

**Solicitation  
For Participation in  
Installation of Five (5) 230 kV and one 138 kV Capacitor Banks**



**Jacksonville, FL  
Solicitation Number  
133-17**

**Mandatory Pre-Bid Meeting on August 11, 2017**

**Mandatory Pre-Bid Meeting Time: 9:00 AM**

**JEA Procurement Bid Office, Customer Center, Room 002, 21 West Church street, Jacksonville, FL  
32202.**

**Bids are due on September 5, 2017**

**Direct delivery or mail to JEA Bid Office, Customer Center 1<sup>st</sup> Floor, Room 002  
21 W. Church Street, Jacksonville, FL 32202**

**JEA will publicly open all bids received from qualified Bidders on September 5, 2017, at 2:00 p.m.  
in the JEA Bid Office, Customer Center 1<sup>st</sup> Floor, Room 002, 21 W. Church Street, Jacksonville, FL  
32206**

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## SOLICITATION

### 1. SOLICITATION

#### 1.1. INVITATION

##### 1.1.1. SCOPE OF WORK

JEA is soliciting Bids from construction contractors (hereinafter referred to as “Company”) for construction services for the installation for a total of four (4) 230 kV and one (1) 138 kV capacitor banks. These capacitor banks will be installed at the following locations; Bartam (230kV), Switzerland (230kV), Forest (230kV), Robinwood (138 kV) and Fort Caroline (230 kV) substations (the “Work” or “Services”).

The Work specified herein includes installation of foundations, steel structures, bus work, all equipment, grounding, conduit, site work, and all other work required for the installation.

A complete scope of work is provided in Appendix A – Technical Specification.

##### 1.1.2. QUESTIONS

All questions must be submitted in writing to the JEA Buyer listed below at least five (5) business days prior to the opening date. Questions received within five (5) business days prior to the opening date will not be answered.

For Procurement Related Questions:

Buyer: RODNEY LOVGREN  
E-mail: LOVGRD@JEA.COM

For Technical Questions:

Contact: MIKE SHORT  
E-mail: SHORML@JEA.COM

##### 1.1.3. INVITATION TO BID

You are invited to bid on the Solicitation noted below:

**JEA Solicitation Title:** Installation of Five (5) 230 kV and one (1) 138 kV Capacitor Banks  
**JEA Solicitation Number:** 133-17

To obtain more information about this Solicitation:  
Download a copy of the Solicitation, PDF quality drawings (if applicable) and any required forms at [jea.com](http://jea.com).

**Bid Due Time:** 12:00 P.M. - ALL LATE BIDS WILL BE RETURNED UNOPENED  
**Bid Due Date:** September 5, 2017

All Bids must reference the JEA Solicitation title and number noted above. All Bids must be made on the appropriate Bid forms as specified within this Solicitation, and placed in an envelope marked to identify the Solicitation and delivered or mailed to:

JEA Procurement, Bid Office, Customer Center 1st Floor, Room 002, Jacksonville, FL 32202

The Bidder shall be solely responsible for delivery of its Bid to the JEA Bid Office. **Please note, JEA employs a third party courier service to deliver its mail from the local U.S. Postal Service (USPS) which could cause a**

**delay of Bid delivery if mailed through the USPS.** Therefore, JEA recommends direct delivery to the JEA Bid Office. Reliance upon the USPS, the courier service employed by JEA to make pick-ups from the local USPS, or public carriers is at the Bidder's risk.

**Bids are due by the time and on the date listed above. ALL LATE BIDS FOR WHATEVER REASON WILL BE RETURNED UNOPENED.**

#### **1.1.4. MANDATORY PRE-BID MEETING**

There will be a mandatory Pre-Bid meeting. All interested Bidders must attend the Pre-Bid meeting. Each Bidder will be required to sign in at the beginning of the meeting. A Bidder shall only sign in representing one (1) company, unless otherwise specified by JEA. Bidders not attending the Pre-Bid meeting shall have their bids opened, however, the Bid will be rejected and JEA will send the Bidder a disqualification letter.

Bidders shall be on time to the Pre-Bid meeting and Bidders must be present at the starting time of the meeting. Bidders not arriving on time for the meeting will have their Bids rejected and returned unopened.

PLEASE BE AWARE DUE TO JEA SIGN IN AND/OR SECURITY PROCEDURES IT MAY TAKE UP TO **FIFTEEN (15) MINUTES** TO OBTAIN ACCESS TO A JEA FACILITY. PLEASE PLAN ACCORDINGLY SO AS TO ARRIVE TO THE PRE-BID MEETING ON TIME.

**Pre-Bid Meeting Time:** 9:00 A.M.

**Pre-Bid Meeting Date:** August 11, 2017

**Pre-Bid Location:** JEA Procurement Bid Office, Customer Center, First floor, room 002, 21 West Church Street, Jacksonville, FL 32202.

#### **1.1.5. OPENING OF BIDS**

All Bids shall be publicly opened, read aloud and recorded at 2:00 PM on September 5, 2017 at the JEA Bid Office, 21 W. Church Street, Customer Center First Floor, Room 002, Jacksonville, FL 32202.

At the opening of Bids, a JEA Representative will publicly open and announce each Bid that was received on time. Bids that have been properly withdrawn will not be opened. JEA has the right to waive any irregularities or informalities in the Bid Document.

### **1.2. SPECIAL INSTRUCTIONS**

#### **1.2.1. MINIMUM QUALIFICATIONS FOR SUBMISSION**

Bidder shall have the following Minimum Qualifications to be considered eligible to submit a Bid in response to this Solicitation. **A Minimum Qualification Form which is required to be submitted with the Bid Form is provided in Appendix B of this Solicitation.**

It is the responsibility of the Bidder to ensure and certify that it meets the Minimum Qualifications stated below. A Bidder not meeting all of the following criteria will have their Bids rejected:

- The company must be listed on JEA's Responsible Bidders List (RBL) category SB1 – Substation Construction up to 500KV at Bid opening.

For any questions regarding RBL qualification and current status, contact Karen Wenberg at: 904-665-6740 or at wenbkw@jea.com.

**Please note, any Bidder whose contract with JEA was terminated for default within the last two (2) (2) years shall have their Bid rejected.**

## **1.2.2. EVALUATION METHODOLOGY**

### **1.2.2.1. BASIS OF AWARD - LOWEST BID**

JEA will Award this Contract to the responsive and responsible Bidder whose Bid meets or exceeds the Minimum Qualifications set forth in this Solicitation, and the Bidder's price represents the lowest cost to JEA.

JEA will use the Bidder's Total Bid Price stated on the Bid Form when making price comparisons for Award purposes.

### **1.2.2.2. COMPETITIVE SEALED BIDDING (INVITATION FOR BIDS)**

The Bidder shall submit its sealed Bid in response to this Solicitation no later than the Bid due date and time indicated herein. At the public opening of the Bids, the Bids from all Bidders will be publicly announced. After the public opening, JEA will subsequently review Bids to determine if they meet the minimum qualifications as stated in this Solicitation. JEA will Award the Contract to the lowest responsive and responsible Bidder whose Bid meets or exceeds the minimum qualifications, and whose Bid Price represents the lowest cost to JEA.

NO EXCEPTIONS ARE ALLOWED IN AN INVITATION TO BID. IF THE BIDDER OBJECTS IN ANY MANNER TO THE TERMS AND CONDITIONS OR TECHNICAL SPECIFICATIONS, THE OBJECTION MUST BE ADDRESSED IN WRITING FIVE (5) BUSINESS DAYS PRIOR TO THE BID OPENING DATE, AND THE OBJECTION MAY BE ADDRESSED IN AN ADDENDUM IF JEA BELIEVES THAT A CLARIFICATION OR CHANGE IS NECESSARY. ANY MODIFICATIONS, EXCEPTIONS OR OBJECTIONS STATED WITHIN THE BID DOCUMENTS SHALL SUBJECT THE BID TO BE REJECTED.

## **1.2.3. NUMBER OF CONTRACTS TO BE AWARDED**

JEA intends to Award ONE (1) Contract(s) for the Work. JEA reserves the right to Award more than one Contract based on certain groupings of the Work items, or JEA may exclude certain Work items, if JEA determines that it is in its best interest to do so.

## **1.2.4. JACKSONVILLE SMALL AND EMERGING BUSINESS (JSEB) PROGRAM REQUIREMENTS**

### **1.2.4.1. OPTIONAL USE OF JACKSONVILLE SMALL AND EMERGING BUSINESS (JSEB) PROGRAM**

It is at the Company's option as to whether it chooses to subcontract to a JSEB firm. JEA encourages the use of JSEB qualified firms; however, the Company is not required to utilize JSEB firms to be Awarded this Contract.

JSEB firms that qualify for this Contract are only those shown on the current City of Jacksonville JSEB directory appearing at [www.COJ.net](http://www.COJ.net). Certification of JSEB firms must come from the City of Jacksonville. No other agency or organization is recognized for purposes of this Contract.

In no case shall the Company make changes to the JSEB firms listed in its Bid, revise the JSEB Scope of Work or amount of Work as stated in its Bid without prior written notice to the JEA Contract Administrator, and without subsequent receipt of written approval for the JEA Contract Administrator.

Any subcontractors of Company shall procure and maintain the insurance required of Company hereunder during the life of the subcontracts. Subcontractors' insurance may either be by separate coverage or by endorsement under insurance provided by Company. Note: Any JSEB firms identified by Bidders for this Solicitation are considered "Subcontractors" under the direct supervision of the Prime or General Contractor (herein referred to as Company in

this Solicitation). Companies should show good faith efforts in providing assistance to JSEB firms in the securing of Subcontractors' insurance requirements stated in this section. Company shall submit subcontractors' Certificates of Insurance to JEA prior to allowing subcontractors to perform Work on JEA's job sites.

All question and correspondence concerning the JSEB program should be addressed to the following contact:

G. Nadine Carswell  
JSEB Manager  
JEA  
(904) 665-6257  
carsgs@jea.com

#### **1.2.5. INSURANCE REQUIREMENTS**

Prior to JEA issuing a Purchase Order to the Bidder to begin the Work or Services, the Bidder shall submit a certificate of insurance (COI) that is in compliance with amounts and requirements as indicated in the Section herein entitled "Insurance Requirements". **Note that the COI shall specifically indicate JEA (and Florida Power and Light Company ("FPL"), if applicable) as additional insured(s) on all required insurance except Worker's Compensation and Professional Liability (if applicable). Furthermore, waiver of subrogation shall be provided for all required insurance in favor of JEA, FPL (if applicable), including their board members, officers, employees, agents, successors, and assigns.**

#### **1.2.6. PAYMENT AND PERFORMANCE BOND REQUIREMENTS**

Once the Bidder is Awarded the Contract and upon receipt of the Contract Documents, the Bidder shall furnish a Payment and Performance Bond, or alternate form of security, in the amount indicated on the Bid Form, made out to JEA in forms and formats approved and provided by JEA, as security for the faithful performance of the Work or Services. No modifications to the JEA bond forms are allowed.

A fully executed Payment and Performance Bond must be recorded with the Clerk of Duval County Court and delivered to JEA before the JEA Purchase Order will be issued. JEA will send the approved bond forms to the Bidder for execution along with the Contract; however, in no case shall the date on the bond forms be prior to that of the executed Contract. The surety must be authorized and licensed to transact business in Florida. **Note, that the Bidder is responsible for the costs associated with the required Payment and Performance Bonds; therefore, the costs should be included in the Bidder's total Bid Price.** If the Bidder fails or refuses to furnish or record the required bonds, JEA will retain the Bidder's bid bond as liquidated damages.

To be acceptable to JEA as surety for Performance and Payment Bonds, a surety company shall comply with the following provisions:

- o The Surety Company shall have a currently valid Certificate of Authority, issued by the State of Florida, Department of Insurance, authorizing it to write surety bonds in the State of Florida.
- o The Surety Company shall have a currently valid Certificate of Authority issued by the United States Department of Treasury under Sections 9304 to 9308 of Title 31 of the United States Codes.
- o The Surety Company shall be in full compliance with the provisions of the Florida Insurance Code.
- o The Surety Company shall have at least twice the minimum surplus and capital required by the Florida Insurance Code during the life of this agreement.
- o If the Contract Award Amount exceeds \$500,000, the Surety Company shall also comply with the following provisions:

The Surety Company shall have at least the following minimum ratings in the latest issue of A.M. Best's Key Rating Guide.

**POLICY HOLDER'S CONTRACT AMOUNT AND REQUIRED FINANCIAL RATING**

\$500,000 TO 1,000,000: A-CLASS IV

\$1,000,000 TO 2,500,000: A-CLASS V

\$2,500,000 TO 5,000,000: A-CLASS VI

\$5,000,000 TO 10,000,000: A-CLASS VII

\$10,000,000 TO 25,000,000: A- CLASS VIII

\$25,000,000 TO 50,000,000: A- CLASS IX

\$50,000,000 TO 75,000,000: A- CLASS X

The Surety Company shall not expose itself to any loss on any one (1) risk in an amount exceeding ten percent (10%) of its surplus to policyholders, provided:

Any risk or portion of any risk being reinsured shall be deducted in determining the limitation of the risk as prescribed in this section. These minimum requirements shall apply to the reinsuring carrier providing authorization or approval by the State of Florida, Department of Insurance, to conduct business in this state has been met.

In the case of the surety insurance company, in addition to the deduction for reinsurance, the amount assumed by any co-surety, the value of any security deposited, pledged or held subject to the consent of the surety and for the protection of the surety shall be deducted.

**1.2.7. LIQUIDATED DAMAGES IN CONTRACT**

The Contract issued pursuant to this Solicitation contains liquidated damages tied to project completion deadlines. The Bidder should review the specific time frames and liquidated damage amounts prior to submitting its Bid.

**1.2.8. SAFETY QUALIFICATION REQUIREMENTS (IFB)**

Bidder shall be approved as JEA Safety Qualified within ten (10) business days of receiving written notice from the JEA Bid Office that it is the lowest responsive and responsible Bidder. If the Bidder fails to obtain JEA approval as a JEA Safety Qualified company by 4:00 p.m. Eastern Time on the 10<sup>th</sup> business day, JEA will reject the company's Bid, and proceed to Award to the next lowest responsive and responsible Bidder.

**JEA Safety Qualification information is available online at [jea.com](http://jea.com). Please note that it may take up to five (5) business days for a company to be approved as JEA Safety Qualified. It is the Bidder's responsibility to ensure it is JEA Safety Qualified. A list of the JEA's Safety Qualified vendors can be found on [jea.com](http://jea.com). For additional information, contact Jerry Fulop at (904) 665-5810.**

**1.2.9. TIME**

In computing any period of time prescribed or allowed by this solicitation, the day of the act, event, or default from which the designated period of time begins to run shall not be included. The last day of the period so computed shall be included unless it is a Saturday, Sunday, or JEA holiday, in which event the period shall run until the end of the next day which is neither a Saturday, Sunday, or JEA holiday.

**1.2.10. REQUIRED FORMS TO SUBMIT WITH BID**

To submit a Bid in response to this Solicitation, all of the forms listed below must be completed and submitted as part of the Bid. The Bidder must obtain the required forms, other than the forms provided in the solicitation, by downloading them from JEA.com. If the Bidder fails to complete or fails to submit one (1) or more of the required forms, the Bid shall be rejected.

The following forms are required to be submitted at the time of Bid:

- o Bid Bond
- o Minimum Qualification Form - This form can be found in Appendix B



- o Bid Form (including acknowledgements of all addenda) - This form can be found in Appendix B
- o Florida Trench Safety Act Acknowledgment - This form can be found on [jea.com](http://jea.com)
- o Construction and Demolition Debris Disposal (if applicable) - This form can be found on [jea.com](http://jea.com)
- o List of Subcontractor Form (if any) - This form can be found on [jea.com](http://jea.com)
- o State of Florida license number- Enter on Appendix B Bid Form
- o Completed Schedule of Values

If the above listed forms are not submitted with the Bid by the Bid Due Time on the Bid Due Date, JEA shall reject the Bid.

JEA also requires the following documents to be submitted prior to execution of Contract. A Bid will not be rejected if these forms are not submitted at the Bid Due Time and Date. However, failure to submit these documents at the time of Contract execution could result in Bid rejection.

- o List of JSEB Certified Firms (if any)- This form can be found on [jea.com](http://jea.com)
- o Conflict of Interest Certificate Form
- o Insurance Certificate
- o W-9
- o Evidence of active registration with the State of Florida Division of Corporations ([www.sunbiz.org](http://www.sunbiz.org))
- o Any technical submittals as required by the Technical Specifications.

#### **1.2.11. BID SECURITY/BID BOND**

All Bids shall be accompanied by a bid security in the amount stated on the Bid Form. The bid security must be furnished by the Bidder at or before the opening of Bids. The bid security shall either be issued by a surety company authorized to do business in the State of Florida, or Bidder shall furnish a certified check or cashier's check in the amount of five percent 5% of the total Bid Amount shown on the Bid Form. The JEA Bid Bond form can be found at [jea.com](http://jea.com). Failure to furnish the required bid security will disqualify the Bid. If the Bidder is Awarded the Work and fails to execute the Contract within ten (10) days of postmarked date on the Contract Documents, JEA shall retain the Bid Bond or check as liquidated damages.

### **1.3. GENERAL INSTRUCTIONS**

#### **1.3.1. COMPLETING THE BID DOCUMENTS**

Bidders shall complete and submit all Bid Documents with responses typewritten or written in ink. ALL BIDS SUBMITTED LATE TO THE JEA BID OFFICE WILL BE REJECTED.

When a blank is marked "optional" on the bid form, the Bidder shall insert the words "No Bid" in the space provided if the Bidder does not choose to submit a price for that item. Failure to complete each blank with either a price or the words "No Bid" may disqualify the Bid. The Bidder, or its authorized agent or officer, shall sign the Bid Documents. Failure to sign the Bid Documents may disqualify the Bid. JEA approved erasures, interlineations or other corrections shall be authenticated by affixing in the margin, immediately opposite the correction, the handwritten signature of each person executing the Bid. Failure to authenticate changes may disqualify the Bid. JEA may disqualify any Bids that deviate from the requirements of this Solicitation, and those that include unapproved exceptions, amendments, or erasures.

#### **1.3.2. CALCULATION OF THE BID PRICE**

JEA will use the Bidder's Total Bid Price stated on the Bid Form when making price comparisons for Award purposes.

### **1.3.3. SUBMITTING THE BID FORM**

The Bidder shall submit one (1) original of all the Bid Documents and two (2) duplicates of the original Bid Documents. It is encouraged that all submitters include an electronic version with their hardcopy submittal.

JEA will not accept Bid Documents files transmitted via email. If electronic copies of the Bid Documents are submitted, they must be submitted on a CD with the hardcopies of the Bid Documents.

### **1.3.4. MODIFICATION OR WITHDRAWAL OF BIDS**

The Bidder may modify or withdraw its Bid at any time prior to the Bid Due Date and Time by giving written notice to JEA's Chief Procurement Officer. JEA will not accept modifications submitted by telephone, telegraph, email, or facsimile, or those submitted after the Bid Due Date and Time. The Bidder shall not modify or withdraw its Bid from time of Bid opening and for a period of ninety (90) days following the opening of Bids.

### **1.3.5. ADDENDA**

JEA may issue Addenda prior to the Bid opening date to revise, in whole or in part, or clarify the intent or requirements of the Solicitation. The Bidder shall be responsible for ensuring it has received all Addenda prior to submitting its Bid or Proposal and shall acknowledge receipt of all Addenda by indicating where requested on the Bid Form. JEA will post all Addenda when issued online at [jea.com](http://jea.com). The Bidder must obtain Addenda from the JEA website. All Addenda will become part of the Solicitation and any resulting Contract Documents. It is the responsibility of each Bidder to ensure it has received and incorporated all Addenda into its Bid or Proposal. Failure to acknowledge receipt of Addenda may be grounds for rejection of a Bid or Proposal.

### **1.3.6. CONTRACT EXECUTION AND START OF WORK**

Within thirty (30) days from the date of Award, JEA will present the successful Bidder with the Contract Documents. Unless expressly waived by JEA, the successful Bidder shall execute a Contract for the Work or Services within ten (10) days after receiving the Contract from JEA. If the Bidder fails to execute the Contract or associated documents as required, or if it fails to act on a JEA-issued Purchase Order (PO), JEA may cancel the Award with no further liability to the Bidder, retain the bid security or bond (if applicable), and Award to the next-ranked company.

Upon JEA's receipt of the executed Contract, certificate of insurance, and recorded Payment and Performance bonds (if applicable), JEA will issue a PO, in writing and signed by an authorized JEA representative as acceptance of the Proposal or Bid and authorization for the company to proceed with the Work, unless otherwise stated in the Contract or PO.

For Construction Services: In the event that JEA intends to authorize the successful Bidder to proceed with administrative work only, or with only a portion of the Work, then the PO shall state the specific limitations of such authorization and JEA will issue a separate written Notice to Proceed to authorize the Bidder to begin Field Work, when applicable, or to perform the remainder of the Work, or any portion thereof. The Bidder shall ensure that it is prepared to begin Field Work upon receipt of Notice to Proceed. Any Work performed outside of this partial authorization shall be at the Bidder's risk and JEA shall have no obligation to pay for such Work.

### **1.3.7. DEFINED TERMS**

Words and terms defined in the Section entitled "Definitions" of this document are hereby incorporated by reference into the entire document.

### **1.3.8. EX PARTE COMMUNICATION**

Ex Parte Communication is strictly prohibited. Ex Parte Communication is defined as any inappropriate communication concerning a Solicitation between a firm submitting a Bid or Proposal and a JEA representative during

the time in which the Solicitation is being advertised through the time of Award. Examples of inappropriate communications include: private communications concerning the details of Solicitation in which a Bidder becomes privy to information not available to the other Bidders. Social contact between Bidders and JEA representatives should be kept to an absolute minimum during the solicitation process.

Failure to adhere to this policy will disqualify the noncompliant Company's Bid or Proposal. Any questions or clarifications concerning a Solicitation must be sent in writing via email to the JEA Buyer at least five (5) business days prior to the opening date. If determined by JEA, that a question should be answered or an issue clarified, JEA will issue an addendum to all Bidders.

For more information on Ex Parte communications, see JEA Procurement Code, Article 1-110, which is available at [www.jea.com](http://www.jea.com).

### **1.3.9. JEA PUBLICATIONS**

Applicable JEA publications are available at [www.jea.com](http://www.jea.com).

### **1.3.10. PROHIBITION AGAINST CONTINGENT FEES**

The Company warrants that it has not employed or retained any company or person, other than a bona fide employee working for the Company, or an independent sales representative under contract to the Company, to solicit or secure a contract with JEA, and that it has not paid or agreed to pay any person, company, corporation, individual or Company, other than a bona fide employee working solely for the Company, or an independent sale representative under contract to the Company, any fee, commission, percentage, gift, or any other consideration, contingent upon or resulting from the Award or making of the Contract. For a breach or violation of these provisions occurs, JEA shall have the right to terminate the Contract without liability, and at its discretion, to deduct from the Contract Price, or otherwise recover, the full amount of such fee, commission, percentage, gift or consideration.

### **1.3.11. RESERVATIONS OF RIGHTS TO JEA**

The Solicitation provides potential Companies with information to enable the submission of written offers. The Solicitation is not a contractual offer or commitment by JEA to purchase products or services.

Bids shall be good for a period of ninety (90) days following the opening of the Bids.

JEA reserves the right to reject any or all Bid or Proposals, or any part thereof, and/or to waive informalities if such action is in its best interest. JEA may reject any Bids that it deems incomplete, obscure or irregular including, but not limited to, Bid or Proposals that omit a price on any one (1) or more items for which prices are required, Bids that omit Unit Prices if Unit Prices are required, Bids for which JEA determines that the Bid or Proposal is unbalanced, Bids that offer equal items when the option to do so has not been stated, Bids that fail to include a Bid Bond, where one (1) is required, and Bids from Companies who have previously failed to satisfactorily complete JEA contracts of any nature or who have been scored by JEA as "Unacceptable" and as a result, are temporarily barred from bidding additional work.

JEA reserves the right to cancel, postpone, modify, reissue and amend this Solicitation at its discretion.

JEA reserves the right to cancel or change the date and time announced for opening of Bids at any time prior to the time announced for the opening of Bids. JEA may Award the Contract in whole or in part. In such cases whenever JEA exercises any of these reservations, JEA will make a commercially reasonable effort to notify, in writing, all parties to whom Solicitations were issued. JEA may award multiple or split Contracts if it is deemed to be in JEA's best interest.

### **1.3.12. SUNSHINE LAW**

#### **General**

Article I, Section 24, Florida Constitution, guarantees every person access to all public records and Chapter 119, Florida Statutes, provide a broad definition of public records. JEA is a body politic and corporate and subject to these laws and related statutes ("Florida's Public Records Laws"). All responses to this Solicitation are public records and available for public inspection unless specifically exempt by law.

**IF A BIDDER HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:**

**JEA**

**Attn: Public Records**

**21 West Church Street**

**Jacksonville, Florida 32202**

**Ph: 904-665-8606**

**publicrecords@jea.com**

#### **Redacted Submissions**

If a Bidder believes that any portion of the documents, data or records submitted in response to this Solicitation are exempt from Florida's Public Records Law, Bidder must (1) clearly segregate and mark the specific sections of the document, data or records as "Confidential," (2) cite the specific Florida Statute or other legal authority for the asserted exemption, and (3) provide JEA with a separate redacted copy of its response (the "Redacted Copy"). The cover of the Redacted Copy shall contain JEA's title and number for this Solicitation and Bidder's name, and shall be clearly titled "Redacted Copy." Bidder should only redact those portions of records that Bidder claims are specifically exempt from disclosure under Florida's Public Records Laws. If Bidder fails to submit a redacted copy of information it claims is confidential, JEA is authorized to produce all documents, data and other records submitted to JEA in answer to a public records request for such information.

In the event of a request for public records to which documents that are marked as confidential are responsive, JEA will provide the Redacted Copy to the requestor. If a requestor asserts a right to any redacted information, JEA will notify Bidder that such an assertion has been made. It is Bidder's responsibility to respond to the requestor to assert that the information in question is exempt from disclosure under applicable law. If JEA becomes subject to a demand for discovery or disclosure of Bidder's redacted information under legal process, JEA shall give Bidder prompt notice of the demand prior to releasing the information (unless otherwise prohibited by applicable law.) Bidder shall be responsible for defending its determination that the redacted portions of its response are not subject to disclosure. By submitting a response to this Solicitation, Bidder agrees to protect, defend and indemnify JEA from and against all claims, demands, actions, suits, damages, liabilities, losses, settlements, costs and expenses (including but not limited to reasonable attorney fees and costs) arising from or relating to Bidder's determination that the redacted portions of its response to this Solicitation are not subject to disclosure.

### **1.3.13. ESTIMATED QUANTITIES**

On the Bid Document, JEA sets forth anticipated quantities, or estimates of anticipated purchase volumes by JEA. JEA anticipates that these quantities are reasonable and will not be exceeded. During the Bid process, if the

Bidder finds any discrepancy greater than ten percent (10%) of the estimated quantity, the Bidder shall notify the JEA Representative in writing of the discrepancy. JEA will check the estimated quantity and if it is found to exceed ten percent (10%) of the estimated quantity, JEA will issue an Addendum to all Bidders.

After Award of the Contract, JEA will make payments upon the actual quantities of Work provided and JEA shall not be obligated, in any way, to pay any amounts for quantities other than those actually provided and authorized under this Contract, regardless of amount stated in the Solicitation. In the event that quantities or scope of work change after Award, the changes to price and/or scope shall be made in accordance with the terms and conditions stated in the Contract Document.

Any item not shown on the Bid Document, but shown in the drawings or Technical Specifications section, that is required to perform the Work, or that is required as part of a complete and operable system, shall be included in the Bid Price.

#### **1.3.14. ETHICS (IFB)**

By signing the Bid Form, the Bidder certifies this Bid is made without any previous understanding, agreement or connection with any other person, firm, or corporation submitting a Bid for the same Work other than as a Subcontractor or supplier, and that this Bid is made without outside control, collusion, fraud, or other illegal or unethical actions. The Bidder shall comply with all JEA and City of Jacksonville ordinances, policies and procedures regarding business ethics.

The Bidder shall submit only one (1) Bid in response to this Solicitation. If JEA has reasonable cause to believe the Bidder has submitted more than one (1) Bid for the same Work, other than as a Subcontractor or subsupplier, JEA shall disqualify the Bid and may pursue debarment actions.

The Bidder shall disclose the name(s) of any public officials who have any financial position, directly or indirectly, with this Bid by completing and submitting the Conflict of Interest Certificate Form available at [jea.com](http://jea.com). If JEA has reason to believe that collusion exists among the Bidders, JEA shall reject any and all Bids from the suspected Bidders and will proceed to debar Bidder from future JEA Awards in accordance with the JEA Purchasing Code.

JEA is prohibited by its Charter from awarding contracts to JEA officers or employees, or in which a JEA officer or employee has a financial interest. JEA shall reject any and all Bids from JEA officers or employees, as well as, any and all Bids in which a JEA officer or employee has a financial interest.

In accordance with Florida Statutes Sec. 287.133, JEA shall reject Bids from any persons or affiliates convicted of a public entity crime as listed on the Convicted Vendor list maintained by the Florida Department of Management Services. JEA shall not make an Award to any officer, director, executive, partner, shareholder, employee, member, or agent active in management of the Bidder listed on the Convicted Vendor list for any transaction exceeding \$35,000.00 for a period of thirty-six (36) months from the date of being placed on the Convicted Vendor list.

If the Bidder violates any requirement of this clause, the Bid may be rejected and JEA may debar offending companies and persons.

#### **1.3.15. FLORIDA TRENCH SAFETY ACT**

If required, the Bidder shall complete and submit with its Bid the Florida Trench Safety Act Acknowledgment form, in accordance with Florida Statutes when the Work includes trench excavations that exceed five (5) feet in depth and as written assurance that the Bidder shall comply with all applicable trench safety standards, laws, rules and regulations during performance of any Work awarded from this Solicitation.

### **1.3.16. MATHEMATICAL ERRORS**

In the event of a mathematical error in calculation of the prices entered on the Bid Form, the Unit Prices will prevail. The corrected Bid Price utilizing the Unit Prices will be used to determine if the Company is Awarded the Work or the Services. Subsequently, the Unit Prices will be used throughout the term of the Contract.

### **1.3.17. AVAILABILITY OF BIDS AFTER BID OPENING**

In accordance with the Florida Public Records Law, Florida Statutes, Chapter 119, copies of all Bids are available for public inspection thirty (30) days after the opening of Bids or on the date of Award announcement, whichever is earlier. Bidders may review opened Bids once they are available for public inspection by contacting the designated Buyer or JEA's Public Records custodian whose contact information can be found at [jea.com](http://jea.com). JEA will post a summary of the Bid results immediately after the Bid opening.

### **1.3.18. PROTEST OF BIDDING AND AWARD PROCESS**

Companies shall file any protests regarding this Solicitation in writing, in accordance with the JEA Purchasing Code, as amended from time to time. The JEA Purchasing Code is available online at [jea.com](http://jea.com).

### **1.3.19. LISTING OF SUBCONTRACTORS**

JEA shall specify the major Subcontractors that the Company must list is the Company intends to use a Subcontractor to perform a portion of the Work, unless the Work will be self-performed by the Company. The Subcontractors that JEA requires to be listed is stated in the Section titled "Required Forms to Be Submitted with the Bid". The major Subcontractors shall be listed on the Subcontractors Form which is available at [jea.com](http://jea.com). Failure of the Company to submit the required Subcontractor information on the form with its Bid shall result in rejection of the Company's Bid.

The Company shall not use Subcontractors and subsuppliers/shop fabricators other than those shown on the Subcontractor Form unless it shows good cause and obtains the JEA Representative's prior written consent. If the Company plans to use Subcontractors or subsupplier/shop fabricators to perform over fifty percent (50%) of the Work, the Company shall obtain JEA's approval at least five (5) days prior to the Bid Due Date. Failure to obtain JEA approval will disqualify the Company and result in rejection of Company's Bid.

### **1.3.20. CERTIFICATION AND REPRESENTATIONS OF THE BIDDER**

By signing and submitting a Bid, the Bidder certifies and represents as follows:

- A. That it has carefully examined all available records and conditions, including sites if applicable, and the requirements and specifications of this Solicitation prior to submitting its Bid. Where the Bidder visits sites, no Work or other disturbance is to be performed while at the site without written permission by JEA in advance of the site visit. The Bidder shall comply with all safety requirements described in the Solicitation and shall be prepared to show proof of insurance
- B. That every aspect of its submitted Bid, including the Bid Price and the detailed schedule for the execution of the Work, are based on its own knowledge and judgment of the conditions and hazards involved, and not upon any representation of JEA. JEA assumes no responsibility for any understanding or representation made by any of its representatives during or prior to execution of the Contract unless such understandings or representations are expressly stated in the Contract and the Contract expressly provides that JEA assumes the responsibility.
- C. That the individual signing the Bid Documents is a duly authorized agent or officer of the firm. Bids submitted by a corporation must be executed in the corporate name by the President

or Vice President. If an individual other than the President or Vice President signs the bid, satisfactory evidence of authority to sign may be requested by JEA. If the Bid is submitted by a partnership, the bid must be signed by a partner whose title must appear under the signature. If an individual other than a partner signs the bid, satisfactory evidence of authority to sign may be requested by JEA. The corporation or partnership must be in active status at the Florida Division of Corporations at the time of contract execution.

- D. That the firm maintains an active status and all licenses, permits, certifications, insurance, bonds and other credentials including, but not limited to, contractor's license and occupational licenses necessary to perform the Work. The Bidder also certifies that, upon the prospect of any change in the status of applicable licenses, permits, certifications, insurances, bonds or other credentials, the Bidder shall immediately notify JEA of status change.
- E. That Bidder has read, understands these instructions and will comply with the Section titled Ethics.

#### **1.3.21. CONFLICT OF INTEREST (CONSTRUCTION)**

This conflict of interest policy applies to all JEA construction projects ("Project"). Any company bidding the construction phase of a Project cannot at the time of Bid submittal, be affiliated with or have any direct or indirect ownership interest in the architect/engineer ("Designer") of record. The company will also be prohibited from bidding if the Designer has any direct or indirect ownership interest in the Contractor. Should JEA erroneously award a contract in violation of this policy, JEA may terminate the contract at any time with no liability to company, and company shall be liable to JEA for all damages, including but not limited to the costs to rebid the Project. The purpose of this policy is to encourage bidding and eliminate any actual or perceived advantage that one (1) Bidder may have over another.

#### **1.3.22. CONSTRUCTION AND DEMOLITION DEBRIS**

The Bidder shall complete and submit the Construction and Demolition Debris Disposal form which is available at [www.jea.com](http://www.jea.com). The Bidder shall identify, by the Certificate of Necessity number and Public Works number, the sites to which it will remove for disposal debris resulting from the Work. A list of approved sites may be obtained from the JEA Office Section or [jea.com](http://jea.com).

#### **1.3.23. UNABLE TO SUBMIT BID FORMS**

If you elect not to submit a Bid in response to this Solicitation, please complete the Unable to Submit Bid Form, available for download at [www.jea.com](http://www.jea.com), or by obtaining a hardcopy from the JEA Bid Office, 21 West Church St., Customer Center 1<sup>st</sup> Floor, Room 002, Jacksonville, FL 32202. The Bidder may contact the Bid Office by phone at (904) 665-6740.

Send the completed Unable to Submit Bid Form to:

JEA Bid Office  
21 West Church St., CC-1, Room 002  
Jacksonville, FL 32202  
or fax the Unable to Submit Bid Form to: (904) 665-7095.

Do not return the entire Solicitation package; simply return the Unable to Submit Bid Form.

## **2. CONTRACT TERMS AND CONDITIONS**

### **2.1. CONTRACT DOCUMENT AND TERMS AND CONDITIONS**

Provided below are the Contract terms and conditions that will be incorporated by reference in the Contract Document executed by the Company and JEA. The Contract Document will incorporate by reference the terms contained in the Solicitation portion of this document provided in Section 1, the Contract Terms provided in Section 2; and the Technical Specifications provided in Section 3. An example of the Contract that the Company will be required to execute is available for review at [jea.com](http://jea.com).

### **2.2. DEFINITIONS**

#### **2.2.1. DEFINITIONS**

Words and terms defined in this section shall have the same meaning throughout all parts of this Solicitation and Contract Documents. Where intended to convey the meaning consistent with that set forth in its definition, a defined word or term is marked by initial capitalization. The "Technical Specifications" portion of this Solicitation may define additional words and terms where necessary to clarify the Work. Unless otherwise stated in this Solicitation and/or Contract Documents, definitions set forth in the "Technical Specifications" shall apply only within the "Technical Specifications."

#### **2.2.2. ACCEPTANCE**

JEA's written notice by the Contract Administrator to the Company that all Work as specified in the Contract, or a portion of the Work as specified in a Task or Work Order, has been completed to JEA's satisfaction. Approval or recognition of the Company meeting a Milestone or interim step does not constitute Acceptance of that portion of Work. Acceptance does not in any way limit JEA's rights under the Contract or applicable laws, rules and regulations.

#### **2.2.3. ADDENDUM/ADDENDA**

A written change or changes to the Solicitation which is issued by JEA Procurement Services and is incorporated into the Solicitation as a modification, revision and/or further clarification of the intent of the Solicitation.

#### **2.2.4. ADMINISTRATIVE WORK**

Actions primarily performed in an office environment and associated with preparing to perform or administer the Work including, but not limited to, preparing Work schedules, obtaining bonds, executing Contracts, securing resources and other actions specified in the Solicitation, or otherwise prudent to ensure a timely, safe and otherwise compliant start and performance of Field Work. Administrative Work is not performed at the Work Location.

#### **2.2.5. ANNIVERSARY DATE**

The date which is twelve (12) months after the effective date of the Contract, and each date which is twelve (12) months after an Anniversary Date that occurs while the Contract is in effect.

#### **2.2.6. APPLICATION FOR PAYMENT**

The form required for payment which shall include all items required pursuant to the contract for the payment to be processed by JEA. Such form shall require the Contractor expressly state that the Contractor has fulfilled all obligations for the previous payments issued to the Contractor, including payment for subcontractors and materials. The Application for Payment includes all forms and supporting documentation as required by the Contract documents.



#### **2.2.7. APPROVED SCHEDULE**

A Critical Path Method Schedule or a Summary Schedule for the Work approved in writing by the Contract Administrator.

#### **2.2.8. AWARD**

The written approval of the JEA Awards Committee that the procurement process for the purchase of the Work was in accordance with the JEA Procurement Code and Florida Statutes. Once an Award is approved, JEA will either issue a Purchase Order or execute a Contract with the successful bidder or proposer.

#### **2.2.9. BID DOCUMENTS**

The forms required to be submitted to JEA as the Company's offer to perform the Work or Services described herein. The Bid Documents can include, but is not limited to, the Bid Form, Bid Workbook, Minimum Qualifications Form, certifications and/or other required submittals. The Bid Documents may also be referred to as the "Bid Form".

#### **2.2.10. BID OR PROPOSAL**

The document describing the Bidder's offer submitted in response to this Solicitation. Bid and Proposal shall be considered synonymous for the purpose of this Contract.

#### **2.2.11. BID PRICE**

The total dollar amount of the Bidder's offer to successfully perform the Work or Services in accordance with the Contract Documents.

#### **2.2.12. BIDDER OR PROPOSER**

The respondent to this Solicitation. Bidder and Proposer shall be considered synonymous for the purpose of this Solicitation.

#### **2.2.13. CHANGE ORDER**

A written order issued after execution of the Contract to the Company signed by the Contract Administrator, or his designated representative, authorizing an addition, deletion, or revision of the Work, or an adjustment in the Contract Price or the Contract Time. Change Orders do not authorize expenditures greater than the monies encumbered by JEA, which is shown on the associated Purchase Order(s). An executed Change Order resolves all issues related to price and time for the Work included in the Change Order. A Change Order that involves a material change to the Contract may result in a Contract Amendment.

#### **2.2.14. COMPANY**

The legal person, firm, corporation or any other entity or business relationship with whom JEA has executed the Contract. Where the word "Company" is used it shall also include permitted assigns. Prime Contractor, Contractor, Vendor, Supplier and Company shall be considered synonymous for the purpose of the Contract.

#### **2.2.15. COMPANY REPRESENTATIVE**

The individual responsible for representing the Company in all activities concerning the fulfillment and administration of the Contract.

#### **2.2.16. COMPANY SUPERVISOR**

The individual, employed or contracted by the Company, to manage the Work on a day-to-day basis and ensure the Work is performed according to the Contract. The Company Supervisor may be authorized by the Company Representative to act on Contract matters. Such authorization shall be in writing and delivered to the Contract

Administrator and shall clearly state the limitations of any such authorization. In the event that the Company Supervisor and the Company Representative is the same person, the Company shall notify the Contract Administrator of such situation.

#### **2.2.17. CONTRACT**

An agreement between JEA and the Company, signed by both parties, which incorporates all the Contract Documents. The Contract shall not be altered without an Amendment to the Contract and executed by JEA and the Company, or a JEA issued Change Order.

#### **2.2.18. CONTRACT ADMINISTRATOR**

The individual assigned by JEA to have authority to administer the Contract, including the authority to negotiate all elements of the Contract with the Company, authorize Change Orders within the maximum amount awarded, terminate the Contract, seek remedies for nonperformance including termination, and otherwise act on behalf of JEA in all matters regarding the Contract. The Contract Administrator may authorize JEA Representative in writing to make minor changes to the Work with the intent of preventing Work disruption.

#### **2.2.19. CONTRACT DOCUMENTS**

Contract Documents, also referred to as the "Contract" means the executed Contract, all Solicitation documents and Bid Documents as further described in the Section of the Solicitation titled "Contract Documents", and any written Change Orders, amendments or Purchase Orders executed by JEA, and insurance and/or bonds as required by the Contract.

#### **2.2.20. CONTRACT PRICE**

The total amount payable to the Company during the initial Term of the Contract. However, this amount is not a guaranteed amount. Also referred to as the "Maximum Indebtedness" of JEA.

#### **2.2.21. CONTRACT TIME (CONSTRUCTION)**

The number of calendar days or the period of time from when the written Purchase Order is issued to the Company to Substantial Completion and Acceptance of the Work.

#### **2.2.22. CONTRACTOR**

The legal person, firm, corporation or any other entity or business relationship with whom JEA has executed the Contract. Where the word "Contractor" is used it shall also include permitted assigns. Contractor and Company shall be considered synonymous for the purpose of the Contract.

#### **2.2.23. CRITICAL PATH METHOD (CPM) SCHEDULE**

A schematic display of the sequential and logical relationship of all activities that comprise the Work. Using a combination of duration, early and late start dates, and early and late finish dates, a critical path is established as the path of interdependent activities that must be sequentially performed and that require a longer total time to perform than any other such series. CPM Schedules suitable for use on this Contract use GANNT Precedence formats.

#### **2.2.24. CUSTOMER SERVICE PLAN**

The Company's plan to achieve customer satisfaction requirements as determined by JEA and JEA Project Outreach, which shall include, as a minimum, the name and office phone number, cell phone number, email address, Nextel Direct Connect number, and fax number of Company's Customer Service Representative, a detailed flow chart on how the Company will handle customer concerns, preemptive customer satisfaction control measures (such as door hangers provided by JEA, and neighborhood meetings in conjunction with JEA staff) and a plan to reduce the number of

customer concerns surrounding construction Work addressing, as a minimum, the construction practices that will eliminate damage to customers' property including, but not limited to, cracked driveways, tire ruts in customers' yards, blocking customers' access to driveways, cutting customers' services during tie-in, excessive noise from construction equipment, and elimination of dust during construction Work.

#### **2.2.25. DEFECT**

Work that fails to reach Acceptance, or Work that fails meet the requirements of any required test, inspection or approval, and any Work that meets the requirements of any test or approval, but nevertheless does not meet the requirements of the Contract Documents.

#### **2.2.26. ENVIRONMENTAL REGULATIONS**

All laws, ordinances, statutes, codes, rules, regulations, agreements, judgments, orders, and decrees, now or hereafter enacted, promulgated, or amended, of the United States, the states, the counties, the cities, or any other political subdivisions in which the Work Location is located, and any other political subdivision, agency or instrumentality exercising jurisdiction over JEA, the Work Location, or the use of the Work Location, relating to pollution, the protection or regulation of human health, natural resources, or the environment, or the emission, discharge, release or threatened release of pollutants, contaminants, chemicals, or industrial, toxic or hazardous substances or waste or Hazardous Materials (as defined in this Contract) into the environment (including, without limitation, ambient air, surface water, ground water or land or soil).

#### **2.2.27. EQUAL ITEM**

Item a Bidder chooses to offer in place of offering the brand name or manufacturer's item specified on the Bid Document when the Bid Document clearly states that the Bidder may offer such an item.

#### **2.2.28. FIELD WORK**

Actions associated with meeting the requirements of the Contract other than Administrative Work. Field Work is primarily performed at the Work Location.

#### **2.2.29. FINAL COMPLETION**

The point in time after JEA makes the determination that the Work is completed and there is Acceptance by JEA, and the Company has fulfilled all requirements of the Contract Documents.

#### **2.2.30. FINAL PAYMENT**

The Final Payment for all Work performed. Final Payment shall not be made until the Company has complied with all the Contract requirements, and provided as necessary close-out documents as contained in the Contract.

#### **2.2.31. HAZARDOUS MATERIALS**

Any substance which is or contains (i) any "hazardous substance" as now or hereafter defined in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 U.S.C. '9601 et seq.) ("CERCLA") or any regulations promulgated under or pursuant to CERCLA; (ii) any "hazardous waste" as now or hereafter defined in the Resource Conservation and Recovery Act (42 U.S.C. '6901 et. seq.) ("RCRA") or regulations promulgated under or pursuant to RCRA; (iii) any substance regulated by the Toxic Substances Control Act (15 U.S.C. '2601 et seq.); (iv) gasoline, diesel fuel, or other petroleum hydrocarbons; (v) asbestos and asbestos containing materials, in any form, whether friable or non-friable; (vi) polychlorinated biphenyls; (vii) radon gas; and (viii) any additional substances or materials which are now or hereafter classified or considered to be hazardous or toxic under Environmental Requirements (as hereinafter defined) or the common law, or any other applicable laws relating to the Licensed Property. Hazardous Materials shall include, without limitation, any substance, the presence of which on the

Licensed Property, (A) requires reporting, investigation or remediation under Environmental Requirements; (B) causes or threatens to cause a nuisance on the Licensed Property or adjacent property or poses or threatens to pose a hazard to the health or safety of persons on the Licensed Property or adjacent property; or (C) which, if it emanated or migrated from the Licensed Property, could constitute a trespass.

#### **2.2.32. HOLIDAYS**

The following days: New Year's Day, Martin Luther King Jr. Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Day after Thanksgiving, Christmas Eve Day, and Christmas Day.

#### **2.2.33. INVOICE**

A document seeking payment to Company from JEA for all or a portion of the Work, in accordance with the Contract Documents, and including at a minimum the following items: the Company's name and address, a description of the product(s) or service(s) rendered, a valid JEA PO number, the amount payable, the Unit Price, the payee name and address, any associated JSEB forms and any other supporting documentation required by the Contract Documents.

#### **2.2.34. JEA**

JEA on its own behalf, and when the Work involves St. Johns River Power Park (SJRPP), as agent for Florida Power and Light Company (FPL). JEA and FPL are co-owners of SJRPP.

#### **2.2.35. JEA ENGINEER**

The individual assigned by JEA (either an employee or a third party) to provide licensing, engineering, design review, and/or construction management including, but not limited to, overseeing and resolving engineering/design issues, conveying JEA's instructions to the Company and enforcing the faithful performance of the Work. The JEA Engineer's authority includes interpreting the technical portion of the Contract Documents, deciding on matters relating to the execution and progress of the Work and evaluating the Company's performance. The JEA Engineer may stop the Work when deemed necessary by JEA. The JEA Engineer will receive and adjudicate any claim of ambiguity or error in the technical portion of the Contract Documents and shall reduce any determination to writing, and the decision shall be final and binding. The JEA Engineer is not a party to the Contract. The JEA Engineer has no authority to approve changes to the Work or Contract, or to commit JEA to any expenditure of money except as expressly designated in writing by the Contract Administrator.

#### **2.2.36. JEA INSPECTOR**

The individual(s) or company(ies) designated by the Contract Administrator to inspect and test the Company's performance and Contract compliance including materials, workmanship, safety, environmental compliance, JSEB compliance, project controls, administration and accounting, and other aspects of Contract compliance. The JEA Inspector has no authority to approve changes to the Work or Contract, or to commit JEA to any expenditure of money except as expressly designated in writing by the Contract Administrator.

#### **2.2.37. JEA REPRESENTATIVES**

The Contract Administrator, Contract Inspector, Contract Administrator's Representative, JEA Engineer, Field Engineer, Project Manager, and other persons designated by the Contract Administrator as JEA Representatives acting in a capacity related to the Work or Contract under the authority of the Contract Administrator.

#### **2.2.38. LUMP SUM BULK BID PRICE**

The total amount payable to the Company under the Contract Documents for performing the bulk bid Work.

#### **2.2.39. MILESTONE**

A point in time representing a key or important intermediate event in the Work. A Milestone is to be capable of validation by meeting all of the items prescribed in a defining checklist as agreed to in writing by JEA.

#### **2.2.40. NOTICE TO PROCEED**

The written notice, duly authorized and delivered by JEA that authorizes the Company to begin the Work. The Notice to Proceed is normally issued in the form of a Purchase Order, unless otherwise specified in the Contract Documents.

#### **2.2.41. OVERTIME**

Work approved in writing by the Contract Administrator that is required to be performed beyond an employee's scheduled workday or work week, including Work performed on Holidays.

#### **2.2.42. PAYMENT AND PERFORMANCE BONDS**

The common-law Performance Bond and the statutory Payment Bond contemplated by Section 255.05, Florida Statutes in the form required by JEA.

#### **2.2.43. PRE-WORK MEETING**

A meeting conducted after Award and prior to the start of any Field Work between JEA and the Company. The purpose of the meeting may include, but is not limited to orientation, schedule, certification and permitting, and other preparatory or Work execution details.

#### **2.2.44. PERFORMANCE - ACCEPTABLE PERFORMANCE/PERFORMER**

The Company averages more than 2.80 and less than 4.0 across all performance scorecard evaluation metrics, and does not receive a score of less than 2.0 on any metric.

#### **2.2.45. PERFORMANCE - TOP PERFORMANCE/PERFORMER**

The Company averages 4.0 or more across all scorecard evaluation metrics and does not receive a score of less than 4.0 on any one (1) metric.

#### **2.2.46. PERFORMANCE - UNACCEPTABLE PERFORMANCE/PERFORMER**

The Company averages less than 2.80 across all scorecard evaluation metrics, or scores a 1.0 on any one (1) metric regardless of average, or receives a score of 2.0 on the same metric on two (2) sequential performance evaluations.

#### **2.2.47. PURCHASE ORDER (PO)**

A commercial document issued by JEA, authorizing work, indicating types, quantities, and agreed prices for products or services the Company will provide to JEA. Sending a PO to a Company constitutes a legal offer to buy products or services. The words "Purchase Order" are clearly marked across the top, a PO number is used for reference and invoicing purposes, includes an authorized JEA signature, and states the dollar amount of the lawfully appropriated funds.

#### **2.2.48. QUALITY ASSURANCE**

Actions that JEA takes to assess the Company's performance under the Contract.

#### **2.2.49. QUALITY CONTROL**

Actions that the Company takes to ensure it successfully completes the Work in full accordance with the Contract Documents.

#### **2.2.50. SCHEDULE**

All documentation related to the planning and scheduling of the Work as described in these Terms and Conditions.

#### **2.2.51. SHOP DRAWINGS (DEFINITION)**

Drawings, electronic and hard copy, that detail the fabrication, erection, layout and setting drawings; manufacturer's standard drawings; schedules; descriptive literature, catalogs and brochures; performance and test data; wiring and control diagrams; all other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and method of construction as may be required to show the JEA Engineer that the proposed materials, equipment or systems and the position thereof are in compliance with the requirements of the Contract Documents.

#### **2.2.52. SOLICITATION**

The documents (which may be electronic) issued by JEA's Procurement Department to solicit Bids from Bidders that includes, but is not limited to, the Bid Documents, Bid Workbook, samples of documents, contractual terms and conditions, the Technical Specifications, and associated Addenda.

#### **2.2.53. SUBCONTRACTOR**

The legal person, firm, corporation or any other entity or business relationship that provides a portion of the work, or provides supplies and materials, to the Company which has an executed Contract with JEA. JEA is not in privity of contract with the Subcontractor.

#### **2.2.54. SUBSTANTIAL COMPLETION (DEFINITION)**

The time when JEA determines that the Work (or a specified part thereof) is substantially complete, in accordance with the Contract Documents. Additionally, all work other than incidental corrective and incidental punch list work items shall be completed. Substantial Completion shall not have been achieved if all systems and parts are not functional, if utilities are not connected and operating normally, if all required regulatory permits and approvals have not been issued, or if all vehicular and pedestrian traffic routes affected by the Work have not been restored. The date of Substantial Completion shall be established in writing by JEA. Recognition of the Work as Substantially Complete, as evidenced by issuance of a Certificate of Substantial Completion, does not represent JEA's Acceptance of the Work.

#### **2.2.55. SUMMARY SCHEDULE**

A diagram displaying the Milestones for the Work graphically positioned on a timeline, showing at a minimum the calendar dates on which each Milestone is scheduled to be completed for Acceptance.

#### **2.2.56. SUPPLEMENTAL WORK AUTHORIZATION (SWA)**

A written order, issued at the sole discretion of the JEA representative, which incorporates cost or schedule changes into the Contract. The SWA shall be used for increases or decreases in the Contract Price within the SWA amount set forth on the Bid Form, or to make changes in the schedule for performance of the Work, or to authorize the Company to perform changes in the Work.

#### **2.2.57. TASK ORDER**

A document that describes the Work or describes a series of tasks that the Company will perform in accordance with the Contract Documents. A Task Order may be issued as an attachment to a Purchase Order, but the Task Order is neither a Purchase Order, nor a Notice to Proceed.

#### **2.2.58. TERM**

The period of time during which the Contract is in force or until the Contract's Maximum Indebtedness is reached, whichever occurs first.

### **2.2.59. UNIT PRICES**

The charges to JEA for the performance of each respective unit of Work as stated in the Response Workbook, Bid Form, or Proposal Form, and incorporated into the Contract Documents.

### **2.2.60. WORK LOCATION (DEFINITION)**

The place or places where the Work is performed, excluding the properties of the Company and/or the Subcontractor(s).

### **2.2.61. WORK OR SCOPE OF SERVICES**

Work includes as defined in the Contract Documents all actions, products, documentation, electronic programs, reports, testing, transport, administration, management, services, materials, tools, equipment, and responsibilities to be furnished or performed by the Company under the Contract, together with all other additional necessities that are not specifically recited in the Contract, but can be reasonably inferred as necessary to complete all obligations and fully satisfy the intent of the Contract.

## **2.3. CONTRACT DOCUMENTS**

### **2.3.1. ORDER OF PRECEDENCE**

The Contract shall consist of JEA's Contract and/or Purchase Order together with the Solicitation including, but not limited to, the executed Bid Documents, which shall be collectively referred to as the Contract Documents. This Contract is the complete agreement between the parties. Parol or extrinsic evidence will not be used to vary or contradict the express terms of this Contract. The Contract Documents are complementary; what is called for by one (1) is binding as if called for by all. The Company shall inform JEA in writing of any conflict, error or discrepancy in the Contract Documents upon discovery. Should the Company proceed with the Work prior to written resolution of the error or conflict by JEA, all Work performed is at the sole risk of the Company. JEA will generally consider this precedence of the Contract Documents in resolving any conflict, error, or discrepancy:

- o Executed Contract Amendments
- o Exhibits to Contract Documents
- o Executed Contract Documents
- o Purchase Order(s)
- o Addenda to JEA Solicitation
- o Drawings associated with this Solicitation
- o Exhibits and Attachments to this Solicitation
- o Technical Specifications associated with this Solicitation
- o This Solicitation
- o Bid Documents
- o References

The figure dimensions on drawings shall govern over scale dimensions. Contract and detailed drawings shall govern over general drawings. The Company shall perform any Work that may reasonably be inferred from the Contract as being required whether or not it is specifically called for. Work, materials or equipment described in words that, so applied, have a well-known technical or trade meaning shall be taken as referring to such recognized standards.

## **2.4. PRICE AND PAYMENTS**

### **2.4.1. PAYMENTS**

#### **2.4.1.1. PAYMENT METHOD - SCHEDULE OF VALUES**

The Company shall submit to JEA a monthly Application for Payment that details the Work completed during that month. The Company shall request payment in accordance with the amounts/percentages set forth on the Schedule of Values that the Company submitted prior to the start of the Work. The Schedule of Values is defined as an itemized list that establishes the value of each part of the Work for a stipulated price and for major lump sum items in a unit price contract. JEA will determine, either by measurement or approximation, the final quantities incorporated into the Work under items for which Unit Prices are established in the Contract Documents. JEA's determination as to the quantity of the Work successfully completed shall be final.

#### **2.4.2. OFFSETS**

In case the Company is in violation of any requirement of the Contract, JEA may withhold payments that may be due the Company, and may offset existing balances with any JEA incurred costs against funds due the Company under this and any other Company Contract with JEA, as a result of the violation, or other damages as allowed by the Contract Documents and applicable law.

#### **2.4.3. DISCOUNT PRICING**

JEA offers any or all of the following option payment terms, one (1) of which may be executed at the request of the Company by sending an email to the JEA Buyer listed in this Solicitation:

- o 1% 20, net 30
- o 2% 10, net 30

Company may request alternate payment terms for JEA's consideration, however, alternate payment terms are not effective until acceptance by JEA in writing. Please note, all payment dates are calculated from the date of the Invoice receipt by JEA's Accounts Payable.

#### **2.4.4. COST SAVINGS PLAN**

During the Term of this Contract, JEA and Company are encouraged to identify ways to reduce the total cost to JEA related to the Work provided by the Company ("Cost Savings Plan"). JEA and Company may negotiate Amendments to this Contract that support and allow such reductions in total costs including, but not limited to, the sharing of savings resulting from implementation of cost-reducing initiatives between JEA and Company. The decision to accept any cost savings plan shall be in the sole discretion of JEA, and JEA shall not be liable to Company for any cost that may be alleged to be related to a refusal to accept a Cost Savings Plan proposed by Company.

#### **2.4.5. TAXES**

JEA is authorized to self-accrue the Florida Sales and Use Tax and is exempt from Manufacturer's Federal Excise Tax when purchasing tangible personal property for its direct consumption.

#### **2.4.6. GENERAL CONDITIONS/SPECIAL CONDITIONS**

The line item shown on the Bid Form titled "General/Special Conditions Lump Sum Price" shall be used for general and special expenses which do not appear as separate line items on the Bid Form, including, but not limited to, costs and expenses related to the following:

- o The execution and recording of the Payment and Performance Bonds



- o Safety requirements
- o Quality Control
- o Preparation of daily reports
- o Maintenance of traffic
- o Attendance of meetings, project scheduling
- o Testing (if not included elsewhere)

Except as provided below for expenses related to Bonds and Surveying, JEA's payment for the General/Special Conditions line item shall be based upon the percentage of Work completed.

Bonds- Company will be permitted to invoice JEA, in its first payment application, for the costs associated with the execution and recording of the Payment and Performance Bonds. The amount paid by JEA for the Payment and Performance Bonds will be deducted from the General/Special Conditions line item total.

Surveying- Prior to construction, the Company will be permitted to invoice JEA for the costs associated with the survey of the existing roadway horizontal alignment. The amount paid by JEA for these costs will be deducted from the General/Special Conditions line item total.

SWA- In the event that JEA authorizes changes to the Work under a Supplemental Work Authorization (SWA), the amount of the Bid Form line item for SWA Allowance will not be increased unless the total value of all SWA Work exceeds the Original SWA Allowance provided on the Bid Form.

#### **2.4.7. JSEB COMPLIANCE**

##### **2.4.7.1. COMPLIANCE WITH JSEB REQUIREMENTS**

The Company shall achieve the JSEB participation requirements as set forth in the Solicitation, except as allowed under the good faith efforts exception as defined in the City of Jacksonville Ordinance. In no case shall the Company make changes to the JSEB firms listed in its Bid, revise the JSEB scope of Work or amount of Work as stated in its Bid without prior written notice to the Contract Administrator, and without subsequent receipt of written approval from the Contract Administrator.

The City of Jacksonville requirements as outlined in the City of Jacksonville Ordinance relating to JSEBs shall apply in their entirety to this Contract. Where the City of Jacksonville ordinance refers to "Chief", it shall be construed to mean, for purposes of this Contract, JEA's Chief Purchasing Officer. In a like manner, where it refers to "City", or "City of Jacksonville", it shall be construed to mean JEA.

Use of brokering, as defined in the City of Jacksonville Ordinance, or other techniques that do not provide a commercially useful function are strictly prohibited as means of achieving the JSEB requirements of the Contract. Only the amount of fees or commissions charged by a JSEB for providing a bona fide service such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a contract shall be counted towards a JSEB participation requirement, provided the fee is reasonable and not excessive as compared with fees customarily charged for similar services.

Payment terms for participating JSEB firms shall be the same or better than the payment terms the Company receives from JEA, except that in all cases JSEB firms shall be allowed to submit invoices to the Company at least bimonthly, and the Company shall pay proper invoices no later than three (3) days after its receipt of JEA payment. The Company shall obtain written approval from the Contract Administrator prior to withholding any payment from JSEB firm.

If the Company uses a JSEB qualified firm for the performance of any part of this Work, the Company shall submit to JEA, with its Invoice, a listing of JSEB qualified firms that have participated in the Work. Such listing shall be made using the form "Monthly Report for COJ/JEA JSEB Participation" available at [www.jea.com](http://www.jea.com)

The Company agrees to let JEA audit its financial and operating records with one (1) day of notice, and during normal business hours, at its corporate offices for the purpose of determining compliance with all JSEB requirements of the Contract Documents.

If the Company violates any provision regarding JSEB, including, but not limited to, program intent, the Company shall be subject to any or all of the following, plus any other remedies available to JEA under law:

- o Terminate the Contract for breach
- o Suspend the Company from bidding any JEA projects as follows:
  - o First offense: Six (6) months
  - o Second offense: One (1) year
  - o Third offense: Three (3) years
- o Revoke Company's JSEB certification if the Company itself is certified as a JSEB.

#### **2.4.8. JSEB - INVOICING AND PAYMENT**

If the Company utilizes JSEB certified firms, regardless of whether these Contract Documents require or encourage the use of such firms, the Company shall Invoice for and report the use of JSEB certified firms according to the format and guidelines established by the City of Jacksonville.

