 32256 (904) 737-5890 e-mail: info@southeasternsurveying.com Certification Number 145106		SHEET NUMBER 3 OF 4 NOT VALID THROUGH 4	

Schedule of Values

Scope	#	ITEM DESCRIPTION	UOM	Quantity	Unit Price	Extended Price
Mob / Demob / Bond	1	1.1 MOBILIZATION	Lump Sum	1		
	2	1.2 DEMOBILIZATION	Lump Sum	1		
	3	1.3 BID BOND	Lump Sum	1		
Site Preparat ion	4	2.1 SURVEYING - LAYOUT PROPOSED BORE PATH	Lump Sum	1		
	5	2.2 SURVEYING - STAKE EXTENTS OF EXCAVATION	Lump Sum	1		
	6	2.3 SURVEYING - STAKE BOUNDARIES OF PERMANENT AND TEMPORARY EASEMENTS	Lump Sum	1		
Transmission Structures, Cable and Ductbank Installation / removal	7	3.1 TRANSPORTATION OF JEA PLATING MATERIALS TO JOB SITE	Lump Sum	1		
	8	3.2 RETURN UNUSED JEA MATERIALS	Lump Sum	1		
	9	3.3 RECEIVE, UNLOAD AND SPOT STRUCTURES AND ASSOCIATED HARDWARE	Lump Sum	1		
	10	3.4 INSTALLATION OF GROUND ROD ADD GROUND WIRE ON POLE	Lump Sum	1		
	11	3.5 HORIZONTAL DIRECTIONAL DRILL OF (4) 6" AND (1) 2" CONDUITS	Lump Sum	1		
	12	3.6 TRENCH INSTALLATION OF (4) 6" AND (1) 2" CONDUITS	Lump Sum	1		
	13	3.7 DEMOLITION OF EXISTING CONCRETE CAP AND CABLES	Lump Sum	1		
	14	3.8 MATERIAL COST OF 2000KCMIL CABLE PLUS SHIPPING TO SITE	Lump Sum	1200		
	15	3.9 INSTALLATION OF 2000KCMIL CABLE AND GROUND CONTINUITY CABLE	Lump Sum	1		
	16	3.10 FRAME POLE RISER INCLUDING INSTALLATION TERMINATORS AND ARRASTORS	Lump Sum	1		
	17	3.11 FRAME SUBSTATION RISER INCLUDING INSTALLATION TERMINATORS AND ARRASTORS	Lump Sum	1		
	18	3.12 BUILD JUMPERS	Lump Sum	1		
	19	3.13 PROVIDE AND INSTALL CABLE GUARD	Lump Sum	1		
	20	3.14 DEWATERING	Lump Sum	1		
	21	3.15 CABLE VLF TESTING	Lump Sum	1		
	22	3.16 MATERIAL COST OF TERMINATORS	Lump Sum	1		
Miscellaneous	23	4.1 RESTORATION	Lump Sum	1		
	24	4.2 AS-BUILT DRAWINGS	Lump Sum	1		
	25	4.3 SILT FENCE, EROSION AND SEDIMENT CONTROL ASSEMBLY, INSTALLATION, AND REMOVAL	Lump Sum	1		
	26	4.4 ADDITIONAL GROUND RODS (FOR EACH ADDITIONAL GROUND ROD, REQUIRED OVER THE BASE SCOPE OF THREE (3))	Per Rod	5		
	27	4.5 MOT TO BE USED FOR ALL MOT ON ALL ROADS	Lump Sum	1		
Subtotal Line 1 - 27 Above						\$ -
SWA (10% of Subtotal)						\$ -
Total Bid Price (Enter this amount on line 1 of the Bid Form)						\$ -



**REPORT OF A
GEOTECHNICAL EXPLORATION**

**Hogan Road Thermal Resistivity
Jacksonville, Florida**

July 9, 2024

**PROJECT NO. 0930.2200.0000
REPORT NO. 2097580**

Prepared for:

JEA
21 West Church Street –T-09
Jacksonville, Florida 32202

Prepared by:

UNIVERSAL ENGINEERING SCIENCES, LLC
5561 Florida Mining Boulevard South
Jacksonville, Florida 32257-3648
(904) 296-0757



July 9, 2024

JEA
21 West Church Street –T-09
Jacksonville, Florida

Attention: Mr. Mohsen Shojaeion

Reference: **REPORT OF A GEOTECHNICAL EXPLORATION**
Hogan Road Thermal Resistivity
Jacksonville, Florida
UES Project No. 0930.2400111.0000 and Report No. 2097580

Dear Mr. Shojaeion:

As requested, Universal Engineering Sciences, LLC has completed a geotechnical exploration for the subject project. This report briefly presents our understanding of the proposed construction, describes the field exploration performed, and presents the data obtained.

PROJECT INFORMATION

Project information was provided to us through recent correspondence with you. We were provided with a copy of an aerial of the site showing the existing roadway alignment and requested boring locations. We understand the project consists of utility improvements along Hogan Road in Jacksonville, Florida.

This report presents the soil conditions encountered on the basis of traditional geotechnical procedures for site characterization. The recovered samples were not examined, either visually or analytically, for chemical composition or environmental hazards. Universal Engineering Sciences would be pleased to perform these services if you desire.

Our work did not address the potential for surface expression of deep geological conditions. This evaluation requires a more extensive range of field services than performed in this study. We will be pleased to conduct an investigation to evaluate the probable effect of the regional geology upon the proposed construction if you desire.

FIELD EXPLORATION

A field exploration was performed on June 25, 2025. The approximate boring locations are shown on the attached Boring Location Plan in Appendix A. The approximate boring locations were determined in the field by our personnel using measurements from existing landmarks, and should be considered accurate only to the degree implied by the method of measurement used.

Samples of the soils encountered will be held in our laboratory for your inspection for 60 days unless we are notified otherwise.

To explore the subsurface conditions within the area of the proposed utility improvements, we located and drilled three (3) Standard Penetration Test (SPT) borings to depths of 20 feet below the existing ground surface in general accordance with the methodology outlined in ASTM D 1586. A summary of this field procedure is included in Appendix A. Split-spoon soil samples recovered during performance of the borings were visually classified in the field and representative portions of the samples were transported to our laboratory for further evaluation. Additionally we obtained six relatively undisturbed Shelby tube samples of the soils at specified depths for thermal resistivity testing.

LABORATORY EXPLORATION

Representative soil samples obtained during our field exploration were returned to our office and classified by a geotechnical engineer. The samples were visually classified in general accordance with ASTM D 2488 (Unified Soil Classification System).

Six (6) fines content tests, six (6) moisture content tests and six (6) thermal resistivity tests were conducted in the laboratory on representative soil samples obtained from the borings. These tests were performed to aid in classifying the soils and to help quantify and correlate engineering properties. The results of these tests are presented on the Boring Logs in Appendix A. A brief description of the laboratory procedures used is also provided in Appendix A.

FINDINGS

Surface Conditions

The proposed site is located along Hogan Road in Jacksonville, Florida. The site is bordered by residential properties and an electrical substation. Hogan Road in the project area generally consists of a two lane asphalt roadway. The existing pavement appears to be in fair to good condition.

General Soil Profile

The boring locations and detailed subsurface conditions are included in Appendix A on the Boring Location Plan and Boring Logs. The classifications and descriptions shown on the logs are generally based upon visual characterizations and laboratory results of the recovered soil samples. When reviewing these records, it should be understood that the soil conditions may vary away from and between the boring locations. The following table summarizes the soil conditions encountered.

TABLE 1		
General Soil Profile		
Typical depth (ft)		Soil Descriptions
From	To	
0	20*	Loose to medium dense fine sand (SP) and fine sand with silt (SP-SM)
* Termination Depth of Deepest Boring () Indicates Unified Soil Classification		

As an exception boring B-1 encountered very loose silty fine sand with many organics (PT) from the existing grade and extending to 1.5 feet below the existing grade.

Groundwater

The groundwater level was encountered at the boring locations and recorded at the time of drilling at depths ranging from 3.8 to 6.7 feet below the existing ground surface. The groundwater should be anticipated to fluctuate due to seasonal climatic variations, surface water runoff patterns, construction operations and other interrelated factors. We estimate the seasonal high water levels will occur approximately 2 feet above the measured levels at the time of our exploration. These estimates are based upon our review of U.S.G.S. data, Duval County Soils Survey, and regional hydrogeology.

Thermal Resistivity

Laboratory Thermal Resistivity was measured on samples collected from the boring locations. The samples were tested at the in-situ moisture contents. A Meter Tempos Thermal Analyzer with a needle probe was used to measure the thermal resistance of the samples in general accordance with the guidelines presented in the ASTM D5334 test procedure. Additionally, the temperature of the samples was obtain immediately after obtaining each sample from the borings. The results of the testing are shown in Table 2. The density and moisture contents were obtained from the relatively undisturbed shelly tube samples.

TABLE 2						
Thermal Testing Results						
Boring	Depth (Feet)	In-Situ Density (moist) (pcf)	Moisture Content (%)	Thermal Resistivity (°C cm/W)	Thermal Conductivity (W/ M °K)	In-situ Soil Temperature (°F)
B-1	10-12	124.0	26.7	37.9	2.64	75
	14-16	124.8	26.4	37.4	2.67	75
B-2	10-12	127.7	24.6	35.8	2.79	77
	14-16	125.7	25.6	36.0	2.782	75
B-3	10-12	124.6	24.2	34.9	2.864	82
	14-16	126.3	24.1	37.1	2.268	81

LIMITATIONS

During the early stages of most construction projects, geotechnical issues not addressed in this report may arise. Because of the natural limitations inherent in working with the subsurface, it is not possible for a geotechnical engineer to predict and address all possible problems. An Geotechnical Business Council (GBC) publication, "Important Information About Your Geotechnical Engineering Report" appears in Appendix B, and will help explain the nature of geotechnical issues.

We trust this report meets your needs and addresses the geotechnical issues associated with the proposed construction. We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Respectfully submitted,

UNIVERSAL ENGINEERING SCIENCES, LLC

Certificate of Authorization No. 549



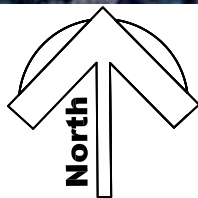
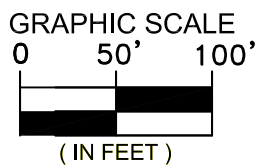
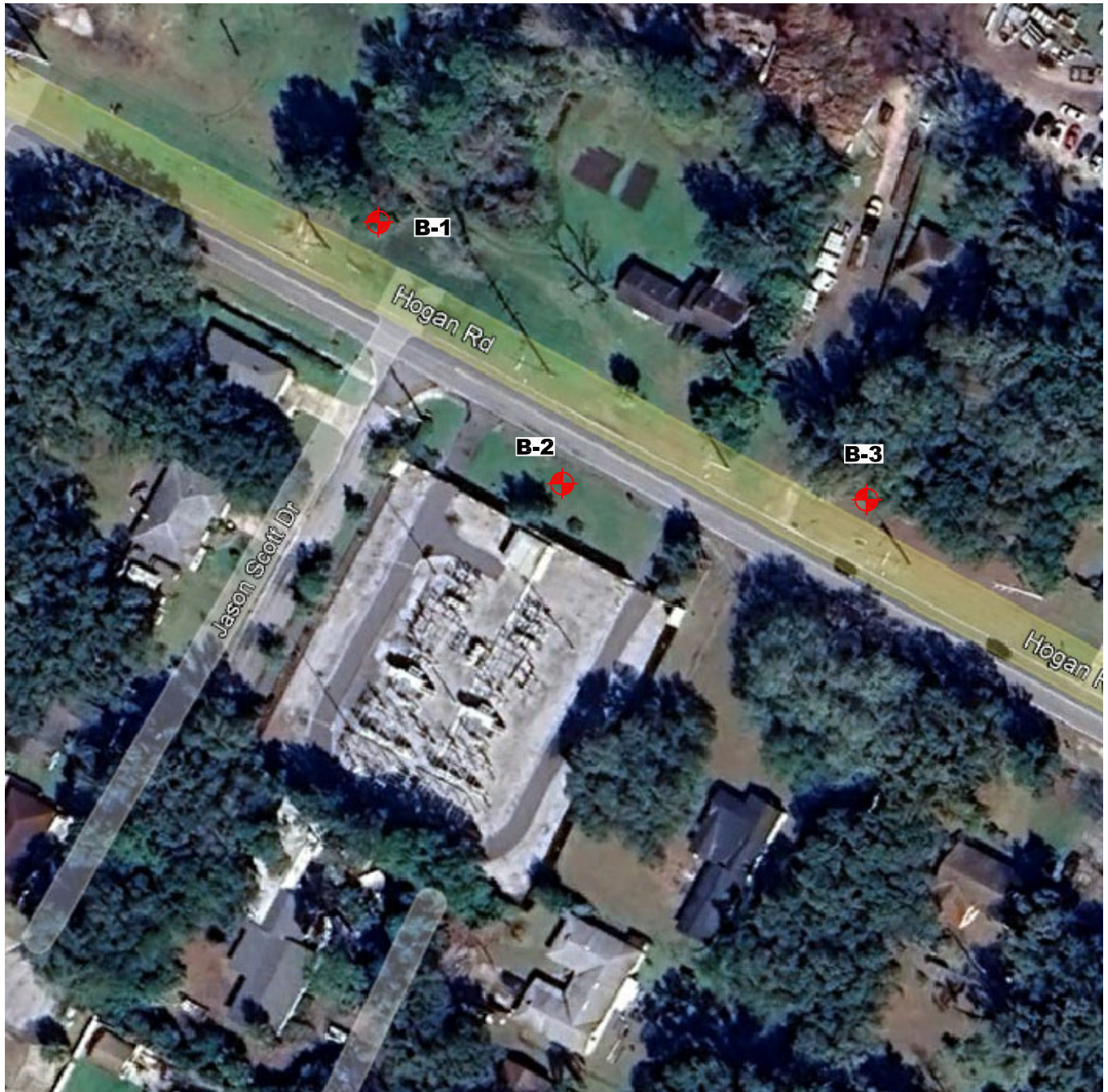
Digitally signed by
Stephen R. Weaver
Date: 2024.07.09
16:28:20 -04'00'

Stephen R. Weaver, P.E.
Geotechnical Services Manager
FL P.E. Number 37389

A handwritten signature in blue ink, likely belonging to Jake D. Cochran.

Digitally signed
by Jake D.
Cochran
Date: 2024.07.09
16:20:55 -04'00'

Jake D. Cochran, P.E.
Senior Geotechnical Engineer
FL P.E. Number 90493



LEGEND

 SPT BORING LOCATIONS



HOGAN ROAD THERMAL RESISTIVITY
JACKSONVILLE, FLORIDA

BORING LOCATION PLAN

REVISED BY: TW

DATE:

7/2/24

CHECKED BY:

J.C.

DATE:

7/2/24

SCALE:

1" = 100'

PROJECT NO:

0930.2400111.0000

REPORT NO:

2097580

PAGE NO:

A-1



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0930.2400111.0000

REPORT NO.: 2097580

PAGE: A-2

PROJECT: GEOTECHNICAL EXPLORATION
HOGAN ROAD THERMAL RESISTIVITY
JACKSONVILLE, FLORIDA

BORING DESIGNATION: **B-1**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: JEA
LOCATION: SEE BORING LOCATION PLAN
REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 3.8
DATE STARTED: 6/25/24
DATE FINISHED: 6/25/24
DATE OF READING: 6/25/24
DRILLED BY: DB/MG
EST. W.S.W.T. (ft):
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Very loose dark brown Silty fine SAND with many Organics (SM)						
		1-1-1	2			Loose to medium dense gray fine SAND with Silt (SP-SM)						
		2-3-4	7									
		5-5-5	10									
5												
		4-2-1	3									
		2-2-3	5			Medium dense light gray fine SAND (SP)						
		2-4-4	8									
10												
							1.6	26.7				
15												
							0.8	26.4				
						Dense light gray fine SAND (SP)						
20		9-12-13	25									

BORING LOG 0930.2400111.0000-HOGAN ROAD THERMAL RESISTIVITY.GPJ UNIENGSC.GDT 7/2/24



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0930.2400111.0000

REPORT NO.: 2097580

PAGE: A-3

PROJECT: GEOTECHNICAL EXPLORATION
HOGAN ROAD THERMAL RESISTIVITY
JACKSONVILLE, FLORIDA

BORING DESIGNATION:
SECTION:

B-2
TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: JEA

G.S. ELEVATION (ft):

DATE STARTED: 6/25/24

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): 6.4

DATE FINISHED: 6/25/24

REMARKS:

DATE OF READING: 6/25/24

DRILLED BY: DB/MG

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Loose dark brown fine SAND with Silt (SP-SM)						
		1-1-3	4									
						Medium dense brown fine SAND (SP)						
		4-5-4	9									
						Loose to medium dense light gray fine SAND (SP)						
		3-3-4	7									
5												
		3-4-5	7									
		6-6-6	12									
		3-5-6	11									
10												
							2.7	24.6				
15												
							2.0	25.6				
						Medium dense gray fine SAND with Silt (SP-SM)						
20		4-4-5	9									

BORING LOG 0930.2400111.0000-HOGAN ROAD THERMAL RESISTIVITY.GPJ UNIENGS.C.GDT 7/2/24



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0930.2400111.0000

REPORT NO.: 2097580

PAGE: A-4

PROJECT: GEOTECHNICAL EXPLORATION
HOGAN ROAD THERMAL RESISTIVITY
JACKSONVILLE, FLORIDA

BORING DESIGNATION: **B-3**
SECTION:

TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: JEA

G.S. ELEVATION (ft):

DATE STARTED: 6/25/24

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): 6.7

DATE FINISHED: 6/25/24

REMARKS:

DATE OF READING: 6/25/24

DRILLED BY: DB/MG

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Loose to medium dense light gray fine SAND (SP)						
		1-2-3	5									
		3-2-2	4									
		2-1-2	3									
5												
		2-3-3	6									
		3-4-4	8			Gray fine SAND with Silt (SP-SM)						
		2-3-4	7			Medium dense light gray fine SAND (SP)						
10												
							1.0	24.2				
15												
							2.9	24.1				
20		5-5-7	12									

BORING LOG 0930.2400111.0000-HOGAN ROAD THERMAL RESISTIVITY.GPJ UNIENGSC.GDT 7/2/24

KEY TO BORING LOGS

SYMBOLS AND ABBREVIATIONS

SYMBOL	DESCRIPTION
N-Value	No. of Blows of a 140-lb. Weight Falling 30 Inches Required to Drive a Standard Spoon 1 Foot
WOR	Weight of Drill Rods
WOH	Weight of Drill Rods and Hammer
	Sample from Auger Cuttings
	Standard Penetration Test Sample
	Thin-wall Shelby Tube Sample (Undisturbed Sampler Used)
% REC	Percent Core Recovery from Rock Core Drilling
RQD	Rock Quality Designation
	Stabilized Groundwater Level
	Seasonal High Groundwater Level (also referred to as the W.S.W.T.)
NE	Not Encountered
GNE	Groundwater Not Encountered
BT	Boring Terminated
-200 (%)	Fines Content or % Passing No. 200 Sieve
MC (%)	Moisture Content
LL	Liquid Limit (Atterberg Limits Test)
PI	Plasticity Index (Atterberg Limits Test)
K	Coefficient of Permeability
Org. Cont.	Organic Content
G.S. Elevation	Ground Surface Elevation

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% retained on the No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM	Silty gravels and gravel-sand-silt mixtures
			GC	Clayey gravels and gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS 5% or less passing No. 200 sieve	SW**	Well-graded sands and gravelly sands, little or no fines
			SP**	Poorly graded sands and gravelly sands, little or no fines
		SANDS with 12% or more passing No. 200 sieve	SM**	Silty sands, sand-silt mixtures
			SC**	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS 50% or more passes the No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays	
		OL	Organic silts and organic silty clays of low plasticity	
	SILTS AND CLAYS Liquid limit greater than 50%	MH	Inorganic silts, micaceous or diamicaceous fine sands or silts, elastic silts	
		CH	Inorganic clays or clays of high plasticity, fat clays	
		OH	Organic clays of medium to high plasticity	
		PT	Peat, muck and other highly organic soils	

*Based on the material passing the 3-inch (75 mm) sieve

** Use dual symbol (such as SP-SM and SP-SC) for soils with more than 5% but less than 12% passing the No. 200 sieve

Granular Materials

Relative Density	Safety Hammer SPT N-Value (Blow/Foot)	Automatic Hammer SPT N-Value (Blow/Foot)
Very Loose	Less than 4	Less than 3
Loose	4 – 10	3 – 8
Medium Dense	10 – 30	8 – 24
Dense	30 – 50	24 – 40
Very Dense	Greater than 50	Greater than 40

Silts and Clays

Consistency	Safety Hammer SPT N-Value (Blow/Foot)	Automatic Hammer SPT N-Value (Blow/Foot)
Very Soft	Less than 2	Less than 1
Soft	2 – 4	1 – 3
Firm	4 – 8	3 – 6
Stiff	8 – 15	6 – 12
Very Stiff	15 – 30	12 – 24
Hard	Greater than 30	Greater than 24

RELATIVE HARDNESS (Limestone)

Soft – 100 Blows for more than 2 inches
Hard – 100 Blows for less than 2 inches

MODIFIERS

These modifiers Provide Our Estimate of the Amount of Minor Constituents (Silt or Clay Size Particles) in the Soil Sample

Trace – 5% or less
With Silt or With Clay – 6% to 11%
Silty or Clayey – 12% to 30%
Very Silty or Very Clayey – 31% to 50%

These Modifiers Provide Our Estimate of the Amount of Organic Components in the Soil Sample

Trace – Less than 3%
Few – 3% to 4%
Some – 5% to 8%
Many – Greater than 8%

These Modifiers Provide Our Estimate of the Amount of Other Components (Shell, Gravel, Etc.) in the Soil Sample

Trace – 5% or less
Few – 6% to 12%
Some – 13% to 30%
Many – 31% to 50%

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer

will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the “Findings” Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site’s subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual site-wide subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report’s Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals’ misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals’ plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note*

conspicuously that you’ve included the material for information purposes only. To avoid misunderstanding, you may also want to note that “informational purposes” means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled “limitations,” many of these provisions indicate where geotechnical engineers’ responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a “phase-one” or “phase-two” environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer’s services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer’s recommendations will not of itself be sufficient to prevent moisture infiltration.* Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists.*



GEOPROFESSIONAL
BUSINESS
ASSOCIATION

Telephone: 301/565-2733

e-mail: info@geoprofessional.org www.geoprofessional.org

CONSTRAINTS & RESTRICTIONS

The intent of this document is to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.



Contractor: NAME
Contractor's Address: ADDRESS
Contractors Phone: PHONE

JEA Phone: 904.665.6000
JEA Emergency Security: 904.665.6200

JEA Transmission Project Design OPN 8008430
Daily Crew Location Work Report
Circuit 690 Re-Cable

Address	Date	Foreman	Foreman's Phone	JEA Inspector	Comments
				Robert Medley	

Send Updates to the following:

Sabrina Whitfield	swhitfield@coj.net
Tanja McCoy	TMcCoy@coj.net
COJ Review Group	reviewgrp@coj.net
Ricardo Cummings	rcummings@coj.net
Mohsen Shojaeion	Talem@jea.com

CITY OF JACKSONVILLE NOTES

GENERAL

All construction shall be performed in accordance with the approved plans and comply with all standard city policies and practices. City approval is contingent upon any required state or federal permit approvals such as those from the Department of Environmental Protection or the St. Johns River Water Management District (SJRWMD).

WORK WITHIN THE RIGHT-OF-WAY

STATE: All work performed within a state right-of-way requires a permit from the Florida Department of Transportation (FDOT). It is the contractor's responsibility to obtain required FDOT permits or maintenance-of-traffic approvals for work within FDOT right-of-ways. The FDOT regional office can be contacted at (904) 825-5036 Any changes to the approved plans needed for FDOT approval must be submitted to Development Services as revisions.

Adjacent State Roads: _____

RAILROAD: Railroad companies may require special approvals or permits to work within their right-of-ways. It is the contractor's responsibility to obtain permission from any railroad right-of-way owner before performing any work within their right-of-way.

STORM WATER

Annual reports in compliance with the SJRWMD stormwater permits are required from the maintenance entity of all stormwater management facilities. Send copies of the reports to:

Engineering and Construction Management
Edward Ball Building, 10th Floor
214 N. Hogan St.
Jacksonville, FL 32202
<http://www.coj.net/Departments/Public+Works/Engineering+and+Construction+Management/>

The owner of any project one (1) acre or larger is required to provide a Notice of Intent (NOI) in accordance with criteria set forth in the city's NPDES permit within 48 hours of beginning construction. Send NOI and NOI fee to:

Florida Department of Environmental Protection
NPDES Stormwater Notices Center, Mail Station #2510
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
(866) 336-6312
<http://www.dep.state.fl.us/water/stormwater/npdes/>

The contractor shall contact the Environmental Quality Division, Erosion and Sedimentation Control Section (ESC) to provide verification that applicable stormwater permits have been obtained and to schedule a pre-construction ESC site inspection:

Environmental Quality Division
407 North Laura Street, Third Floor
Jacksonville, FL, 32202
(904) 255-7222

LANDSCAPE

A Site Work Permit is required for this project.

- ☐ Tree Fund payment is due: _____ inches at \$ _____ = \$ _____
- ☐ Article 25 funds are due: _____ inches at \$ _____ = \$ _____

TRAFFIC ENGINEERING

TRAFFIC SIGNS

- Metro Name (each) _____
- Standard (each) _____
- Stop/Yield (each) _____
- Design (per plat) 1 per plat
- Installation (per hour) 1 per 2 signs (rounded up)

____ Streetlights Required

NOTE: Traffic sign costs change from time to time. Consult Attachment 8 of the Land Development Procedures Manual (<http://ldpm.jaxdev.com/>) for the current rates before paying for any sign installations.

No lane closures allowed from 7 a.m. till 9 a.m. and from 4 p.m. till 6 p.m.

BID SET DRAWINGS
FOR
69kV CIRCUIT 690
UNDERGROUND RECONDUCTOR
HOGAN RD., SANS SOUCI SUBSTATION
JEA PROJECT NO. 8008430



LOCATION MAP
N.T.S.