### **2.5. SCHEDULES, REPORTING REQUIREMENTS AND LIQUIDATED DAMAGES**

#### **2.5.1. LIQUIDATED DAMAGES UNTIL ACCEPTANCE**

If the Company fails to obtain Substantial Completion of the Work on or before December 120 days after date of Notice to Proceed, the Company shall pay JEA the sum of \$1,000.00 per day for each and every calendar day, including Sundays and Holidays, starting on this day until the date the Work is Substantially Completed.

If the Company fails to obtain JEA's Acceptance of the Work on or before ninety-eight (98) days after date of Notice to Proceed, the Company shall pay JEA the sum of \$600.00 per day for each and every calendar day, including Sundays and Holidays, starting on the day the Work was deemed by JEA to be Substantially Complete until the date the Work is Accepted by JEA.

Liquidated Damages are capped at a maximum of ten percent (10%) of the Contract Price.

The Company understands and agrees that said daily sum is to be paid not as a penalty, but as compensation to JEA as a fixed and reasonable liquidated damages for losses that JEA will suffer because of such default, whether through increased administrative and engineering costs, interference with JEA's normal operations, other tangible and intangible costs, or otherwise, which costs will be impossible or impractical to measure or ascertain with any reasonable specificity.

Liquidated damages may, at JEA's sole discretion, be deducted from any monies held by JEA that are otherwise payable to Company.

The Company's responsibility for liquidated damages shall in no way relieve the Company of any other obligations under the Contract.

### **2.5.2. REPORTING (CONSTRUCTION)**

The Company shall provide all reports as defined in the Contract Documents.

Where the reporting frequency is daily, reports shall be submitted by noon of the following workday. Where the reporting frequency is weekly, reports are due by Monday at noon, covering the prior workweek. Where Monday is a Holiday, the reports are due at noon on the next workday. Where reports are due monthly, reports are due by noon on the first business day of each month. Sample forms for reports may be included in the Contract Documents. Where they are included, they are to be used. Where they are not included, the Company shall provide a sample of its proposed report format for each report to the Contract Administrator at least one (1)-week prior to its initial due date. The Contract Administrator will review and either approve or reject use of the report. Where proposed report is rejected, Company shall resubmit revised report formats, until Contract Administrator approves format. Reporting cycle shall begin upon the Purchase Order date, or, if used, the issuance date of the Notice to Proceed.

Where the Contract calls for reports to be submitted by Company, such reports shall be in both paper and electronic format, with the electronic version submitted electronically via email to the Contract Administrator.

### **2.5.3. WORK SCHEDULES**

The Approved Schedule is referenced in the Technical Specifications attached to this Solicitation. If no schedule is provided, then the established schedule is based on working five (5) days per week, single shift, eight (8) hours per day or four (4) days per week, single shift, ten (10) hours per day. JEA may require the Company to base its schedule on an accelerated Work schedule or multiple shifts. The Company shall not schedule work on Holidays without obtaining prior written approval from JEA.

The Company shall, at no additional cost to JEA, increase or supplement its working force and equipment and perform the Work on an overtime or multiple shift basis when directed by JEA and upon notification that the Company is behind schedule. The Company shall submit a revised schedule in writing demonstrating the Company's schedule recovery plans.

The Company understands and agrees that the rate of progress set forth in the Approved Schedule already allows for ordinary delays incident to the Work. No extension of the Contract Term will be made for ordinary delays, inclement weather, or accidents, and the occurrence of such events will not relieve the Company from requirement of meeting the approved schedule.

## **2.6. WARRANTIES AND REPRESENTATIONS**

### **2.6.1. WARRANTY (CONSTRUCTION)**

Unless otherwise stated herein, the Company unconditionally warrants to JEA for a period of not less than Two (2) year(s) from the date of issuance of the Certificate of Substantial Completion, that all Work furnished under the Contract, including but not limited to, materials, equipment, workmanship, and intellectual property, including derivative works will be:

- o Performed in a safe, professional and workman like manner; and
- o Free from Defects in design, material, and workmanship; and
- o Fit for the use and purpose specified or referred to in the Contract; and
- o Suitable for any other use or purpose as represented in writing by the Contractor; and
- o In conformance with the Contract Documents; and
- o Merchantable, new and of first-class quality.

The Company warrants that the Work shall conform to all applicable standards and regulations promulgated by federal, state, local laws and regulations, standards boards, organizations of the Department of State, and adopted industry association standards. If the Work fails to conform to such laws, rules, standards and regulations, JEA may return the Work for correction or replacement at the Company's expense, or return the Work at the Company's expense and terminate the Contract.

If the Company performs services that fail to conform to such standards and regulations or to the warranties set forth in the first paragraph of this Section, the Company shall make the necessary corrections at Company's expense. JEA may correct any services to comply with standards and regulations at the Company's expense if the Company fails to make the appropriate corrections within a reasonable time after notice of the Defect from JEA.

If Work includes items covered under a manufacturer's or Subcontractor's warranty that exceeds the requirements stated herein, Company shall transfer such warranty to JEA. Such warranties, do not in any way limit the warranty provided by the Company to JEA.

If, within the warranty period, JEA determines that any of the Work is defective or exhibit signs of excessive deterioration, the Company at its own expense, shall repair, adjust, or replace the defective Work to the complete satisfaction of JEA. The Company shall pay all costs of removal, transportation, reinstallation, repair, and all other associated costs incurred in connection with correcting such Defects in the Work. The Company shall correct any Defects only at times designated by JEA. The Company shall extend the warranty period an additional twelve (12) months for any portion of the Work that has undergone warranty repair or replacement, but in no case shall the maximum warranty period be extended beyond thirty-six (36) months.

JEA may repair or replace any defective Work at the Company's expense when the Company fails to correct the Defect within a reasonable time of receiving written notification of the Defect by JEA, when the Company is unable to respond in an emergency situation or when necessary to prevent JEA from substantial financial loss. Where JEA makes repairs or replaces defective Work, JEA will issue the Company a written accounting and invoice of all repair work required to correct the Defects.

Where spare parts may be needed, Company warrants that spare parts will be available to JEA for purchase for at least seventy-five percent (75%) of the stated useful life of the product.

The Company's warranty excludes any remedy for damage or Defect caused by abuse, improper or insufficient maintenance, improper operation, or wear and tear under normal usage.

Note that JEA intends to perform a warranty inspection prior to the expiration of the warranty period. JEA will notify the Company and the Company Representative shall attend the inspection. All discrepancies identified at said inspection shall be corrected by the Company within a reasonable timeframe.

## **2.7. INSURANCE, INDEMNITY AND RISK OF LOSS**

### **2.7.1. INSURANCE**

#### **INSURANCE REQUIREMENTS**

Before starting and until acceptance of the Work by JEA, and without further limiting its liability under the Contract, Company shall procure and maintain at its sole expense, insurance of the types and in the minimum amounts stated below:

#### Workers' Compensation

Florida Statutory coverage and Employer's Liability (including appropriate Federal Acts); Insurance Limits: Statutory Limits (Workers' Compensation) \$500,000 each accident (Employer's Liability).

#### Commercial General Liability

Premises-Operations, Products-Completed Operations, Contractual Liability, Independent Contractors, Broad Form Property Damage, Explosion, Collapse and Underground, Hazards (XCU Coverage) as appropriate; Insurance Limits: \$1,000,000 each occurrence, \$2,000,000 annual aggregate for bodily injury and property damage, combined single limit.

#### Automobile Liability

All autos-owned, hired, or non-owned; Insurance Limits: \$1,000,000 each occurrence, combined single limit.

#### Excess or Umbrella Liability

**(This is additional coverage and limits above the following primary insurance: Employer's Liability, Commercial General Liability, and Automobile Liability);** Insurance Limits: \$4,000,000 each occurrence and annual aggregate.

Company's Commercial General Liability and Excess or Umbrella Liability policies shall be effective for two (2) years after Work is complete. The Indemnification provision provided herein is separate and is not limited by the type of insurance or insurance amounts stated above.

Company shall specify JEA and Florida Power & Light Company as additional insured for all coverage except Workers' Compensation and Employer's Liability. Such insurance shall be primary to any and all other insurance or self-insurance maintained by JEA. Company shall include a Waiver of Subrogation on all required insurance in favor of JEA, FPL, their board members, officers, employees, agents, successors and assigns.

Such insurance shall be written by a company or companies licensed to do business in the State of Florida and satisfactory to JEA. Prior to commencing any Work under this Contract, certificates evidencing the maintenance of the insurance shall be furnished to JEA for approval. Company's and its subcontractors' Certificates of Insurance shall be mailed to JEA (Attn. Procurement Services), Customer Care Center, 6<sup>th</sup> Floor, 21 West Church Street, Jacksonville, FL 32202-3139.

The insurance certificates shall provide that no material alteration or cancellation, including expiration and non-renewal, shall be effective until thirty (30) days after receipt of written notice by JEA.

Any subcontractors of Company shall procure and maintain the insurance required of Company hereunder during the life of the subcontracts. Subcontractors' insurance may be either by separate coverage or by endorsement under insurance provided by Company. Note: Any JSEB firms identified by Bidders for this Solicitation are considered "Subcontractors" under the direct supervision of the Prime or General Contractor (herein referred to as "Company"). Companies should show good faith efforts in providing assistance to JSEB firms in the securing of the Subcontractors' insurance requirements stated herein. Company shall submit subcontractors' certificates of insurance to JEA prior to allowing Subcontractors to perform Work on JEA's job sites.

### **Builder's Risk**

During construction of the Northside (NGS) Substation Bay Addition and St. Johns River Power Park (hereinafter referred as SJRPP) Station Service Conversion (hereinafter referred to as "Projects"), JEA shall provide All Risk Builder's Risk insurance at its sole expense (insurance premiums and insurance deductibles unless otherwise specified in this Section 2.7.1) for itself, Company and its Subcontractors of all tiers while performing Work at JEA's Project sites (JEA's Northside Generating Station (hereinafter referred to as NSGS), 4377 Heckscher Drive, Jacksonville, FL 32226 and St. Johns River Power Park (SJRPP), 11201 New Berlin Road, Jacksonville, FL 32226). The planned period of coverage for this Builder's Risk insurance is estimated to begin on or about October 1, 2017. JEA shall obtain a Waiver of Subrogation on this Builder's Risk insurance in favor of Company and its Subcontractors, including their employees, agents, successors and assigns. Certificates of Insurance shall be issued to Company and its Subcontractors on request to JEA's Director Risk Management Services at (904) 665-7781. JEA's Builder's risk insurance does not provide coverage for loss or damage for either:

- (a) Comp Company's or its Subcontractors' tools, equipment, personal property, protective fencing, scaffolding, temporary structures, framework, forms and equipment owned, leased, rented or borrowed by Company and its Subcontractors or
- (b) materials, supplies and equipment in transit to JEA's Project sites or located on JEA's Project sites which does not become a permanent part of JEA's NSGS or SJRPP. JEA's Builder's Risk insurance shall be excess above any other property insurance or self-insurance maintained by vendors and suppliers who have agreed to be responsible for risk of loss for JEA's equipment, materials and supplies (F.O.B. destination: JEA's Project site).

Company and its Subcontractor shall be responsible to reimburse JEA for the first \$100,000.00 (each occurrence) of any property damage to the Work at JEA's Project sites, including JEA's existing Facilities (NSGS and SJRPP), caused by the negligence, error or omission of Company and its Subcontractors. This reimbursement requirement applies regardless if an insurance claim is submitted to Factory Mutual Insurance Company above JEA's Builder's Risk property insurance deductibles. All other insurance deductibles are the responsibility of JEA.

### **2.7.2. TITLE AND RISK OF LOSS**

JEA will retain the title to equipment and materials removed from JEA sites for repairs, service or duplication.

The Company shall assume all risk of loss or damage to the Work until such time that JEA issues written notice of Final Acceptance, subject to JEA's Builder's Risk Insurance Section 2.7.1 of this Solicitation.

JEA's receipt or delivery of any equipment or other materials will not constitute JEA's Final Acceptance of any such items and will not constitute a waiver by JEA of any right, claim or remedy.

Ownership of the Work shall pass to JEA upon written notice of Final Acceptance.

### **2.7.3. BOND AMOUNT**

The Company shall furnish a Payment Bond and Performance Bond in the amount of indicated on the Bid Form, made out to JEA in forms and formats approved and provided by JEA, as security for the faithful performance of the Work of Contract. JEA will send the approved bond forms to the Company for execution along with the Contract, however, in no case shall the date on the bond forms be prior to that of the executed Contract. The surety must be authorized and licensed to transact business in Florida. A fully executed Payment Bond and Performance Bond must be recorded with the Clerk of Duval County Court and delivered to JEA before JEA will issue a Purchase Order to begin the Work. No Purchase Order shall be issued until the Payment and Performance Bonds are recorded and delivered to the JEA Procurement Department. If the Company fails or refuses to furnish or record the required bonds, JEA will retain the Company's Bid Bond as liquidated damages.

#### **2.7.4. ENVIRONMENTAL INDEMNIFICATION**

The Company shall hold harmless and indemnify JEA and Florida Power and Light (FPL), including without limitation, its officers, directors, members, representatives, affiliates, agents and employees, successors and assigns (the "Indemnified Parties") and will reimburse the Indemnified Parties from and against any and all claims, suits, demands, judgments, losses, costs, fines, penalties, damages, liabilities and expenses (including all costs of cleanup, containment or other remediation, and all costs for investigation and defense thereof including, but not limited to, court costs, reasonable expert witness fees and attorney fees) arising from or in connection with:

- (a) the Company's, including, but not limited to, its agents, affiliates or assigns ("Parties"), actions or activities that result in a violation of any environmental law, ordinance, rule, or regulation or that leads to an environmental claim or citation or to damages due to the Company's or other Parties' activities,
- (b) any environmental, health and safety liabilities arising out of or relating to the operation or other activities performed in connection with this Contract by the Company or any Party at any time on or after the effective date of the Contract, or
- (c) any bodily injury (including illness, disability and death, regardless of when any such bodily injury occurred, was incurred or manifested itself), personal injury, property damage (including trespass, nuisance, wrongful eviction and deprivation of the use of real property) or other damage of or to any person in any way arising from or allegedly arising from any hazardous activity conducted by the Company or any Party. JEA and FPL will be entitled to control any remedial action, any proceeding relating to an environmental claim. This indemnification agreement is separate and apart from, and is in no way limited by, any insurance provided pursuant to this Contract or otherwise. This section relating to indemnification shall survive the Term of this Contract, and any holdover and/or Contract extensions thereto, whether such Term expires naturally by the passage of time or is terminated earlier pursuant to the provisions of this Contract.

#### **2.7.5. INDEMNIFICATION (SJRPP)**

For ten dollars (\$10.00) acknowledged to be included and paid for in the contract price and other good and valuable considerations, the Company shall hold harmless and indemnify JEA and Florida Power and Light Company (hereinafter referred to as FPL), against any claim, action, loss, damage, injury, liability, cost and expense of whatsoever kind or nature (including, but not by way of limitation, reasonable attorney's fees and court costs) arising out of injury (whether mental or corporeal) to persons, including death, or damage to property, arising out of or incidental to the negligence, recklessness or intentional wrongful misconduct of Company and any person or entity used by the Company in the performance of this Contract or Work performed thereunder. For purposes of this Indemnification, the term "JEA" shall mean JEA as a body politic and corporate and shall include its governing board, officers, employees, agents, successors and assigns. For purposes of this Indemnification, FPL has been included with JEA, as co-owner for their St. Johns River Power Park facility (hereinafter referred to as SJRPP). The term "FPL" shall include its governing board, officers, employees, agents, successors and assigns. This indemnification shall survive the term of a Contract entered into pursuant to this solicitation, for events that occurred during the Contract term. This indemnification shall be separate and apart from, and in addition to, any other indemnification provisions set forth elsewhere in this Contract.

#### **2.7.6. NOTIFICATION OF SURETY**

The Company shall notify its surety of any changes affecting the general scope of the Work or altering the Contract Price. The amount of the applicable bonds shall be adjusted accordingly and the Company shall furnish proof of such adjustment to JEA within ten (10) days of date of Purchase Order.

## **2.8. ACCEPTANCE**

### **2.8.1. DELAY IN ACCEPTANCE OR DELIVERY**

JEA may delay delivery or acceptance of goods in the event of any unforeseen event. The Company shall hold the goods pending JEA's direction, and JEA will be liable only for direct increased costs incurred by the Company by reason of JEA's instructions.

### **2.8.2. ACCEPTANCE OF WORK - RECEIPT, INSPECTION, USAGE AND TESTING**

The Contract Administrator will make the determination when Work is completed and there is Acceptance by JEA. Acceptance will be made by JEA only in writing, and after adequate time to ensure Work is performed in accordance with Contract Documents. JEA will reject any items delivered by Company that are not in accordance with the Contract, and shall not be deemed to have accepted any items until JEA has had reasonable time to inspect them following delivery or, if later, within a reasonable time after any latent defect in the items has become apparent. JEA may partially accept the Work items. If JEA elects to accept nonconforming items, it may in addition to other remedies, be entitled to deduct a reasonable amount from the price as compensation for the nonconformity. Any Acceptance by JEA, even if nonconditional, shall not be deemed a waiver, or settlement or acceptance of any Defect.

Items specifically required prior to Acceptance are: **Energized Substation, Post construction walk through, Contractor cleanup and demobilized, as-builts submitted.**

## **2.9. TERM AND TERMINATION**

### **2.9.1. TERM**

#### **2.9.1.1. TERM OF CONTRACT - THROUGH COMPLETION OF WORK**

The Contract shall be in force through completion of all Work, Acceptance and final payment, including resolution of all disputes, claims, or suits, if any. Certain provisions of this Contract may extend past termination including, but not limited to, Warranty and Indemnification provisions.

This Contract, after the initial year, shall be contingent upon the existence of lawfully appropriated funds for each subsequent year of the Contract.

#### **2.9.2. TERMINATION FOR CONVENIENCE**

JEA shall have the absolute right to terminate the Contract in whole or part, with or without cause, at any time after the Award effective date upon written notification of such termination.

In the event of termination for convenience, JEA will pay the Company for all disbursements and expenses that the Company has incurred, or has become obligated prior to receiving JEA's notice of termination.

Upon receipt of such notice of termination, the Company shall stop the performance of the Work hereunder except as may be necessary to carry out such termination and take any other action toward termination of the Work that JEA may reasonably request, including all reasonable efforts to provide for a prompt and efficient transition as directed by JEA.

JEA will have no liability to the Company for any cause whatsoever arising out of, or in connection with, termination including, but not limited to, lost profits, lost opportunities, resulting change in business condition, except as expressly stated within these Contract Documents.



### **2.9.3. SUSPENSION OF WORK**

JEA may suspend the performance of the Work by providing the Company with five (5) days' written notice of such suspension. Schedules and compensation for performance of the Work shall be amended by mutual agreement to reflect such suspension. In the event of suspension of Work, the Company shall resume full performance of the Work when JEA gives written direction to do so. Suspension of Work for reasons other than the Company's negligence or failure to perform, shall not affect the Company's compensation as outlined in the Contract Documents.

### **2.9.4. TERMINATION FOR DEFAULT (WITH A BOND)**

JEA may give the Company written notice to discontinue all or part of the Work under the Contract or a Notice to Cure a material breach in the event that:

- o The Company assigns or subcontracts the Work without prior written permission;
- o Any petition is filed or any proceeding is commenced by or against the Company for relief under any bankruptcy or insolvency laws;
- o A receiver is appointed for the Company's properties or the Company commits any act of insolvency (however evidenced);
- o The Company makes an assignment for the benefit of creditors;
- o The Company suspends the operation of a substantial portion of its business;
- o The Company suspends the whole or any part of the Work to the extent that it impacts the Company's ability to meet the Work schedule, or the Company abandons the whole or any part of the Work;
- o The Company, at any time, violates any of the conditions or provisions of the Contract Documents, or the Company fails to perform as specified in the Contract Documents, or the Company is not complying with the Contract Documents;
- o The Company attempts to willfully impose upon JEA items or workmanship that are, in JEA's sole opinion, defective or of unacceptable quality;
- o The Company breaches any of the representations or warranties;
- o The Company is determined, in JEA's sole opinion, to have misrepresented the utilization of funds or misappropriated property belonging to JEA; or
- o There is an adverse material change in the financial or business condition of the Company.

If within thirty (30) days after service of such notice to discontinue or notice to cure upon the Company an arrangement satisfactory to JEA has not been made by the Company for continuance of the Work or the material breach has not been remedied, JEA may declare the Company to be in default and terminate the Contract.

Once Company is declared in default and the Contract has been terminated, JEA will notify the Surety in writing of the termination. The Surety shall, at JEA's sole option take one (1) of the following actions:

- (a) Within a reasonable time, but in no event later than thirty (30) days, from JEA's written notice of termination for default, arrange for Company with JEA's consent, which shall not be unreasonably withheld, to complete the Contract and the Surety shall pay JEA all losses, delay and disruption damages and all other damages, expenses, costs and statutory attorney's fees, including appellate proceedings, that JEA sustains because of a default by the Company under the Contract;
- (b) Within a reasonable time, but in no event longer than sixty (60) days after JEA's written notice of termination for default, award a contract to a completion contractor and issue notice to proceed or alternatively, JEA may elect, to have the Surety determine jointly with JEA the lowest responsible qualified bidder, to have the Surety arrange for a contract between such bidder and JEA, and for the Surety to make available as Work progresses sufficient funds to pay the cost of completion less the balance of the Contract price; or

- (c) Within a reasonable time, but in no event later than thirty (30) days from JEA's notice of termination for default, JEA may waive its right to complete or arrange for completion of the Contract and, within twenty-one (21) days thereafter, determine the amount for which the Surety may be liable to JEA and tender payment to JEA of any amount necessary in order for JEA to complete performance of the Contract in accordance with its terms and conditions less the balance of the Contract price.

JEA shall have the right to take possession of and use any of the materials, plant, tools, equipment, supplies and property of any kind provided by the Company for the purpose of this Work.

JEA will charge the expense of completing the Work to the Company and will deduct such expenses from monies due, or which at any time thereafter may become due, to the Company. If such expenses are more than the sum that would otherwise have been payable under the Contract, then the Company or Surety shall pay the amount of such excess to JEA upon notice of the expenses from JEA. JEA shall not be required to obtain the lowest price for completing the Work under the Contract, but may make such expenditures that, in its sole judgment, shall best accomplish such completion. JEA will, however, make reasonable efforts to mitigate the excess costs of completing the Work.

The Contract Documents shall in no way limit JEA's right to all remedies for nonperformance provided under law or in equity, except as specifically set forth herein. In the event of termination for nonperformance, the Company shall immediately surrender all Work records to JEA. In such a case, JEA may set off any money owed to the Company against any liabilities resulting from the Company's nonperformance.

JEA has no responsibility whatsoever to issue notices of any kind, including but not limited to deficient performance letters and scorecards, to the Company regarding its performance prior to default by Company for performance related issues.

JEA shall have no liability to the Company for termination costs arising out of the Contract, or any of the Company's subcontracts, as a result of termination for default.

Immediately upon termination or expiration of this Agreement, Company must return to JEA all materials, documents and things used by Company and belonging to JEA, including proposals, computer files, borrower files, building keys, and any other property or information regarding continued business compliance or goodwill, whether in electronic or hard-copy form. Furthermore, upon JEA's request, Company shall certify in writing that all of the foregoing documents or materials, including archival or backup copies, whether in electronic or hard-copy form, have been returned to JEA, deleted from any computer system, or otherwise destroyed.

Any other provision in this Agreement to the contrary notwithstanding the duration of this Agreement after the initial year, shall be contingent upon the existence of lawfully appropriated funds for each subsequent year of the term.

#### **2.9.5. UNAUTHORIZED WORK**

JEA will consider any Work done without lines and grades given, Work done beyond the lines and grades shown on the Contract or as given, or any extra Work done without written authority, as unauthorized Work and will not pay the Company for such Work. If so ordered by the Contract Administrator, the Company shall remove such Work and properly replace it at the Company's own expense.

## **2.10. PRELIMINARY MATTERS**

### **2.10.1. MAINTENANCE OF TRAFFIC**

The Company, when required by the governing agency such as the City of Jacksonville or the Florida Department of Transportation (FDOT), shall maintain traffic in accordance with an approved Maintenance of Traffic (MOT) plan ("MOT Plan") submitted by the Company, on streets, roads, private ways, and walks. The Company shall assume full responsibility for the adequacy and safety of provisions made. The Company shall be solely responsible for the placement, maintenance and removal of the minimum number of devices required by the MOT Plan, or specified by the FDOT, for the control of traffic at the Work Location including, but not limited to signs, cones, lights, barricades, concrete barrier walls, police officers, flaggers, etc. ("MOT Items").

Company shall be responsible for all costs associated with MOT. There will not be a separate line item for MOT on the Bid Form.

### **2.10.2. LIMITATION OF ACCURACY OF INFORMATIONAL MATERIALS**

For all drawings, test results, inspections, and other informational materials included as part of the Contract Documents, the Company understands and agrees that any existing facilities shown, including underground, overhead, and surface structures, and other delineations, and any other informational items provided as part of the Contract Documents are for reference only and are not to be used by the Company as the only indication of Work conditions. The Company understands and agrees that it is its sole responsibility to verify all Work conditions, measurements, dimensions, obstructions and other causes for existing or potential changes to the Work prior to initiating Work. In the event the Work must be changed due to the Company not fulfilling the above requirements, the Company understands and agrees that it will be responsible for all costs associated with the changed condition. Changes associated with conditions that are clearly unforeseen and that could not have been discovered by a reasonable verification of the above listed items, shall be covered as stated in Changes to Work.

### **2.10.3. PERMITS TO BE OBTAINED BY THE CONTRACTOR**

Unless otherwise specified in the Contract Documents, the Contractor shall secure, maintain, post as required, and pay for all building, plumbing, electrical, water, sewer, right-of-way, parking, roadway, railroad, shipping, freight, hazardous materials, and any other permits which may be required for performance of the Work in full compliance with all applicable laws, rules and regulations. The Contractor shall perform all actions necessary to identify where permits are to be obtained and properly file for the permits, except those specifically listed in the Contract Documents as being provided by JEA.

The Contractor shall comply with all conditions of permits issued for the Work, either directly or indirectly, issued by federal, state, or local governmental agencies, which are hereby incorporated as part of these Contract Documents. The Contractor shall be solely responsible for resolving any issues and bearing all expenses including any damages suffered by JEA that result from a finding of noncompliance during performance of the Work by any of the respective regulatory agencies including, but not limited to, all costs for delays, litigation, fines, fees of any kind, and other costs.

### **2.10.4. PRE-WORK MEETING AND PROGRESS MEETINGS (CONSTRUCTION)**

Before starting the Field Work, a Pre-Work or Pre-Construction meeting may be held to review procedures for the Work, review the Work schedule, establish procedures for invoicing, approving Invoices and making payments, and establish a working relationship between JEA and the Company.

The JEA Contract Administrator may, at his or her discretion, request Pre-Work Meetings to be held prior to start of any Field Work. Such meeting(s) shall be attended by, but not limited to, the Company Representative and Company Supervisor. The JEA Contract Administrator will notify the Company in writing of the meeting time and location at

least two (2) days prior to the meeting date. In addition, construction progress meetings will be held at a frequency as determined by JEA. Such meeting(s) shall be attended by, but not limited to, the Company's Representative and Company's Supervisor.

#### **2.10.5. TEMPORARY CLOSURE OF ROADWAYS**

The Company shall not close or obstruct any portion of a street, road, or private way without first obtaining permits. If any street or private way is rendered unsafe by the Company's operations, the Company shall make such repairs or provide such temporary ways and guards necessary for the protection and safety of persons on the Work and the public and for the orderly maintenance of traffic. All costs associated with temporary closure of roadways shall be included in Bid Price.

The Company shall notify the police and fire departments in writing if it will be necessary to close a street. The Company shall copy JEA on all correspondence relating to street closure. The Company shall notify the police and fire departments prior to closure of the street. The Company shall be responsible for maintaining proper coordination with the proper authorities.

Temporary closure of business entrances must be approved in writing by and coordinated with JEA.

#### **2.10.6. TEMPORARY UTILITIES**

The Company shall furnish and install all temporary water, electricity and other utilities required to accomplish the Work. The Company shall obtain the water required for carrying out the Work from fire hydrants, existing water main connections, or new connections approved by JEA. The Company shall install a back flow preventer and water meter assembly if construction water is necessary. Upon Substantial Completion of Work, the Company shall remove all evidence of temporary connections and lines.

Prior to initiating any construction Work, the Company shall coordinate and schedule the provision of temporary utility service required during construction and arrange for the permanent installation and connection of utilities for the completed Work.

#### **2.10.7. WORK LOCATION**

Work shall be performed at the following substation location. The actual addresses for each location are found in the technical specifications(s): Bartam, Switzerland, Forest, Robinwood and Fort Caroline substations.

#### **2.10.8. UNFORESEEN CONDITIONS**

The Company understands and agrees that it is its responsibility to conduct due diligence prior to the Work. Such due diligence includes, but is not limited to, verifying all Work conditions, measurements, dimensions and latent and patent obstructions, the accuracy of drawings, test results, inspections and other informational materials provided in the Contract Documents, and any other causes for existing or potential changes to the Work prior to initiating the Work. In the event that the Work must be changed due to the Company's failure to fulfill the above requirements, the Company understands and agrees that it will be responsible for all costs associated with the changed condition.

In the event, however, that the Company exercises the requisite due diligence and a change to the Work becomes necessary resulting from conditions that are clearly unforeseen and that could not have been discovered, the costs for adjusting the Work in response to such unforeseen conditions shall be addressed in a Change Order or an amendment to the Contract executed by JEA and Company. Any Work the Company performs prior to receipt of such Change Order or approved Contract amendment will be at the Company's sole risk.

#### **2.10.9. COMMERCIAL ACTIVITIES ON THE WORK LOCATION**

The Company shall not establish any commercial activities, or issue concessions or permits of any kind to third parties to establish commercial activities on lands owned or controlled by JEA, or within the boundaries of the Work Location. The Company shall not allow its employees to engage in any commercial activities on the Work Location.

#### **2.10.10. COMMUNICATIONS - SITE WORK**

The Company shall supply and maintain at the Work Location a two (2)-way communication system of such quality as to enable communications between the Work Location, the Company office(s), and the Contract Administrator while Work is in progress. This system may consist of a two (2)-way radio system or any combination of pagers and telephones, either cellular or conventional. All communication equipment required to accomplish this is to be provided by the Company.

In some cases, JEA may provide the Company with radio(s) on specified frequencies. Where provided, the Company shall be solely responsible for the security of the radio(s), and the Company shall monitor the radio(s) at all time while performing Work.

In the event the Company will be requesting hold tags from JEA, the Company shall provide local digital pagers to its Company Representative and all Company Supervisors for the full Term of this Contract.

#### **2.10.11. COMPANY'S EQUIPMENT**

The Company's equipment including, but not limited to, trucks, drill rigs, backhoes, excavators, bucket trucks and derricks shall not be older than five (5) years in age, unless the Company can demonstrate to JEA's satisfaction that equipment being used has been completely refurbished and that it is in good working order. JEA may, at its sole discretion, make exceptions for equipment that is rarely used such as sag winches.

#### **2.10.12. SHIPPING TO AND STORAGE AT WORK LOCATION**

Shipping Materials and equipment to be installed by the Company shall be delivered by the Company to the Work Location or such other place as may be designated by the Contract Administrator. Insofar as transportation conditions will allow, items shall be shipped complete and ready for installation.

Where applicable, the Company shall be responsible for obtaining any permits required for transportation to the Work Location. The Company shall provide an Advance Ship Notice to the Contract Administrator or designated Work Location manager.

Storage: Under arrangement with the JEA Engineer, and upon his approval, a limited amount of temporary indoor storage space may be made available, but only for the equipment that must be protected from the weather. Equipment for which arrangements have been made for indoor storage, shall be packed separately and the container clearly marked "For Indoor Storage." For equipment that will be stored indoors and that will require special storage precautions, the storage instructions shall be shown on the outside of each container, or in a durable envelope identified as containing storage instructions and attached to the container.

#### **2.10.13. SECONDARY CONVERSION**

Zoning Department and National Electric Code.

All wiring installations must be inspected and approved by an authorized electrical inspector as required by law.

JEA requires ten (10) days between an approved "rough" inspection and an approved "final" inspection in order to schedule new meter installations.

The Company shall clearly mark each conductor of the service entrance as to phase, neutral and ground. The conductors shall be marked at the point of service and the location of the JEA metering transformers. Each conductor within JEA transformers and service boxes shall be "spiral" marked their entire length, beginning at the conduit entering the equipment. The following color coding shall be used:

- o For 240V: Neutral-White, Ground - Green, High Leg (3 phase 4 wire delta service) - Orange
- o Phase markings for 208V: Black, Red, Blue
- o Phase markings for 480V: Brown, Orange, Yellow

All color coding shall be consistent when parallel runs of conductors are used.

Overhead to Underground Customer Conversion Agreement: The above work will be done by a contractor who is a licensed electrician, the work will be permitted and inspected through the City of Jacksonville, and who will perform work in accordance with the JEA Rules and Regulations. The owner/customer understands that, after completion of the underground conversion, and subject to a one-year warranty period.

Regulations for Electric Service for Meter Socket Specification.

#### **2.10.14. SWITCHING AND HOLD TAGS**

The Company shall be required to attend a JEA class concerning hold tag procedures and be adjudged to be qualified prior to the issuance of the Notice to Proceed.

The Company shall not, in any case, make connections or taps to energized lines, cut any lines in or out of service, or attempt any outages without due notice to and approval from the Station 2 Dispatcher of the Distribution Control Department.

#### **2.10.15. TRANSFORMER DATA CARD**

The Company shall be responsible for completing a JEA Transformer Installation/Removal Data sheet for each transformer installed or removed on the distribution electric system. This data sheet contains pertinent information such as installation/removal date, serial number, rating, street address, voltage, etc. This data is used to ensure that the Graphic Information System (GIS) is properly updated. The Company shall be responsible for transporting all removed transformers to JEA's transformer rehabilitation facility. The Company shall return a copy of all data cards with the transformers to the rehabilitation facility and shall include a copy with the as-built drawings.

#### **2.10.16. MATERIAL REIMBURSEMENT**

JEA will reimburse the Company for the direct cost of material or chemicals furnished by the Company as requested by JEA for the labor, equipment and materials (L.E.M.) project plus 10 percent for the Company's handling of the material.

#### **2.10.17. COMPANY LAYDOWN AREA**

In the event the Company decides to utilize public or private property as a laydown area, the Company shall enter into a written agreement with the entity who owns the property. JEA shall have access to all laydown areas. Upon submission of Company's first Invoice or application for payment to JEA, the Company shall provide to JEA a copy of such signed written agreement. The Company shall submit to JEA a letter of release from the entity in connection with Company's final Invoice or application for payment to JEA.

## **2.10.18. COMPANY'S DOCUMENTS AT THE WORK LOCATION**

The Company shall maintain at the Work Location for JEA one (1) record copy of all Contract Documents in good order and marked currently to record all Addenda and changes made during Contract Term. These shall be available to JEA Representatives and shall be delivered to the Contract Administrator upon completion of the Work and at the request of the Contract Administrator.

The Company shall also maintain detailed records of the Work for its own files. The Company shall make these records available to JEA for inspection upon request. The Company shall maintain such records for three years after date of Final Completion.

## **2.10.19. COMPANY'S FIELD OFFICE**

The Company shall provide its own office facilities at the Work Location, as required. Unless specifically listed herein, JEA provides no Work Location facilities or Work Location area for the Company facilities of any kind such as field office and material storage. If the Company establishes a Work Location-based office, the Company shall provide and maintain adequate telephone facilities at this office during the full Term of the Contract. If the Company has a local business office, this office may serve as a Work Location office for this Contract, but the Company must maintain an operational cellular phone at the Work Location while performing Work.

## **2.11. CONFIDENTIALITY AND OWNERSHIP OF DOCUMENTATION**

### **2.11.1. PUBLIC RECORDS LAWS**

#### **Access to Public Records**

All Documents, data and other records received by JEA in connection with the Contract are public records and available for public inspection unless specifically exempt by law. The Company shall allow public access to all documents, data and other records made or received by the Company in connection with the Contract unless the records are exempt from Section 249(a) of Article I of the Florida Constitution or subsection 119.07(1), Florida Statutes. JEA may unilaterally terminate the Contract if the Company refuses to allow public access as required under the Contract.

#### **Redacted copies of Confidential Information**

If the Company believes that any portion of any documents, data or other records submitted to JEA are exempt from disclosure under Chapter 119, Florida Statutes, the Florida Constitution and related laws ("Florida's Public Records Laws"), Company must (1) clearly segregate and mark the specific sections of the document, data and records as "Confidential", (2) cite the specific Florida Statute or other legal authority for the asserted exemption, and (3) provide JEA with a separate redacted copy of the documents, data, or records (the "Redacted Copy"). The Redacted Copy shall contain JEA's contract name and number, and shall be clearly titled "Redacted Copy". Bidder should only redact those portions of records that Bidder claims are specifically exempt from disclosure under Florida's Public Records Laws. If the Company fails to submit a redacted copy of documents, data, or other records it claims is confidential, JEA is authorized to produce all documents, data, and other records submitted to JEA in answer to a public records request for these records.

#### **Request for Redacted Information**

In the event of a public records or other disclosure request under Florida's Public Records Laws or other authority to which the Company's documents, data or records are responsive, JEA will provide the Redacted Copy to the requestor. If a Requestor asserts a right to any redacted information, JEA will notify the Company that such an assertion has been made. It is the Company's responsibility to respond to the requestor to assert that the information in questions is exempt from disclosure under applicable law. If JEA becomes subject to a demand for discovery or disclosure of the redacted information under legal process, JEA shall give the Company prompt notice of the demand prior to releasing

the redacted information (unless otherwise prohibited by applicable law). The Company shall be responsible for defending its determination that the redacted portions of the information are not subject to disclosure.

#### **Indemnification for Redacted Information**

The Company shall protect, defend, and indemnify JEA from and against all claims, demands, actions, suits, damages, liabilities, losses, settlements, judgments, costs, and expenses (including but not limited to reasonable attorney's fees and costs) arising from or relating to the Company's assertion that all or any portion of its information is not subject to disclosure.

#### **Public Records Clause for Service Contracts**

If, under the Contract, the Company is providing services and is acting on behalf of JEA as contemplated by subsection 119.011(2), Florida Statutes, the Company shall:

- Keep and maintain public records that ordinarily and necessarily would be required by JEA in order to perform service;
- Provide the public with access to public records on the same terms and conditions that JEA would provide the records and at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes, or otherwise prohibited by law;
- Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law; and
- Meet all requirements for retaining public records and transfer, at no cost, to JEA all public records in possession of the Company upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically shall be provided to JEA in a format that is compatible with the information technology systems of JEA.

**IF THE COMPANY HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE COMPANY'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:**

**JEA**

**Attn: Public Records**

**21 West Church Street**

**Jacksonville, Florida 32202**

**Ph: 904-665-8606**

**publicrecords@jea.com**

#### **2.11.2. INTELLECTUAL PROPERTY**

The Company grants to JEA an irrevocable, perpetual, royalty free and fully paid-up right to use (and such right includes, without limitation, a right to copy, modify and create derivative works from the subject matter of the grant of the right to sublicense all, or any portion of, the foregoing rights to an affiliate or a third party service provider) the Company's intellectual property (including, without limitation, all trade secrets, patents, copyright and know-how) that is contained or embedded in, required for the use of, that was used in the production of or is required for the



reproduction, modification, maintenance, servicing, improvement or continued operation of any applicable unit of Work.

If the Work contains, has embedded in, requires for the use of any third party intellectual property, or if the third party intellectual property is required for the reproduction, modification, maintenance, servicing, improvement or continued operation of the Work, the Company shall secure for JEA an irrevocable, perpetual, royalty free and fully paid-up right to use all third party intellectual property. The Company shall secure such right at its expense and prior to incorporating any third party intellectual property (including, without limitation, all trade secrets, patents, copyright and know-how) into any Work, including, without limitation, all drawings or data provided under the Contract, and such right must include, without limitation, a right to copy, modify and create derivative works from the subject matter of the grant of the right and a right to sublicense all or any portion of the foregoing rights to an affiliate or a third party service provider.

Should JEA, or any third party obtaining such work product through JEA, use the Work or any part thereof for any purpose other than that which is specified herein, it shall be at JEA's sole risk.

The Company will, at its expense, defend all claims, actions or proceedings against JEA based on any allegation that the Work, or any part of the Work, constitutes an infringement of any patent or any other intellectual property right, and will pay to JEA all costs, damages, charges, and expenses occasioned to JEA by reason thereof. JEA will give the Company written notice of any such claim, action or proceeding and, at the request and expense of the Company, JEA will provide the Company with available information, assistance and authority for the defense.

If, in any action or proceeding, the Work, or any part thereof, is held to constitute an infringement, the Company will, within thirty (30) days of notice, either secure for JEA the right to continue using the Work or will, at the Company's expense, replace the infringing items with noninfringing Work or make modifications as necessary so that the Work no longer infringes.

The Company will obtain and pay for all patent and other intellectual property royalties and license fees required in respect of the Work.

### **2.11.3. PROPRIETARY INFORMATION**

The Company shall not copy, reproduce, or disclose to third parties, except in connection with the Work, any information that JEA furnishes to the Company. The Company shall insert in any subcontract a restriction on the use of all information furnished by JEA. The Company shall not use this information on another project. All information furnished by JEA will be returned to JEA upon completion of the Work.

### **2.11.4. PUBLICITY AND ADVERTISING**

The Company shall not take any photographs, make any announcements or release any information concerning the Contract or the Work to any member of the public, press or official body unless prior written consent is obtained from JEA.

## **2.12. LABOR**

### **2.12.1. NONDISCRIMINATION**

The Company represents that it has adopted and will maintain a policy of nondiscrimination against employees or applicants for employment on account of race, religion, sex, color, national origin, age or handicap, in all areas of employee relations, throughout the Term of this Contract. The Company agrees that on written request, it will allow JEA reasonable access to the Company's records of employment, employment advertisement, application forms and other pertinent data and records for the purpose of investigation to ascertain compliance with the nondiscrimination

provisions of this Contract; provided however, the Company shall not be required to produce, for inspection, records covering periods of time more than one (1) year from the effective date of this Contract.

The Company shall comply with the following executive orders, acts, and all rules and regulations implementing said orders or acts, which are by this reference incorporated herein as if set out in their entirety:

- The provisions of Presidential Order 11246, as amended, and the portions of Executive Orders 11701 and 11758 as applicable to Equal Employment Opportunity;
- The provisions of section 503 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA); and
- The provisions of the Employment and Training of Veterans Act, 38 U.S.C. 4212 (formerly 2012).

The Company agrees that if any of the Work of this Contract will be performed by a Subcontractor, then the provisions of this subsection shall be incorporated into and become a part of the subcontract.

#### **2.12.2. JEA ACCESS BADGES**

If the scope of work described in this Contract requires a Company to access JEA facilities, each Company employee shall apply for a JEA access badge through JEA's Security Department. An appointment to obtain a JEA access badge can be made by contacting JEA Security at securitybadge@jea.com. Finally, JEA does not allow Company employees to share JEA access badges. A Company whose employees are found to be sharing JEA access badges, will result in the Contract being terminated immediately for default. Additionally, JEA shall be notified within six (6) hours of a lost or stolen JEA security badge or when an employee leaves the Company. Report badge termination notifications to JEA Security at (904) 665-8200.

#### **2.12.3. LEGAL WORKFORCE**

JEA shall consider the Company's employment of unauthorized aliens a violation of section 274A(e) of the Immigration and Nationalization Act. Such violation shall be cause for termination of the Contract for default upon thirty (30) days' prior written notice of such termination, notwithstanding any other provisions to the contrary in the Contract Documents.

#### **2.12.4. JEA WORKPLACE TOBACCO USE POLICY**

It is JEA's policy to maintain a healthy work environment and JEA's goal is to become a tobacco-free workplace. Therefore, JEA prohibits Company employees from using tobacco products while on JEA property or during the performance of JEA Work. JEA reserves the right to require Company to remove an employee who violates this policy from JEA property or JEA Work site upon notice from the JEA Representative.

#### **2.12.5. PROHIBITED FUTURE EMPLOYMENT**

It shall be unlawful and a class C offense for any person, who was an officer or employee of JEA, after his or her employment has ceased, to be employed by or enter into any contract for personal services, with a person or company who contracted with, or had a contractual relationship with JEA, while the contract is active or being completed, or within two (2) years of the cessation, completion, or termination of the person's or company's contractual relationship with JEA, where (1) the contract with JEA had a value that exceeded \$250,000, and (2) the officer or employee had a substantial and decision-making role in securing or negotiating the contract or contractual relationship, or in the approval of financial submissions or draws in accordance with the terms of the contract; except that this prohibition shall not apply to an employee whose role is merely as a review signatory, or to contracts entered into prior to January 1, 2008, or to contracts that have been competitively procured. With respect to this subsection a contract is competitively procured if it has been obtained through a sealed low bid award. A "substantial and decision-making role" shall include duties and/or responsibilities that are collectively associated with: (i) approving solicitation or

payment documents; (ii) evaluating formal bids and proposals; and (iii) approving and/or issuing award recommendations for JEA Awards Committee approval. The contract of any person or business entity who hires or contracts for services with any officer or employee prohibited from entering into said relationship shall be voidable at the pleasure of JEA. This prohibition shall not apply to any former officer or employee after two (2) years from cessation from JEA employment.

#### **2.12.6. HIRING OF OTHER PARTY'S EMPLOYEES**

Each party recognizes that the other party has incurred or will incur significant expenses in training its own employees and agrees that it will not pursue or hire, without the other party's consent, the other party's employees or the employees of its subsidiaries for a period of two (2) years from the termination date of this Contract.

#### **2.12.7. MINIMUM QUALIFICATION OF COMPANY PERSONNEL**

At a minimum, all Company personnel shall be qualified for the tasks they are assigned. All Company personnel assigned to work at a JEA facility or job site shall be able to read, write, speak and understand English. All Company personnel shall act in a professional manner, with due sensitivity to other persons at the Work Location. If JEA, at its sole discretion, determines that a Company person is unqualified, unfit, or otherwise unsuitable for the tasks assigned, the Company shall immediately stop the person from performing the tasks, and replace the person with a qualified individual. The Company shall pay all costs associated with replacing the unqualified person including, but not limited to, termination, recruiting, training, and certification costs.

The Company personnel assigned supervisory roles, and those with increased authority shall be held to strict scrutiny of their qualifications and suitability for their positions. In addition to the other provisions of this Section, the Company shall provide written documentation as to experience, education, licenses, certifications, professional affiliations, and other qualifications of the individual, within one (1) day of request from the Contract Administrator. Any changes to such personnel after approval shall require the written permission of the Contract Administrator.

#### **2.12.8. PAYMENT OF OVERTIME**

Any Overtime required for Company to complete the Work within the Contract Time shall be at the sole cost and expense of Company. However, if JEA requires the Company to perform Overtime Work in order to complete the Work prior to the Contract Time, the Company shall bill JEA for the Overtime such that only the actual costs incurred by the Company relating to the payment of Overtime premiums, in accordance with its labor policies and applicable laws. Such actual costs include Overtime wage premium, and additional taxes and insurance directly associated with the Overtime wage premium. The Company agrees that it will not charge for personnel paid a salary, or other form of compensation such that the Company incurs no direct costs as a result of the Overtime.

The Company shall total the direct Overtime charges, and add the agreed upon overhead rate, but in no case, shall such overhead rate exceed ten percent (10%) of the total overtime costs.

Overtime may only be charged to JEA if the Company was directed in writing by the Contract Administrator to incur the Overtime. Such authorization for Overtime shall be accompanied by a Change Order.

#### **2.12.9. SCHEDULING OF OVERTIME**

Whenever the Company schedules Work beyond eight (8) hours per day for a five (5) day week, beyond ten (10) hours per day for a four (4) day week, beyond forty (40) hours per week, or on Saturdays, Sundays, or Holidays, then the Company shall arrange, in advance, for the JEA Representative to inspect the Work performed during Overtime. The Company shall not perform Overtime Work or after-hours Work without a JEA Representative at the Work Location or available to perform the inspections, as directed by the Contract Administrator. Except where JEA has requested the

Company schedule Overtime to perform additional Work, the Company shall reimburse JEA for any additional costs associated with JEA Representatives' Overtime pay.

#### **2.12.10. SHOW-UP PAY**

In the event that inclement weather prevents the Company from performing Work, the Company may be obligated to pay its crew a show-up pay. The Company shall be solely responsible for providing this pay.

#### **2.12.11. COMPANY'S LABOR RELATIONS**

The Company shall negotiate and resolve any disputes between the Company and its employees, or anyone representing its employees. The Company shall immediately notify JEA of any actual or potential labor dispute that may affect the Work and shall inform JEA of all actions it is taking to resolve the dispute.

### **2.13. COMPANY'S RESPONSIBILITIES AND PERFORMANCE OF THE CONTRACT**

#### **2.13.1. COMPANY REPRESENTATIVES**

The Company shall provide JEA with the name and responsibilities of the Company Representative, in writing after Award of the Contract and before starting the Work under the Contract. Should the Company need to change the Company Representative, the Company shall promptly notify JEA in writing of the change.

#### **2.13.2. COMPANY REVIEW OF PROJECT REQUIREMENTS**

The Company shall review the Work requirements and specifications prior to commencing Work. The Company shall immediately notify the Contract Administrator in writing of any conflict with applicable law, or any error, inconsistency or omission it may discover. JEA will promptly review the alleged conflicts, errors, inconsistencies or omissions, and issue a Change Order or Purchase Order as appropriate if JEA is in agreement with the alleged conflict, and issue revised specifications. Any Work the Company performs prior to receipt of approved Change Order will be at the Company's sole risk.

#### **2.13.3. LICENSES**

The Company shall comply with all licensing, registration and/or certification requirements pursuant to applicable laws, rules and regulations. The Company shall secure all licenses, registrations and certifications as required for the performance of the Work and shall pay all fees associated with securing them. The Company shall produce written evidence of licenses and other certifications immediately upon request from JEA.

#### **2.13.4. PERFORMANCE OF THE WORK**

The Company represents and warrants that it has the full corporate right, power and authority to enter into the Contract and to perform the acts required of it hereunder, and that the performance of its obligations and duties hereunder does not and will not violate any Contract to which the Company is a party or by which it is otherwise bound. The Company warrants that all items provided under the Contract shall be free from Defect and services shall be performed in a professional manner and with professional diligence and skill, consistent with the prevailing standards of the industry. The Company warrants that the Work will meet the functional and performance requirements defined in the Contract.

#### **2.13.5. DAMAGED MATERIALS OR EQUIPMENT**

The Company shall report to the Contract Administrator any materials issued by JEA or delivered by the JEA material supplier and received by the Company that are later found to be faulty, damaged or discrepant in some manner. The Contract Administrator will obtain appropriate replacement materials upon written notification from the Contract

Administrator. The Company shall not, under any circumstances, make a material replacement without written approval of the Contract Administrator.

The Company understands and agrees that damage to material and discrepancy of material is an expected part of performing the Work, and as such, the Company agrees it shall be solely responsible for any additional costs incurred as a result of damaged or discrepant materials, including, but not limited to, the costs to keep or get the Work on the Approved Schedule.

JEA will bill the Company for materials or equipment that are damaged while in the Company's custody. In such a case, the Company shall be charged the current JEA cost plus an inventory handling fee.

#### **2.13.6. DELIVERY LOCATION**

The delivery address for items provided under this Contract is: 4377 Heckscher Drive Jacksonville, FL 32226 and 11201 New Berlin Road Jacksonville, FL 32226.

#### **2.13.7. DISPOSITION OF SALVABLE MATERIAL**

All material to be removed from the Work Location, relocated or salvaged, shall be inspected by the JEA Engineer immediately prior to removal, and the JEA Engineer's decision as to whether it can be salvaged shall be final. Such material that is salvable, in the opinion of the JEA Engineer, shall be stored at the Work Location on-site by the Company, as and where directed by the JEA Engineer, or delivered to a location as directed. Under no circumstances may existing structures, plant or facilities be removed or demolished without obtaining prior written approval from the JEA Engineer.

#### **2.13.8. EMERGENCY EVENTS**

In the event that a system-wide emergency arises during the Term for which JEA requires assistance from the Company including, but not limited to, severe storms, large-scale fires, floods, and terrorist attacks, the Company acknowledges the importance of JEA infrastructure and agrees to support, with all its resources, skills and capabilities, and the maximum extent possible, all restoration efforts of JEA. The Contract Administrator shall notify the Company when an emergency event occurs and the Company agrees to mobilize its full resources immediately. In the event conditions are such that an emergency event is likely in progress, but the Company has not been notified by the Contract Administrator, the Company shall make all efforts to contact a JEA Representative to determine if and how it should respond. JEA agrees to reimburse the Company for its actual costs incurred as a result of supporting JEA during the emergency event, plus overhead and profit, not to exceed twelve percent (12%) of such costs.

#### **2.13.9. EMERGENCY PROCEDURES**

In emergencies affecting the safety of persons, the Work or property at the Work Location or any other area adjacent thereto, the Company, without special instructions or authorization from JEA Representatives, is obligated to act to its best ability to prevent threatened damage, injury or loss to the Work, any persons, or property. The Company shall give the Contract Administrator prompt written notice describing the emergency, its cause, actions taken, injuries and casualties, property damage, other damages, and impact on continued performance under this Contract.

#### **2.13.10. ENCROACHMENTS ON RIGHTS OR PROPERTY**

The Company shall be solely responsible for any encroachments on public property or on the rights or property of adjoining property owners to the Work Location, and shall hold JEA harmless because of any encroachments that may result because of the Company's improper layout. In this regard, the Company shall, without extra cost to JEA, remove any Work or portion of any Work that encroaches on the property other than that of the Work Location, or that is built beyond legal building or setback limits. The Company shall rebuild the affected Work or portion of Work at the proper location and in full compliance with the Contract Documents.

#### **2.13.11. REMOVAL OF WORK**

The Company shall not sell, assign, mortgage, hypothecate or remove Work that has been delivered to or installed at the Work Location.

#### **2.13.12. APPLICABLE STANDARDS AND CODES**

The latest rules and regulations of the following organizations shall be considered a part of these Contract Documents. The Company shall perform all Work in strict accordance with applicable provisions thereof:

Institute of Electronic and Electrical Engineers (IEEE), Edison Electric Institute (EEI), National Electrical Manufacturer's Assoc. (NEMA), American Concrete Institute (ACI), American National Standards Institute (ANSI), National Electric Safety Code (NESC).

#### **2.13.13. FREE AND CLEAR TITLE**

The Company warrants that it has title to all equipment and materials furnished under the Contract where title will pass to JEA, and that the equipment and materials passed to JEA are free and clear of all liens, claims, security interests and encumbrances.

#### **2.13.14. INSPECTIONS AND TESTING**

JEA, or its designated representatives, will perform inspections at the Company facilities during normal business hours and in a manner that minimizes disruption to the normal day-to-day work activities of the Company. Company shall provide safe and proper facilities for inspection access and observation of the Work and also for any inspection or testing by others.

If the Company has covered or concealed any Work from inspection in any way that the JEA Representative has not specifically requested prior to the JEA Representative's inspection, or if the JEA Representative considers it necessary or advisable that covered Work be inspected or tested by others, the Company, at the JEA Representative's request, shall uncover, expose or otherwise make available the portion of the Work in question for observation, inspection or testing as the JEA Representative may require. The Company shall furnish all necessary labor, material and equipment to make such Work available.

If such Work is defective, the Company shall bear all expenses of uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including, but not limited to, compensation for additional professional services required by JEA, and no change in Contract Time will be considered as a result of the foregoing.

If such Work is not defective, JEA will reimburse the Company for actual time, material, and equipment costs for uncovering and reconstruction of the portion of the Work in question. JEA may also, at its sole discretion, grant the Company an extension of the Contract Time directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction.

All materials and equipment used in the construction of the Contract shall be subject to adequate inspection and testing in accordance with accepted standards. The Company shall select the laboratory or inspection agency for making all tests required by the specifications, and shall pay for this laboratory service direct, as a part of this Contract.

The Company shall pay for all required testing of materials and equipment. Two (2) copies of each test showing certification of each test shall be furnished to the JEA Engineer immediately after such test has been made and with

the exception of concrete, prior to delivery of the materials or equipment tested to the Work Location. JEA will not accept the materials or equipment until tests have been approved.

Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be subject to inspection and testing to establish conformance with specifications and suitability for uses intended. Test requirements for all materials are set out in the detailed specifications for that particular material. All materials and equipment prior to being incorporated in the Work, and required by the JEA Engineer to be tested, shall be tested for conformance with contractual requirements. Standard items of a uniform nature may be accepted on the manufacturer's certification. Where specific performance and/or quality is referred to, it is the Company's responsibility to have the necessary tests performed by qualified persons to show that the contractual requirements are being met except those tests named in the Contract Documents to be performed by JEA. Certified test results shall be submitted promptly in quadruplicate to the JEA Engineer for review. All tests shall be performed in accordance with referenced standards. Where no reference is made, tests shall be performed in accordance with the methods prescribed by the American Society for Testing and Materials or such other organization as would be applicable.

The Company shall pay for any retests resulting from its failure to provide Work that passes required tests.

The JEA Engineer may appoint JEA Inspectors to inspect any and all materials and Work. Such inspection may extend to any or all parts of the Work and to the preparation and manufacture of the materials to be used. The JEA Inspectors shall not be authorized to alter, revoke, enlarge or relax the provisions of the Contract, nor will they be authorized to approve or accept any portion of the completed Work, nor to issue instructions contrary to the Contract. The JEA Inspector shall inform the JEA Engineer of the progress of the Work and the manner in which it is being done, and notify the Company of any infringement upon the Contract Documents. The JEA Inspector will have the authority to reject defective materials or to suspend any Work that is being improperly done subject to the final decision of the JEA Engineer.

#### **2.13.15. INTERFERENCE WITH EXISTING UTILITIES**

The Company acknowledges and agrees that there is a possibility that existing JEA or other utility facilities may cross and/or lie parallel to excavations in the area where Work will occur. Although JEA may indicate recorded obstacles on the drawings, it does not warrant that other subsurface obstacles do not exist. The Company shall be responsible for verifying the data furnished by JEA and for fully investigating and locating additional obstructions including every type below, on or above the ground. The Company should regard these impediments as normal to construction. All costs for performing such work shall not be paid for separately, but shall be included in the Company's costs on the Bid Document.

The Company shall comply with all requirements of the Sunshine State One-Call program.

In the event the Company encounters an unidentified utility during performance of the Work, the Company shall promptly cease Work in the affected area and shall immediately notify the JEA Representative in writing. JEA will investigate the area and propose remedial actions in accordance with the provisions stated herein in "Changes to the Work".

The Company shall work in cooperation with JEA and representatives of existing utilities to plan and coordinate putting new Work into service so as not to interfere with the operation of the existing utilities. Such plans shall be adhered to unless deviations therefrom are expressly permitted in writing by the Contract Administrator.

The Company shall at all times conduct the Work in a manner that interferes as little as possible with the existing utilities. Any cables exposed during construction, whether energized or not, must be handled and protected as if they are energized. The Company shall so conduct its operations and maintain the Work in such condition that adequate

drainage shall be in effect at all times. The Company shall not obstruct existing gutters, ditches and other runoff facilities. When working in the vicinity of overhead lines, the Company shall request line rubber protection from JEA at least ten (10) days in advance of performing the work.

The Company shall be solely responsible for any damages, interferences, and interruptions of service caused to any utility's assets and services including water, sewer, electric, telephone, gas, cable, and other utility services, that result from the Company's failure to fulfill the above stated requirements.

In the event the Company damages an existing utility, the Company shall immediately notify the property owner, the owner of the damaged utility and the JEA Representative. Should the damage cause an interruption of service, the Company shall be responsible for restoring service as soon as possible; however, the Company shall not make repairs, other than any required to restore safe conditions, without the approval of the property owner, or the owner of the damaged utility. The Company shall be responsible for coordinating any repair effort, and any associated costs should the utility owner or a licensed repair contractor be required to make the repair. JEA reserves the right to deduct any unsettled claim amount from Company's invoices until such time as the claim is satisfactorily resolved.

#### **2.13.16. INTERFERENCE WITH OTHER JEA WORK OR OTHER COMPANIES**

The Company shall perform the Work in a manner that minimizes the interference with other JEA work, City of Jacksonville work, or with work performed by other companies. The Company shall coordinate the Work with other persons and companies employed by JEA. If a difference of opinion regarding scheduling or coordination of the Work arises between the Company and another JEA contractor(s) performing work at the Work Location, JEA may arbitrate the matter. In such cases where JEA makes a decision regarding the scheduling or coordination of the work, the Company agrees to fully abide by JEA's decision. Unless otherwise agreed in writing by JEA, JEA will not be responsible for additional costs.

Any claims arising against the Company from damages to other companies' work, equipment, machinery, tools or other property shall be settled directly between the Company and the other companies involved. JEA will not, in any way, be a party to arbitrating or mediating any such disputes, nor shall JEA be responsible for any costs associated with such disputes.

#### **2.13.17. INTERFERENCE WITH RAILROADS**

The Company shall not build across, into, over or under, either temporarily or permanently, any portion of a railway or railway right-of-way without first obtaining all required permits. If the Company's operations render any railroad unsafe, the Company shall immediately notify the Contract Administrator and the railroad owner and take appropriate actions and such temporary safeguards as required to protect life, limb, and property, and to maintain orderly traffic.

The Company shall procure all railroad permits required for the Work beyond those procured by JEA and the costs for such permits shall be included in the Bid Documents. All costs associated with railroad fees for railroad flagmen, watchouts, inspectors, supervisors, any additional training of Company's employees that is required by applicable laws, rules and regulations when performing Work in association with railways, any certifications required for successful completion of the Work and all other associated costs shall be included in the Bid Document.

#### **2.13.18. MATERIAL DELIVERED TO COMPANY SITES**

The Company shall be responsible for all unloading, handling and storage of Work-related materials at the Work Location. Where the Company is to use a JEA-designated supplier to deliver materials to the Work Location, JEA will provide the Company, upon request, with contact names and information, along with required material lead-times. The Company is solely responsible for taking into account required material lead-times when planning its performance of the Work, and for communication and coordination of materials delivered to the Work Location by JEA suppliers. The



Company shall be responsible for any additional delivery costs charged by the JEA material supplier for any Company delays.

If, for any reason, the Company is unable to receive, unload, handle or store materials it has ordered or caused to be ordered, the Company shall be responsible for any and all additional costs incurred by JEA for unloading, handling, storing, or additional shipping costs. In such cases where JEA is receiving items when the Company is unable to, such receipt does not indicate JEA's Acceptance of items.