IFB BID NO.:
BID DUE DATE:
TIME OF RECEIPT:
TIME OF OPENING:
BID PLACE:



PLAN APPROVAL IS SUBJECT TO THE
FOLLOWING NOTES AND CONDITIONS:

GENERAL PROJECT INFORMATION

GENERAL

City Development Number _____

Concurrence Application Number _____

Property Appraiser Number (RE #) * _____

Zoning Designation _____

Zoning Application(s) (if any) _____

PUD Ordinance Number _____

FIRM – Community – Panel _____

Flood Zones (Show in Plans) _____

Base Flood Elev. (Show in Plans) Vertical _____

Datum Used for Project NAVD 1988

JEA Availability Number _____

SUBDIVISION

PSD Number _____

City or Private Inspection _____

Public or Private Roads _____

Subdivision ("911") Disk Provided? _____

NON-SUBDIVISION

North American Industry _____

Classification System (NAICS) _____

Impervious Area (Sq. Ft.) _____

BID SET APPROVAL

11/08/24 _____ Mohsen Talebi Shojaeion

Date JEA Electrical System Engineer

For project related questions or concerns, contact the JEA Electrical System Engineer: (904) 678-7227 or email: talem@jea.com

RELEASED FOR BID ON: 11/08/24

NOT APPLICABLE
APPLICABLE

SURVEY AND LOCATE DATA:

- | | | |
|--------------------------|----|--|
| ☐ | 1. | ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM AND SHOWN IN FEET. |
| ☐ | 2. | ELEVATIONS ARE BASED ON N.G.V.D. 1929. |
| ☐ | 3. | LOCATION OF EXISTING UTILITIES OBTAINED BY SOFT DIG LOCATES WHERE SHOWN ON PLANS, OR INCLUDED WITH BID SPECS. |
| ☐ | 4. | EXISTING WATER AND SEWER LINES ARE SHOWN AS PER FIELD LOCATES OR SUPPLEMENTED WITH AS-BUILT PLANS. |
| ☐ | 5. | UNDERGROUND UTILITIES WERE LOCATED UTILIZING GROUND PENETRATING RADAR (GPR) AND A DIGITAL LOCATOR. CONTRACTOR SHALL BE AWARE THAT IN SOME CASES UTILITIES HAVE BEEN LOCATED, AND SURVEY HAS BEEN COMPLETED ONLY ON ONE SIDE OF THE ROAD. |
| ☐ | 6. | ALL PIPE LENGTHS SHOWN ON PLAN AND PROFILES ARE FROM CENTER TO CENTER OF MANHOLES OR ALONG THE CENTER LINE OF CONDUITS. |
| ☐ | 7. | INVERT ELEVATIONS SHOWN ON DRAWINGS REFER TO THE NORTH RIM OF MANHOLES, UNLESS OTHERWISE INDICATED. |
| ☐ | 8. | THE LOCATION OF ALL EXISTING SEWER AND WATER SERVICE LINES MAY NOT BE INDICATED ON THESE PLANS. THE LOCATION OF NEW SERVICES SHALL BE VERIFIED IN THE FIELD. |
| ☐ | 9. | BENCHMARK DATA: NAVD 88 SEE SURVEYORS NOTES |

PERMIT REQUIREMENTS (NOT ALL INCLUSIVE):

- | | | |
|--------------------------|-----|---|
| ☐ | 1. | CONTRACTOR TO OBTAIN ALL REQUIRED RIGHT-OF-WAY PERMITS. |
| ☐ | 2. | CONTRACTOR SHALL NOT OPEN CUT STREETS IN THE PROJECT AREA UNLESS SPECIFICALLY SHOWN ON PLANS |
| ☐ | 3. | THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A CONSUMPTIVE USE PERMIT (C.U.P.) THROUGH THE ST. JOHNS WATER MANAGEMENT DISTRICT SHOULD DEWATERING ACTIVITIES BE REQUIRED. |
| ☐ | 4. | THE FLORIDA DEPARTMENT OF TRANSPORTATION AND C.O.J. ARE TO BE NOTIFIED IN ADVANCE OF CONSTRUCTION PER THEIR RESPECTIVE PERMIT CONDITIONS. |
| ☐ | 5. | ALL WORK SHALL BE IN ACCORDANCE WITH BID DOCUMENTS AND CITY OF JACKSONVILLE STANDARD SPECIFICATIONS AND DETAILS AND ALL APPLICABLE STATE AND LOCAL REGULATIONS. |
| ☐ | 6. | IF SOLVENT CONTAMINATION IS FOUND IN THE PIPE TRENCH, WORK SHALL BE STOPPED AND THE PROPER AUTHORITIES NOTIFIED. WITH APPROVAL OF THE PERMITTING AGENCY, DUCTILE IRON PIPE, FITTINGS AND SOLVENT RESISTANT GASKET MATERIAL SHALL BE USED IN THE CONTAMINATED AREA. THE DUCTILE IRON PIPE SHALL EXTEND AT LEAST 100 FEET BEYOND ANY SOLVENT NOTED. |
| ☐ | 7. | THE CONTRACTOR SHALL NOTIFY APPLICABLE UTILITY CONTACT PERSONNEL NOT LESS THAN ONE WEEK PRIOR TO CONSTRUCTION OF FACILITIES IN THEIR RESPECTIVE AREAS. |
| ☐ | 8. | TREE PROTECTION SHALL BE IN ACCORDANCE WITH JACKSONVILLE ORDINANCE CODE 656 AND/OR AS DETAILED ON SPECIFIC PLAN SHEETS. NO TRIMMING OF OVERHANGING TREE LIMBS WILL BE ALLOWED. USE SMALLER EQUIPMENT IF NECESSARY. |
| ☐ | 9. | THE CONTRACTOR SHALL LOCATE THE DRAINAGE INLET STRUCTURES IN THE PROJECT AREA AND ERECT SEDIMENTATION CONTROL DEVICES AS NECESSARY PER THE CITY OF JACKSONVILLE STORMWATER POLLUTION PREVENTION PLAN. |
| ☐ | 10. | CONTRACTOR TO COORDINATE WORK WITH OTHER UTILITIES DURING CONSTRUCTION. |

RESTORATION NOTES:

1. THE CONTRACTOR SHALL EMPLOY A LAND SURVEYOR, REGISTERED IN THE STATE OF FLORIDA, TO REFERENCE AND RESTORE PROPERTY CORNERS AND LANDMARKS WHICH MAY BE DISTURBED BY CONSTRUCTION, KNOWN CORNER LOCATIONS ARE AVAILABLE FROM THE CITY OF JACKSONVILLE ENGINEERING DIVISION.
2. THE CONTRACTOR SHALL RESTORE/REPLACE ALL CULVERTS, HEADWALLS AND STORM DRAIN INLETS REMOVED OR DISTURBED BY THE CONSTRUCTION OPERATION.
3. TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITION IN ACCORDANCE WITH FDOT AND CITY OF JACKSONVILLE STANDARD SPECIFICATIONS.
4. SIDEWALKS, DRIVEWAYS AND CURBING DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED IN ACCORDANCE WITH CITY OF JACKSONVILLE OR FDOT STANDARD SPECIFICATIONS AS REQUIRED. SIDEWALKS REMOVED AND REPLACED IN CURB AND GUTTER AREAS AT INTERSECTIONS SHALL HAVE HANDICAP RAMPS INSTALLED. DRIVEWAYS AND SIDEWALKS SHALL BE SAWCUT ALONG THE RIGHT-OF-WAY LINE OR NEAREST JOINT AND REMOVED AND REPLACED TO THE EDGE OF STREET.
5. GRASS SOD SHALL BE FURNISHED AND PLACED IN THE AREAS DISTURBED OR DAMAGED BY THE CONSTRUCTION OPERATION.
6. ALL PAVEMENT REPAIR SHALL BE IN ACCORDANCE WITH THE CITY OF JACKSONVILLE AND FDOT STANDARD DETAILS AND SPECIFICATIONS LATEST EDITION.
7. UNLESS OTHERWISE NOTED, REMOVE AND REPLACE EXISTING PAVEMENT AS PER C.O.J. CASE X (10) AND C.O.J. PAVEMENT REPLACEMENT DETAIL.
8. CONTRACTOR MUST MAINTAIN AND PRESERVE NEWLY GRADED AREAS AND REPAIR AREAS WHERE SETTLING AND EROSION HAVE OCCURRED.

INSTALLATION NOTES:

1. WHEN THE DISTANCE BETWEEN A POWER POLE AND THE TRENCH IS LESS THAN THE TRENCH DEPTH, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH JEA ELECTRICAL PERSONNEL TO SECURE POWER POLES. THE CONTACTS FOR JEA ARE AS FOLLOWS:
- NORTHSIDE-EAST OF US-1 MIKE CORBITT @ 665-7991 (mobile 662-0635)
NORTHSIDE-WEST OF US-1 ANDY YEAGER @ 665-7998 (mobile 662-0622)
NORTHSIDE-BACKUP ALAN AINSLEY @ 665-7303 (mobile 662-6557)
SOUTHSIDE-SOUTH OF BEACH BLVD. TOM KERNS @ 665-6847 (mobile 860-1687)
SOUTHSIDE-NORTH OF BEACH BLVD. DERYL BASFORD @ 665-8555 (mobile 662-0616)
SOUTHSIDE-BACKUP EDDIE GALE'S @ 665-5655 (mobile 662-0616)
- A MINIMUM OF SEVEN (7) WORKING DAYS NOTICE IS REQUIRED FOR AN OUTSIDE MEETING WITH JEA ELECTRICAL. TO DISCUSS THE REQUIRED WORK. ADDITIONAL TIME WILL BE REQUIRED BY JEA ELECTRICAL FOR ANY REQUIRED WORK TO BE ACCOMPLISHED.
2. THE DESIGN FOR THE PROJECT IS BASED UPON "OPEN-CUT" AND "HORIZONTAL, DIRECTIONAL DRILLING" METHODS OF CONSTRUCTION. IF USING ALTERNATIVE MEANS OR METHODS, THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE STANDARDS FOR THAT MEANS OR METHOD.
3. THE CONTRACTOR SHALL MINIMIZE UTILITY SERVICE INTERRUPTIONS AT SERVICE CONNECTIONS. THE MEANS AND METHODS SHALL BE LEFT TO THE DISCRETION OF THE CONTRACTOR, SUBJECT TO THE REQUIREMENTS OF THE CONTRACT SPECIFICATIONS. NO EXISTING ACTUAL UTILITY SERVICE SHALL BE LEFT INTERRUPTED AT THE END OF THE WORK DAY.
4. PRIOR TO COMMENCING ANY EXCAVATION OR GRADING, THE CONTRACTOR SHALL OBTAIN ALL GEOTECHNICAL AND TOPOGRAPHIC SURVEY DATA AND LOCATIONS OF ABOVE GROUND AND UNDERGROUND UTILITIES. SHOULD THE CONTRACTOR DISCOVER ANY INACCURACIES, ERRORS OR OMISSIONS IN THE SURVEY DATA, HE SHALL IMMEDIATELY NOTIFY THE DESIGN ENGINEER IN ORDER THAT PROPER ADJUSTMENTS CAN BE ANTICIPATED AND ORDERED.
5. SHEET PILING WILL BE REQUIRED ON ALL EXCAVATIONS DEEPER THAN 16 FEET.

CITY OF JACKSONVILLE PUBLIC WORKS DEPARTMENT TRAFFIC ENGINEERING DIVISION PAVEMENT MARKINGS STANDARDS

1. PAVEMENT MARKINGS SHOULD BE REPLACED IN KIND IN ACCORDANCE WITH COJ STANDARDS.
2. ANY REQUIRED TEMPORARY MARKINGS MUST BE IN PLACE BEFORE OPENING LANES OF TRAFFIC.
3. THE REMOVAL OF EXISTING PAVEMENT MARKINGS WILL BE CONSIDERED AN INCIDENTAL ITEM WITH NO ADDITIONAL COMPENSATION PROVIDED.
4. ALL PERMANENT PAVEMENT MARKINGS SHALL BE EXTRUDED THERMOPLASTIC AND MEET CURRENT CITY OF JACKSONVILLE SPECIFICATIONS AND/OR FDOT STANDARD SPECIFICATIONS, LATEST EDITION.
5. THERMOPLASTIC PAVEMENT MARKINGS ARE TO BE PLACED NO SOONER THAN 30 CALENDAR DAYS AFTER THE COMPLETION OF THE FINAL PAVEMENT LAYER.
6. A BITUMINOUS REFLECTIVE PAVEMENT MARKER (RPM) ADHESIVE MEETING CURRENT CITY OF JACKSONVILLE AND/OR FDOT SPECIFICATIONS SHALL BE USED ON ASPHALT ROADWAYS.
7. THE CONTRACTOR SHALL USE CLASS - B REFLECTIVE PAVEMENT MARKERS (RPMs) INSTALLED TO MEET CURRENT CITY OF JACKSONVILLE SPECIFICATIONS AND/OR FDOT STANDARD SPECIFICATIONS.
8. REFLECTIVE PAVEMENT MARKERS THAT DO NOT CONFLICT WITH PERMANENT (THERMOPLASTIC) MARKINGS SHALL BE PLACED ON ALL FINAL ASPHALTIC CONCRETE SURFACES IMMEDIATELY AFTER THE TEMPORARY PERMANENT STRIPING IS IN PLACE.
9. PAVEMENT MARKING REMOVAL:
 - (a) PAINT BLACKOUT METHOD OF PAVEMENT MARKINGS REMOVAL IS NOT ACCEPTABLE.
 - (b) GRINDING OR HYDRO BLAST METHOD SHALL BE USED ON WEATHERED ASPHALT SURFACES.
 - (c) REMOVAL ON NEW ASPHALT SURFACES SHALL BE BY HYDRO BLAST METHOD ONLY.
10. THE CONTRACTOR SHALL CONTACT THE PAVEMENT MARKING INSPECTOR (904) 255-7550 48 HOURS PRIOR TO INSTALLING ANY PAVEMENT MARKINGS ON ANY CITY OF JACKSONVILLE ROADWAY OF STREET.
11. IN THE EVENT OF A CONFLICT BETWEEN THE SPECIFICATIONS OF THE CITY OF JACKSONVILLE AND THE SPECIFICATIONS OF THE FDOT, THE CITY OF JACKSONVILLE WILL PREVAIL.

GENERAL NOTES

1. THE CONTRACTOR SHALL CONTACT THE LOCAL PUBLIC UTILITIES LOCATING SERVICE TO LOCATE UTILITIES IN THE AREA PRIOR TO ANY EXCAVATION. ALL EXISTING UTILITIES NOT BE SHOWN ON THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING UTILITIES, WHETHER SHOWN OR NOT, AND FOR REPAIRING ALL DAMAGE TO UTILITIES.
2. DISTURBANCE SHALL BE LIMITED TO THE TEMPORARY CONSTRUCTION EASEMENTS AND PERMANENT FDOT AND COJ RIGHT OF WAYS. IF TRAVEL LANES ARE DAMAGED DURING CONSTRUCTION IN FDOT AND COJ ROW, REMOVAL AND REPLACEMENT OF FRICTION COURSE MAY BE REQUIRED.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROCURING ALL MOBILIZATION, STORAGE, AND STAGING AREAS AS WELL AS ACCESS TO THE CONSTRUCTION SITES WITHIN THE TEMPORARY AND PERMANENT RIGHT OF WAYS. EROSION CONTROL DEVICES AND BEST MANAGEMENT PRACTICES SHALL BE INSTALLED AND MAINTAINED AT ALL WORK SITES AND STAGING AREAS. THE CONTRACTOR SHALL FOLLOW ALL LOCAL GUIDELINES AND REGULATIONS REGARDING THE WORK, INCLUDING KEEPING MUD AND DIRT OFF PUBLIC ROADS AND PRIVATE ENTRANCES.
4. SOIL EXPLORATION WORK WAS PERFORMED BY UNIVERSAL ENGINEERING SCIENCES LLC OF JACKSONVILLE FLORIDA (PROJECT No. 0930.2200.000). SOILS EXPLORATION WORK IS SOLELY TO ASSIST BIDDERS IN ASSESSING THE NATURE AND EXTENT OF TESTING PROCEDURES REQUIRED TO MAKE THEIR OWN DETERMINATION OF ACTUAL SUBSURFACE CONDITIONS THAT WILL BE ENCOUNTERED DURING THE COURSE OF CONSTRUCTION. NO REPRESENTATION IS MADE OR WILL BE GIVEN BY THE ENGINEER CONCERNING ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED. ALL BIDDERS ARE DIRECTED PRIOR TO BIDDING TO CONDUCT ALL INVESTIGATIONS THEY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSIONS REGARDING SUCH CONDITIONS.
5. ALL OPEN ENDS OF CONDUIT SHALL BE SECURED TO PREVENT ENTRY AND WATER INTRUSION AT THE END OF EACH WORK DAY.
6. ALL AREAS WITH OPEN EXCAVATIONS, OPEN VAULTS OR MANHOLES, OR EQUIPMENT SHALL BE FENCED WITH TEMPORARY SECURE FENCING AT LEAST FOUR FEET HIGH OR CLOSED AT THE END OF EACH WORK DAY. NO OPEN HOLES, VAULTS, EXCAVATIONS, ETC. SHALL BE ALLOWED TO BE LEFT OPEN DURING NON-WORKING HOURS WITHIN COJ AND FDOT RIGHT OF WAY.
7. ANY PUBLIC LAND CORNER, PROPERTY MONUMENTATION, OR BENCH MARK WITHIN THE LIMITS OF CONSTRUCTION SHALL BE PROTECTED. IF A MONUMENT IS IN DANGER OF BEING DESTROYED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY. ANY CORNER MONUMENT DISTURBED OR DESTROYED SHALL BE RESET BY A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF FLORIDA AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL IMPLEMENT ONLY MAINTENANCE OF TRAFFIC SPECIFIED BY THE ENGINEER.
8. THE CONTRACTOR SHALL CONTACT THE ENGINEER OR OWNER IMMEDIATELY SHOULD ANY ISSUE BETWEEN CONSTRUCTION AND THE DRAWINGS ARISE. THE CONTRACTOR SHALL ADHERE TO ALL CONDITIONS AND REQUIREMENTS OF ALL PERMITS THAT HAVE BEEN OBTAINED. SHOULD ANY ISSUES BETWEEN CONSTRUCTION AND THE DRAWINGS ARISE IN FDOT, OR COJ, ROW, THE CONTRACTOR SHALL ALSO CONTACT THE FDOT, OR COJ, RESPECTIVELY, PRIOR TO ANY DEVIATIONS FROM THE CONSTRUCTION DRAWINGS.
9. FOR ALL TIE-IN PIPING THE CONTRACTOR SHALL VERIFY ALL EXISTING PIPELINE ELEVATIONS, LOCATIONS, DIAMETERS, AND MATERIALS PRIOR TO SHOP DRAWING SUBMITTALS, NOTIFYING THE ENGINEER OF ANY CONFLICTS.
10. ALL DRIVEWAYS, DRAINAGE PIPES, AND HEADWALLS SHALL BE RESTORED TO EQUAL OR BETTER THAN EXISTING CONDITION. IN BOTH NEW AND EXISTING RIGHT OF WAYS AND WITHIN ANY TEMPORARY EASEMENT AREAS. ANY STRUCTURES OR DRIVEWAYS DISTURBED OUTSIDE OF THE RIGHT OF WAY SHALL BE FULLY RESTORED AT NO COST TO THE PROPERTY OWNER.
11. THE CONTRACTOR SHALL LOCATE AND PROTECT ALL WATER AND SEWER LATERALS SERVICING RESIDENTS AND BUSINESSES THROUGHOUT CONSTRUCTION.
12. WHEN EXCAVATED MATERIALS ARE PLACED ON ROADWAY SURFACES THE CONTRACTOR SHALL PLACE SAND OR STONE SCREENING UNDERNEATH THE EXCAVATED MATERIALS AND SHALL REMOVE SAID MATERIALS AND SWEEP CLEAN ALL RESIDUES FROM THE SURFACES DAILY.
13. THE CONTRACTOR SHALL PROVIDE AN ACCESS CORRIDOR FOR EMERGENCY SERVICES AT ALL TIMES.
14. THE CONTRACTOR SHALL PROVIDE 24 HOURS NOTICE TO TECO GAS PRIOR TO WORK WHICH MAY IMPACT GAS MAINS.
15. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CLEAN AND EFFICIENT OPERATIONS OF ALL STORM WATER CONVEYANCE STRUCTURES IN THE AREA IMPACTED BY CONSTRUCTION. THE CONTRACTOR SHALL ENSURE THAT THE CONVEYANCE CAPACITY OF THE STORM WATER INFRASTRUCTURE IS MAINTAINED TO AVOID FLOODING. THE CONTRACTOR SHALL INSTALL STABILIZED CONSTRUCTION ENTRANCES AS DIRECTED BY THE ENGINEER AT LOCATIONS WHERE VEHICULAR TRAFFIC PASSES FROM DISTURBED AREAS TO UNDISTURBED AREAS. THE CONTRACTOR SHALL IMPLEMENT THE EROSION AND SEDIMENT CONTROL MEASURES DESIGNATED BY THE ENGINEER OR BY THE CONTRACTOR'S RECOMMENDATION.
16. THE CONTRACTOR SHALL IMPLEMENT EROSION CONTROL MEASURES IN COMPLIANCE WITH FEDERAL, STATE, AND LOCAL STORM WATER EROSION CONTROL PERMITS AND STANDARDS FOR ALL LAND DISTURBANCES NOT SHOWN IN THESE DRAWINGS.
17. PAVEMENT, DRIVEWAYS AND SIDEWALKS SHALL BE REMOVED BY FULL DEPTH SAW CUTTING IN STRAIGHT LINES.
18. BORING LOCATIONS SHOWN ON THE DRAWINGS ARE FOR INFORMATIONAL PURPOSES ONLY FOR THE CONTRACTORS CONVENIENCE. GEOTECHNICAL DATA SHALL BE GOVERNED BY THE GEOTECHNICAL REPORT PREPARED BY UNIVERSAL ENGINEERING SCIENCES LLC (PROJECT No. 0930.2200.000).
19. THE CONTRACTOR SHALL REFERENCE OF THE GEOTECHNICAL REPORT PROVIDED BY UNIVERSAL ENGINEERING SCIENCES LLC FOR DETAILS ON POTENTIAL GROUND WATER FLUCTUATIONS (PROJECT No. 0930.2200.000).
20. THE CONTRACT DOCUMENTS FOR THIS PROJECT, SHALL BE THE GOVERNING SPECIFICATION FOR ALL MATERIALS AND METHODS REQUIRED FOR INSTALLATION OF THIS RECONDUCTOR AND SHALL SUPERSEDE ALL CONFLICTING RECOMMENDATIONS UNLESS EXPLICITLY STATED BY THE OWNER (JEA) OR AN AUTHORIZED OWNERS REPRESENTATIVE.
21. WORK WITHIN THE FDOT, AND COJ ROW IS WITHIN CONGESTED UTILITY CORRIDORS. THE CONTRACTOR WILL BE REQUIRED TO LOCATE AND SUPPORT ANY EXISTING UTILITIES WITHIN THE OPEN CUT TRENCH OR PIT AREA FOR INSTALLATION VIA HDD OR JACK AND AUGER BORE.
22. ANY CONSTRUCTION IN FDOT, AND COJ RIGHT OF WAY WILL REQUIRE A RIGHT OF WAY PERMIT. THE CONTRACTOR IS RESPONSIBLE FOR CALLING 904-255-8366 DAILY FROM 7:30 A.M. TO 8:30 A.M., WHEN WORKING IN COJ RIGHT OF WAY.

DRAWING INDEX

SHEET	TITLE	NUMBER
GN-1	GENERAL NOTES & DRAWING INDEX	01 OF 13
GN-2	GENERAL NOTES, ABBREVIATIONS & DRAWING LEGEND	02 OF 13
PP-1	PLAN & PROFILE	03 OF 13
ESMT-1	JEA PERMANENT UTILITY & TEMP. CONST. EASEMENT OVERVIEW	04 OF 13
CD-1	STANDARD DETAILS	05 OF 13
CD-2	STANDARD DETAILS	06 OF 13
CD-3	STANDARD DETAILS	07 OF 13
CD-4	STANDARD DETAILS	08 OF 13
D-1	DEMOLITION PLAN	09 OF 13
D-2	RISER DEMOLITION DETAILS	10 OF 13
E-1	TERMINATION DETAILS	11 OF 13
E-2	GROUNDING DETAILS FOR RISER POLE #66A & SUBSTATION RISER STRUCTURE	12 OF 13
BOM-1	CABLE & CONDUIT SCHEDULES AND MAJOR EQUIPMENT BOM	13 OF 13

EXISTING UTILITY PROTECTION:

1. IN ORDER TO REDUCE THE DISRUPTION AND COST OF UTILITY DAMAGES OCCURRING IN THE FDOT AND CAJ RIGHT-OF-WAY AND EASEMENTS, THE CONTRACTOR SHALL PREVENT DAMAGES TO EXISTING UTILITIES CAUSED BY WORK OR OTHER CAUSES OF DAMAGE TO EXISTING UTILITIES. IN THE CASE OF OPEN EXCAVATION, VERIFICATION MAY BE PERFORMED DURING THE CONTRACTORS WORK. IN THE CASE OF DIRECTIONAL DRILLING, VERIFICATION SHALL TAKE PLACE PRIOR TO MOBILIZATION OF THE DRILLING EQUIPMENT.
2. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES AS NEEDED TO AVOID CONTACT. EXISTING UTILITIES SHALL BE EXPOSED USING DETECTION EQUIPMENT OTHER ACCEPTABLE MEANS. SUCH METHODS MAY INCLUDE BUT SHALL NOT BE LIMITED TO "SOFT DIG" EQUIPMENT AND GROUND PENETRATING RADAR (GPR). THE EXCAVATOR SHALL BE HELD LIABLE FOR DAMAGES CAUSED TO THE CITY/SUEA'S INFRASTRUCTURE AND THE EXISTING FACILITIES OF OTHER UTILITY COMPANIES.
3. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE AND AVOID ALL UTILITIES, OTHER STRUCTURES AND OBSTRUCTIONS BOTH ABOVE AND BELOW GROUND SURFACE. ALL DAMAGE RESULTING FROM THE CONTRACTOR'S FAILURE TO COMPLY WITH THIS REQUIREMENT SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

UTILITY CONTACTS:

A	AT&T - GENERAL NUMBER	904-519-2529
B	AT&T - ADAM DUGAN - NORTH DISTRICT	904-781-0741
C	AT&T - BILL LAKE - SOUTH DISTRICT	904-303-8754
D	CITY OF JACKSONVILLE - PUBLIC WORKS DEPT.	904-255-8752
E	CITY OF JACKSONVILLE - TRAFFIC OPERATIONS	904-255-7533
F	FLORIDA DEPT. OF TRANSPORTATION	904-825-0368
G	GEA - WATER COLLECTION & DISTRIBUTION - RANDY ELLIS	904-665-7133
H	GEA - SEWER COLLECTION & DISTRIBUTION - NATHANIAL ROUSE	904-665-8183
I	JEA - GENERAL INFORMATION	904-665-6000
J	JEA - PROJECT OUTREACH	904-665-7500
K	JEA - POWER OUTAGES	904-665-6000
L	JEA - SEWER PROBLEMS	904-665-4802
M	JEA - WATER PROBLEMS	904-665-4801
N	JEA - WATER & SEWER LOCATES	904-665-8410
O	COMCAST - EMERGENCY HOTLINE	904-380-8272
P	JACKSONVILLE TRANSIT AUTHORITY (JTA) - IVAN MITCHELL	904-633-8523
Q	TECO/PEOPLES GAS - BEN MOBLEY	904-545-8958
R	SUNSHINE ONE CALL	811
S	FDOT - ITS - FOC - JOSH REICHERT	904-360-5642
T	JEA ENVIRONMENTAL GROUP	904-665-4517
U	COJ TRAFFIC MOT - RONNIE THIGPEN	904-255-8704
V	COJ TRAFFIC SIGNALS - MASON BOYD	904-255-7548
W	FLORIDA GAS TRANSMISSION - JACOB WALLACE	904-454-0028
X	FLORIDA POWER AND LIGHT - ROB HELFER	904-824-7617
Y	ST JOHNS COUNTY - RIGHT-OF-WAY PERMITTING - RICK MAULDIN	904-209-0134
Z	ST JOHNS COUNTY - TRAFFIC SIGNALS - HANK MEIN	904-209-0173
AA	FEC RAILROAD - EMERGENCY HOTLINE	904-538-6161

NOTE:

JEAS STANDARD DRAWINGS AND DETAILS ARE APPLICABLE FOR ALL PROJECTS INCORPORATED BY REFERENCE AND ARE AVAILABLE AT www.jea.com/Engineering_and_Construction/Water_and_Wastewater_Standards/

NOTE:

COJ STANDARD DRAWINGS AND DETAILS ARE APPLICABLE FOR ALL PROJECTS
INCORPORATED BY REFERENCE AND ARE AVAILABLE AT
COJ.NET/DEPARTMENTS/PLANNING-AND-DEVELOPMENT/DEVELOPMENT-SERVICE

BID SET: 11/08/24

REVISION						DATE	BY	CH'D	APP'D	ENGINEERING RECORD				69kV CIRCUIT 690 UNDERGROUND RECONDUCTOR HOGAN RD., SANS SOUCI SUBSTATION GENERAL NOTES & DRAWING INDEX			PROJECT NO. 8008430
NO.	REVISION	DATE	BY	CH'D	APP'D	STATUS	BY	DATE	DRAWING NO. GN-1								
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS	ASSIGNED	O&M	10/01/22									
						DESIGNED	DLC/MTS	-		SHEET NO. 01 OF 13							
						DRAWN	DLC	-									
						CHECKED	MTS	11/18/24									
						APP'D	MTS	11/18/24									
										SCALE:	N.T.S.	PROJECT DESIGN SEGMENT 20410					

CITY OF JACKSONVILLE EROSION CONTROL NOTES:

- CAUTION: ALL UTILITY LOCATIONS ARE APPROXIMATE AND MUST BE LOCATED PRIOR TO CONSTRUCTION.
- VEGETATION CLEARING WILL BE KEPT TO THE ABSOLUTE MINIMUM NECESSARY FOR CONSTRUCTION.
- MATERIAL RESULTING FROM EXCAVATION WILL NOT BE PLACED IN SUCH A MANNER THAT IT IS DISPERSED BY CURRENT OR OTHER FORCES. THE MATERIAL SHOULD BE COLLECTED AND CONTAINED AT ONE SITE AS APPROPRIATE.
- HEAVY EQUIPMENT WORKING IN WETLANDS WILL BE PLACED ON MATS OR LOW GROUND PRESSURE EQUIPMENT USED DURING CONSTRUCTION TO LIMIT SOIL DISTURBANCE TO THE MINIMUM AREA REQUIRED TO INSTALL THE UTILITY.
- NO STAGING AREAS OR TEMPORARY ACCESS ROADS WILL BE PLACED IN WETLANDS.
- APPROPRIATE SILTATION AND EROSION CONTROLS WILL BE USED AND MAINTAINED IN EFFECTIVE OPERATING CONDITION DURING CONSTRUCTION, AND ALL EXPOSED SOIL AND FILLS WILL BE PERMANENTLY STABILIZED AT THE EARLIEST PRACTICABLE DATE.
- SEDIMENT CONTROL FENCE (SILT FENCE) SHOULD BE INSTALLED AND MAINTAINED FOR THE DURATION OF THE CONSTRUCTION. SILT FENCE WILL BE INSTALLED ALONG AND WITHIN THE RIGHT-OF-WAY LINE (12 FT. AWAY FROM THE EDGE OF THE RIGHT-OF-WAY), IF A BODY OF WATER OR POTENTIAL WETLAND IS LOCATED WITHIN 60 FT. FROM THE EDGE OF THE RIGHT-OF-WAY. ANY OTHER SITUATIONS WILL BE APPROVED BY ENGINEER.
- WHEN CONSTRUCTING IN WETLANDS, THE TOP 6 TO 12 INCHES OF THE TRENCH WILL BE BACK FILLED WITH TOP SOIL FROM THE TRENCH.
- EXCESS MATERIAL WILL BE REMOVED FROM THE WETLAND AND PLACE ON UPLAND AREAS IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
- EXPOSED SLOPES OF STREAM BANKS WILL BE RESTORED TO THEIR ORIGINAL CONTOURS AND STABILIZED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
- ANY TEMPORARY FILLS MUST BE REMOVED IN THEIR ENTIRETY AND THE AFFECTED AREAS RETURNED TO THEIR PRE-EXISTING ELEVATION.
- ANY DISTURBED AREA WILL BE RESEDED WITH NATIVE GRASS SEED, AND SEDIMENT CONTROL FENCE SHOULD BE REMOVED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
- WHEN CONSTRUCTING IN CITY LIMITS, ALL ROADWAY DRAINS, SUCH AS INLETS NEAR CURBS OR DROP INLETS ON ROADWAYS WHICH ARE LOCATED WITHIN THE RIGHT-OF-WAY, SHALL BE PROTECTED WITH TYPICAL INLET SEDIMENT FILTERS. THESE FILTERS WILL BE REMOVED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
- ALL CABLE MARKERS TO BE PLACED AS FAR BACK TO RIGHT-OF-WAY LINE AS POSSIBLE.
- DRAWING DISCLAIMER: FACILITY LOCATIONS ARE GENERAL IN NATURE. ENGINEER WILL NOT BE HELD ACCOUNTABLE FOR THE ACCURACY OF THE INFORMATION PROVIDED ON THESE DRAWINGS. CONTRACTOR MUST LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.

DEMOLITION NOTES:

- ALL DEMOLITION DEBRIS SHALL BE REMOVED FROM THE SITE AND CONTAINED, HAULED AND DISPOSED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
- CONTRACTOR SHALL COORDINATE SALVAGE OF THE COPPER CONDUCTORS WITH THE OWNER. UPON REQUEST, MATERIALS IDENTIFIED FOR SALVAGE SHALL BE DELIVERED TO AN APPROVED OWNER FACILITY AT NO ADDITIONAL COST TO THE OWNER.
- WITH THE EXCEPTION OF EXISTING CIRCUIT CONDUCTORS AT EACH RISER LOCATION, DEMOLITION OF THE EXISTING CIRCUIT 693 CONDUCTORS SHALL NOT TAKE PLACE UNTIL THE NEW CIRCUIT 693 SYSTEM HAS BEEN INSTALLED AND COMMISSIONED.
- WHERE INDICATED, DEMOLITION SHALL INCLUDE THE COMPLETE REMOVAL OF EXISTING CIRCUIT CONDUCTORS, GROUND CONDUCTORS, AND THE PROTECTIVE CONCRETE CAP. THE CONTRACTOR SHALL UTILIZE ALL NECESSARY SOIL EROSION AND SEDIMENT CONTROL BMPs, SITE SAFETY AND MOT/TTC METHODS DURING DEMOLITION. THE CONTRACTOR SHALL RESTORE ALL LANDSCAPING, PAVING, CURBING, SIDEWALKS OR OTHER AREAS OF DEMOLITION DISTURBANCE TO ORIGINAL OR BETTER CONDITION IN ACCORDANCE WITH RESPECTIVE FDOT OR COJ REQUIREMENTS.
- WHERE INDICATED, ABANDONMENT SHALL INCLUDE A CLEAN CUT OF THE EXISTING CIRCUIT CONDUCTORS, GROUND CONDUCTORS, AND CONCRETE PROTECTION CAP WITHIN 3 FEET OF LIMITS SHOWN. THE CONTRACTOR SHALL ATTEMPT TO PULL BACK AND EXTRACT CONDUCTORS FROM UNDER DRIVEWAYS OR OTHER AREAS DENOTED FOR ABANDONMENT TO THE EXTENT POSSIBLE.
- WHERE DENOTED AS DEMOLITION, BUT EXISTING ADJACENT AND CROSSING UTILITIES MAY BE NEGATIVELY IMPACTED DURING DEMOLITION ACTIVITIES, THE CONTRACTOR SHALL IMMEDIATELY STOP DEMOLITION ACTIVITIES IN THE AREA.
- DEVIATIONS FROM THE DEMOLITION SCOPE OF WORK AS IDENTIFIED ON THESE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER FOR REVIEW AND APPROVAL PRIOR TO IMPLEMENTATION.
- CONTRACTOR SHALL PROVIDE SURVEY AND INCLUDE DATA FOR ALL ABANDONED JEA UTILITIES WITHIN THE WORK AREA ON THE AS-BUILT RECORD DRAWINGS.
- DEMOLITION ACTIVITIES WITHIN 5 FEET OF EXISTING GAS LINES SHALL BE COORDINATED WITH THE TECO GAS UTILITY PRIOR TO COMMENCING WORK.
- ANY EXISTING MATERIALS CONTAINING OIL OR OTHER POTENTIALLY HAZARDOUS OR CONTROLLED SUBSTANCES INDICATED FOR DEMOLITION SHALL BE HANDLED AND DISPOSED OF IN ACCORDANCE WITH INDUSTRY STANDARD AND REGULATORY AGENCIES HAVING JURISDICTION.
- ABANDONED CONDUITS AND CASINGS SHALL BE GROUT FILLED IN ACCORDANCE WITH COJ AND FDOT STANDARDS.

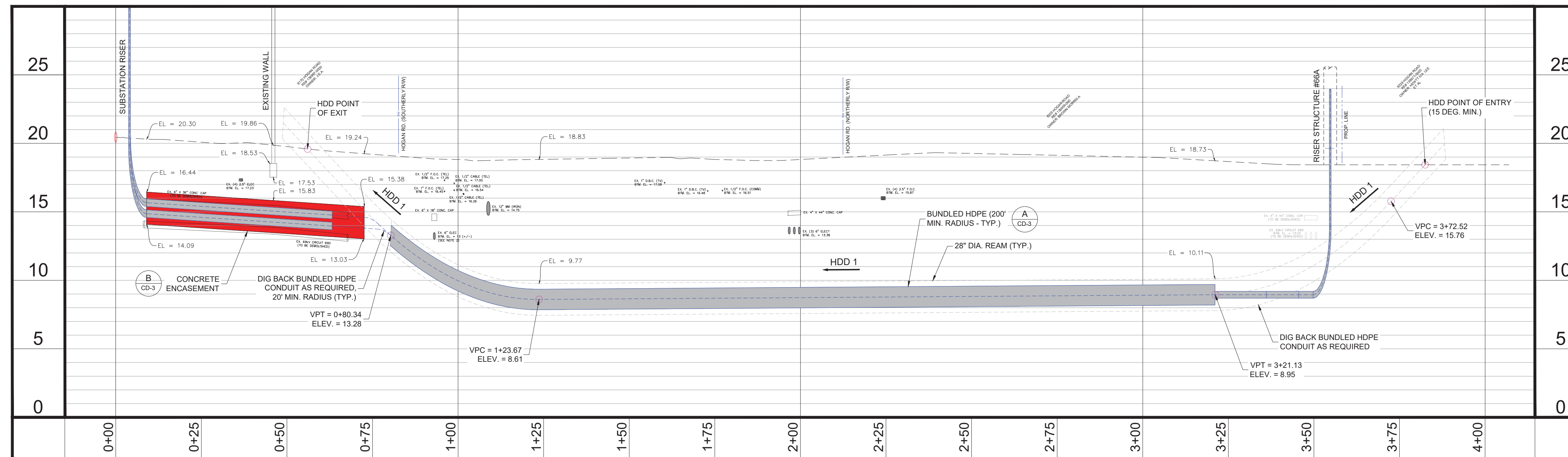
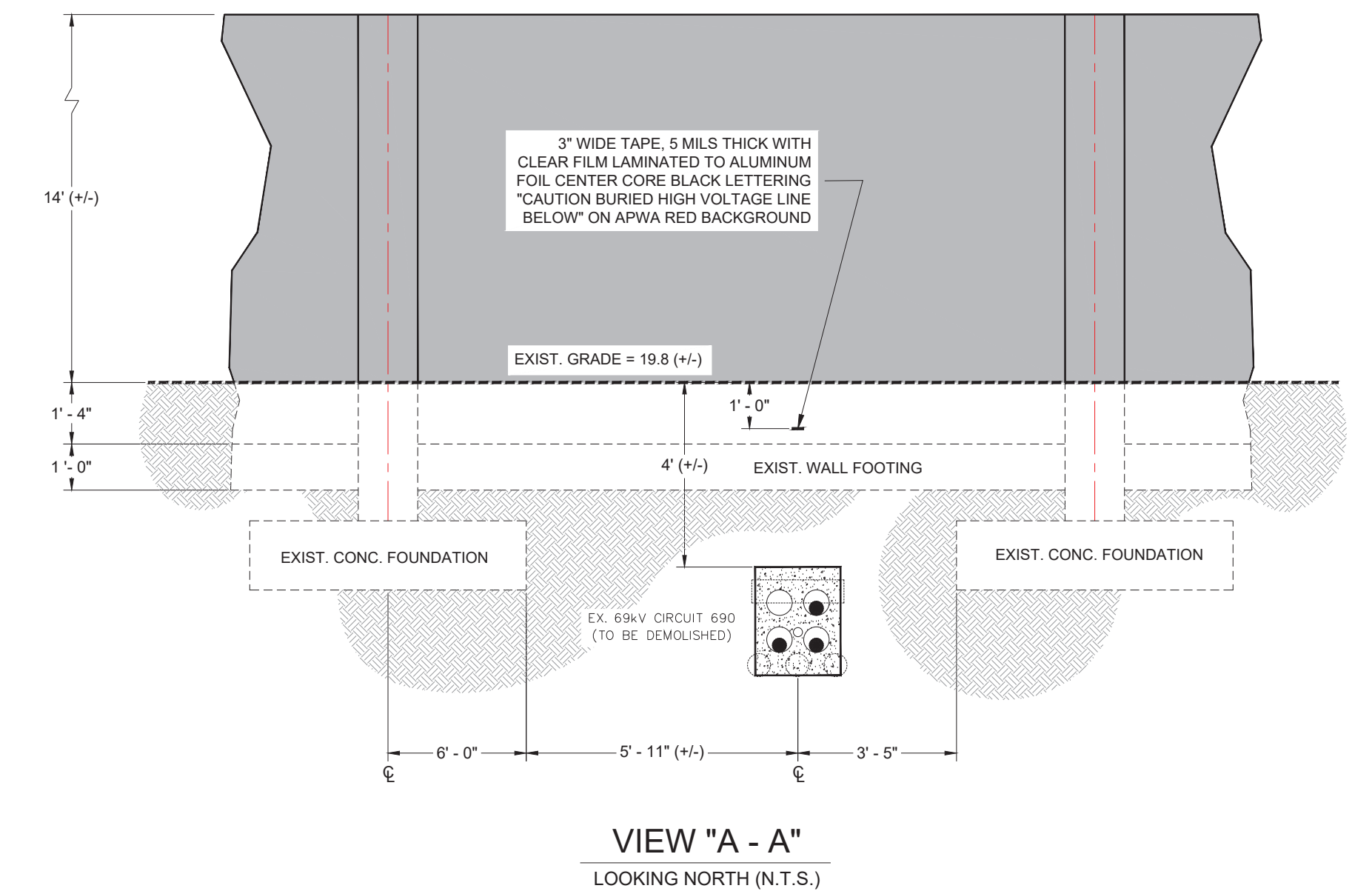
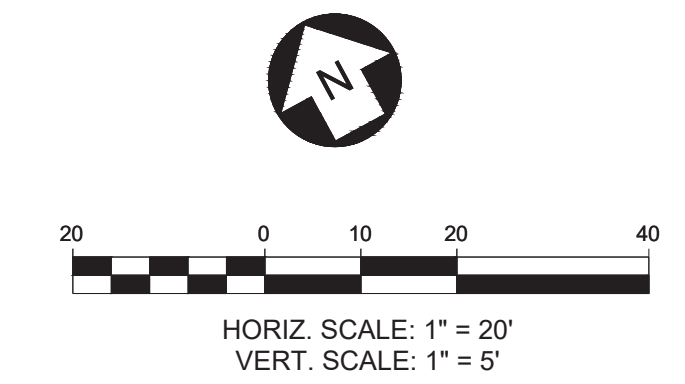
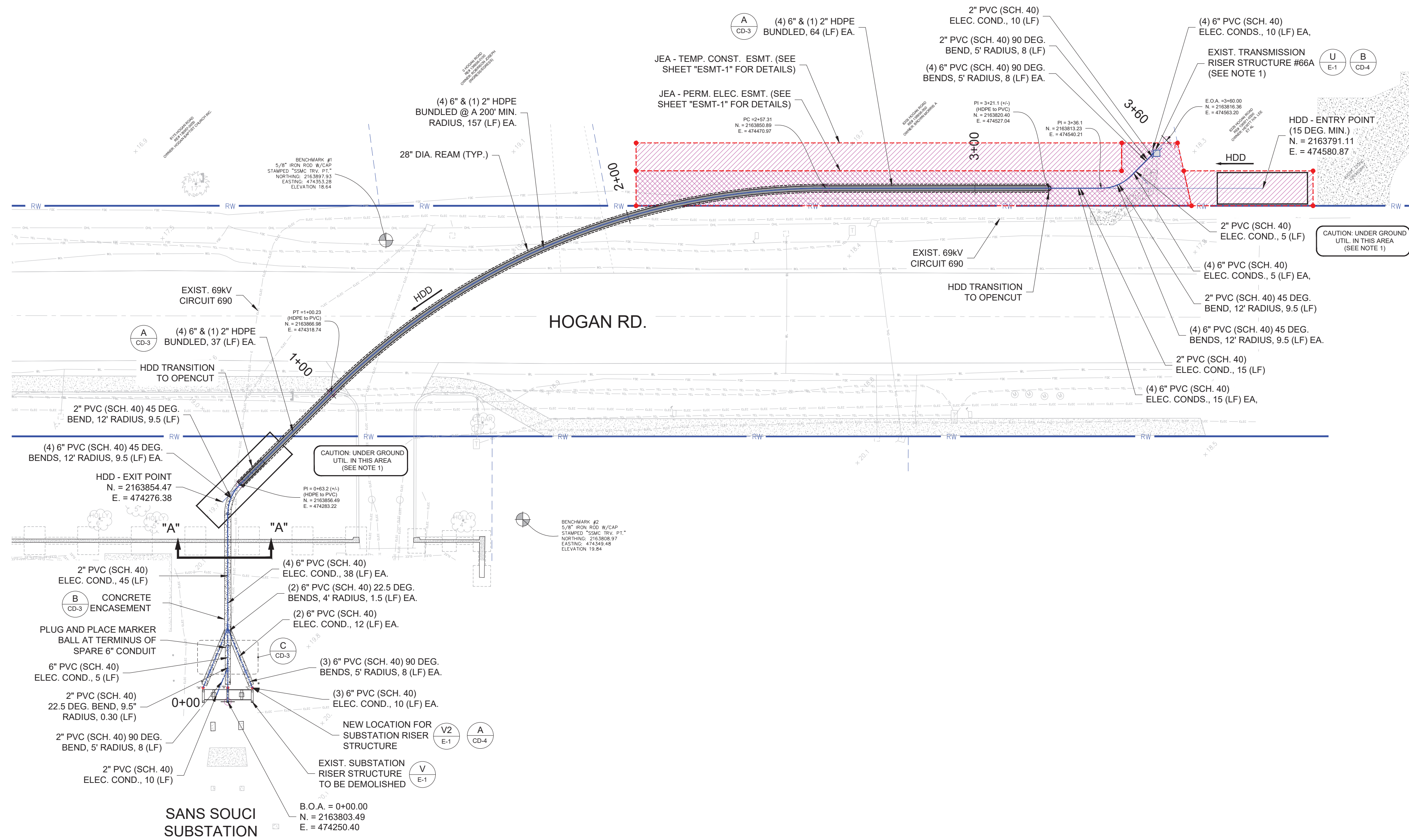
ABBREVIATIONS		
A	APP'D	APPROVED
B	BCL	BURIED CABLE
	BFP	BACK FLOW PREVENTER
	BND	BEND
	BOA	BEGINNING OF ALIGNMENT
	BOM	BILL OF MATERIALS
	BOP	BOTTOM OF PIPE
C	BTM	BOTTOM
	CH'D	CHECKED
	CL	CENTER LINE
	CLP	CONCRETE LIGHT POLE
	CND	CONDUIT
	COF	COEFFICIENT OF FRICTION
	COJ	CITY OF JACKSONVILLE
	CONC	CONCRETE
	CONST	CONSTRUCTION
	CPP	CONCRETE POWER POLE
	CUP	CONCRETE UTILITY POLE
	CULV	CULVERT
	CW	CHILL WATER
D	DEG	DEGREE
	DEMO	DEMOLISHED, DEMOLITION
	DEPT	DEPARTMENT
	DIA	DIAMETER
	DI	DUCTILE IRON
E	E	EAST, EASTERN, EASTERLY
	EA	EACH
	ELEC	ELECTRICAL, ELECTRIC
	ELEV & EL	ELEVATION
	EOA	END OF ALIGNMENT, EDGE OF ASPHALT
	EOP	EDGE OF PAVEMENT
	ERCP	ELLIPTICAL REINFORCED CONCRETE PIPE
	EQUIP	EQUIPMENT
	ESMT	EASEMENT
	EX & EXIST	EXISTING
F	FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION
	FH	FIRE HYDRANT
	FL	FLORIDA
	FM	FORCEMAIN
	FOC, FO	FIBER OPTIC CABLE
G	G	GAS
	GND	GROUNDING, GROUND
	GPR	GROUND PENETRATING RADAR
	GV	GAS VALVE, GATE VALVE
H	HYD	HYDRANT
	HDD	HORIZONTAL DIRECTIONAL DRILL
	HDPE	HIGH DENSITY POLYETHYLENE
	HORZ	HORIZONTAL
I	ID	INSIDE DIAMETER, INNER DIAMETER
	IE	INVERT ELEVATION
	INT	INTERSECTION
	INV	INVERT
	IP	IRON PIPE

ABBREVIATIONS		
J	JEA	JACKSONVILLE ELECTRICAL AUTHORITY
L	LF	LINEAR FEET
M	MAX	MAXIMUM, MAXIMAL
	MIN	MINIMUM, MINIMAL
N	N	NORTH, NORTHERN, NORTHERLY
	NAVD	NORTH AMERICAN VERTICAL DATUM 1988 (FL)
	No	NUMBER
	NTS	NOT TO SCALE
O	OHE	OVERHEAD ELECTRICAL
	OHU	OVERHEAD UTILITY
	OD	OUTSIDE DIAMETER, OUTER DIAMETER
P	PC	POINT OF CURVATURE
	PCC	POINT OF CONTINUED CURVATURE
	PERM	PERMANENT
	PI	POINT OF INTERSECTION
	PROJ	PROJECT
	PT	POINT, POINT OF TANGENCY
	PVC	POLYVINYL CHLORIDE
R	R	RADIUS
	RCP	REINFORCED CONCRETE PIPE
	RD	ROAD
	RE	RECLAIM
	REV	REVISION
	ROW, RW & R/W	RIGHT OF WAY
S	STA	STATION
	SAN	SANITARY
	SCH	SCHEDULE
	ST	STREET
	STM	STORM
	STR	STRUCTURE
T	TCP	TERRA COTTA PIPE
	TEL	TELEPHONE, TELECOMMUNICATION
	TEMP	TEMPORARY
	TOP	TOP OF PIPE
	TRV	TRAVERSE
	TYP	TYPICAL
U	UNG	UNDERGROUND
	UNK	UNKNOWN
	UTIL	UTILITY
V	VERT	VERTICAL
	VPC	VERTICAL POINT OF CURVATURE
	VPCC	VERTICAL POINT OF CONTINUED CURVATURE
	VPI	VERTICAL POINT OF INTERSECTION
	VPT	VERTICAL POINT OF TANGENCY
W	WL	WATER LINE
	WLP	WOODEN LIGHT POLE
	WM	WATER MAIN
	W.M.B.	WATER METER BOX
	WPP	WOODEN POWER POLE
	WS	WATER SERVICE
	WUP	WOODEN UTILITY POLE
	W.V.	WATER VALVE
	W.V.B	WATER VALVE BOX

DRAWING LEGEND		
	-	NORTH ARROW
	-	HORIZONTAL DIRECTIONAL DRILL DIRECTION LABEL
	-	REFERENCE DETAIL LETTER & SHEET NUMBER LABEL
	-	EX. STORM (GRAVITY)
	-	EX. BENCHMARK
	-	RIGHT OF WAY LINE
	-	EXIST. PROPERTY LINE
	-	EXIST. WATER LINE
	-	EXIST. OVERHEAD LINE
	-	EXIST. LIGHT POLE
	-	EXIST. POWER POLE (CONCRETE)
	-	EXIST. UTILITY POLE (WOODEN)
	-	EXIST. GUY WIRE/ANCHOR
	-	EXIST. ELECTRIC CABLE/DUCT
	-	EXIST. FIBER OPTIC CABLE
	-	EXIST. TELEPHONE
	-	EXIST. BURIED CABLE

BID SET: 11/08/24

NO.	REVISION	DATE	BY	CH'D	APP'D	REVISION	DATE	BY	CH'D	APP'D	ENGINEERING RECORD					69KV CIRCUIT 690 UNDERGROUND RECONDUCTOR HOGAN RD., SANS SOUCI SUBSTATION GENERAL NOTES, ABBREVIATIONS & DRAWING LEGEND		PROJECT NO. 8008430
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS						STATUS	BY	DATE					DRAWING NO. GN-2
											ASSIGNED	O&M	10/01/22					SHEET NO. 02 OF 13
											DESIGNED	DLC/MTS	-					
											DRAWN	DLC	-					
											CHECKED	MTS	11/18/24					
											APP'D	MTS	11/18/24					
														SCALE: N.T.S.		PROJECT DESIGN SEGMENT 20410		



LEGEND - EASEMENTS	
	T TEMPORARY CONSTRUCTION EASEMENT
	JEA - PERMANENT ELECTRICAL EASEMENT

NOTE: SEE SHEET "ESMT-1" FOR DETAILS

NOTE:

- CONTRACTOR TO VERIFY LOCATION & DEPTH OF EXISTING UTILITIES PRIOR TO HDD. FOR EXISTING 69kV CIRCUIT 693 DEMO, SEE SHEET D-1 (09 OF 13).
- ALL CABLE PULLS SHALL BE PERFORMED FROM SUBSTATION SIDE (COF = 0.25).