#### **2.13.19. MATERIAL DELIVERY LOCATIONS**

The Company shall notify, in writing, the Contract Administrator of all planned material delivery/receiving locations. Such notification shall be prior to initiation of shipment. The Contract Administrator will provide the Company with specific written approval for each delivery/receipt location, which will not be unreasonably withheld. Where the Contract Administrator disapproves a proposed location, the Company shall propose alternate locations and obtain the Contract Administrator's written approval for any proposed alternate location. The Company understands and agrees that it shall not seek additional monies to compensate for any costs associated with changes or denials of proposed delivery/receipt locations regardless of circumstances

#### **2.13.20. OBLIGATIONS OF THE COMPANY**

The Company shall provide everything necessary to successfully complete the Work except the materials and services specifically stated in the Contract to be provided by JEA. No payments, other than those shown in the Bid Documents, will be made to the Company for performance of any requirements of the Contract Documents. The Company shall perform all Work in accordance with the Contract Documents and the applicable JEA standards manuals, safety manuals, policies, accepted commercial work practices, local, state, and federal, rules regulations and laws which may be amended from time to time. The Company shall provide all permits, certifications, insurances, and bonds necessary or required by good practice, except where specifically stated in the Contract to be provided by JEA.

The Company's personnel shall perform all Work in a professional, efficient, and competent manner. The Company is obligated to provide personnel possessing the skills, certifications, licenses, training, tools, demeanor, motivation, and attitude to successfully complete the Work. The Company is obligated to remove individuals from performing Work under this Contract when the Company recognizes an individual to not be working in a manner consistent with the requirements of this Contract, or when JEA notifies the Company that JEA has determined an individual or group of individuals to not be working in a manner consistent with the requirements of this Contract. The Company is obligated to ensure that their officers and executives interact with JEA, JEA customers, whether direct or indirect customers of JEA, with the utmost level of professionalism and integrity.

In the event the Contractor chooses to use Subcontractors, the Contractor is obligated to provide Subcontractors possessing the skills, certifications, licenses, training, tools, demeanor, motivation and attitude to successfully perform the work for which they are subcontracted. The Contractor is obligated to remove Subcontractors from performing Work under this Contract when the Contractor recognizes that a Subcontractor is failing to work in a manner consistent with the requirements of this Contract, or when JEA notifies the Contractor that JEA has determined a Subcontractor is failing to work in a manner consistent with the requirements of this Contract.

The Contractor is obligated to ensure that sufficient supervision of the Work is provided. This includes ensuring that the Contractor Supervisor is at the Work Location when Work is being performed.

The Contractor shall bear sole responsibility for the efficiency, adequacy and safety of the performance of the Work, including temporary Work and facilities, until Acceptance. The Contractor shall be solely responsible for any loss or damage to materials, tools, labor, and equipment used during the performance of, or in connection with, the Work.

Any JEA comments or approval regarding the Contractor's performance, materials, working force, or equipment will not relieve the Contractor of any responsibility.

#### **2.13.21. PROTECTION OF EXISTING FACILITIES AND GROUNDS**

The Company shall be responsible for protecting all the existing facilities including, but not limited to, buildings, lawns, landscaping, sprinkler systems, and pavements, both public and private, that are encountered during the performance of the Work. At all times, the Company shall cooperate with the owners of such facilities by arranging and performing the Work in and around such facilities in a manner that facilitates their preservation, relocation, and/or reconstruction. The Company shall be responsible for the full restoration or replacement if the Company damages such facilities during or resulting from performance of the Work.

The Company shall verify the existing dimensions and clearances before laying out the Work. When the Work involves the laying of utility lines across landscaped areas and grassed areas, which may include, but is not limited to, irrigation systems, streets, sidewalks, and other paved areas, the Company shall protect and preserve all trees, shrubs, palms, landscaping, etc., and restore such areas and all paved areas to their original sound conditions using construction techniques and materials that are the same as existing including replacing plants and trees with those of similar size and age. In the case of planted areas, the Company shall maintain the restoration Work until positive growth has been acknowledged in writing by the Contract Administrator.

All costs for such restoration and replacement work shall be included in the associated lines on the Bid Documents.

The Company shall not (except upon written consent from the property owner and Contract Administrator) enter or occupy with workers, tools, equipment or vehicles any land outside the permitted easements, right-of-ways, JEA property or the City of Jacksonville property.

#### **2.13.22. QUALITY CONTROL AND QUALITY ASSURANCE**

The Company shall provide Quality Control to ensure the Work is performed in accordance with the Contract. Quality Control shall be appropriate for the nature of the Work, and shall be conducted in a manner consistent with sound quality management and industrial engineering principles. The Company shall have only personnel trained in Quality Control techniques and experienced with the nature of the Work perform the Quality Control function.

JEA may perform Quality Assurance activities. Such activities, whether performed or not, do not in any way limit or reduce the Company's requirements. JEA may become aware of quality related problems during its performance of Quality Assurance, but has no obligation to notify the Company of its findings. The Company shall provide access to all areas of Work, including the Company's facilities, for JEA Quality Assurance personnel and JEA Representatives. JEA will conduct Quality Assurance activities so as not to excessively interfere with the Work, however, where JEA Quality Assurance personnel request specific actions of the Company, the Company shall comply with the request and agrees that such compliance is included as part of its Contract Price.

#### **2.13.23. SAFETY AND PROTECTION PRECAUTIONS (CONSTRUCTION)**

The Company shall comply with all applicable federal, state and local laws, ordinances, all JEA procedures and policies including, but not limited to, JEA's Contractor Safety Management Process (available at JEA.com), and orders of any public body having jurisdiction for the safety of persons or protection of property. The Company understands and agrees that a violation of any provision of this Section e is grounds for an immediate termination of the Contract for default, with no requirement for JEA to provide Company with advanced notice and opportunity to cure. Additionally, the Company shall be responsible for all JEA damages associated with such termination.

The Company shall only use those Subcontractors who have met JEA Safety Prequalification requirements in the JEA Contractor Safety Management Process. The Company shall ensure that Subcontractors and their personnel have all the necessary personal protective equipment and training needed to perform the Work safely.

The Company understands and agrees that JEA Representatives may stop Work at any time that JEA, at its sole discretion, considers the Company's Work to be unsafe or a risk to person or property, and to direct the Company to, at a minimum, perform as directed in such a way as to render the Work environment safe. The Company understands and agrees that it is responsible for paying all costs associated with providing a safe work environment including, but not limited to, any costs associated with any JEA directed safety improvements. The Company also understands and agrees that it is solely responsible for the safety of personnel and property associated with the Work, and that any actions taken by JEA to prevent harm to persons or damage to equipment does not, in any way, relieve the Company of this responsibility.

The Company Representative, or alternatively, the Company Supervisor, shall be designated as the Company's representative responsible for the prevention of accidents.

If the nature of the Work requires, the Company shall notify the police and fire departments as to its Work Location in order to ensure prompt response in an emergency.

#### **2.13.24. SAFETY REPRESENTATION**

The Company represents and warrants to JEA that it has the capacity to train and supervise its employees, Subcontractors and suppliers to ensure the Work complies with all safety requirements of the Contract Documents. The Company shall be responsible for executing the necessary safety training and supervision of its employees and Subcontractors, and acknowledges that JEA is not responsible for training or supervising the Company's employees, except when noted for the purpose of enforcing compliance with these safety requirements.

#### **2.13.25. SHIPPING - FOB DESTINATION**

Items are purchased F.O.B. destination. The Company shall ensure the following:

- o Pack and mark the shipment to comply with the Contract Documents; or in the absence of specifications in the Contract Documents, prepare the shipment in conformance with carrier requirements;
- o Prepare and distribute commercial bills of lading;
- o Deliver the shipment in good order and condition to the point of delivery specified in the Contract;
- o Be responsible for any loss of and/or damage to the goods occurring before receipt of the shipment by JEA Representative at the delivery point specified in the Contract;
- o Be responsible for obtaining any permits required for transportation to the installation site;
- o Furnish a delivery schedule and designate the mode of delivering carrier; and
- o Pay and bear all charges to the specified point of delivery.

#### **2.13.26. SHOP DRAWINGS**

The Company shall promptly submit all required Shop Drawings in accordance with the provisions provided herein. JEA will not grant an extension of Contract Time due to the Company's failure to submit Shop Drawings in ample time to allow for checking, revisions, reviews, and approval.

A letter of transmittal and four copies of each shop drawing shall accompany each submittal. Shop drawings shall be forwarded to the JEA Engineer. Each drawing shall be listed separately on the letter. The Company shall also note distinctively on the transmittal letter any deviations that the Shop Drawings may have from the requirements of the Contract Documents.

The JEA Engineer's approval of Shop Drawings shall not be construed as a complete check, nor shall it relieve the Company from responsibility for any deficiency that may exist, or from any departures or deviations from the requirements of the Contract unless the Company has, in writing, called the JEA Engineer's attention to such deviations at the time of submission and obtained written approval for the deviation. The JEA Engineer's approval shall not relieve the Company from the responsibility for errors of any sort in Shop Drawings or schedules, nor from responsibility for proper fitting of the Work, nor from the necessity of furnishing any Work, materials, equipment or tools, required by the Contract Documents that may not be indicated on Shop Drawings when approved. The Company shall be solely responsible for all quantities and dimensions shown on the Shop Drawings. The Company shall not execute any Work until the JEA Engineer approves the Shop Drawings and a copy stamped "Approved" is at the Work Location. The Company shall, at no extra cost to JEA, make all changes and alterations whatsoever in Work performed or in subcontracts or orders placed prior to the approval of any and all Shop Drawings.

The Company shall allow a minimum of fourteen (14) days for the review of Shop Drawings. This shall be the period for new Shop Drawings and Shop Drawings that are revised and resubmitted.

As used herein, the term "manufactured" applies to standard units usually mass produced, and "fabricated" means items specifically assembled or made out of selected materials to meet individual design requirements. Shop drawings shall establish the actual details of all manufactured or fabricated items; indicate proper relation to adjoining Work; amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure; and incorporate minor changes of design or construction to suit actual conditions.

Shop drawings shall be complete in every detail, properly identified with the Contract name, Contract and subsection number for identification of each item, and state the qualifications, departures or deviations from the Contract, if any. Shop drawings for each section of the Work shall be numbered consecutively and the numbering system shall be retained throughout all revisions. Each drawing shall have a clear space above the title block in the lower right-hand corner for the approval stamps of the Company and the JEA Engineer.

If the materials are not listed in JEA's Approved Materials Manual, then prior to purchase of material or fabrication, the Company shall forward to the JEA Engineer for review, five (5) sets of each shop drawing plus the number of prints it desires returned.

In checking the Shop Drawings, the Company shall verify all dimensions and field conditions and shall check and coordinate the Shop Drawings of any section or trade with the requirements of all other sections or trades whose Work is related thereto, as required for proper and complete installation of the Work. All rough-in and connections for utilities shall conform to approved equipment Shop Drawings.

The JEA Engineer will review the Shop Drawings and will return them to the Company stamped to indicate the action taken. The stamp will indicate that the shop drawing is "Approved", "Approved as Noted", "Returned for Correction", or "Disapproved". Only those Shop Drawings stamped "Returned for Correction" or "Disapproved" shall be resubmitted for subsequent review. Resubmittals shall be in the same form and number of copies as original submittals, with notation indicating a revised submittal. The Shop Drawings stamped "Approved" or "Approved as Noted" will be returned to the Company, who will be responsible for obtaining prints thereof and distributing them to the field and Subcontractors.

At the same time the JEA Engineer returns a reviewed submittal to the Company, it will forward two (2) copies of each item stamped "Approved" or "Approved as Noted" together with any conditions of approval, to JEA for field and office use. The JEA Engineer may revoke approval of Shop Drawings, should field conditions so dictate.

#### **2.13.27. STORAGE OF EQUIPMENT**

The Company shall be responsible for all storage of materials, equipment, vehicles, tools, and all other items associated with the Work. Such storage shall comply with applicable regulations appropriate for the items being stored to ensure suitable care for items and protection from theft, vandalism, or inappropriate use. The Company is solely responsible for the costs for such storage, unless otherwise indicated in the Contract Documents, and any costs associated with noncompliant storage including, but not limited to, loss and damage to items. In the event that JEA directs the Company to stop the Work, costs associated with storing equipment or materials will be compensated in accordance with the Contract Documents. The Company shall ensure that JEA Representatives have access to Work-related storage on an as needed basis during regular work hours and Overtime.

#### **2.13.28. STORM PREPAREDNESS**

In the event of a Hurricane Warning, Tropical Storm Warning, or other large storm affecting the Work Location, the Company shall secure, or shall remove and store all equipment and materials at the Work Location including, but not limited to, cones, barricades, lights and signs. The Company shall begin taking such precautions as necessary to secure the Work Location upon official issuance of mandatory evacuation of the area of the Work Location and no later than 24 hours prior to predicted arrival of tropical storm or hurricane force winds, or when notified by a JEA Representative to do so. These activities are considered a regular part of the Work, regardless of the frequency they are required.

#### **2.13.29. SUBSTITUTIONS**

Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function and quality required.

Materials or equipment of other suppliers may be accepted by the JEA Engineer if sufficient information is submitted by the Company to allow the JEA Engineer to determine that the material or equipment proposed is equivalent or equal to that named.

The Company shall make written application to the JEA Engineer for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified.

The application shall state that the evaluation and acceptance of the proposed substitute will not prejudice the Company's completion of the Work within the time prescribed by the Contract, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other Contract directly with JEA for Work on the Contract) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fees, royalties, permits or any other costs.

All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair and replacement service shall be indicated.

The application shall also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other Companies affected by the resulting change, all of which shall be considered by the JEA Engineer in evaluating the proposed substitute.

Requests for review of substitute items of material and equipment will not be accepted by the JEA Engineer from anyone other than the Company.

The JEA Engineer may require the Company to furnish, at the Company's expense, additional data about the proposed substitute.

If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract, the Company may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to the JEA Engineer, if the Company submits sufficient information to allow the JEA Engineer to determine that the substitute proposed is equivalent to that indicated or required by the Contract.

The JEA Engineer will be allowed a reasonable time within which to evaluate each proposed substitute; such time shall not be deemed justification for an extension of the Company's time for completion of the Contract.

The JEA Engineer will be the sole judge of acceptability, and no substitute shall be ordered, installed or utilized without the JEA Engineer's prior written notice, which shall be evidenced by either a Change Order or an approved shop drawing.

JEA may require reimbursement for the costs associated with JEA's evaluation of substitutions.

JEA may require the Company to furnish, at the Company's expense, a special performance guarantee bonds or other surety with respect to any substitution.

#### **2.13.30. TOOLS AND EQUIPMENT**

All tools and equipment used in the performance of the Work shall be used as intended by the manufacturer and in accordance with manufacturer operating manuals and industry practices, whichever is more stringent. The Company shall ensure that all tools and equipment used in the performance of the Work shall be of the size and quality suitable for safe and efficient performance of the Work. If the Company-provided tools and equipment do not meet these requirements, or if in the sole opinion of JEA formed after considering relevant factors, the tools or equipment are inappropriate for performance of the Work, the Company agrees to remove the unacceptable tools and equipment and obtain tools and equipment JEA considers suitable. Such replacement shall be entirely at the Company's expense, and no change to time prescribed by the Contract will be allowed.

The Company is responsible for furnishing and the security of any and all tools and equipment required to perform the Work.

#### **2.13.31. CARE OF JEA CUSTOMERS**

The Company agrees to provide excellent customer service throughout the execution of the Work during both scheduled Work hours and Overtime in the manner, as a minimum, as set forth below:

##### **Customer Service Plan:**

The Company shall submit a Customer Service Plan prior to mobilization and designate an individual to assume the duties of the Company's Customer Service Representative (CSR) as described herein.

The Company shall provide an after-hours emergency phone number to JEA.

The Company shall provide contact numbers for those individuals assigned to concerns arising during non-business hours and in the event of emergencies. The designated person(s) shall provide a cellular phone number as the main contact number, and one (1) alternate number. The designated person(s) shall respond to JEA with proposed resolution within two (2) hours of receiving a call from a JEA representative or customer. If the Company fails to respond within the designated time and it is thereby necessary for JEA to provide assistance, the Company shall be responsible for all costs incurred by JEA as a result of resolving the concern.

Upon JEA approval, the Company shall deliver fliers and/or door hangers provided by Project Outreach to all customers in an affected work area at least three days prior to each construction activity including, but not limited to, locates, TV/cleaning, soil borings, mobilization, etc. Upon JEA's request, the contractor will install JEA provided signage at a location chosen by the JEA project team. These signs will be removed by the contractor at the end of the project.

The Company shall notify affected customers prior to any planned water/electric outages, line flushing, valve simulations and driveway/curb construction, paving and road closures. The notification will be produced by the Company (unless notifications are provided by JEA) and approved by JEA Project Outreach.

**Customer Concerns:**

The CSR shall contact the JEA customer who has a concern by the end of the business day of when the concern was received from JEA Project Outreach. The Company shall contact Project Outreach within two (2) business days to confirm that they have contacted the customer and assessed the concern.

The CSR shall provide JEA Project Outreach with concern evaluations, resolutions, and actions taken all within five (5) business days of when the concern was received.

The CSR shall notify Project Outreach immediately after a concern has been resolved with specific resolution actions or an update of the resolution. Project Outreach will contact the customer following notification of resolution to confirm the resolution before Project Outreach closes the concern and prior to notifying the Company, the CSR, JEA Representatives and inspectors of resolution of the concern.

Within one (1) business day of receiving a concern from a JEA customer, the Company shall notify JEA Project Outreach in writing of each customer concern reported directly to the Company's personnel by any JEA customer. Such notification shall include, as a minimum: the Company's name, date and time the concern was communicated to the Company, the name, address and phone numbers for the customer, the nature of their concern and any action that was taken or any action currently underway to resolve the concern. The CSR shall follow the customer concern procedures stated above.

If the Company fails to meet the problem resolution deadlines stated in this document in a manner that meets acceptable quality standards, JEA may make repairs or take other necessary actions to resolve the issue, which shall be at the Company's sole expense.

**Duties of the Customer Service Representative (CSR):**

The Company shall provide a Customer Service Representative for the Term of the Contract. The CSR's primary responsibilities shall include, but are not limited to the following:

**Communication:** Serve as the primary point of contact for customer concerns and information requests; report customer concerns to the JEA Project Manager and Project Outreach or other internal JEA resources and assist in resolution of issues; and meet with customers on site as needed to assess their concerns.

**Planning:** Conduct biweekly progress meetings with JEA Project Manager; conduct progress meetings with Project Outreach regularly and as needed to review any outstanding complaints and provide a timeframe/action plan for resolving them; review customer satisfaction targets and goals, measurements, documentation and project definition and assist with making improvements; conduct periodic customer service reviews during the course of the Work to assess and identify any items considered to be at risk or vulnerable in relationship to meeting JEA goals and objectives; and notify Project Outreach, in a timely manner, of change in scope or schedule.

**Process Improvement:** Work with JEA to identify process improvement opportunities that increase customer service and satisfaction; make recommendations to JEA to enhance and assist with JEA goals and objectives for customer service; and conduct a customer service review at the completion of the construction phase of a project, but prior to the restoration, or "punch list" phase, to assess customers' satisfaction with the handling of concerns and customers' overall response to the project.

**Disruption of Utility Services:** If the Company disrupts any utility services (water, sewer or electric, etc.) during performance of the Work, the Company shall return them to operation as soon as possible. No disruption to any utility service disruption shall exceed the end of the Company's normal work shift. No disruption to the customer's utility services shall exceed any 12-hour period. Should any of the customer's utility services be disrupted, for a period longer than 12 hours, the Company shall provide alternative arrangements for the customer, as determined by JEA, with no additional cost to JEA for these arrangements unless otherwise specified in the documents. The CSR shall immediately notify JEA Project Outreach (telephone 665-7500) of any service disruptions.

**Restoration:** The Company shall restore, for no additional compensation, the landscaping of any properties affected by the Company's actions, directly or indirectly, (in the right-of-way not related to ongoing Work, or isolated Work in the right-of-way that would leave unrestored areas for undue periods of time subject to criticism) to its original state, within five (5) calendar days from the time the area was disrupted. All other restoration required within the right-of-way shall be scheduled in the customary method for such construction and in accordance with any permit conditions.

The Company shall, at its own expense (unless otherwise specified in the documents), repair any irrigation systems damaged by the Company's Work within one (1) day from the time the irrigation system was damaged. If this is not possible, the Company shall inform the customer of the damage and provide an estimated time for repair. In addition, the Company shall make adequate provisions for the customer to water and maintain his or her lawn.

The Company shall repair, at its own expense, any asphalt and concrete damaged by Company (in the right-of-way not related to ongoing Work, or isolated Work within the right-of-way that would leave unrestored areas for undue periods of time subject to residents/customer criticism) within five (5) calendar days from the time the damage occurred. All other restoration required within the right-of-way shall be scheduled in the customary method for such construction and in accordance with any permit conditions.

**Customer Concern Ratios:** Project Outreach's goal for customer concerns is to completely resolve all complaints within 10 business days of receiving a complaint. A formal customer concern shall be defined as a documented concern to JEA Project Outreach. The concern may be of a real or perceived problem that the customer has against the Company.

The JEA Project Manager or designee will notify the Company on a monthly basis of how many concerns were received by JEA's Project Outreach and the number of concerns yet to be resolved. JEA will immediately notify the Company when a concern has been opened and has not been a response to it within five (5) business days. The Company shall contact Project Outreach and provide a written correction plan within five (5) calendar days of receipt of the notice. If at any time the Company allows unresolved concerns to exceed the five (5) business days without prior notification to Project Outreach and the customer concern ratio reaches 3.0 percent, the Company shall be required to appear in front of the Company Performance Review Board to explain the circumstances leading to the unresolved concern. The Company Performance Review Board will notify the Chief Procurement Officer of the board's decision and any recommended actions, which may include, but are not limited to, additional remedial action, termination of the Contract and/or suspension from JEA's Responsible Bidder's List in all categories for a period not to exceed one (1) year.

If the Company fails to adhere to the customer service requirements stated herein, the Company's performance shall result in a required hearing before the Company Performance Review Board. The Company Performance Review



Board will consist of three JEA directors. The hearing will evaluate the Company's remedial action plan and determine whether such plan will be effective. The Company Performance Review Board will present its recommendation to the Chief Procurement Officer and recommended actions that may include additional remedial actions, termination of the Contract and/or suspension from JEA's Responsible Bidder's List in all categories for a period not to exceed one (1) year.

#### **2.13.32. WEATHER PROTECTION**

The Company shall provide proper facilities, take all necessary precautions and assume the entire cost for protecting the Work against weather conditions and for handling all storm, flood and ground water, sewage, or other seepage, that may be encountered during the performance of the Contract. The Company shall provide for such contingencies and for carrying on the Work in freezing weather by methods that meet with the approval of the JEA Engineer. If the Company fails to provide such protection, or in the event of an emergency, JEA may provide such protection at the Company's expense.

#### **2.13.33. WORK INFORMATION**

In the event the Company requires additional information regarding the scope, technical specifications, Work Locations, personnel requirements, or other information pertinent to the Work or Contract, the Company shall request such information or clarifications from the Contract Administrator in writing. Within the bounds of the JEA Representative's authority, JEA Representatives may provide requested information to the Company.

#### **2.13.34. WORK LOCATION CLEANLINESS**

The Company shall, at all times, keep the Work Location free from an accumulation of waste materials or rubbish caused by its operations. At the completion of the Work, the Company shall remove all waste materials and any rubbish from and about the project, as well as any tools, construction equipment, machinery and surplus materials. If the Company fails to clean up at the completion of the Work, JEA may do so and charge the cost thereof to the Company.

#### **2.13.35. WORKMANSHIP**

The Company shall perform all Work in a safe and professional manner, so as to render a neat and uniform appearance. The Company shall handle all material in such a way as to preserve its finish and protective coatings from damage. General arrangement shall be in accordance with JEA Distribution Construction Standards and shall be satisfactory to the Contract Administrator.

#### **2.13.36. COMPLIANCE WITH REFERENCED SPECIFICATIONS**

All Work, materials, systems or operations specified by reference to standard trade specifications or to manufacturer's published specifications shall comply with the requirements of the referenced specifications, except as modified by the requirements of the Contract Documents. The referenced specification used shall be the latest published edition that is in effect on the effective date of this Contract unless a particular edition is specified. In case of a conflict, the specifications that contain the more stringent requirements will govern.

#### **2.13.37. CUSTOMER OUTAGES**

All customer outages shall be held to a minimum. It is realized that certain outages will have to be taken on the electric distribution system. The time of the outages will be at the discretion of System Operations Control Center (SOCC) personnel and must follow the guidelines set forth in the JEA Safety Manual.

It is anticipated that all Work to be done under these Contract Documents can be accomplished during regular working hours. However, should any unforeseen circumstances occur where JEA or its customers cannot be without service during regular working hours, the Work will have to be scheduled to their convenience. Where inclement weather may

impact the Company, the Company shall be expected to continue Work as previously scheduled, and return customers to service, without penalty to the JEA. Customer outages shall be limited to 9 a.m. - 3 p.m. unless coordinated by Company with the customer and SOCC.

#### **2.13.38. JEA CUSTOMER SATISFACTION**

The Company shall restore affected properties in less than five (5) working days from the time the area is disrupted. Restoration items include, but are not limited to, sod, sidewalk, dirt mounds at poles, etc. JEA has the right to audit the Company's customer service documentation and the Company's actions to determine if the customer service requirements are being met. The Company shall obtain prior approval from JEA if it deviates from customer complaint procedures. The Contract Administrator and JEA's Project Outreach shall monitor the progress toward achievement of the customer satisfaction goals. If the Company fails to comply with any provisions of this part, the Company may be subject to any, all, or any combination of the following actions, or other actions at JEA's sole discretion: (1) Withholding of all payments under this Contract from the Company until it is determined that the Company is in compliance, (2) Termination of the Contract, (3) Suspension from bidding any JEA projects as follows: a) More than three documented Defects-three months b) Five (5) or more documented Defects-six months c) 10 or more documented Defects-one (1) year.

#### **2.13.39. AS-BUILT DRAWINGS (ELECTRICAL)**

The Company shall furnish as-built drawings that depict, if applicable, any changes to the Work. The as-built drawings shall also include the required ground ohm readings and the number of ground rods driven at each station.

The validity and verity of the as-built drawings shall be reviewed at a post-construction meeting, which will include the JEA Engineer, JEA Inspector and the Company, within one (1) week of completion of the Work. The JEA Inspector will approve or reject the as-built drawings at this meeting.

At the post-construction meeting, a JEA Representative may accomplish an infrared camera inspection of the Work performed by the Company. The Company shall replace any workmanship found to be defective.

#### **2.13.40. JEA FIBER OPTIC CONSTRUCTION STANDARDS MANUAL**

The JEA Fiber Optic Construction Standards Manual provides standard engineering, design and construction practices for JEA. It contains Standard Construction Plates, which illustrate the various standards, as well as providing written specifications, construction notes and a list of required materials. Where applicable, all Work will be performed as specified by the JEA Fiber Optic Construction Standards Manual, which shall be considered as part of the specifications. Fiber Optic Standards can be found online at [jea.com](http://jea.com).

JEA will evaluate and employ new techniques of construction made possible by the development of new equipment. Any such proposal by the Company is welcome, but is subject to evaluation and approval by the JEA Standards Section.

#### **2.13.41. COMPANY'S KNOWLEDGE OF THE WORK**

The Company represents that its total Bid Price and the detailed schedule for the execution of the Work are based on its own knowledge and judgment of the conditions and hazards involved, and not upon any representation of JEA. JEA assumes no responsibility for any understanding or representation made by any of its representatives during or prior to execution of the Contract unless such understandings or representations are expressly stated in the Contract and the Contract expressly provides that JEA assumes the responsibility.

## **2.13.42. CONTRACTOR'S PLANS AND SPECIFICATIONS**

All plans and specifications that the Contractor provides for any building, structure, system or equipment where required by federal, state, local laws and regulation as part of the Work shall bear the seal of a professional engineer duly registered in the State of Florida at no cost to JEA.

## **2.14. STANDARD REQUIREMENTS FOR CONSTRUCTION**

### **2.14.1. PROTECTION OF THE ENVIRONMENT**

The Company and its Subcontractors shall comply with all applicable laws, rules and regulations including, but not limited to, all Environmental Regulations.

#### **A. Asbestos, Lead, or Toxic Mold Notification:**

Asbestos, Lead, or Toxic Mold may be present at the Work Location. The Company shall notify the Contract Administrator immediately upon discovery of asbestos, lead, toxic mold. The Company shall not disturb or remove known or discovered asbestos, lead, or toxic mold unless directed by the JEA Representative.

#### **B. Hazardous Materials:**

The Company shall bear full responsibility including, but not limited to, payment and liability for the transportation, use, recycling, and disposal of any Hazardous Materials under the Company's control during the performance of the Work. Disposal or recycling of Hazardous Materials shall only be performed at JEA approved facilities. The Company shall provide JEA with appropriate documentation showing proper disposal or recycling of its Hazardous Materials.

The Company shall notify the Contract Administrator in writing of the type, quantity and disposal or recycling method of any hazardous material used during the performance of the Work. The Company shall be solely responsible for the use and disposal or recycling of any such materials. The Company shall submit cleanup procedures to the JEA Representative for review and written approval prior to the use of the hazardous material. In the event that a hazardous material escapes into the environment, the Company shall immediately notify the Contract Administrator in writing of the occurrence and the actions taken. In the event that the Company encounters hazardous materials in the course of construction, the Company shall immediately notify the Contract Administrator verbally, with a written notification to follow. The Contract Administrator shall arrange for disposal by JEA.

JEA has identified and labeled equipment known to contain PCBs. JEA will remove and transport any equipment so identified. The Company shall not remove or transport any equipment containing PCBs. The Company shall immediately notify the JEA Representative of any questionable or unmarked equipment, and the JEA Representative will arrange for testing and identification.

#### **C. Waste Management:**

The Company will be solely responsible for the proper management of all waste material, including but not limited to, paints, lubricants, fuels, solvents, drilling mud and materials, construction and demolition debris, used oil and oily waste, land clearing debris, universal waste (mercury containing lamps and devices, batteries, etc.) and other chemicals and hazardous materials used in connection with or generated during the Work, except as specified above. The Company will provide proper containers for waste materials and comply with all applicable laws, rules and regulations in their disposal or recycling. The Company will dispose of or recycle all empty containers off-site as soon as possible.

#### **D. Wetlands:**

The Company understands and agrees that the Work Location may include wetlands or other environmentally sensitive areas. The Company shall not enter these areas during the performance of its Work, unless specifically authorized by the Contract Administrator and appropriate state and federal permits have been obtained.

E. Wildlife:

The Company and/or Subcontractor's employees shall not endanger wildlife species or domestic animals of any kind.

F. Violation of Environmental Laws and Permits:

The Company shall immediately cease any activity that causes or results in a violation of JEA's or Company's environmental permits or federal, state and local laws and regulations. Such violation shall immediately be reported to the Contract Administrator verbally, with written notification to follow. All additional costs due to the Company's noncompliance with the applicable environmental permits or Environmental Regulations shall be paid by the Company.

#### **2.14.2. NPDES PERMIT CONFORMANCE**

The Company shall obtain all other applicable local, state, and federal permits. It is unlawful to have any discharges that are not composed entirely of stormwater (except discharges pursuant to a NPDES permit) to the municipal separate stormwater system (MS4). Only non-contaminated water/non-turbid water shall be transported through the MS4. Groundwater discharge (approved by JEA) from dewatering activities may be routed into the stormwater system providing that erosion, and transportation of suspended solids to the system is prevented. If contaminated soil or contaminated groundwater is encountered, the dewatering activity shall cease immediately, and the Company shall contact the Florida Department of Environmental Protection and notify the appropriate department of the incident immediately.

#### **2.14.3. NPDES PERMIT CONFORMANCE - DEWATERING**

If Company encounters groundwater, the Company shall be responsible for obtaining; a *Generic Permit for Discharge of Produced Ground Water From any Non-Contaminated Site Activity* from the Florida Department of Environmental Protection (FDEP), and a *Noticed General Permit for Short-term Construction Dewatering* from the St. Johns River Water Management District (SJRWMD) before any dewatering activities can begin.

Company shall also be responsible for developing and utilizing a dewatering system(s) to remove water from the excavations. Prior to beginning any dewatering, the Company shall submit a dewatering plan to JEA for review. The Company shall comply with all sampling requirements listed in FDEP regulation (62-621.300(2) F.A.C.) before any dewatering can begin. The Company shall submit to JEA the sampling analysis results. In the event the sample analysis fails to meet FDEP water quality standards as established in applicable rule, the Company shall not proceed with further permitting or dewatering activities, shall notify JEA of any failure to meet applicable standards, requirements, or rules, and shall await instruction from JEA.

The dewatering plan developed by the Company shall further consider the dewatering volume as estimated using traditional and customary methods. The dewatering plan shall comply with the requirements of 40C-2 and 40C-22, F.A.C., and additional requirements as may be mandated or amended by SJRWMD. In the event the dewatering plan does not comply with those requirements applicable to the *Noticed General Permit for Short-term Construction Dewatering* the Company shall not proceed with further permitting or dewatering activities, shall notify JEA of any failure to meet applicable standards, requirements, or rules, and shall await instruction from JEA.

If the above requirements are not followed, the Company shall be held liable for any fines and/or violations incurred by JEA.

#### **2.14.4. NPDES PERMIT CONFORMANCE - STORMWATER POLLUTION PREVENTION**

The Company shall obtain as necessary a *Generic Permit for Stormwater Discharge from Large and Small Construction Activities (CGP)*, and shall develop a Stormwater 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.

**No additional payments shall be made to Company for revisions or addendums to the SWPPP, or for the actual implementation of those revisions on the Work site, including those made so as to achieve functional performance based best management practices.**

The Company shall obtain all other applicable local, state, and federal permits subsequent to notification of JEA of the need for such authorization(s). It is unlawful to have any discharges that are not composed entirely of stormwater (except discharges pursuant to a NPDES permit) to the Municipal Separate Stormwater System (MS4). Only non-contaminated water/non-turbid water shall be transported through the MS4. Groundwater discharge (approved by the FDEP pursuant to 62-621.300(2)) from dewatering activities may be routed into the stormwater system, drainage ditch, creek, river or wetland providing that erosion, and transportation of suspended solids to the system is prevented. If contaminated soil or contaminated groundwater is encountered, the dewatering activity shall cease immediately, and the Company shall contact JEA's Environmental Coordinator, Andrew Sears at (904) 665-7719.

All contractors conducting land disturbing activities shall have at least one (1) corporate representative that is certified for the Florida Department of Environmental Protection Erosion and Sediment Control Inspector Training Manual.

For projects with greater than one (1) acre of disturbed land, a person certified pursuant to the Florida Department of Environmental Protections Erosion and Sediment Control Inspector Training Manual or trained by a certified person shall make the routine inspections shall be maintained and kept on the construction site and made available for inspection during land-disturbing activities. Such inspection shall be made no led that daily and a log of such inspections shall be maintained and kept on the construction site and made available for inspection by City and JEA inspectors throughout the duration of land-disturbing activities. If the inspector is trained by a certified person but not certified themselves, accurate training records must be kept and evidence of annual refresher trainer shall be maintained.

Any required erosion and sediment control plans submitted to the City of Jacksonville must conform to the requirements in the FDEP's Florida Department of Environmental Protections Erosion and Sediment Control Inspector Training Manual or the provisions contained in the Land Development Procedures Manual, whichever

Upon approval to proceed to do so by the Owner, the Company shall complete a *Notice of Termination (NOT)* (DEP Doc. No. 62-621.300(6), F.A.C.), to terminate the CGP coverage within one (1) week of final site stabilization.

If the above requirements are not followed, the Company shall be held liable for any fines and/or violations incurred by JEA.

**2.14.5. PREVENTION, CONTROL AND ABATEMENT OF EROSION AND SILTATION**

The Company shall take steps and make suitable provisions to minimize siltation and erosion of waterways that may result from its operation during the course of construction.

The Company shall make suitable arrangements, which may require the temporary construction of flumes, boxes, or some other device(s), at the Work Location for the drainage and disposal of water. The Company shall be responsible for protecting adjacent property to the Work Location from damage by water resulting from its operations. The Work Location shall be returned to its original condition to the satisfaction of JEA.

The Company is cautioned that execution or maintenance that creates turbidity and that directly or indirectly affects the water quality of any waterway into which storm water is discharged in such a manner as to exceed the limitations prescribed in the Florida Administrative Code, is a violation of the water quality standards of the State of Florida.

Turbidity shall not exceed 29 NTU's, above background level within 100' of the construction activity. Costs incurred by the Company for compliance to the restrictions outlined above shall be included in the cost of the items for which the turbidity control is required, unless a separate line item is included in the Bid Document for turbidity control. Silt barriers shall be used at all waterway crossings or at any time during construction that siltation or erosion may occur. The Company shall submit to the JEA Engineer, for written approval prior to construction, the method to be used to control the turbidity. The JEA Engineer's approval of the method to be used in no way relieves the Company of the liability in case of a citation against JEA.

#### **2.14.6. SILT FENCE ASSEMBLY**

The Company shall furnish and install silt fence assembly (including fabric, stakes, etc.) in accordance with the details shown on the Erosion Control Drawings and as required by the Storm Water Pollution Prevention Plan (SWPPP). Company will be responsible for all costs associated with silt fence assembly. There will not be a separate line item for silt fence assembly on the Bid Form.

#### **2.14.7. EARTHWORK**

##### **SUITABLE MATERIAL**

The Company shall stockpile all material encountered during regular excavation that the JEA Engineer determines is suitable for use as backfill material. Excess suitable material shall not be stored/stockpiled along the right-of-way. JEA will not make separate payment for the use of backfill material obtained on the Work from regular excavation. Excess material shall become the property of the Company and shall be disposed of appropriately outside the right-of-way.

##### **UNSUITABLE MATERIAL**

All material encountered during regular excavation that the Geotechnical Engineer determines is unsuitable for use as backfill shall become the property of the Company and the Company shall remove and dispose of it properly. Unsuitable material shall not be stored/stockpiled along the right-of-way. Where unsuitable material is to be replaced, suitable material obtained elsewhere on the Work area shall be used as backfill at no additional cost. In the event there are not sufficient quantities of stockpile suitable material available, Class A-3 sand shall be used as specified below for A-3 Soil Backfill. Except as specified below for A-3 Soil Backfill, JEA will not make separate payment for replacement material used to construct the stabilized sub-base.

##### **OVEREXCAVATION**

If the Company encounters material below the bearing elevation of the proposed utility pipe or structure that the Geotechnical Engineer determines to be unsuitable, the Company shall remove this material, after notifying JEA or the City of Jacksonville, and properly dispose of the material. JEA shall pay the Company at the Contract Unit Price for Special Bedding (Contingency) and such payment shall be full compensation including, but not limited to, excavation, material disposal, dewatering, sheeting and shoring and A-3 Soil backfill replacement. Method of measurement for removal and replacement for over-excavation material shall be per cubic yard of unsuitable material removed and replaced below the bearing elevation and disposed based on actual trench section dimensions in accordance with the JEA Water and Sewer Standards, Details and Materials Manual as amended from time to time, unless otherwise specified in the Contract Documents.

##### **A-3 SOIL BACKFILL**

If there is not enough suitable material obtained from regular excavation to use as backfill, then the Company shall import A-3 soil to the Work area to meet the need for fill and backfill as directed by JEA or the City of Jacksonville. The Company shall provide JEA test results for both stockpiled material and imported material to indicate that the materials meet the minimum standards established by the Geotechnical Engineer for this project. JEA will pay the Company at the Contract Unit Price for A-3 soil for the importation and placement of the soil and sand. JEA will not pay the Company for A-3 soil backfill when suitable material from regular excavation will become available, but at the time required, is not available, due to the Company's sequence of work. Measurement of A-3 soil backfill shall be based on actual trench section dimensions and in accordance with Section 801, Item 4.5 of the JEA August 2008 edition of JEA Water and Sewer Standards, Details and Materials Manual, as amended, unless otherwise specified in the Contract Documents. A-3 replacement soil shall not be stored/stockpiled along the right-of-way.

#### **2.14.8. METERS**

The Company shall pay all fees and charges required for connections to utilities, concurrency management, parking meter rental/removal and any other assessments imposed on the Work or initial occupancy of the Contract, except those specifically listed herein as provided by JEA.

#### **2.14.9. SUBSURFACE INVESTIGATION**

A geotechnical exploration of existing conditions including soft digs where necessary in the general area of the proposed Work has been performed and a report of the findings and recommendations are attached

#### **2.14.10. SURVEYING**

Unless specifically stated in the Contract Documents as being provided by JEA, the Company shall be responsible for all surveying necessary to commence and perform this Work. The Company shall employ a land surveyor registered in the State of Florida to reference and restore all property corners and/or monuments that may have been disturbed and to ensure accurate horizontal and vertical control during the construction of this project and for staking locations for new structures. Height and spacing of stakes to be as specified elsewhere herein or as directed by JEA Engineer.

All Work shall be done to the lines, grades and elevations shown on the drawings. Any Work improperly located may be ordered removed and replaced at the Company's expense. The Company shall be responsible for making its own determination of water table variations and shall not assume that any water levels shown by the aforesaid boring data will necessarily be maintained at the level indicated. The Company shall investigate the conditions above or below the surface of the ground as it may deem necessary for the proper and timely performance of its Work including, but not limited to, the making of borings.

### **2.15. VENDOR PERFORMANCE EVALUATION**

#### **2.15.1. VENDOR PERFORMANCE EVALUATION**

##### **Use of Vendor Performance Evaluation Scorecards**

JEA may evaluate the Company's performance using the evaluation criteria shown on the vendor scorecard available online at JEA.com.

Scores for all metrics shown on the evaluation range from a low of 1, meaning significantly deficient performance, to a high of 5, meaning exceptionally good performance. The Company's performance shall be classified as Top Performance, Acceptable Performance, or Unacceptable Performance, as defined herein. The evaluator will be a designated JEA employee. The evaluator's supervisor and the Chief Purchasing Officer will review deficient performance letters and Unacceptable Performance scorecards, as described below, prior to issuance. When evaluating the Company's performance, JEA will consider the performance of the Company's Subcontractors and suppliers, as part of the Company's performance.

### **Frequency of Evaluations**

JEA may conduct performance evaluations and prepare scorecards in accordance with the procedures described herein at any time during performance of the Work or soon after the completion of the Work. JEA may conduct one (1) or more evaluations determined solely at the discretion of JEA.

### **Unacceptable Performance**

- If at any time, JEA determines, using the criteria described on the scorecard, that the performance of the Company is Unacceptable, the Contract Administrator and Chief Procurement Officer or his designated alternate will notify the Company of such in a letter. The Company shall have ten (10) days to respond to the Contract Administrator. Such response shall include, and preferably be delivered in-person by an officer of the Company, the specific actions that the Company will take to bring the Company's performance up to at least Acceptable Performance.
- Within thirty (30) days from date of the first Unacceptable Performance letter, the Contract Administrator and Chief Purchasing Officer or his designated alternate will notify the Company by letter as to whether its performance, as determined solely by JEA, is meeting expectations, or is continuing to be Unacceptable. If the Company's performance is described in the letter as meeting expectations, no further remedial action is required by the Company, as long as Company's performance continues to be Acceptable.
- If the Company's performance as described in the letter continues to be Unacceptable, or is inconsistently Acceptable, then the Company shall have fifteen (15) days from date of second letter to demonstrate solely through its performance of the Work, that it has achieved Acceptable Performance. At the end of the fifteen (15) day period, JEA will prepare a scorecard documenting the Company's performance from the start of Work, or date of most recent scorecard, whichever is latest, and giving due consideration to improvements the Company has made in its performance, or has failed to make. If the scorecard shows Company's performance is Acceptable, then no further remedial action is required by Company as long as Company's performance remains Acceptable. If the scorecard shows the Company's performance is Unacceptable, JEA will take such actions as it deems appropriate including, but not limited to, terminating the Contract for breach, suspending the Company from bidding on any JEA related solicitations, and other remedies available in the JEA Purchasing Code and in law. Such action does not relieve the Company of its obligations under the Contract, nor does it preclude an earlier termination.
- In the event that the Contract Term or the remaining Term of the Contract does not allow for the completion of the deficient performance notification cycles described above for those in danger of receiving an Unacceptable Performance scorecard, JEA may choose to accelerate these cycles at its sole discretion.
- If the Company receives five (5) or more letters of deficiency within any twelve (12) month period, then JEA will prepare a scorecard describing the deficiencies and the Company's performance will be scored as Unacceptable.

### **Acceptable Performance**

JEA expects the Company's performance to be at a minimum Acceptable.

### **Disputes**

In the event that the Company wants to dispute the results of its scorecard performance evaluation, the Company must submit a letter to the Chief Procurement Officer supplying supplemental information that it believes JEA failed to take into account when preparing the scorecard. Such letter, along with supplemental information, must be submitted no later than ten (10) days following the Company's receipt of the scorecard. If the Chief Procurement Officer decides to change the scorecard, the Company will be notified and a revised scorecard will be prepared, with a copy issued to the



Company. If the Chief Procurement Officer decides that no change is warranted, the decision of the Chief Procurement Officer is final. If the Company is to be suspended from consideration for future Award of any contracts, the Company may appeal to the Procurement Appeals Board as per JEA Procurement Code.

### **Public Records**

There can be no expectation of confidentiality of performance-related data in that all performance-related data is subject to disclosure pursuant to Florida Public Records Laws. All scorecards are the property of JEA.

## **2.16. JEA RESPONSIBILITIES**

### **2.16.1. ACCESS TO THE WORK LOCATIONS**

JEA will provide, as indicated in the Contract Documents, and no later than the date when needed by the Company, access to the Work Location, including rights-of-way or access thereto, and such other lands that are designated for the Company's use. JEA will secure easements for permanent structures or permanent changes in existing facilities, unless otherwise specified in the Contract Documents.

## **2.17. CHANGES IN THE WORK, CONTRACT TIME OR PRICE**

### **2.17.1. AMENDMENTS**

This Contract may not be altered or amended except in writing, signed by JEA Chief Procurement Officer, or designee, and the Company Representative, or each of their duly authorized representatives.

### **2.17.2. FORCE MAJEURE**

No party shall be liable for any default or delay in the performance of its obligations under this Contract due to an act of God or other event to the extent that: (a) the non-performing party is without fault in causing such default or delay; (b) such default or delay could not have been prevented by reasonable precautions; and (c) such default or delay could not have been reasonably circumvented by the non-performing party through the use of alternate sources, work-around plans or other means. Such causes include, but are not limited to: act of civil or military authority (including but not limited to courts or administrative agencies); acts of God; war; terrorist attacks; riot; insurrection; inability of JEA to secure approval, validation or sale of bonds; inability of JEA or the Company to obtain any required permits, licenses or zoning; blockades; embargoes; sabotage; epidemics; fires; hurricanes, tornados, floods; or strikes.

In the event of any delay resulting from such causes, the time for performance of each of the parties hereunder (including the payment of monies if such event actually prevents payment) shall be extended for a period of time reasonably necessary to overcome the effect of such delay, except as provided for elsewhere in the Contract Documents.

In the event of any delay or nonperformance resulting from such causes, the party affected shall promptly notify the other in writing of the nature, cause, date of commencement and the anticipated impact of such delay or nonperformance. Such written notice, including Change Orders, shall indicate the extent, if any, to which it is anticipated that any delivery or completion dates will be thereby affected within seven (7) calendar days.

### **2.17.3. NO DAMAGE FOR DELAY**

Damage, loss, expense or delay incurred or experienced by the Company in the prosecution of the Work by reason of unforeseen circumstances, unanticipated difficulties and obstructions, bad weather, or other mischances that are generally considered to be a part of the usual hazards associated with Work, shall be borne entirely by the Company and shall not be the subject of any claim for additional compensation or change in Approved Schedule.

The Company agrees that its sole remedy for any claims, damages or losses related to any delay, disruption or hindrance alleged to be caused by JEA or any of JEA's agents or other contractors, shall be an extension of the Contract completion date.

Any demand for equitable time adjustment must be served in writing to JEA within five (5) days of the event giving rise to the delay, disruption or hindrance. Any request for an equitable time adjustment shall be accompanied by a logical time impact analysis, demonstrating the nature and magnitude of the event to the critical path.

Failure to strictly comply with these requirements shall be deemed a waiver of any right to seek equitable time adjustment.

In the event the "no damage for delay" clause is inapplicable, there shall be no recovery for home office overhead and any damages claimed shall be proven by discreet accounting of direct project costs and no theoretical formula or industry estimating reference manuals shall be permissible.

#### **2.17.4. CHANGE IN THE WORK**

To request or claim any change in the Work including, but not limited to change in scope, quantities, pricing, or schedules, the Company shall submit a letter to the Contract Administrator stating such request or claim. JEA shall have the right to approve or disapprove any request or claim for change as it deems necessary and in its best interests consistent with the other Contract requirements. Whether requested by the Company, claimed by the Company, or contemplated by JEA, no change shall be authorized unless made on a JEA Change Order signed by the Contract Administrator or through a formal written amendment to this Contract.

In the event of an emergency endangering life or property where it is appropriate for the Company to take action, the Company shall undertake such actions to preserve life and property. JEA and the Company will determine after emergency is concluded, the extent of out-of-scope work performed by Company, and the Contract Administrator will issue a Change Order or amend the Contract for such work, if any and as necessary.

All requests for changes filed by the Company shall be in writing delivered to the Contract Administrator within ten (10) working days of when the event that prompted the claim was discovered or should have been discovered. Upon receipt of the Company's claim notification, Contract Administrator will provide written direction as to the procedures that will be used to address the request. The Company's request shall be sufficiently detailed including itemized costs, condition and work descriptions and other information necessary to evaluate the merits of the claim. The Contract Administrator may reject requests providing insufficient supporting information. Any change in the Contract resulting from the request will be incorporated into the Contract via a Change Order or Purchase Order. Where JEA and the Company are unable to reach a mutually acceptable resolution of request, JEA's determination will be final.

Where necessary, JEA will determine the value of work covered by a Change Order using one (1) of the following methods:

- Where the work is covered by established Unit Prices contained in the Contract, the Unit Price will be applied to the quantity of work;
- By mutual acceptance of lump sum price;
- By actual cost and a mutually acceptable fixed amount for overhead and profit, or

Where Bid Price was based on estimates quantities, prior to making final payment, JEA will determine actual quantities using sampling, surveying and other industry recognized means and prepare a Change Order adjusting the price to reflect actual volumes.

The Company shall immediately notify the Contract Administrator in writing of any unauthorized change in the scope of the Work or significant change in the quantities of the Work that may increase the Contract Price, require an extension of Work schedule, or negatively impact permitting or other regulatory requirements.

The Work schedule may be changed only by a Change Order or Purchase Order. The Company's request or claim for a Work schedule adjustment shall be in writing delivered to the Contract Administrator within five (5) working days following the discovery of the event that prompted the claim or when the event should have been discovered. Where accepted by JEA, changes to Work schedule will only adjust for critical path impacts. Failure to include the necessary critical path analysis with request shall be grounds for rejecting the claim. The path of critical events mentioned herein means the series of interdependent Work events that must be sequentially performed and that require a longer total time to perform than any other such series. Upon receipt of the Company's request for a change in the Work schedule, the Contract Administrator will provide any additional directions in writing detailing the procedures that will be used to resolve the request, including provision of time impact or manpower and equipment loading schedules. Where JEA and the Company are unable to reach a mutually acceptable resolution of request, JEA will make a commercially reasonable determination, made in accordance with JEA's Procurement Code, which shall be final.

All Work defined on Change Orders shall be subject to the conditions of the Contract, unless specifically noted on the Change Order.

#### **2.17.5. ASSIGNING OF CONTRACT**

Each party agrees that it shall not assign, delegate, or otherwise dispose of the Contract, the duties to be performed under the Contract, or the monies to become due under the Contract without the other party's prior written consent.

The assignment of the Contract will not relieve either of the parties of any of its obligations until such obligations have been assumed in writing by the assignee. If the Contract is assigned by either of the parties, it will be binding upon and will inure to the benefit of the permitted assignee. The Company shall be liable for all acts and omissions of its assignee or its Subcontractor.

#### **2.17.6. CHANGE OF LUMP SUM BULK BID PRICE**

All duties, responsibilities and obligations assigned to or undertaken by the Company in performing the Work described in the Contract shall be at the Company's expense without change to the Lump Sum for Complete Scope of Work as indicated on Exhibit A/Bid Form (hereinafter referred to as "Lump Sum Bulk Bid Price").

If the Company is entitled by the Contract Documents to make a claim for an increase in the Lump Sum Bulk Bid Price, the Company shall make such claim in writing, delivered to JEA within ten (10) business days of the occurrence of the event giving rise to the claim.

In all claims for adjustments in the Lump Sum Bulk Bid Price, JEA's determination shall be final. Any change in the Lump Sum Bulk Bid Price resulting from such claim shall only be made by a JEA Change Order.

In the event that Unit Prices or labor, equipment and materials (L.E.M.) rates contained in the Contract Documents are applicable to the value of any Work associated with a claim for increase or decrease in the Lump Sum Bulk Bid Price, the change shall be documented in a JEA Change Order and the change amount shall be determined in one (1) of the following ways:

1. Unit Prices Established by JEA Third Party Contracts: Where the quantities of the claim are covered by established Unit Prices contained in third party JEA Unit Price Contracts, the Unit Prices and L.E.M. rates contained in these contracts will be applied to the quantities stated in Company's claim. The JEA Unit Prices Contracts to be used are as follows:

JEA Contract Number 147043, JEA Solicitation 022-15, Underground Electric Distribution Facilities and Manhole/Ductbank Unit Price Construction and Maintenance Contract; or

JEA Contract Numbers 114933, JEA Solicitation 062-11, Overhead Distribution-Transmission Facilities Up C and M and Pole Removal.

2. Unit Prices Not Established: In the event that Unit Prices or L.E.M. rates are not applicable to Company's claim, the Company shall submit an itemized breakdown of costs, in the form prescribed by JEA, for each of the subcontracts involved and for the Company's cost, the change shall be documented in a JEA Change Order, and the change amount shall be ultimately determined by JEA in one (1) of the following ways:

by mutual acceptance of the lump sum amount; or

by actual cost and a mutually acceptable fixed amount for overhead and profit.

Estimated quantities will be adjusted to final quantities prior to Final Payment. JEA will compute the final quantities of JEA Change Order based upon measurements or surveys provided by JEA.

## **2.18. MISCELLANEOUS PROVISIONS**

### **2.18.1. AMBIGUOUS CONTRACT PROVISIONS**

The parties agree that this Contract has been the subject of meaningful analysis and/or discussions of the specifications, terms and conditions contained in this Contract. Therefore, doubtful or ambiguous provisions, if any, contained in this Contract will not be construed against the party who physically prepared this Contract.

### **2.18.2. APPLICABLE STATE LAW; VENUE; SEVERABILITY**

The rights, obligations and remedies of the parties as specified under the Contract will be interpreted and governed in all respects exclusively by the laws of the State of Florida without giving effect to the principles of conflicts of laws thereof. Should any provision of the Contract be determined by the courts to be illegal or in conflict with any law of the State of Florida, the validity of the remaining provisions will not be impaired. Litigation involving this Contract or any provision thereof shall take place in the State or Federal Courts located exclusively in Jacksonville, Duval County, Florida.

### **2.18.3. CUMULATIVE REMEDIES**

Except as otherwise expressly provided in this Contract, all remedies provided for in this Contract shall be cumulative and in addition to and not in lieu of any other remedies available to either party at law, in equity or otherwise.

### **2.18.4. ENTIRE AGREEMENT**

This Contract constitutes the entire agreement between the parties. No statement, representation, writing, understanding, or agreement made by either party, or any representative of either party, which are not expressed herein shall be binding. All changes to, additions to, modifications of, or amendment to this Contract, or any of the terms, provisions and conditions hereof, shall be binding only when in writing and signed by the authorized officer, agent or representative of each of the parties hereto.

### **2.18.5. EXPANDED DEFINITIONS**

Unless otherwise specified, words importing the singular include the plural and vice versa and words importing gender include all genders. The term "including" means "including without limitation", and the terms "include", "includes"

and "included" have similar meanings. Any reference in this Contract to any other agreement is deemed to include a reference to that other agreement, as amended, supplemented or restated from time to time. Any reference in the Contract to "all applicable laws, rules and regulations" means all federal, state and local laws, rules, regulations, ordinances, statutes, codes and practices.

#### **2.18.6. HEADINGS**

Headings appearing herein are inserted for convenience or reference only and shall in no way be construed to be interpretations of text.

#### **2.18.7. INDEPENDENT CONTRACTOR**

Company is performing this Contract as an independent contractor and nothing in this Contract will be deemed to constitute a partnership, joint venture, agency, or fiduciary relationship between JEA and Company. Neither Company nor JEA will be or become liable or bound by any representation, act, or omission of the other.

#### **2.18.8. LANGUAGE AND MEASUREMENTS**

All communication between the Company and JEA, including all documents, notes on drawings, and submissions required under the Contract, will be in the English language. Unless otherwise specified in the Contract, the US System of Measurements shall be used for quantity measurement. All instrumentation and equipment will be calibrated in US System of Measures.

#### **2.18.9. MEETINGS AND PUBLIC HEARINGS**

The Company will, upon request by JEA, attend all meetings and public hearings as required, in any capacity, as directed by JEA.

#### **2.18.10. NEGOTIATED CONTRACT**

Except as otherwise expressly provided, all provisions of this Contract shall be binding upon and shall inure to the benefit of the parties, their legal representatives, successors and assigns. The parties agree that they have had meaningful discussion and negotiation of the provisions, terms and conditions contained in this Contract. Therefore, doubtful or ambiguous provisions, if any, contained in the Contract shall not be construed against the party who physically prepared this Contract.

#### **2.18.11. NONEXCLUSIVE**

Notwithstanding anything contained herein that may appear to be the contrary, this Contract is "non-exclusive" and JEA reserves the right, in its sole discretion, to retain other companies to perform the Work, and/or JEA may self-perform the Work itself.

#### **2.18.12. NONWAIVER**

Failure by either party to insist upon strict performance of any of the provisions of the Contract will not release either party from any of its obligations under the Contract.

#### **2.18.13. REFERENCES**

Unless otherwise specified, each reference to a statute, ordinance, law, policy, procedure, process, document, drawing, or other informational material is deemed to be a reference to that item, as amended or supplemented from time to time. All referenced items shall have the enforcement ability as if they are fully incorporated herein.

#### **2.18.14. SEVERABILITY**

In the event that any provision of this Contract is found to be unenforceable under applicable law, the parties agree to replace such provision with a substitute provision that most nearly reflects the original intentions of the parties and is enforceable under applicable law, and the remainder of this Contract shall continue in full force and effect.

With regard to any provision in this agreement pertaining to damages, equitable or otherwise, it is the intent of the Parties that under no circumstances shall there be recovery for home office overhead. Any damages claimed shall be proven by discreet accounting of direct project costs and no theoretical formula or industry estimating reference manuals shall be permissible.

#### **2.18.15. SUBCONTRACTING OR ASSIGNING OF CONTRACT**

Each party agrees that it shall not subcontract, assign, delegate, or otherwise dispose of the Contract, the duties to be performed under the Contract, or the monies to become due under the Contract without the other party's prior written consent.

The assignment of the Contract will not relieve either of the parties of any of its obligations until such obligations have been assumed in writing by the assignee. If the Contract is assigned by either of the parties, it will be binding upon and will inure to the benefit of the permitted assignee. The Company shall be liable for all acts and omissions of its assignee or its Subcontractor.

In the event the Company obtains JEA approval to use Subcontractors, the Company is obligated to provide Subcontractors possessing the skills, certifications, registrations, licenses, training, tools, demeanor, motivation and attitude to successfully perform the work for which they are subcontracted. The Company is obligated to remove Subcontractors from performing Work under this Contract when the Company recognizes that a Subcontractor is failing to work in a manner consistent with the requirements of this Contract, or when JEA notifies the Company that JEA has determined a Subcontractor is failing to work in a manner consistent with the requirements of this Contract.

#### **2.18.16. SURVIVAL**

The obligations of JEA and the Company under this Contract that are not, by the express terms of this Contract, to be performed fully during the Term, shall survive the termination of this Contract.

#### **2.18.17. TIME AND DATE**

Unless otherwise specified, references to time of day or date mean the local time or date in Jacksonville, FL. If under this Contract any payment or calculation is to be made, or any other action is to be taken, on or as of a day that is not a regular business day for JEA, that payment or calculation is to be made, and that other action is to be taken, as applicable, on or as of the next day that is a regular business day. Where reference is made to day or days, it means calendar days. Where reference is made to workday, workdays, business day, or business days, it means regular working days for JEA Procurement.

#### **2.18.18. TIME OF ESSENCE**

For every material requirement of this Contract, time is of the essence.

#### **2.18.19. TITLE TO MATERIALS FOUND**

JEA shall retain the title to water, mineral matter, timber and any other materials that the Company, or its Subcontractors, encounters during the excavation or other operations of the Work. The Company shall use or dispose of this material in accordance with the Contract or written instructions from the Contract Administrator. Any materials found in the excavation, or other operations of the Company, that are of archaeological or historical value shall be left in place. The Company shall immediately notify JEA of the find and shall take no further action until directed by JEA.

#### **2.18.20. USE OF JEA CONTRACTS BY THE CITY OF JACKSONVILLE**

Where the City of Jacksonville's or its other independent agencies' or political subdivisions' procurement codes all use of JEA contracts, the Company agrees to extend any pricing and other contractual terms to such entities.

#### **2.18.21. WAIVER OF CLAIMS**

A delay or omission by JEA to exercise any right or power under this Contract shall not be construed to be a waiver thereof. A waiver by JEA under this Contract shall not be effective unless it is in writing and signed by the party granting the waiver. A waiver by a party of a right under or breach of, this Contract shall not be construed to operate as a waiver of any other or successive rights under, or breaches of, this Contract.

The Company's obligations to perform and complete the Work in accordance with the Contract shall be absolute. None of the following will constitute a waiver of any of JEA's rights under the Contract: approval of payments, including final payment; Certificate of Contract Completion; any use of the Work by JEA; nor any correction of faulty or defective work by JEA.

#### **2.18.22. JEA PROJECT SECURITY PROGRAM**

The JEA Project Security Program establishes a coordinated security program and assigns specific security responsibilities for which the Company and/or its Subcontractors shall be responsible at while performing services at existing JEA facilities and upon the substantial completion of new facilities. The programs objectives are 1) to direct all project security activities toward a single goal--no breaches, thefts or vandalism, and 2) to ensure effective coordination and communication of all project security activities with JEA Security.

In general, the Company shall provide on-site JEA security personnel at any time a JEA facility's perimeter is unsecured, including but not limited to, alarms disabled, fences or gates down, traffic flows that require gates to be opened repeatedly and/or for more than one (1) hour of the work day. The Company shall schedule security personnel through JEA Security. Where existing lighting is disabled or otherwise impacted by the Work, the Company shall provide temporary lighting equal to or exceeding that which exists.

Further, the Company shall be responsible for complying with all applicable provisions of Chapter 12 "Security Program" of the JEA Contractor Safety Management Process Safety Requirements, a copy of which may be obtained upon request.

### **3. TECHNICAL SPECIFICATIONS/DETAILED SCOPE OF WORK**

#### **3.1. TECHNICAL SPECIFICATIONS/DETAILED SCOPE OF WORK (APPENDIX A)**

Technical Specifications and a Detailed Scope of Work are located in Appendix A of this document.