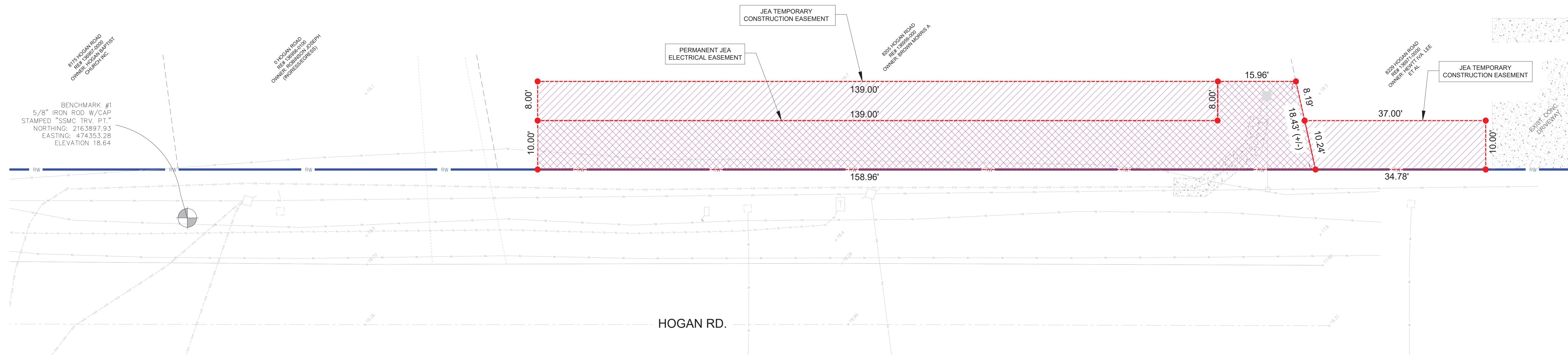
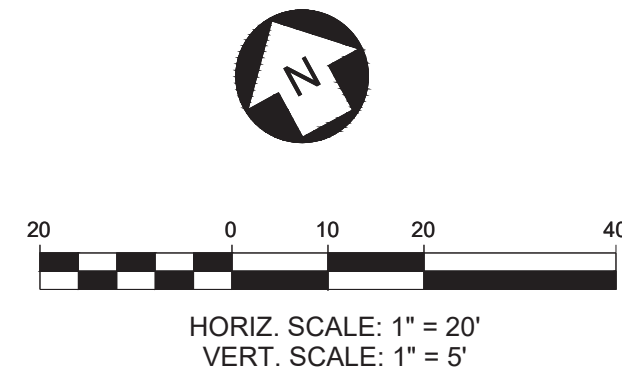
NO.	REVISION	DATE	BY	CH'D	APP'D		REVISION	DATE	BY	CH'D	APP'D	ENGINEERING RECORD		
												STATUS	BY	DATE
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS							STATUS	O&M	10/01/22
												ASSIGNED	DLC/MTS	-
												DESIGNED	DLC	-
												DRAWN	MTS	11/18/22
												CHECKED	MTS	11/18/22
												APP'D	MTS	11/18/22



69kV CIRCUIT 690 UNDERGROUND RECONDUCTOR HOGAN RD., SANS SOUCI SUBSTATION	
PLAN & PROFILE	
SCALE: N.T.S.	PROJECT DESIGN SEGMENT 20410

BID SET: 11/08/24

PROJECT NO. 8008430
DRAWING NO. PP-1
SHEET NO. 03 OF 13



LEGEND - EASEMENTS

TEMPORARY CONSTRUCTION EASEMENT

JEA - PERMANENT ELECTRICAL EASEMENT

BID SET: 11/08/24

NO.	REVISION	DATE	BY	CH'D	APP'D		REVISION	DATE	BY	CH'D	APP'D	ENGINEERING	RECORD	
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS							STATUS	BY	DATE
												ASSIGNED	O&M	10/01/22
												DESIGNED	DLC/MTS	-
												DRAWN	DLC	-
												CHECKED	MTS	11/18/24
												APP'D	MTS	11/18/24

JEA

Building Community

69kV CIRCUIT 690 UNDERGROUND RECONDUCTOR
HOGAN RD., SANS SOUCI SUBSTATION

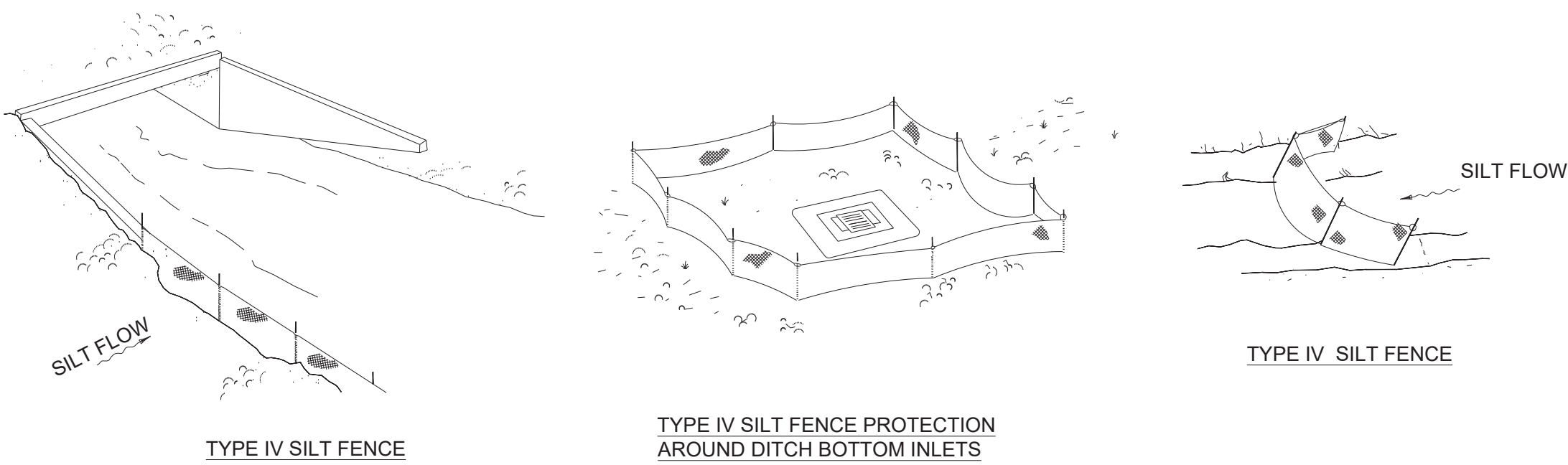
JEA PERMANENT UTILITY & TEMP. CONST. EASEMENT OVERVIEW

SCALE: AS NOTEDPROJECT DESIGN SEGMENT 20410

PROJECT NO. 8008430
DRAWING NO. ESMT-1
SHEET NO. 04 OF 13

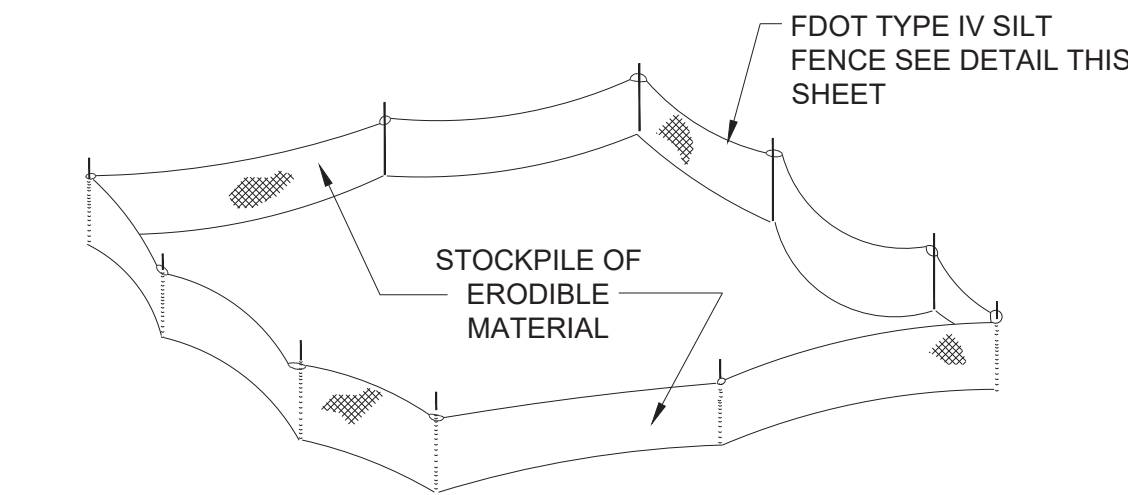
GENERAL NOTES FOR SOIL EROSION, SEDIMENT CONTROL, AND TREE PROTECTION:

1. ALL EROSION AND SEDIMENT CONTROL PRACTICES TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
2. ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN 30 DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE A TEMPORARY SEEDING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW, OR EQUIVALENT MATERIAL, AT A RATE OF TWO (2) TONS PER ACRE, ACCORDING TO STATE STANDARDS.
3. PERMANENT VEGETATION TO BE SEEDDED OR SODDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER GRADING. MULCH TO BE USED AS NECESSARY FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.
4. ALL WORK AND MATERIALS TO BE IN ACCORDANCE WITH THE FDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", LATEST EDITION, SECTIONS 104, 570, 575 AND 980 TO 986.
5. UNFILTERED DEWATERING IS NOT PERMITTED. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS DURING ALL DEWATERING OPERATIONS TO MINIMIZE SEDIMENT TRANSFER.
6. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE WILL BE SPRINKLED UNTIL THE SURFACE IS WET, TEMPORARY VEGETATION COVER SHALL BE ESTABLISHED OR MULCH SHALL BE APPLIED IN ACCORDANCE WITH STATE STANDARDS FOR EROSION CONTROL.
7. ALL SOIL WASHED, DROPPED, SPILLED OR TRACKED OUTSIDE THE LIMIT OF DISTURBANCE OR ONTO PUBLIC RIGHTS-OF-WAY WILL BE REMOVED IMMEDIATELY.
8. ANY AREAS USED FOR THE CONTRACTOR'S STAGING, INCLUDING BUT NOT LIMITED TO, TEMPORARY STORAGE OF STOCKPILED MATERIALS (E.G. CRUSHED STONE, QUARRY PROCESS STONE, SELECT FILL, EXCAVATED MATERIALS, ETC.), SHALL BE ENTIRELY PROTECTED BY A SILT FENCE ALONG THE LOW ELEVATION SIDE TO CONTROL SEDIMENT RUNOFF.
9. ADDITIONAL SEDIMENT AND EROSION CONTROL MEASURES MAY BE REQUIRED, DURING ANY PHASE OF DEVELOPMENT, AT THE DISCRETION OF THE JEA APPOINTED CONSTRUCTION INSPECTOR.
10. THE EROSION AND SEDIMENTATION CONTROLS SHOWN ON THE PLANS ARE THE MINIMUM REQUIRED. ADDITIONAL SEDIMENT AND EROSION CONTROL MEASURES MAY BE REQUIRED, DURING ANY PHASE OF DEVELOPMENT, AT THE DISCRETION OF THE JEA APPOINTED CONSTRUCTION INSPECTOR.
11. THE CONTRACTOR SHALL ENSURE THAT A FOREMAN OR SUPERVISOR WHO HAS BEEN CERTIFIED UNDER FLORIDA STORMWATER, EROSION AND SEDIMENTATION CONTROL INSPECTOR TRAINING PROGRAM IS AVAILABLE IN PERSON OR BY PHONE AT ALL TIMES DURING THE CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL DESIGNATE THAT PERSON OR PERSONS AT THE PRE-CONSTRUCTION MEETING AND THAT PERSON OR PERSONS MUST ATTEND THE PRE-CONSTRUCTION MEETING.
12. EROSION CONTROL MEASURES DEPICTED IN THE PLANS ARE LIMITED TO INLET PROTECTION AND SILT FENCES. THE INLET PROTECTION SHALL BE LIMITED TO INLETS WITHIN THE ACTIVE CONSTRUCTION LIMITS AND A MINIMUM OF TWO INLETS DOWNSTREAM OF THE ACTIVE CONSTRUCTION LIMITS. THE CONTRACTOR SHALL MONITOR THE EFFECTIVENESS OF SUCH INLET PROTECTION AND PROVIDE ADDITIONAL PROTECTION IF WARRANTED. NO SEDIMENTS ARE INTENDED TO ENTER THE CURB INLETS. THE CONTRACTOR SHALL CONDUCT AND MAINTAIN THE WORK IN SUCH CONDITION TO PROVIDE ADEQUATE DRAINAGE AT ALL TIMES AND SHALL MONITOR THE PERFORMANCE OF THE STORM WATER INLETS WHILE IMPEDED BY THE INLET PROTECTION. STREET FLOODING IS NOT TO BE INTRODUCED AS A RESULT OF THE INLET PROTECTION. SAFETY OF THE TRAVELING PUBLIC, AS RELATED TO THE ADEQUACY OF THE DRIVING SURFACE AS A RESULT OF STANDING STORMWATER RUNOFF CREATED BY THE INTRODUCTION OF INLET PROTECTION, IS THE RESPONSIBILITY OF THE CONTRACTOR.
13. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN A CLEAN WORK ZONE TO LIMIT THE RELEASE OF SEDIMENTS INTO STORMWATER COLLECTION SYSTEMS AND TO LIMIT THE TRACKING OF MATERIALS BEYOND THE ACTIVE WORK LIMITS. THE CONTRACTOR IS REQUIRED TO MECHANICALLY SWEEP THE ACTIVE CONSTRUCTION LIMITS TO REMOVE SEDIMENTS AND LIKE MATERIALS FROM THE CORRIDOR AT THE END OF EACH WORKDAY. ADDITIONAL OR MORE FREQUENT SWEEPING MAY BE REQUIRED BY THE JEA APPOINTED CONSTRUCTION INSPECTOR.
14. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL TREES AND LANDSCAPING ON ADJACENT PROPERTIES, AND WILL BE SOLELY LIABLE FOR DAMAGE TO VEGETATION ON PROPERTIES ADJACENT TO CONSTRUCTION WORK ZONES. ALL TREES WITHIN THE LIMITS OF CONSTRUCTION ARE TO BE PROTECTED UNLESS SPECIFICALLY IDENTIFIED ON THE PLANS TO BE REMOVED. ALL TREES OUTSIDE THE CONSTRUCTION WORK ZONE ARE TO BE PROTECTED TO THE MAXIMUM EXTENT PRACTICABLE. TREE BARRICADES WILL BE INSTALLED AND MAINTAINED AROUND ALL TREES TO BE PROTECTED OR AS DIRECTED BY THE ENGINEER/JEA APPOINTED CONSTRUCTION INSPECTOR. THE CONTRACTOR SHALL EMPLOY A CERTIFIED ARBORIST TO MITIGATE IMPACTS TO TREES AS A RESULT OF CONSTRUCTION ACTIVITIES AND SHALL COORDINATE THESE TREE-RELATED ISSUES WITH THE JEA APPOINTED CONSTRUCTION INSPECTOR. NO TRENCHING OR EXCAVATION SHALL BE ALLOWED WITHIN THE CRITICAL PROTECTION ZONE OF ANY PROTECTED TREE, EXCEPT WHERE DEBITS HAVE BEEN NOTED ON THE PLANS OR MITIGATION HAS BEEN PERFORMED. ANY TREE-RELATED DAMAGE DUE TO CONSTRUCTION SHALL BE PAID BY THE CONTRACTOR.
15. ALL DISTURBED AREAS, EXCEPT FOR AREAS THAT ARE LANDSCAPED, PAVED, OR OTHERWISE DESIGNATED, ARE TO BE SODDED. EXISTING GRASSED AREAS THAT ARE DISTURBED WILL BE SODDED WITH THE SAME GRASS TYPE AS EXISTING, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. CENTIPEDE SOD WILL BE USED FOR ALL DISTURBED AREAS NOT CURRENTLY GRASSED. WHERE SOD IS PLACED ON SLOPES OF 2:1 OR STEEPER, AN EROSION MAT WILL BE INSTALLED BENEATH THE SOD, AND THE SOD WILL BE STAKED. AREAS THAT ARE SODDED SHALL BE FERTILIZED AT AN APPLICATION RATE OF 450 LBS./AC AND WILL BE WATERED AT A RATE OF 5,000 GAL./AC. NO SEPARATE PAYMENT WILL BE MADE AND ALL COSTS FOR FERTILIZING, WATERING, STAKING, AND FURNISHING AND INSTALLING EROSION MAT SHALL BE CONSIDERED INCIDENTAL TO OTHER PAY ITEMS IN THE CONTRACT.
16. A DEWATERING PLAN IS REQUIRED AND SHALL DETAIL THE MEASURES TO BE EMPLOYED TO LOWER THE GROUNDWATER TABLE AND/OR TO DIVERT SURFACE WATER DURING EXCAVATION AND CONSTRUCTION INCLUDING THE INSTALLATION AND MAINTENANCE OF ALL DEVICES TO BE USED DURING EACH PHASE OF CONSTRUCTION TO CONTROL EROSION AND THE TRANSPORTATION OF ERODED MATERIALS OFF SITE. TRENCH SHEETING AND BRACING SHALL BE ADEQUATE TO PREVENT CAVE-IN OF TRENCH WALLS, SUBSIDENCE OF AREAS ADJACENT TO THE TRENCH, DAMAGE TO UTILITIES, AND SLOUGHING OF THE BASE OF THE EXCAVATION DUE TO WATER SEEPAGE. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT ALL DEWATERING ACTIVITIES ADHERE TO ALL LOCAL, STATE AND FEDERAL REGULATIONS. IT IS THE CONTRACTORS RESPONSIBILITY FOR THE ADEQUACY OF ANY SHEETING AND BRACING. THE COST OF DEWATERING, SHEETING AND BRACING IS CONSIDERED INCIDENTAL TO THE PAY ITEMS IN THE CONTRACT. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
17. PAYMENT FOR PREPARING AND SUBMITTING THE DEWATERING PLAN IS CONSIDERED INCIDENTAL TO THE PAY ITEMS IN THE CONTRACT. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
18. ALL DISTURBED AREAS TO BE LEFT IDLE LONGER THAN 14 DAYS MUST BE STABILIZED WITH QUICK GROW GRASS SEED AND MULCH.



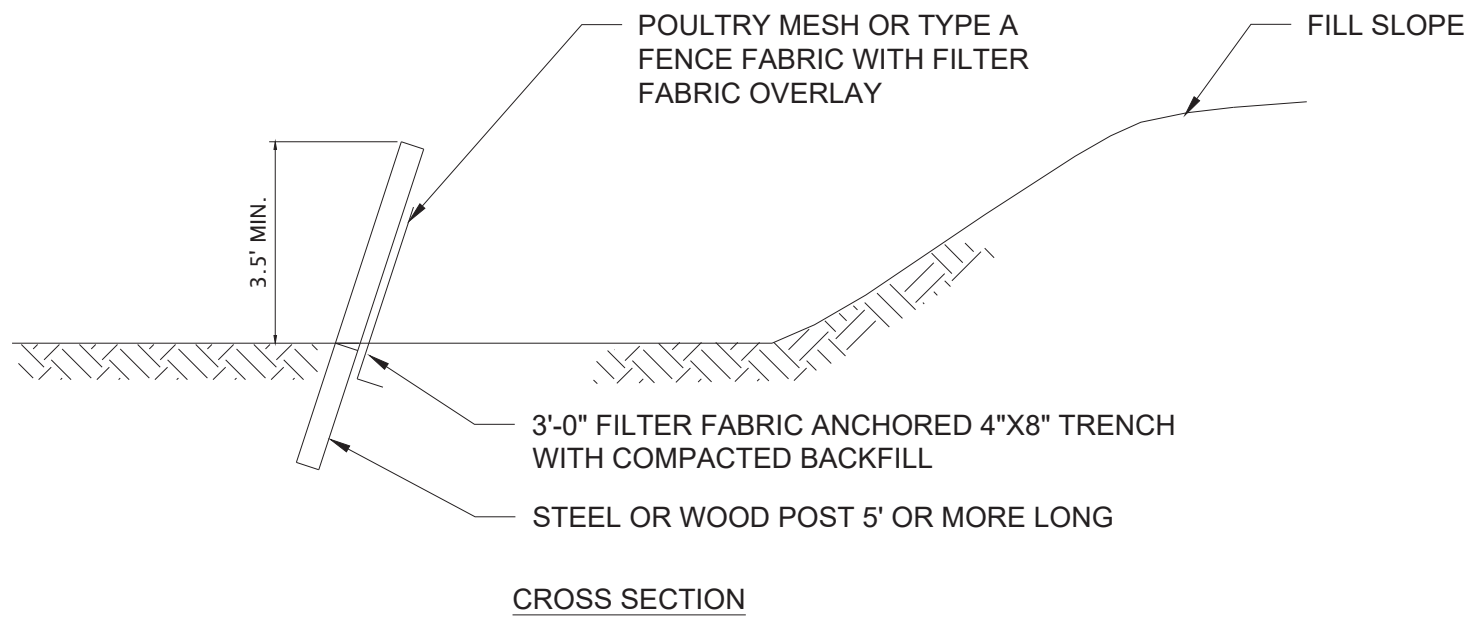
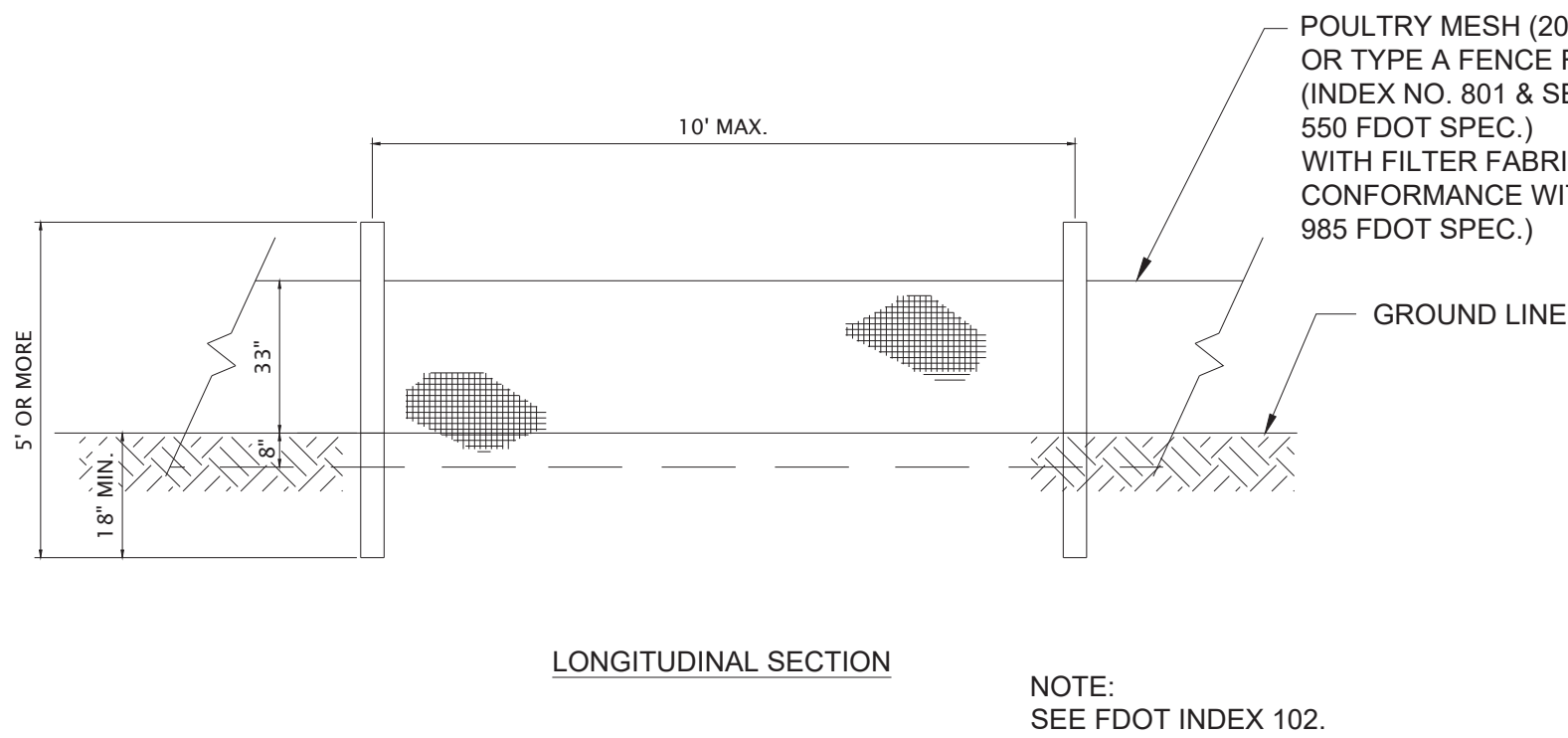
A SILT FENCE APPLICATIONS

DO NOT DEPLOY IN A MANNER THAT SILT FENCES WILL ACT AS A DAM ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE USED AT UPLAND LOCATIONS AND TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.

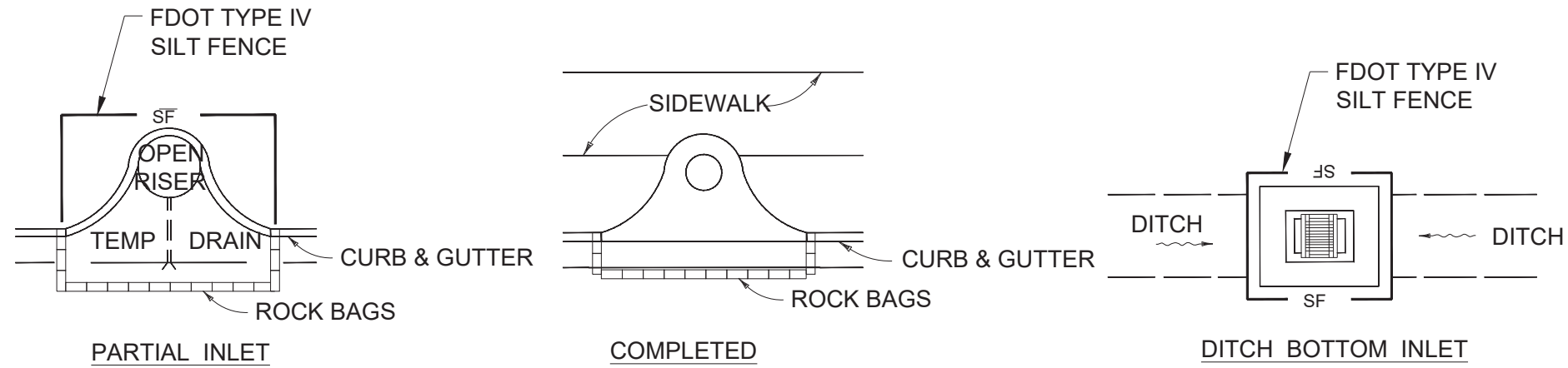


NOTE: THE STORAGE OF ALL MATERIAL SHALL BE OUTSIDE THE 100-YEAR FLOOD PLAIN.

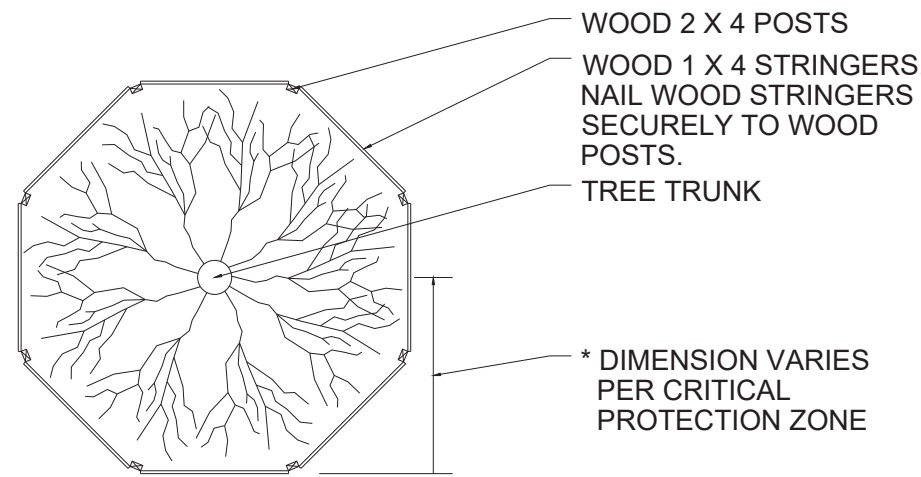
B MATERIAL STOCKPILE DETAIL



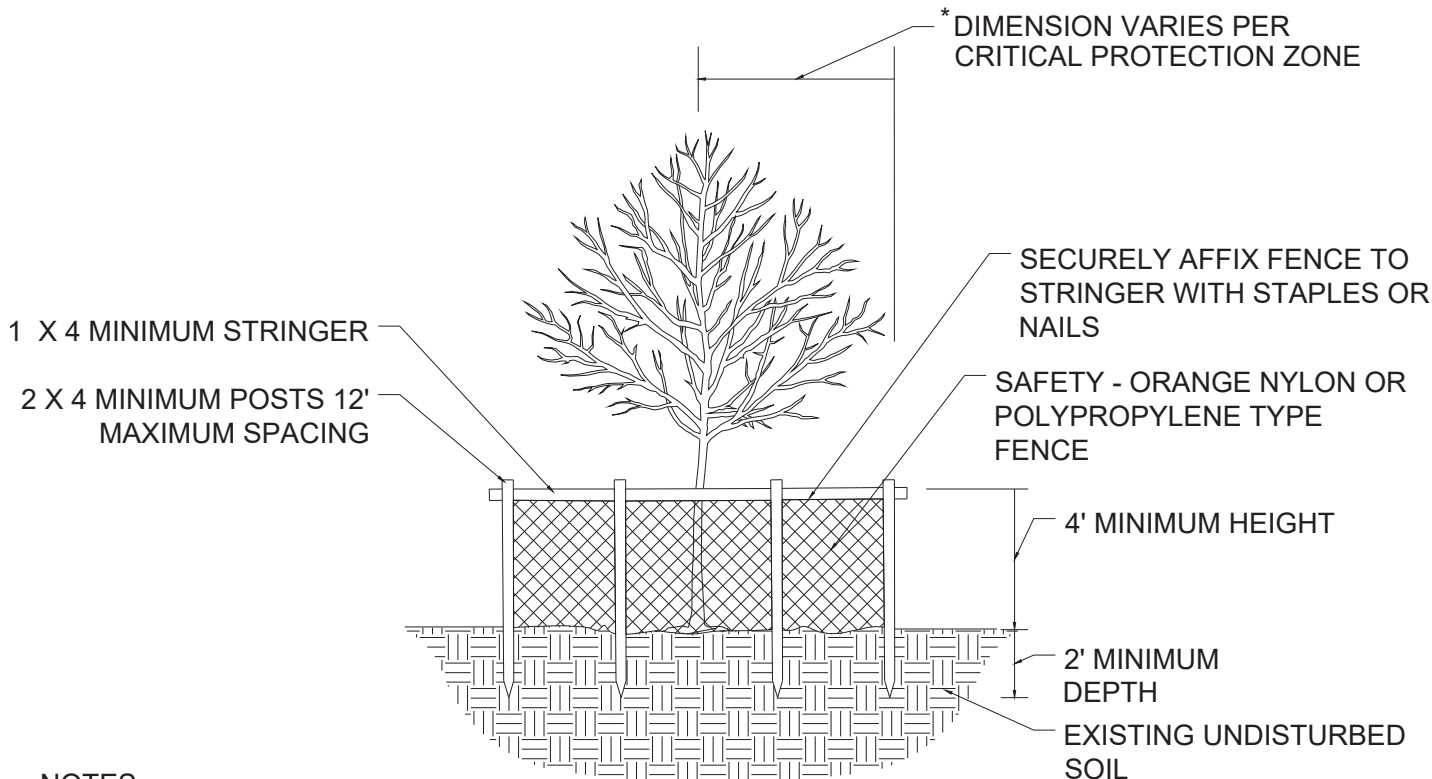
C TYPE IV SILT FENCE



D INLET PROTECTION



NOTE: FOR GROUPS OF TREES, PLACE BARRICADES BETWEEN TREES AND CONSTRUCTION ACTIVITY.



- NOTES:
1. CRITICAL PROTECTION ZONE: THE AREA SURROUNDING A TREE WITHIN A CIRCLE DESCRIBED BY A RADIUS OF ONE FOOT FOR EACH INCH OF THE TREE TRUNK DIAMETER AT 54" ABOVE FINISHED GRADE. FOR GROUPS OF TREES, PLACE BARRICADES BETWEEN TREES AND CONSTRUCTION ACTIVITY.
2. TREE PROTECTION BARRICADES SHALL BE LOCATED TO PROTECT A MINIMUM OF 75% OF THE CRITICAL PROTECTION ZONE.

E TREE PROTECTION

PURSUANT TO A.A.N. STANDARDS CALIPER MEASUREMENTS SHALL BE MADE 6 INCHES ABOVE GROUND LEVEL (ROOTBALL) UP TO AND INCLUDING 4 INCH CALIPER; 12 INCHES ABOVE GROUND LEVEL FOR LARGER SIZES.

("DUCKBILL" GUYING SYSTEM IS AN ACCEPTABLE ALTERNATIVE TO BELOW)

PLANT SO THAT TOP OF ROOT BALL IS EVEN WITH THE FINISHED GRADE

FLAG GUYING WIRES WITH SAFETY ORANGE COLORED SURVEYOR'S FLAGGING TAPE

MAINTAIN GUYING & SAFETY FLAGS FOR ONE YEAR; THEN REMOVE

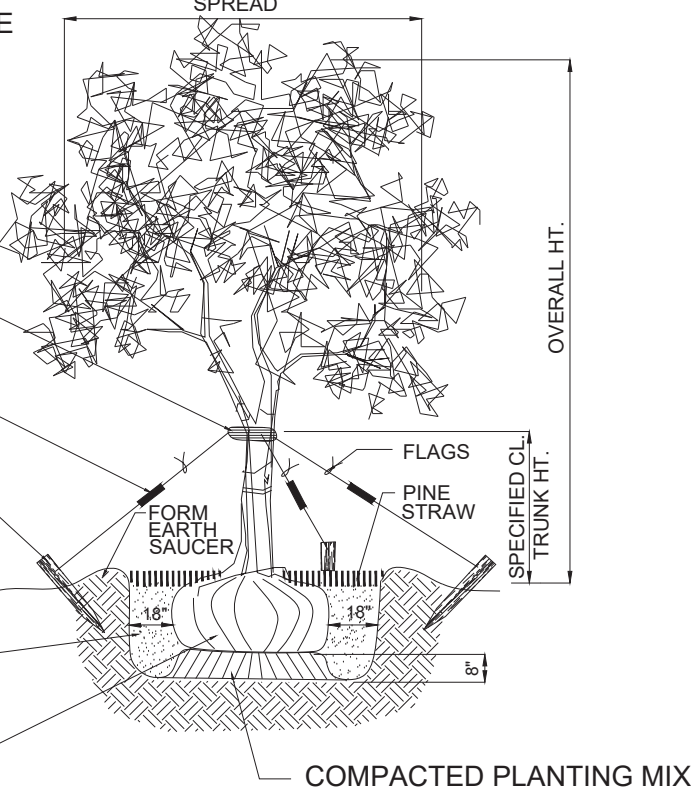
RUBBER HOSE 1" DIA. (8" MIN.) TO PROTECT BARK FROM WIRE

3) GUYING WIRES 2 STRAND TWIST 12 GAUGE WIRE W/ TURNBUCKLE

3) 2"x4"x24" PRESSURE TREATED STAKES - TOP OF STAKE ABOVE GROUND PAINT W/SAFETY ORANGE HIGH GLOSS PAINT

SPECIFIED PLANTING MIX WATER & TAMP TO REMOVE AIR POCKETS

REMOVE CONTAINER



TREE TRUNK DIAMETER	SETUP (SINGLE/DOUBLE)	WATER CAPACITY (PER BAG)	FILLS REQ'D PER WEEK
2 TO 3 INCH	SINGLE BAG	14.5 GALLONS	2 FILLS PER WEEK
4 TO 5 INCH	DOUBLE BAG	23.5 GALLONS	1 FILL PER WEEK

F TREE PLANTING

NO.	REVISION	DATE	BY	CH'D	APP'D		REVISION	DATE	BY	CH'D	APP'D	ENGINEERING	RECORD	
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS							STATUS	BY	DATE
												ASSIGNED	O&M	10/01/22
												DESIGNED	DLC/MTS	-
												DRAWN	DLC	-
												CHECKED	MTS	11/18/24
												APP'D	MTS	11/18/24



69KV CIRCUIT 690 UNDERGROUND RECONDUCTOR
HOGAN RD., SANS SOUCI SUBSTATION

STANDARD DETAILS

SCALE: N.T.S.

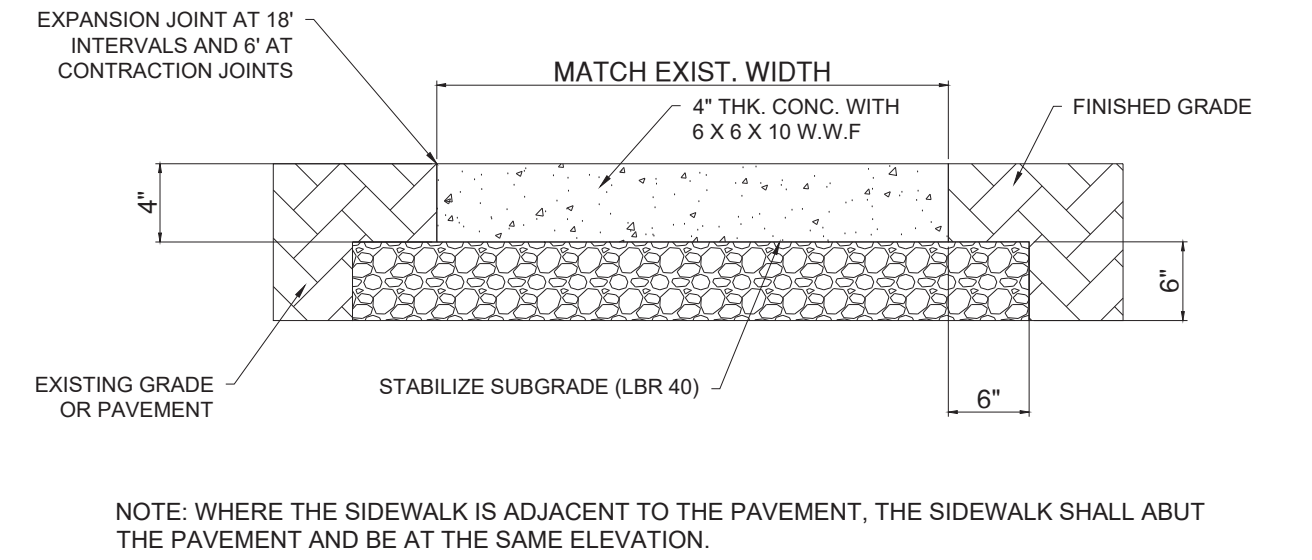
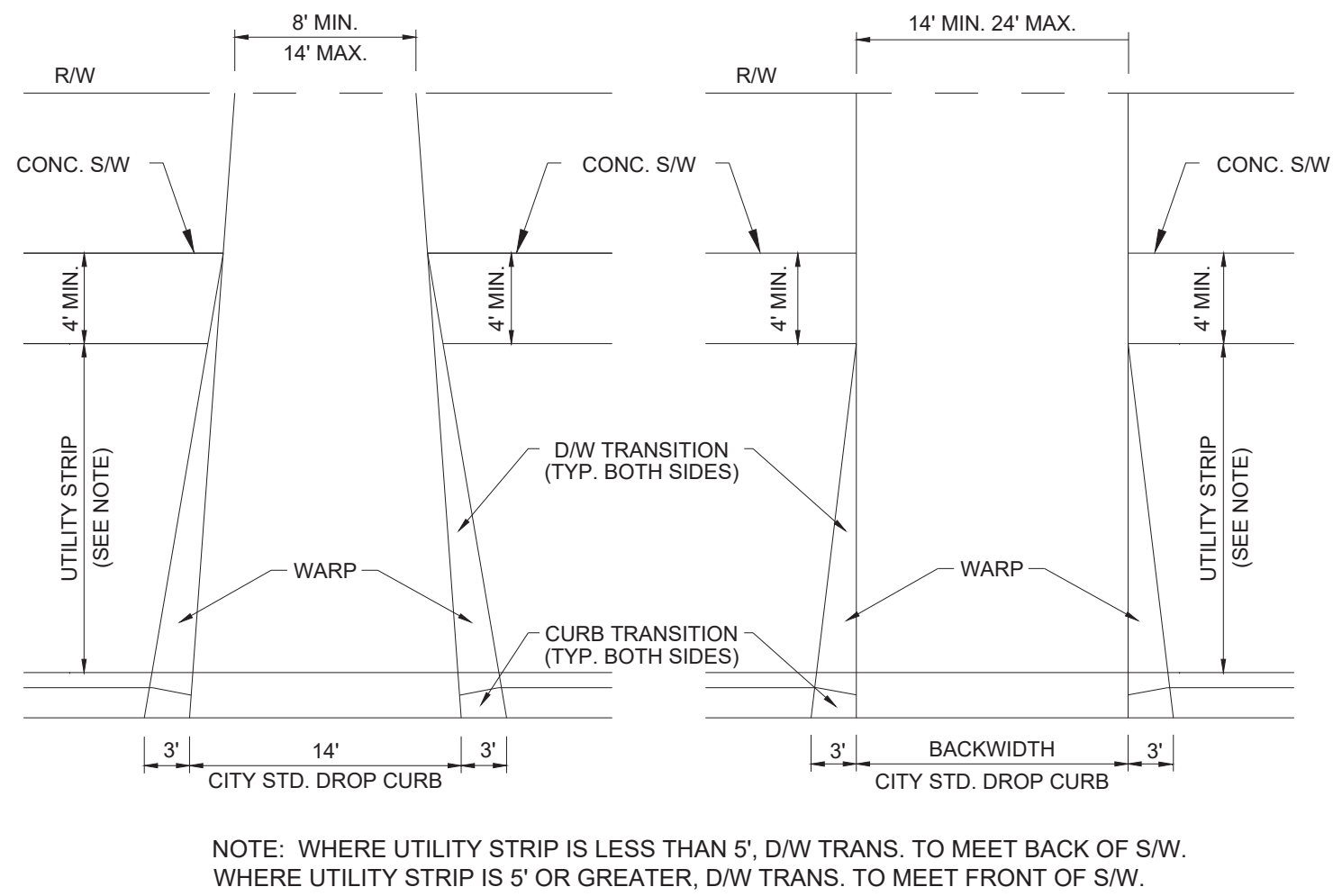
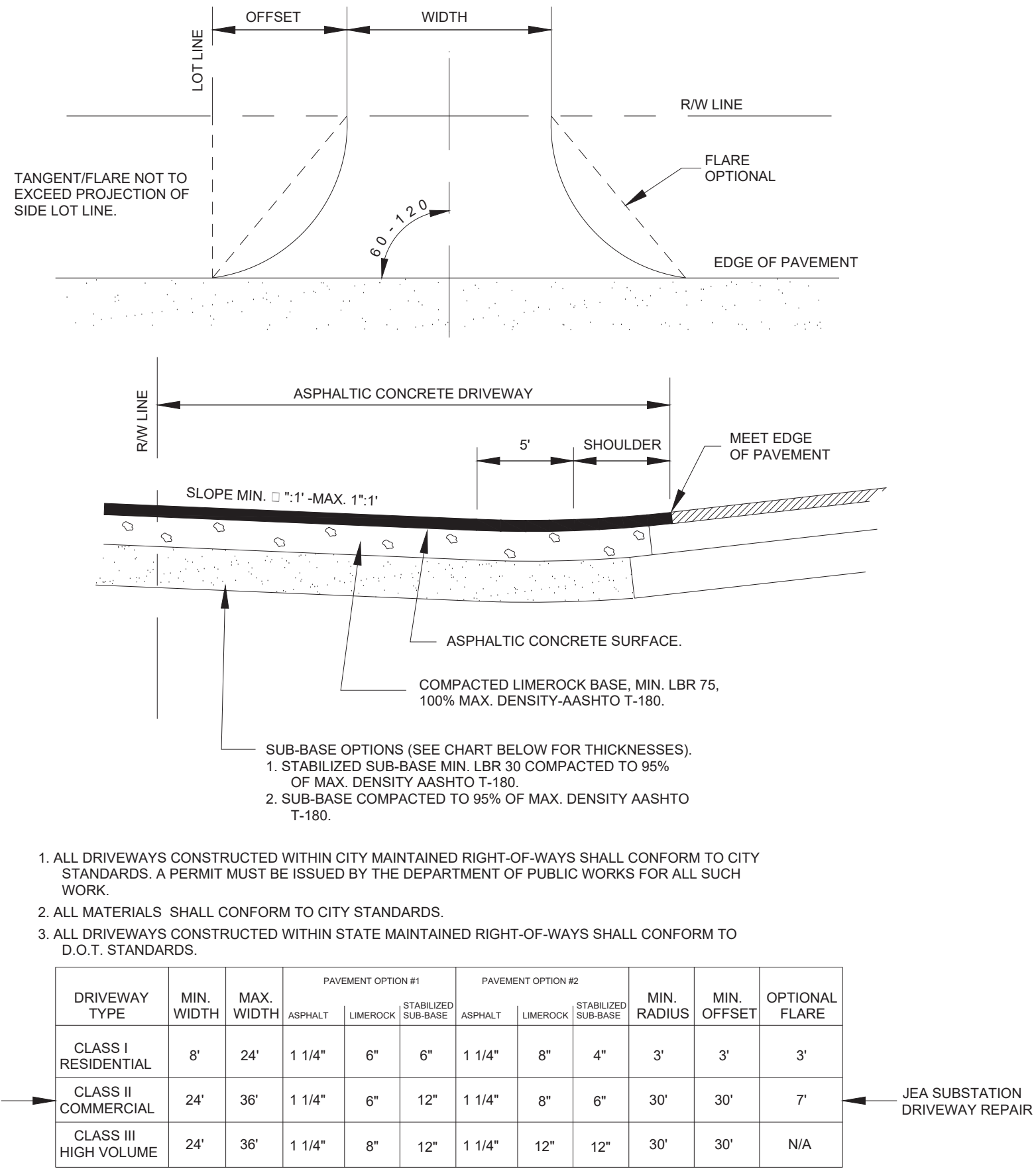
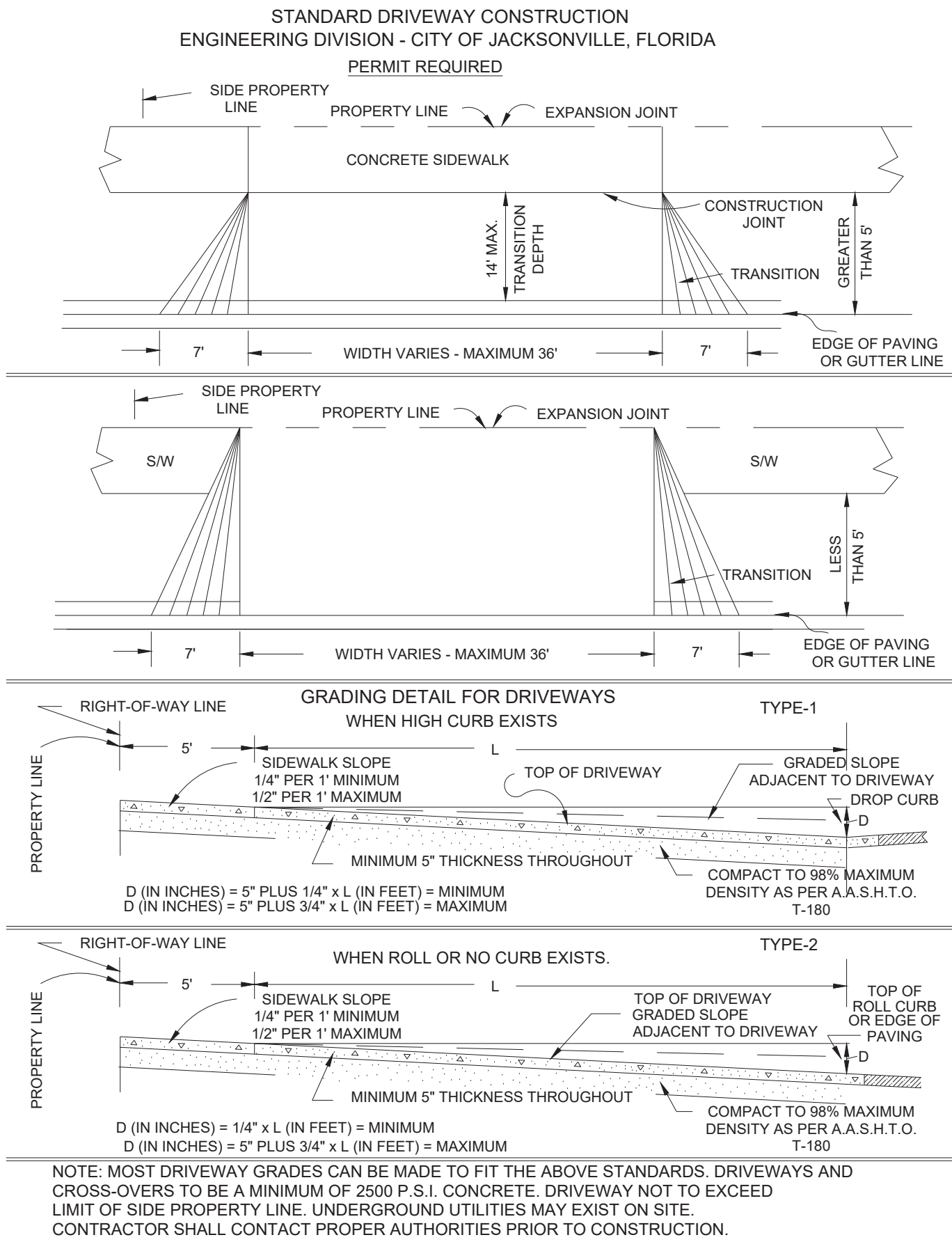
PROJECT DESIGN SEGMENT 20410

BID SET: 11/08/24

PROJECT NO.
8008430

DRAWING NO.
CD-1

SHEET NO.
05 OF 15

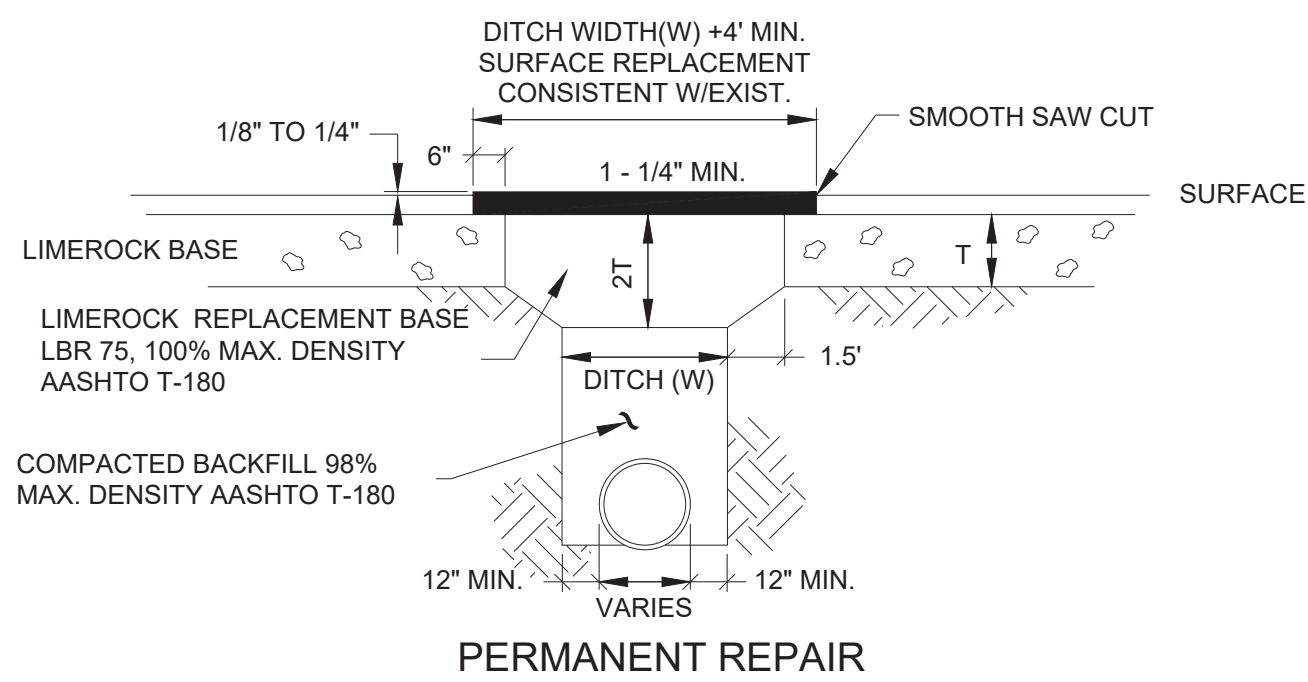
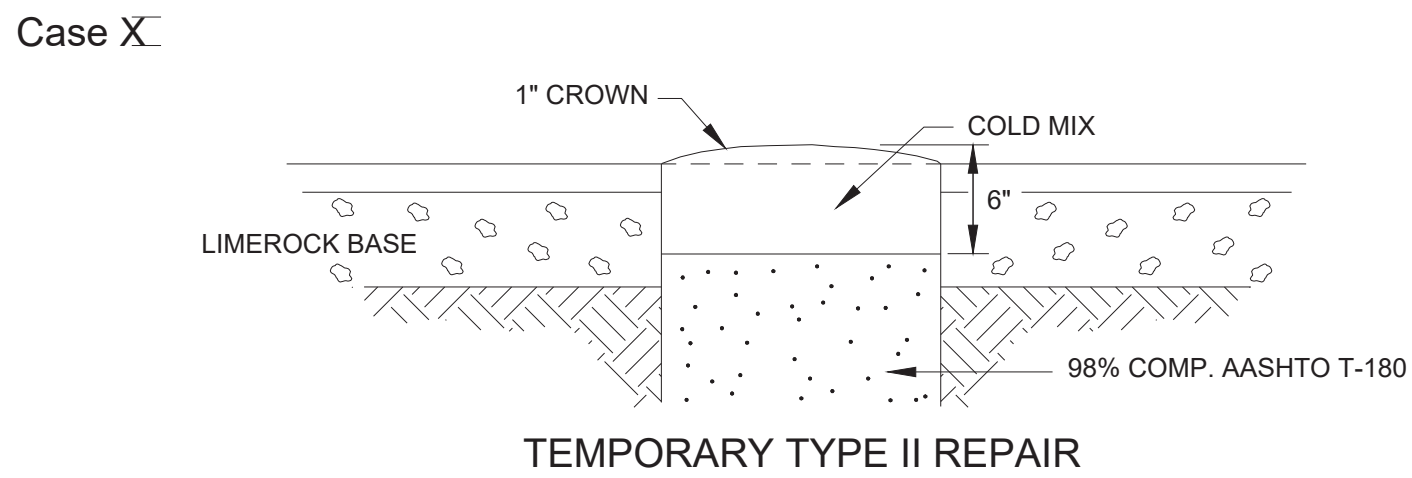
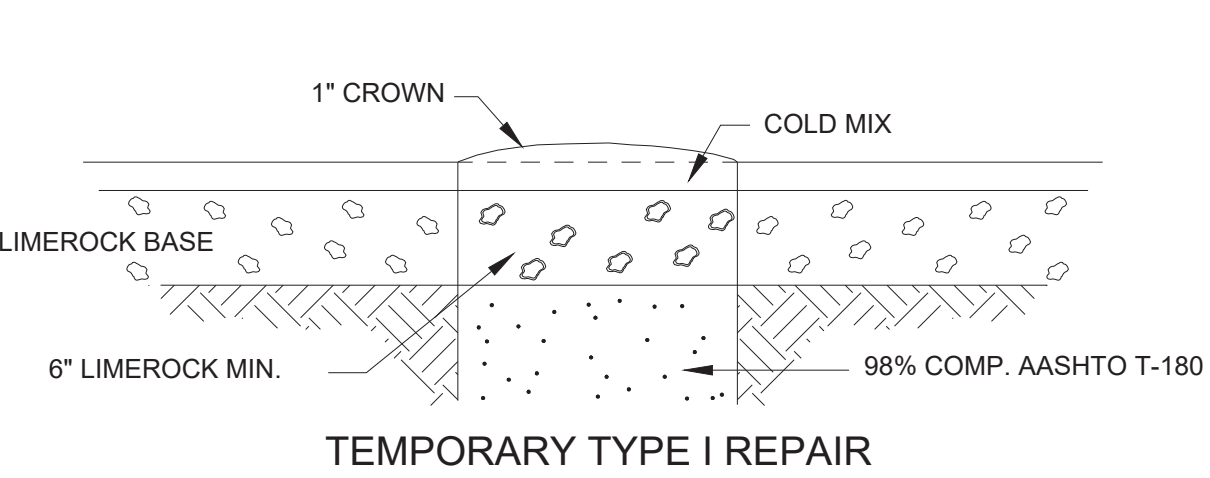


A CLASS II COMMERCIAL CONCRETE DRIVEWAY

IN STATE ROAD RIGHT-OF-WAY
SEPTEMBER 2003
PLATE P-206

B STANDARD ASPHALTIC CONCRETE DRIVEWAY

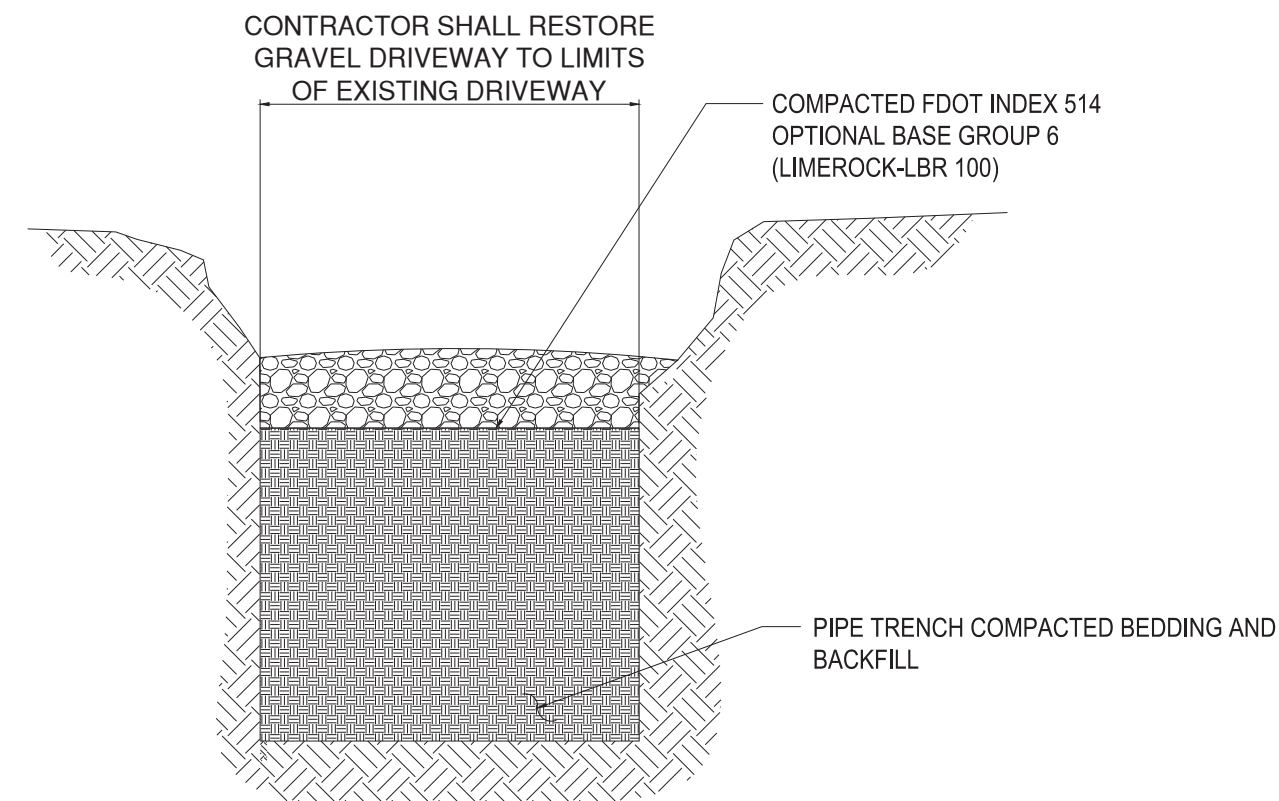
OCTOBER 1997
PLATE P-204



NOTE: IN SOME CASES PORTLAND CEMENT CONCRETE MAY BE CONSIDERED OR REQUIRED BY CITY ENGINEER FOR SURFACE REPLACEMENT.