### **4. FORMS**

#### **4.1. ADDITIONAL FORMS**

- Appendix B- Bid Form

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## SECTION VII - TECHNICAL SPECIFICATIONS - SPECIFIC INSTRUCTIONS

### 1. SCOPE

#### 1.1. LOCATION OF PROJECT

The project has (4) four work locations, each at a JEA electrical substation. The substation site addresses are:

- 1.1.1. Bartram Substation – 4516 Race Track Rd, Jacksonville, FL 32259
- 1.1.2. Forest Substation – 10601 Forest Blvd, Jacksonville, FL 32246
- 1.1.3. Ft Caroline Substation – 12337 McCormick Rd, Jacksonville, FL 32206
- 1.1.4. Robinwood Substation – 10327 Alden Rd, Jacksonville, FL 32216

#### 1.2. SCHEDULE OF WORK

An overall sample project schedule for the completion of the Construction is attached with these Specifications and Drawings, based upon a Contract Award on Oct 2<sup>nd</sup> 2017. **NOTE:** Major project milestone dates are also listed below:

<u>Item</u>	<u>Schedule</u>
Receive Anchor Bolts	Approximately October 9, 2017
Receive Substation Steel Structures	Approximately October 30, 2017
Receive Buswork, Switches, PT	Approximately October 30, 2017
Receive/Set HV Breakers	Approximately November 3, 2017
Receive/Set Cap Banks	Approximately November 6, 2017
Substantial Substation Completion	December 5, 2017
Complete Substation Energization	December 11, 2017
Complete Construction	January 26, 2018

The Contractor should take note that, while the actual delivery dates of material items are not precisely known at this time, the schedule provided is synchronized with the expected delivery schedule for certain materials, equipment, transformers, etc. The Contractor is responsible under this Contract to receive the items listed in the Substation Package Bill of Materials at the jobsite.

JEA also has Electric System Security concerns, which require that this Work be completed on time. Therefore, time is of the essence.

JEA also requires, as a part of this Contract, that the Contractor assure and guarantee that the installation of the 230kV and 138kV high-voltage buswork, 230kV and 138kV power circuit breakers, 230kV and 138kV capacitor banks, the substation grounding grid, conduits, low-voltage control cable, be substantially completed and operable by December 4, 2017 to allow JEA sufficient time for complete checkout of the substation prior to energization. The Contractor shall assure and further guarantee that the entire project, including substation rock, punch list, landscaping, irrigation, etc. shall be complete no later than March 31, 2018. Reference Liquidated Damages, if these dates are not met. JEA intends to test, check out the substation, and place all equipment in-service and serve load by December 29, 2017.

#### 1.3. GENERAL DESCRIPTION OF PROJECT

In general, the Scope of Work shall include, but not be limited to, the following:

- 1.3.1. Development of a Project Schedule, Project Schedule of Values, and a Project Cash Flow Schedule (indicating expected monthly invoice amounts) for approval by JEA. Obtaining adequate insurances, presenting licenses, and executing a contract with JEA for the construction of the project.

- 1.3.2. Site surveying, benchmarking, clearing and grading (as required).
- 1.3.3. Site preparation and earthwork.
- 1.3.4. Construction of capacitor bank additions complete with poured-in-place foundations, steel structures, welded aluminum bus-work, circuit breakers, switches, instrument transformers, protection and control cabling, ground grid system, conduit system, substation lighting, lightning protection facilities, and other auxiliary items typical of this type of substation.
- 1.3.5. Termination of cables and conductors to equipment, control switchboard panels, and existing ground grid.
- 1.3.6. Installation of substation lighting and security poles and fixtures, including wiring.
- 1.3.7. Installation of the substation pavement and cellular confinement roadway systems, aggregate fill (rock), grassing, landscaping, and herbicides. Cleanup and punch list.

#### 1.4. ENGINEERS OF RECORD

- 1.4.1. The Project Manager for this work is:

Michael Short  
Project Design 20410  
JEA Tower, 9<sup>th</sup> Floor  
21 West Church Street  
Jacksonville, Florida 32202  
Phone: (904) 665-7048  
Cell: (904) 236-9665  
Email: shorml@jea.com

- 1.4.2. The Project Representative for this work is:

Greg Couture  
Project Design 20410  
JEA Tower, 9<sup>th</sup> Floor  
21 West Church Street  
Jacksonville, Florida 32202  
Cell: (904) 502-5925  
Fax: (904) 665-7950

## 2. SEQUENCE OF WORK

In order to provide an orderly progression of work, the Contractor will be required to coordinate the Work Schedule with other entities performing work in connection with this Project. The installation of the capacitor banks will require the coordination of schedules among the Contractor, Substation Packager, and JEA Forces.

The following is a general representation of a possible Sequence of Work, provided only as an example of one such possible sequence. The Contractor shall be responsible for all work coordination, timing, sequencing, and scheduling that is necessary to assure timely project completion even while working with material suppliers and prevailing circumstances (labor, weather, etc.) that are not unusual for this locale and time of year.

- 2.1. Substation Sequence of Work

- 2.1.1. Mobilize.
- 2.1.2. Site surveying and establish baselines. Setting of monuments.
- 2.1.3. Site preparation.
- 2.1.4. Receive and offload all foundation anchor bolts from Owner's suppliers.
- 2.1.5. Install foundations for all structures and equipment, including power and control conduit stub-outs as required.
- 2.1.6. Install ground grid, ground rods, and structure and equipment ground taps.
- 2.1.7. Install conduits from the cable trench to equipment and structure foundations.
- 2.1.8. Backfill and compact site as necessary.
- 2.1.9. Receive, offload, and securely store on-site all substation structures and materials as directed by the Project Representative.
- 2.1.10. Install 230kV and 138kV structures, insulators, buswork, and switches. **NOTE:** No structure may be installed for more than twenty-four (24) hours unless grounded to the permanent ground grid.
- 2.1.11. Install ground cables to all 230kV and 138kV structures and terminate ground cables to ground grid.
- 2.1.12. Receive, offload, and install 230kV SF<sub>6</sub> power circuit breakers.
- 2.1.13. Receive, offload, and install 138kV vacuum circuit breaker.
- 2.1.14. Install lightning arrestors, potential transformers, equipment jumpers, and capacitor bank systems.
- 2.1.15. Install and mount switchyard lights and security lights.
- 2.1.16. Pickup locally, offload, and set in the control building substation seven (5) relay and control panels.
- 2.1.17. Extend conduits, pull cable, and terminate at yard equipment and into the control house cabinets.
- 2.1.18. Complete backfilling, compaction, and stabilization of the substation site.
- 2.1.19. Install substation rock.
- 2.1.20. Completion of equipment and relay commissioning testing by JEA Forces.
- 2.1.21. Energization of the capacitor banks.
- 2.1.22. Site clean-up and disposal of debris.
- 2.1.23. General inspection of the project by JEA Forces.
- 2.1.24. Completion of all punch list items and final adjustments as necessary after Owner inspection.
- 2.1.25. Upon JEA commencing the serving of load but not more than ninety (90) days beyond punch list completion, the Contractor shall inspect all 230kV electrical connections for hot spots.

2.1.26. Correction of all hot spot locations by the Contractor.

2.1.27. Demobilize.

### **3. CONSTRUCTION DRAWINGS**

All Technical Specifications and Drawings that have been provided to the Bidder to allow the Bidder to estimate the Bid for the type, kind, and quantity of work to be performed, as well as the type, qualities, and quantities of materials that must be furnished as a part of this Bid, and are provided solely for Bidding purposes. These Technical Specifications and Drawings are not intended to be used for Construction. Actual Technical Specifications and Drawings for Construction shall be provided not later than the pre-construction conference, at which time if the Contractor can show, in an explicit, formulary way, any direct cost differences between the requirements of the Construction set and the Bid set, JEA will entertain a change order only for that (those) differences.

Actual Construction Technical Specifications and Drawings, equipment instruction books, and environmental permits, if applicable, will be furnished to the Contractor as described in the following paragraphs. Furnishing any additional copies that may be required by the Contractor, subcontractor, construction personnel, including copies necessary for securing permits, is the responsibility of the Contractor.

- 3.1. The Owner shall furnish the Contractor two (2) complete sets of Construction Drawings, Specifications, equipment instruction books, and environmental permits, if applicable, for the completion of the work. These two (2) sets will be provided at the Pre-Construction Conference. One (1) set is intended for the Contractor's home office and one (1) set is intended for the Contractor's field office.
- 3.2. The Contractor shall be responsible for the accurate reproduction of the Drawings and Specifications for use by the Contractor, subcontractor, and construction personnel in the completion of this Work, including the securing of necessary permits to perform the work. The Contractor shall be responsible for all costs incurred in the reproduction of the Construction Drawings and Specifications.

### **4. SHOP DRAWINGS**

- 4.1. The Contractor shall submit Shop Drawings through the Project Representative to the Project Engineer for approval of any Contractor-furnished materials, equipment, or their installation methods. These Shop Drawings may be submitted in the form of drawings, diagrams, illustrations, schedules, or any other form deemed best to convey or illustrate the material, equipment, or installation method to the Project Engineer. The data submitted shall be complete with respect to dimensions, design criteria, materials of construction, etc., to enable the Project Engineer to properly and completely review and evaluate the submittal without unnecessary delays.
- 4.2. The Contractor shall submit a minimum of seven (7) copies of all Shop Drawings. Each submittal must be accompanied by a transmittal letter. Two (2) copies will be returned to the Contractor with appropriate action taken. Should the Contractor require more than two (2) returned copies, the Contractor shall increase the submittal quantity by the additional required amount.

## 5. AS BUILT DRAWINGS

The Contractor is required to provide the Owner with a complete set of "As Built" Drawings. The Contractor's "As Built" field markings shall be accurately transferred to a clean set of Drawings provided by the Contractor. The "As Built" Drawings shall be marked as follows:

Red - Add  
Yellow - Delete  
Green - Notes to the Engineer

## 6. SUBSTATION ACCESS AND SECURITY

It will be the responsibility of the Contractor to maintain access to the construction site at all times. In addition, security for JEA equipment and materials must be provided at all times during Construction by the Contractor. Questions about Site Access and Security should be referred to the Project Representative. Generally, substation security must include at least one (1) of the following, at a minimum, to be established within six (6) weeks of Notice to Proceed:

- 6.1. Temporary Construction Fence: The Contractor may choose to establish a temporary construction fence that shall meet the following Specifications: 1) the fence shall establish a closed perimeter over the majority of the site and shall cover all areas where materials of any kind are stored, and 2) the fence shall be substantially similar to the permanent fence, but excepting top rail, slats, decorative appurtenances, and signage. The temporary fence will allow for use of lockable (double) 10' leaf gates in the place of roller gates.
- 6.2. Temporary Security Guard: The Contractor may choose to establish temporary, 24 hour, 365 day security via subcontracting with a Florida Licensed Security service that will supply on-site security personnel at all times that the Contractor does not have activities on-site. Said personnel shall maintain plainly visible picture ID and copies of the ID shall be provided to the JEA Project Representative prior to assignment. Also, persons who perform this security function shall be subject to attendance of JEA's Substation Safety training class prior to work and attendance at such class shall be at no additional cost to JEA.

## 7. PERMIT REQUIREMENTS

The Contractor shall adhere to all the requirements of the permits attached with these Specifications and Drawings.

## 8. DEWATERING

- 8.1. Should groundwater be encountered, the Contractor shall be responsible for utilizing a dewatering system(s) to remove the water from excavations. The Contractor shall comply with all sampling requirements listed in FDEP Dewatering Regulations (FAC 62.621.300) before dewatering can begin. Once the sampling process is complete, the sample(s) results shall be submitted to Jason Compton, JEA, 21 West Church Street, Tower 8, for review and submittal to FDEP. If the sample analysis fails, no dewatering can proceed without further instruction from the JEA Construction Manager. Additionally, prior to any dewatering, the Contractor shall apply for a St. Johns River Water Management District (SJRWMD) Generic Permit for Short Term Dewatering, and comply with all SJRWMD requirements listed on Form No. 40C-22-0590-1.
- 8.2. If the above requirements are not followed, the Contractor shall be held liable for any fines and/or violations incurred by JEA.

**9. LAYDOWN, SITE ACCESS, & NOISE CONTROL**

- 9.1. The Contractor shall propose and JEA shall approve any area located within the substation fence that shall function as a material laydown area. The laydown area shall be maintained and returned to the original condition by the Contractor immediately after use.
- 9.2. The Contractor shall permit, clear, supply, and install any cribbing, temporary culverts, and any other materials and devices as necessary, to obtain access to the laydown area. The Contractor shall remove the temporary materials and devices and restore the area to original condition after Construction is complete.
- 9.3. The Contractor is required to minimize noise from pumps and other sources and to maintain dust control throughout Construction.

**10. TEMPORARY POWER**

JEA will provide three phase service in the substation sites.

**11. CONTRACTOR'S SANITARY FACILITIES**

Sanitary facilities are available for contractor use at substation sites.

**12. EXPLANATION OF BID ITEMS**

**Group I – Foundations**

Bid Item(s)	Bid Description
101-104	BR2, S1, S11, S18
	a) These items shall consist of a complete "package", which shall include furnishing concrete and rebar, excavation, installation and backfilling in accordance with the bid drawings and Section II – Civil Specification.
	b) The Contractor shall do all the excavating of every description of whatever substance encountered, backfill, and compact the excavation to the required densities. The Contractor shall provide such dewatering, well-pointing, sheeting and shoring as may be required to support the sides of the excavation. Labor, equipment and material to provide such support as well as the cost of required compaction tests shall be paid by the Contractor and included in the Unit Price.
	c) The Contractor is responsible for returning the substation rock to its original condition after backfill is complete. The Contractor can wash the excavated rock or install new rock of the same description.

**Group II – Conduit**

Bid Item(s)	Bid Description
201-204	C1, C2, C3, C4,

- a) These items shall consist of a complete "package", which shall include furnishing conduit and elbows, excavation, installation and backfilling in accordance with the bid drawings and Section II – Civil Specification.
- b) The Contractor shall do all the excavating of every description of whatever substance encountered, backfill, and compact the excavation to the required densities. The Contractor shall provide such dewatering, well-pointing, sheeting and shoring as may be required to support the sides of the excavation. Labor, equipment and material to provide such support as well as the cost of required compaction tests shall be paid by the Contractor and included in the Unit Price.
- c) The Contractor is responsible for returning the substation rock to its original condition after backfill is complete. The Contractor can wash the excavated rock or install new rock of the same description.

#### **Group III – Structures and Insulators**

Bid Item(s)	Bid Description
301-302	Bus Supports Structures, Switch Stand
	<ul style="list-style-type: none"> <li>a) These items shall consist of receiving, offloading, storing (at site) and installation of structures in accordance with the bid drawings and Section III – Electrical Specification.</li> </ul>
310	Insulators
	<ul style="list-style-type: none"> <li>a) This item shall consist of receiving, offloading, storing (at site) and installation of insulators in accordance with the bid drawings and Section III – Electrical Specification.</li> </ul>

#### **Group IV – Bus and Connectors**

Bid Item(s)	Bid Description
401-402	3" IPS AL Tube, 4" IPS AL Tube
	<ul style="list-style-type: none"> <li>a) These items shall consist of receiving, offloading, storing (at site) and installation of aluminum bus in accordance with the bid drawings and Section III – Electrical Specification.</li> </ul>
410-413	Bus Coupler, Bus Cap, Bus Terminal, Bus Tap
	<ul style="list-style-type: none"> <li>a) These items shall consist of receiving, offloading, storing (at site) and installation of bus accessories in accordance with the bid drawings and Section III – Electrical Specification.</li> </ul>
420	Bus Support Connectors
	<ul style="list-style-type: none"> <li>a) This item shall consist of receiving, offloading, storing (at site) and installation of bus support connectors in accordance with the bid drawings and Section III – Electrical Specification.</li> </ul>

#### **Group V – Wire, Control Cable and Connectors**



Bid Item(s)	Bid Description
501	954 AAC
	a) These items shall consist of pick up from JEA Storeroom, delivery, offloading, storing (at site) and installation of aluminum wire in accordance with the bid drawings and Section III – Electrical Specification.
510-511	954 Termination, 954 Wire Spacers
	a) These items shall consist of receiving, offloading, storing (at site) and installation of wire accessories in accordance with the bid drawings and Section III – Electrical Specification.
520-522	4#10, 8#10, 21#10
	a) These items shall consist of pick up from JEA Storeroom, delivery, offloading, storing (at site) and installation of control cable in accordance with the bid drawings and Section III – Electrical Specification.
	b) This item shall include termination into yard equipment and relay panels.
523	3#8
	a) This item shall consist of furnishing, storing (at site) and installation of AC cable in accordance with the bid drawings and Section III – Electrical Specification.
	b) This item shall include termination into yard equipment and yard panels.
524	Low Voltage Breaker
	a) This item shall consist of furnishing, storing (at site) and installation of 120 VAC breaker in yard panel where necessary.

#### Group VI – Electrical Equipment

Bid Item(s)	Bid Description
601	Set 230 kV Breaker
	a) This item shall consist of receiving, offloading, storing (at site) and installation of breakers in accordance with the bid drawings and Section III – Electrical Specification.
610	Set HV Cap Bank
	a) This item shall consist of receiving, offloading, storing (at site) and installation of high voltage capacitor banks in accordance with the bid drawings and Section III – Electrical Specification.
620	HV Disconnect Switch
	a) This item shall consist of receiving, offloading, storing (at site) and installation of high voltage switches in accordance with the bid drawings and Section III – Electrical Specification.
	b) This item shall include the setting and grounding of a ground platform (owner furnished).

### Group VII – Grounding

Bid Item(s)	Bid Description
701-702	7#5 Copperweld, 19#8 Copperweld
	<ul style="list-style-type: none"><li>a) These items shall consist of a complete “package”, which shall include furnishing, excavation, installation and backfilling in accordance with the bid drawings and Section III – Electrical Specification.</li><li>b) The Contractor shall do all the excavating of every description of whatever substance encountered, backfill, and compact the excavation to the required densities. The Contractor shall provide such dewatering, well-pointing, sheeting and shoring as may be required to support the sides of the excavation. Labor, equipment and material to provide such support as well as the cost of required compaction tests shall be paid by the Contractor and included in the Unit Price.</li><li>c) The Contractor is responsible for returning the substation rock to its original condition after backfill is complete. The Contractor can wash the excavated rock or install new rock of the same description.</li></ul>
710	Ground Connector
	<ul style="list-style-type: none"><li>a) These items shall consist of receiving, offloading, storing (at site) and installation of connectors in accordance with the bid drawings and Section III – Electrical Specification.</li></ul>
720	Lightning Probe Pole
	<ul style="list-style-type: none"><li>a) These items shall consist of receiving, offloading, storing (at site) and installation of poles in accordance with the bid drawings and Section III – Electrical Specification.</li></ul>

### Group VIII – Miscellaneous

Bid Item(s)	Bid Description
801	Mobilization
	<ul style="list-style-type: none"><li>a) Mobilization shall consist of obtaining all required insurance, bonds and permits; preparatory work and operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; preparation of a construction schedule; and any facilities necessary for work on the project; badging and training of employees; and all other work which must be performed or cost incurred prior to beginning work on the various contract items at each project site.</li></ul>
802	Demobilization
	<ul style="list-style-type: none"><li>a) Demobilization shall include removal of construction facilities, including all utilities, and equipment off the Site and final cleanup of the Site after completion of the Project.</li></ul>
810	Bollards
	<ul style="list-style-type: none"><li>a) This item shall consist of furnishing, storing (at site) and installation of bollards in accordance with the bid drawings.</li></ul>

820

Set Relay Panels

- a) This item shall consist of picking up picking up, loading, delivery, storing (at site) and setting of 36" relay panels inside the control house at each site.

## SECTION II - TECHNICAL SPECIFICATIONS - CIVIL

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## SECTION VIII - TECHNICAL SPECIFICATIONS - CIVIL

This is a general specification that covers the civil work requirements for substation construction. Any equipment, material or methods listed which does not apply to this particular project shall be disregarded. The Drawings shall be used to determine the type of work, along with these associated specifications intended for use on this project. These specification sometimes refer to the FDOT Standard Specifications which the latest version can be found online at the following website:

([http://www.dot.state.fl.us/programmanagement/Implemented/SpecBooks/July2015/Files/715eBook\\_Revised.pdf](http://www.dot.state.fl.us/programmanagement/Implemented/SpecBooks/July2015/Files/715eBook_Revised.pdf))

Related JEA Specifications: Specific Instructions, Technical Specifications, JEA Overhead Electric Distribution Standard (JEA OH) ([www.jea.com](http://www.jea.com)), JEA Underground Electric Distribution Standards (JEA UG) ([www.jea.com](http://www.jea.com))

### 1. SITE PREPARATION AND EARTHWORK

#### 1.1. SCOPE

This Section shall govern site preparation and all earthwork required to accomplish the work of this contract. The Contractor shall erect silt fences around the entire substation site in accordance with the applicable DEP requirements and the construction drawing requirements. The Contractor shall develop a Maintenance of Traffic (MOT) plan where entrance/access from public roads and sidewalks occur.

#### 1.2. FAMILIARIZATION

Prior to all work of this Section, Contractor shall become thoroughly familiar with the site, the site conditions and all portions of the work falling within this section.

#### 1.3. SURVEYING

The Contractor SHALL engage the services of a State of Florida Registered Land Surveyor to perform the limits of construction, total clearing, and the structure staking. The accuracy of this operation is critical to the success of this project. Therefore, prior to any clearing on this project, the Contractors' Construction Superintendent Chief shall be prepared to meet on the jobsite with the Project Engineer (JEA) and Consulting Engineer to discuss and exchange data for the staking operation and thereby ensure effective communication has occurred.

As-Builts: The Contractor shall provide coordinates on As Built Drawings in the appropriate State Plane Coordinate System (SPCS) and Zone (latest adjustment), for all new structures. The Contractor shall also provide ground rod resistance measurements for each structure.

1.3.1. Survey Datum: 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.

1.3.1.1. 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.

1.3.1.2. Horizontal: Work shall 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.

#### 1.4. PERMITS

- 1.4.1. Contractor shall comply with all permit requirements accompanying these specifications and shall obtain additional permits, if required, at no additional cost to the JEA.

#### 1.5. CLEARING AND GRUBBING

- 1.5.1. Total Clearing and Grubbing: Total clearing and grubbing shall consist of:

- 1.5.1.1. Complete removal and disposal in accordance with the provisions of this specification and associated drawings, of all standing trees including their root systems along with all brush, bushes, shrubs, stumps, vines and their associated root systems, as well as other logs, trees cut by others, wood fencing, wood structures, debris, rubbish and all other obstructions to the work. In accordance with the project drawings, the Contractor shall stake every 50' along the boundary of the areas to be cleared. The Contractor shall obtain JEA approval of the stake out prior to the removal of any trees or shrubs.

Certain trees within the property have been designated to remain. Protect these trees by providing a fence or barricade around each tree of sufficient distance away and of sufficient height to prevent damage to the tree in any way as part of this work; see Clearing Plan Drawings. The Contractor shall obtain JEA approval prior to the proposed removal of any trees or shrubs located on a boundary between areas to be cleared and those that are to remain. The JEA project representative may make adjustments to the tree and shrub locations depicted on the drawings depending on actual site conditions at the time.

- 1.5.1.2. Total clearing and grubbing shall be accomplished within the areas designated on the plans and other areas, if/as required for construction or landscaping.
- 1.5.1.3. All rubbish such as tires, roofing materials, concrete, etc., resulting from clearing shall be considered to be property of the Contractor and shall be removed from the job site for proper disposal. All fees for disposal of rubbish and/or other items related to clearing shall be paid by the Contractor.

- 1.5.1.3.1. The Contractor shall dispose of the following solid wastes if found on the property: anti-freeze containers, aerosol lubricant and solvent cans, rusted 55 gallon drums, automobile gasoline tanks and batteries, domestic trash, oil filters and containers, appliances, demolition debris, tires, concrete, roofing materials, boards, metal, soil piles, etc.

All solid wastes shall be disposed in accordance with FAC 62-701 (Solid Waste/Construction and Demolition Debris), 62-710 (Used Oil and Used Oil Filters), 62-711 (Tires) and 62-730 (Hazardous Waste). Several of these materials (whole tires, appliances, batteries, oil filters, non-empty containers) are prohibited from disposal in permitted, non-hazardous solid waste landfills.

Any liquids discovered on-site must be properly screened (sampled and analyzed) before developing a disposal plan. Containers may be required to be crushed or cut open to demonstrate that they are empty.

If asbestos is determined to be present, proper precautions shall be followed

when removing and transporting the material (wet material, use Type C respirators, and transport in covered vehicle).

The JEA has approved the following facilities for disposal of non-hazardous solid waste:

Trail Ridge (Waste Management ), Baldwin, FL

Pecan Row (GeoWaste), Valdosta, GA

Okeechobee Farms (Chambers), Okeechobee, FL

Springhill Regional (Waste Management) Graceville, FL

Use of any other landfills is subject to approval by JEA staff.

1.5.2. Stump Removal

All stumps and roots larger than 2 inches in diameter shall be removed to a depth at least 2 feet below the existing ground surface, or new final grade, whichever is lower.

1.5.3. Description of Services:

1.5.3.1. Contractor shall remove all timber by logging and/or chipping.

1.5.3.2. Contractor may employ any practical means for performing the work, including such equipment as tractors and chains, bulldozers with brush hooks and rakes, or axe and chain saw, such that the specified requirements for clearing and grubbing are accomplished to the satisfaction of the Field Representative.

1.5.3.3. In areas to be cleared and grubbed that are accessible to bulldozers, Contractor shall, wherever possible, push or pull trees extracting roots all in one piece, and push out with the bulldozer blade the stumps of trees cut by others.

1.6. Disposal of Materials

1.6.1. Clearing and Grubbing: Disposal of materials resulting from clearing and grubbing shall consist of:

1.6.1.1. All trees, stumps, roots, root mat, branches, brush, shrubs, logs, vines, wood fencing, wood structures and other debris or obstructions that are the products of the clearing and grubbing work shall be completely removed from Owner's property.

1.6.1.2. No Burning will be permitted on the site.

1.6.2. Excavation: Any surplus excavated materials shall become the property of the Contractor and are to be disposed of by him to the satisfaction of the Field Representative and in compliance with the requirements for solid waste disposal for Duval County.

A. All rubbish such as tires, roofing materials, concrete, etc., resulting from clearing shall be considered to be property of the Contractor and shall be removed from the job site for proper disposal. All fees for disposal of rubbish and/or other items related to clearing shall be paid by the Contractor.

B. The Contractor shall dispose of the following solid wastes if found on the property: anti-freeze containers, aerosol lubricant and solvent cans, rusted 55 gallon drums, automobile gasoline

tanks and batteries, domestic trash, oil filters and containers, appliances, demolition debris, tires, concrete, roofing materials, boards, metal, soil piles, etc.

C. All solid wastes shall be disposed in accordance with FAC 62-701 (Solid Waste/Construction and Demolition Debris), 62-710 (Used Oil and Used Oil Filters), 62-711 (Tires) and 62-730 (Hazardous Waste). Several of these materials (whole tires, appliances, batteries, oil filters, non-empty containers) are prohibited from disposal in permitted, non-hazardous solid waste landfills.

D. Any liquids discovered on-site must be properly screened (sampled and analyzed) before developing a disposal plan. Containers may be required to be crushed or cut open to demonstrate that they are empty.

E. If asbestos is determined to be present, proper precautions should be followed when removing and transporting the material (wet material, use Type C respirators, and transport in covered vehicle).

F. The JEA has approved the following facilities for disposal of non-hazardous solid waste:

- Trail Ridge (Waste Management ), Baldwin, FL
- Evergreen Landfill (Advanced Disposal), Valdosta, GA
- Chesser Island Road (Waste Management), Folkston, GA
- Boradhurst Landfill (Republic Services), Screven, GA
- Use of any other landfills is subject to approval by JEA staff.

#### 1.7. SITE EXCAVATION

1.7.1. Perform excavation of every type of material encountered within the limits of the work to the lines, grades and elevations indicated on the drawings, and/or as required for foundation or other subsurface construction.

1.7.2. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.1 foot, unless over-excavation is required. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction, and for inspections.

1.7.3. Soil stockpiles should be located, constructed, and maintained to minimize unwanted changes in the natural moisture content of the excavated soils, i.e.: protect soils near optimum moisture from becoming too wet to be readily reused for backfill, or prevent soils drier than optimum from further drying. Stockpiles can be protected from saturation by sloping and compacting the surface and side slopes to promote rainfall runoff. If additional protection is required, cover stockpile with plastic membranes. Failure to protect stockpiled soil shall not be accepted as a reason to replace the material with imported fill materials at the Owner's cost.

1.7.4. Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials and obstructions. If excavated materials intended for fill and backfill include unsatisfactory materials and rock, replace with satisfactory soil materials as described herein.

1.7.5. Conduct excavation operations so that material outside the excavation limits is not disturbed or loosened. Restore material disturbed or loosened to its original condition.

#### 1.8. EXCAVATION PRECAUTIONS



- 1.8.1. Excavation Safety: Contractor shall comply with all requirements of all applicable OSHA excavation safety standards and regulations. Contractor shall comply with all applicable trench safety standards. Contractor shall adhere to special shoring requirements, if any, of the state or other political subdivisions, which may be applicable to this project scope. For any project that contains a trench excavation deeper than four feet, the Contractor shall submit with his bid the cost of compliance with the applicable trench safety standards.
- 1.8.2. Sheeting and Shoring: The stability of previously constructed structures and facilities shall not be impaired or endangered by excavation work. Previously constructed structures and facilities include both structures and facilities existing when the work under these specifications begins and structures and facilities already provided under these specifications.
- Adequate sheeting and shoring in accordance with OSHA regulations 29 CFR Part 1926 shall be provided to protect and maintain the stability of previously constructed structures and facilities and the sides of excavations and trenches until they are backfilled. Sheeting, bracing, and shoring shall be designed and built to withstand all loads that might be caused by earth movement or pressure and shall maintain the shape of the excavation under all circumstances. Certified/stamped drawings prepared by a registered professional engineer of all shoring details as required by OSHA shall be furnished to the Project Engineer before any excavation begins. When "sloping" of the sides of the excavation or trench is used in lieu of sheeting or shoring the name of the "Competent Person" in charge for the Contractor shall be submitted in writing to the Contract Administrator before any excavation begins.
- 1.8.3. Depressions: Where depressions result from, or have resulted from, the removal of surface or subsurface obstructions, remove all debris and soft material as directed by the Field Representative.
- 1.8.4. Over-excavation: Backfill and compact all over-excavated areas as specified for fill below, and at no additional cost to the Owner.
- 1.8.5. Protection of In-Place Structures: Excavation likely to misalign, damage or impair the strength of structures already in place shall be made only after adequate protection has been provided. The Contractor shall repair any damage that occurs as a result of insufficient protection at no cost to the Owner. It is the responsibility of the Contractor to coordinate with the utility owners to adjust any utilities conflicting with the work under this contract at no additional cost to JEA. It is the Contractor's responsibility to locate all underground utilities prior to digging.
- 1.8.6. Underground Utilities: The Contractor shall determine the location of underground piping, conduit and cable before proceeding with the work. Should any utilities be encountered that were not expected, work in the area shall be halted and the Engineer notified immediately.
- 1.8.7. Classification: All material shall be unclassified and considered as excavation regardless of the material encountered and no additional compensation will be allowed because of difficulties met in removing such materials.
- 1.8.8. Muck and/or Organic Removal: Where muck or other soft material occurs, the Contractor shall remove such material by excavation to suitable foundation soil or to a depth designated by the Engineer and backfill in accordance with Section VIII. The Contractor is responsible for removal of a maximum of one (1) foot of the muck. Where the Engineer directs the removal of such material to a depth in excess of one (1) foot, an adjustment in the contract price will be allowed.
- 1.8.9. Contaminated Soils: No hazardous materials or contaminated soil are expected to be encountered during excavation. However, in the event contaminants are found, the Contractor shall dispose of them in accordance with Chapters 62-780, and 777, Florida Administrative Code (F.A.C.), the Florida Department of Environmental Protection (FDEP) "Mineral Oil Dielectric Fluid Emergency Response Protocol (April 2007)", and any other applicable federal, state, or local rules or

regulations. The Contractor shall notify the JEA Contractor Administrator immediately upon contaminant discovery.

#### 1.9. SITE FILL

- 1.9.1. Material: All soil for fill (if required) shall be of a quality acceptable to the Engineer and shall be free from roots, rubbish or other extraneous material. The fill material for areas outside the rock yard to be compacted shall be sand similar to materials classified in the A-3 group as shown in AASHTO M145. The fill material for rocky areas shall be sand with less than 5% fines similar to materials classified in the A-3 group as shown in AASHTO M145. At least the top underlying twelve(12) inches of the rock yard shall be compacted to 98% of maximum density as per ASTM D-1557. All fill areas outside the rock yard shall be compacted to 95% of the maximum density as per ASTM D-1557. Borrow, where necessary, shall be provided from sources off the site in areas provided by the Contractor. The borrow pit shall be available for inspection by the Engineer.
- 1.9.2. Placement: Embankments shall be constructed true to lines, grades and cross sections shown on the plans. Fill shall be placed in successive layers of not more than twelve (12) inches in thickness, loose measure. Each layer shall be compacted to a density of at least 95% of the maximum density as determined by AASHTO T99 except that the final 9 inches of stabilized fill shall be compacted to maximum density as per AASHTO T99. Elevations after final grading shall be within 0.1 foot above or below plan dimensions.

No fill material for the rock yard shall be placed until receipt of a Letter of Certification from an independent testing company stating that the fill material is in compliance with the A-3 group of AASHTO M145 containing less than 5% fines.

#### 1.10. EXCAVATION FOR STRUCTURES

- 1.10.1. General: All excavations shall be carried to foundation materials satisfactory to the Engineer, regardless of the elevation shown on the plans. In the event unsuitable soil is encountered at the required elevation, the Engineer shall determine the depth of removal of such soil. Unless otherwise specified, the bottoms of all excavations shall be compacted to at least 100% of maximum density per ASTM D 698 or 95% of maximum density per AASHTO T180. Prior to such compaction, the ground water shall be lowered to a depth of at least 2.0 foot below the bottom of the excavation.

Should ground water be encountered, Contractor shall be responsible for utilizing a dewatering system(s) to remove water from the excavations. JEA Environmental will obtain any necessary FDEP Dewatering Permit for the project. Contractor shall ensure that permit is onsite and comply with all monitoring requirements with documentation listed in FDEP Dewatering Permit for the entire time dewatering occurs on this project site. Additionally, prior to any dewatering, Contractor shall apply for a St. Johns River Water Management District (SJRWMD) Generic Permit for Short Term Dewatering, and comply with all SJRWMD requirements listed in Form No. 40C-22-0590-1.

If the above requirements are not followed, the Contractor shall be held liable for any fines and/or violations incurred by JEA.

- 1.10.2. Footings: To minimize differential settlement, it is essential that earth surfaces upon which footings will be placed be compacted to the approval of the Field Representative and in accordance with the compaction requirements established in this section of these specifications. Excavate to the established lines and grades. Cut off bottoms of excavations level, and remove all loose soil. Where soft spots are encountered, remove all defective material and replace with lean concrete (flowable fill) or suitable backfill at no additional cost to the Owner.

1.10.3. Slabs: When undercutting of slabs is required in order to remove unsuitable material, the excavation shall be backfilled to the required elevation and compacted in accordance with Section VIII.

1.10.4. Trenches:

1.10.4.1 The trench shall be of sufficient width and depth below the proposed final grade to ensure that all conduit spacing is maintained per the details on the Drawings.

1.10.4.2 Trench excavation shall be accomplished so as to ensure the conduit may be laid on a firm, undisturbed, native earth bed. In the event excavation below the required elevation is made, bedding material is to be placed and compacted so as to bring the excavation to grade.

1.10.4.3 Accurately shape trench bottoms so that the pipe or utilities are in continuous and uniform contact with either undisturbed soil or bedding material as shown on the Drawings. Do not backfill any trenches until all joints are made, required tests are performed, pipe encased as necessary, and Owner approval is granted to proceed.

1.10.5. Payment: If extra excavation is authorized due to unforeseen, unsatisfactory soil conditions, an adjustment in contract price will be allowed. Extra depth of footings or fill due to error in excavation shall be at the Contractor's expense.

#### 1.11. BACKFILL FOR STRUCTURES

Backfill shall be deposited in layers not exceeding six (6) inches in thickness and shall be compacted to a density of not less than 100% of the maximum density per ASTM D 698 or 95% of maximum density per AASHTO T180. No backfill shall be placed against masonry or concrete walls and piers until the structure has been in place five days or until permission has been given by the Engineer. When backfilling against masonry walls, each side shall be backfilled simultaneously to prevent excessive stress.

#### 1.12. TESTING FOR SOILS

The Contractor shall employ an approved independent laboratory to do all testing. Two copies of test reports shall be submitted to the Engineer.

1.12.1. Soil Properties: The Contractor shall submit an analysis of borrow material proposed for site fill including the following tests: Particle Size Analysis of Soils (per AASHTO T88) and Permeability of Granular Soils - Constant Head (per AASHTO T215).

Three (3) additional Particle Size and Permeability tests shall be performed on truck loads of fill material randomly selected by the Field Representative. If any of the truck loads tested does not comply with the A-3 group of AASHTO M145 containing less than 5% fines, the material shall be rejected, and the Contractor shall perform six (6) additional sets of tests on material in place. Any material in place that does not comply with the A-3 group of AASHTO M145 containing less than 5% fines shall be removed and replaced with acceptable material at no additional cost to the Owner. The Contractor shall pay for all of the above testing.

1.12.2. Compaction: In-place density tests shall be made in accordance with AASHTO T191-61, ASTM D1556-74, ASTM D2167-77, or ASTM D2922-78 at the following locations:

1.12.2.1. Ten (10) tests per layer of site fill at locations determined by the Field Representative for site compaction.

1.12.2.2. One (1) test under each of ten (10) foundations as selected by the Field Representative.

Compaction tests shall be made no sooner than one day before the placing of a succeeding layer of fill or the pouring of a foundation, as the case may be. The intent of the time stipulation is to minimize the loss of compaction due to moisture loss after the compaction test has been made.

1.13. SOILS INVESTIGATION

The Owner has obtained a representative number of core borings; the boring logs are included in Appendix "A". Investigations conducted by the Owner of subsurface conditions are for the purpose of study and design only. The Owner does not assume any responsibility with respect to the sufficiency or accuracy of the borings, or of 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. After the contract has been awarded, the Contractor shall make an inspection of the site to determine the conditions under which the work is to be performed and may obtain additional core borings, if deemed necessary.

1.14. AGGREGATE FILL

Aggregate fill (rock) shall be blue/gray limestone or granite (natural). All rock shall be a gradation equal to Size #5, as shown in AASHTO M43 or ASTM D448 (Note: Size #57 will not be acceptable). The Contractor shall submit a sample and sieve analysis of the aggregate for approval before proceeding with the rocking. Before placement of the aggregate, the subgrade shall be dressed and compacted.

A representative list of suppliers is:

<u>Company</u>	<u>Location</u>	<u>Telephone</u>
Conrad Yelvington	Daytona Beach, FL or Jacksonville, FL	(904) 767-5500  (904) 358-6740
Vulcan Materials	Birmingham, AL	(205) 877-3086

1.15. HERBICIDE (GOUND STERILIZATION)

Prior to spreading aggregate in the substation area, the Contractor shall have the area treated with DuPont Krovar I DF for selective control of weeds. Substation area shall be defined as the structure area and areas between the pavement and the fence. Areas outside of the fence where rock is to be installed shall not be treated. Application shall be by a licensed pesticide applicator in accordance with the manufacturer's instructions and precautionary statements. Personal protective equipment recommendations on the MSDS shall be strictly followed. Federal, State and local regulations regarding handling, transportation and spills shall be observed by the applicator.

1.16. EROSION CONTROL PLAN

Contractor shall provide erosion and sediment control measures conforming to current Land Development Procedures of the City of Jacksonville, Florida, for all land-disturbing construction activities.

1.17. TRIAX GEOGRID AND FILTER FABRIC SYSTEM

Tensar TriAx TX140 geogrid shall be placed over filter fabric on all areas to be rocked and SHALL develop the structural support previously attained with limerock stabilization which is now only allowed under impervious surfaces.

- 1.17.1. Filter Fabric and TriAx TX140 Geogrid: The exposed subgrade soils shall be lined with a soil stabilization geotextile nonwoven filter fabric. The filter fabric shall be Mirafi 140N or approved equal, which shall be installed as per manufacturer's instructions and precautionary statements.

Once the filter fabric is in place on all areas to be rock, Tensar TriAx TX140 Geogrid shall be placed on top of the filter fabric as detailed in the plan drawings. After the filter fabric and TX140 geogrid are in place and secured per manufacturer requirements, then the rock can be placed as directed in the plan drawings.

#### 1.18. DRAINAGE AND DEWATERING

1.8.1. Prevent surface water and groundwater from entering excavations, from ponding on prepared subgrades, and from flooding construction site and surrounding areas. Provide for the collection and disposal of surface and subsurface water encountered during construction. Dispose of water as approved by the Owner.

1.8.2. Protect subgrades from softening, undermining, washout, and damage by surface or groundwater accumulation. Completely drain construction site during periods of construction to keep soil materials sufficiently dry. Provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils. When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified herein.

#### 1.8.3. Dewatering

A. During Construction, provide and maintain at all times during construction, ample means and devices with which to remove promptly and dispose of all water from every source entering the excavations or other parts of the work. The Contractor shall utilize quiet pumps and socks, with noise deflectors installed around the pumps, to comply with all allowable night time local noise ordinances. Dewater by means which will ensure dry excavations and the preservation of the final lines and grades of bottoms of excavations. If dewatering is performed by use of a sock system, Contractor shall completely grout fill the abandoned sock(s) upon completion of dewatering activities. Locations of all abandoned socks shall be indicated on Contractor submitted "as-built" drawings.

B. Control groundwater and surface runoff flowing toward or into excavations to prevent sloughing of excavation slopes and walls, boils, and excavation uplift and heave to eliminate all interference with orderly progress of construction. Remove water by pumping or other suitable methods. Use filters on dewatering devices to avoid removal of fines from soil. Provide erosion protection at discharge locations to avoid erosion. Install dewatering system prior to the excavation reaching the groundwater in order to maintain the integrity of the in-situ material.

C. Verify the groundwater level prior to excavation. While the excavation is open, maintain the water level continuously, at least two (2) feet below the working level. Submit a dewatering work plan, as necessary.

D. Operate the dewatering system continuously until dewatering is no longer required and construction work is complete within two (2) feet of the water level.

E. Should ground water be encountered, the Contractor shall be responsible for utilizing a dewatering system(s) to remove water from the excavations. Prior to any dewatering, Contractor is responsible for applying for all applicable dewatering permits.

F. Should the above requirements not be followed, the Contractor shall be held liable for any fines and/or violations incurred by JEA.

## 2. CONCRETE

2.1. SCOPE:

All concrete work shall be governed by this Subsection unless modified by other Sections of these specifications.

2.2. APPLICABLE STANDARDS

All concrete work shall be in accordance with the following standards of the American Concrete Institute (ACI), except as may be modified by these specifications:

2.2.1. ACI 318 (latest revision) "Building Code Requirements for Reinforced Concrete."

2.2.2. ACI 301 (latest revision) "Building Code Requirements for Structural Concrete."

2.2.3. ACI 306 (latest revision) "Recommended Practice for Cold Weather Concreting."

2.2.4. ACI 305 (latest revision) "Recommended Practice for Hot Weather Concreting."

2.2.5. ACI 613 (latest revision) "Recommended Practice for Selecting Proportions for Concrete."

2.3. MATERIALS

2.3.1. Cement: Cement shall be Portland cement conforming to ASTM C150, Type I.

2.3.2. Fine Aggregate: Sand for concrete shall conform to ASTM C33.

2.3.3. Coarse Aggregate: Coarse aggregate shall be natural gravel, crushed stone or slag conforming to ASTM C33.

2.3.4. Water: Mixing water for concrete shall be potable water, clean and free from injurious amounts of oils, acids, alkalis, organic materials or other deleterious substances.

2.4. CONCRETE PROPORTIONING

The concrete mix design for the class of concrete specified for use under this contract shall be prepared and submitted to the Engineer for approval. No concrete shall be placed without prior approval of the mix design.

2.4.1. Composition: The concrete shall be composed of Portland cement, fine aggregate, coarse aggregate and water. The ingredients shall be proportioned to produce a dense, workable concrete, free from voids. The concrete shall be designed in accordance with applicable ACI standards to attain the properties of strength, slump and rate of hardening required by these specifications.

2.4.2. Maximum Size of Coarse Aggregate: Maximum size of coarse aggregate shall not be larger than 3/4 the minimum clear spacing between the reinforcing bars.

2.4.3. Strength and Slump: The following are the minimum compressive strength and slump ranges for the various types of concrete construction:

<u>Type of Construction</u>	<u>Compressive Strength 28 Days, psi</u>	<u>Slump, in.</u>
Footings, slabs on grade, bond beam and lintel	As noted on plans	3±1

Headwalls and drop inlets	3000	5±1
Paving	3000	3±1
Curb and gutter, ditch pavement	2500	3±1

- 2.4.4. Air Content: The air content in the concrete shall be maintained in accordance with the following requirements:

<u>Maximum Size Coarse Aggregate, in.</u>	<u>Air Content Percent by Volume</u>
1 1/2	3±1
3/4 or 1	4±1
3/8 or 1/2	5±1

- 2.4.5. Admixtures: Air entrainment shall be produced by the addition of an air-entraining admixture meeting the requirements of ASTM C260. Air entraining cement will not be permitted. If required, an approved water reducing retarder may be used in the proportions recommended by the manufacturer.

- 2.4.6. Proportioning of Ingredients: Proportions, including water-cement ratio, shall be established on the basis either of laboratory trial batches or of field experience with the materials to be employed. The mix design together with supporting data shall be submitted to the Engineer for approval. The Engineer may, at his discretion, require only a letter from the concrete supplier indicating compliance with the specifications in lieu of submission of a mix design.

## 2.5. REINFORCING STEEL

- 2.5.1. Reinforcing Bars: Reinforcing bars shall conform to ASTM A615, ASTM A616 or ASTM A617, Grade 60.
- 2.5.2. Welded Wire Fabric: Welded wire fabric shall conform to ASTM A185.
- 2.5.3. Shop Drawings: Shop drawings for fabrication and placing of the reinforcing steel and accessories shall be submitted to the Engineer for approval.
- 2.5.4. Cleaning and Bending: Metal reinforcement at the time concrete is placed shall be free from loose, flaky rust, loose scale, mud, oil or other coatings that will destroy or reduce the bond. All bars shall be bent cold. Details of hooks and bends for reinforcement shall be in accordance with ACI 318. No metal reinforcement shall be placed within the FDOT Right-of-Way.
- 2.5.5. Placing Reinforcement: Metal reinforcement shall be accurately placed and adequately secured in position by concrete or metal chairs and spacers. After being placed, the reinforcing bars shall be maintained in a clean condition until they are completely embedded in the concrete. Reinforcing steel shall be handled and placed in accordance with ACI 318. No metal reinforcement shall be placed within the FDOT Right-of-Way.

## 2.6. EMBEDDED ITEMS

All sleeves, inserts, anchors, ground rods and other embedded items shall be placed prior to concreting. Anchor bolts shall be set to the exact horizontal dimensions shown. The Contractor shall provide adequate protection for all threaded sections of the anchor bolts above the surface of the concrete. Any threaded section of the anchor bolts above the surface of the concrete which becomes damaged or encrusted with

concrete during and/or after pouring shall be returned to their original threaded condition at no cost to the Owner. Apply cold galvanizing after re-threading and again after setting structures in their final position.

## 2.7. MIXING AND DELIVERY OF CONCRETE

- 2.7.1. Mixer: Unless otherwise authorized, the mixing of concrete shall be done in a batch mixer of approved AGC type or in ready-mix equipment conforming to ASTM C94. The volume of the mixed material for each batch shall not exceed the manufacturer's rated capacity of the mixer.
- 2.7.2. Mixing Time: The concrete shall be mixed until there is a uniform distribution of the materials and shall be discharged completely before the mixer is recharged. For job-mixed concrete, the mixer shall be rotated at the speed recommended by the manufacturer and mixing shall be continued for at least one and one-half (1-1/2) minutes after all materials are in the mixer. For mixers larger than one cubic yard capacity, the minimum mixing time shall be increased 15 seconds for each additional 1/2 cubic yard of concrete or fraction thereof.
- 2.7.3. Delivery: Each batch of concrete shall be delivered to the site of the work and discharged completely within 90 minutes after addition of the cement to the aggregates. Exceptions to this 90 minute time limit will be permitted only upon special permission from the Engineer. A ticket or time slip shall accompany each batch, showing the time of the batching of the cement. The production and delivery of ready-mixed concrete shall be such that not more than 20 minutes shall elapse between the depositing of successive batches of concrete in any monolithic unit of concrete.
- 2.7.4. Cold Weather Batching: When the temperature is below 40°F or is likely to fall below 40°F during the 24-hour period after placing, adequate equipment shall be provided for heating the concrete materials. No frozen material or materials containing ice shall be used. Temperatures of the separate materials, including the mixing water, when placed in the mixer, shall not exceed 140°F. When placed in forms, the concrete shall have a temperature of between 50°F and 90°F.
- 2.7.5. Addition of Water: Indiscriminate addition of water to increase slump is prohibited. When concrete arrives at the site with slump below that suitable for placing, water may be added only if neither the maximum water-cement ratio nor the maximum slump is exceeded. The concrete supplier must submit, at the time of delivery of each batch of concrete, a signed letter stating the maximum amount of water that may be added to the entire load of concrete in the truck. This will be a one time addition of water. The letter must also state that addition of the specified amount of water will not affect the design requirements of the approved concrete mix design. Acceptance of this by JEA does not relieve the Contractor from meeting the design specifications required herein. If addition of water results in a failure of any test of any kind of the concrete placed, the Contractor shall remove and replace the concrete at no cost to JEA.

## 2.8. FORMS

- 2.8.1. Installation: Forms shall conform to the shape, lines and dimensions of the members as called for on the plans, shall be substantially free from surface defects and sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together to maintain position and shape.
- 2.8.2. Removal: Forms shall be removed in such a manner and at such a time as to insure the complete safety of the structure. In no case shall the supporting forms or shoring be removed until the members have acquired sufficient strength to safely support their own weight and the load thereon.
- 2.8.3. Footings: Earth cuts may be utilized for forms provided the sides are stable at time of placing.
- 2.8.4. Chamfers: Exposed corners of columns, beams and piers shall be chamfered 3/4" unless otherwise noted on construction drawings.



## 2.9. PLACING OF CONCRETE

- 2.9.1. Preparation of Equipment and Place of Deposit: Before placing concrete, all equipment for mixing and transporting the concrete shall be cleaned; all debris and ice shall be removed from the spaces to be occupied by the concrete and all reinforcement shall be thoroughly cleaned of ice or other coatings. Water shall be removed from the place of deposit before concrete is placed unless otherwise permitted by the Engineer.

All reinforcement, forms, fillers and ground with which the concrete is to come in contact shall be free from frost. Concrete shall not be deposited during rain unless adequately protected and, in any case, preparations shall be on hand to protect newly placed concrete from rain until it has hardened sufficiently so that it will not be damaged.

- 2.9.2. Conveying: Concrete shall be conveyed from the mixer to the place of final deposit by methods which will prevent the separation or loss of the materials. Equipment for chuting, pumping and pneumatically conveying concrete shall be of such size and design as to insure a practically continuous flow of concrete at the delivery end and without separation of the materials.

- 2.9.3. Placing: No concrete shall be placed until the Engineer or his authorized representative has inspected forms, reinforcing and conditions incidental to the pour. Concrete shall be deposited as nearly as practicable in its final position to avoid separation due to re-handling or flowing.

All concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around the reinforcement and embedded items and into the corners of forms.

## 2.10. FINISHING

- 2.10.1. Patching: Immediately after stripping forms, all defective areas shall be patched with mortar similar to the concrete mix. Proprietary compounds for patching may be used provided they are used in accordance with the manufacturer's recommendations.

2.10.1.1. Major defective areas, including those resulting from leakage of forms, excessive honeycomb, large bulges and large offsets at form joints shall be chipped away to expose sound material and the surfaces that are to be patched shall be coated with an epoxy-polysulfide adhesive. The patching mortar shall be pressed in for a complete bond and finished to match adjacent areas.

2.10.1.2. Minor defective areas, including honeycomb, air bubbles, holes resulting from removal of ties and those resulting from leakage of forms shall be patched with grout without resorting to chipping.

- 2.10.2. Finishing: After patching, finish exposed-to-view surfaces as follows:

2.10.2.1. Standard Finish - Trim remaining bulges and offsets to remove fins and form blemishes, and dress rough edges. Rub with carborundum and water as necessary to achieve this finish. The result should be a solid concrete surface in a true and accurate plane.

2.10.2.2. Rubbed Finish: In addition to the work required for a "standard finish," rub all the surfaces with carborundum and water to provide the hereinafter specified results. Wood grain pattern from wood forms need not be removed but shall be rubbed to provide uniformity of surface. Smooth surfaces resulting from overlaid plywood and metal shall be rubbed to remove the glaze. The result should be a solid concrete surface in a true and accurate plane, having a uniformly rubbed finish and free of glazed areas.

2.10.2.3. Areas to be finished as described above:

2.10.2.3.1. Rubbed Finish: Control house bond beam surfaces.

2.10.2.3.2. Standard Finish: All other exposed-to-view surfaces.

## 2.11. FINISHING OF UNFORMED SURFACES

2.11.1. General: Grade and screed the surfaces to the exact elevation or slope shown or required. After screeding, tamp the mixture thoroughly to drive the coarse aggregate down from the surfaces and apply the finish below.

2.11.2. Float Finish: Finish the surface with a wood or machine float to a true and uniform plane with no coarse aggregate visible. Dusting to absorb surface water will not be permitted.

2.11.3. Broom Finish: Finish the surface with a wood or machine float to a true and uniform plane with no coarse aggregate visible. In addition, lightly broom the surface to make skid resistant. Dusting to absorb water will not be permitted.

2.11.4. Finish Schedule: Apply indicated finish as scheduled below:

	<u>Trowel</u>	<u>Broom</u>	<u>Float</u>
Control House	X		
Transformer Foundation		X	
Circuit Breaker Foundation		X	
All Other Foundations			X

## 2.12. JOINTS

2.12.1. Construction Joints: Construction joints shall not be permitted except in the locations shown on the plans. All reinforcing steel and welded wire fabric shall be continued across joints. Bond shall be obtained by either the use of an approved adhesive or by roughening the surface of the concrete in an approved manner.

2.12.2. Isolation Joints shall be provided to separate concrete slabs from columns, footings or walls. There shall be no connection across the joint by reinforcement, keyways or bond. Joints shall be filled with preformed joint filler material conforming to ASTM D994 and sealed with a material compatible to the joint filler.

2.12.3. Control Joints made of premolded joint material shall be installed in floor slabs to allow for contraction caused by drying/shrinkage. Joints shall be spaced at a maximum of 20 feet with the joint spacing chosen so that the panels are approximately square. Depths of control joints shall be one-fifth the slab depth.

## 2.13. CURING AND PROTECTION

Freshly deposited concrete shall be protected from premature drying and excessively hot or cold temperatures, and shall be maintained with minimal moisture loss at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete. The approved practices of cold weather and hot weather concreting are those outlined in ACI 306 and ACI 305, respectively.

## 2.14. TESTING

2.14.1. Testing Laboratory: The Contractor shall, at his expense, employ an approved independent laboratory to prepare cylinders and perform all concrete testing. Two (2) copies of all test reports shall be submitted to the Engineer.

- 2.14.2. Tests: Each truckload or partial truckload of concrete shall be tested for air content, slump and compressive strength.
- 2.14.2.1. Air Content: Tests for air content shall be made in accordance with ASTM C173 or ASTM C231.
- 2.14.2.2. Slump: Tests for slump shall be made in accordance with ASTM C143.
- 2.14.2.3. Compressive Strength: For each compressive test, one set of four (4) cylinders shall be made. Test cylinders shall be prepared in accordance with ASTM C31 and ASTM C172. One cylinder shall be tested at 7 days, two at 28 days and the fourth held in reserve. The 28-day strength shall be the average of the two cylinders tested. The strength level of the concrete will be considered satisfactory if the average equals or exceeds the required  $f_c$ . Compressive strength tests shall be made in accordance with ASTM C39.
- 2.14.3. Core Test: If compressive tests do not conform to the requirements of these specifications, approval may be given by the Engineer for the Contractor to have alternate strength tests made, provided that the concrete satisfies all other requirements of these specifications. Alternate strength tests shall be made on specimens secured from the structure in accordance with ASTM C42 (Core Test). These alternate tests shall be made at the Contractor's expense. If the concrete does not meet the required specifications, the concrete so represented or the entire structure, if concrete not meeting these specifications is a part thereof, shall be removed and replaced by the Contractor at his expense. In structure elements for which the strength of the concrete is not critical and the structural integrity is not affected, the Engineer may, at his discretion, allow the concrete to remain in place.

## 2.15. GROUT FOR STRUCTURE FOUNDATIONS

It is the intent of the foundation detail drawings that all structure foundations be poured true and level to the proper elevation without the use of grout; also, that all structure columns be set plumb without the use of leveling nuts or shims. However, if this cannot be accomplished, the Contractor may use shims and a maximum of 1-1/2" of non-metallic, non-shrinking, premixed, inorganic grout. The grout shall be Masterflow 713 (Master Builders) or F-100 (Sauereisen) or an approved equal. The Contractor shall install the grout in strict accordance with the manufacturer's specifications and/or instructions.

## 2.16. VAPOR BARRIER

All floor slabs on grade or fill shall be waterproofed with one ply of polyvinyl chloride (PVC) 6 mils thick. The PVC sheet shall be laid on the subgrade after it has been dressed and compacted. Joints shall be lapped six inches and sealed continuously with a pressure-sensitive tape, especially made for this purpose, or with an approved water-resistant adhesive. PVC sheets shall be turned up four (4) inches at walls, columns, and all other items projecting above the slab. Before concrete is placed, the sheets shall be carefully inspected and all punctures shall be patched with the pressure-sensitive tape or additional plies of strips of PVC sheeting laid down on approved adhesive.

## 2.17. CONCRETE SEALER

Interior concrete floor slab in Control House shall be dustproofed and sealed with a sealer similar or equal to Sherwin Williams Tru-Glaze 4508. Color shall be gray. The sealer shall be installed and finished in strict accordance with the manufacturer's directions. The JEA Field Representative shall be present during application.

- 2.17.1. Interior concrete floor slab in Control House Battery Room shall be given two (2) coats of "Sonoplex" floor sealer. Prior to application, all surfaces shall be cleaned and free of soil, dust, loose material, oil, grease, paint, parting, and curing compounds and all other foreign matter. All dirty or contaminated floors shall be cleansed with hot TSP solution (trisodium phosphate) and

rinsed thoroughly with clean water. The floor shall be acid etched with a one-to-one solution by volume 18-20 Baume commercial muriatic acid and water. The floor shall be thoroughly rinsed with clean water and a squeegee and allowed to dry thoroughly before coating with "Sonoplex". The floor sealer shall be applied in strict accordance with the manufacturer's recommendations. The JEA Field Representative shall be present during application.

### 3. DRILLED PIER CONSTRUCTION

#### 3.1.SCOPE

- 3.1.1. This section presents the general technical provisions and requirements for installation of drilled pier foundations. For purposes of these specifications, a drilled pier shall be defined as a foundation element constructed by excavating a circular shaft in the soil which subsequently is filled with concrete, reinforcing steel and anchor bolt cage as required.
- 3.1.2. It is not the intent of these specifications to unnecessarily restrict the contractor in his construction methods, techniques or equipment. However, methods, techniques or equipment herein specified are considered necessary to provide adequate pier installation. Deviations from these techniques or equipment may be made only if approved by the Engineer in advance. All work shall be done and completed in an acceptable manner in accordance with best modern practices for construction of drilled pier foundations, notwithstanding any omissions from the specifications or drawings.

#### 3.2. FAMILIARIZATION

Prior to all work of this section, Contractor shall become thoroughly familiar with the site, the site conditions, and accessibility to all drilled pier locations.

#### 3.3. INSTALLATION PERSONNEL

The Contractor shall have a minimum of four (4) years experience in reinforced concrete drilled pier installation. A resume indicating this experience shall be included with the bid. Drilled piers shall be installed by personnel experienced in this rotary excavation and pouring operation. In addition to the familiarity which the contractor may have with the process, the key operating personnel must have had prior experience in drilled pier installations, preferably relevant to anticipated subsurface materials, water conditions, shaft sizes and special techniques required.

#### 3.4. PIER ALIGNMENT AND DIMENSIONS

All drilled piers shall be installed from the ground surface as existing. The maximum variation of the center of any pier from its design location shall be three inches (3"), and no pier shall be out of plumb more than one percent (1%) of its length. All piers shall be at least as large in diameter as shown on the drawings. Tolerance of top elevation shall be plus one inch (1"), minus three inches (3"). If these tolerances are exceeded, proper additional construction (including costs of engineering and redesign) as required by the Engineer shall be provided without additional cost to the Owner.

#### 3.5. EXCAVATION

- 3.5.1. Shafts for piers shall be either drilled or augured by the use of a combination of power driven rotary type rig and bits or augers of a size and type to excavate the required diameter and depth as specified on the drawings.
- 3.5.2. Removal of materials from the shaft shall be by the use of the auger or a drilling mud slurry re-circulated from a sump through the hollow drill stem back up the open shaft and into the sump. Excavated material shall be disposed of in a manner subject to the approval of the Owner.

### 3.6. DRILLING MUD

Commercially produced drilling mud should be compatible with existing soil conditions at the construction location. If salt or brackish water is used to mix the drilling fluid, or if a salt or brackish formation is to be penetrated by the drilled shaft, an attapulgitic clay or "salt-gel" shall be used as the mineral additive.

In an acid environment, it may be necessary to neutralize the drilling fluid and/or use bentonite as the mineral additive. Bentonite shall not be left in the excavated shaft longer than 8 hours

The drilling fluid must be maintained above the natural water table at all times and must have a viscosity or consistency capable of maintaining a stable excavation. Shaft depth should be measured upon completion of the initial cleaning process and again immediately prior to pouring concrete. If there is six inches (6") or more difference, the shaft must be re-cleaned. In addition to measuring the hole depth just prior to placing concrete, a sample of the drill fluid, two feet (2') above the bottom of the shaft should be obtained. If the concrete pouring time will be less than 45 minutes, the fluid density may be a maximum of 85 pcf as measured by a mud density balance. If the concrete pouring time exceeds 45 minutes, the fluid density shall be 80 pcf or less. If it can be demonstrated that there is no sand precipitation from the 85 pcf fluid after 45 minutes, the heavier fluid density will be allowed.

The responsibility for obtaining the sample of drilling fluid and determining the specific gravity will be the Contractor's and will be observed by the Owner's representative. The method of obtaining the sample and determining the fluid specific gravity or density will be subject to approval by the owner.

### 3.7. TEMPORARY CASINGS

Temporary casings will be required at locations where the soil will not stand without support, or where, because of ground water conditions, sloughing of the sides of the piers may seriously delay or endanger the satisfactory completion of excavation and placement of concrete. The Contractor shall have immediately available for use on the job an ample supply of casings for each size which may be required and shall provide additional amounts, if required, to ensure orderly progress of the work. The casings shall be of such strength and rigidity as to maintain the required excavation lines and to resist crushing due to hydrostatic and/or earth pressure. All temporary casings shall be removed as concrete is placed or immediately thereafter, and in such a manner as to prevent sloughing material from dropping to the bottoms of the piers or falling on top of freshly placed concrete.

### 3.8. PERMANENT CASINGS

When piers penetrate very soft strata, the contractor may use corrugated metal pipe as forms to maintain the shape of the pier through these layers. The inside diameter of the casing shall be at least the nominal shaft diameter. Insertion into the excavated hole shall not unduly disturb side walls. When such casings are utilized, they shall not be removed, but shall remain in place.

### 3.9. REINFORCING

- 3.9.1. Reinforcing steel shall be the lengths and sizes shown on the drawings and shall conform to the requirements of the section "Concrete for Drilled Piers," except as modified below.
- 3.9.2. The pier reinforcement shall be assembled as a cage above ground and sufficiently braced to enable placing of the cage into the pier hole as a unit, without deforming, twisting or bending.
- 3.9.3. The contractor shall provide guides on the outside of the reinforcing cage to allow the cage to be centered in the open shaft. The guides shall be of such size and design as to be able to furnish the concrete cover for the reinforcing steel as shown on the drawings. Guides shall be placed in sufficient quantities to stabilize the reinforcing cage during concrete placement. A sample of the guide shall be submitted for approval.

### 3.10. CONCRETE

- 3.10.1. Except as modified below, concrete shall conform to the requirements of the section "Concrete for Drilled Piers."
- 3.10.2. Concrete shall be placed as soon as practicable after completion of excavation and installation of reinforcing and in a manner that will not cause segregation of materials.
- 3.10.3. When holes cannot be kept free of groundwater, concrete shall be placed by the use of a tremie pipe. The diameter of the tremie pipe should be as large as possible, but not greater than 1/3 the diameter of the shaft being poured. Drilled shafts less than thirty (30) feet deep may be poured with either a bottom sealed or traveling plug tremie. The traveling plug must be sufficiently tight so as to prevent the mixing of the drill fluid and concrete. The reinforcing steel cage shall be in place before any concrete is placed in the tremie. With the tremie on the bottom of the shaft, the tube shall be filled to the top extending above the ground. The filled tremie shall be picked up approximately one (1) foot off the bottom of the shaft to allow the weight of the concrete to displace the seal at the bottom of the tremie.

During this initial pouring operation, the tremie is not to be pulled to such a height so as to clear the surface of the concrete already placed in the shaft. All concrete shall be poured through the now open tremie, with care taken to maintain a sufficient head of concrete to completely displace all drilling mud and suspended cuttings of material and to provide sufficient pressure so as to prevent reduction in pier diameter by earth pressure on the fresh concrete. The concrete in each pier shall be overpoured sufficiently to assure that clean, uncontaminated concrete is present at the top of the shaft.

- 3.10.4. During concrete pouring operations through the tremie, should the surface of the concrete in the pier be breached by the tremie, the tremie tube shall immediately be withdrawn from the hole, resealed and inserted below the surface of the concrete and pouring operations resumed. It may be necessary during large pours to replace the original long tremie with a shorter one. The replacement tremie should be sealed and inserted at least one hole diameter. Should the Engineer deem it necessary, when a breach occurs (and contamination is suspected), the Contractor shall retrieve the reinforcing steel cage, re-drill the shaft to reopen the hole, and begin the concreting operations from the bottom of the pier shaft.
- 3.10.5. Temporary casings shall be withdrawn as the concrete is deposited. A sufficient head of concrete shall be maintained to insure that no extraneous material enters the concrete and that necking has not occurred. An initial jerk of 2 to 4 inches will be permitted to start the lift; thereafter, while being removed from the pier hole, the casing must be kept plumb and must be pulled with a smooth vertical motion, without jerks.
- 3.10.6. The concrete along the full length of the anchor bolts shall be vibrated if the Engineer so directs.
- 3.10.7. Under certain circumstances, construction joints in pier shafts may be permitted. Prior approval must be obtained from the Engineer. Any such construction must be accomplished under dewatered conditions using approved ACI procedures, and must be properly recorded in the drilled pier report.

### 3.11. CHECKING COMPLETED PIERS

If the engineer has reason to suspect that the concrete was breached by the tremie, or that the pier, for any other reason, may contain extraneous material or otherwise fail the specifications, he may order the pier cored for inspection and/or testing. If the core recovery and/or test results indicate non-compliance with the specifications, the Contractor shall bear the expense of the investigation and/or testing and shall also, at no cost to the Owner, install proper additional construction as required by the Owner. Should the investigation and/or testing indicate compliance with the specifications, the Owner shall bear the cost of such investigation

and/or testing.

#### 3.12. REPORTS

A complete report of each pier installed shall be made for the Engineer. This report shall contain all dimensions, location of pier, elevation of bottom and top as actually poured, measured amount of concrete placed in each pier hole, and any other pertinent data. All cavities encountered should be clearly indicated. All lengths of permanent and/or temporary casings should be clearly shown. All unusual conditions shall be clearly described. This information shall be forwarded as soon as possible for review of conditions encountered.

#### 3.13. EXTRA COMPENSATION

It is the Contractor's responsibility to familiarize himself with the site and subsurface conditions before submitting his proposal. Ignorance of conditions will not be accepted as the basis of a claim for additional compensation. Payment for extra concrete due to overdrilling will not be made.

### 4. CONCRETE FOR DRILLED PIERS

#### 4.1. SCOPE

All concrete work shall be governed by this Section unless modified by other sections of these Specifications.

#### 4.2. APPLICABLE STANDARDS

All concrete work shall be in accordance with the following standards of the American Concrete Institute (ACI), except as may be modified by these Specifications:

- 4.2.1. ACI 318 (latest revision) "Building Code Requirements for Reinforced Concrete".
- 4.2.2. ACI 301 (latest revision) "Specifications for Structural Concrete for Buildings".
- 4.2.3. ACI 306 (latest revision) "Recommended Practice for Cold Weather Concreting".
- 4.2.4. ACI 305 (latest revision) "Recommended Practice for Hot Weather Concreting".
- 4.2.5. ACI 613 (latest revision) "Recommended Practice for Selecting Proportions for Concrete".

#### 4.3. MATERIALS

- 4.3.1. Cement: Low alkali cement (maximum of 0.6 percent equivalent  $\text{Na}_2\text{O}$ ) shall be used in all concrete. The cement shall be Portland cement conforming to ASTM C150, Type 1.
- 4.3.2. Fine Aggregate: Sand for concrete shall conform to ASTM C33.
- 4.3.3. Coarse Aggregate: The coarse aggregate shall be gravel, crushed stone or slag conforming to ASTM C33. Coarse aggregate shall be tested for potential alkali reactivity according to ASTM C-289; reactive aggregate will not be permitted.
- 4.3.4. Water: Mixing water for concrete shall be clean and free from injurious amounts of oils, acids, alkalis, organic materials or other deleterious substances.

#### 4.4. CONCRETE PROPORTIONING

The concrete mix design for the class of concrete specified for use under this contract shall be prepared and

submitted to the Engineer for approval. No concrete shall be placed without prior approval of the mix design.

4.4.1. Composition: The concrete shall be composed of Portland cement, fine aggregate, coarse aggregate and water. The ingredients shall be proportioned to produce a dense, workable concrete, free from voids. The concrete shall be designed in accordance with applicable ACI standards to attain the properties of strength, slump and rate of hardening required by these specifications.

4.4.2. Maximum Size of Coarse Aggregate: The maximum size of coarse aggregate shall not be larger than 3/4 the minimum clear spacing between the reinforcing bars.

4.4.3. Strength and Slump: The following is the minimum compressive strength and slump range. All slump tests shall be in accordance with ASTM C143 and shall be performed by the Contractor as directed by the Owner's field representative.

Type of Construction	Compressive Strength 28 days, psi	Slump, in
Drilled Piers	4000	7 - 9

4.4.4. Air Content: The air content in the concrete shall be maintained in accordance with the following requirements:

Maximum Size Coarse Aggregate, in.	Air Content Percent by Volume
1 1/2	3 ± 1
3/4 or 1	4 ± 1
3/8 or 1/2	5 ± 1

4.4.5. Admixtures: Air entrainment shall be produced by the addition of an air entraining admixture meeting the requirements of ASTM C260. Air-entraining cement will not be permitted. If required, an approved water reducing retarder may be used in the proportions recommended by the manufacturer.

4.4.6. Proportioning of Ingredients: Proportions, including water-cement ratio shall be established on the basis either of laboratory trial batches or of field experience with the materials to be employed. The mix design together with supporting data shall be submitted to the Engineer for approval. The Engineer may, at his discretion, require only a letter from the concrete supplier indicating compliance with the Specifications in lieu of submission of a mix design.

#### 4.5. REINFORCING STEEL

4.5.1. General: Reinforcing bars shall conform to ASTM A615, ASTM A616 or ASTM A617, Grade 60 for #6 bars and larger and Grade 40 for #5 bars and smaller.

4.5.2. Shop Drawings: Shop drawings for fabrication and placing of the reinforcing steel and accessories, shall be submitted to the Engineer for approval.

4.5.3. Cleaning and Bending: Metal reinforcement at the time concrete is placed shall be free from loose, flaky rust, loose scale, mud, oil or other coatings that will destroy or reduce the bond. All bars shall be bent cold. Details of hooks and bends for reinforcement shall be in accordance with ACI 318.

4.5.4. Placing Reinforcement: Metal reinforcement shall be accurately placed and adequately secured in position by concrete or metal chairs and spacers. After being placed, the reinforcing bars shall be maintained in a clean condition until they are completely embedded in the concrete. Reinforcing



steel shall be handled and placed in accordance with ACI 318.

#### 4.6. EMBEDDED ITEMS

All sleeves, inserts, anchors, ground rods and other embedded items shall be positioned prior to concreting (except where the concrete is being placed with a tremie). Anchor bolts shall be set to the exact horizontal dimensions shown. The Contractor shall provide adequate protection for all threaded sections of the anchor bolts above the surface of the concrete. Any threaded sections of the anchor bolts above the surface of the concrete which become damaged or encrusted with concrete during and/or after pouring shall be returned to their original threaded condition at no cost to the Owner.

#### 4.7. MIXING AND DELIVERY OF CONCRETE

4.7.1. Mixer: Unless otherwise authorized, the mixing of concrete shall be done in a batch mixer of approved AGC type or in ready-mix equipment conforming to ASTM C94. The volume of the mixed material for each batch shall not exceed the manufacturer's rated capacity of the mixer.

4.7.2. Mixing Time: The concrete shall be mixed until there is a uniform distribution of the materials and shall be discharged completely before the mixer is recharged. For job-mixed concrete, the mixer shall be rotated at the speed recommended by the manufacturer and mixing shall be continued for at least one and one-half (1 1/2) minutes after all materials are in the mixer. For mixers larger than one cubic yard capacity, the minimum mixing time shall be increased 15 seconds for each additional 1/2 cubic yard of concrete or fraction thereof.

4.7.3. Delivery: Each batch of concrete shall be delivered to the site of the work and discharged completely within 90 minutes after addition of the cement to the aggregates. Exceptions to this 90 minute time limit will be permitted only upon special permission from the Engineer. A ticket or time slip shall accompany each batch, showing the time of the batching of the cement.

The production and delivery of ready-mixed concrete shall be such that not more than 20 minutes shall elapse between the depositing of successive batches of concrete in any monolithic unit of concrete.

4.7.4. Cold Weather Batching: When the temperature is below 40°F or is likely to fall below 40°F during the 24-hour period after placing, adequate equipment shall be provided for heating the concrete materials. No frozen material or materials containing ice shall be used. Temperatures of the separate materials, including the mixing water, when placed in the mixer, shall not exceed 140°F. When placed in forms, the concrete shall have a temperature of between 50°F and 90°F.

4.7.5. Addition of Water: Indiscriminate addition of water to increase slump shall be prohibited. When concrete arrives at the site with slump below that suitable for placing, water may be added only if neither the maximum water-cement ratio nor the maximum slump is exceeded. Any addition of water above that permitted by the limitation on water-cement ratio must be accompanied by a quantity of cement sufficient to maintain the proper water-cement ratio.

#### 4.8. FORMS

4.8.1. Installation: Forms shall conform to the shape, lines and dimensions of the members as called for on the plans, shall be substantially free from surface defects and sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together to maintain position and shape.

4.8.2. Removal: Forms shall be removed in such a manner and at such a time to insure the complete safety of the structure. Form work for drilled piers and other parts not supporting the weight of the concrete may be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations.

- 4.8.3. Chamfers: Exposed edges of drilled piers shall be chamfered  $\frac{3}{4}$ ".

#### 4.9. PLACING OF CONCRETE

- 4.9.1. Preparation of Equipment and Place of Deposit: Before placing concrete, all equipment for mixing and transporting the concrete shall be cleaned; all debris and ice shall be removed from the spaces to be occupied by the concrete and all reinforcement shall be thoroughly cleaned of ice or other coatings. Water shall be removed from the place of deposit before concrete is placed unless otherwise permitted by the Engineer.

All reinforcement, forms, fillers and ground with which the concrete is to come in contact shall be free from frost. Concrete shall not be deposited during rain unless adequately protected, and in any case, preparations shall be on hand to protect newly placed concrete from rain until it has hardened sufficiently so that it will not be damaged.

- 4.9.2. Conveying: Concrete shall be conveyed from the mixer to the place of final deposit by methods which will prevent the separation or loss of the materials. Equipment for chuting, pumping, and pneumatically conveying concrete shall be of such size and design as to insure a practically continuous flow of concrete at the delivery end and without separation of the materials.

- 4.9.3. Placing: No concrete shall be placed until the Engineer or his authorized representative has inspected forms, reinforcing and conditions incidental to the pour. Concrete shall be deposited as nearly as practicable in its final position to avoid separation due to rehandling or flowing. All concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around the reinforcement and embedded items and into the corners of forms.

#### 4.10. FINISHING

- 4.10.1. Patching: Immediately after stripping forms, all defective areas shall be patched with mortar similar to the concrete mix. Proprietary compounds for patching may be used provided they are used in accordance with the manufacturer's recommendations.

4.10.1.1. Major defective areas, including those resulting from leakage of forms, excessive honeycomb, large bulges and large offsets at form joints shall be chipped away to expose sound material and the surfaces that are to be patched shall be coated with an epoxy-polysulfide adhesive. The patching mortar shall be pressed in for a complete bond and finished to match adjacent areas.

4.10.1.2. Minor defective areas, including honeycomb, air bubbles, holes resulting from removal of ties and those resulting from leakage of forms shall be patched with grout without resorting to chipping.

- 4.10.2. Finishing: After patching, finish exposed-to-view surfaces by one of the following methods:

4.10.2.1. Standard Finish: Trim remaining bulges and offsets to remove fins and form blemishes, and dress rough edges. Rub with carborundum and water as necessary to achieve this finish. The result should be a solid concrete surface in a true and accurate plane.

4.10.2.2. Rubbed Finish: In addition to the work required for a "standard finish," rub all the surfaces with carborundum and water to provide the hereinafter specified results. Wood grain pattern from wood forms need not be removed but shall be rubbed to provide uniformity of surface. Smooth surfaces resulting from overlaid plywood and metal shall be rubbed to remove the glaze. The result should be a solid concrete surface in a true and accurate plane, having a uniformly rubbed finish and free of glazed areas.

#### 4.11. CURING AND PROTECTION

Freshly deposited concrete shall be protected from premature drying and excessively hot or cold temperatures, and shall be maintained with minimal moisture loss at a relatively constant temperature for the period of time necessary for the hydration of the cement and proper hardening of the concrete. The approved practices of cold weather and hot weather concreting are those outlined in ACI 306 and ACI 305, respectively.

#### 4.12. TESTING

4.12.1. Testing Laboratory: The Contractor shall, at his expense, employ an approved independent laboratory to prepare cylinders and do all testing. Two (2) copies of all test reports shall be transmitted to the Engineer.

4.12.2. Tests: Each truckload or partial truckload of concrete shall be tested for air content, slump and compressive strength. Test cylinders shall be made in accordance with ASTM C172 and ASTM C31.

4.12.3. Compressive Tests: For each compressive test, one set of four (4) cylinders shall be made. One cylinder shall be tested at 7 days, two at 28 days and the fourth held in reserve. The 28-day strength shall be the average of the two cylinders tested. The strength level of the concrete will be considered satisfactory if the average equals or exceeds the required  $f'_c$ . Compressive strength tests shall be made in accordance with ASTM C39.

4.12.4. Core Test: If specimen strength tests do not conform with the requirements of these Specifications, approval may be given by the Engineer for the Contractor to have alternate strength tests made on specimens secured from the structure in accordance with ASTM C42 (Core Test). These alternate tests shall be made at the Contractor's expense. If the concrete does not meet the required specifications, the concrete so represented or the entire structure, if concrete not meeting these Specifications is a part thereof, shall be removed and replaced by the Contractor at his expense. In structure elements for which the strength of the concrete is not critical and the structural integrity is not affected, the Engineer may, at his discretion, allow the concrete to remain in place.

### 5. CONTROL HOUSE MASONRY CONSTRUCTION

#### 5.1. SCOPE

This Subsection covers all masonry work required in construction of the Control House shown on the drawings. Concrete work accomplished in conjunction with masonry construction, such as concrete lintels, shall be governed by Section VIII, Subsection 2 of these specifications.

#### 5.2. DESIGN AND CONSTRUCTION

The design and construction of concrete masonry structures shall be in accordance with "Building Code Requirements for Masonry Structures" (ACI 530-88/ASCE 5-88, latest revision) and "Standard Building Code" of the Southern Building Code Congress International (1997 Edition, latest revision).

#### 5.3. MATERIALS

5.3.1. The materials used in masonry construction shall meet the following specifications unless otherwise noted.

- 5.3.2. Concrete Masonry Units: Block shall conform to ASTM C90 Grade N-I. Moisture content at time of installation shall not exceed 35% of total absorption. All units shall be uniform in color and texture, of standard sizes, and of the shapes required for the construction intended. All units shall be kept dry during storage on the job and shall be dry when laid in the walls and partitions.
- 5.3.3. Cementitious Materials
- 5.3.3.1. Portland Cement - Type I, II, or III of ASTM C150
- 5.3.3.2. Masonry Cement - ASTM C91
- 5.3.3.3. Hydrated Lime - Type S of ASTM C207
- 5.3.3.4. Quicklime - ASTM C5
- 5.3.4. Aggregates
- 5.3.4.1. Fine aggregates for grout and mortar: ASTM C144
- 5.3.4.2. Coarse aggregate for grout, maximum size No. 8 of ASTM C404
- 5.3.5. Water: Water used shall be clear and free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances that may be deleterious to mortar, grout and any metal in the wall.
- 5.3.6. Admixtures: Accelerators, retarders, and other admixture materials shall not be used in mortar or grout unless reliable data are provided to demonstrate that the admixture has no adverse effect on the properties of the mortar. Any admixtures used shall conform to ASTM C494.
- 5.3.7. Masonry Anchors and Reinforcements: All wall reinforcing and tie system shall be Dur-O-Wal truss or approved equal. Rods shall be minimum 9 gauge and hot-dip galvanized after fabrication in accordance with ASTM A116 Class 3 coating (0.8 oz./s.f.).

#### 5.4. MORTAR AND GROUT

- 5.4.1. Proportioning: Grout shall be proportioned to meet the requirements of ASTM C476. Mortar shall be proportioned in accordance with ASTM C270 for Type N mortar.
- 5.4.2. Mixing: All materials should be mixed in a mechanical mixer for a minimum period of 5 minutes, after all the materials are in the mixer, with the amount of water required to produce the desired workability. Mortar that has stiffened from evaporation may be retempered to workable consistency by adding water and remixing thoroughly. All mortar shall be used within 2-1/2 hours of the initial mixing.

#### 5.5. LAYING CONCRETE BLOCK UNITS

- 5.5.1. Workmanship: All masonry work shall be laid out carefully and accurately. All work shall be performed by first-class masons thoroughly experienced in the trade. All lines, vertical and horizontal, shall be straight and true and all walls shall be plumb, true, clean and smooth.
- 5.5.2. Laying: All units shall be laid in running bond with the vertical joints occurring at mid-points of the units above and below, and aligned vertically. Concrete block must not be wetted before laying, but must be kept dry to prevent shrinkage. Horizontal and vertical mortar joints shall be uniform and not wider than 3/8 inch thick. All exposed joints shall be tooled concave.

- 5.5.3. Cold Weather: No masonry construction shall be permitted in freezing weather unless suitable means are provided to heat materials. No antifreeze ingredients shall be used. Masonry shall be protected against freezing for at least 48 hours.
- 5.5.4. Intersecting Walls and Corners: At corners, walls shall be tied together in masonry bond. When masonry bond is not practical at intersecting walls and partitions, ties shall be provided as specified below.

5.6. MASONRY REINFORCING AND ANCHORAGE

Horizontal reinforcing shall be built into every other block course starting 16 inches above the footing or slab and ending with the last mortar joint. In addition, reinforcing shall be installed in the first 2 mortar joints above and below all openings, extending at least 24 inches beyond each side of the opening. Anchors for intersecting partitions shall be factory made "T" sections placed at 16 inch intervals vertically. Reinforcement shall be so placed as to assure a 5/8 inch mortar cover on the exterior face of walls and 1/2 inch cover on interior faces. Side rods shall be lapped at least 6 inches at splices.

5.7. SETTING OF METAL WORK

All flashing, anchors, ties, bearing plates, bolts, etc., shall be set at the correct elevation, true and level, in full beds of mortar. Masonry shall be brought to bear against anchors to prevent slippage. Anchors and similar work shall be completely covered with mortar or grout. Pressed steel frames shall be filled with mortar as the work progresses.

5.8. CLEANING

All exposed masonry shall be cleaned with solvents of a brand and mixture recommended by the concrete block manufacturer. The cleaning shall be done in accordance with the solvent manufacturer's printed directions. Exposed concrete block may be cleaned without solvents provided the resulting surfaces are suitable for painting and the original texture of the units is not altered.

5.9. LINTELS

All openings wider than 16 inches shall have lintels. Lintels shall bear a minimum of 8 inches at each end. Where masonry lintel blocks are used, units shall be filled with 3,000 psi concrete and reinforced with a minimum of 2 No. 4 bars. Concrete and reinforcing shall meet the requirements of Section VIII, Subsection 2.

6. CONTROL HOUSE – ROOF

6.1. SCOPE

This Subsection covers construction of the Control House roof system composed of precast prestressed concrete hollow core slabs, rigid insulation and modified bitumen roofing.

6.2. HOLLOW CORE SLABS

Manufacturer shall be a firm specializing in providing prestressed concrete products and services of the types specified herein and on the plans. The manufacturer shall have at least three (3) years experience in manufacturing, transporting and erecting precast/prestressed concrete decks. The manufacturer's plant shall be a member of the Prestressed Concrete Institute's Plant Certification Program. Design of the precast/prestressed hollow core slabs shall be performed by a Professional Engineer registered in the State of Florida, and qualified by education and/or experience to perform the design.

6.2.1. Materials

- 6.2.1.1. Portland cement, Type I, II or III, shall conform to ASTM C-150.
- 6.2.1.2. Lightweight aggregates shall conform to ASTM C-330.
- 6.2.1.3. Concrete shall be zero slump.
- 6.2.1.4. All concrete shall be produced by the prestressed concrete manufacturer at a central batching plant.
- 6.2.1.5. Prestressing steel wire shall be high tensile, three strand, 5/16" diameter stress relieved wire (250 ksi) in accordance with ASTM A-416.

6.2.2. Fabrication

- 6.2.2.1. Prestressed concrete slabs with a 4'-0" nominal width shall be machine extruded using zero slump concrete.
- 6.2.2.2. Prestressed concrete slabs shall be manufactured in one single operation with a smooth top and bottom.
- 6.2.2.3. Prestressed concrete slabs shall be free of honeycombing. Chamfers shall be uniform in size.
- 6.2.2.4. Tolerances:

Width		
Full width units	±	1/4"
Saw cut units	±	1/2"
Length		
	±	1"
Thickness	±	1/4"
Deviation from square	±	1"

- 6.2.2.5. Testing
  - 6.2.2.5.1. At least four (4) test cylinders shall be made for each day's production.
  - 6.2.2.5.2. Testing shall conform to the applicable provisions of PCI MNL-116, Manual for Quality Control for Plants and Production of Precast Prestressed Concrete Products.

- 6.2.3. Submittals: Shop drawings shall be submitted for approval, showing identifying marks of each unit, holes over 100 square inches and anchorage details.

6.2.4. Erection

- 6.2.4.1. Prestressed concrete units shall be erected into final position under the supervision of a representative of the manufacturer.
- 6.2.4.2. Prestressed concrete units shall be aligned, leveled and anchored prior to grouting keyway joints.

6.2.5. Grouting

- 6.2.5.1. Keyways between units shall be cleaned and filled with grout. Grout that may have seeped through keyways to areas below shall be removed before hardening.

- 6.2.5.2. Tops of grouted joints shall be screeded adequately smooth to prevent any unevenness that might interfere with the placing of roofing.

6.3. WOOD NAILERS

Continuous wood nailing strips shall be provided at all locations such as eaves and roof edges for nailing of flashings and the like and to act as a stop for the insulation. Nailers shall be pressure treated with a water-borne preservative such as Wolman salts or with penta applied in a liquified petroleum gas carrier such as the Cellon Process. Oil based preservatives such as creosote are not acceptable.

6.4. BUILT-UP ROOF

Built-up roof system, to include insulation, flashing and sheet metal and modified bitumen roofing, shall be in accordance with The Johns Manville Company. A Johns Manville 2FID SBS Modified Bitumin roofing system with a 20-year NDL warranty shall be installed. JEA has standardized on this system and will not accept other alternatives. Installation shall be by a Johns Manville Company approved roofing contractor. All required procedures and inspections shall be closely followed.

6.5. GUTTERS AND DOWNSPOUTS

All gutters and downspouts, where shown on the drawings, shall be 24 gauge aluminum. Gutter and downspouts are to be 5" x 5" with 6" cover plates at splices. All splices and ends are to be soldered. Provide aluminum ferrules and aluminum spikes at 4'0" o.c. for mounting gutter to wood blocking. Aluminum flashing is to run down into gutter. Provide aluminum straps 8'0" apart attached into masonry for mounting of downspouts. Gutters are to be installed per The Johns Manville Company specifications and details.

7. CONTROL HOUSE - MISCELLANEOUS CONSTRUCTION

7.1. SCOPE

This Subsection covers furnishing and installing doors and hardware, windows, painting and other incidental finishing operations. Mechanical and electrical work is specified or scheduled on the drawings or other sections of these specifications.

7.2. HOLLOW METAL DOORS AND FRAMES

7.2.1. Scope

- 7.2.1.1. The Contractor shall furnish and install:

7.2.1.1.1. All doors along with frames and hardware as called for on the drawings.

7.2.1.1.2. Hangers, bars, plates, angles, nuts, screws, clips, cushions, brackets, lugs, fastenings, and all other required parts and accessories for complete units which may be required to complete the work in this Subsection.

- 7.2.1.2. The Contractor shall furnish all hardware as specified in the Hardware Schedule. The Contractor shall supply one locking cylinder to allow him access to the Control House during construction. Upon completion of construction, the Contractor will remove his locking cylinder and replace with Owner furnished cylinder.

7.2.2. Steel Honeycomb Core Doors and Frames

- 7.2.2.1. Steel honeycomb doors shall be as manufactured by Steelcraft, 9017 Blue Ash Road, Cincinnati, Ohio, 45242, and distributed by George P. Coyle & Sons, 2351 Dennis Street, Jacksonville, Florida, 32204. Doors shall be flush seamless entrance doors, fabricated of galvanized steel, and designated as LF-18F. Doors shall be phosphatized, and shall receive one coat of baked-on primer and one finish coat of baked-on enamel (Desert Sand #11049). Doors shall be internally reinforced with 12 gauge steel for mounting of surface closers, and shall be furnished with top caps for weather protection.
- 7.2.2.2. Door frames shall be as manufactured by Steelcraft and designated as F16-4. Frames shall be fabricated of galvanized steel. Frames shall be bonderized, and shall receive one coat of baked-on primer and one finish coat of baked-on enamel (Desert Sand #11049). Frames shall be reinforced for closers. Weatherstripping shall be Pemko #303AV or equal.
- 7.2.3. Metals (General): Metals used in this section shall be free from defects impairing strength, durability or appearance, and shall be of best commercial grade for their particular function and situation in structure and location.
- 7.2.4. Erection and Workmanship
- 7.2.4.1. Frames shall be installed by the Contractor in correctly prepared openings according to the manufacturer's recommended installation instructions. They shall be set plumb, square and level in correct alignment with floors, ceilings, walls and other work. They shall be securely anchored and completely ready for operation. To produce a watertight job, all joints between frames and masonry shall be tightly caulked and neatly painted. Excess caulking materials shall be removed. It shall be the Contractor's responsibility to protect frame members from harm during construction.
- 7.2.4.2. All doors are to remain in original cartons until ready for installation. This will protect the finish and facings from the pitting corrosion action of plaster, concrete, cement, or other highly alkaline materials.
- 7.2.4.3. Like metals in contact or metals in contact with unlike metals, where necessary to prevent corrosion by electrolytic action and other causes, shall be effectively insulated.
- 7.2.4.4. Anchors, bolts, and other fastenings into masonry shall be as per manufacturer's recommendations.
- 7.2.4.5. Except as detailed, no member shall project beyond the normal face or planes of wall line.
- 7.2.5. Adjustments Upon Completion: Upon substantial completion of the work of this Subsection, the Contractor shall go over all his work and put it in first-class condition. He shall adjust and condition all movable and fixed parts and make good any loose or damaged work and put hardware in proper operating condition.
- 7.2.6. Templates: The door manufacturer shall be furnished templates by the hardware supplier and extreme care and precision shall be used in the hardware layout and mortising so as to assure an accurate fit to frames.
- 7.2.7. Shop Drawings
- 7.2.7.1. When laying out shop drawings, the Contractor shall carefully verify all conditions at the site of operations, and shall promptly report to the JEA field representative any variation



or digression from contract document affecting his work, that proper and prompt adjustment may be made on the shop drawings or otherwise.

- 7.2.7.2. Provide necessary symbol key seating plans for easily and quickly identifying units and parts and assigning to their proper locations in the building.

### 7.3. FINISH HARDWARE

- 7.3.1. General: Hardware shall be free from defects affecting appearance and serviceability. Working parts shall be well fitted and smooth working without unnecessary play. All items of hardware shall be delivered to the building site in sufficient time in advance of its requirement for use for inspection prior to installation. All items of finishing hardware shall be placed in separate packages and definitely numbered and marked for each opening for which it is intended. Hardware for application to metal shall be made to standard templates. Template information shall be furnished to door and frame fabricators and all other trades requiring same, in order that they may cut, reinforce or otherwise prepare in the shop, materials for the reception of hardware.

- 7.3.2. Installation: Install finishing hardware and adjust for intended operation. Cover doorknobs and other surfaces while the area is being finished. Clean paint from all exposed surfaces thoroughly before the building is turned over to the Owner. Hinges shall be located 10 inches from the top of the door, 10 inches from the bottom of the door and other hinge(s) centered between the top and bottom hinges. Where locations of knobs are not indicated on the drawings, they shall center 39 inches above the floor.

- 7.3.3. Hardware Schedule: Furnish and install the following hardware for each door. Set numbers are assigned to doors shown on door schedule as follows:

#### 7.3.3.1. Door E-1:

7.3.3.1.1. 2-1/2 pairs butts – FBB191 – 4-1/2"x 4-1/2" – NRP- 32D (Stanley)

7.3.3.1.2. 1 butt – CEFBB191 – 4-1/2"x4-1/2" – 32D (Stanley)

7.3.3.1.3. 1 – 8500 Concealed Vertical Rod Device (Adams-Rite)

7.3.3.1.4. 1 – EL8500 Concealed Vertical Rod Device x Model 3001 pull (Adams-Rite)

7.3.3.1.5. 1 – Power Supply (Adams-Rite PS-LR)

7.3.3.1.6. 1 – 8650 Key Override (Adams-Rite)

7.3.3.1.7. 2 closers – DC2210A1 (Russwin)

7.3.3.1.8. 2 kickplates - 8" x DWL – 32D

7.3.3.1.9. 1 threshold No. 155 AV

7.3.3.1.10. weatherstripping – 312CR

7.3.3.1.11. door sweep – 315CN

7.3.3.1.12. 1 lock guard

#### 7.3.3.2. Doors E-2 and E-6:

- 7.3.3.2.1. 1-1/2 pairs butts – FBB191 - 4-1/2" x 4-1/2" – NRP 32D (Stanley)
- 7.3.3.2.2. 1 butt CEFBB191 –4-1/2"x4-1/2" 32D (Stanley)
- 7.3.3.2.3. 1 – EL8500 Concealed Vertical Rod Device x Model 3001 pull (Adams-Rite)
- 7.3.3.2.4. 1 –Power Supply (Adams-Rite PS-LR)
- 7.3.3.2.5. 1 – 8650 Key Override (Adams-Rite)
- 7.3.3.2.6. 1 closer - DC2210A1
- 7.3.3.2.7. 1 kickplate - 8" x DWL – 32D
- 7.3.3.2.8. 1 threshold No. 155 AV
- 7.3.3.2.9. weatherstripping – 312CR
- 7.3.3.2.10. door sweep – 315CN
- 7.3.3.2.11. 1 lock guard
- 7.3.3.3. Door E-3:
  - 7.3.3.3.1. 1-1/2 pairs butts - SSBB - 4-1/2" x 4-1/2" - US26D
  - 7.3.3.3.2. 1 closer - DC2210A1
  - 7.3.3.3.3. 1 kickplate - 8" x DWL – 32D
  - 7.3.3.3.4. 1 threshold No. 155 AV
  - 7.3.3.3.5. 1 pull plate – 8302 – 32D
  - 7.3.3.3.6. 1 push plate – 8200 – 32D (8x16)
- 7.3.3.4. Door E-4:
  - 7.3.3.4.1. 1-1/2 pairs butts - SSBB - 4-1/2" x 4-1/2" - US26D
  - 7.3.3.4.2. 1 closer - DC2210A1
  - 7.3.3.4.3. 1 kickplate - 8" x DWL – 32D
  - 7.3.3.4.4. 1 lockset – 4352 Austin 32D
- 7.3.3.5. Door E-5:
  - 7.3.3.5.1. 1-1/2 pairs butts - SSBB - 4-1/2" x 4-1/2" - US26D
  - 7.3.3.5.2. 1 closer - DC2210A1
  - 7.3.3.5.3. 1 kickplate - 8" x DWL – 32D
  - 7.3.3.5.4. 1 lockset – 4352 Austin 32D

7.3.3.5.5. weatherstripping – 312CR

7.3.3.5.6. door sweep – 315CN

7.3.3.5.7. 1 lock guard

- 7.3.4. Lock Guards: Stainless steel lock guards shall be installed on Doors E-1, E-2, E-5 and E-6 . Lock guards shall be manufactured by Lock Guard Manufacturing Company and available from George P. Coyle & Sons , Inc., Jacksonville, Florida (904- 356-4821).

#### 7.4. PAINTING AND FINISHING

- 7.4.1. Materials: All paint materials shall be delivered to the job in their original unbroken packages. For the various paints to be used, the Contractor shall submit for approval specification data in accordance with the paragraph for same, both as covered in "General Conditions." All paint shall be applied in strict accordance with the manufacturer's printed instructions. All paint materials shall be the manufacturer's first quality for the type specified. Approved manufacturers are:

Devoe  
Pittsburgh  
Glidden  
Sherwin Williams

- 7.4.2. Colors: The color code has been selected (based on Sherwin Williams color charts) as follows:

Outside Walls	SW6133 – Muslin
Inside Walls	SW6126 – Navajo White
Doors	SW6129 – Restrained Gold

- 7.4.3. Workmanship: All finish surfaces shall be smooth, even and free from defects and shall show even coatings. Paint shall be applied to dry surfaces only and no succeeding coat of paint shall be applied until the preceding coat is thoroughly dry. Paint shall be thoroughly worked into all joints, crevices and open spaces. There shall be a perceptible difference in the shades of successive coats of paint. All freshly painted surfaces shall be adequately protected.

- 7.4.4. Preparation of Surfaces: All rust, loose or disintegrated paint, grease and scale shall be removed from metalwork before priming or field coats are applied. All wood or other surfaces shall be free from dirt, grease and dust, and shall be in condition necessary to provide for a proper paint finish. All nail holes, cracks or open joints shall be puttied with pure linseed oil putty, or caulked. Putty, where necessary, shall be applied with a knife after priming coats have been applied.

#### 7.4.5. Finish Painting - Control House

- 7.4.5.1. Exterior Wall : Exposed surfaces, including entryway ceiling, shall receive a paint application as follows:

7.4.5.1.1. Two (2) coats of Sherwin Williams BLOXFIL 4000 to which has been added one (1) quart of Sherwin Williams Exterior Masonry Paint color SW6133 per gallon of Blox Fill.

7.4.5.1.2. Two (2) finish coats of Sherwin Williams Acrylic Exterior Flat Masonry Paint No. 2210 Wonder-Guard color No. SW6133.

- 7.4.5.2. Interior Wall Surfaces: Exposed surfaces shall receive a paint application as follows:

7.4.5.2.1. Two (2) coats of Sherwin Williams BLOXFIL 4000 to which has been added one (1) quart of Sherwin Williams Interior Vinyl No. 506 color No. SW6126 per gallon.

7.4.5.2.2. One (1) coat of Sherwin Williams ULTRA-HIDE PVA Interior primer-sealer 1030 tinted to color No. SW6126.

7.4.5.2.3. One (1) coat of Sherwin Williams DEVSHIELD 4328 color No. SW6126.

7.4.5.3. Interior Ceiling: Interior ceiling of Control House (underside of concrete roof slabs) shall receive a paint application as follows:

7.4.5.3.1. One (1) coat of Sherwin Williams BOND-PREP Interior/Exterior Waterborne Pigmented Bonding Primer 3030 (White).

7.4.5.3.2. One (1) coat of acrylic white.

7.4.6. Caulking: Caulking compound shall be furnished and applied at all locations indicated on the drawings and where required to close joints and similar openings. The compound shall be silicone or polysulfide type produced by a manufacturer regularly engaged in the manufacture of caulking compounds.

7.4.7. Cleaning: Upon completion of the work, paint, caulking compound, etc., shall be cleaned from all surfaces for which the material was not intended for application. All damaged places shall be touched up and the job shall be left in a first-class workmanlike condition. Particular attention shall be given to surface areas which have been sprayed with paint to see that all dust from spraying operation is thoroughly removed.

7.4.8. Touch-up Paint: Provide one (1) extra gallon of each color to be used for touch-up. The extra gallon must come from the same batch as the original paint.

#### 7.5. AIR-CONDITIONING SYSTEM:

The Contractor shall furnish and install three (3) split system heat pumps as specified in Section IX of these specifications.

7.5.1. Indoor Unit: The blower coil shall be wall mounted inside the Control House in the location shown on the drawings and at a distance of two (2) feet above the floor. The Contractor shall furnish and install all structural steel supporting members, as well as all fasteners necessary for a secure mounting of the unit. The Contractor shall install the indoor unit including all piping, control thermostat, and control wiring. The Contractor shall then complete the electrical conduit connections between the unit and the disconnect safety switch and complete the power wiring to the unit. All electrical and mechanical connections between the indoor unit and the outdoor unit shall go through the wall. The Contractor shall furnish and install an insulated sheet metal duct, with grille, to direct air flow toward the center of the Control House.

7.5.2. Outdoor Unit: The Contractor shall furnish and install the outdoor unit. The unit shall be mounted on a contractor furnished and installed concrete pad of the size and in the location shown on the drawing. The pad shall be installed level. After the Contractor has completed installing the outdoor unit the Contractor shall then complete the electrical conduit connections between the unit and the disconnect safety switch and complete the power wiring to the unit.

#### 7.6. TOILET ROOM ACCESSORIES: Furnish and install accessories as specified:

7.6.1. Paper Towel Dispenser: Bobrick B-263

- 7.6.2. Toilet Paper Dispenser: Bobrick B-6867
- 7.6.3. Mirror: Bobrick B-165 1622
- 7.6.4. Waste Paper Basket: Bobrick B-2270
- 7.7. BATTERY BANK EXHAUST FAN:  
The contractor furnished and installed wall mounted explosion-proof fan above the battery bank shall be as specified in Section IX. The contractor shall install the fan in accordance with the manufacturer's instructions.
- 7.8. BATTERY BANK SAFETY SIGN
  - 7.8.1. Safety signs inside and outside of battery room (both sides of battery room door), prohibiting smoking, sparks, or flame shall be provided. Signs shall be in accordance with ANSI Z535.1-1998, ANSI Z535.2-1998, ANSI Z535.3-1998, ANSI Z535.4-1998, and ANSI Z535.5-1998.
- 7.9. BATTERY CART CABLE ENTRANCE  
  
The Contractor shall furnish and install a 6 inch diameter PVC pipe protruding through the Control House wall to be used as a battery cart cable entrance. The pipe shall be located 2 feet above the Control House floor, in a field-located position convenient to the D.C. panel. The pipe shall be caulked on both sides of the wall for weatherproofing and shall be capped with a clean-out plug on each end.
- 7.10. FIRE EXTINGUISHER  
  
The Contractor shall furnish and install three (3) Class 123 (ABC) dry chemical fire extinguishers, 10 lbs. in the Control House. Fire extinguishers shall be wall-mounted at a location to be field determined.
- 7.11. WINDOW
  - 7.11.1. The Contractor shall furnish and install one (1) fixed-pane window as manufactured by Kawneer Products, and distributed by All Purpose Glass and Mirror, 5555 W. Beaver Street, Jacksonville, Florida. Window shall be Model designation IR501; with 1-5/16" overall glass, which is impact resistant, laminated insulated and tinted. Window frame shall be Bronze in color.
- 8. WATER SUPPLY AND SEWAGE DISPOSAL FACILITIES
  - 8.1. GENERAL REQUIREMENTS  
  
The work of this section includes construction of water supply and sewage disposal facilities to serve the substation.
  - 8.2. WATER SUPPLY  
  
Water supply will be by means of a tap to the existing water main as shown on the plans. Contractor shall install necessary fittings and equipment to attach to water main for a complete water service to the site.
  - 8.3. WATER PIPING

8.3.1. Underground Supply Line: Underground supply line to Control House shall be PVC 1120, Schedule 80, conforming to the latest edition of the following standards:

8.3.1.1. Pipe: ASTM D1785

8.3.1.2. Fittings: ASTM D2466

8.3.1.3. Solvent Cements: ASTM D2564

8.3.1.4. The supply line shall have a minimum cover of 2'6" unless shown otherwise on the drawings.

8.3.2. Riser at Control House: Riser pipe at Control House shall be copper tubing, Type K, in accordance with ASTM B88.

8.3.3. Interior Piping at Control House: Water distribution piping inside the Control House shall be copper tubing, Type L, in accordance with ASTM B88.

#### 8.4. SANITARY SYSTEM PIPING

8.4.1. Drain, Waste and Vent Piping: Drainage piping and fittings within the Control House shall be PVC plastic drain, waste and vent pipe and fittings, Schedule 40, in accordance with ASTM D2665, and shall be NSF-DWV approved. Applicable commercial standard is CS-272-65.

8.4.2. Sewer Piping: Sewer piping shall be PVC pipe and fittings, in accordance with ASTM D3034, SDR 35.

#### 8.5. INSTALLATION OF COPPER WATER PIPING

Copper water tubing shall be installed using soldered or sweated joints, which shall be made with approved fittings. Surfaces to be soldered or sweated shall be cleaned bright. The joints shall be properly fluxed and made with lead free approved solder. Joints in copper water tubing shall be made with the appropriate use of brass or wrought copper water fittings, properly soldered or sweated together. Joints shall be watertight for the pressure required by test.

#### 8.6. WATER VALVES

Water valves shall be installed in accessible places and shall be located as follows: (1) main shut-off valve just outside the building on the service branch; (2) on the supply line as shown on the drawings; (3) shut-off valve on each supply to each fixture not provided with compression stop or with other auxiliary shut-off valve. All shut-off valves shall be bronze with soldered ends and shall be Class A, and Type I, II or III in accordance with Federal Specification No. WW-V-54b. Angle, check and globe valves, if used, shall be bronze valves, Class A, in accordance with Federal Specification No. WW-V-51b; check valves shall be Type IV.

#### 8.7. DRAIN, WASTE AND VENT PIPE INSTALLATION

Drain, waste and vent piping shall be installed according to Appendix A1 of ASTM D2665 for PVC DWV Pipe and Fittings. Plumbing vents exposed to sunlight shall be protected by shielding or lightweight insulation.

#### 8.8. UNDERGROUND SERVICE LINE AND SEWER PIPE INSTALLATION

Underground service line and sewer pipe shall be laid on an unyielding foundation after suitable excavation has been accomplished for uniform bearing under the full length of the barrel of the pipe and not by wedging up or blocking any portion of the pipe. Final grade shall conform accurately to that shown on the drawings. Just before jointing the pipes, the mating ends shall be thoroughly cleaned. Trenches shall be kept free of

water until the pipe jointing material has set. The Contractor shall take all necessary precautions to prevent floatation of the pipe cause by flooding of the trench.

Installation of underground water and sewer lines shall conform to all Duval County Public Health Unit regulations.

8.8.1. TESTS: The following tests shall be made by the Contractor, and all defects indicated by the tests shall be corrected by the Contractor.

8.8.1.1. Sanitary Piping: Before the installation of any fixture, the ends of the system shall be capped and all lines filled with water to the roof and allowed to stand for sufficient time to inspect the joints. After the fixtures are set, a smoke or equivalent test shall be made using an approved apparatus.

#### 8.9. WATER PIPING STERILIZATION

All water pipe shall be thoroughly sterilized prior to being placed in service. Sterilization shall be in accordance with Specification AWWA C601 (latest revision), "Standard for Disinfecting Water Mains."

#### 8.10. PLUMBING FIXTURES

8.10.1. Lavatory: Lavatory shall be Crane Westmont 1320V Vitreous China, modified to omit hot water trim and furnish with C.P. hole cover.

8.10.2. Water Closet: Water closet shall be Crane Deluxe Radcliffe 3944, with Beneke 523 SS NCH white solid plastic open front seat with self-sustaining check hinge.

8.10.3. Eye/Face Wash Head: Eye/Face Wash Head (wall mounted) shall be installed in the location shown on the drawings. Unit shall be Model SE-490-PT, with p-trap as manufactured by the Speakman Co. Contractor shall furnish and install a sign, mounted on the wall above the eye/face wash head. The sign shall be plastic, with one-inch white letters on a red background, and shall read "Eye Wash - Emergency Use Only."

8.10.4. Wall Hydrants (hose bibs): Wall hydrant shall be Wade W-8604-L\_\_\_ 3/4", nickel bronze finish with loose key stop and vacuum breaker.

#### 8.11. SEWAGE DISPOSAL FACILITIES

Sewage disposal shall consist of a septic tank, dosing tank and drainfield. Sewage system shall include all associated piping and equipment for a complete installation as shown and detailed on the plans. The Sewage Disposal System shall conform to all Duval County Public Health Unit regulations.

#### 8.12. PERMITS, CERTIFICATES AND LAWS

The Contractor shall, at his own expense, procure all permits and licenses required by County, State, and Federal laws for lawful performances of the required work in connection with the water supply and sewage disposal facilities of these documents.

### 9. PAVING AND DRAINAGE

#### 9.1. SCOPE

The work specified in this Subsection consists of constructing a substation roadway with 1-1/2 inch asphaltic concrete surface on a 6 inch limerock or granite base and stabilized subgrade. The work also includes installation of drainage facilities.

## 9.2. FAMILIARIZATION

Prior to bidding the work of this Subsection, the Contractor shall become thoroughly familiar with the site conditions and all portions of the work falling within this Subsection.

## 9.3. PAVING: All workmanship, materials, equipment and plant shall be in accordance with the applicable sections of the Florida DOT Standard Specifications for Road and Bridge Construction, Latest Edition, and referred to hereinafter as Standard Specifications. The sections of the above mentioned specifications which are applicable are listed below. Additional compensation for adjustment of quantities due to extra thickness of base construction or extra application of materials will not be made.

9.3.1. Muck Removal: Muck or other unsuitable material shall be removed and the excavated area backfilled in accordance with the applicable requirements of Section VIII, Subsection 1 of these specifications.

9.3.2. Stabilization: The top 12 inches of the subgrade shall be stabilized (Type B) to a Granite or Limerock Bearing Ratio (LBR) of 40 in accordance with Section 160 of the Standard Specifications. The stabilized area shall be compacted to 98% of the maximum density as determined by FM 1-T 180, Method D (FDOT 2014 Spec Book (Standard Specifications), Page 206, Section 200-7.2.1).

Base Course: A granite (preferred) or limerock base course shall be constructed in accordance with Section 200 of the Standard Specifications and shall be compacted to 98 percent of maximum density as determined by FM 1-T 180, Method D (FDOT 2014 Spec Book (Standard Specifications), Page 206, Section 200-7.2.1). Note: JEA will not allow the Contractor to use a CFB Hydrated Ash (EZBase) for base course construction.

9.3.3. Prime Coat: Materials and method of application for the prime coat shall conform to Section 300 of the Standard Specifications.

9.3.4. Asphaltic Concrete Surface: The surface course shall be FDOT Type S-P-12.5 asphaltic concrete structural course for Traffic Level A in accordance with Section 320,330 and 334 of the Standard Specifications.

9.3.5. Plant, Methods and Equipment: The plant and methods of operations for preparing all plant-mixed hot bituminous mixtures for surface courses and bases, and the requirements for the equipment to be used in the construction of the pavements and bases shall be in accordance with Section 320 of the Standard Specifications.

9.3.6. General Construction Requirements: The general construction requirements for all plant-mixed hot bituminous pavements and bases shall be in accordance with Section 330 of the Standard Specifications.

## 9.4. TESTING

The stabilized subgrade shall be tested for density and LBR, and the base course tested for density at approximately 200 foot intervals. Density tests may be performed using AASHTO T191-61 or ASTM D2922. The Contractor shall employ, at his expense, an independent testing laboratory to do all testing for pavement.

Two (2) copies of all test reports shall be submitted to the Engineer.

## 9.5. INVERTED CROWN

As part of the stormwater management design, the outer paved substation roadways have been designed with an inverted crown for the purpose of conveying stormwater runoff to catch basins. It is imperative that the roadway paving meets the inverted crown slopes as shown on the plans. The interior paved access



roads will have a normal crown peaking in the middle of the paved interior access roads. The Contractor shall use proper paving equipment to accomplish all of the above.

Culverts: Contractor to obtain the Engineer's approval of the method of controlling line and grade during culvert installation. Use a method that allows rapid checking of the previously laid sections. Maintain line and grade on sections previously set. The Engineer will consider sections which do not retain the plan line within 0.10 foot or grade within 0.10 foot during laying of subsequent sections, as not having been laid to line and grade. Take up and relay sections not to line and grade without additional compensation.

## 9.6. DRAINAGE FACILITIES

All drainage facilities shall be constructed in accordance with the plans, City Standard Specifications and City Standard Details or FDOT Design Standards of the most current year for any index number referenced. The JEA will obtain the Stormwater Management Permit from St. Johns River Water Management District. All drainage facilities are to be placed to the nearest tenth of a foot except for the stormwater control structure which by law has to be accurate to the hundredth of a foot.

9.6.1. Drain Pipe: Storm Drain pipes shall be Class V Reinforced Concrete Pipe or PVC DR-18, bell and spigot, in accordance with AWWA Standard C-900 can be used for pipes 12 inches or smaller, as indicated on the plans.

9.6.1 PVC: PVC pipe shall conform to ASTM D1785, Schedule 80.

9.6.2. Inlets: Reinforced concrete storm inlets shall be Types "C", "D", "E" or "H" as indicated on the drawings, and shall be constructed in accordance with Plates D-207, D-208 and D-209 of the City Standard Details.

9.6.3. Inlet Grates: Grates for storm inlets shall be traffic bearing in accordance with Plate D-304 of the City Standard Details.

9.6.4. Mitered End Sections: Reinforced concrete mitered end sections shall be constructed in accordance with Plate D-435 of the City Standard Details or as shown on the plans.

## 10. CHAIN-LINK FENCING

### 10.1. GENERAL

All materials and installation required shall conform to the following specifications:

10.1.1. Tolerance: Standard mill tolerances shall be used for all framework members and chain-link fabric.

10.1.2. Height: The total height of the substation perimeter fence shall be nine (9) feet above grade when erected. In the case of installations of additional fence components to existing substations, the height of the new fence components shall match existing, unless directed otherwise by the project engineer or field representative.

10.1.3. Style: The substation perimeter fence shall be the three-barb wire style in strict accordance with the specifications. Any suggested change or deviation from the specifications or any detail in which the product or service of any bidder differs from that specified shall be fully covered in a letter accompanying the bids.

10.1.4. Zinc Coating (Galvanizing): All fabric, posts, and fittings used in the construction of this fence shall be hot-dipped galvanized according to the following ASTM Standards:

10.1.4.1. Fabric: ASTM A392, Class 2. (minimum of 2.0 oz. coating per square foot of surface).

10.1.4.2. Posts, Rails and Gate Frames: ASTM F1083. (minimum of 1.8 oz. coating per square foot of surface).

10.1.4.3. Fittings: ASTM F626, pressed steel type. (minimum of 1.2 oz. coating per square foot of surface).

## 10.2. FENCING

10.2.1. Fabric: The fabric shall be galvanized steel chain-link 96 inches high, No. 9 gauge wire woven in a 2 inch mesh. Selvages of the fabric shall have a twisted and barbed finish.

10.2.2. Fabric Connections: The chain link fabric shall be securely fastened to all terminal posts using 3/16" x 3/4" tension bars and heavy 11 gauge tension bands. There shall be one band for each foot in the height of the fence. The fabric shall be fastened to all intermediate posts with 9 gauge tie wires, spacing not to exceed fourteen (14) inches; ties to top rail not to exceed 24 inch spacing.

10.2.3. Bottom Tension Wire: The bottom tension wire shall be No. 7 gauge galvanized spring coil or crimped wire stretched taut from terminal post and securely fastened to each intermediate post six (6) inches above the grade line. Tension wire shall be attached to the fence fabric with galvanized hog rings every twenty-four (24) inches.

10.2.4. Barbed Wire: Furnish three lines of high strength galvanized steel barbed wire which is to be of the four-point pattern composed of two strands of 15-1/2 gauge line wires with barbs spaced on approximately 5-inch centers.

10.2.5. PVT Slats: Dark green PVT slats shall be installed for full height of all fence fabric along the entire perimeter fence line unless indicated otherwise. PVT slats shall be 1-1/8" wide, 9 gauge, flat tubular plastic extrusions as manufactured by Patrician Products, 100 Frank Road, Hicksville, NY 11801, Telephone: (516) 937-3580.

## 10.3. FRAMEWORK

10.3.1. Intermediate Posts: The intermediate posts shall be 2-1/2" o.d. hot-dipped galvanized steel pipe weighing 3.65 pounds per lineal foot or heavier.

10.3.2. Terminal Posts: All end, corner, and pull posts shall be hot-dipped galvanized steel pipe three (3) inches o.d. standard weight pipe, nominal weight 5.79 pounds per lineal foot.

10.3.3. Gateposts: Posts for swing gates shall be hot-dipped galvanized standard weight pipe of the following nominal sizes and weights for each leaf:

10.3.3.1. Gate leaf up to six (6) feet wide: 2-7/8 inches o.d., weight 5.79 pounds per lineal foot.

10.3.3.2. Gate leaf over six (6) feet to thirteen (13) feet wide: four (4) inches o.d., weight 9.1 pounds per lineal foot.

10.3.3.3. Gateposts shall be equipped with tops so designed to exclude moisture from the post.

10.3.4. Post Spacing: Posts shall be evenly spread in the line of fence no farther apart than ten (10) feet on center.

10.3.5. Post Settings: The perimeter fence posts shall be of sufficient length to extend thirty-six (36) inches into concrete footings.

- 10.3.6. Top Rail: The top rail shall be 1-5/8" o.d., standard weight pipe, weighing 2.27 pounds per lineal foot, hot-dipped galvanized, provided with couplings approximately every twenty (20) feet. Couplings are to be outside sleeve type at least seven (7) inches long. The top rail is to pass through the line post tops and form a continuous brace from end to end of each stretch of fence. The top rail shall be securely fastened to the terminal posts by heavy pressed steel brace bands and malleable rail end connections.
- 10.3.7. Braces: Brace pipe shall be the same as top rail and shall be installed midway between the top rail and the ground and extend from the terminal post to the first adjacent line post. Braces shall be securely fastened to posts by heavy pressed steel and malleable fittings, then securely trussed from line post to base of terminal post with a 3/8" truss rod and tightener.
- 10.3.8. Intermediate Post Tops: Intermediate post tops shall be of pressed steel or malleable iron base. When barb wire is specified, the base is to include pressed steel extension arms to accommodate the number of barbs specified. The three-barb style is to extend at a 45° angle outward from the fence line. The barb wire arms shall support a minimum of 400 pounds vertical dead load from tip of arm.
- 10.3.9. Gate frames shall be two (2) inches o.d. standard weight pipe, weight 2.72 pounds per lineal foot. Gates may be fabricated using welded construction of heavy pressed steel or malleable corner fittings securely riveted. All construction shall be in a workmanlike manner performed by personnel experienced in the trade. Gates shall be properly braced to eliminate any possible sagging condition. Hinges shall be of sufficient strength and design to permit easy and trouble-free operation. All gates shall be equipped with a positive type latching device with a means for padlocking. All drive gates shall be equipped with center plunger rods, catch and semi-automatic outer catches to secure gates in open position. Gates shall be surmounted by three (3) strands of barbed wire, supported vertically one above the other. Top strand to match adjacent barbed wire. All cantilever gates shall have gate rollers UHMW with stainless steel shafts with roller guards. All cantilever gates shall have hard rubber nose wheel carriers ASM-DB-IND 12 inches x 8 inches with gate latch/catch. Contractor shall submit details for all proposed gates to Project Engineer or field representative for approval.

#### 10.4. INSTALLATION

Installation shall be made in a workmanlike manner by skilled mechanics experienced in erection of this type fence. The fence shall be erected on line and to grade as provided by Owner.

- 10.4.1. All posts are either cast in top of the retaining wall or shall be set in concrete foundations at a minimum depth of thirty-six (36) inches below rock. Diameter of the foundation shall be a minimum of nine (9) inches, except for gateposts on which the minimum diameter shall be three times the outside diameter of the gatepost. Concrete shall have a minimum strength of 2500 psi. All foundations shall extend approximately one (1) inch above grade and shall slope away from the post to provide for proper drainage. The fabric and barb wire shall be stretched to proper tension between terminal posts and securely fastened to the framework members. The bottom of the fabric shall be held as uniformly as possible at a height not exceeding 1-1/2" to finished grade.

#### 10.5. GROUNDING

For fence grounding, see Section IX.

#### 10.6. CLEAN-UP

Upon the completion of the installation, all debris created by the installation shall be removed from the premises of the Owner or disposed of as directed by his agents.

### 11. GRASSING

#### 11.1. SCOPE

A stand of grass shall be established on all areas as shown on the drawings plus any other areas where the existing grass is disturbed by construction activity exclusive of paved or rocked areas. Grass shall be established by seeding, seeding and mulching or by sodding as noted on the drawings. The work shall include maintaining the grassed areas until final acceptance of the project.

#### 11.2. MATERIALS AND CONSTRUCTION METHODS

11.2.1. The following section of the most current edition of Florida DOT Standard Specifications shall govern the materials and construction methods used by the Contractor for Grassing.

11.2.1.1. Performance Turf: 570

11.2.2. In lieu of the type of fertilizer called for in the Standard Specifications, the fertilizer shall be 6-6-6, fifty (50) percent organic applied at the rate of 20 pounds per 1000 square feet.

#### 11.3. MAINTENANCE

The Contractor shall, at his expense, maintain the grassed areas in a satisfactory condition until final acceptance of the project.

##### 11.3.1. Work Included:

11.3.1.1. Watering, weeding, cultivating, spraying and mowing necessary to keep the grassed areas in a healthy growing condition and to keep these areas neat and attractive throughout the maintenance period.

11.3.1.2. Provide equipment and means for proper application of water to those areas not equipped with an irrigation system.

11.3.1.3. Filling, leveling and repairing of any washed or eroded areas, as may be necessary.

##### 11.3.2. Replacements:

11.3.2.1. At the end of the maintenance period, all grassed areas shall be in a healthy growing condition.

11.3.2.2. During the maintenance period, should the appearance of any grass indicate weakness and probability of dying, immediately replace that area of grass without additional cost to the Owner.

11.3.2.3. Replacements required because of vandalism or other causes beyond control of the Contractor shall be paid for by the Owner.

#### 11.4. RESTORATION

- 11.4.1. The Contractor shall, at his expense, restore any vegetative areas damaged during construction to conditions that existed prior to the project. The Contractor will be required to restore area to proper grade, properly amend soil and install vegetation that matches surrounding and/or pre-existing conditions. Contractor shall water area as necessary to permanently establish new vegetation.