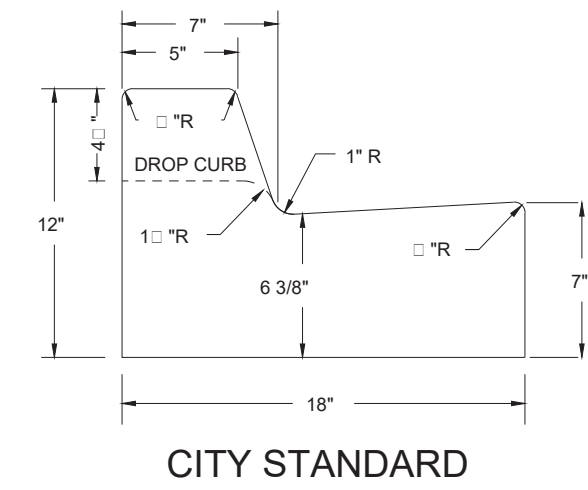
E STANDARD TRENCH AND PAVING REPAIR DETAILS

SEPTEMBER 1996
PLATE P-409



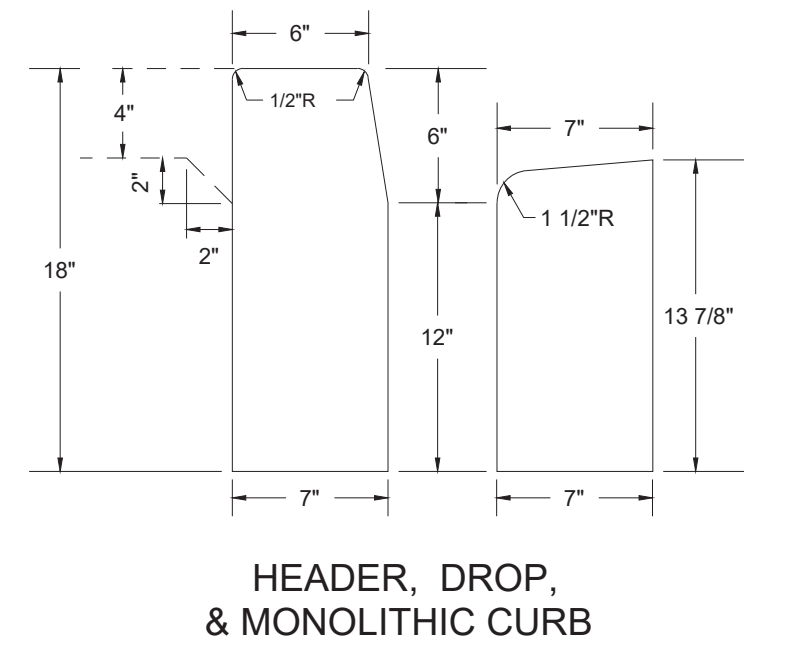
F GRAVEL DRIVE RESTORATION

NTS



CONCRETE QUANTITIES

CITY STANDARD CURB	0388889	CU. YD./LIN. FT.
STANDARD DROP CURB	0322222	CU. YD./LIN. FT.
MEDIAN CURB	0411111	CU. YD./LIN. FT.
MIAMI CURB	0325926	CU. YD./LIN. FT.
HEADER CURB	0314815	CU. YD./LIN. FT.
HEADER DROP CURB	0244444	CU. YD./LIN. FT.



G CITY STANDARD CURB TEMPLATES

APRIL 2009
PLATE P-301

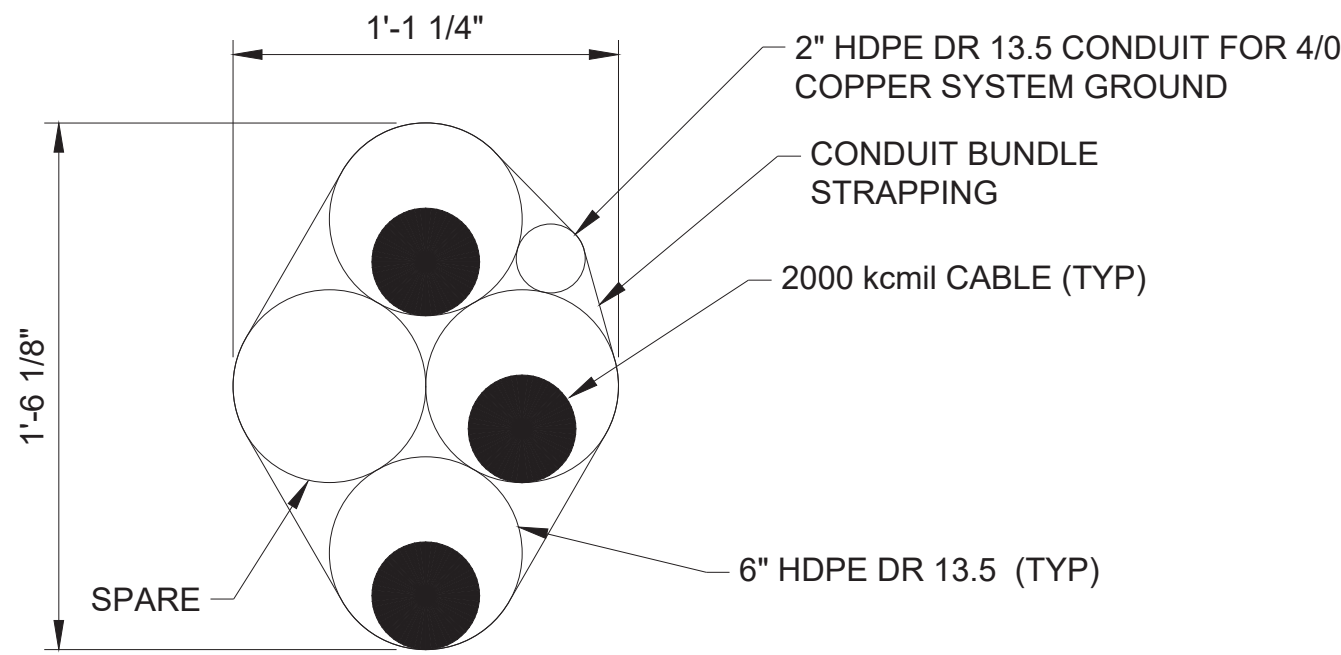
NO.	REVISION	DATE	BY	CH'D	APP'D		REVISION	DATE	BY	CH'D	APP'D	ENGINEERING	RECORD	
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS							STATUS	BY	DATE
												ASSIGNED	O&M	10/01/22
												DESIGNED	DLC/MTS	-
												DRAWN	DLC	-
												CHECKED	MTS	11/18/24
												APP'D	MTS	11/18/24



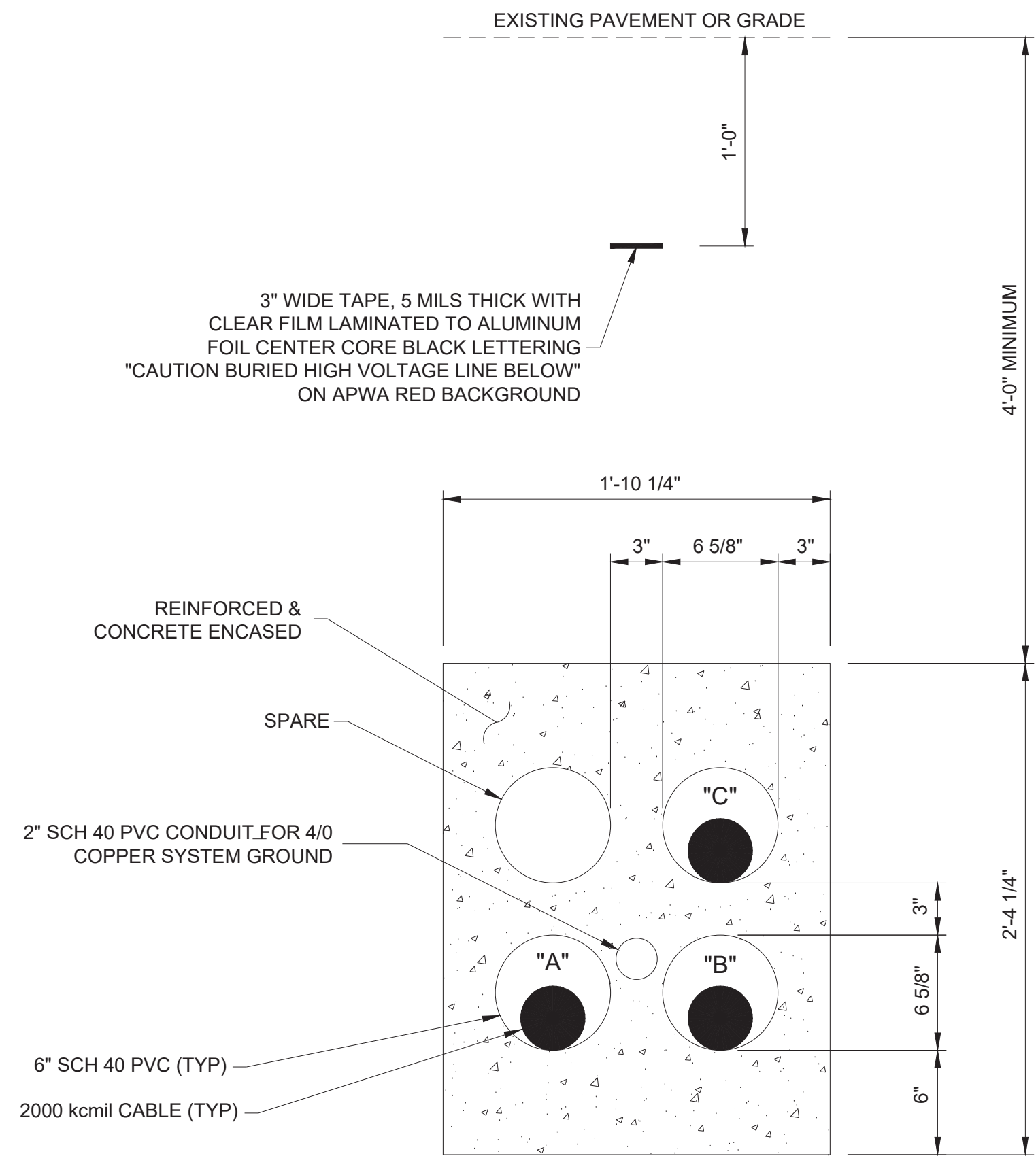
69KV CIRCUIT 690 UNDERGROUND RECONDUCTOR HOGAN RD., SANS SOUCI SUBSTATION	
STANDARD DETAILS	
SCALE: AS NOTED	PROJECT DESIGN SEGMENT 20410

PROJECT NO. 8008430
DRAWING NO. CD-2
SHEET NO. 06 OF 13

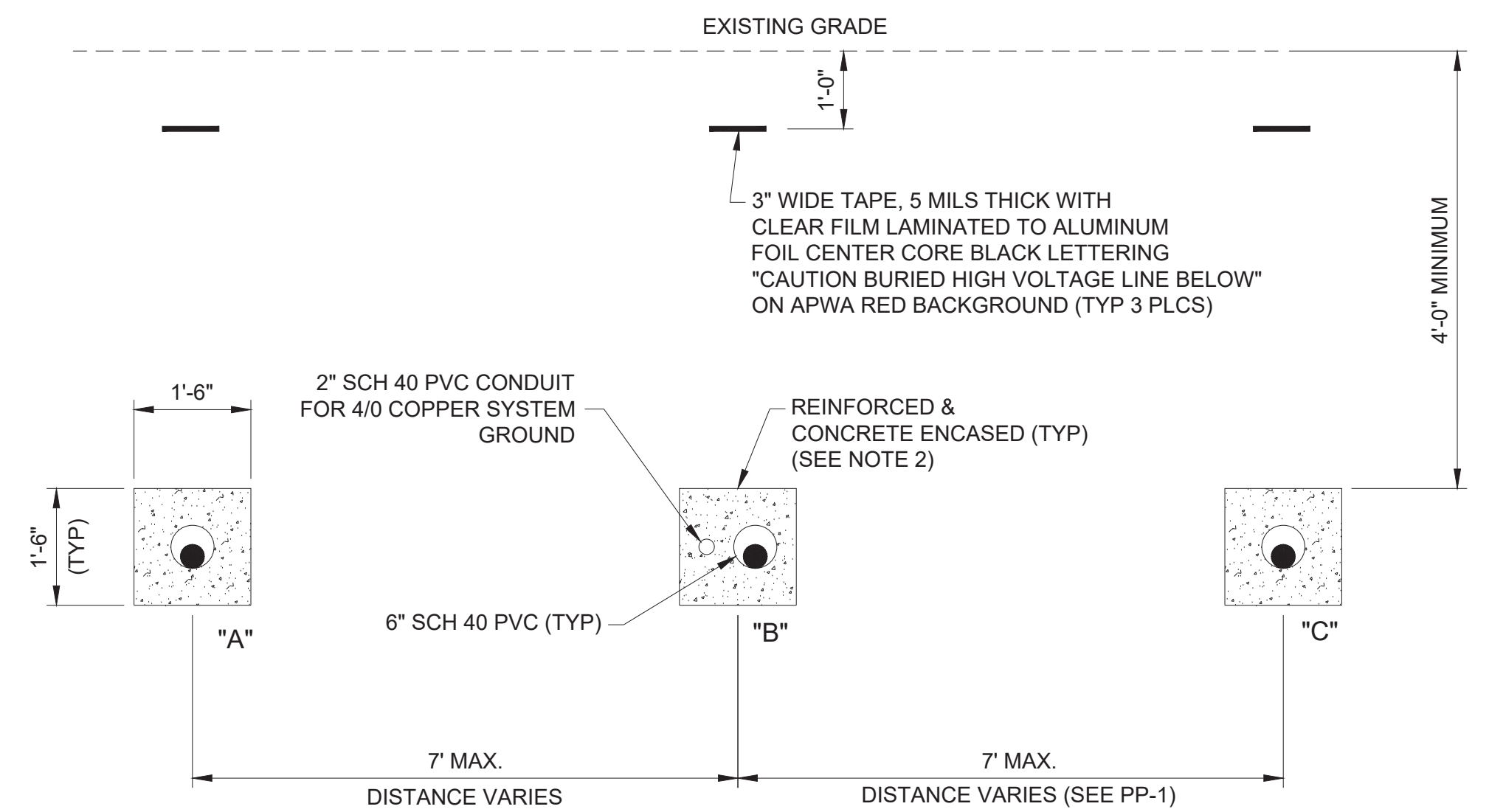
BID SET: 11/08/24



A HDD SECTION (TYP)
PP-1 NTS



B OPEN CUT TRENCH SECTION (TYP)
PP-1 NTS (LOOKING NORTH)



C SUBSTATION RISER TRENCH SECTION
- NTS (LOOKING NORTH)

NOTE:

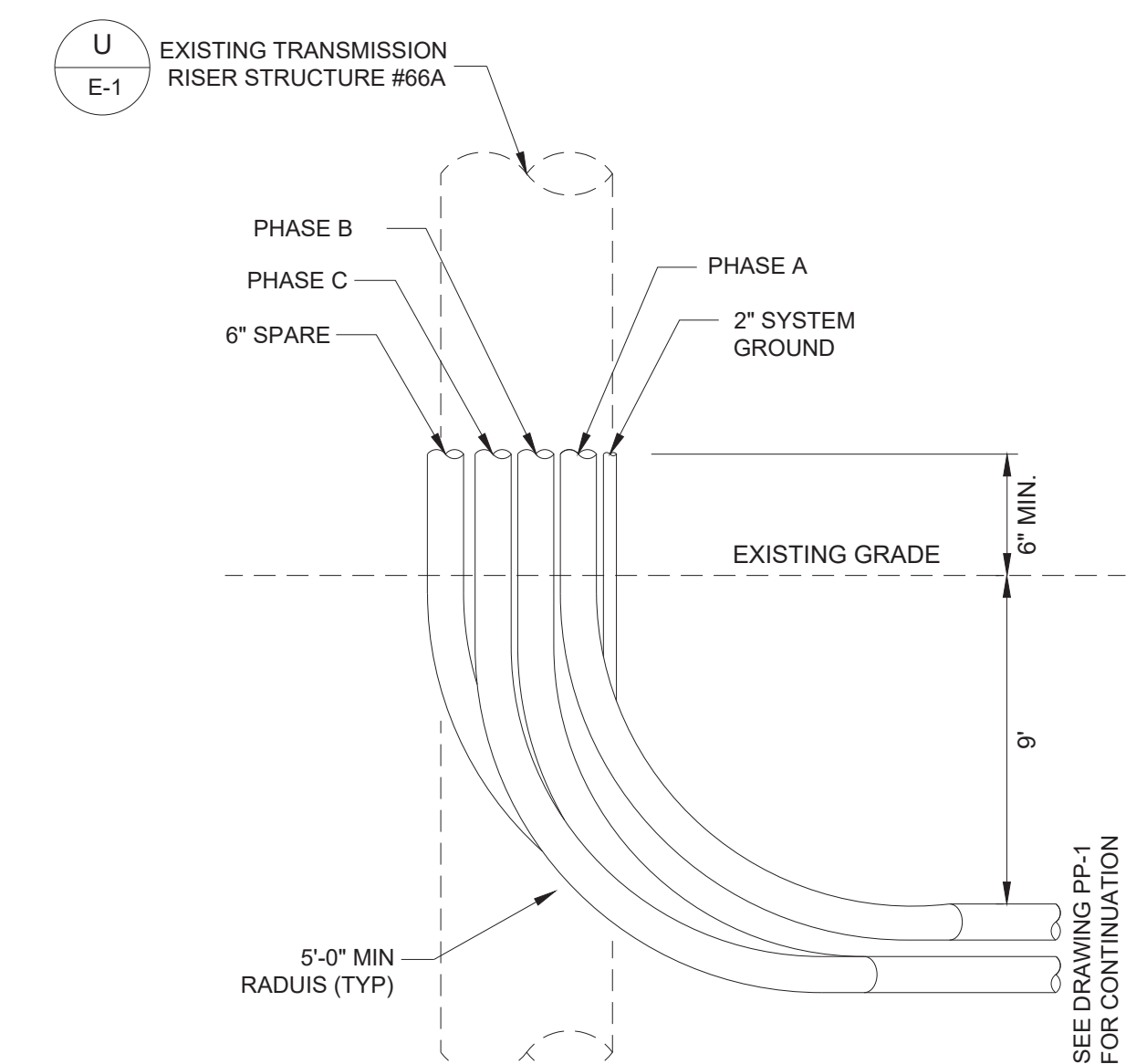
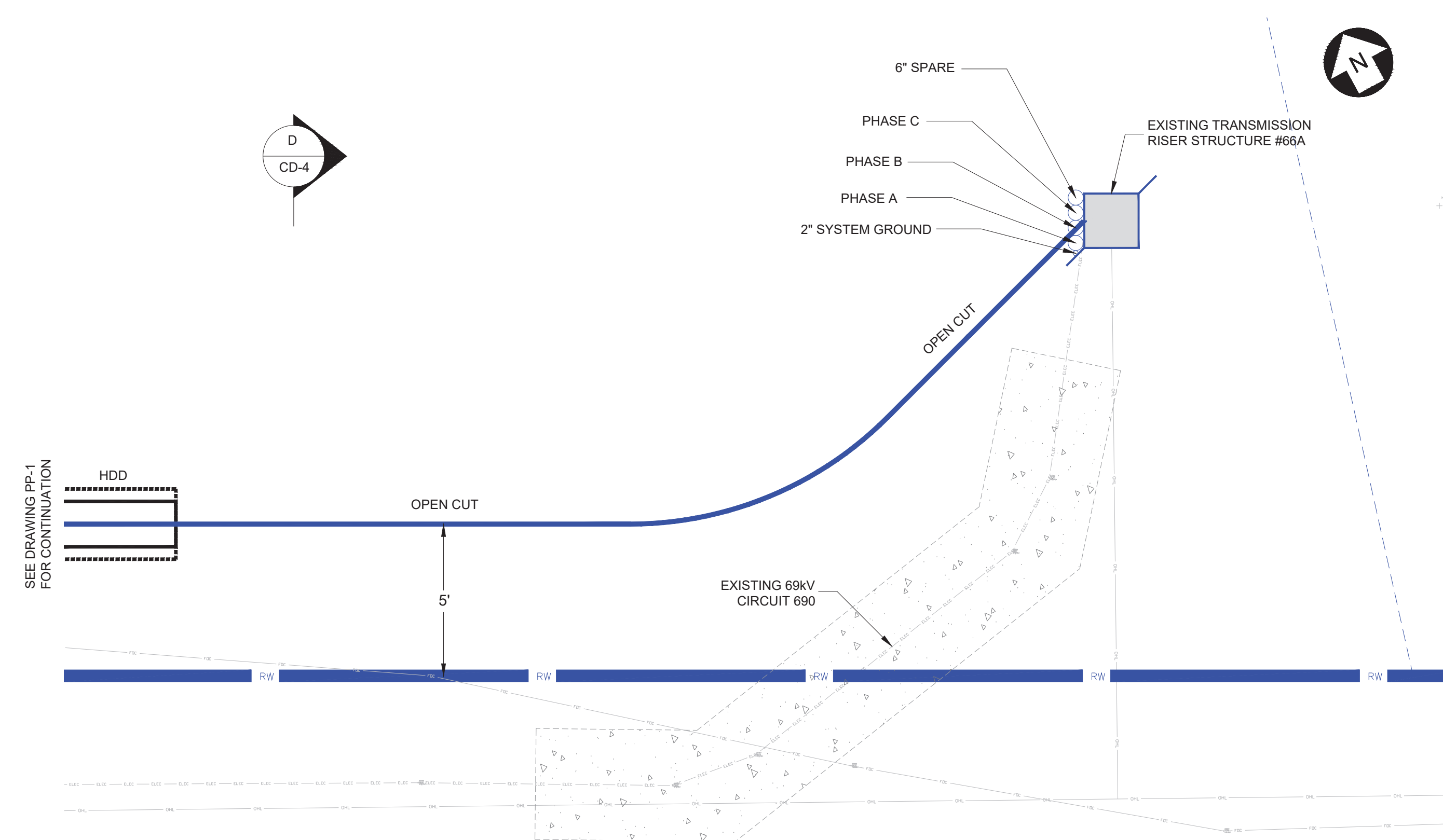
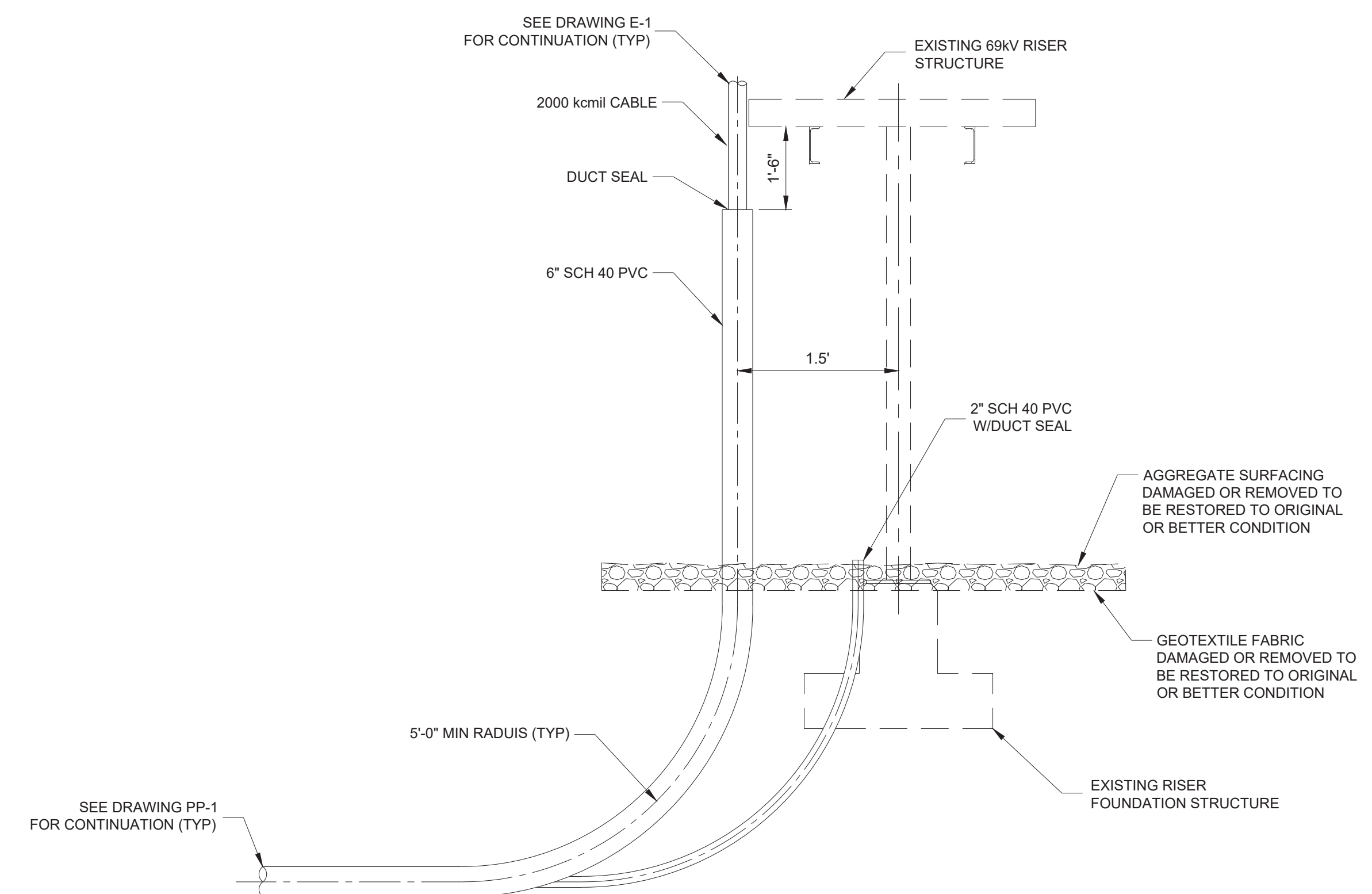
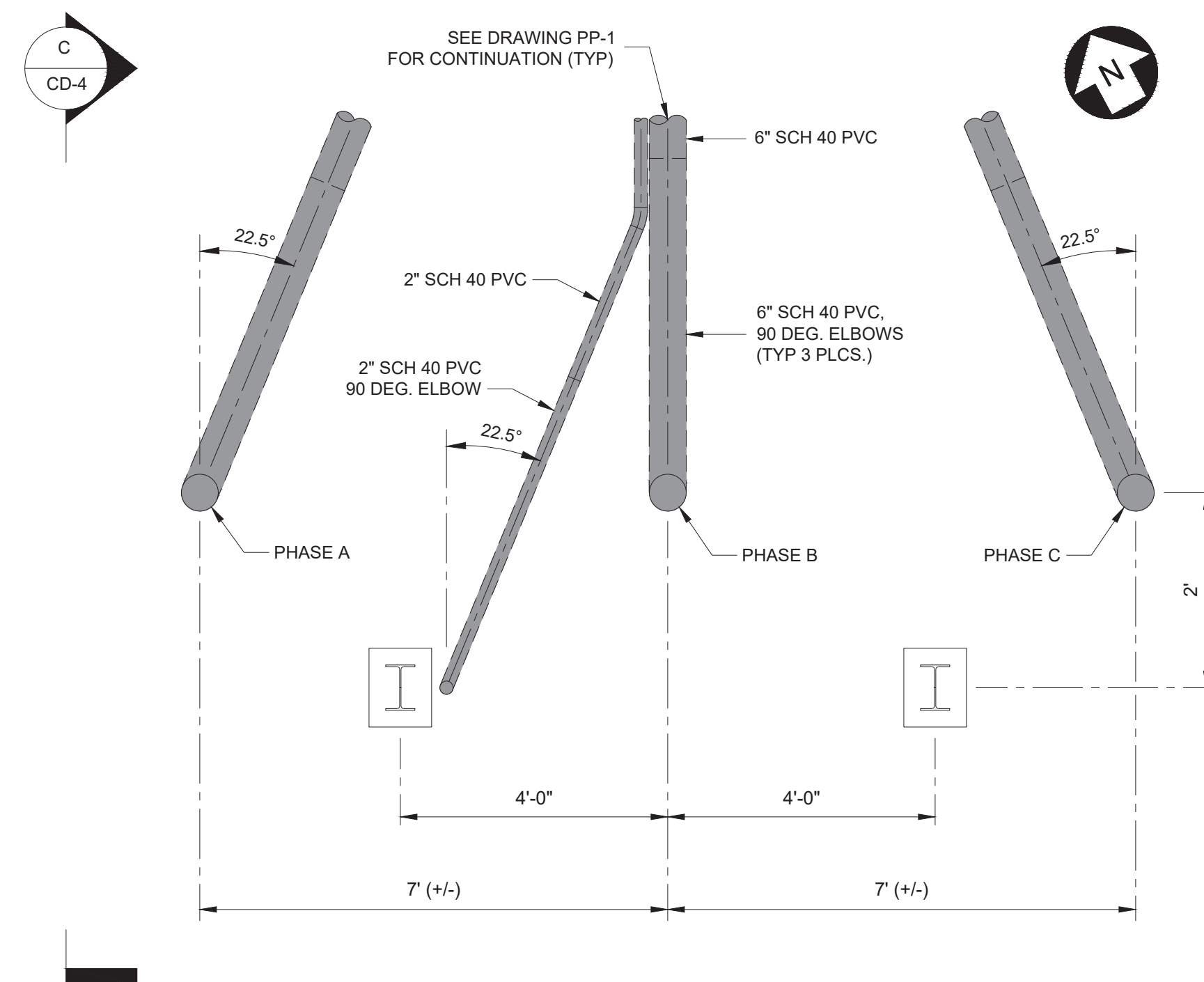
1. THE HDPE CONDUITS (4-6\" & 1-2\") SHALL BE BUNDLED WITH HIGH PERFORMANCE 3/4\" x 0.04\" EMBOSSED POLYESTER STRAPPING WITH A MINIMUM BREAK STRENGTH OF 1800 LBS. THE STRAPPING SHALL BE TENSIONED TO NO MORE THAN 70 PERCENT OF ITS BREAK STRENGTH (1250 LBS.) THE STRAPPING SHALL BE FRICTION WELD JOINED WITH A POWER STRAPPING TOOL TO PROVIDE HIGH JOINT SEAL EFFICIENTLY WITH CONSTANT TENSION. THE HDPE CONDUIT BUNDLE SHALL BE STRAPPED 5 FEET ON CENTER FOR THE FIRST 100 FEET OF HDD PULLBACK AND 20 FEET ON CENTER THEREAFTER.
2. CONCRETE ENCASEMENT SHALL BE UTILIZED ON ALL CONDUITS WITHIN 6'-0\" OF FINISHED GRADE.