## 12. TRANSMISSION RIGHT OF WAY CLEARING

- 12.1. Survey: The Contractor's Surveyor shall stake out the clearing limits of the JEA right-of-way. This shall include setting iron pipes at any right-of-way corners where monumentation does not exist. The accuracy of this operation is critical to the success of this project.
- 12.2. Total Clearing: Total clearing of the JEA right-of-way shall be accomplished within the areas designated on the construction drawings where the new patrol road and/or transmission line is to be installed. Contractor shall remove all brush, scrub growth, trees, debris, rubbish and other obstructions. All trees standing 20 feet tall and higher, and existing tree stumps if present, shall be cut to ground level. All smaller trees, brush, and scrub growth shall also be cut at the ground line. Prior to cutting any trees contractor shall remove any metal tags, which are attached to protected trees, and deliver the tags to the JEA field Representative. Complete removal and disposal in accordance with the provisions of this specification, of all standing trees including their root systems along with all brush, bushes, shrubs, stumps, vines, as well as other logs, trees cut by others, wood fencing, wood structures, debris, rubbish and all other obstructions to the work.
- 12.3. Stump Removal: All stumps and roots larger than 2 inches in diameter shall be removed to a depth at least 2 feet below the existing ground surface within the areas designated for Patrol Road construction and roadside ditches. Stumps outside the patrol road ditches, but within the limits of construction, shall be ground down to ground level and all wood chips and debris removed from the project by the contractor.
- 12.4. Trimming: All branches overhanging more than 3 feet into the total clearing zone shall be trimmed to a line drawn vertically at the limit of total cleaning and all trimmings removed by the contractor.
- 12.5. Mowing: All upland grassy areas of the new rights-of-way shall be mowed.
- 12.6. Protection of Existing Improvements: Contractor shall exercise proper care not to destroy or otherwise damage those existing improvements which are to remain. Any damage to such improvements shall be immediately repaired by the Contractor at no additional cost to the JEA.
- 12.7. Disposal of Materials: Disposal of materials resulting from right-of-way clearing and from demolition of designated improvements shall consist of:
  - 12.7.1. All trees, stumps, roots, root mat, branches, brush, slash, shrubs, logs, vines, wood fencing, wood structures and other debris or obstructions that are the products of the clearing or demolition work shall be completely removed from the Owner's property.
  - 12.7.2. Any saleable timber that is cleared may be sold by the Contractor for his own benefit.
  - 12.7.3. In the event a chipper is used, the residue shall be completely removed from the Owner's property.
  - 12.7.4. Burning of materials is not permitted.

## 13. TRANSMISSION PATROL ROAD

- 13.1. Survey: The Contractor SHALL engage the services of a State of Florida Registered Land Surveyor to stake out the baseline of patrol road construction.
- 13.2. Patrol Road Construction: New patrol road shall be constructed in areas as shown on the drawings and as per the requirements of these specifications and the construction plans.

- 13.3. Alignment: Generally, the patrol road alignment shall be as shown on the plans; however, minor variations will be allowed in order to minimize stump or muck removal and/or cutting or filling. Such changes shall require prior approval of the Project Engineer. Typical cross sections of the patrol road are shown on the plans.
- 13.4. Soil Borings: Soils information is provided in Attachment 3, Soil Boring Reports, of this specification; however, it is the responsibility of the Contractor to make such examination of the site of the work as may be necessary to become informed of the conditions under which the work is to be performed and to obtain additional core borings, if deemed necessary.
- 13.5. Excavation of unsuitable material:
- 13.5.1. De-Mucking: Wetland areas where muck was located by the geotechnical exploration have been called out in the plans for Tensar TriAx TX140 geogrid stabilization by stationing along the centerline of Patrol Road. The Contractor will excavate a two feet deep by fourteen feet wide trench along the entire length of Patrol Road construction and backfill with suitable borrow material. As an alternative to excavation of muck below this two foot by fourteen foot wide trench, the Contractor may surcharge sufficient embankment material to displace the muck. If the JEA Field representative deems it necessary, the contractor will remove more muck at the unit price set up in the schedule of values prior to award. JEA will not pay for extra de-mucking without prior approval.
- 13.5.1.1. The extent and depth of muck (if any) along the right-of-way is not fully known, however, see Attachment 3 - Soil Boring Reports. It shall be the responsibility of the Contractor to make such investigation as necessary to determine the scope of muck removal operations which might be required.
- 13.5.1.2. In general, muck or other excavated materials unsuitable for patrol road construction shall become the property of the Contractor and shall be disposed of by him outside the right-of-way. However, when approved by the Field Representative, the Contractor may dispose of such material on the right-of-way, provided that:
- There is a clear distance of at least six (6) feet between the patrol road grading limits and the spoil material.
  - The flow of any channel or drainage ditch is not impeded.
  - Material is not deposited within one hundred (100) feet of the proposed location of any transmission structure.
  - The material is so placed as to not exceed two (2) feet in height in upland areas but no material will be disposed of in the along wetlands along this project.
- 13.6. Embankment Material: Embankments shall be constructed of sand/clay material (A-2 to A-3) containing no muck, stumps, roots, brush, vegetable matter, rubbish or other material that will not compact into a suitable and enduring roadbed. All suitable material resulting from the excavation of roadside ditches may be used as far as practical in construction of the patrol road. When sufficient quantity of suitable material is not available from drainage excavation, the Contractor shall obtain additional material from outside the right-of-way in borrow areas furnished by him. The Contractor shall provide and maintain at his own expense all necessary roads for hauling fill material.
- 13.6.1. Embankment Construction: Embankments shall be constructed by placing suitable material in successive layers of not more than 12 inches in thickness, loose measure, for the full width of the patrol road. Each layer shall be compacted to such a degree that the soil will support heavy hauling equipment without creating permanent ruts or depressions. Where the material is deposited in water, or on low swampy ground that will not support the weight of hauling equipment; the fill shall be constructed by dumping successive loads in a uniformly distributed

layer of thickness not greater than necessary to support the hauling equipment while placing subsequent layers.

- 13.7. Stabilization: The Contractor is responsible for the stabilization needed to perform his work on this project. After the completion of the clearing and transmission line construction, the patrol road grade shall have a tolerance of plus or minus one tenth (0.10') of a foot for final acceptance by JEA.

13.7.1. Geogrid Stabilization: Tensar TriAx TX140 geogrid has been specified in the plans and specs for stabilization in areas where the geotechnical exploration found muck. This stabilization will be provided in two layers as described here. The bottom layer of Tensar TriAx TX140 geogrid is to be placed on top of natural soil at the bottom of the two feet deep by fourteen foot wide excavation trench that extends below the entire length of the Patrol Road Construction. On top of this bottom layer of Tensar TriAx TX140, place eighteen inches of fill according to Section 4.6 and compact according to 4.6.1. On top of this eighteen inch layer of fill, place the top layer of Tensar TriAx TX140 geogrid. Continue embankment construction according to Sections 4.6 and 4.6.1 until the design elevation shown in the plans is reached. The excavation trench runs the entire length of the patrol road but this geogrid system of stabilization will be constructed as described by stationing shown in the patrol road plans along the centerline Patrol Road baseline. See also typical section shown on plans.

13.7.2. Bearing Value: The top six (6) inches of the roadway shall be stabilized to a Granite or Limerock Bearing Ratio (LBR) of 40 in accordance with Section 160 of the DOT Standard Specifications for Stabilization. It is the Contractor's responsibility that the finished roadbed meets the bearing value requirements regardless of the quantity (if any) of stabilizing material necessary to be added. In stabilized areas, the minimum density acceptable at any location will be 93% of the maximum density as determined by AASHTO T-180, Test Method C.

13.7.3. Density: Test for density and bearing value requirements shall be made at locations selected by the Field Representative at approximately 500 foot intervals by an independent testing laboratory. An under tolerance of 5 from the specified bearing value will be allowed; however, the average of 5 consecutive tests shall not be less than the specified value. All costs of testing or re-testing shall be borne by the Contractor. Three copies of test reports shall be submitted to the Contract Administrator.

13.7.4. The Contractor shall maintain all road construction throughout the life of the Contract, and shall take all reasonable precautions to prevent loss of material from the patrol road due to the action of wind or water. Any and all material migrating from construction activity to wetlands will be removed from the wetlands at the contractor's expense. He shall repair at his own expense any slides, washouts, settlement, subsidence, or other mishap which may occur prior to final acceptance of work. The patrol road will not be accepted before completion of the entire project including installation of the transmission line.

- 13.8 Testing for Soils: The Contractor shall employ an approved independent laboratory to do all testing. Two copies of test reports shall be submitted to the Engineer.

13.8.1. Soil Properties: The Contractor shall submit an analysis of borrow material proposed for site fill including the following tests:

13.8.1.1. Particle Size Analysis of Soils (per AASHTO T88) and Permeability of Granular Soils – Constant Head (per AASHTO T215).

Three (3) additional Particle Size and Permeability tests shall be performed on truck loads of fill material randomly selected by the Field Representative. If any of the truck loads tested does not comply with the A-3 group of AASHTO M145 containing less than 5% fines, the material shall be rejected, and the Contractor shall perform six (6) additional sets of tests on material in place. Any material in place that

does not comply with the A-3 group of AASHTO M145 containing less than 5% fines shall be removed and replaced with acceptable material at no additional cost to the Owner. The Contractor shall pay for all of the above testing.

- 13.9. Grassing: A stand of grass shall be established on all areas of patrol road construction plus any other areas where the existing grass is disturbed by construction activity. Grass shall be established by seeding, seeding and mulching or by sodding as noted on the drawings. The work shall include maintaining the grassed areas until final acceptance of the project. Any slopes steeper than 3:1 that are not concrete or paved must be sodded.

- 13.9.1. Materials and Construction Methods: The following sections of the most current edition of Florida DOT Standard Specifications shall govern the materials and construction methods used by the Contractor. The year 2010 FDOT Standard Specifications can be found on the internet at <http://www.dot.state.fl.us/specificationsoffice/Implemented/specbooks/2010bk.shtm>

- Seeding: 570
- Seeding and mulching: 570
- Sodding: 575

In lieu of the type of fertilizer called for in the Standard Specifications, the fertilizer shall be 6-6-6, fifty (50) percent organic applied at the rate of 20 pounds per 1000 square feet. Disregard Section 570-3.2 about wild flowers and plant only grass seed.

- 13.9.2. Maintenance: The Contractor shall, at his expense, maintain the grassed areas in a satisfactory condition until final acceptance of the project. This will include but is not limited to:

- Watering, weeding, cultivating, spraying and mowing necessary to keep the grassed areas in a healthy growing condition and to keep these areas neat and attractive throughout the maintenance period.
- Provide equipment and means for proper application of water to those areas not equipped with an irrigation system.
- Filling, leveling and repairing of any washed or eroded areas, as may be necessary.

- 13.9.3. Replacements: At the end of the maintenance period, all grassed areas shall be in a healthy growing condition.

13.9.3.1. During the maintenance period, should the appearance of any grass indicate weakness and probability of dying, immediately replace that area of grass without additional cost to the Owner.

13.9.3.2. Replacements required because of vandalism or other causes beyond control of the Contractor shall be paid for by the Owner.

- 13.10. Restoration: The contractor shall, at his expense, restore any vegetative areas damaged during construction to conditions that existed prior to the project. The contractor will be required to restore area to proper grade, properly amend soil and install vegetation that matches surrounding and/or pre-existing conditions. Contractor shall water area as necessary to permanently establish new vegetation.

13.11. Drainage Features

- 13.11.1. Reinforced Concrete Pipe: The pipe culvert strength for the Patrol Road construction is to be ASTM (C76) Class V.

- 13.11.2. Culverts: Contractor to place all culverts to the nearest 0.1 foot of the design elevation. Contractor to maintain line and grade on sections previously set. The Engineer will consider sections which



do not retain the plan line within 0.10 foot or grade within 0.10 foot during laying of subsequent sections, as not having been laid to line and grade. Take up and relay sections not to line and grade without additional compensation.

## 14. REFERENCE

### 14.1. Related Sections

- 14.1.1. Specific Instructions (Section VII)
- 14.1.2. Technical Specifications (Section IX) – Electrical
- 14.1.3. JEA Overhead Electric Distribution Standards (JEA OH) ([www.jea.com](http://www.jea.com))
- 14.1.4. JEA Underground Electric Distribution Standards (JEA UG) ([www.jea.com](http://www.jea.com))

### 14.2. Reference

14.2.1. The latest edition and published addenda of the referenced publications herein effect on the date of Contract Award are a part of this Section and, where referred to by title or by basic designation only, are applicable to the extent indicated by the specific reference:

- A. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. M 43 - Standard Specification for Sizes of Aggregate for Road and Bridge Construction
  - 2. M 145 - Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
  - 3. T 99 – Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop
  - 4. T 180 - Moisture-Density Relations of Soils Using a 10-lb Rammer and 18-inch Drop
  - 5. T 191 - Standard Method of Test for Density of Soil In-Place by the Sand Cone Method
- B. American Concrete Institute (ACI):
  - 1. 117 – Specification for Tolerances for Concrete Construction and Materials
  - 2. 229R - Report on Controlled Low-Strength Materials
  - 3. 301 - Specifications for Structural Concrete
  - 4. 304R - Guide for Measuring, Mixing, Transporting and Placing Concrete
  - 5. 305R - Hot Weather Concreting
  - 6. 306R - Cold Weather Concreting
  - 7. 309R - Guide for Consolidation of Concrete
  - 8. 318 - Building Code Requirements for Structural Concrete
  - 9. 347 - Guide to Formwork for Concrete

10. 530/530.1 – Building Code Requirements and Specification for Masonry Structures
- C. American Institute of Steel Construction (AISC):
1. 303 - Code of Standard Practice for Steel Buildings and Bridges
- D. American National Standards Institute (ANSI):
1. A 185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
- E. American Society for Testing and Materials (ASTM) International:
1. A 36 - Standard Specification for Carbon Structural Steel
  2. A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
  3. A 123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
  4. A 153 - Specification for Zinc Coating (Hot-Dip) on iron and Steel Hardware
  5. A 185 - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
  6. A 370 - Standard Test Methods and Definitions for Mechanical Testing of Steel Products
  7. A 497 - Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
  8. A 563 - Standard Specification for Carbons and Alloy Steel Nuts
  9. A 615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement
  10. A 653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
  11. A 706 - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
  12. A 780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
  13. A 924/A 924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
  14. A 992 - Standard Specification for Structural Steel Shapes
  15. B 695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
  16. C 5 – Standard Specification for Quicklime for Structural Purposes
  17. C 29 - Standard Test Method for Bulk Density (Unit Weight) and Voids in Aggregate

18. C 31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field
19. C 33 - Standard Specification for Concrete Aggregates
20. C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
21. C 40 - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete
22. C 42 - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
23. C 88 - Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
24. C 90 – Standard Specification for Loadbearing Concrete Masonry Units
25. C 91 – Standard Specification for Masonry Cement
26. C 94 / C94M - Standard Specification for Ready Mixed Concrete
27. C 109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in. or 50 mm Cube Specimens)
28. C 117 - Standard Test Method for Materials Finer Than 75  $\mu\text{m}$  (No. 200) Sieve in Mineral Aggregates by Washing
29. C 123 - Standard Test Method for Lightweight Particles in Aggregate
30. C 127 - Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
31. C 128 - Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
32. C 131 - Standard Test Method for Resistance to Degradation of Small Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
33. C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
34. C 138 - Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
35. C 142 - Standard Test Method for Clay Lumps and Friable Particles in Aggregates
36. C 143 - Standard Test Method for Slump of Hydraulic Cement Concrete
37. C 144 – Standard Specification for Aggregate for Masonry Mortar
38. C 150 - Standard Specification for Portland Cement
39. C 172 - Standard Practice for Sampling Freshly Mixed Concrete
40. C 173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method

41. C 192 - Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
42. C 207 – Standard Specification for Hydrated Lime for Masonry Purposes
43. C 231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
44. C 260 - Standard Specification for Air Entraining Admixtures for Concrete
45. C 270 – Standard Specification for Mortar for Unit Masonry
46. C 289 - Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)
47. C 309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
48. C 403 – Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance
49. C 404 – Standard Specification for Aggregates for Masonry Grout
50. C 451 - Standard Test Method for Early Stiffening of Hydraulic Cement (Paste Method)
51. C 470 - Standard Specification for Molds for Forming Concrete Test Cylinders Vertically
52. C 476 – Standard Specification for Grout for Masonry
53. C 494/C494M - Standard Specification for Chemical Admixtures for Concrete
54. C 535 - Standard Test Method for Resistance to Degradation of Large Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
55. C 566 - Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
56. C 617 - Standard Practice for Capping Cylindrical Concrete Specimens
57. C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
58. C 920 - Standard Specification for Elastomeric Joint Sealants
59. D 994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)
60. C 1064 – Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
61. C 1077 - Standard Practice for Laboratories Testing Concrete, and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
62. C 1218 - Standard Test Method for Water-Soluble Chloride in Mortar and Concrete

- 63. C 1602 - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
- 64. D 422 - Standard Test Method for Particle-Size Analysis of Soils
- 65. D 448 - Standard Classification for Sizes of Aggregate for Road and Bridge Construction
- 66. D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>))
- 67. D 854 – Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer
- 68. D 994 – Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)
- 69. D 1140 - Standard Test Methods for Determining the Amount of Material Finer Than 75  $\mu$ m (No. 200 Sieve) in Soils by Washing
- 70. D 1556 – Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method
- 71. D 1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>))
- 72. D 1751 - Standard Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
- 73. D 1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
- 74. D 2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
- 75. D 2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- 76. D 2488 - Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)
- 77. D 2940 - Standard Specification Graded Aggregate Material for Bases or Subbases for Highways or Airports
- 78. D 3282 - Standard Practice for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
- 79. D 3740 – Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
- 80. D 4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- 81. D 4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus
- 82. D 4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles

83. D 4595 - Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
  84. D 4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
  85. D 4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile
  86. D 4832 – Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders
  87. D 5199 – Standard Test Method for Measuring the Nominal Thickness of Geosynthetics
  88. D 5261 – Standard Test Method for Measuring Mass per Unit Area of Geotextiles
  89. D 6241 – Standard Test Method for the Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe
  90. D 6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
  91. E 4 - Standard Practices for Force Verification of Testing Machines
  92. F 436 - Standard Specification for Hardened Steel Washers
  93. F 1554 - Standard Specification for Anchor Rods, Steel, 36, 55, and 105-ksi Yield Strength
- F. American Society of Civil Engineers (ASCE):
1. 5-11/6-11 - Building Code Requirements and Specifications for Masonry Structures.
  2. 7-10 – Minimum Design Loads for Building and Other Structures
- G. American Welding Society (AWS):
1. D1.1 - Structural Welding Code - Steel
- H. Concrete Reinforcing Steel Institute (CRSI):
1. MSP-2-01 - Manual of Standard Practice
- I. National Ready Mixed Concrete Association:
1. Certification of Ready-Mixed Concrete Production Facilities
- J. The Society for Protective Coatings (SSPC):
1. PA-1 - Shop, Field, and Maintenance Painting of Steel
  2. SP-6 - Commercial Blast Cleaning
- K. U.S. Army Corps of Engineers:
1. CRD-C572 - Specifications for Polyvinyl Chloride Waterstops

- L. U.S. Department of Labor, Occupational Safety and Health Administration Standards (OSHA):
  - 1. 29 CFR, Part 1926, Safety and Health Regulations for Construction, Standard Number: 1926.652, Requirements for Protective Systems, Subpart P – Excavations
  - 2. 29 CFR, Part 1926, Safety and Health Regulations for Construction, Standard Number: 1926.652, Requirements for Protective Systems, Subpart T – Demolition
- M. 2010 Florida Building Code
- N. City of Jacksonville, Florida (COJ)
  - 1. Land Development Procedures Manual
  - 2. City Standard Specifications, Department of Public Works
- O. Florida Department of Environmental Protection:
  - 1. Florida Stormwater Erosion and Sedimentation Control Inspector's Manual
  - 2. State of Florida, Erosion and Sediment Control, Designer and Reviewer Manual
- P. Florida Department of Transportation:
  - 1. FM 5-515 - Florida Method of Test for Limerock Bearing Ratio (LBR)
  - 2. Standard Specifications for Road and Bridge Construction
- Q. Florida Administrative Code:
  - 1. 62-621 – Generic Permits
  - 2. 62-701 – Solid Waste Management Facilities
  - 3. 62-710 – Used Oil Management
  - 4. 62-711 – Waste Tire Rule
  - 5. 62-730 – Hazardous Waste

14.2.2. Where the codes and standards referenced herein contain recommendations in addition to requirements, consider the recommendations as requirements and follow unless stated otherwise by this Specification.

14.2.3. In the event of any conflict between codes, or this Specification and codes, the more stringent requirement applies.

### SECTION III - TECHNICAL SPECIFICATIONS - ELECTRICAL

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## SECTION IX - TECHNICAL SPECIFICATIONS - ELECTRICAL

### **1. SWITCHYARD ELECTRICAL EQUIPMENT**

#### **GENERAL**

This is a general specification and covers the equipment required for substation construction. Separate Sections of these Specifications provide further information for High Voltage Transmission Systems, Distribution-class Duct Bank Systems, and Metal-Clad Switchgear, where applicable. Any equipment listed which does not apply to this particular project shall be disregarded. The Drawings shall be used to determine the exact quantity and type of equipment intended for use on this project. In case of discrepancy, the Drawings shall be taken in all cases.

#### **1.1. SCOPE**

This Section covers labor, equipment, and material requirements for the installation of the switchyard electrical equipment. The Contractor shall erect in place, test, and leave ready for service, the facilities shown on the Drawings and herein specified. The Contractor shall also have responsibilities for receiving, off-loading, and transporting certain structures, equipment, and miscellaneous materials as called for in this Specification. The Contractor shall furnish and install materials and equipment only as specified or approved by the Project Engineer.

#### **1.2. STANDARDS**

The installation covered by these Specifications shall conform to the practices set forth in the latest edition of the National Electrical Code (NEC) and the National Electrical Safety Code (NESC), unless otherwise specified in these Plans and Specifications.

#### **1.3. MATERIALS**

- 1.3.1. All Contractor furnished materials, unless otherwise indicated, shall be new, of the first quality and of the proper type for use intended. When applicable, all material will be in accordance with the latest published NEMA Standards and/or carry the approval of the Underwriter's Laboratories.
- 1.3.2. The use of a manufacturer's trade name and catalog number is intended to indicate preference. Products of reputable manufacture, equal quality, and functional type may be used only after stamped approval by the Project Engineer.
- 1.3.3. Owner furnished items, with a general description of the items and their storage location, are listed in the Attachments at the end of this Specification. The Contractor shall coordinate the receiving of the items with the Project Representative. It is the Contractor's responsibility, unless otherwise specified, to furnish labor and equipment for loading, for transporting, and for off-loading the items at the job site.
- 1.3.4. All material and equipment stored on the substation site or other areas including Owner furnished material and equipment, shall be in the care, custody, and control of the Contractor. The Contractor shall be responsible for any necessary repairs or replacement of materials and equipment damaged, lost, or stolen while in the care and custody of the Contractor.

### **2. OUTDOOR SWITCHYARD STRUCTURES**

The Contractor shall install all substation structures as indicated on the Drawings. Assembly of the structures shall be in accordance with the Manufacturer's assembly drawings, unless otherwise specified.

- 2.1. The Owner's Supplier shall furnish the substation structures as a part of the "Structures and Materials" package. It is the Contractor's responsibility, unless otherwise specified in the Appendix, to furnish labor and equipment for receiving, off-loading, and storing these structures at the job site.
- 2.2. It shall be the Contractor's responsibility to notify the Owner of any damage to the structures and errors in the structure fabrication before and during the installation, so that the Owner may coordinate with the Manufacturer and make good any such damage to the equipment.
- 2.3. Detailed structural assembly drawings may be inspected at the JEA office in Jacksonville, Florida, by contacting the Project Engineer.
- 2.4. The steel structures, as shown on the Drawings, will be furnished by the Owner and are fabricated for bolted field assembly. Mounting holes for equipment have been included in the fabrication of the structures.
- 2.5. The Contractor shall include in the bid and be responsible for the correction of minor errors and minor modifications in the structures in order to provide for a complete installation as indicated on the Drawings. Corrections shall include but not be limited to the following: reaming misaligned holes, punching new holes, and clipping or punching support angles as required. Approximately 100 punched holes shall be considered minor modifications. All modifications shall be cold galvanized to resist corrosion.
- 2.6. Any equipment mounted on the structures by the Contractor (e.g. AC panels, outlet boxes, etc.) shall be mounted utilizing galvanized or stainless steel materials and hardware. Whenever practical, the Contractor shall mount miscellaneous equipment to the structures using non-penetrating methods such as back-to-back unistrut. All holes drilled to mount such equipment shall be cold galvanized to resist corrosion.
- 2.7. The Contractor shall provide and install a bit-u-mastic coating for the bases of all aluminum structures which come into direct contact with concrete foundations.
- 2.8. The Contractor shall install lighting fixtures mounted on the lightning probe poles and on the takeoff structures complete with conduit, wiring, light fixtures, and switches, in locations as shown on the Drawings. Conduit, switches, and wiring as specified on the Drawings shall be furnished by the Contractor.
- 2.9. Erection of the lightning probe poles shall be in accordance with the Manufacturer's assembly drawings.
- 2.10. The Contractor shall install perimeter lighting poles complete with anchor bases, arms, conduit, wiring, light fixtures, and photocells in locations as shown on the Drawings. Lighting poles and anchor bases will be furnished by the Owner, as indicated in the Attachments at the end of these Specifications.
- 2.11. All substation structures and equipment are stored at the Substation Packager's facility. The Contractor shall plan and make provisions for receiving, unloading, and storing on site all related structures and equipment.
- 2.12. The Contractor shall provide dry storage containers, as required, for all items (including but not limited to cardboard boxes, fragile items, etc.) requiring inside storage until assembly and installation by the Contractor. Tarps and/or covers placed on top of the material and stored outdoors do not qualify as dry storage in this Contract.

### **3. POWER TRANSFORMERS**

- 3.1. The Owner will be responsible for delivery and offloading the power transformer(s) onto the foundations unless the Contractor fails to have the transformer foundations ready as per Section VII. The Owner will provide the Contractor the desired delivery date when available. The Contractor shall prepare the site and foundations as directed to facilitate off-loading (see Section VII for additional transformer installation requirements). An approximate delivery date for the transformer is listed in Section VII of these Specifications. Crane and Rigging in Jacksonville, Florida, is the only company approved to lift, transport, and set power transformers for JEA.

- 3.2. The Contractor shall schedule the installation of the transformer foundation to allow for a minimum two (2) week curing time prior to the receipt and installation of the transformer. This will require the Contractor to schedule the installation of the transformer foundation well in advance of the estimated delivery date of the transformer, due to the inherent uncertainties involved in shipping large transformers. Early foundation construction times, and the corresponding longer curing times are strongly recommended.
- 3.3. The Owner, the Equipment Manufacturer's Contractor, or representative acting as an agent for the Owner, will be responsible for assembly of the power transformer and will furnish and operate the filtering equipment, vacuum drying equipment, provide the insulating oil, and fill the transformer. The Contractor shall provide adequate working space and access to temporary construction power to allow assembly and vacuum oil filling of the power transformers.
- 3.4. In no instance is a Contractor's employee or agent to enter a transformer manhole unless accompanied by the Owner's representative and only after suitable oxygen analysis has been conducted on the internal equipment environment.
- 3.5. The power transformers shall be under the care and custody of the Contractor while on the substation site. The Contractor shall be responsible for any minor repairs, as deemed necessary by the Project Engineer, to the finish of the power transformers that may have been damaged while in the care and custody of the Contractor.
- 3.6. Connections to the power transformers by means of bus or conductor will be the responsibility of the Contractor.
- 3.7. The foundation, conduit, control and power cabling, grounding, and associated work will be the responsibility of the Contractor.
- 3.8. All associated primary wiring, secondary wiring, control wiring, and grounding connections shall be furnished and installed by the Contractor in accordance with the Manufacturer's assembly instructions and JEA substation equipment interconnection drawings.

#### **4. CIRCUIT BREAKERS**

- 4.1. The Contractor shall be responsible for either transporting the circuit breakers to the substation site from their storage location at an arbitrary location within Duval County, Florida, or receiving all circuit breakers directly from the Manufacturer at the job site at the discretion of JEA.
- 4.2. The following tasks must be performed if the breaker is being shipped directly to the job site:
  - 4.2.1. The Contractor may assume that the Owner's Manufacturer shall have the breakers available for shipping in time to meet the scheduled circuit breaker shipping dates which are shown in the Project Schedule in the Attachments of these Specifications.
  - 4.2.2. As the project progresses, the Contractor shall notify the Project Engineer in writing (or by electronic mail) at least two (2) weeks in advance of the date of the Contractor's readiness for the breakers. This should be at the time of foundation pouring, to assure sufficient time for curing, and should conform to the breaker delivery dates listed in the Project Schedule in the Attachments of these Specifications.
  - 4.2.3. The Owner's Manufacturer will then ship the breakers directly to the job site and deliver it on the date specified by the Contractor, +/- five (5) business days.
  - 4.2.4. The Contractor shall then have employees and equipment on-site during business hours, throughout this five day window, to off-load the breaker within one (1) hour of the shipper's arrival. The Contractor shall then take responsibility of the breaker, and may choose whether to set the breaker directly onto

the pad or to set the breaker in an approved storage area. Approved storage areas shall mean any storage location approved by the Project Representative for this specific purpose.

- 4.2.5. The Contractor shall be responsible to ground the circuit breaker (including each high-voltage bushing) immediately upon arrival at the job site. This may be done by means of a temporary attachment to the ground grid, when approved by the Project Representative. The Contractor shall also run temporary AC power to the heater in the control panel of each breaker.
- 4.3. The Contractor shall be responsible for some minor assembly of the breaker at the job site. This assembly, which shall be supervised by JEA personnel, shall include such things as assembly of supports, attachments of control panel doors, etc. The Owner shall supply the Contractor with one (1) copy of the Manufacturer's assembly instructions. The Contractor shall closely follow these instructions.
- 4.4. The Owner, the Equipment Manufacturer's Contractor, or representative acting as an agent for the Owner, will furnish and operate the filtering equipment, vacuum drying equipment or SF-6 gas handling equipment, and provide the insulating oil or SF-6 gas. The Owner will be responsible for filling and final adjustment of the circuit breakers.
- 4.5. The Contractor shall be responsible for the placement of the circuit breakers on the foundations. The Contractor shall install the circuit breakers such that the lowest point of any energized parts is not less than the appropriate above grade clearance for personnel safety (NESC) above the foundation elevation.
- 4.6. Connections to the circuit breakers, by means of bus or conductor, will be the responsibility of the Contractor.
- 4.7. The foundation, conduit, control and power cabling, grounding, and associated work will be the responsibility of the Contractor.
- 4.8. All associated primary wiring, secondary wiring, and control wiring, and grounding connections shall be installed by the Contractor in accordance with the Manufacturer's assembly instructions, unless directed otherwise on the construction drawings.

## **5. CIRCUIT SWITCHERS, SWITCHES, & LOAD BREAK DEVICES**

- 5.1. The Contractor shall install circuit switchers, group-operated switches, ground switches, load break devices, hookstick disconnect switches, and fuse disconnect switches as indicated on the Drawings.
- 5.2. The circuit switchers, group-operated switches, ground switches, load break devices, hookstick disconnect switches, and fuse disconnect switches will be furnished by the Owner's Supplier as a part of the "Structure and Materials" package. The Contractor shall receive, off-load, and store these switches in the same manner as described for the "Structures and Materials" package, unless otherwise directed.
- 5.3. The Contractor shall adjust and align all switch blades and contacts according to the Manufacturer's recommendations.
- 5.4. All load break devices shall be installed according to the Manufacturer's recommendations. The Contractor shall be responsible for the re-alignment of switch blades and contacts.
- 5.5. All operating handles shall be aligned such that the mechanism may be locked in the "OPEN" or "CLOSED" position.
- 5.6. The minimum clearance between contacts of each pole in the open position shall be adjusted to meet the requirements of NESC and NEMA standards.

- 5.7. The Owner's responsibility will be limited to inspection and acceptance of switch and operator alignment. Final alignment or adjustment shall be by the Contractor.
- 5.8. The Contractor shall assist and provide equipment required for the factory servicemen to perform testing, final checkout, and approval of placing the circuit switcher in service.
- 5.9. The Contractor shall ensure that all control and power (AC and DC) cables are installed and in service prior to the requesting that JEA perform testing and final checkout.

## **6. MOTOR OPERATING MECHANISM**

Motor operating mechanisms shall be furnished by the Owner's Supplier as a part of the "Structures and Materials" package and installed by the Contractor in accordance with the Manufacturer's assembly instructions. The Contractor shall receive, off-load, and store these switches and mechanisms in the same manner as described for the "Structures and Materials" package, unless otherwise directed.

## **7. INSULATORS, BUSWORK, & CONNECTORS**

- 7.1. The station type insulators, bus, conductor, and connectors shall be furnished by the Owner's Supplier as listed in the Bill of Materials as a part of the "Structures and Materials" package and installed by the Contractor in accordance with the Manufacturer's assembly instructions. The Contractor shall receive, off-load, and store this equipment in the same manner as described for the "Structures and Materials" package, unless otherwise directed. That includes providing dry storage for the material, boxes, crates, cartons, etc. not suited for outdoor storage.
- 7.2. The Contractor shall install station type insulators, bus, conductor, and connectors as indicated on the Drawings.
- 7.3. Any chipped or damaged insulators shall be brought to the Owner's attention prior to installation. The Contractor shall repair minor insulator damage after review of the damage and approval of the Contractor's proposed repair process is made by the Project Engineer.
- 7.4. The minimum clearance between bus and overhead conductors of different phases and from conductors to ground shall be as indicated on the Drawings. Where not specifically indicated, the minimum clearances shall be as indicated on the General Notes Drawing.
- 7.5. The Contractor shall install all bus, conductors, and connectors as indicated on the Drawings. All items on the substation structures, including hardware, will be furnished by the Owner's Supplier unless noted otherwise on the Bill of Materials or on the Drawings.
- 7.6. The welding of aluminum bus shall adhere to the following requirements:
  - 7.6.1. The welding process and all welding operators shall be qualified in accordance with the Aluminum Association Aluminum Construction Manual, "Specifications for Aluminum Structures", Section 7/2/4 (Qualification of Welding Procedure and Welding Operators).
  - 7.6.2. All joints to be welded shall be free of moisture and hydrocarbons. Degreasing shall be done with a non-toxic solvent. Sufficient time must be allowed for the evaporation of the solvent prior to welding. Wire brushing with a stainless steel wire brush should be employed after solvent cleaning to remove all oxide films, water stains, etc.
  - 7.6.3. All aluminum welds shall be by the gas metal-arc (MIG) or the gas tungsten-arc (TIG) welding process.

- 7.6.4. The working area should be substantially draft-free and protected from atmospheric contamination.
- 7.6.5. All welds shall be made with clean metal and the completed weld shall have a smooth finish and shall indicate good fusion with the parent metal.
- 7.6.6. All connections shall be checked for the proper edge penetration and alignment before, during, and after the weld is made. The cross sectional area of the weld should not be less than that of the smallest member being joined.
- 7.6.7. To repair a defective weld, the defective portion must be entirely removed. The area to be repaired should be re-cleaned as in Paragraph 7.6.2 above and the weld made in a manner similar to the original.
- 7.6.8. Tackwelding should be used to prevent misalignment of the members being joined during the welding process.
- 7.7. Tinned connectors shall be installed when a copper to aluminum connection is made. The tinned connectors shall be furnished by the Owner.

## **8. INSTRUMENT TRANSFORMERS, POTENTIAL TRANSFORMERS, & LIGHTNING ARRESTORS**

- 8.1. The instrument transformers, potential transformers, and lightning arrestors will be furnished by the Owner's Supplier as a part of the "Structures and Materials" package. The Contractor shall receive, off-load, and store these materials in the same manner as described for the "Structures and Materials" package, unless otherwise directed.
- 8.2. The Contractor shall install outdoor instrument transformers and potential transformers as indicated on the Drawings. All wiring shall be as listed in the Cable Schedule and Conduit Schedule.
- 8.3. The Owner will furnish, operate, and supervise the filtering equipment and oil for the instrument transformers as required.
- 8.4. The Contractor shall install lightning arrestors as indicated on the Drawings.
- 8.5. All associated primary wiring, secondary wiring, instrument and control wiring, and grounding connections shall be installed by the Contractor in accordance with the Manufacturer's instructions, unless stated otherwise in the Drawings.
- 8.6. Tinned connectors shall be installed when a copper to aluminum connection is made. The tinned connectors shall be furnished by the Owner.

## **9. STATION SERVICE, AUTOMATIC TRANSFER SWITCH, & ELECTRICAL PANELS**

- 9.1. The Contractor shall be responsible for transporting and installing the Owner furnished distribution type transformers in the locations as shown on the Drawings. The transformers are located at the JEA Commonwealth Service Center and will be taken out of stock.
- 9.2. The Contractor shall be responsible for transporting and installing the automatic transfer switch if specified on the Station Service Drawing. The transfer switch shall be ASCO Type 940 or 7000 and be furnished by the Owner complete with a NEMA 3R enclosure. The Contractor shall furnish and install galvanized unistrut channels and stainless steel mounting hardware as required to mount the transfer switch to the structure mounting brackets.

- 9.3. The Contractor shall be responsible for installing three phase CTs and Meter in accordance with JEA electric service standards and as shown on the Drawings.
- 9.3.1. The Owner will furnish three (3) CTs (item# METCT001) and one (1) meter socket (item # METSO007). The Contractor shall supply all other materials needed to complete the service metering.
- 9.3.2. The CTs, CT cabinet and meter socket/enclosure shall be grounded in accordance with the NEC and local inspection authority requirements. Cabinet shall be capable of being sealed and/or locked by the JEA meter shop activity.
- 9.3.3. Conduits entering CT cabinet from point of service shall be marked "Line" and conduits leaving CT cabinet to Main Breaker Panel (MBP) "Load".
- 9.3.4. CT#3 to contain the high leg, marked with orange phasing tape and be the right-most CT in the CT cabinet.
- 9.4. The Contractor shall furnish and install all new AC electrical panels on the load side of the automatic transfer switch as shown on the Drawings, unless directed otherwise. The Contractor shall also furnish and install the internal circuit breakers, ground bus, and associated hardware (as required) to complete the wiring shown on the panel drawing. The Contractor shall also furnish and install the galvanized unistrut channel and stainless steel mounting hardware as required to mount the panel to the structure mounting brackets.
- 9.5. The Contractor shall be responsible for furnishing the necessary terminals, connectors, etc., to terminate cables at the transformers, ATS, and splices (as required).
- 9.6. The Contractor shall be responsible for furnishing and installing the switchyard electrical panels, cabinets, and junction boxes. The exact quantity, locations and sizes of the panels, cabinets, and junction boxes shall be as shown on the Drawings. All switchyard AC panels shall be enclosed in stainless steel enclosures.
- 9.7. The AC power panelboards shall be Square D Co. Type NQOD. All panelboards shall be enclosed in a NEMA 3R enclosure and shall also include housings with a lockable cover and/or door.
- 9.8. The Contractor shall be responsible for furnishing and installing the main and branch circuit breakers in all yard panels. The main breakers and branch circuit breakers shall be conventional bolt-on type circuit breakers rated in accordance with the Drawings. The wiring and labeling of each panel breaker shall be as shown on the Drawings and in accordance with other applicable Sections of these Specifications.
- 9.9. The Contractor shall be responsible for securely mounting switchyard electrical panels to the substation structures. Mounting brackets may have been incorporated into the structure design. The Contractor shall furnish and install galvanized unistrut channels and stainless steel mounting hardware as required to mount the electrical panels, cabinets, and junction boxes to the structure mounting brackets. Should any alteration or modification be necessary for the mounting of electrical panels, the Contractor shall submit details of the proposed alteration to the Project Engineer in writing for approval prior to installation.

## **10. SWITCHYARD RECEPTACLES**

- 10.1. The switchyard receptacles shall be furnished by the Contractor.
- 10.2. The Contractor shall be responsible for installing the yard receptacles and the vacuum pump receptacles. Installation and wiring of each receptacle shall be in accordance with the Drawings. Details for mounting the switchyard receptacles (if applicable) are included in the Drawings.
- 10.3. The 120V (single phase) yard receptacles shall be standard grounding type duplex receptacles mounted in a weatherproof outlet box with a weatherproof cover, Crouse-Hinds catalog number WLRD-1 or approved equal.

- 10.4. The 240V (single phase) truck receptacles shall be Thomas & Betts/Russellstoll Type SCA, catalog number 3323-78 or approved equal.
- 10.5. The 240V (three phase) vacuum pump receptacles shall be Thomas & Betts/Russellstoll Type SCA, catalog number 3324-78 or approved equal.
- 10.6. All above grade conduit to the receptacles shall be either rigid galvanized steel or UV resistant PVC, Schedule 40.

## **11. SWITCHYARD RELAY BOXES**

- 11.1. The Contractor shall be responsible for furnishing and installing the bus differential boxes, potential transformer fuse boxes, terminal blocks, fuse blocks, test switches, and heaters (as specified). The exact quantities, locations, sizes, and types of boxes, blocks, switches, and heaters shall be as shown on the Drawings. The bus differential and PT fuse boxes shall be stainless steel.
- 11.2. The Contractor shall be responsible for securely mounting the switchyard relay boxes to the substation structures. Mounting brackets may have been incorporated into the structure design for most of these boxes. The Contractor shall furnish and install galvanized unistrut channels and stainless steel mounting hardware as required to mount the relay boxes to the structure mounting brackets. Details for mounting and wiring the switchyard relay boxes (if applicable) are included in the Drawings. Should any alteration or modification be necessary for mounting the relay boxes, the Contractor shall submit details of the proposed alteration to the Project Engineer for approval prior to installation.
- 11.3. All above grade conduit to the relay boxes shall be either rigid galvanized steel or UV resistant PVC, Schedule 40. Installation and termination of control and instrument wiring shall be in accordance with the Specifications and Drawings.

## **12. CONSTRUCTION STATION SERVICE**

The Contractor shall be responsible for installing and maintaining a temporary station service facility for new construction and additions to existing stations where adequate facilities are not available.

- 12.1. The Contractor shall be responsible for following standard permitting and application procedures to obtain the construction service. Where the installation of a power transformer or autotransformer is required, the construction service shall be 3-phase. The Contractor's service is to be metered and shall comply with JEA requirements for meter can, weatherhead, and disconnect.
- 12.2. The Contractor shall provide the necessary conduit, cable, entrance head, meter, disconnect switch, panels, outlets, etc. to sufficiently supply electric service to the field office, construction outlets, and permanent low-voltage receptacles for station check-out.
- 12.3. The Owner will provide the distribution lateral, temporary span poles and distribution transformers as required for the construction station service. The Contractor shall be responsible for furnishing and installing secondary conductors and raceway to the transformers as required.
- 12.4. The Owner will be responsible for the total metered electric charges of the construction service during the term of the Construction Contract.
- 12.5. The Contractor shall provide a 200A disconnect in a NEMA 3R enclosure to run conduit and cables to the permanent station service facilities for use in equipment check-out by the Owner. The Contractor shall furnish and install conduit to the cable trench, or permanent facilities, and install single conductor 4/0 RHW cable to the



ATS or AC panels (as required). This requirement is in addition to the Contractor's service and shall be provided as soon as the low-voltage equipment is in place (see Section VII, Subsection 2, for Sequence of Work).

**NOTE:** Termination of the permanent station service transformers to the ATS or low-voltage electrical panels shall not be performed until after the temporary service has been disconnected.

- 12.6. The Contractor will be required to remove any temporary construction service poles and the construction service once the substation is energized and the permanent station service is in operation. Additionally, the Contractor shall apply for removal of the service drop and transformer bank.
- 12.7. Where there is existing station service available, and JEA service requirements are met, the Contractor shall be allowed to utilize the station service for construction A.C. at no cost.

### 13. GROUND GRID SYSTEM

#### 13.1. GENERAL

- 13.1.1. This is a general specification and covers the requirements and procedures for the installation of, or addition to, the station ground grid system. Any material or equipment listed which does not apply to this particular project shall be disregarded. The Drawings shall be referenced for specific requirements concerning the quantity, type, and installation of the material to complete the station ground grid system.
- 13.1.2. The Contractor shall be responsible for providing the Owner with an accurate "As Built" drawing of the station ground grid (as specified in Section VII, Subsection 5).

#### 13.2. SCOPE

This Section covers the labor, equipment, and material requirements for the installation of, or addition to, the station ground grid system. The Contractor shall install the ground grid, ground rods, and ground wells as shown on the Drawings and herein specified. The Contractor shall also be responsible for the connection of all switchyard electrical equipment, control house electrical equipment, substation structures, fences and gates to the station ground grid system as shown on the Drawings and herein specified.

#### 13.3. MATERIALS

The Contractor shall refer to the Drawings for material requirements to complete the station ground grid system. The Contractor shall furnish materials and equipment only as specified or approved by the Project Engineer.

- 13.3.1. All Contractor furnished materials, unless otherwise specified, shall be new, of first quality and of the proper type for the use intended.
- 13.3.2. The Owner shall furnish above grade structure and equipment grounding connectors, unless otherwise indicated. The above grade structure and equipment grounding connectors will be furnished by the Owner's Supplier as a part of the "Structures and Materials" package. The Contractor shall receive, off-load, and store these items in the same manner as described for the "Structures and Materials" package. The Contractor shall furnish the below and above grade ground grid conductor; below grade connectors; the equipment, structures, manhole, and fence grounding conductor; and all fence grounding connectors. The Contractor shall also furnish the grounding system as shown on the Drawings for any "sliding-type" main entrance gate.

#### 13.4. GROUND GRID

- 13.4.1. The Contractor shall furnish the required amount of 19#8 and 7#5 Copperweld conductor and the 500MCM copper conductor for the ground grid, unless otherwise specified. The Contractor shall purchase the grounding material which meets or exceeds JEA material requirements. The 19#8 conductor (JEA #COBCW015) shall be Copperweld, 19-strand #8, .0643" diameter, 40% conductivity as per ASTM B-227 and B-228, high strength – 27,548 lbs. The 7#5 conductor (JEA #COBCW016) shall be Copperweld, 7-strand #5, .0546" diameter, 40% conductivity as per ASTM B-227 and B-228, high strength – 17,949 lbs.
- 13.4.2. The Contractor shall install the ground conductor in the locations indicated on the Drawings and at the depth specified. The Contractor shall install the conductor in an open trench to facilitate proper installation and inspection of the ground grid connections.
- 13.4.3. The Contractor shall notify the Owner of any damaged ground grid conductor before, during, and after installation so the conductor may be replaced.
- 13.4.4. The Contractor shall furnish material (as required) and install all ground rods, ground wells, and grounding connections to complete the ground grid system, as specified.

#### 13.5. GROUND RODS AND GROUND WELLS

- 13.5.1. The Contractor shall furnish and install ground rods and ground wells (as specified) in the locations shown on the Drawings. Rods and wells shall be specified by either the depth or resistance required. Details for ground rod connections (if applicable) are included in the Drawings.
- 13.5.2. Where the installation of ground rods and ground wells is specified by depth or where driving rods in soil of high resistivity, it may be necessary to use casing in the well holes. The Contractor shall make a resistance reading of each ground rod and/or ground well prior to its connection to the station ground grid and report these readings to the Project Engineer for verification of the ground grid design. Connection of the rod to the station ground grid shall be made, only after Owner approval, utilizing the exothermic process. The Contractor shall also include these readings on the "As Built" Drawings.
- 13.5.3. Where the installation of ground rods and ground wells is specified by resistance, the Contractor shall install the ground rods and ground wells to a minimum, base bid depth of fifty (50') feet, unless otherwise specified. The Contractor shall continue until the specified resistance is achieved. A unit price of \$3.75 per foot installed will be used for adjusting the contract price from the base bid depth.
- 13.5.4. All ground rods and ground wells shall maintain a minimum earth cover as specified on the drawings.
- 13.5.5. Where the installation of ground rods is not specified by resistance or depth, the Contractor shall install ground rods twenty-four (24') feet deep at all locations as shown on the substation grounding drawing. No ground rods or wells shall be installed under paved roadway areas.

#### 13.6. GROUND GRID CONNECTIONS

- 13.6.1. Ground grid connections (including connections to ground rods and ground wells) shall be made by approved an exothermic process utilizing Cadweld Plus molds and materials manufactured by Cadweld. The Contractor shall use the Cadweld Plus System with the corresponding molds and electronic control unit for weld metal ignition. Molds for each type of connection are to be replaced after a maximum use of fifty (50) welds.
- 13.6.2. Ground grid connections shall be of the type that avoids cutting and/or splicing of the main grid conductor.

- 13.6.3. A Manufacturer's representative is required to demonstrate the proper installation procedures of the exothermic system being used prior to installation of any ground grid connection. The Contractor shall be responsible for arranging the demonstration. Any Contractor representative that may install the ground grid connections and the Project Representative shall be present at the demonstration.
- 13.6.4. The Contractor shall strictly follow the Manufacturer's installation procedures.
- 13.6.5. All surfaces to be joined by the weld shall be thoroughly cleaned and dried prior to final placement of the mold. Worn, damaged, or incorrectly sized molds which in the opinion of the Project Representative do not make satisfactory welds shall be removed from the job site.
- 13.6.6. All welded connections made by the exothermic process shall encompass 100% of the end of the material being welded. Welds which do not meet this requirement shall be remade at the Contractor's expense.
- 13.6.7. All welded connections made by the exothermic process shall be visually inspected by the Project Representative and may be subjected to testing. Testing shall be in the form of moderate hammer blows, from which a properly formed connection will easily resist any visible damage. Any connection which fails such a test or which, upon visual inspection, indicates a porous or deformed weld shall be remade at the Contractor's expense. Should different molds or materials be required to facilitate the corrected connection of a failed weld, such material shall be furnished at the Contractor's expense. The use of molds and materials other than specified must be approved for use by the Project Engineer.

#### 13.7. TRANSFORMER GROUNDING

- 13.7.1. The Contractor shall connect the neutral bushing of any power transformer or autotransformer directly to the station ground grid using 500MCM copper conductor. The neutral ground conductor shall extend continuously and be connected to the station ground grid in two (2) places using the connection process specified. The two (2) connections shall be made to the same ground grid run and shall be placed approximately three (3') feet apart.
- 13.7.2. The Contractor shall connect the transformer tank to the ground grid in two (2) locations as shown on the Drawings using 7#5 Copperweld conductor and the connection process specified.
- 13.7.3. The Owner shall furnish the above grade grounding connectors to be used in connecting the power transformers to the ground grid. The Contractor shall furnish the 500MCM copper and the 7#5 Copperweld grounding conductor to be used in connecting the power transformers to the ground grid system.

#### 13.8. SWITCH GROUNDING

- 13.8.1. All group operated switches shall be furnished by the Owner complete with an operator platform. The operator platform shall be located on the rock surface as indicated by the Drawings and be connected on one side to the station ground grid. A continuous grounding conductor shall extend from the other side of the operator platform through the parallel ground clamp, provided for structure grounding, to the operating mechanism. This conductor shall be connected to the operating pipe by means of a flexible copper braid. The remaining groove of the parallel grounding clamp shall contain a conductor connected directly to the station ground grid. All mechanical connectors used in this installation shall be furnished by the Owner. Details for grounding the operator platform (if applicable) are included in the Drawings.
- 13.8.2. Every switch structure shall be connected to the station ground grid in at least two (2) locations, as shown on the Drawings. One (1) switch structure ground conductor shall be installed as specified above.

- 13.8.3. Grounding switches shall have a continuous ground conductor from the blades to the station ground grid. This conductor shall be routed on the structure column opposite of the operating mechanism to facilitate complete grounding of the switch structure. The operating pipes for both the line and ground switches shall be connected by flexible copper braid as specified above.

**13.9. EQUIPMENT GROUNDING**

- 13.9.1. The Contractor shall be responsible for connecting electrical equipment such as circuit breakers, station service transformers, potential transformers, instrument transformers, lightning arrestors, etc., directly to the station ground grid as shown on the Drawings.
- 13.9.2. Electrical equipment shall be furnished by the Owner, unless otherwise specified. The Contractor shall be responsible for installing the equipment ground conductor on the side of the structure designed to accommodate the ground conductor.
- 13.9.3. The Owner shall furnish all above grade ground connectors necessary to connect the equipment to the station ground grid, unless otherwise specified. The Contractor shall furnish the 7#5 Copperweld grounding conductor and all other material, equipment, and labor necessary to complete the connection of the electrical equipment to the station ground grid.
- 13.9.4. The Contractor shall install the equipment ground conductor such that the continuity of the conductor from the equipment to the station ground grid is maintained as much as practical.
- 13.9.5. The ground conductor installed on the equipment structures shall be sufficient in meeting the requirements of structure grounding.
- 13.9.6. Free standing electrical equipment, such as circuit breakers, shall be connected directly to the station ground grid. The Contractor shall install ground conductors as shown on the Drawings. More than one (1) ground conductor installation may be required in the grounding of free standing electrical equipment.

**13.10. STRUCTURE GROUNDING**

- 13.10.1. The Contractor shall be responsible for connecting all steel structures directly to the station ground grid as shown on the Drawings.
- 13.10.2. The structures are furnished by the Owner and are designed to accept the ground connectors provided. The Contractor shall be responsible for installing the structure ground conductor on the proper side of the structure to facilitate the connection of the structure to the station ground grid.
- 13.10.3. The Owner shall furnish all above grade ground connectors necessary to connect the structures to the station ground grid, unless otherwise specified. The Contractor shall furnish the 7#5 Copperweld grounding conductor and all other material, equipment, and labor necessary to complete the connection of the steel structures to the station ground grid.
- 13.10.4. The Contractor shall install all structure ground conductors such that they conform to the structure and foundation. Ground conductors on structures with grounded equipment shall conform to the requirements of this Section IX and all relevant paragraphs.
- 13.10.5. Structures must be grounded to the station grid within the same working day the structure is erected.

**13.11. CABLE TRENCH AND CONTROL HOUSE GROUNDING**

- 13.11.1. The Contractor shall install the cable trench and control house grounding as specified and shown on the Drawings. The Contractor shall furnish the 7#5 Copperweld conductor necessary to ground the

cable trench and control house to the station ground grid and all other required material and labor to complete the installation.

- 13.11.2. The Contractor shall install the cable trench and control house ground conductors. The ground conductor shall run the entire length of the cable trench and connect to the station ground grid at all points of intersection. Two (2) ground conductors shall be brought into the control house through the cable trench and attached to the outside of the cable tray. The Contractor shall furnish and install 7#5 Copperweld cable clips on one side of the cable trench to support the ground conductor.
- 13.11.3. Connection of the ground conductor to the cable tray shall be made utilizing Burndy Type GC2929CT connection or approved equal. The ground conductor shall be secured to the cable tray at each cable tray fitting or at intervals not exceeding four (4') feet throughout the length of the tray. Provide ground wire lugs and hardware (as required). The cable tray shall NOT be used as a ground path.
- 13.11.4. Control house equipment, including electrical panels shall be connected to the control house ground by means of Anderson Type K3 connector or approved equal.
- 13.11.5. Where a reinforced concrete floor is installed in the control house, the Contractor shall bond the control house slab reinforcement to the ground grid to provide equipotential surfacing as shown on the drawings. Metal floor decking within modular buildings should be bonded internally by the manufacturer, with connections to the grid on the exterior of the building at the points designated.

#### 13.12. CHAIN LINK FENCE AND GATE GROUNDING

- 13.12.1. The Contractor shall furnish the material and connect the chain link fences to the station ground grid as specified and as shown on the Drawings. Details for grounding the fence and fence gates, if applicable, are included in the Drawings.
- 13.12.2. The Contractor shall connect the fence to the station ground grid at every gate post, every corner post, and intermediate posts at convenient intervals, no more than forty (40') feet apart. The fence and gate posts shall be connected to the station ground grid using 7#5 Copperweld conductors.
- 13.12.3. The Contractor shall furnish #2 AWG copperweld conductor and connectors as required to complete the fence grounding. The conductor shall attach to the post with a minimum of three (3) clamp connections and be woven into the fence fabric between these connections to terminate on each strand of barbed wire.
- 13.12.4. Each personnel and equipment swing gate shall have a perimeter ground conductor of 19#8 Copperweld connected to the station ground grid. This conductor shall extend approximately three (3') feet beyond the gate swing, both inward and outward, unless property restrictions prevent the exterior extension.
- 13.12.5. Each swing gate leaf shall be connected to the gate post with a copper welding cable, as specified on the Drawings. The copper welding cable and exothermic weld connections shall be furnished by the Contractor. The Contractor shall connect the welding cable directly to the post and the post grounding conductor.
- 13.12.6. The Contractor shall furnish and install the grounding system as shown on the Drawings for the substation lift and/or sliding entrance gates.

### 14. CONDUITS, CABLE TRENCHES, & CABLE TRAYS

#### 14.1. GENERAL

- 14.1.1. This is a general specification and covers the requirements and procedures for the installation of conduits, wireways, cable trenches, and cable trays used to distribute power and control cables to the equipment in the switchyard and control building. Any material or equipment listed which does not apply to this particular project shall be disregarded. The Drawings shall be referenced for specific requirements concerning the quantity, type, and installation of material to complete this work.
- 14.1.2. The Contractor shall be responsible for providing the Owner with accurate "As Built" drawings of the conduit, cable trench, and cable tray systems installed (as specified in Section VII, Paragraph 5).

#### **14.2. SCOPE**

This Section covers the labor, equipment, and material requirements for the installation of conduits, wireways, cable trenches, and cable trays in the switchyard and control building. The Contractor shall furnish all materials necessary and install the conduits, wireways, cable trenches, and cable trays as shown on the Drawings and specified herein.

#### **14.3. MATERIALS**

The Contractor shall refer to the Drawings for material requirements to complete the installation of the conduits, wireways, cable trenches, and cable trays as required for the substations raceway system. The Contractor shall furnish materials and equipment only as specified or approved by the Project Engineer.

- 14.3.1. All Contractor furnished materials, unless otherwise specified, shall be new, of first quality, and of the proper type for the use intended.
- 14.3.2. The Contractor shall refer to the "Conduit Schedule" for specific material requirements of individual raceway runs.
- 14.3.3. Unless otherwise specified, UV resistant Schedule 40 PVC shall be permitted for underground conduit runs. All above grade conduit shall be either rigid galvanized steel or UV resistant Schedule 40 PVC, unless otherwise specified or as shown on the Drawings.

#### **14.4. CONDUIT AND WIREWAY**

- 14.4.1. The Contractor shall furnish and install the conduits, as listed in the "Conduit Schedule" and as shown on the Drawings.
- 14.4.2. The Contractor is responsible for all hardware necessary to complete the installation of the conduit system.
- 14.4.3. When installing conduit in an existing switchyard, the Contractor shall remove and dispose of the existing rock. The Contractor shall not use this rock to cover the completed work-in-place, but shall place new, clean rock onto the work surfaces. Such rock and its placement shall meet the requirements of Section VIII of these Specifications.
- 14.4.4. When installing conduit in an existing switchyard, the Contractor shall compact the area to the same density, and with similar material, as with the adjacent undisturbed materials. In every such case, the resultant soils will be re-poisoned to eradicate future plant growth, using the herbicide specified in Section VIII of these Specifications. The Contractor shall furnish these herbicides.
- 14.4.5. Conduits shall be installed at the depth shown on the Drawings, with the area backfilled and compacted to same density as surrounding areas.
- 14.4.6. The Contractor shall form all above grade conduits to conform to the surfaces of the foundations and structures. Rigid galvanized steel conduit shall be formed using a pipe bender. UV resistant Schedule 40 PVC shall be shaped with a Therm-o-Tools Company combo type, Hotbox bender, or approved equal.

- 14.4.7. The Contractor shall furnish and install all indoor conduits, junction boxes, switches, and receptacles as specified in the "Conduit Schedule" and as shown on the Control House Drawings. All conduits less 2" shall be concealed within block walls.
- 14.4.8. The Contractor shall furnish and install the wireway as specified in the "Conduit Schedule" and as shown on the Control House Drawings. The wireway shall be NEMA 1 square wireway, smooth, seam free, without knockouts, and shall have removable covers. The wireway and associated fittings shall be finished with baked satin ANSI 61 gray enamel over phosphatized surface. The wireway shall be manufactured from steel not less than 16 gauge and shall conform to NEMA standards.
- 14.4.9. The Contractor shall install the wireway in accordance with the Manufacturer instructions and as indicated on the drawings. All field cuts shall be made with a hacksaw and grounded smooth. Terminations of the wireway run into the cable tray, electrical panels, or electrical equipment shall utilize a panel adapter. Wireway sweeps consisting of two (2) 45 degree bends shall be used in lieu of one (1) 90 degree bend.
- 14.4.10. The Contractor will be responsible for labeling all conduits as listed in the "Conduit Schedule". For details, see Subsection "Labeling" of this Section.

#### 14.5. PRE-CAST CABLE TRENCH

The trench system shall consist of precast concrete or fiber reinforced precast concrete framing members, side sections, and removable polymer cover sections assembled to form a completely enclosed trench, except with open earth bottom having a 4" bedding of sand. Polymer modified concrete trench lids are not acceptable.

- 14.5.1. The Contractor shall furnish and install a precast concrete frame with FIBRELITE lids manufactured by TRENWA, or PLASTIBETON lids manufactured by OLDCASTLE, or similar products.
- 14.5.2. The installation of the cable trench shall be in strict accordance with the Drawings, these Specifications, and the Manufacturer assembly drawings.
- 14.5.3. The trench shall be dimensioned as shown on the Drawings. A sixteen (16") inch nominal depth shall be furnished, unless otherwise specified.
- 14.5.4. One-piece trench system with 10'-0" standard lengths shall be furnished.
- 14.5.5. Precast polymer trench covers shall be furnished in sections, sized to permit removal by a single person, and each shall have slots for lifting tools.
- 14.5.6. The trench system shall be designed to support at least 200# per square foot live load. The road crossing sections shall be precast with galvanized steel or aluminum lids and designed for H-20 loading.
- 14.5.7. Precast trench members shall be cast in steel forms using 3000# or greater high early strength concrete. Members shall be cured for a period of at least fourteen (14) days.
- 14.5.8. The Contractor shall furnish and install all necessary special fittings, offsets, terminations, or other designated fittings (as required).
- 14.5.9. The Contractor shall furnish and install the cable transition ladder assembly with covers for the trench in the length shown on the Drawings for the entrance to the control house.
- 14.5.10. Install the concrete trench system in earth trenches with covers extending above the surrounding crushed rock surfacing approximately three (3") inches. See Site Plan for top of trench elevations.

- 14.5.11. Excavate trenches to a minimum width consistent with the stability of the sides. Excavate completely to the bottom of the framing members and correct any points of over-excavation by returning to grade with mechanically compacted fine earth backfill to form a smooth trench bottom. Remove all excess excavated material as required for proper alignment and elevation of work.
- 14.5.12. Excavation shall conform to other requirements as set forth in Civil Specifications, Subsection 1 on Site Preparation and Earthwork. Grounding of the cable trench shall conform to the requirements of the Electrical Specifications, Subsection 13.
- 14.5.13. Component members shall be set only on firm, compacted earth, sand, or gravel mix, at an elevation such that the top of the sidewall will be two (2") inches above the final grade (top of crushed rock) for the substation. Prior to setting the trench section, place geotextile fabric the full length of the trench excavation, overlapping a minimum of two (2') feet at each joint of the fabric. The width of the fabric shall be sufficient to cover the bottom and both sides of the cable trench to finish grade. Geotextile fabric shall be Mirafi 140N, a non-woven water permeable fabric as distributed by:

H. Moore & Associates, Inc.  
Maislin Drive, Bldg. E  
Tampa, Florida 33637  
or approved equal.

- 14.5.14. After setting the component trench sections, back fill along sides with the geotextile fabric flush against the sides. Place a minimum four (4") inches of bedding sand in the trench to form a level bottom, just covering the bottom of the section members.
- 14.5.15. Hand tamp the backfill along the outside walls of the trench. Backfill shall conform to other requirements as set forth in the Civil Specifications.
- 14.5.16. At the trench entrance to the control house, set trench section bottom members on the control house foundation support for trench as provided in the foundation construction. Adjust the end elevation of the section to meet that shown on the Drawing details.
- 14.5.17. The Contractor shall furnish and install the cable tray transition compartment as designed for the trench as shown on the Drawings. The cable tray transition compartment shall be sealed to the control house wall.
- 14.5.18. The Contractor shall protect the trench against entrance of construction debris, rock, and earth during the construction and after placing of the sand bedding. The trench shall be cleaned out of any such foreign material prior to placing control cables and just before final placing of covers.
- 14.5.19. The Contractor shall provide the Owner with a new set of Manufacturer's cover removal tools as well as the tools used during construction. The Contractor shall deliver these tools to the Project Representative.

#### 14.6. CABLE TRAY

The Contractor shall furnish and install the cable tray system located in the switchboard room. The Contractor shall submit a description and/or shop drawings of the proposed cable tray system for approval. The shop drawings submitted shall include certified flexural and loading data with the Manufacturer's recommendation of maximum span for the design load.

- 14.6.1. Indoor cable trays shall be fabricated from extrusions of aluminum alloy 6063-T5 or 6063-T6. Application shall be in accordance with the ASCE Specifications and AWS Standards. The trays shall be furnished with a six (6") inch depth or four (4") inch depth, as indicated on the Drawings and in nominal twelve (12') foot lengths. Splices shall be of the high pressure bolted type. The design load for the tray installation shall be a minimum 200 lbs. per linear foot for the maximum tray width of thirty-



six (36") inches or nine (9") inches, as described on the Drawings, when supported on twelve (12') foot centers.

- 14.6.2. Indoor cable trays shall be of the aluminum ladder type with cross rungs spaced six (6") inches maximum center to center.
- 14.6.3. All rungs, dropouts and other metal surfaces in contact with the cable shall have smooth, rounded edges. The rungs shall be joined to the sides by a homogeneous union method, weld on swage.
- 14.6.4. Cable tray supports shall be provided at intervals not to exceed the Manufacturer's recommendations for maximum span for the design load and type of tray being supported. In no case shall the spans exceed that shown on the Drawings.
- 14.6.5. All necessary splice plates, bolts, nuts, lock washers, etc., shall be furnished compatible for use with the type metal tray provided.
- 14.6.6. Provide ground wire lugs and hardware as required. The cable tray shall NOT be used as a ground path. Grounding of the cable tray shall conform to the requirements of Section IX, Subsection 13, Paragraph 12.

## **15. CONTROL CABLE & LOW-VOLTAGE ELECTRICAL CABLE**

### **15.1. CABLE SCHEDULE**

- 15.1.1. The Contractor shall pull and terminate all cables as listed in the Cable Schedule. All control cable, shielded control cable, and instrument cable will be provided by Owner. All other cables listed shall be provided by the Contractor.
- 15.1.2. Cable lengths listed in the Cable Schedule are approximate and based on engineering estimates that may differ due to field routing or other factors. The total quantities required for the project may also be affected by factors such as waste, cable reel sizes and optimization (or lack thereof). The Contractor shall be responsible for the actual quantities required and for verification of all cable lengths prior to cutting.
- 15.1.3. The Contractor is responsible for providing the Owner with accurate "As Built" revisions of the Cable Schedule, Conduit Schedule, and related Drawings, as specified in Section VII, Subsection 5.
- 15.1.4. All low-voltage electrical cable furnished by the Contractor shall be as specified in the Cable Schedule. Where multiple conductor cable is specified, the Contractor shall furnish and install multiple conductor cable. Cable lengths listed in the Cable Schedule are approximate. The Contractor shall supply cable as necessary to complete the work.
- 15.1.5. The Contractor will be responsible for labeling all cables as listed in the Cable Schedule. For details, see Subsection "Labeling" of this Section IX.

### **15.2. SHIELDED CONTROL CABLE SPECIFICATIONS**

#### **15.2.1.**

### **15.3. SPLICES**

- 15.3.1. All runs of control cable shall be continuous. Splices in control cable shall NOT be permitted.
- 15.3.2. Splices made in low-voltage electrical cable should be avoided. When necessary, splices in low-voltage electrical cable shall conform to all applicable NEC and NESC standards.

#### **15.4. INTERCONNECTION DRAWINGS**

The control cable Interconnection Drawings will be supplied at a later date by the Owner to show all terminations of the cables as listed on the Conduit and Cable Schedules.

- 15.4.1. The Contractor shall be responsible for terminating all cables listed on the Conduit and Cable Schedules. The Contractor shall also be responsible for the termination of any jumpers on terminal blocks in the equipment or on the control panels that may be shown on the Interconnection Drawings.
- 15.4.2. The Bid shall be based on the assumption of a termination at both ends of every conductor in each cable of the Cable Schedule and an additional fifty (50) #10 cables with 500 total terminations between panels and/or control house equipment. These jumpers may be Class B multi-conductor cables running between panels, including termination.
- 15.4.3. The Owner shall terminate all cables to existing control panels which are energized. The Contractor shall pull cables to these panels, fan ends, install terminals, and leave ample cable for making terminations.

#### **15.5. CONTROL CABLE TERMINALS**

Ring type compression terminals, which shall be furnished by the Contractor, shall be used at both ends of all control cables and wiring. The ring terminals used shall be non-insulated, tin plated, barrel type with brazed seam and sized for the wire being terminated.

#### **15.6. GROUNDING OF SHIELDED CONTROL CABLE**

A terminal block has been provided at the top of each relay control panel for terminating the ground conductor of each shielded control cable. Each ground conductor from the shielded cables will land individually on a terminal space, and be identified with its appropriate cable name. The Contractor shall provide amp type Termi-foil connectors for jumper connections between the control cable shields to the panel ground terminal block. The jumper wire size shall be a stranded #10 AWG.

#### **15.7. LENGTH OF CABLES FOR CONTROL PANELS**

All cables pulled to the control panels shall be sized to reach the floor of the panel and back to the top of the relay panel or RTU. The insulation jacket shall then be stripped back to the top of the panel and all cables terminated without cutting individual wires.

### **16. CONTROL HOUSE ELECTRICAL**

#### **16.1. SCOPE**

This Section covers the equipment, installation, and wiring necessary for the control house.

#### **16.2. GENERAL**

The Contractor shall furnish and install the low-voltage equipment in locations as shown on the Drawings. The installation of low-voltage wiring of this equipment shall conform to the practices set forth in the latest edition of the NEC, unless otherwise specified in these Plans and Specifications. It shall be the Contractor's responsibility to furnish the required quantity of conduit and cable necessary to complete the installation.

#### **16.3. EQUIPMENT AND MATERIALS**

- 16.3.1. All materials, unless otherwise indicated, shall be new, of the first quality, and of the proper type for the use intended. Where applicable, all material shall be in accordance with the latest published NEMA Standards and/or carry the approval of the Underwriters' Laboratories.
- 16.3.2. The use of a manufacturer's trade name and catalog number is not intended to indicate preference, but only the type and quality of the product desired. Products of reputable manufacturers of equal quality and functional type will be acceptable upon approval of the Project Engineer. Substitutes which tend to lower the quality of the work will not be permitted.

#### 16.4. PLACING EQUIPMENT IN SERVICE

Equipment and electrical circuits shall be checked and tested prior to energization. Notification of the Contract Administrator is to be made before energization of the low-voltage electrical equipment so a representative of the Contract Administrator will be present.

#### 16.5. CONTROL HOUSE ELECTRICAL PANELS

- 16.5.1. The Contractor shall be responsible for furnishing and installing the control house electrical panels. The exact quantity, locations, and sizes of the panels shall be as shown on the Drawings.
- 16.5.2. The AC panel shall be Square-D Company Type "NQOD" or an approved equal. The panelboard shall be enclosed in a NEMA 1 enclosure and include lightning protection. The panels shall include a lockable cover and/or door.
- 16.5.3. The DC panel shall be Square-D Company I-Line Type "HCN" or an approved equal. The panelboard shall be enclosed in a NEMA 1 enclosure. The panels shall include a lockable cover and/or door.
- 16.5.4. The main breakers and branch circuit breakers shall be conventional bolt on type circuit breakers rated in accordance with the Drawings. The wiring and labeling of each panel breaker shall be as shown on the Drawings.

#### 16.6. CONTROL HOUSE LIGHTING AND OUTLETS

- 16.6.1. The Contractor shall furnish and install the lighting fixtures for the control house; see Drawings for quantities, types and locations. **NOTE:** All lighting shall operate at line voltage of 120 volts.
- 16.6.2. Each exterior lighting circuit shall be dawn-dusk controlled by a single photocell mounted on the exterior of the control house.
- 16.6.3. The Contractor shall furnish and install the following items as needed to complete the Control House Electrical as shown on the Drawings:
  - A. Receptacle, ground-type duplex, surface mounted.
  - B. Receptacle, ground fault circuit-interrupter, duplex, surface mounted.
  - C. Three way switch, surface mounted.
  - D. Four way switch, surface mounted.
  - E. Single pole switch, surface mounted.
  - F. Junction boxes.
  - G. Conduit, EMT, PVC, and aluminum, as required.
  - H. Weatherproof covers for all outdoor switches and receptacles.

- I. Smoke detector GE Type 350CX with Form A and C output relays.

#### 16.7. CONTROL HOUSE HVAC EQUIPMENT

- 16.7.1. The Contractor shall furnish and install, as shown on the Drawings, Trane 2.5 ton packaged split system heat pump with heat strips as follows:

- (2) Trane 2/4TEC3F30B1000A Air Handler Unit
- (2) Trane 2TWB3030A1000A Condensing Unit
- (2) Trane BAYHTR1405000A, 4.8kW Electric Heater
- (2) Single Stage Heating/Cooling Programmable Thermostat
- (2) Trane TAYPLNM100 Plenum Pedestal Upflow

**NOTE:** Refer to the Control House Electrical drawing for exact number and locations of the condensers and air handlers. For further details or contact information about this equipment, contact the Project Engineer.

- A. The Contractor shall furnish and install ducting, return and supply air grills, and permanent type filters associated with the heat pumps above. The Contractor shall also furnish and install a turning vane to efficiently project air into the control house.
- B. For each heat pump specified above, the Contractor shall furnish and install two (2) non-fusible, 2-pole heavy duty disconnect safety switches, 60A, 240VAC, one (1) shall use an indoor NEMA 1 enclosure and one (1) shall use a rain tight NEMA 3R enclosure, the disconnect safety switches shall be manufactured by Square-D Company. After the Contractor has installed each heat pump specified above, the Contractor shall complete the conduit run from the disconnect safety switches to the heat pump units, utilizing a section of liquid-tight flexible conduit sized appropriately for connection to the heat pump units. The Contractor shall then complete the power wiring from the disconnect safety switches to the heat pump units.

- 16.7.2. The Contractor shall furnish and install one (1) wall mounted exhaust fan (Nutone Model #8070SA with Model #834 washable permanent aluminum-mesh filter, or approved equal) in the bathroom.
- 16.7.3. The Contractor shall furnish and install one (1) wall mounted exhaust fan, explosion-proof, having a capacity of 100 cfm at 0.375 inch wg static pressure with backdraft damper and wall cap in the battery room. Return register with opposed blade dampers shall be provided and adjusted to balance exhaust airflow to 100 cfm. The Contractor shall submit for approval the battery room exhaust fan and associated equipment. Both wall mounted exhaust fan motors shall be suitable for 120V, single phase, 60Hz operation.

#### 16.8. BATTERY BANK, CONTROL SWITCHBOARD PANELS, & SCADA RTU CABINET

- 16.8.1. The Owner will furnish two (2) battery banks, two (2) tier battery racks and two (2) battery chargers. The Contractor shall transport the above material from the JEA Commonwealth Service Center warehouse to the jobsite, unload, and store them indoors until assembly by the Manufacturer. The Contractor shall move the material to the control house battery room, upon completion of the battery room, for installation by the Manufacturer.
- 16.8.2. The Contractor shall install the battery chargers, conduits, AC and DC cables, and grounding conductors as required by the Plans and Drawings prior to requesting assembly of the battery banks. The Contractor shall provide a four (4) week notice before requesting the assembly of the battery banks by the Manufacturer. The Manufacturer shall install, float charge, test, and approve the battery bank for in-service operation.

- 16.8.3. The Contractor shall request delivery schedule, unload, and install the control switchboard panels (quantity as indicated on the Drawings), and pickup, transport, and install one (1) SCADA RTU cabinet in the locations as shown on the Drawings. The Contractor shall install these panels into the Control House only after the Control House is substantially complete, including installation of the floor sealant. The Contractor shall be responsible for properly leveling the panels and ensuring that all access doors are operable.
- 16.8.4. The Owner will furnish and install all communications, network, and security switchboard panels within the control house.
- 16.8.5. The Contractor shall be responsible for all additional incurred cost by JEA if the Contractor is unable to unload and place the relay panels into the control house upon delivery from the Manufacturer.

## **17. RECEIVING AND OFF-LOADING OF STRUCTURES AND MATERIALS**

The Contractor shall be responsible for taking delivery of all Substation Structures and Materials directly from the Manufacturer at the job site. This will require that the Contractor perform the following tasks regarding Substation Structures and Materials delivery as the project progresses:

- 17.1 The Contractor may assume that the Owner's Manufacturer shall have the Substation Structures and Materials available for shipping in time to meet the scheduled Structures and Materials shipping date which is shown in the Project Schedule in the Attachments of these Specifications.
- 17.2 As the site work progresses, the Contractor shall notify the Project Engineer in writing (or by electronic mail) at least two (2) weeks in advance of the date of the Contractor's readiness for all Structures and Materials. However, this scheduled delivery date must be within two (2) weeks of the scheduled Structures and Materials shipping date which is listed in the Project Schedule in the Attachments of these Specifications.
- 17.3 The Owner's Manufacturer will then set an approximate schedule for the shipment of all Substation Structures and Materials directly to the job site and deliver on the date specified by the Contractor, +/- five (5) business days (two week window).
- 17.4 When the shipper of each shipment is within 48 hours of the Substation site, the shipper will contact the Project Representative to schedule a delivery appointment. The Contractor, shipper, and Project Representative shall then coordinate a firm appointment.
- 17.5 The Contractor shall then have employees and equipment on-site, throughout normal business hours of that day, to off-load all Substation Structures and Materials within two (2) hours of the shipper's arrival. The Contractor shall then take responsibility of all Substation Structures and Materials, and may store the Structures and Materials on-site in an approved storage area. Approved storage area shall mean any storage location approved by the Project Representative for this specific purpose.
- 17.6 The JEA Project Representative and the Contractor shall then count, examine, and sign for all Structures and Materials.

## **18. LABELING**

The Contractor shall be responsible for labeling the following newly-installed substation facilities at the job site. This will require that the Contractor perform the following tasks:

### **18.1. LABELING OF LARGE TRANSFORMERS AND BREAKERS**

The Contractor shall provide and install all labeling of all newly-installed large transformers and high-voltage circuit breakers in the switchyard as specified below.

- 18.1.1. The Contractor shall label the transformers and breakers using spray paint and a block stencil with six (6") inch high letters. The equipment designations to be used are shown on the "SINGLE LINE DIAGRAM" Drawing.
- 18.1.2. The Contractor shall prepare the surface of the transformers and breakers prior to painting, in a manner approved by the Project Representative. The paint shall be Rust-oleum spray on #7776-830, flat black, or equal as approved by the Project Representative.
- 18.1.3. The labeling shall be applied, at approximately eye level, in two (2) places: on the right hand side of the cabinet door and another location as specified by the Project Representative.

#### **18.2. LABELING OF HIGH-VOLTAGE SWITCHES**

JEA shall provide and the Contractor shall install labeling on all newly-installed high-voltage substation switches at the job site. These switches include high-voltage hook switches, group-operated switches, circuit switchers, and fused disconnect switches which interconnect to the buswork. The labeling of these switches will require that the Contractor perform the following tasks:

- 18.2.1. The Contractor shall apply labels on the switch support structures as enumerated on the Drawing titled "SINGLE LINE DIAGRAM".
- 18.2.2. The Contractor shall label the switches using reflective labeling to be provided by JEA through the Project Representative. Note that the Contractor must notify the Project Representative in writing (or by electronic mail) when the Contractor is approximately two (2) weeks away from needing these labels. The Project Representative will then pick up the labels from the JEA storeroom and deliver to the Contractor at the job site.
- 18.2.3. The labeling shall be applied at a location to be field located by the Project Representative, or a JEA employee who is directed by the Project Representative.

#### **18.3. LABELING OF LOW-VOLTAGE PANELS**

The Contractor shall provide and install all labeling of all other low-voltage panels installed in the switchyard as well as low-voltage AC/DC power panels in the control house, as specified below:

- 18.3.1. The Contractor shall label the cover of every newly installed junction box, AC low-voltage supply panels, DC low-voltage supply panels, and others as labeled on the "CONDUIT PLAN" and the "STATION SERVICE AND YARD PANELS" Drawings. This shall also include the AC low-voltage supply panels and DC low-voltage supply panels in the control house.
- 18.3.2. The Contractor shall label the covers using a block stencil with three (3") high letters.
- 18.3.3. The Contractor shall prepare a reasonable portion of the surface of such covers and paint the characters onto the surface. Paint shall be Rust-oleum spray on #7776-830, flat black, or equal as approved by the Project Representative.
- 18.3.4. The labeling shall be applied, at approximately eye level, centered on the cover, or other location if approved by the Project Representative.
- 18.3.5. The labeling shall also be hand-written inside the panel, to the panel box itself, in a conspicuous location, using a permanent marker. Sharpie Fine Point Series 30000 Black, or approved equal.

#### **18.4. LABELING OF LOW-VOLTAGE AC/DC SUPPLY BRANCHES**

The Contractor shall be responsible for labeling of all newly-installed low-voltage AC/DC supply branches at the job site. This will require that the Contractor perform the following tasks:

- 18.4.1. The Contractor shall label the branch circuits of each AC/DC supply branch to agree with the designations as shown on the "STATION SERVICE AND YARD PANELS" Drawing.
- 18.4.2. The Contractor shall label the branch circuits of each AC/DC supply branch in two (2) locations; the panel front surface adjacent to the protection device (breaker) and the branch index sheet provided with the cover of the cabinet.
- 18.4.3. The branch index sheet shall be neatly typed (or clearly printed in ball-point pen) with the branch names shown on the Drawings for these panels. Two (2) copies of this sheet will be produced by the Contractor and provided to either the Project Representative or the Project Engineer at the final checkout / inspection.
- 18.4.4. The Contractor shall provide and install labels of each branch on the panel front surface adjacent to the protection device (breaker). The Contractor shall refer to the Project Representative for approval of a labeling system for this purpose.

#### **18.5. LABELING OF SWITCHYARD RECEPTACLES**

The Contractor shall provide and install labels on all newly-installed switchyard receptacles at the job site. This will require that the Contractor perform the following tasks:

- 18.5.1. The Contractor shall apply labels on the switchyard receptacle structures as labeled on the "CONDUIT PLAN" Drawing.
- 18.5.2. The Contractor shall label the switchyard receptacle structures using a block stencil with three (3") high letters.
- 18.5.3. The Contractor shall prepare a reasonable portion of the surface of such structures and paint the characters onto the surface. Paint shall be Rust-oleum spray on #7776-830, flat black, or equal as approved by the Project Representative.
- 18.5.4. The labeling shall be applied at a location to be field located by the Project Representative.
- 18.5.5. Additionally, the Contractor shall label each receptacle on the inside of the receptacle faceplate or cover using a permanent fine-tip black marker. Sharpie Fine Point Series 30000 Black, or approved equal.

#### **18.6. LABELING OF CONDUITS**

The Contractor shall provide and install labels on all newly-installed conduits as a part of this work. This shall require that the Contractor perform each of the following:

- 18.6.1. Where conduits enter an electrical panel (AC/DC service panel, control panel, junction box, etc.), the Contractor shall label the conduit in two (2) places:
  - A. The Contractor shall label the conduit circumferentially, about two (2") inches outside of the box, using a permanent fine-tip black marker. The markings shall be positioned and sized so that a person working on the cabinet may readily see the markings.
  - B. The Contractor shall also apply the same labels, using a permanent fine-tip black marker, on the interior of the box, conspicuously near the conduit entry points.

- 18.6.2. Where conduits enter a cable trench, the Contractor shall label the conduit along the axis of the conduit, about two (2") inches below the conduit opening, using a permanent large-tip black marker. The markings shall be positioned and sized so that a person looking downward onto the conduit may readily see the markings.
- 18.6.3. Where a conduit terminates other than as mentioned above, the Contractor shall label the conduit along the axis of the conduit, about two (2") inches below the conduit termination, using a permanent large-tip black marker.
- 18.6.4. All conduit identifications shall be those taken from the Conduit Schedule which is attached to these Specifications.

## 18.7. LABELING OF CABLE

The Contractor shall provide and install labels on all newly-installed cables as a part of this work. This shall require that the Contractor perform each of the following:

- 18.7.1. All cables are to be labeled:
  - A. At both ends.
  - B. Where entering and leaving the cable trench.
  - C. Where exiting station electrical equipment, to include all AC/DC power panels, power circuit breakers, power transformers, junction boxes, fiber optic, video, and station control panels, etc.
- 18.7.2. Cable identification tags will be attached to the cable in a manner approved by the Project Representative. The Contractor shall prevent galvanic corrosion and not intermix dissimilar metals (Aluminum-Copper, Stainless Steel-Aluminum) when attaching tags to cables. Plastic cable ties shall not be permitted for exterior applications. Examples of exterior connection methods are lockable beaded chain and metal wire.
- 18.7.3. Outdoor cable identification tags shall be 1/2" wide stainless steel, Dymo M1011 system, unless otherwise approved by the Project Representative. Indoor cable identification tags shall be RhinoPRO 1/2" flexible nylon labels - black on white, Manufacturer part# 18488, unless otherwise approved by the Project Representative. Indoor labels shall be secured with no less than two plastic cable ties.
- 18.7.4. All cable identification tags will have the appropriate cable number clearly stamped in no less than 1/4" high characters. Cable numbers are specified on the Cable Schedule attached to these Specifications.

## 19. SUBSTATION SIGNAGE

The Contractor shall install the following signage on the substation fence, wall, or partitions, and control house entry point(s) as a part of this Work. The signage shall consist of four (4) components, the signs which shall be used on the Perimeter Security Boundary (which shall normally be a fence or a wall), the Perimeter Entry Points (gates, doors, etc.), the Control House Entry Points (typically doors) and inside substation perimeter road (near live equipment, bus, switches etc.).

- 19.1. Perimeter Signage: The perimeter signage shall consist of signs labeled "**WARNING HAZARDOUS VOLTAGE KEEP OUT**", placed at approximately Forty (40') foot spacing around the entire perimeter boundary (fence, wall, etc.) and at a conspicuous height, approximately Six (6') feet.
  - 19.1.1. "Warning Hazardous Voltage Keep Out" (JEA Item ID# sigda010),



- 19.2. Substation Entry Points Signage: Each entryway shall have signage in addition to the requirements of the perimeter signage. Entryways include the fence gates and wall entryways. The entryways shall each have the following four (4) signs:
- 19.2.1. **"WARNING HAZARDOUS VOLTAGE KEEP OUT"** (JEA Item ID# SIGDA003)
  - 19.2.2. **"SAFETY INSTRUCTIONS / PPE"** (JEA Item ID# SIGDA004)
  - 19.2.3. **"NOTICE CONTACT SYSTEM DISPATCH BEFORE ENTERING/AFTER SECURING"**  
(JEA Item ID# SIGDA005)
  - 19.2.4. **"NOTICE PRIVATE PROPERTY NO TRESPASSING"** (JEA ITEM ID# SIGDA012)
- 19.3. Control House Entry Point Signage: Each Control House Entry Point (door, roll up doors, or any other appurtenance for the admission of persons under reasonable conditions) shall have signage in addition to the requirements mentioned above. For this paragraph, the "Control House" shall be any and every humanly-accessible building within or adjoining to the substation property that contains any electrical apparatus that monitors, controls, or otherwise is essential to the operation of the substation, and is not otherwise designed for novice/public entry and occupancy. Each Control House Entry Point shall each have the following sign:
- 19.3.1. **"NOTICE CONTACT SYSTEM DISPATCH BEFORE ENTERING/AFTER SECURING"**  
(JEA Item ID# SIGDA005)
- 19.4. Interior Substation Signage: Danger signs to be placed inside substation (at inner perimeter of road, by side of switchgear, near transformers, breakers, capacitor banks, bus, and feeders. The following sign and fiberglass post shall be used:
- 19.4.1. **DANGER HAZARDOUS VOLTAGE KEEP OUT** (JEA Item ID# SIGDA011)
  - 19.4.2. **FIBERGLASS POST** (JEA Item ID# SIGPO014)
- 19.5. Exact location of the signage may be reviewed and modified with the concurrence of the on-site Project Representative.
- 19.6. All signs for this Work shall be provided by JEA. The Contractor shall request the signage indicating type and quantity, in writing (by email or other typewritten instrument) from the Project Representative approximately two (2) weeks in advance of need.
- 19.7. The Contractor may assume that all signs for this Work shall include corner holes riveted with a non-corroding grommet or eyelet. The Contractor shall fasten the signs to the perimeter fence or wall, or control house door, in a manner that is to be submitted in writing (by email or other typewritten instrument) to, and approved by, the Project Representative.



**PROJECT DESIGN SEGMENT 20410  
HV Capacitor Bank Installations  
MATERIALS FURNISHED BY OWNER**

**GENERAL NOTES:**

1. THE CONTRACTOR SHALL NOT RESPONSIBLE FOR TRANSPORTING HIGH VOLTAGE CIRCUIT BREAKERS OR THE CAPACITOR BANKS TO THE SUBSTATION SITE, THE CONTRACTOR'S RESPONSIBILITIES IN REGARDS TO SITE ACCESS, FOUNDATIONS AND ASSEMBLY OF THE HIGH VOLTAGE CIRCUIT BREAKERS AND CAPACITOR BANKS ARE OUTLINED IN SECTION III OF THESE SPECIFICATIONS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ORDERING THE JEA STOCK MATERIAL THROUGH THE JEA PROJECT REPRESENTATIVE AT LEAST TWO WEEKS IN ADVANCE OF NEED, RECEIVING AND LOADING THE MATERIAL AT AN ARBITRARY JEA LOCATION WITHIN DUVAL COUNTY, FLORIDA, TRANSPORTING THE MATERIAL TO THE SUBSTATION SITE, AND THEN OFFLOADING AND INSTALLING THE MATERIAL AT THE JOBSITE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRANSPORTING, OFFLOADING AND INSTALLING THE RELAY / CONTROL SWITCHBOARD PANELS INTO THE CONTROL HOUSE AT EACH SITE, FROM AN ARBITRARY JEA LOCATION WITHIN DUVAL COUNTY, FL.
4. ALL MATERIALS PICKED UP OR RECEIVED BY THE CONTRACTOR SHALL REMAIN IN THE CARE, CUSTODY, AND CONTROL OF THE CONTRACTOR UNIL FINAL ACCEPTANCE. CONTRACTOR WILL BE RESPONSIBLE FOR ANY LOSS OR DAMAGE TO SAID MATERIAL.
5. THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING MISCELLANEOUS ITEMS NOT LISTED IN THIS MATERIAL LIST, AS WELL AS ADDITIONAL MATERIALS LISTED ON THE DRAWINGS AND IN THE SPECIFICATIONS. THESE ITEMS INCLUDE, BUT ARE NOT LIMITED TO CONDUIT, CONDUIT FITTINGS AND HARDWARE, GROUNDING CONDUCTOR AND CONNECTORS, CLAMPS, UNISTRUT, FASTENERS, CONNECTORS, POWER CABLE, FITTINGS, ALL LABELING MATERIALS, ETC.

## MATERIALS FURNISHED BY OWNER HV CAPACITOR ADDITIONS

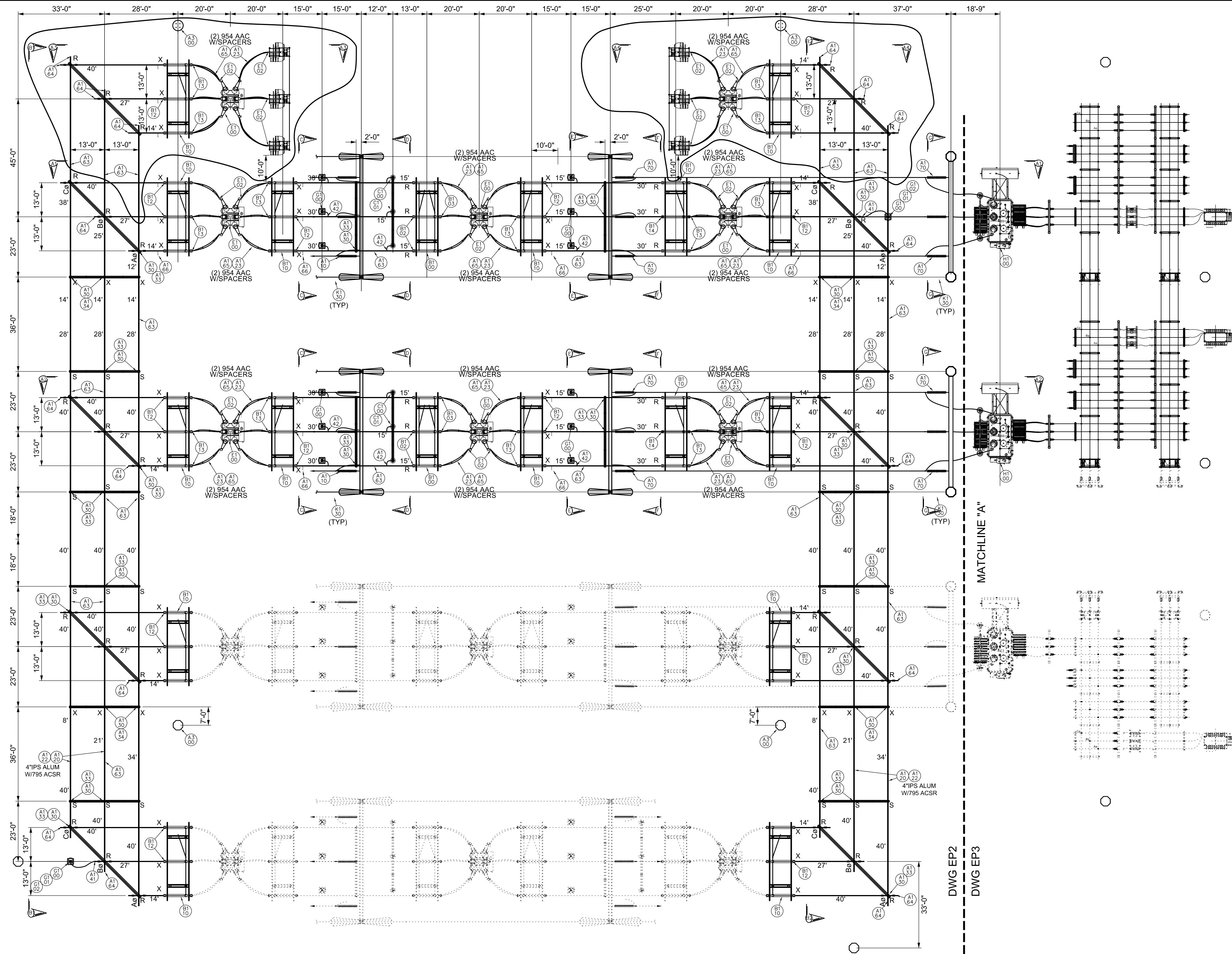
PAGE.: 2 OF 3

DESCRIPTION	MANUFACTURER	COMMENTS	DELIVERED TO / PICKUP FROM	RESPONSIBILITY FOR TRANSPORT / OFF-LOAD
230 KV BUS SUPPORT STAND	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
230 KV DISCONNECT SWITCH STAND	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
230 KV INSULATORS	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
3" IPS AL TUBE BUS	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
4" IPS AL TUBE BUS	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
BUS COUPLER	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
BUS CAP	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
BUS TERMINAL	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
BUS TAP	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
BUS SUPPORT CONNECTORS	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
954 AAC WIRE	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
954 TERMINATION	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
954 WIRE SPACER	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
5000 FT. SPOOL, SHIELDED CONTROL CABLE, #10, FOUR CONDUCTOR	STORE ROOM STOCK # CAICN016		SEE NOTE 2	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
2500 FT. SPOOL, SHIELDED CONTROL CABLE, #10, EIGHT CONDUCTOR	STORE ROOM STOCK # CAICN017		SEE NOTE 2	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
2500 FT. SPOOL, SHIELDED CONTROL CABLE, #10, TWENTY ONE CONDUCTOR	STORE ROOM STOCK # CAICN018		SEE NOTE 2	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
230 KV POWER CIRCUIT BREAKERS	MITSUBISHI		SEE NOTE 1	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR

## MATERIALS FURNISHED BY OWNER HV CAPACITOR ADDITIONS

PAGE.: 3 OF 3

DESCRIPTION	MANUFACTURER	COMMENTS	DELIVERED TO / PICKUP FROM	RESPONSIBILITY FOR TRANSPORT / OFF-LOAD
230 KV CAPACITOR BANK	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
138 KV CAPACITOR BANK	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
230 KV DISCONNECT SWITCH	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
138 KV DISCONNECT SWITCH	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
CLAMP, BRONZE 5/8 INCH	STORE ROOM STOCK # CLAGR001	FOR MH-3	SEE NOTE 2	CONTRACTOR
GROUND PLATFORM 1" X 3' X 4'	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
LIGHTNING PROBE POLE	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
RELAY / CONTROL SWITCHBOARD PANELS	TBD		SEE NOTE 3	CONTRACTOR
EQUIPMENT BOLTS, NUTS AND WASHERS	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR
ANCHOR BOLTS AND TEMPLATES	FURNISHED BY DISTRAN		PROVIDED BY DISTRAN – DELIVERED TO SUBSTATION SITE	TRANSPORTATION BY JEA OFF-LOAD BY CONTRACTOR



- REFERENCE DRAWINGS:
1. E91 - 230KV ELECTRICAL SECTIONS A1,A2,A3,A4
  2. E92 - 230KV ELEC. SECTIONS B1,B2,C,D,E,F,G



NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	OFFSET 230KV PTs AND LAs PER 90% REVIEW	REM	3-4-09	REM	DESIGNED	REM	1-8-08
2	ISSUED FOR CONSTRUCTION BID	REM	4-1-09		CHECKED	REM	10-21-09
3	UPDATED TO INCLUDE SUBSTATION PACKAGER BOM MARKS; FOR CONSTRUCTION	REM	10-21-09		APPROVED		
4	UPDATED TO ADD 2-230KV CAP BANKS	KRK /STN	7-5-17				
					DRAFTING	BY	DATE
					PRELIMINARY	REM	1-8-08
					FINAL DESIGN	REM	10-21-09
					AS BUILT		

BARTRAM SUBSTATION

230KV ELECTRICAL PLAN

23026KV LOW PROFILE SUBSTATION

PROJECT DESIGN SEGMENT 20410

1" = 20'

SCALE

1" = 20'

DESIGN FILENAME

BT172EP2.DGN

DRAWING NO.

BT-23026-17

SHEET NO.

28 OF 72

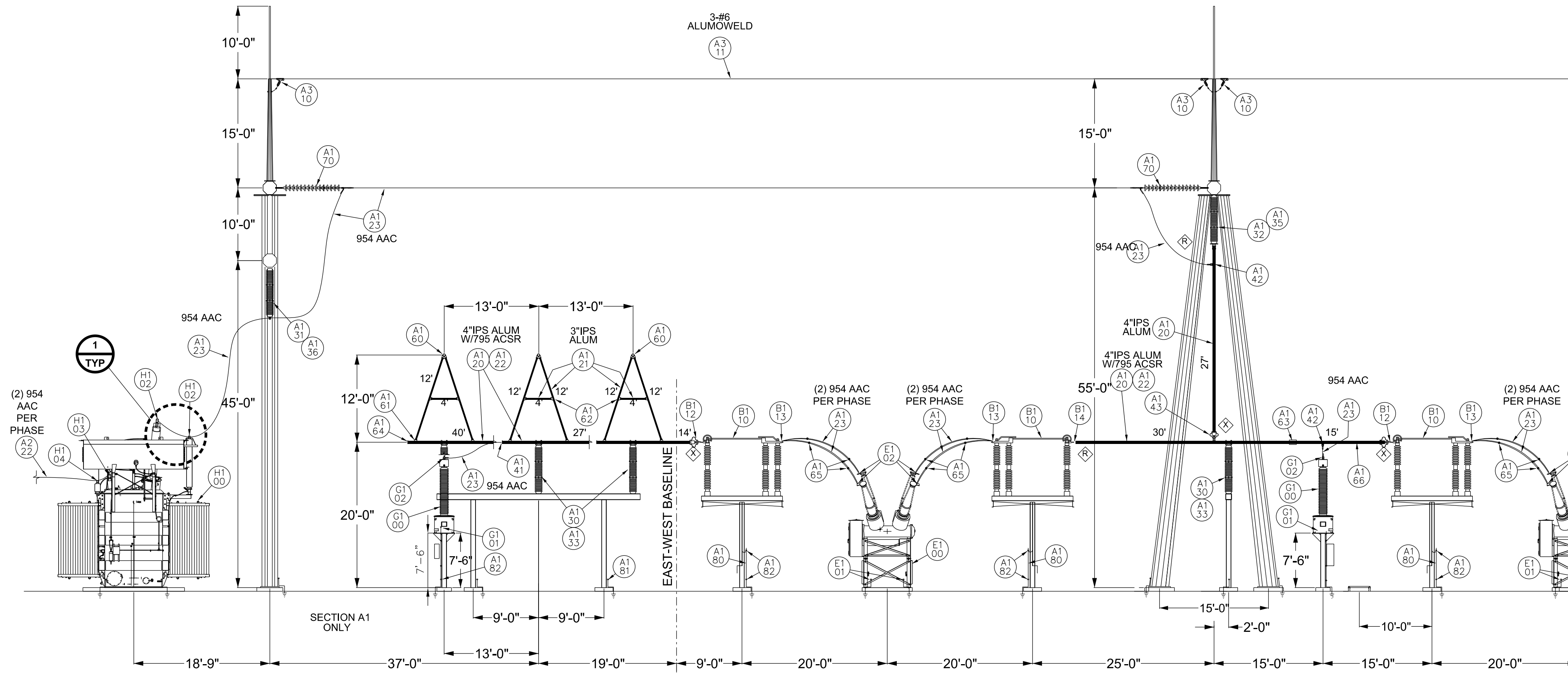
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NA

JEA

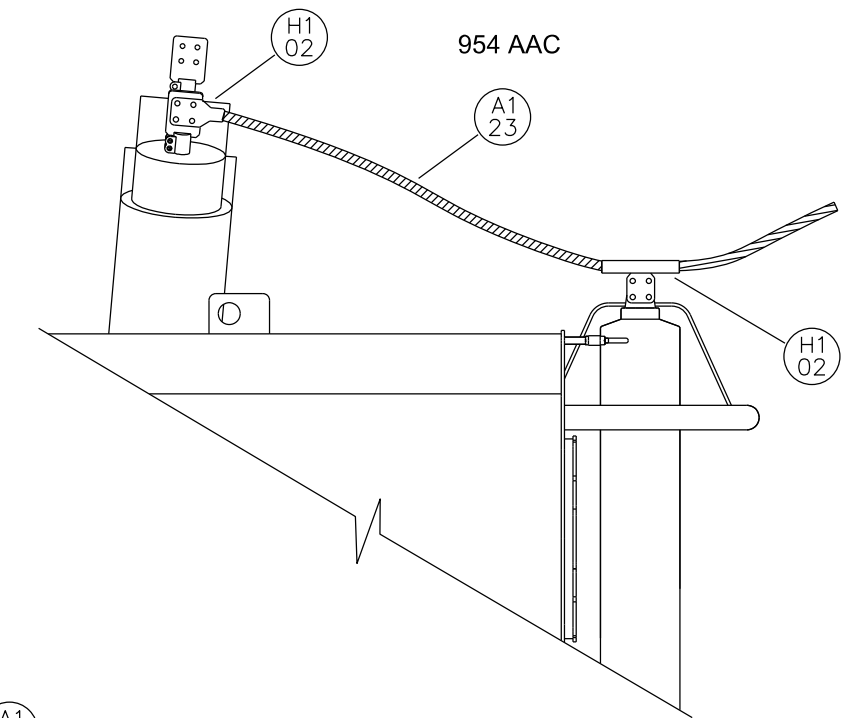
BUILDING COMMUNITY





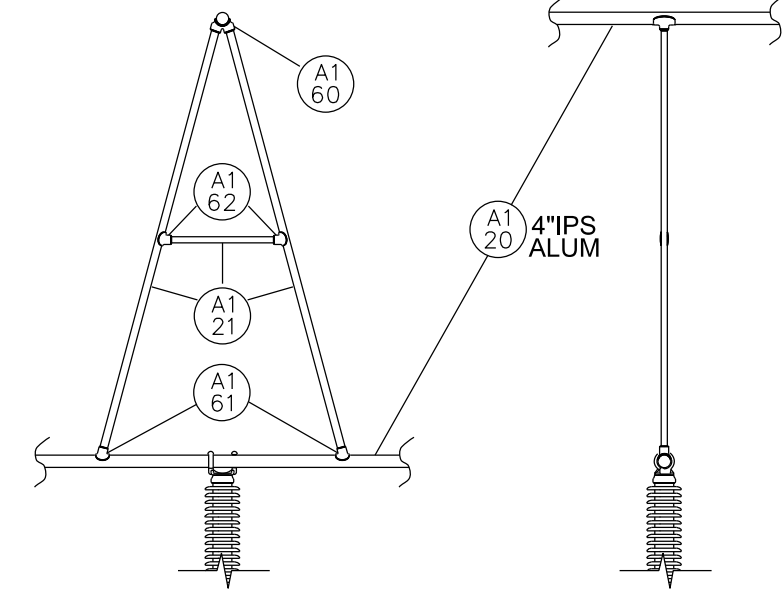
BILL OF MATERIAL DETAIL 1 (6 REQUIRED)			
ITEM NO.	UNIT QTY.	DESCRIPTION	TOTAL QTY.
H1-02	1*	954 AAC TEE TO 4-HOLE PAD, COMPRESSION	6
H1-02	1*	954 AAC TO 4-HOLE PAD, COMPRESSION	6

\*INSTALLED BY CONTRACTOR PERFORMING STRAIN BUS INSTALLATION

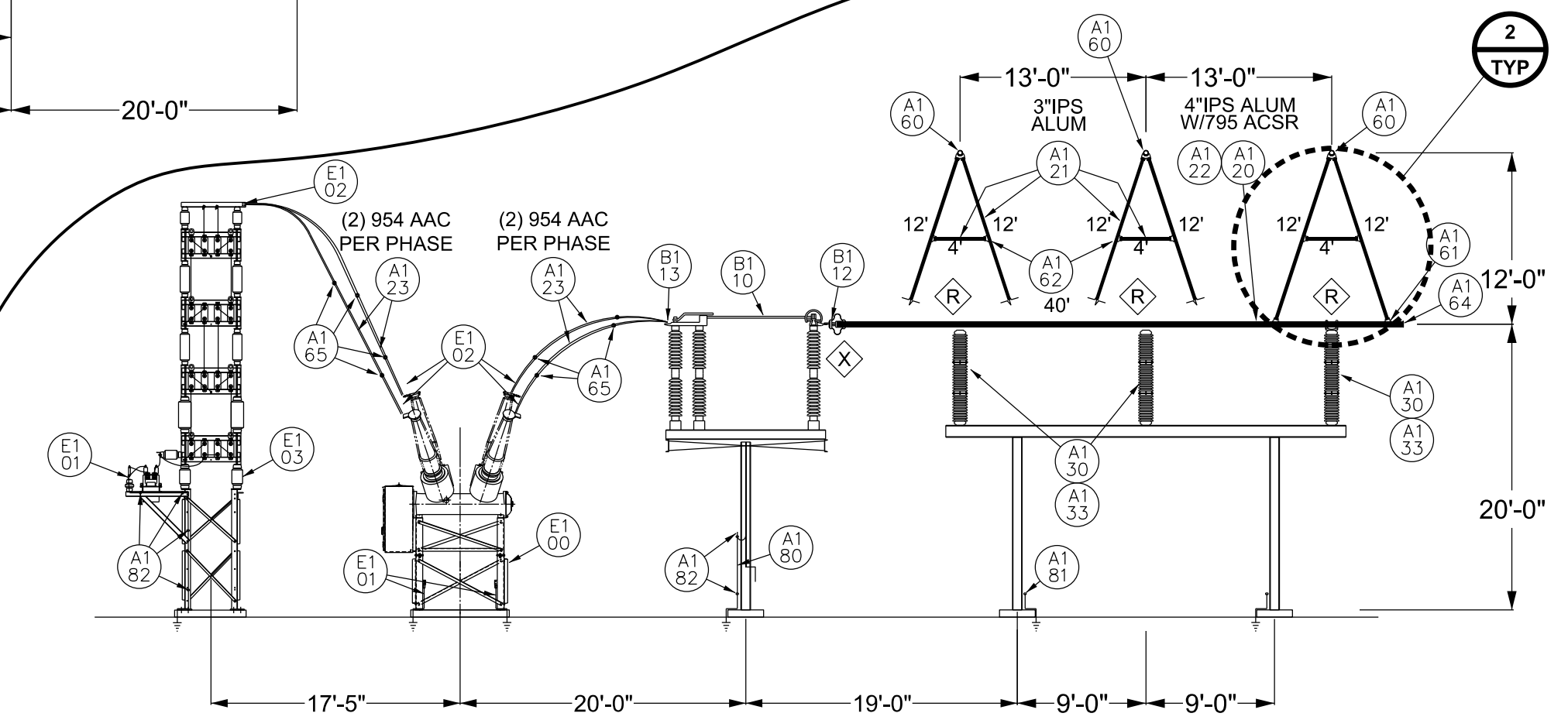
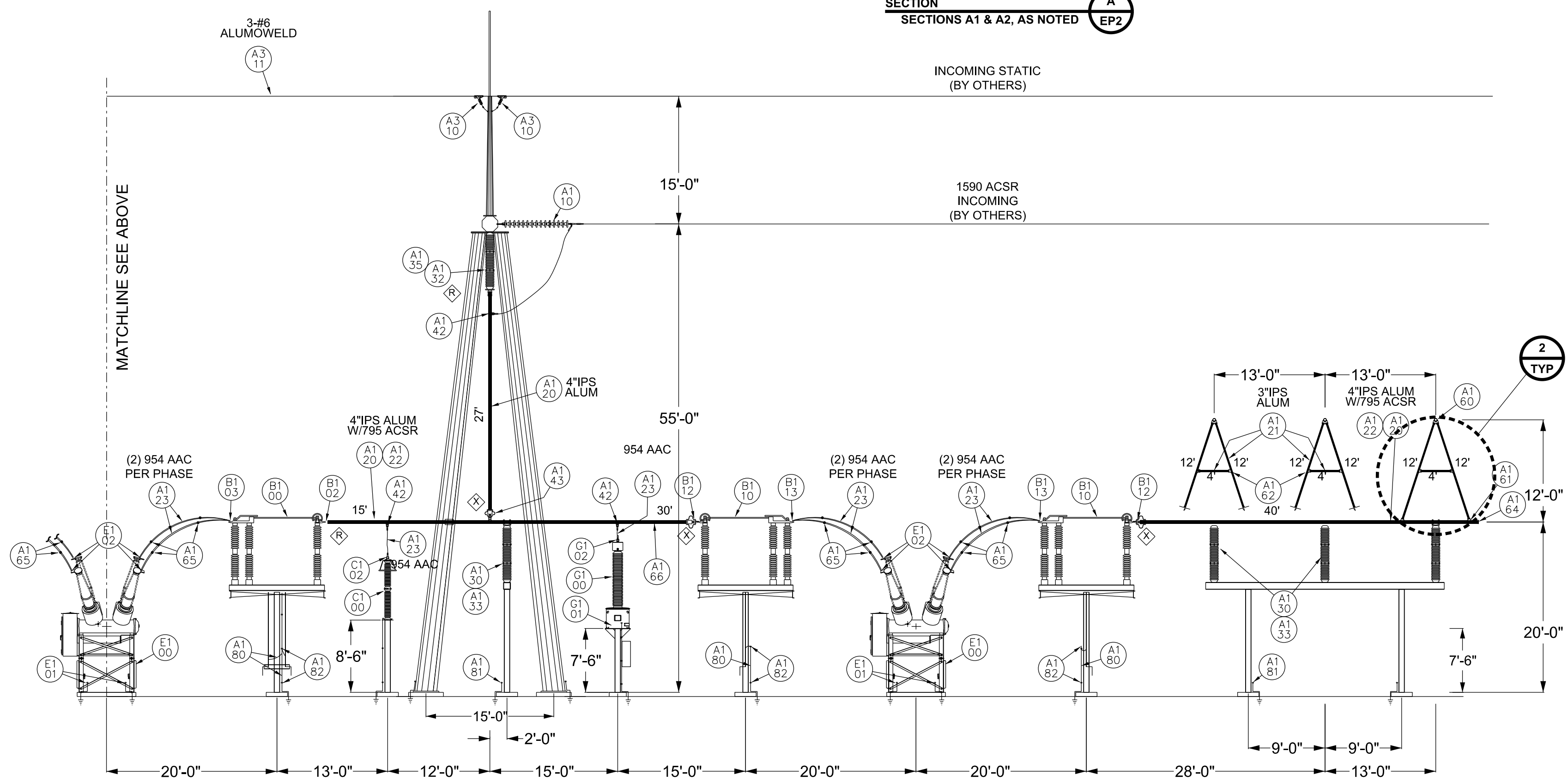


DETAIL 1  
TYPICAL CONNECTIONS  
TRANSFORMER HIGH SIDE

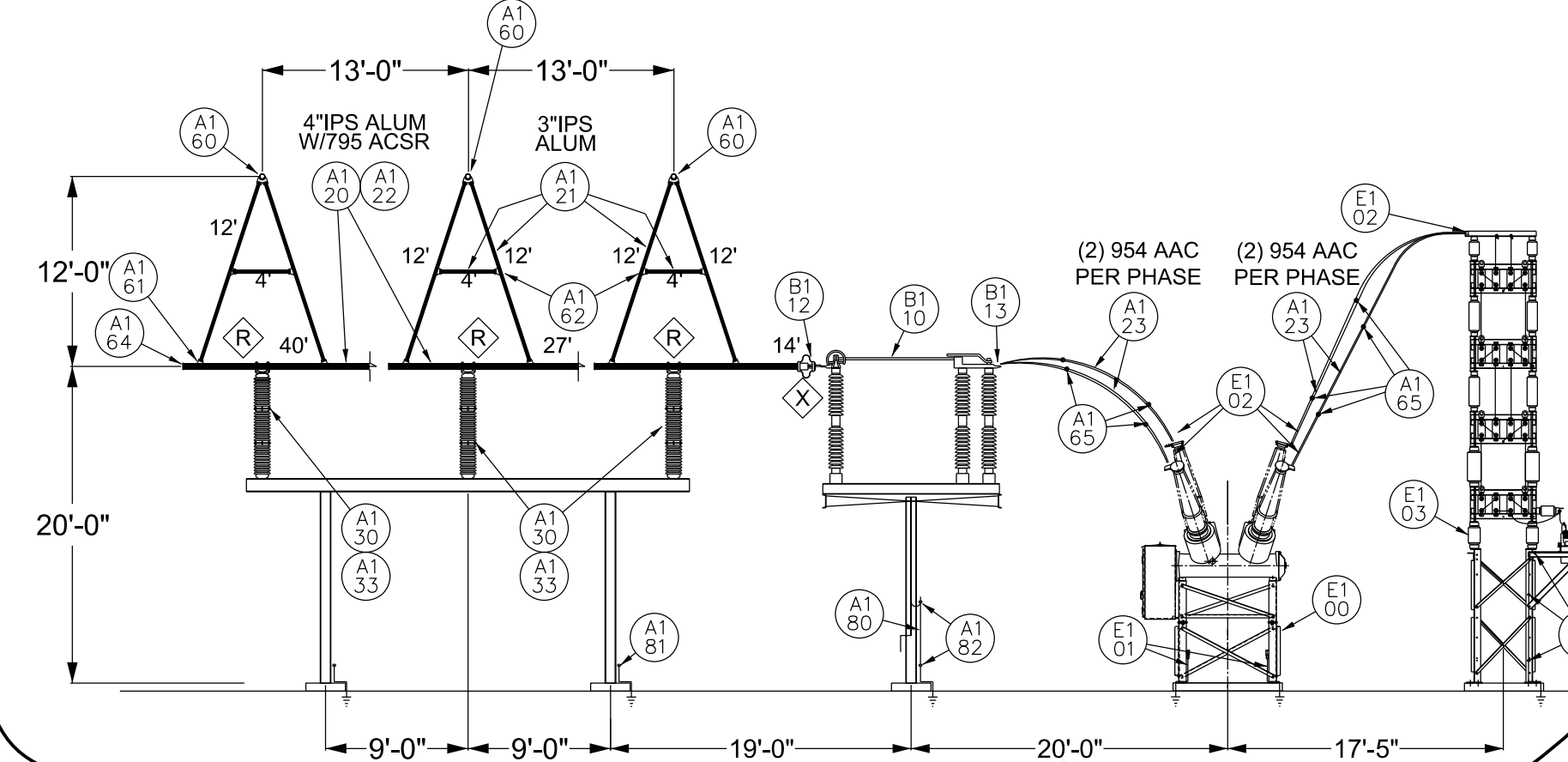
BILL OF MATERIAL DETAIL 1 (24 REQUIRED)			
ITEM NO.	UNIT QTY.	DESCRIPTION	TOTAL QTY.
A1-20	-	4" IPS AL. TUBING	-
A1-21	30'	3" IPS AL. TUBING	720'
A1-60	1	4" IPS AL. MAIN TO (2) 3" IPS AL. TAP AT 15"	24
A1-61	2	4" IPS AL. MAIN TO (1) 3" IPS AL. TAP AT 15"	48
A1-62	2	3" IPS AL. MAIN TO (1) 3" IPS AL. TAP AT 15"	48



DETAIL 2  
TYPICAL A-FRAME  
CONSTRUCTION



SECTION A3



SECTION A4

LEGEND  
R RIGID BUS CONNECTION  
X EXPANSION-TYPE BUS CONNECTION  
NOTE: BUS CONNECTIONS NOT DESIGNATED ARE TO BE SLIP-FIT (DO NOT FIELD WELD)



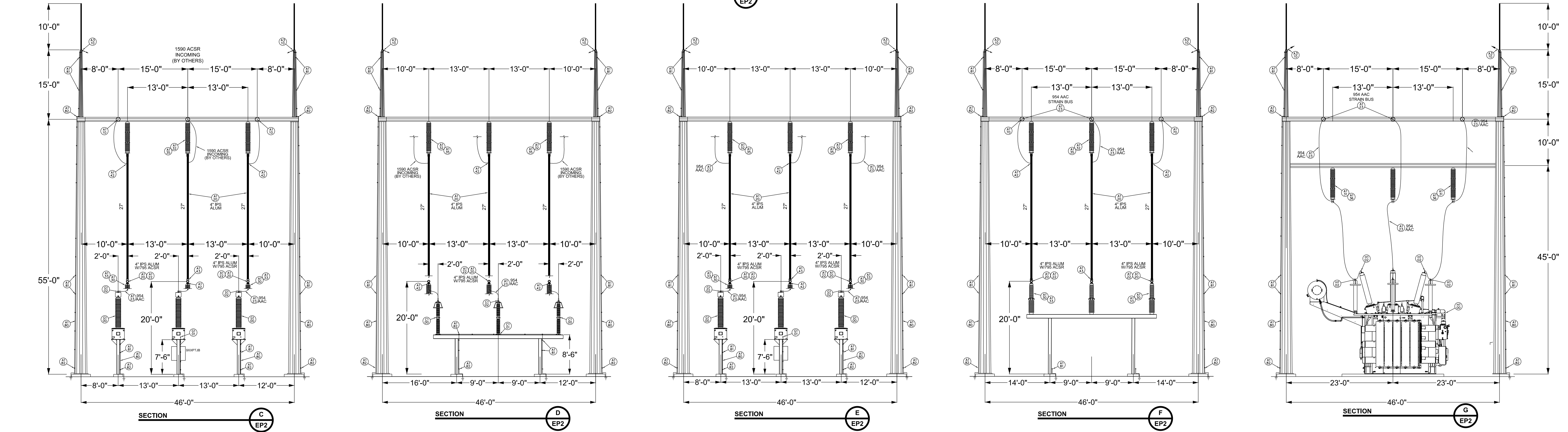
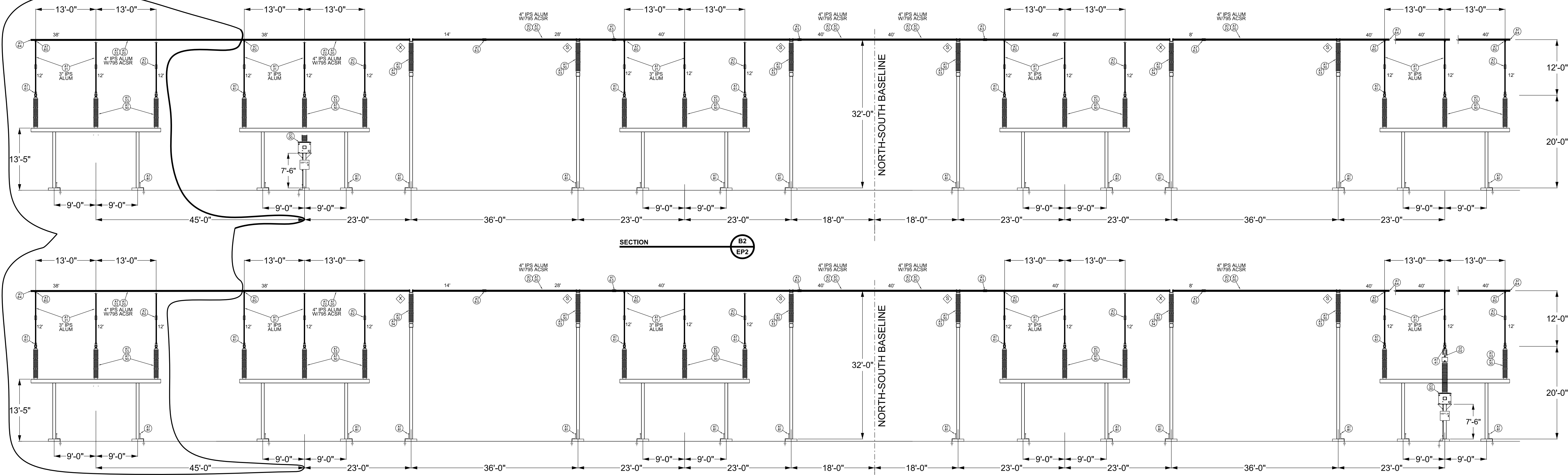
NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	ISSUED TO SUBSTATION PACKAGER	REM	3-21-08		DESIGNED	REM	3-21-08
2	CHANGED CENTER H-FRAME TO A-FRAME (YELLOW WATER SALVAGE), MINOR EDITS	REM	11-13-08		CHECKED	REM	10-21-09
3	CORRECTED H-FRAME DESIGN (ADDED SECOND CROSSMEMBER)	REM	2-2-09		APPROVED		
4	OFFSET 230KV PTs AND LAs PER 90% REVIEW	REM	3-4-09		DRAFTING	BY	DATE
5	ISSUED FOR CONSTRUCTION BID	REM	4-1-09		PRELIMINARY	REM	3-21-08
6	UPDATED TO INCLUDE SUBSTATION PACKAGER BOM MARKS FOR CONSTRUCTION	REM	10-21-09		FINAL DESIGN	REM	10-21-09
7	UPDATED TO INCLUDE SECTIONS A3 AND A4	KRK -STN	7-5-2017		AS BUILT		

BARTRAM SUBSTATION  
230KV ELECTRICAL SECTIONS A1,A2,A3,A4  
230/26kV LOW PROFILE SUBSTATION  
PROJECT DESIGN SEGMENT 20410

JEA  
BUILDING COMMUNITY

DESIGN FILENAME:  
BT172E91.DGN  
DRAWING NO:  
BT-23026-17  
SHEET NO:  
30 OF 72





**LEGEND**

RIGID BUS CONNECTION

EXPANSION-TYPE BUS CONNECTION

NOTE: BUS CONNECTIONS NOT DESIGNATED ARE TO BE SLIP-FIT (DO NOT FIELD WELD)

NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	ISSUED TO SUBSTATION PACKAGER	REM	3-21-08		DESIGNED	REM	3-21-08
2	CHANGED CENTER H-FRAME TO A-FRAME (YELLOW WATER SALVAGE), MINOR EDITS	REM	11-13-08		CHECKED	REM	10-21-09
3	CORRECTED H-FRAME DESIGN (ADDED SECOND CROSSMEMBER)	REM	2-2-09		APPROVED		
4	OFFSET 230KV PTs AND LAs PER 90% REVIEW	REM	3-4-09		DRAFTING	BY	DATE
5	ISSUED FOR CONSTRUCTION BID	REM	4-1-09		PRELIMINARY	REM	3-21-08
6	UPDATED TO INCLUDE SUBSTATION PACKAGER BOM MARKS; FOR CONSTRUCTION	REM	10-21-09		FINAL DESIGN	REM	10-21-09
7	UPDATED FOR 230KV CAP BANK INSTALL	KRK-STN	7-10-17		AS BUILT		

BARTRAM SUBSTATION

230KV ELEC. SECTIONS B,C,D,E,F,G

230/26kV LOW PROFILE SUBSTATION

PROJECT DESIGN SEGMENT 20410

DESIGN FILENAME

BT172E92.DGN

DRAWING NO.

BT-23026-17

SHEET NO.