BID SET: 11/08/24

NO.	REVISION	DATE	BY	CH'D	APP'D		REVISION	DATE	BY	CH'D	APP'D	ENGINEERING RECORD		
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS							STATUS	BY	DATE
												ASSIGNED	O&M	10/01/22
												DESIGNED	DLC/MTS	-
												DRAWN	DLC	-
												CHECKED	MTS	11/18/24
												APP'D	MTS	11/18/24



69KV CIRCUIT 690 UNDERGROUND RECONDUCTOR HOGAN RD., SANS SOUCI SUBSTATION STANDARD DETAILS		PROJECT NO. 8008430
		DRAWING NO. CD-3
		SHEET NO. 07 OF 13
SCALE: N.T.S.	PROJECT DESIGN SEGMENT 20410	



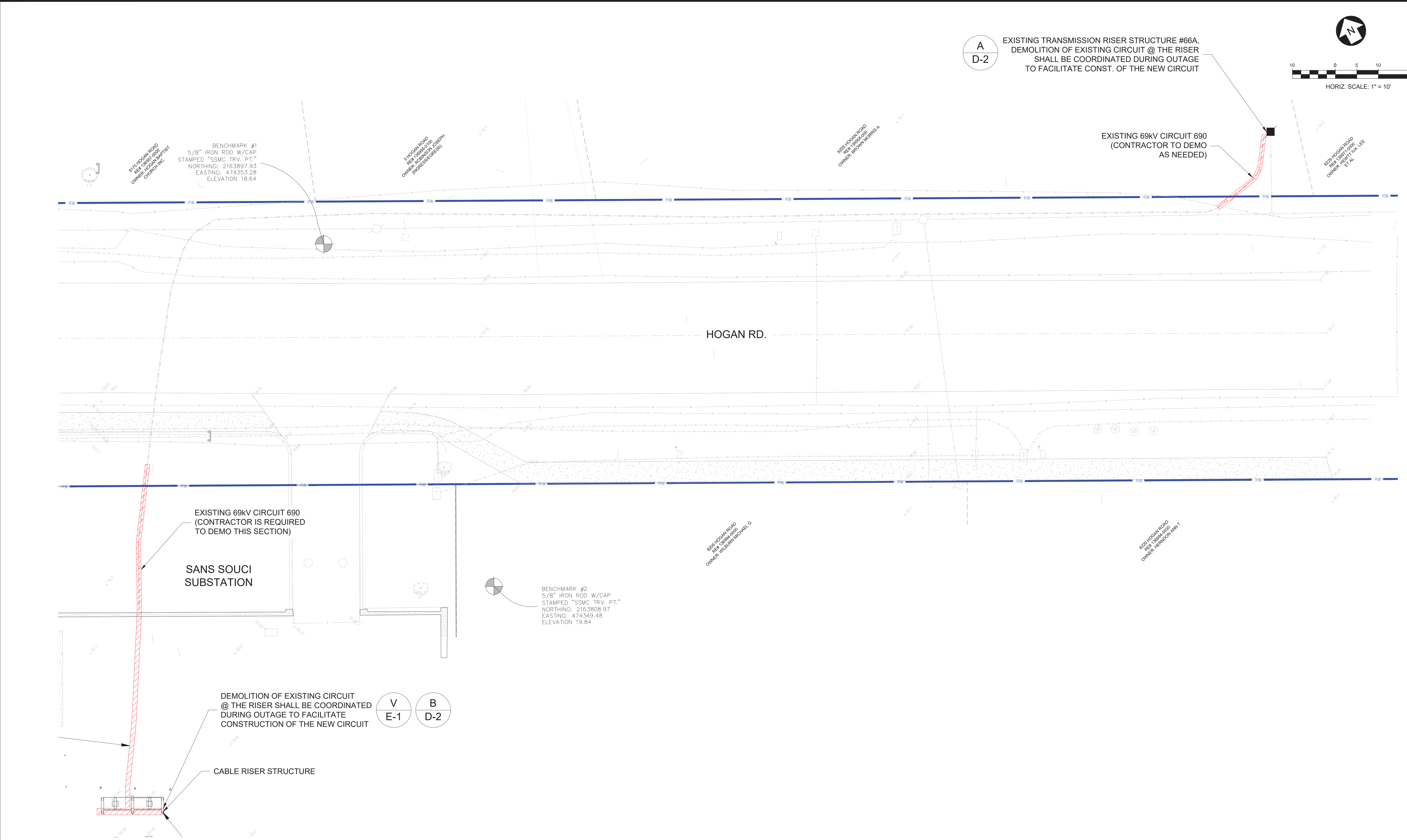
NO.	REVISION	DATE	BY	CH'D	APP'D						ENGINEERING RECORD			
											STATUS	BY	DATE	
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS							STATUS	BY	DATE
												ASSIGNED	O&M	10/01/22
												DESIGNED	DLC/MTS	-
												DRAWN	DLC	-
												CHECKED	MTS	11/18/24
												APP'D	MTS	11/18/24



69kV CIRCUIT 690 UNDERGROUND RECONDUCTOR
HOGAN RD., SANS SOUCI SUBSTATION
STANDARD DETAILS

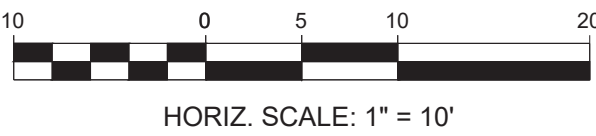
SCALE: AS NOTED	PROJECT DESIGN SEGMENT 20410
-----------------	------------------------------

ID SET: 11/08/24	
<i>PROJECT NO.</i>	8008430
<i>DRAWING NO.</i>	CD-4
<i>SHEET NO.</i>	08 OF 13



A
D-2

EXISTING TRANSMISSION RISER STRUCTURE #66A,
DEMOLITION OF EXISTING CIRCUIT @ THE RISER
SHALL BE COORDINATED DURING OUTAGE
TO FACILITATE CONST. OF THE NEW CIRCUIT



EXISTING 69kV CIRCUIT 690
(CONTRACTOR TO DEMO
AS NEEDED)

EXISTING 69kV CIRCUIT 690
(CONTRACTOR IS REQUIRED
TO DEMO THIS SECTION)

SANS SOUCI
SUBSTATION

DEMOLITION OF EXISTING CIRCUIT
@ THE RISER SHALL BE COORDINATED
DURING OUTAGE TO FACILITATE
CONSTRUCTION OF THE NEW CIRCUIT

V
E-1

B
D-2

CABLE RISER STRUCTURE

HOGAN RD.

NO.	REVISION	DATE	BY	CH'D	APP'D	REVISION	DATE	BY	CH'D	APP'D	ENGINEERING	RECORD	
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS						STATUS	BY	DATE
											ASSIGNED	O&M	10/01/22
											DESIGNED	DLC/MTS	-
											DRAWN	DLC	-
											CHECKED	MTS	11/18/24
											APP'D	MTS	11/18/24



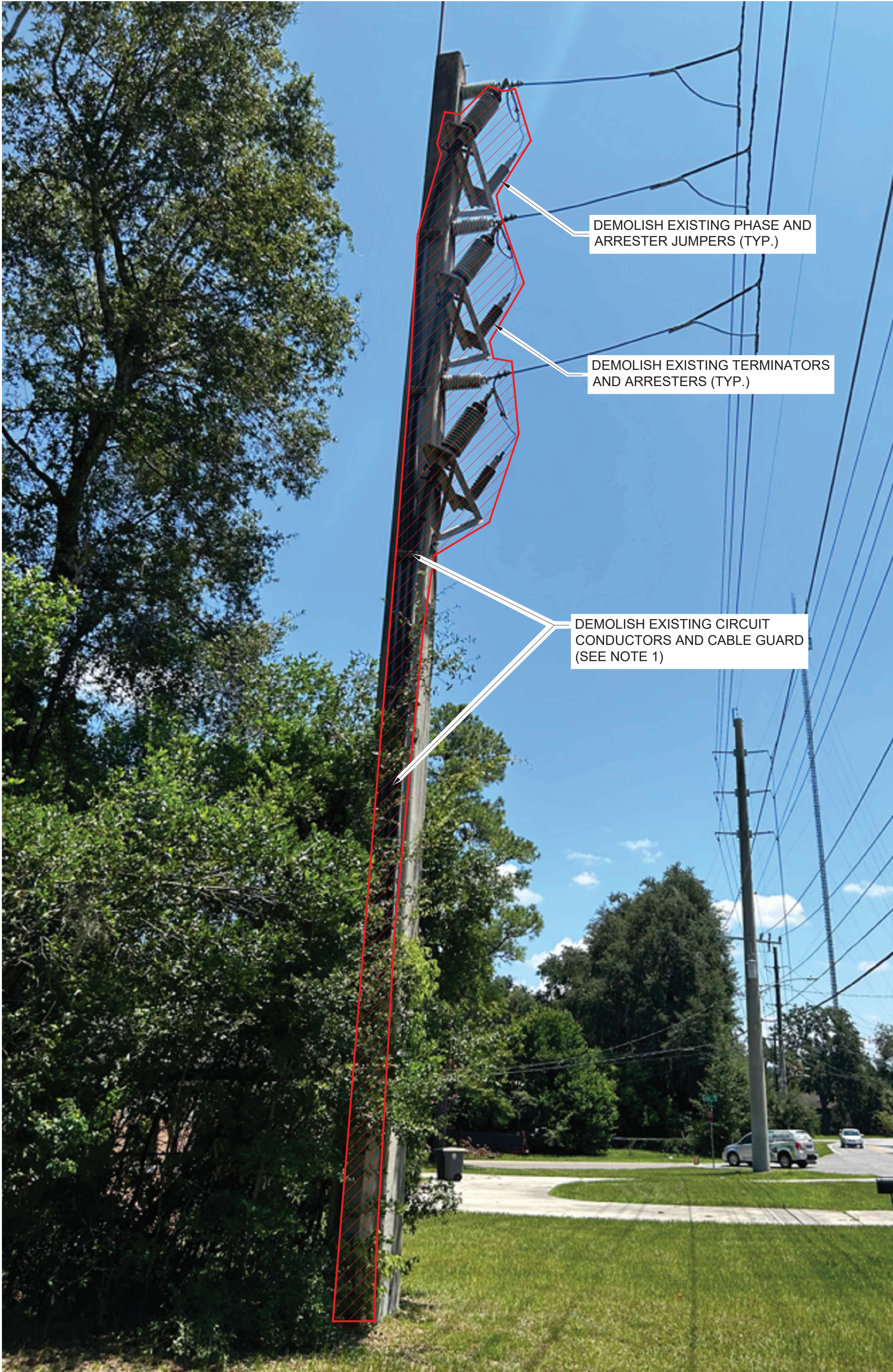
69kV CIRCUIT 690 UNDERGROUND RECONDUCTOR
HOGAN RD., SANS SOUCI SUBSTATION
DEMOLITION PLAN

SCALE: N.T.S.

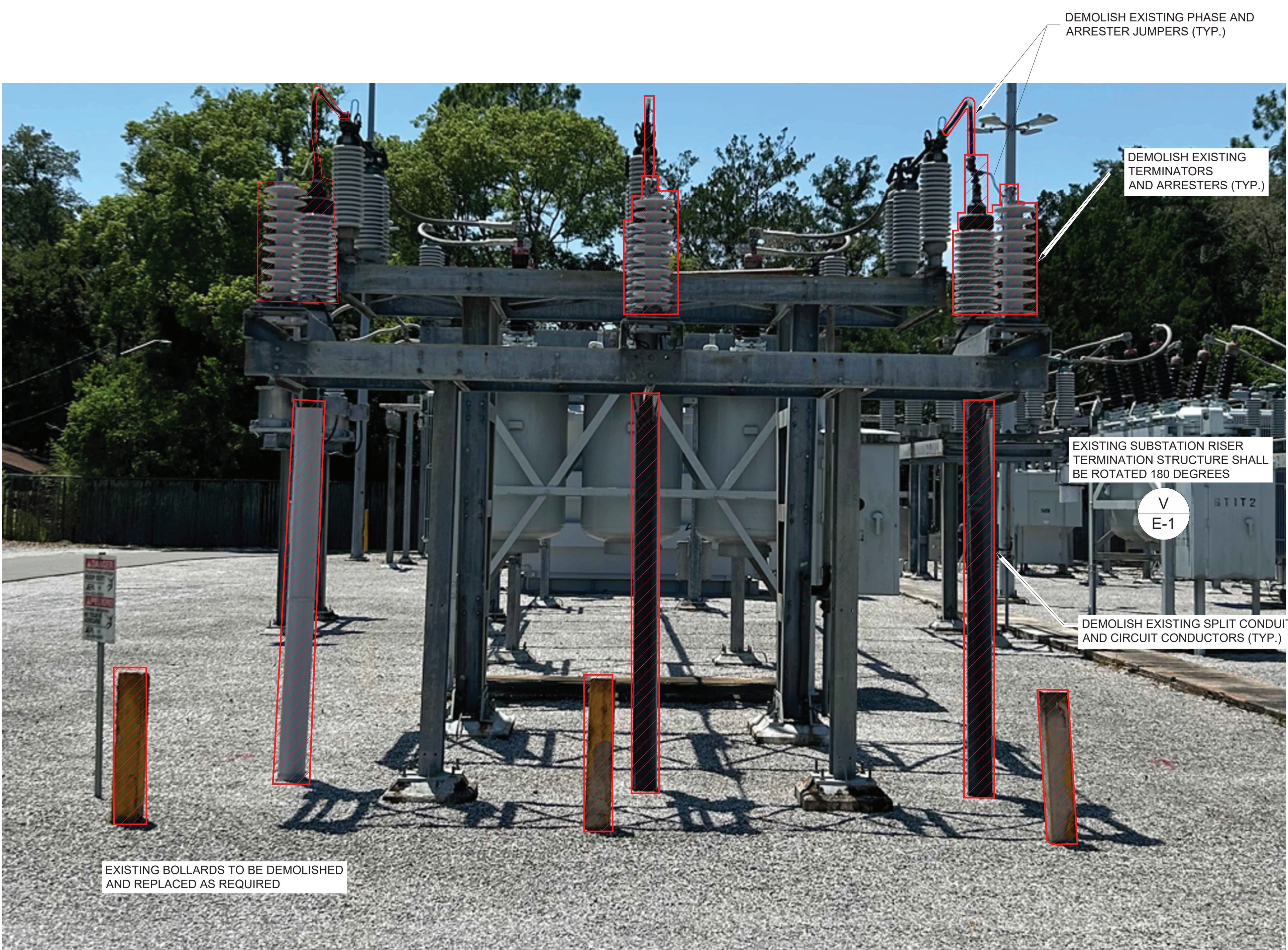
PROJECT DESIGN SEGMENT 20410

BID SET: 11/08/24

PROJECT NO.
8008430
DRAWING NO.
D-1
SHEET NO.
09 OF 13



A EXISTING TRANSMISSION RISER POLE #66A DEMOLITION DETAIL
- NTS



B SANS SOUCI SUBSTATION RISER STRUCTURE DEMOLITION DETAIL
- NTS

- NOTES:**
1. CONTRACTOR SHALL REUSE CABLE GUARD AND CABLE SUPPORT CLAMPS. DEFECTIVE OR INSUFFICIENT MATERIALS SHALL BE REPLACED WITH NEW AS REQUIRED.

BID SET: 11/08/24

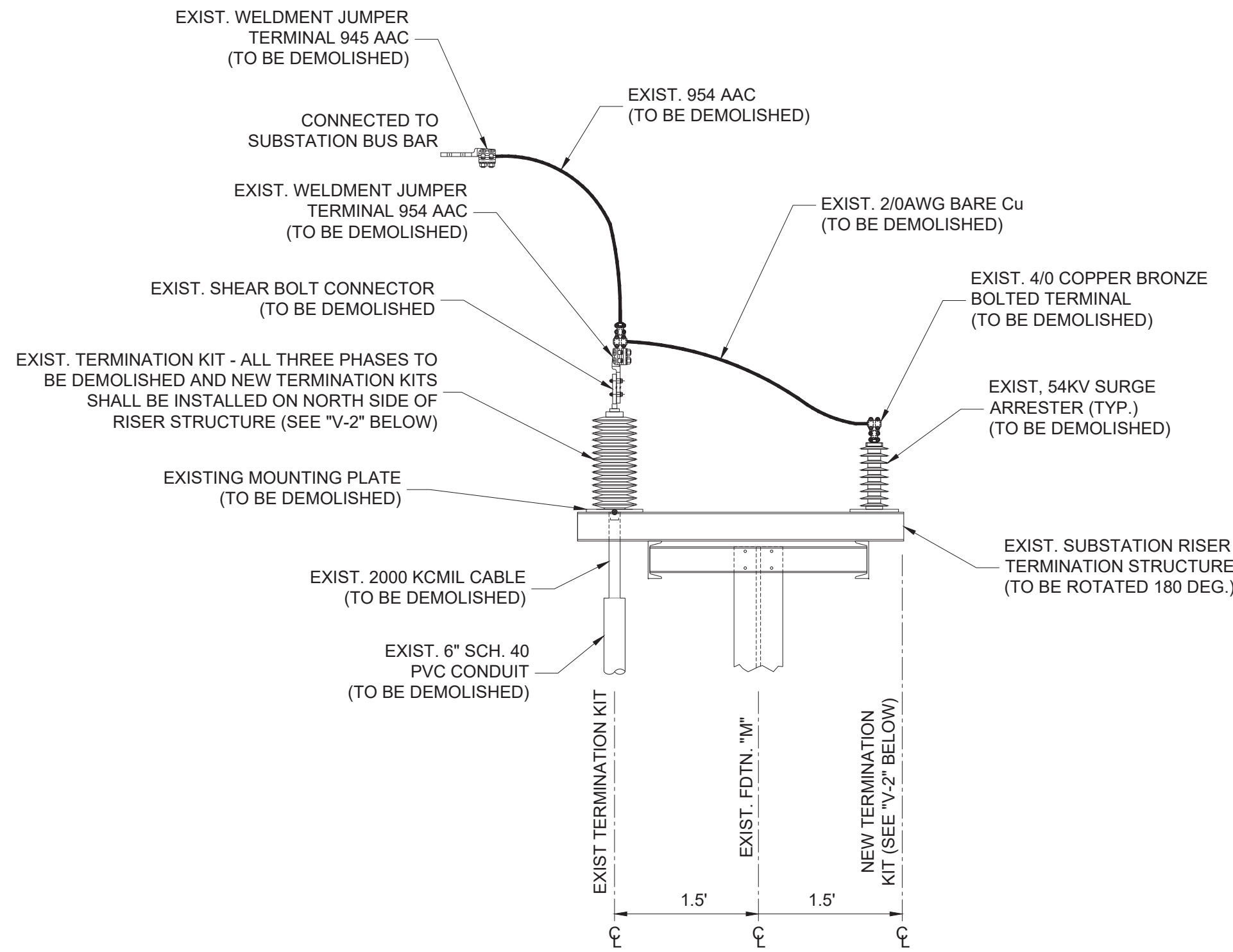
NO.	REVISION	DATE	BY	CH'D	APP'D		REVISION	DATE	BY	CH'D	APP'D	ENGINEERING	RECORD	
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS							STATUS	BY	DATE
												ASSIGNED	O&M	10/01/22
												DESIGNED	DLC/MTS	-
												DRAWN	DLC	-
												CHECKED	MTS	11/18/24
												APP'D	MTS	11/18/24



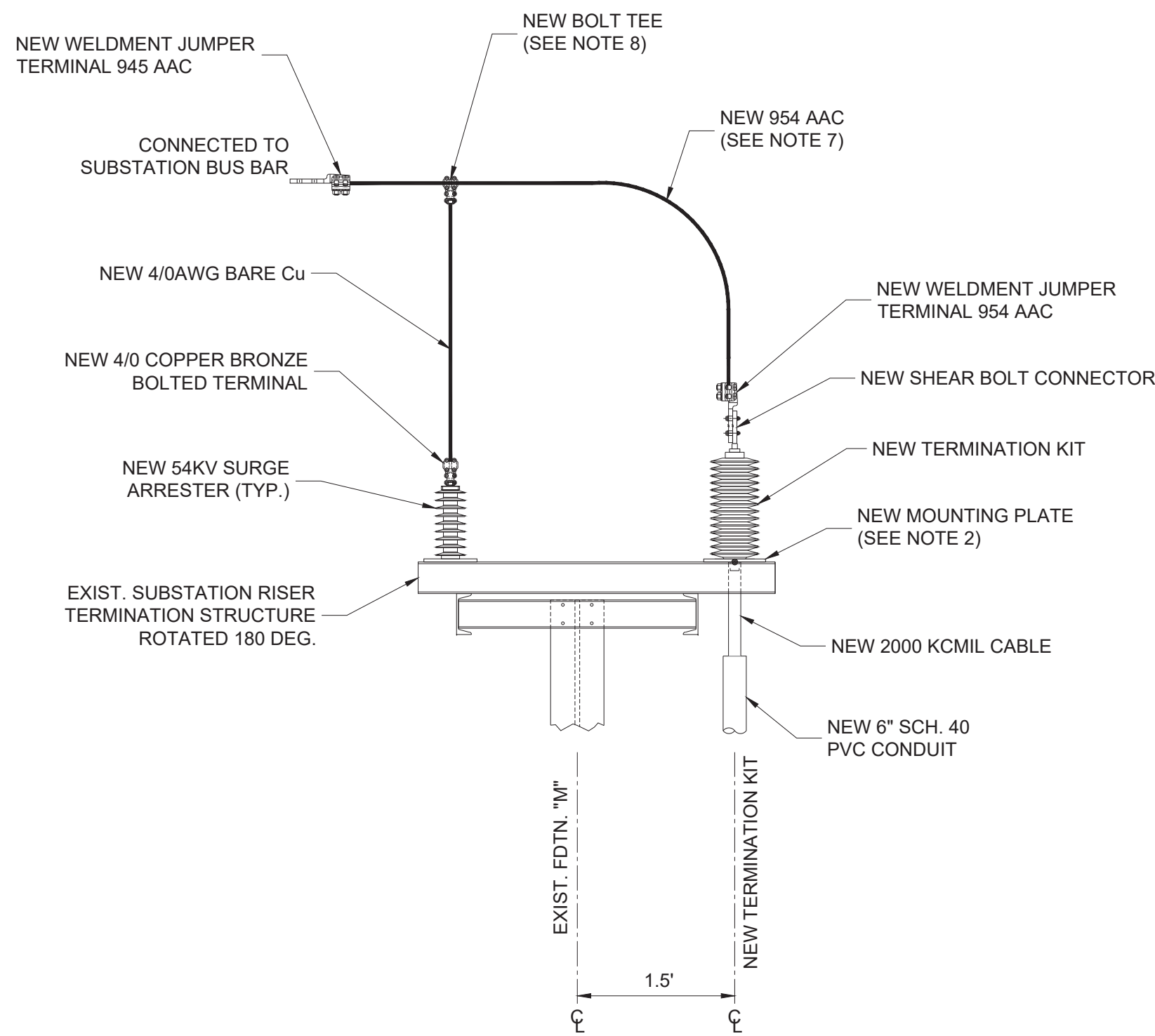
69kV CIRCUIT 690 UNDERGROUND RECONDUCTOR
HOGAN RD., SANS SOUCI SUBSTATION
RISER DEMOLITION DETAILS

SCALE: N.T.S. PROJECT DESIGN SEGMENT 20410

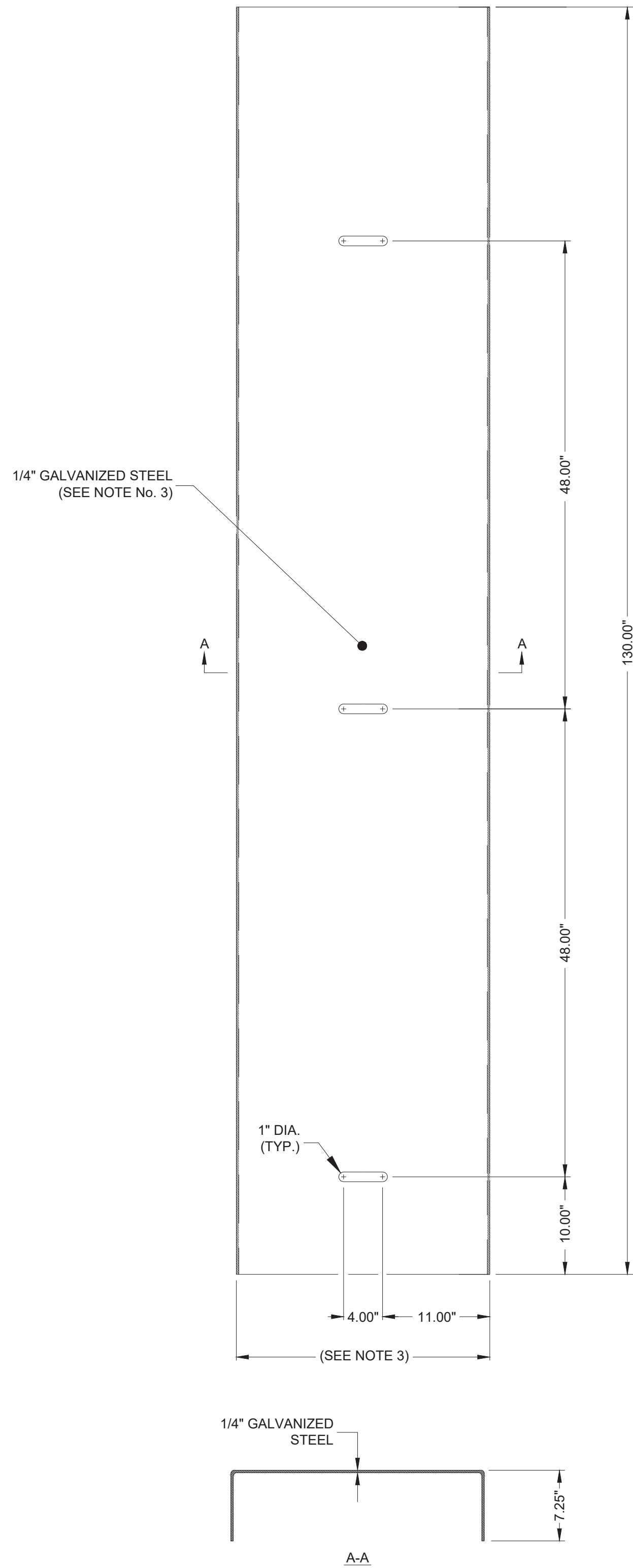
PROJECT NO.
8008430
DRAWING NO.
D-2
SHEET NO.
10 OF 13



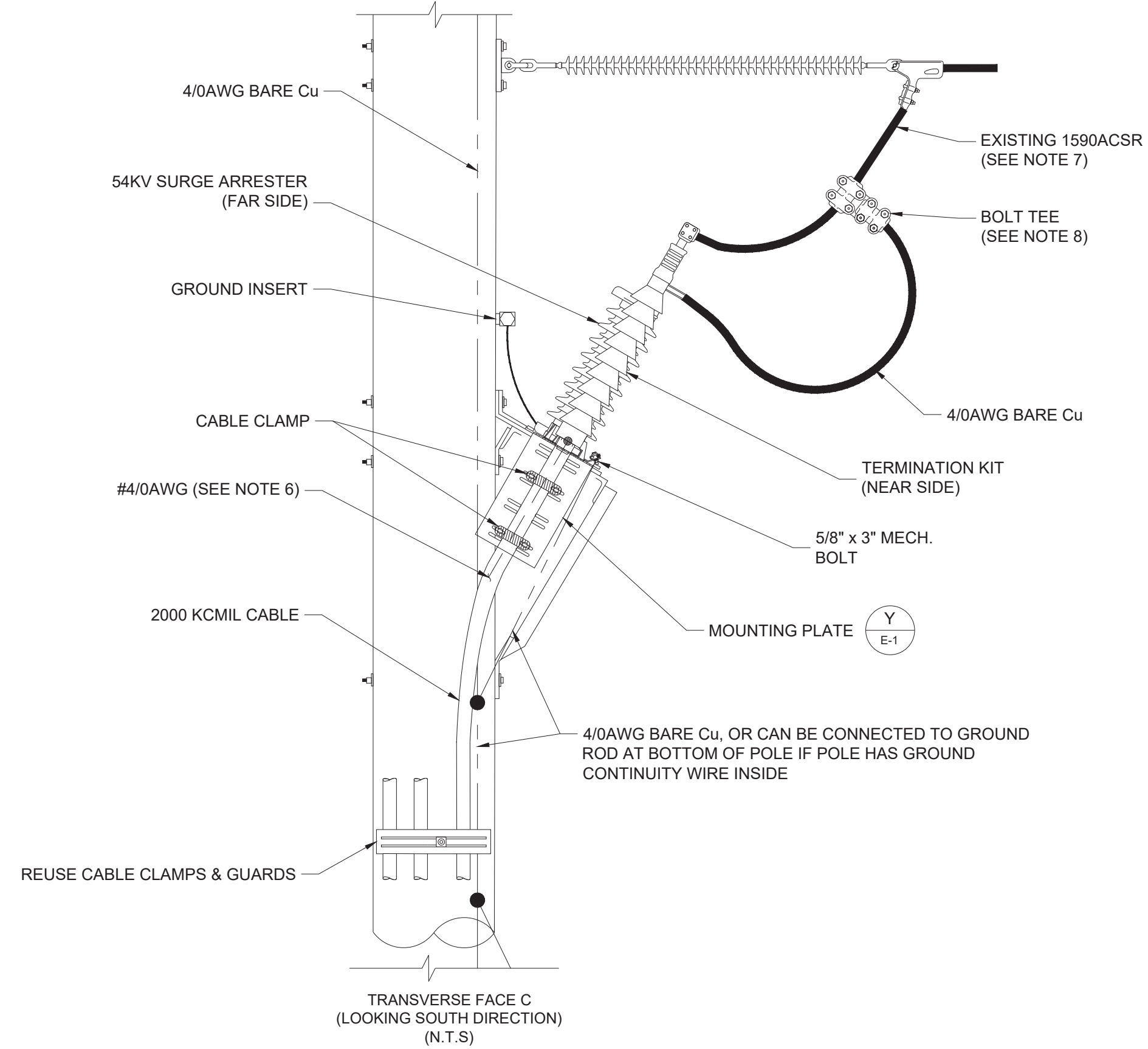
V
-
SUBSTATION CABLE TERMINATION SIDE VIEW SHOWING
EXISTING TERMINATION KIT LOCATIONS / WEST ELEVATION
(LOOKING WESTERLY) - NTS



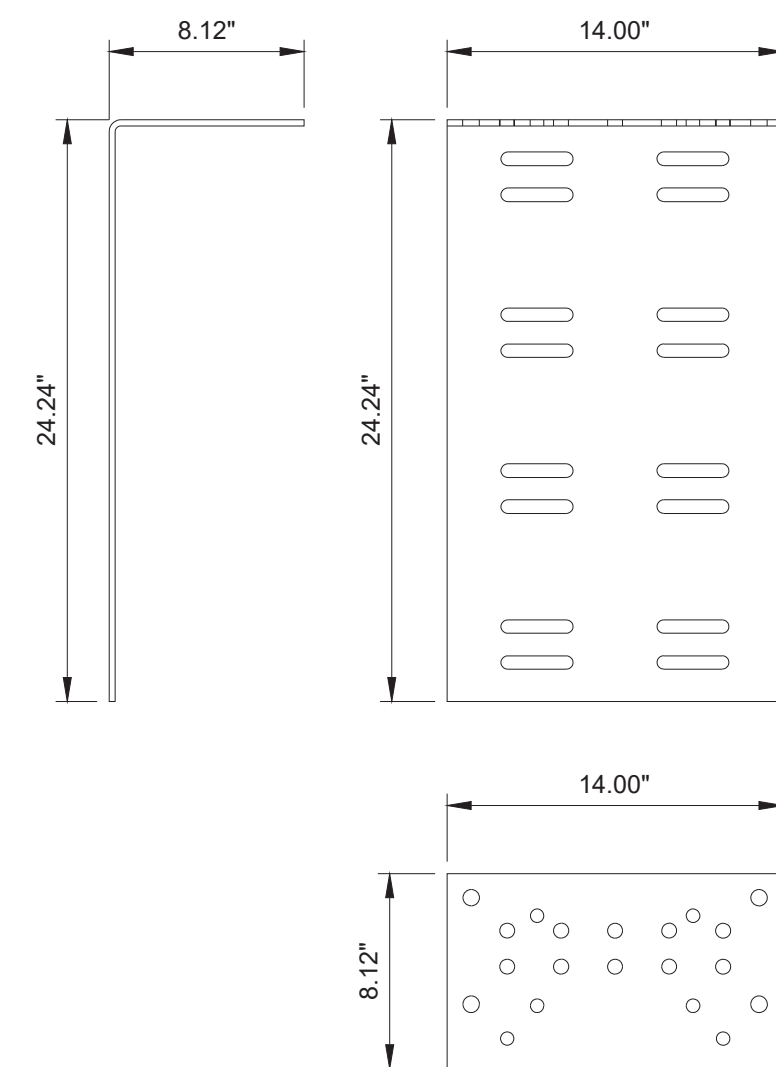
V2
-
SUBSTATION CABLE TERMINATION SIDE VIEW SHOWING
NEW TERMINATION KIT LOCATIONS / WEST ELEVATION
(LOOKING WESTERLY) - NTS



CABLE GUARD DETAIL
SCALE: NTS



U
-
CABLE TERMINATION RISER POLE
NTS



Y
-
MOUNTING PLATE (TYP.)
NTS

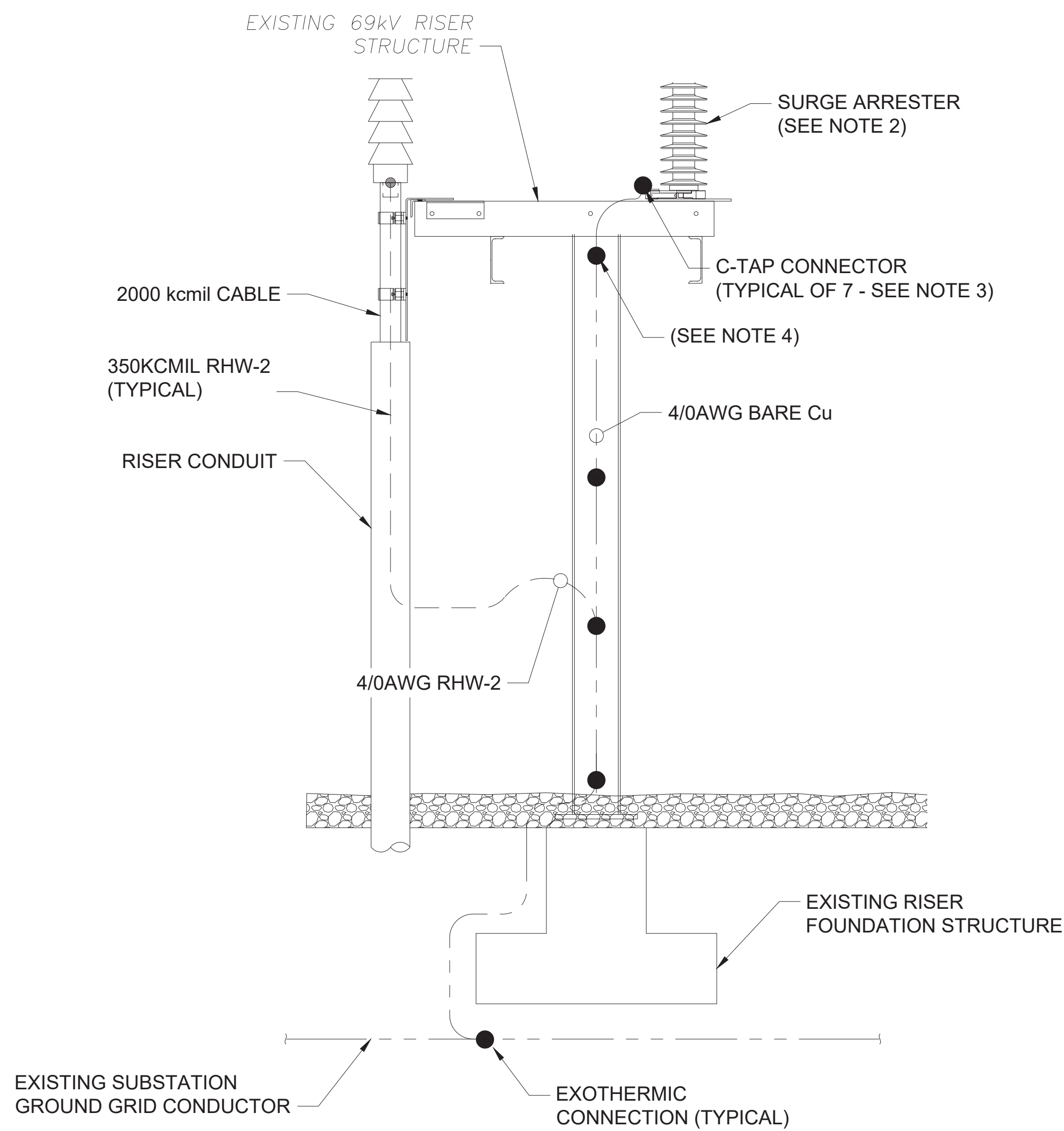
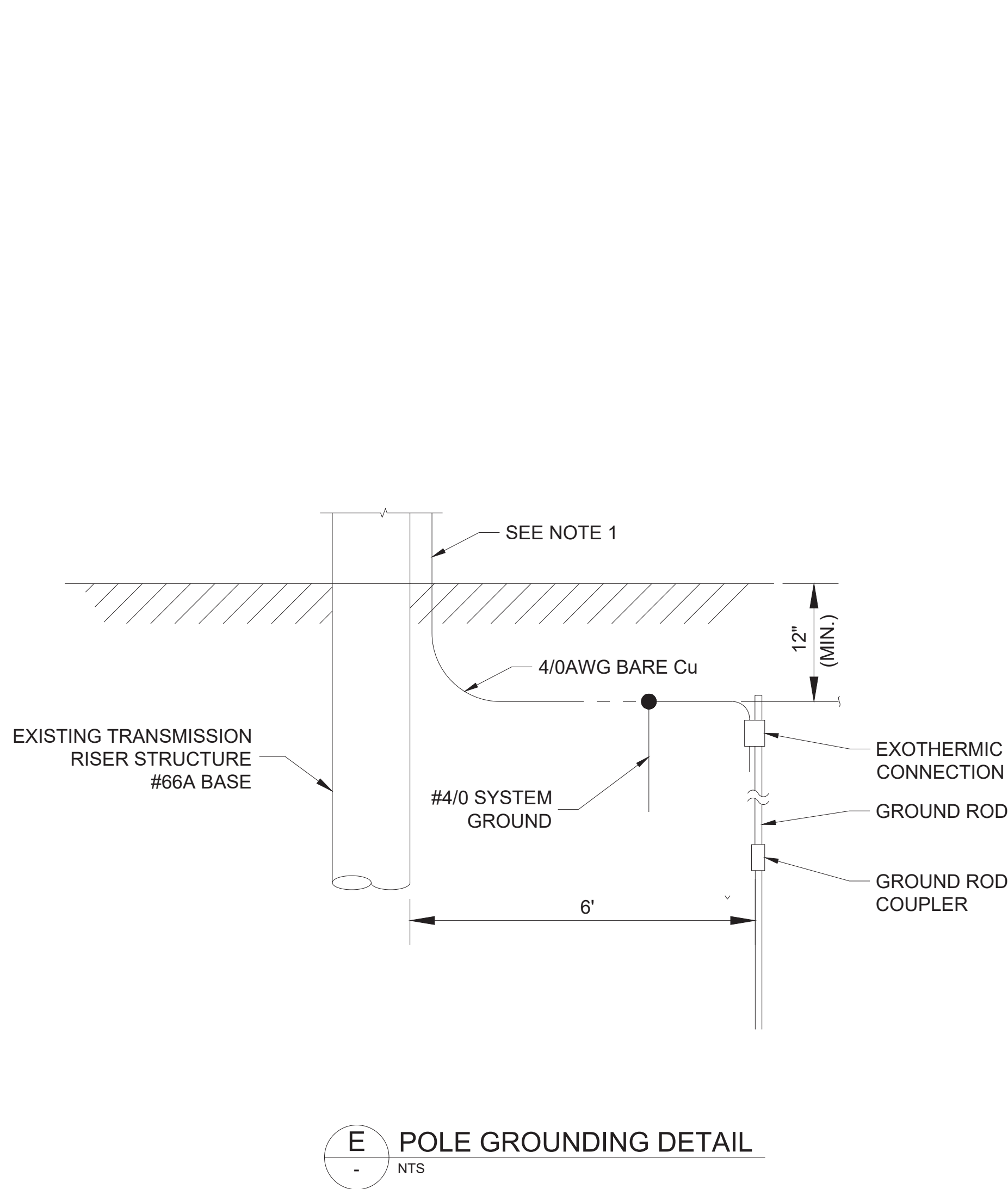
NOTES:

1. THE LENGTH OF ANY BONDING LEAD SHALL BE KEPT AS SHORT AS POSSIBLE. NO JOINTS IN THE BONDING LEAD ARE PERMITTED.
2. CONTRACTOR SHALL FIELD DRILL FOUR (4) HOLES PER MOUNTING PLATE FOR ATTACHMENT TO EXISTING STRUCTURES. PROTECT WITH COLD GALVANIZING OR SIMILAR.
3. CONTRACTOR TO SUPPLY CABLE GUARD. CABLE GUARD MUST BE 1/4\" GALVANIZED STEEL. CONTRACTOR TO CONFIRM DIMENSIONS IN FIELD PRIOR TO ORDERING THIS MATERIAL.
4. BOLTED CONNECTIONS SHALL UTILIZE 5/8\" DIAMETER A325 BOLTS IN 11/16\" DIAMETER HOLES WITH STANDARD F436 WASHERS AND A563 HEAVY HEX NUTS. BOLT ASSEMBLIES TO GALVANIZED PER A153 AND SNUG TIGHTENED PER THE SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS.
5. 4/0AWG SINGLE CONDUCTOR COPPER GROUND LEAD.
6. 4/0AWG SINGLE CONDUCTOR COPPER BONDING LEADS TO CONNECT SYSTEM GROUND.
7. JUMPERS FROM TERMINATION AND SURGE ARRESTOR TO BE REPLACED WITH 954 AAC \"GOLDENROD\" & 4/0AWG CU.
8. CONTRACTOR SHALL SUPPLY BOLTED TEE FOR THE 954AAC TO 4/0 CU CABLE.
9. SECURE ALL LEADS TO 2000KCMIL CABLE WITH UV RESISTANT PLASTIC CABLE TIES. WHERE BONDING LEADS ARE SECURED TO STEELWORK USE STAINLESS STEEL CABLE TIES OR BANDING.
10. CONTRACTOR IS RESPONSIBLE TO FABRICATE 10' TALL x 1/4\" STEEL GUARD TO ENCOMPASS CABLES AND CLAMPS AND CONDUIT AT BASE OF POLE.

BID SET: 11/08/24

NO.	REVISION	DATE	BY	CH'D	APP'D		REVISION	DATE	BY	CH'D	APP'D	ENGINEERING RECORD				69kV CIRCUIT 690 UNDERGROUND RECONDUCTOR HOGAN RD., SANS SOUCI SUBSTATION			PROJECT NO. 8008430
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS							STATUS	BY	DATE					DRAWING NO. E-1
												ASSIGNED	O&M	10/01/22					
												DESIGNED	DLC/MTS	-					
												DRAWN	DLC	-					
												CHECKED	MTS	11/18/24					
												APP'D	MTS	11/18/24					
															SCALE:	N.T.S.	PROJECT DESIGN SEGMENT 20410		SHEET NO. 11 OF 13





- NOTES:
- GROUND CONDUCTOR TO BE RUN ALONG 2000kcmil CABLE AND BANDED TO POLE WHERE NECESSARY. FIELD TO DETERMINE.
 - FIELD TO DETERMINE SUITABILITY OF EXISTING BOLT HOLES AND DRILL AS NECESSARY.
 - COMPRESSION CLAMP FOR 4/0AWG Cu GROUND WIRE RUNNING TO OTHER TWO SURGE ARRESTERS (NOT SHOWN).
 - FIELD TO DETERMINE SUITABILITY OF EXISTING CLAMP BOLT HOLES ON RISER STEEL AND DRILL AS NECESSARY.

NO.	REVISION	DATE	BY	CH'D	APP'D	REVISION	DATE	BY	CH'D	APP'D	ENGINEERING	RECORD
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS						STATUS	BY DATE
											ASSIGNED	O&M 10/01/22
											DESIGNED	DLC/MTS -
											DRAWN	DLC -
											CHECKED	MTS 11/18/24
											APP'D	MTS 11/18/24

69kV CIRCUIT 690 UNDERGROUND RECONDUCTOR
HOGAN RD., SANS SOUCI SUBSTATION

GROUNDING DETAILS FOR RISER POLE #66A &
SUBSTATION RISER STRUCTURE

SCALE: N.T.S. PROJECT DESIGN SEGMENT 20410

PROJECT NO.
8008430

DRAWING NO.
E-2

SHEET NO.
12 OF 13

BID SET: 11/08/24

TABLE 1: MAJOR EQUIPMENT - BILL OF MATERIALS

ID	Description	Supplied By	Manufacturer	Part #	JEA Item ID	Extended Quantity	U/M
CABLES AND TRENCH CONTENTS							
1001	UNDERGROUND 69KV HV POWER CABLE						
	2000kcmil Cu, EPR, Cu CN, LLDPE JKT Cable	Contractor	Okonite, Prysmian, Kerite	TBD		1300	ft
1002	SYSTEM GROUND WIRE						
	4/0 AWG Bare Stranded Copper	JEA			COBCO032	400	ft
1003	DETECTABLE PLASTIC WARNING TAPE						
	Scotch, 3" Wide tape, 5mil clear film laminated to aluminum foil center core, black lettering "Caution Buried High Voltage Cable Below" or Equal Wording on APWA red background	Contractor	3M	412		140	ft
1004	Concrete Duct 1'-10 1/4" x 2'-4 1/4"						
	Concrete Duct with 4-6" and 1-2" hole	Contractor				50	ft

TABLE 2: MAJOR EQUIPMENT - BILL OF MATERIALS

ID	Description	Supplied By	Manufacturer	Part #	JEA Item ID	Extended Quantity	U/M
CONDUITS & ACCESSORIES							
1401	2-INCH CONDUIT BOREPIPE (COILABLE)						
	2-INCH nominal, SDR13.5 HDPE power conduit, smooth wall	Contractor	Dura-Line	Submit for Approval		300	ft
1402	6-INCH CONDUIT BOREPIPE (COILABLE)						
	6-inch nominal, SDR13.5 HDPE power conduit, smooth wall	Contractor	Dura-Line	Submit for Approval		1,200	ft
1403	2-INCH CONDUIT STICKPIPE						
	2-inch nominal, SCH 40 PVC with belled end, smooth wall, 20' sections	Contractor	By Contractor	Submit for Approval		100	ft
1404	6-INCH CONDUIT STICKPIPE						
	6-inch nominal, SCH 40 PVC with belled end, smooth wall, 20' sections	Contractor	By Contractor	Submit for Approval		340	ft
1407	60" RADIUS - RIGID PVC 90° ELBOW						
	6-INCH nominal SCH-40 PVC	Contractor	By Contractor	Submit for Approval		7	ea
1408	60" RADIUS - RIGID PVC 90° ELBOW						
	2-INCH nominal SCH-40 PVC	Contractor	By Contractor	Submit for Approval		2	ea
1409	144" RADIUS - RIGID PVC 45° ELBOW						
	6-INCH nominal SCH-40 PVC	Contractor	By Contractor	Submit for Approval		10	ea
1410	144" RADIUS - RIGID PVC 45° ELBOW						
	2-INCH nominal SCH-40 PVC	Contractor	By Contractor	Submit for Approval		2	ea
1411	END BELL - SDR13.5 HDPE						
	6-INCH nominal	Contractor	By Contractor	Submit for Approval		16	ea
1412	END BELL - SDR13.5 HDPE						
	2-INCH nominal	Contractor	By Contractor	Submit for Approval		4	ea
1413	2-INCH CONDUIT COUPLINGS						
	Couplings suitable for SDR13.5 HDPE 2-Inch nominal	Contractor	By Contractor	Submit for Approval		varies	ea
1414	6-INCH CONDUIT COUPLINGS						
	Couplings suitable for SDR13.5 HDPE 6-Inch nominal	Contractor	By Contractor	Submit for Approval		varies	ea
1415	DUCT SPACER						
	6" Duct Spacer to accommodate 2 ea. 6" Conduits with 12" Center-to-Center Separation, and 1 ea. 2" conduit	Contractor	Underground Devices	626W30-2		300	ea
1416	HDD CONDUIT BUNDLE STRAPPING						
	High performance 3/8-inch w x 0.040-inch th. embossed polyester strapping with a minimum break strength of 1800 lbs	Contractor	By Contractor	Submit for Approval		1,200	ft
1417	CABLE TAGS						
	Cable Tag Holder	JEA			TAGHO002	6	ea
	Cable Tag "6" and "9"	JEA			TAGYP006	4	ea
	Cable Tag "0"	JEA			TAGYP000	2	ea
	Cable Tag "A"	JEA			TAGYP049	2	ea
	Cable Tag "B"	JEA			TAGYP050	2	ea
	Cable Tag "C"	JEA			TAGYP051	2	ea

NOTES:

1. SCHEDULE QUANTITY IS EXTENDED BY THE NUMBER OF SETS PER PHASE AND THE NUMBER OF PHASES FOR EACH CIRCUIT.
2. JEA HAS NOT PERFORMED ANY REEL MANAGEMENT ANALYSIS IN THE CABLE DESIGN. REEL MANAGEMENT IS THE RESPONSIBILITY OF THE CONTRACTOR.

BID SET: 11/08/24

NO.	REVISION	DATE	BY	CH'D	APP'D		REVISION	DATE	BY	CH'D	APP'D	ENGINEERING	RECORD		69KV CIRCUIT 690 UNDERGROUND RECONDUCTOR HOGAN RD., SANS SOUCI SUBSTATION CABLE & CONDUIT SCHEDULES AND MAJOR EQUIPMENT BOM	PROJECT NO. 8008430
0	BID SET DRAWINGS	10/18/24	DLC	MTS	MTS							STATUS	BY	DATE		DRAWING NO. BOM-1
												ASSIGNED	O&M	10/01/22		
												DESIGNED	DLC/MTS	-		
												DRAWN	DLC	-		
												CHECKED	MTS	11/18/24		SHEET NO.
												APP'D	MTS	11/18/24		13 OF 13



SCALE: N.T.S.

PROJECT DESIGN SEGMENT 20410