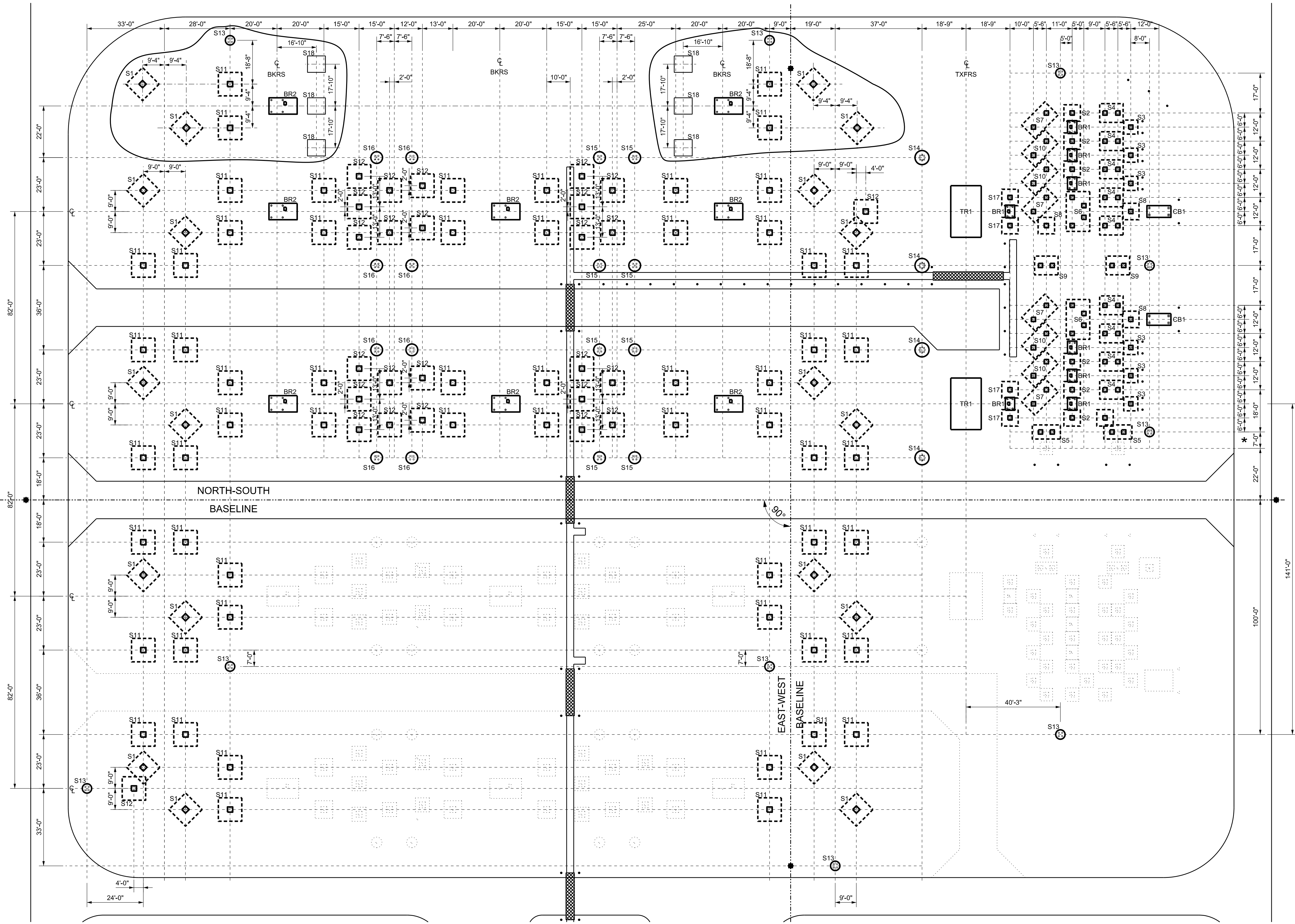
31 OF 72

SCALE

1" = 10'

IPR NO.

NA



#### FOUNDATION PLAN NOTES

1. CONTRACTOR SHOULD PAY CLOSE ATTENTION WHEN INSTALLING THE S12 FOUNDATIONS WITHIN THE VICINITY OF THE SUBSTATION A-FRAME STRUCTURES. SPECIFICALLY, THE FOUNDATIONS FOR THE SINGLE PHASE POTENTIAL TRANSFORMERS AND LIGHTING ARRESTERS HAVE BEEN OFFSET BY A DISTANCE OF TWO (2) FEET SO THAT THE EQUIPMENT IS NOT DIRECTLY UNDER THE HIGH VOLTAGE BUS.
2. FOUNDATIONS ONLY FOR MAJOR SUBSTATION YARD EQUIPMENT ARE SHOWN HERE. FOUNDATIONS FOR THE CONTROL HOUSE, HVAC UNITS, PERIMETER SECURITY POLES, ETC. ARE SHOWN ELSEWHERE IN THIS DRAWING SET.
3. IT IS OF EXTREME IMPORTANCE FOR THE CONTRACTOR TO REVIEW THE GEOTECHNICAL EXPLORATION REPORT FOR INFORMATION REGARDING THE SITE SUBSURFACE SOIL CONDITIONS. THIS REPORT WAS PREPARED BY "UNIVERSAL ENGINEERING SCIENCES," AND IS ATTACHED AS AN APPENDIX TO BIDDING DOCUMENTS OF THIS PROJECT. THE CONTRACTOR SHALL PAY SPECIFIC ATTENTION TO THE SITE PREPARATION RECOMMENDATIONS OUTLINED BY THE REPORT AND ABIDE BY THEM.



NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	OFFSET 230KV PTs AND LAs PER 90% REVIEW	REM	3-4-09		DESIGNED	LJG	7-18-08
2	ISSUED FOR CONSTRUCTION BID	REM	4-1-09		CHECKED	LJG	3-29-09
3	ISSUED FOR CONSTRUCTION	REM	6-18-09		APPROVED		
4	UPDATED FOR 230KV CAP BANK INSTALLATION	KRK-STN	7-17-17		DRAFTING	BY	DATE
					PUBLIMINARY	REM	7-18-08
					FINAL DESIGN	REM	4-1-09
					AS BUILT		

BARTRAM SUBSTATION  
FOUNDATION PLAN  
23026KV LOW PROFILE SUBSTATION



DESIGN FILENAME:  
BT172FP1.DGN

DRAWING NO.:  
BT-23026-17

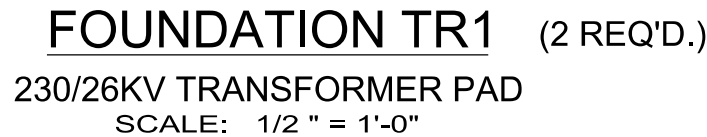
SHEET NO.:  
38 OF 72

PROJECT DESIGN SEGMENT 20410

IFB NO.:  
N/A

SCALE:  
1" = 20'





A.B. - 3/4" DIA. STAINLESS STEEL  
POWERS FASTENERS POWER STUD  
CAT. NO. 7349 CONCRETE ANCHOR  
WITH ONE (1) FLAT WASHER AND  
ONE (1) HEX NUT PER BOLT - BY  
CONTRACTOR. 2 1/2" PROJ. TYP.

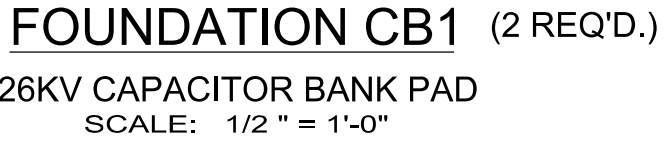
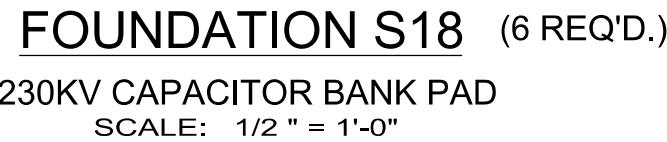
4" ROCK  
6"  
ELEV. 19.67  
2'-0"

#6 @ 11" O.C.  
E.W. BOTT. & TOP

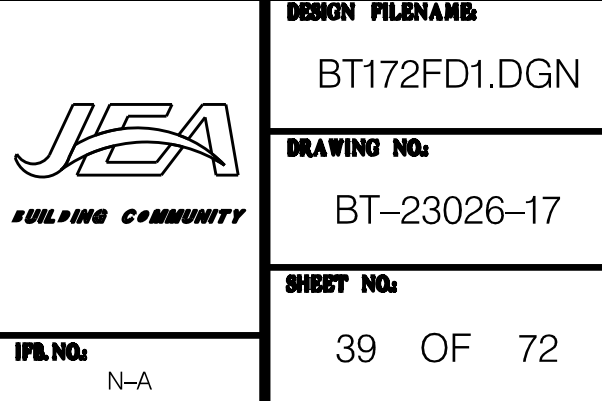
SECTION

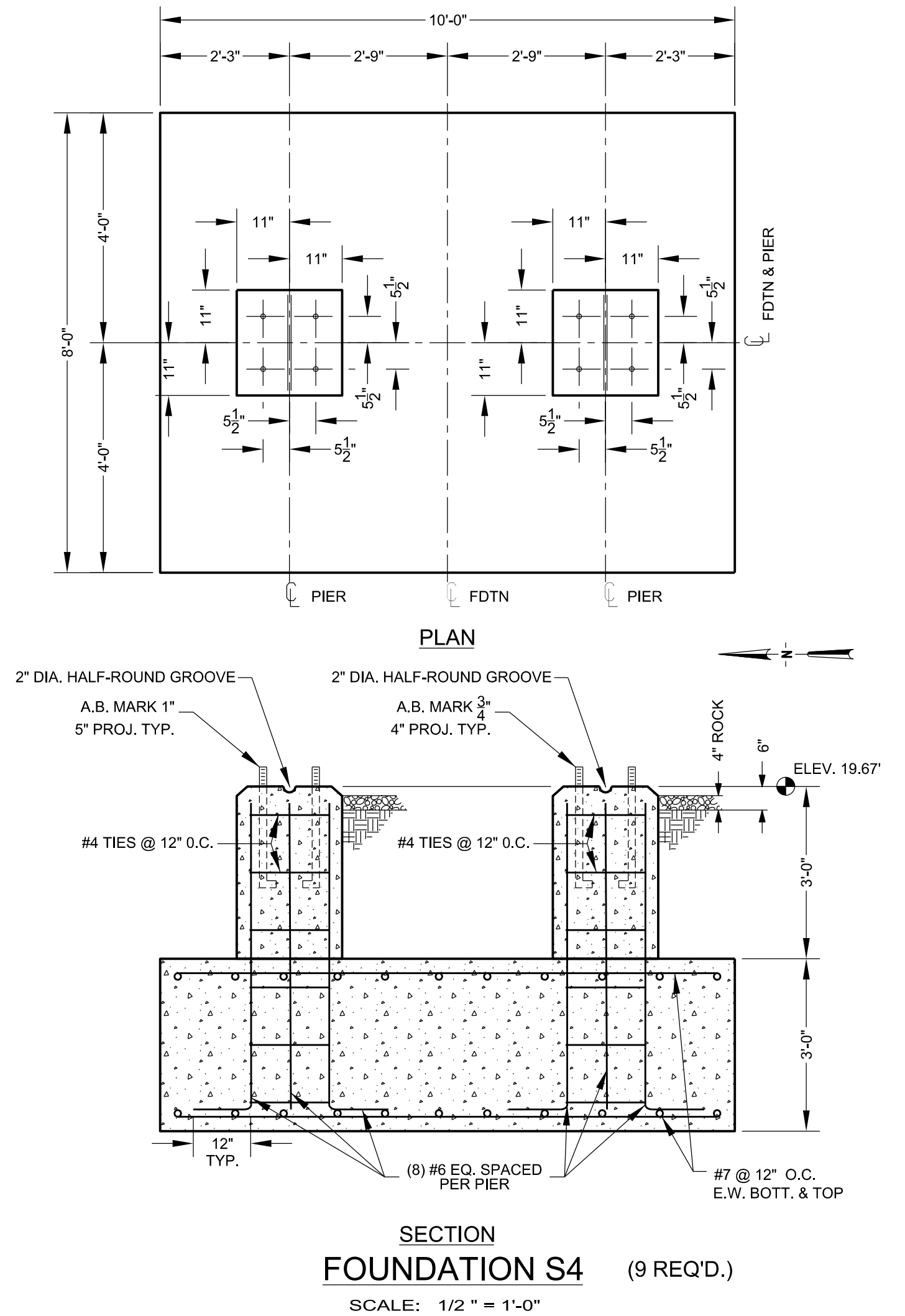
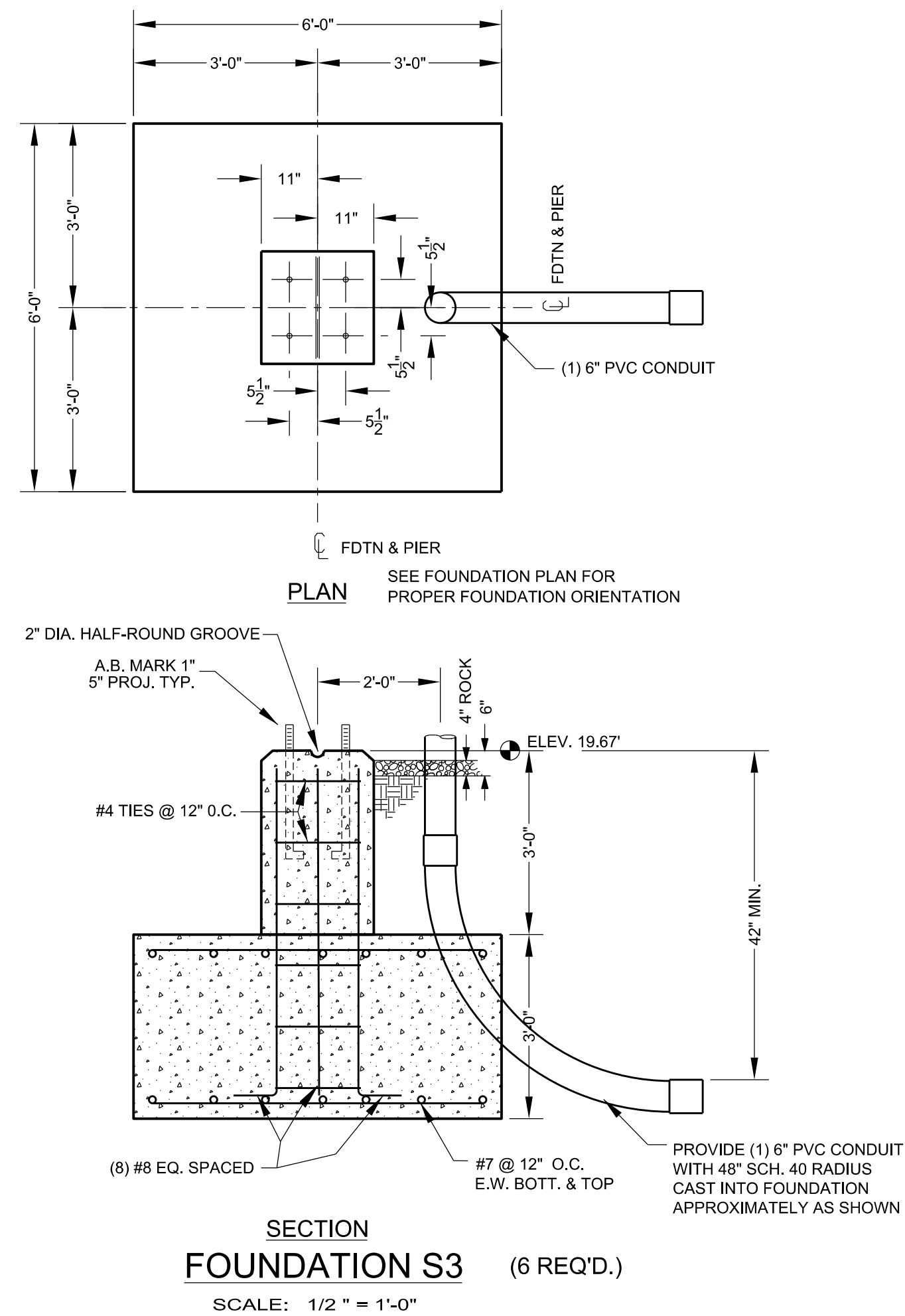
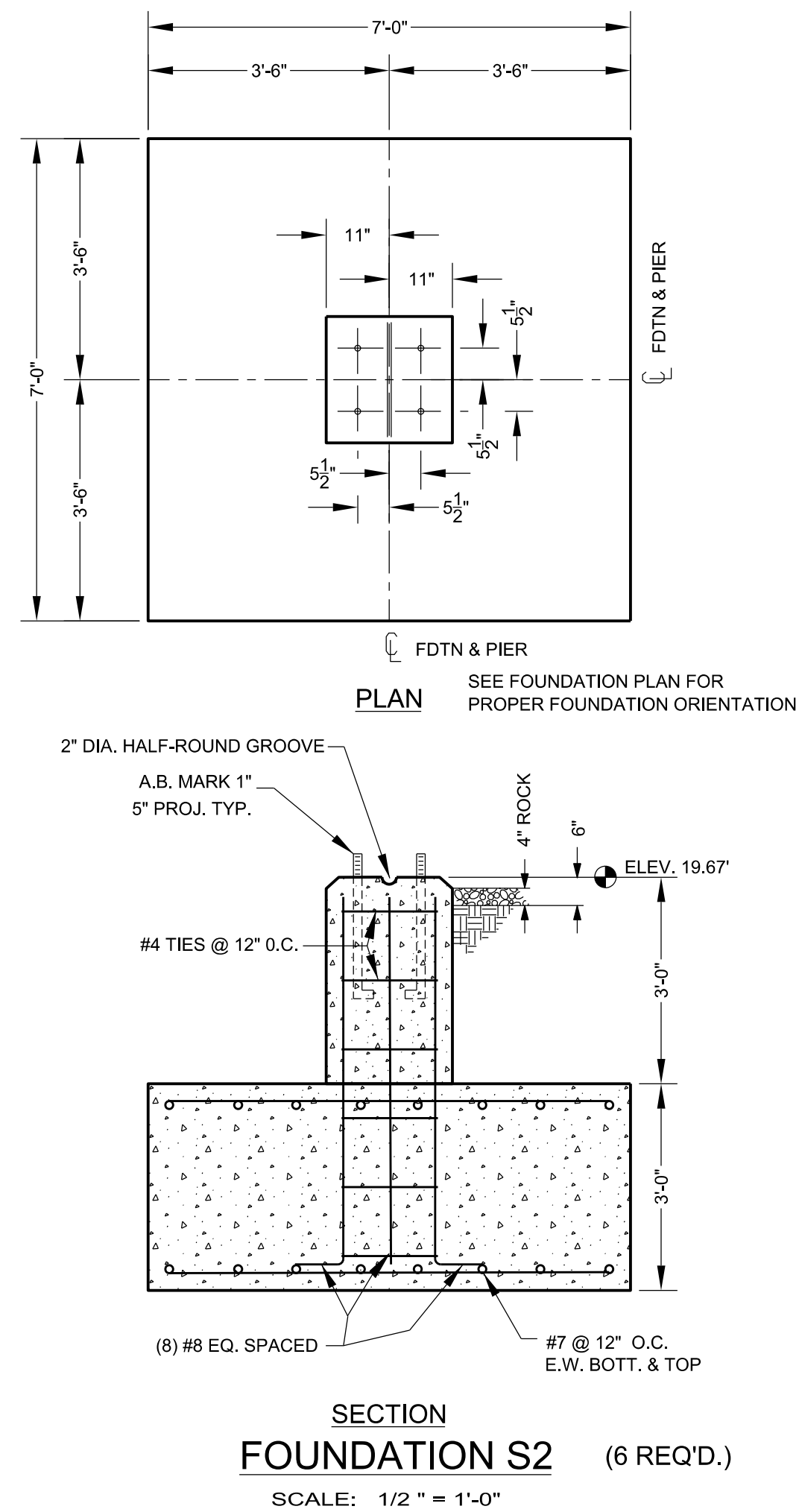
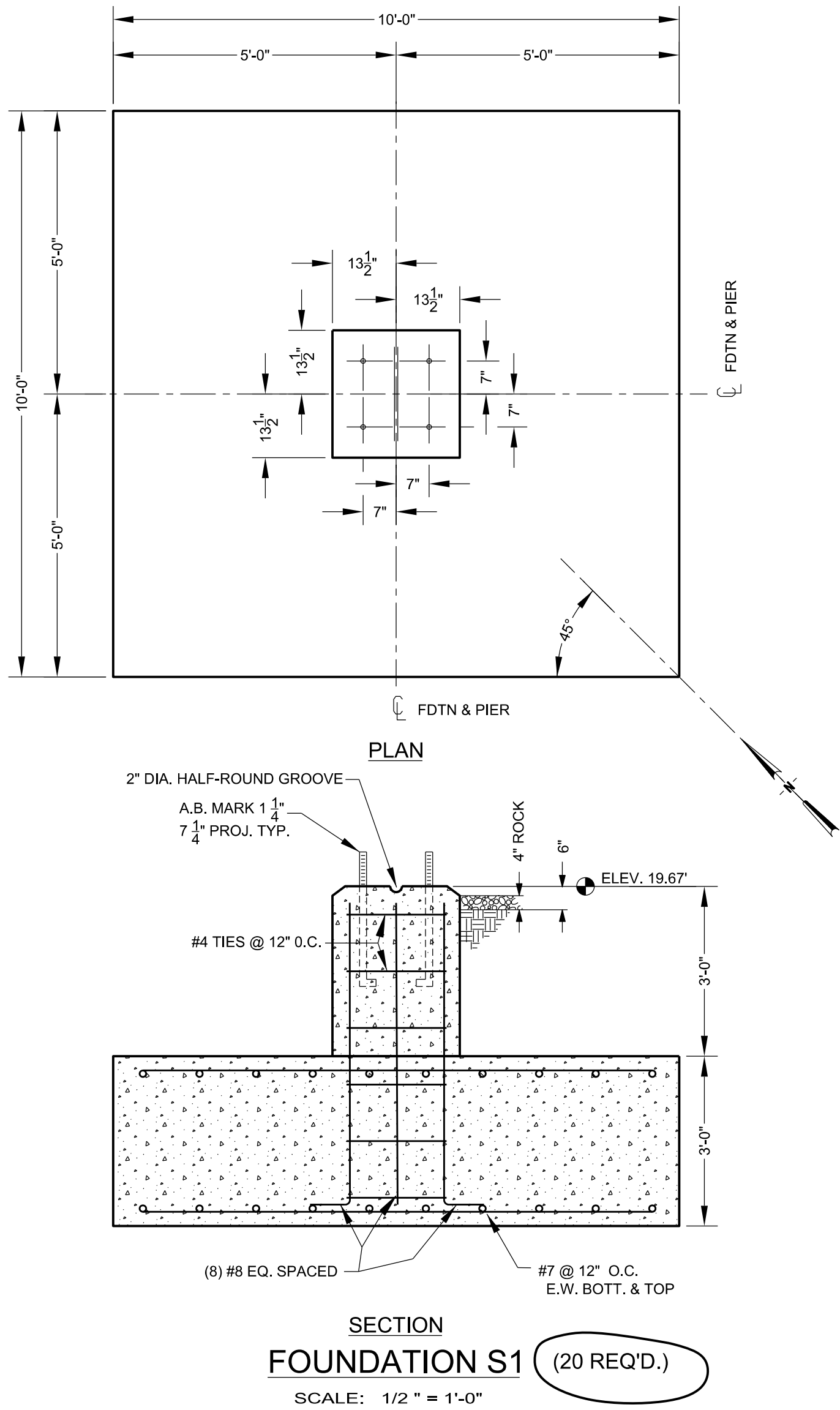
**FOUNDATION BR1** (8 REQ'D.)

26KV BREAKER PAD  
SCALE: 1/2" = 1'-0"



- ## FOUNDATION DESIGN LOADS
1. THE FOUNDATIONS FOR STRUCTURES S1 THROUGH S16 ARE DESIGNED TO ACCOMMODATE THE FOUNDATION REACTIONS NOTED IN THE CLARK SUBSTATIONS BARTRAM SUBSTATION 230/26KV STRUCTURAL CALCULATIONS, (CLARK JOB NUMBER 7652), DATED JANUARY 23, 2009.
2. TRANSFORMER FOUNDATION TRI IS DESIGNED TO ACCOMMODATE TRANSFORMER LOADS PER SHOP DRAWING #A6418T532108 SUBMITTED BY "WAUKESHA ELECTRIC SYSTEMS".
3. FOUNDATIONS FOR ALL OTHER STRUCTURES WERE DESIGNED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE USING WIND LOAD PARAMETERS:
- |                                   |                       |
|-----------------------------------|-----------------------|
| A. LOCATION:                      | JACKSONVILLE, FLORIDA |
| B. BASIC WIND SPEED:              | 120 MPH               |
| C. WIND EXPOSURE:                 | EXPOSURE C            |
| D. IMPORTANCE FACTOR (I):         | 1.15                  |
| E. INTERNAL PRESSURE COEFFICIENT: | N/A                   |





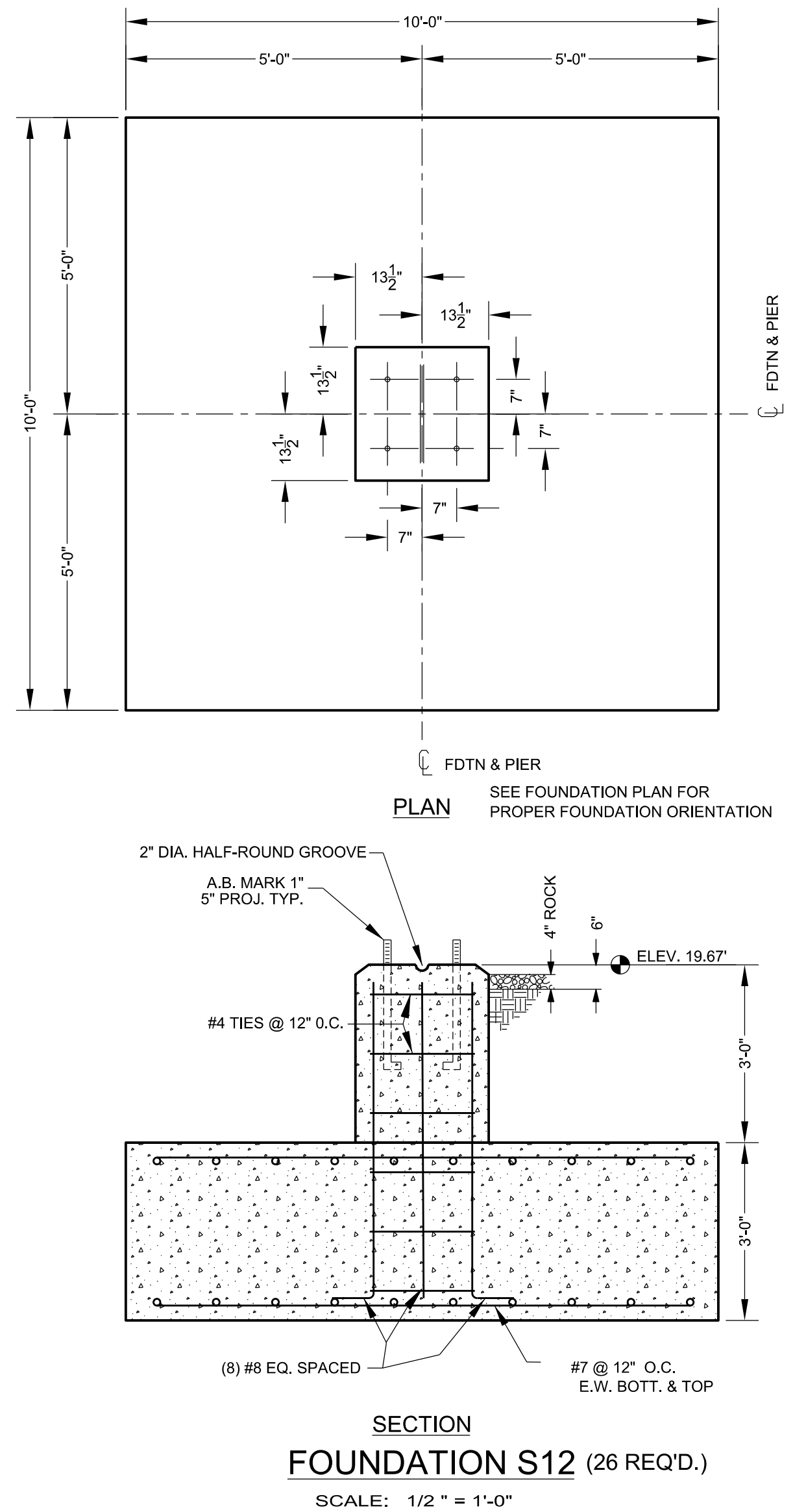
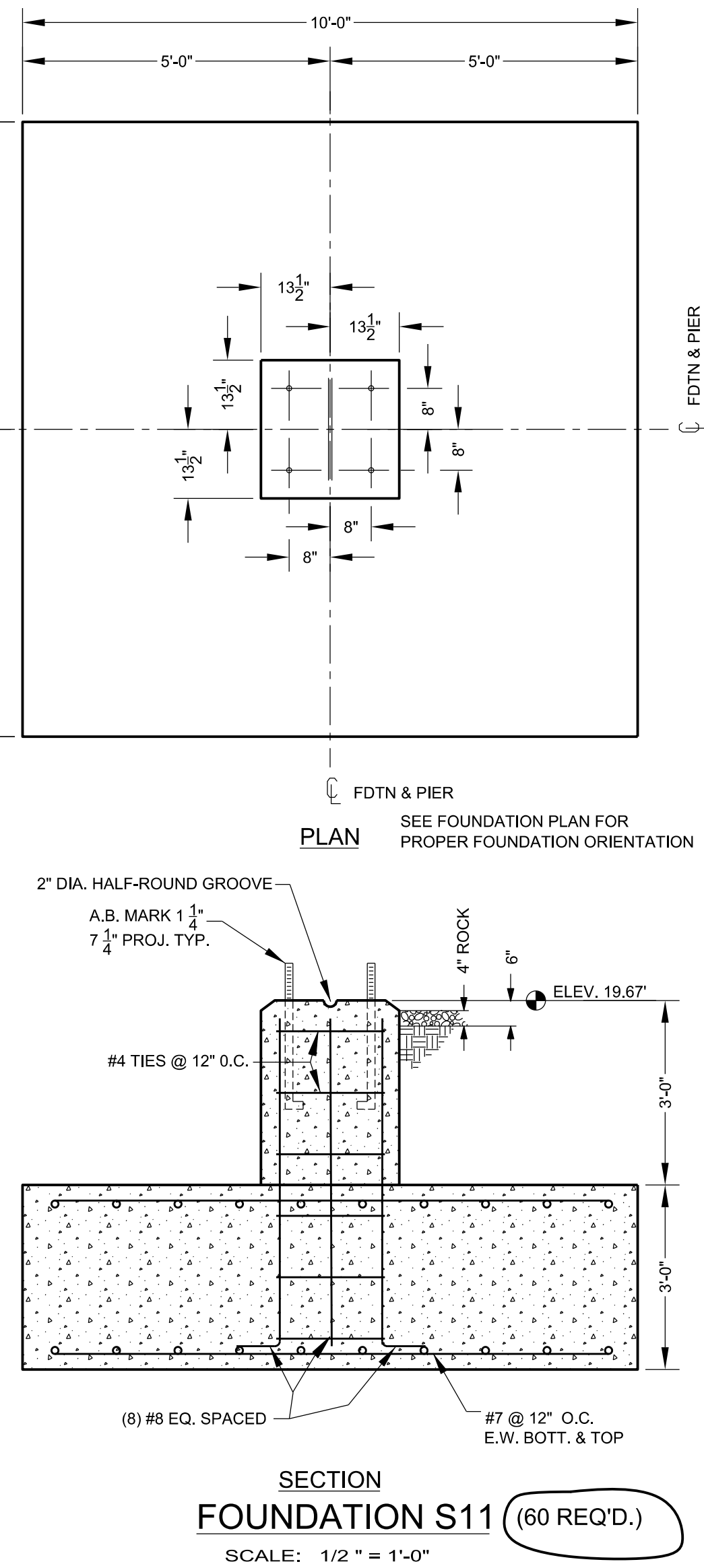
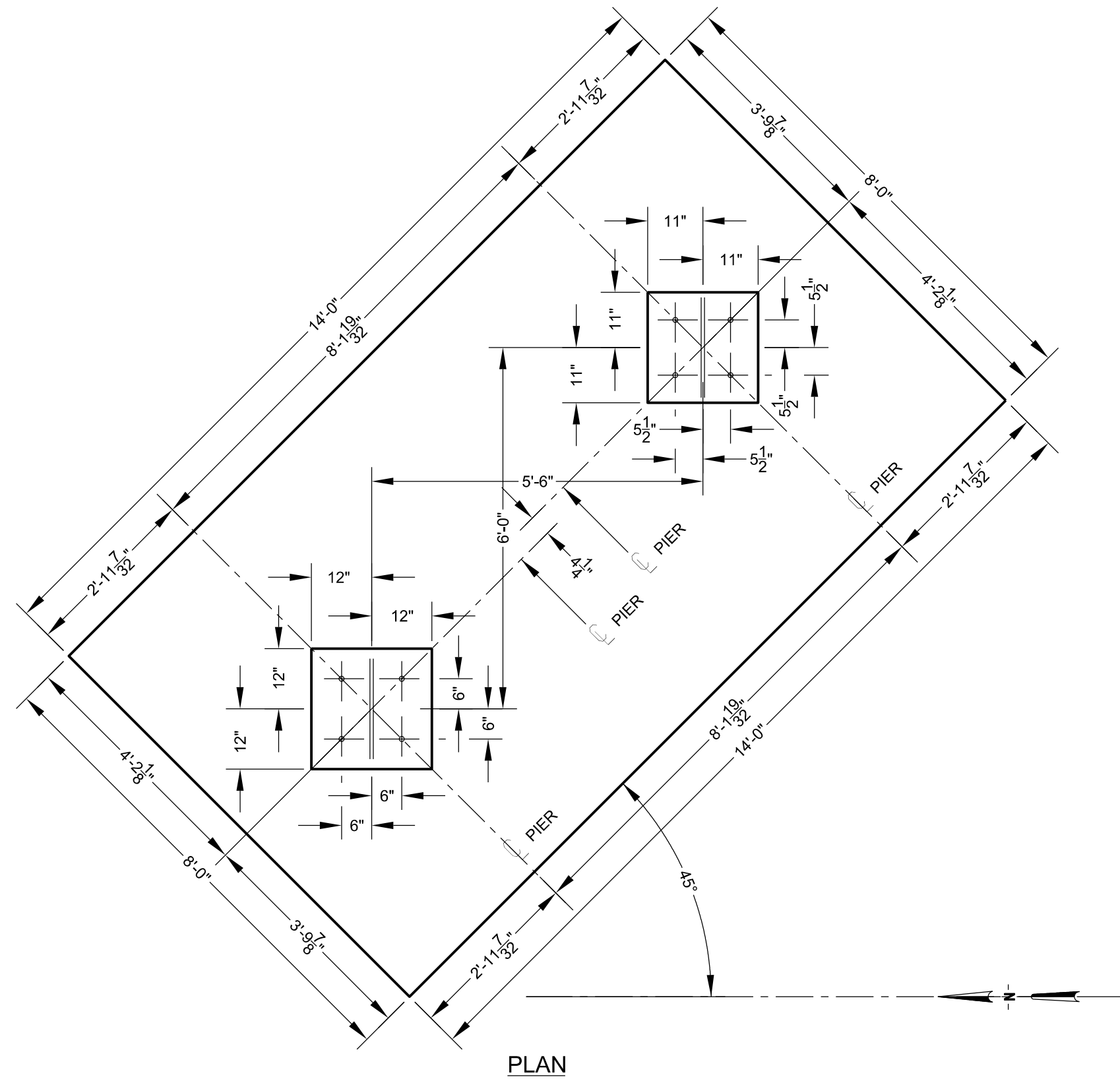
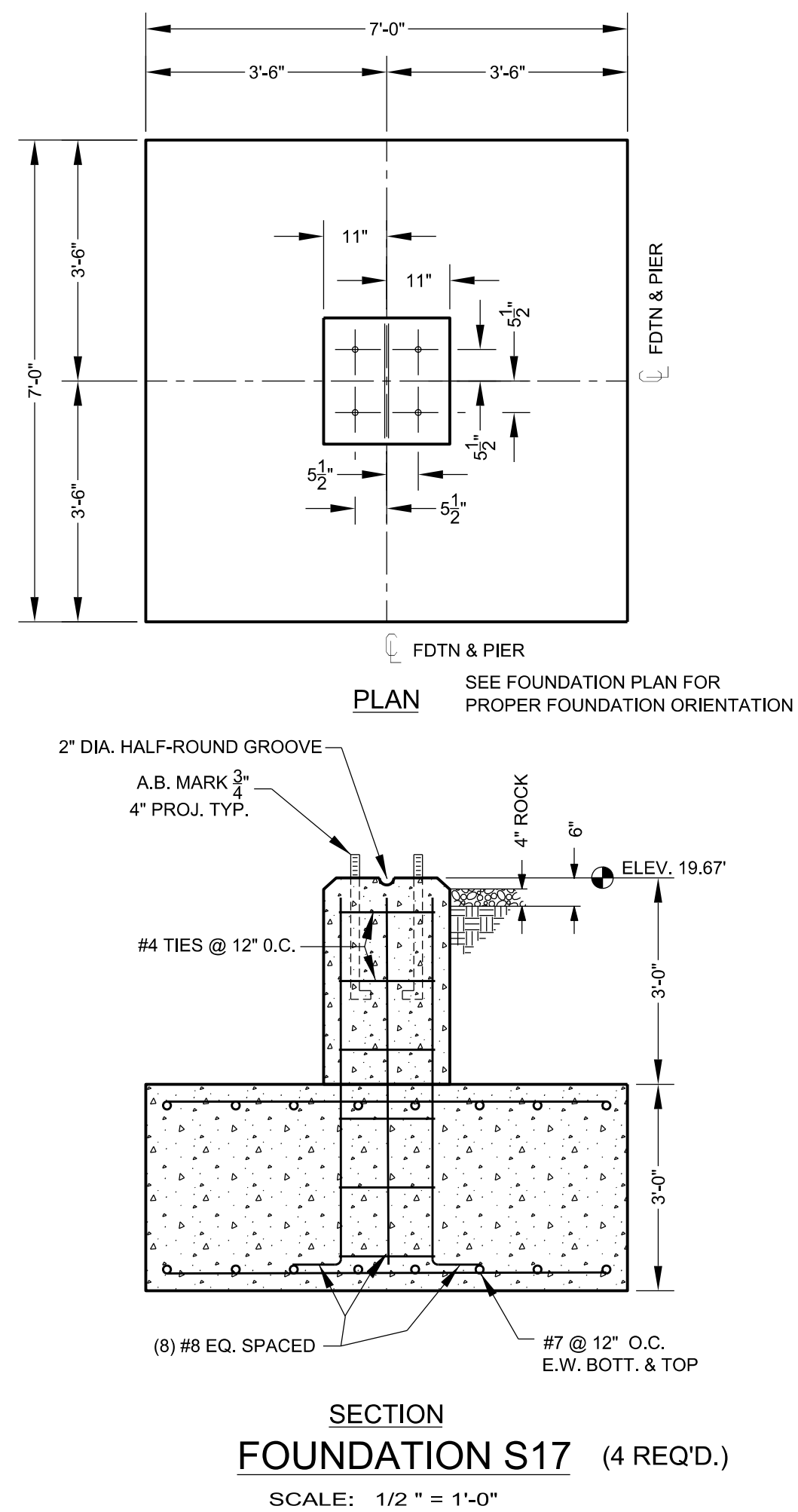
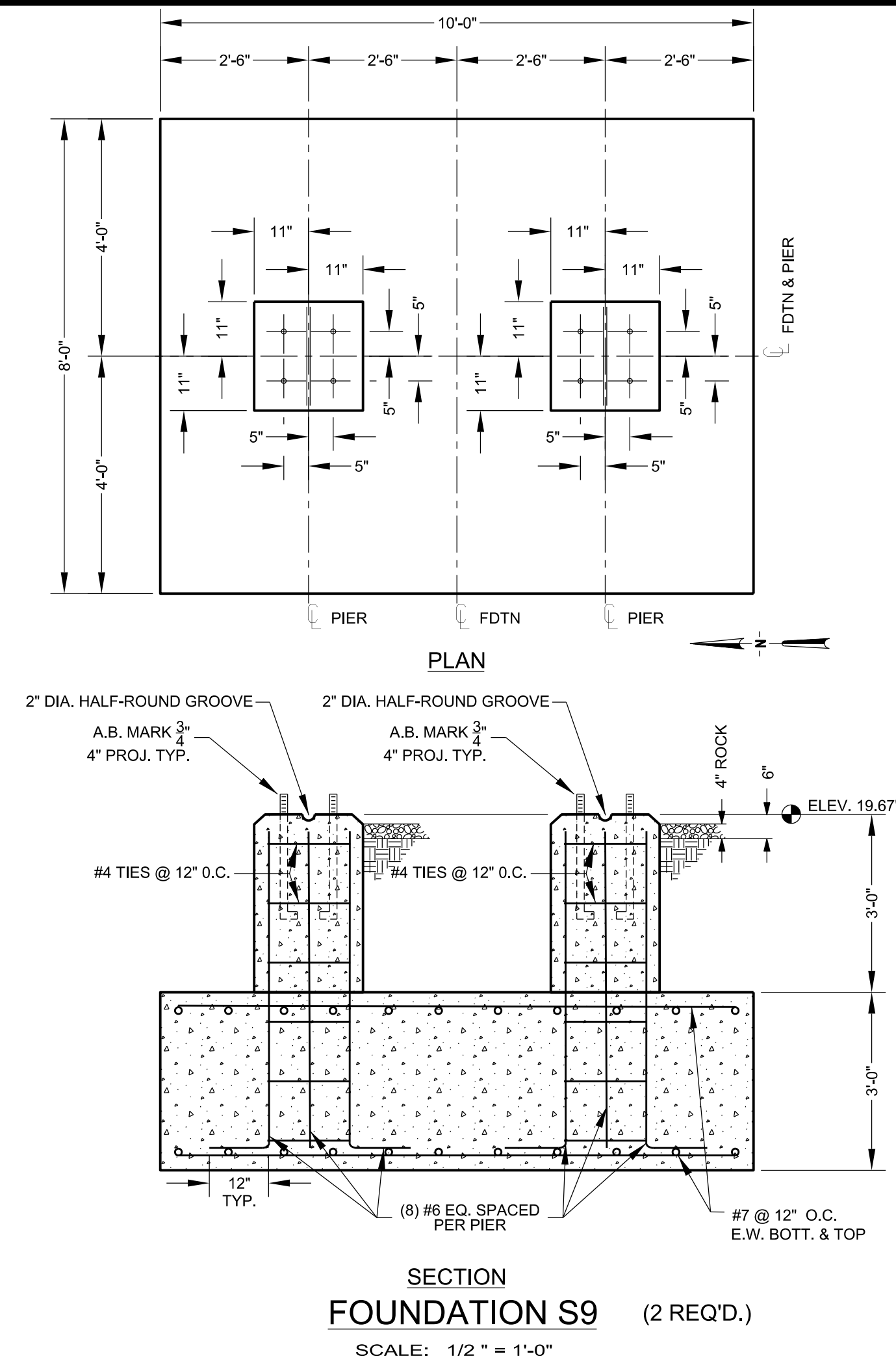
NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	ISSUED FOR CONSTRUCTION BID	REM	4-1-09		DESIGNED	LJG	3-29-09
2	CORRECTED QTY OF FDN S3 (FROM 7 TO 6); ADDED 6" CONDUIT PER BID ADDENDA	REM	6-16-09		CHECKED	REM	4-1-09
3	ISSUED FOR CONSTRUCTION	REM	6-16-09		APPROVED		
4	REVISED FOR 230KV CAP BANK INSTALLATION	KRK-STN	7-17-17		DRAFTING	BY	DATE
					PRELIMINARY	REM	3-29-09
					FINAL DESIGN	REM	4-1-09
					AS BUILT		

BARTRAM SUBSTATION  
FOUNDATION DETAILS SHEET 2  
230/26KV LOW PROFILE SUBSTATION



SCALE: AS NOTED  
PROJECT DESIGN SEGMENT 20410  
IPL NO. N-A

DESIGN FILENAME	BT172FD2.DGN
DRAWING NO.	BT-23026-17
SHEET NO.	40 OF 72



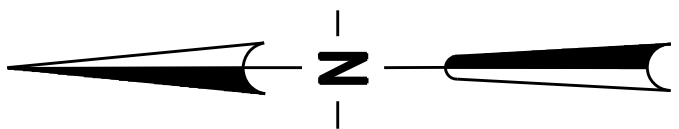
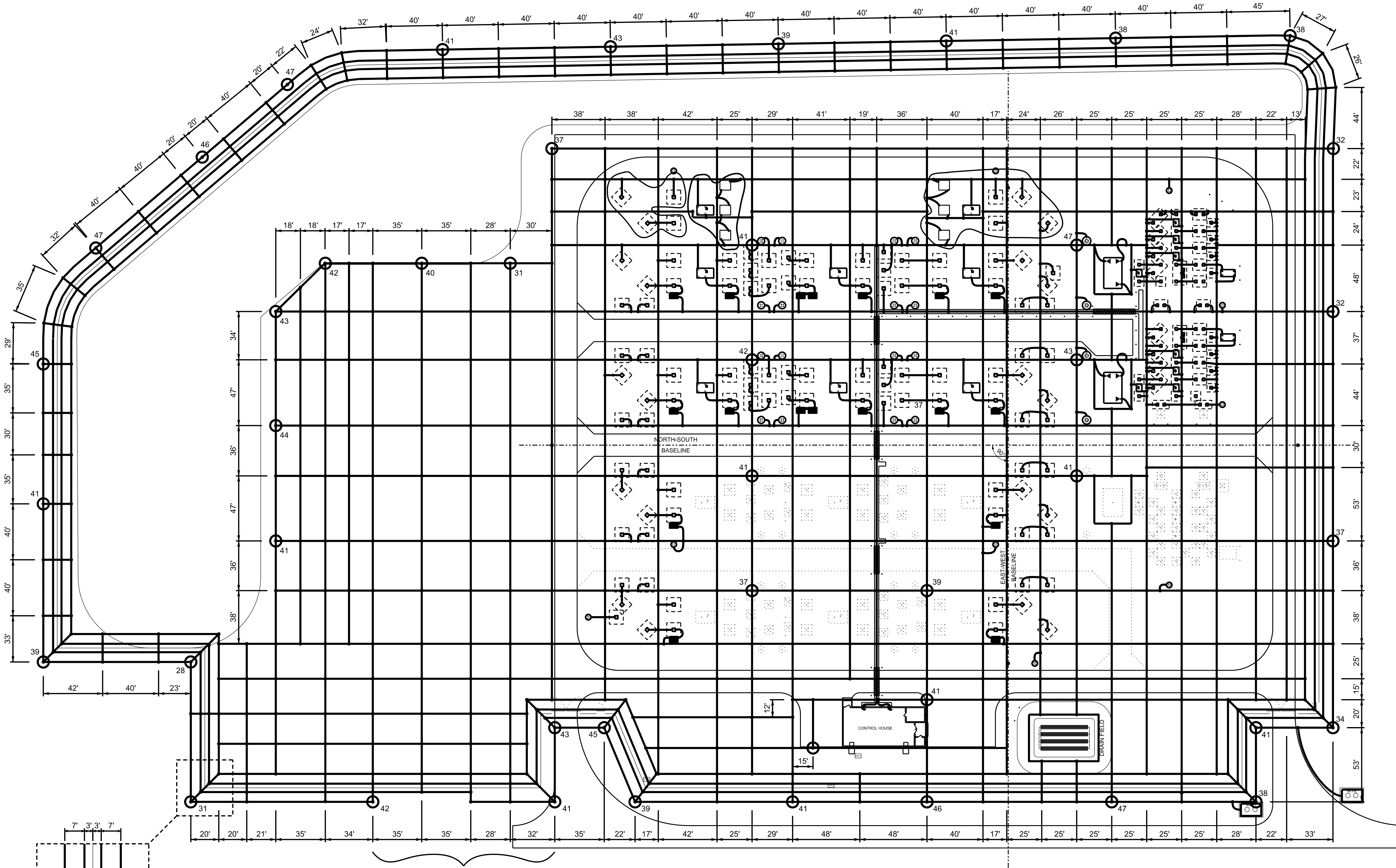
NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	ISSUED FOR CONSTRUCTION BID	REM	4-1-09		DESIGNED	LJG	3-29-09
2	CORRECTED QTY OF FOUNDATION S12 (FROM 21 TO 26) PER BID ADDENDA	REM	6-16-09		CHECKED	REM	4-1-09
3	ISSUED FOR CONSTRUCTION	REM	6-16-09		APPROVED		
4	REVISED FOR 230KV CAP BANK INSTALLATION	KRK-STN	7-17-17		DRAFTING	BY	DATE
					PRELIMINARY	REM	3-29-09
					FINAL DESIGN	REM	4-1-09
					AS BUILT		

BARTRAM SUBSTATION  
**FOUNDATION DETAILS SHEET 4**  
230/26KV LOW PROFILE SUBSTATION



SCALE: AS NOTED  
**PROJECT DESIGN SEGMENT 20410**  
IPL NO: N-A

DESIGN FILENAME:  
BT172FD4.DGN  
DRAWING NO:  
BT-23026-17  
SHEET NO:  
42 OF 72



GROUNDING NOTES

1. ALL 19#8 AND 7#5 COPPERWELD CONDUCTORS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. ALL GROUND GRID CONDUCTORS AND TAPS SHALL BE CONNECTED USING CADWELD EXOTHERMIC CONNECTIONS AND SHALL BE INSTALLED 24" BELOW GRADE (28" BELOW ROCK SURFACE) EXCEPT WHERE CONNECTION TO STRUCTURES AND EQUIPMENT IS ABOVE GRADE.
2. THE CONTRACTOR SHALL CONSTRUCT THE STATION MAIN GROUND GRID USING 19#8 COPPERWELD CONDUCTORS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING THE MAIN GROUND GRID CONDUCTOR IN THE LOCATIONS SHOWN ON THIS DRAWING. THE GRID CONDUCTORS SHALL BE INSTALLED IN MAXIMUM LENGTH CONTINUOUS RUNS AND CONNECTED AT ALL INTERSECTIONS USING CADWELD PLUS TYPE XB CROSS CONNECTION OR OTHER CADWELD PLUS PARALLEL CONNECTIONS TO AVOID CUTTING THE GRID CONDUCTOR. THE CONTRACTOR SHALL VERIFY THE FINAL LOCATION OF THE 7#5 COPPERWELD CONDUCTOR GROUND TAP CONNECTIONS TO THE STRUCTURES AND EQUIPMENT USING THE MANUFACTURER'S SHOP DRAWINGS, THE LOCATIONS OF GROUND TAPS SHOWN ON THIS DRAWING ARE APPROXIMATE ONLY.
3. THE CONTRACTOR SHALL CONNECT THE NEUTRAL BUSHING OF THE POWER TRANSFORMER DIRECTLY TO THE STATION GROUND GRID USING 500 KCMIL COPPER CONDUCTOR. THE NEUTRAL GROUND CONDUCTOR SHALL EXTEND CONTINUOUSLY AND CONNECT TO THE STATION GRID IN TWO (2) PLACES USING THE CONNECTION PROCESS PREVIOUSLY MENTIONED.
4. THIS DRAWING DEPICTS THE INSTALLATION OF THE MAIN SUBSTATION GROUND GRID, MAJOR ELECTRICAL EQUIPMENT GROUND CONNECTIONS AND STRUCTURE GROUND CONNECTIONS. CONTRACTOR SHALL REFER TO THE GROUNDING DETAILS PAGES FOR OTHER GROUND GRID CONNECTIONS REQUIRED, BUT NOT SHOWN ON THIS DRAWING, SUCH AS PERMETER LIGHTING POLES, SAFETY BOLLARDS, YARD PANELS, JUNCTION BOXES, SUBSTATION FENCE, ETC.
5. ALL ABOVE GRADE CONNECTIONS OF GROUND CONDUCTOR TO STRUCTURES AND EQUIPMENT, SUCH AS TRANSFORMERS, BREAKERS, LIGHTNING ARRESTERS, ETC., SHALL BE CONNECTED USING OWNER FURNISHED MECHANICAL CONNECTORS. ALL EQUIPMENT AND STRUCTURES ERECTED IN THE SUBSTATION SHALL BE GROUNDED TO THE MAIN GRID WITHIN SAME WORKING DAY.
6. ALL ABOVE GRADE CONNECTIONS OF GROUND CONDUCTOR TO FENCE AND GATE POSTS SHALL BE MADE USING GROUNDING CONNECTORS. THE CONTRACTOR SHALL FURNISH ALL MATERIALS NECESSARY TO COMPLETE THE FENCE GROUNDING. SUBSTATION FENCE GROUNDING DETAILS HAVE BEEN INCLUDED IN THESE DRAWINGS AND THE ASSOCIATED SPECIFICATIONS.
7. THE CONTRACTOR SHALL FURNISH AND INSTALL GROUND RODS AS SPECIFIED AND IN THE LOCATIONS SHOWN ON THIS DRAWING. GROUND RODS ARE TO BE INSTALLED TO A DEPTH OF FORTY-EIGHT FT. (48'). GROUND RODS ARE TO BE COUPLED USING CADWELD TYPE CC SPLICE CONNECTIONS.
8. GROUND ROD SHALL BE INSTALLED PRIOR TO ITS CONNECTION TO THE GRID. CONNECTION OF THE ROD TO THE STATION GROUND GRID SHALL BE MADE ONLY AFTER OWNER APPROVAL USING CADWELD PLUS TYPE GR OR GT CABLE-TO-ROD CONNECTIONS.
9. THE CONTRACTOR IS REQUIRED TO MEASURE AND REPORT THE RESISTANCE OF EACH GROUND ROD INSTALLED PRIOR TO ITS CONNECTION TO THE GRID. CONNECTION OF THE ROD TO THE STATION GROUND GRID SHALL BE MADE ONLY AFTER OWNER APPROVAL.
10. CONNECT TWO 19 #8 COPPERWELD CONDUCTORS FROM THE 19 #8 CONDUCTOR IN THE CABLE TRENCH TO THE CONTROL BUILDING CABLE TRAY. CABLE TRAY TO BE GROUNDED PER CABLE TRAY GROUNDING DETAILS. SEE THE GROUNDING DETAILS DRAWINGS OF THIS DRAWING SET.
11. CONTRACTOR TO FURNISH AND INSTALL GROUND CONNECTIONS FOR YARD AND PERIMETER LIGHT POLES (GROUND CONNECTIONS NOT SHOWN ON DRAWING.)
12. CONTRACTOR TO FURNISH AND INSTALL GROUND PROVISIONS FOR DISTRIBUTION MANHOLES AS DETAILED IN DRAWING GD2.
13. ADJUST DEPTH & DIRECTION OF GROUND GRID CONDUCTORS IN ORDER TO COORDINATE WITH INSTALLATION OF DRAIN FIELD, SEPTIC & DOSING TANKS.
14. SAFETY BOLLARDS ARE TO BE GROUNDED ACCORDING TO THE GROUNDING DETAILS OF THIS DRAWING SET (GROUND CONNECTIONS NOT SHOWN ON THIS DRAWING.)
15. CONDUCTORS IN THESE LOCATIONS THAT APPEAR TO BE MISSING HAVE BEEN REMOVED INTENTIONALLY BY THE DESIGN ENGINEER TO REMEDY INTERFERENCE WITH TRANSMISSION POLES, INSTALLED BY OTHERS.

LEGEND

- GROUND CONDUCTOR - 19#8 COPPERWELD FOR MAIN GRID, 7#5 COPPERWELD FOR STRUCTURE, GROUND ROD, EQUIPMENT, CABLE TRENCH, CABLE TRAY AND TRANSFORMER TANK GROUNDING. 500 KCMIL COPPER CONDUCTOR FOR NEUTRAL BUSHING OF POWER TRANSFORMERS. CONTRACTOR FURNISHED AND INSTALLED.
- + GROUND CONNECTION - CADWELD PLUS EXOTHERMIC MOLD CONNECTION, SIZED AND CONFIGURED AS REQUIRED. CONTRACTOR FURNISHED AND INSTALLED.
- SWITCH OPERATOR GROUND PLATFORM - FURNISHED BY OWNER, INSTALLED BY CONTRACTOR.
- ⊙ GROUND ROD - COPPERWELD RODS 5/8" DIAMETER, 8' IN LENGTH, COUPLED AND DRIVEN TO A DEPTH OF FORTY-EIGHT (48) FEET. CONTRACTOR FURNISHED AND INSTALLED.
- CHAIN LINK SECURITY FENCE. CONTRACTOR FURNISHED AND INSTALLED.
- 4" CAST IRON PIPE CEMENT-FILLED BOLLARD. CONTRACTOR SHALL CONNECT TO STATION GRID (NOT SHOWN) PER THE GROUNDING DETAILS DRAWINGS OF THIS SET. CONTRACTOR FURNISHED AND INSTALLED.
- ◀ BOLTED GROUNDING CONNECTOR TO TRANSFORMER TANK AND NUETRAL GROUNDS.

DESIGN NOTES

Grid designed for 4" substation rock only in substation structure area. Maximum touch voltages at fence were below permissible limits without any substation rock. In the rocked switchyard area, permissible touch limits are safe with ground fault currents in excess of 40kA.

Ground Grid Depth: 24 inches below compacted earth  
Length of Main Grid Conductor: 33,216 feet  
Ground Rod Depth: 48 feet  
Number of Ground Rods: 45  
Total Installation Impedance: 0.493583 ohms  
Ground Current With Rock: 8800 amps (40kA)  
Ground Current Without Rock: 5500 amps (25kA)  
Split Factor: .22 (5 lines, 9 feeders, 100% remote)  
Upper Layer Thickness: 10 feet  
Upper Layer Resistivity: 550 ohm-m  
Lower Layer Resistivity: 225 ohm-m  
Surface Layer Thickness: 4 inches  
Surface Layer Resistivity: 5000 ohm-m  
Parallel Z: 10 ohms

REFERENCE DRAWINGS:

1. GD1 - GROUNDING DETAILS SHEET 1
2. GD2 - GROUNDING DETAILS SHEET 2
3. GD3 - GROUNDING DETAILS SHEET 3
4. SD1 - FENCE DETAILS

TYPICAL PERIMETER GRID SPACING



NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	ADDED MANHOLE MH-2	REM	3-19-09		DESIGNED	REM	7-18-08
2	ISSUED FOR CONSTRUCTION BID	REM	4-1-09		CHECKED	REM	3-19-09
3	CORRECTED GRAPHIC SCALE READOUT (FROM 1"=20' TO 1"=40') PER BID ADDENDA	REM	6-16-09		APPROVED		
4	ISSUED FOR CONSTRUCTION	REM	6-16-09		DRAFTING	BY	DATE
5	UPDATED FOR 230KV CAP BANK INSTALL	KRK-STN	7-10-17		PRELIMINARY	REM	7-18-08
					FINAL DESIGN	REM	3-19-09
					AS BUILT		

SCALE:  
1" = 40'

BARTRAM SUBSTATION

GROUNDING PLAN

23026KV LOW PROFILE SUBSTATION

PROJECT DESIGN SEGMENT 20410



DESIGN FILENAME:

BT172GP1.DGN

DRAWING NO.

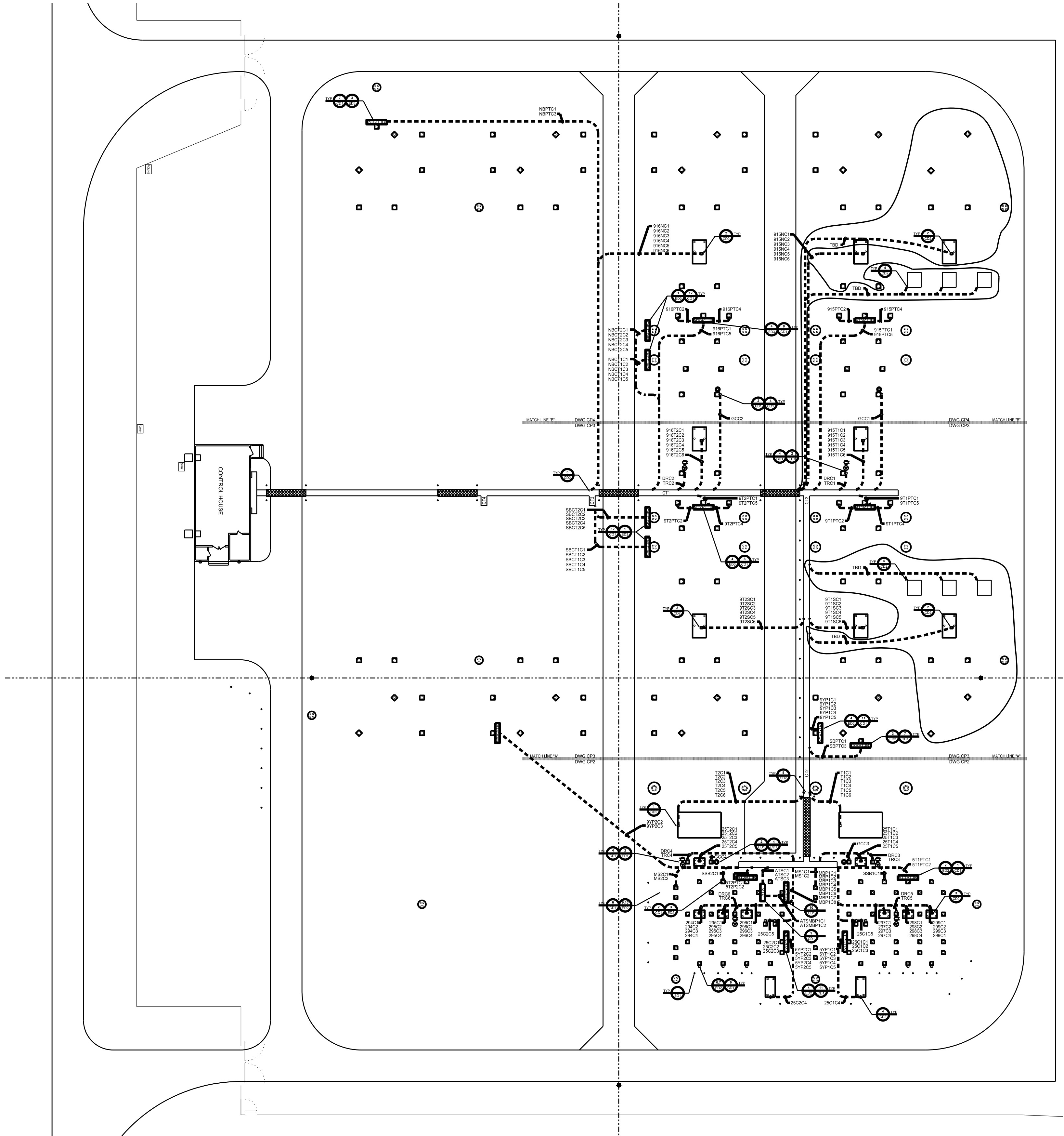
SHEET NO.

57 OF 72

IFL NO.

NA





CONDUIT PLAN NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING ALL CONDUIT AND CABLE, AS LISTED IN THE CONDUIT AND CABLE SCHEDULES. THE CONDUIT LOCATIONS SHOWN ON THIS DRAWING ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE FINAL CONDUIT RISER LOCATION USING THE EQUIPMENT MANUFACTURER'S SHOP DRAWINGS. CONDUIT SHALL BE INSTALLED 18" MINIMUM BELOW FINISHED SUBGRADE ELEVATION WHICH WILL PROVIDE A COVER OF 22" MINIMUM BELOW ROCK SURFACING. THE OWNER SHALL SUPPLY ALL TYPE B AND TYPE F CABLE.
2. THE CONDUIT ROUTING SHOWN ON THIS DRAWING WAS DESIGNED TO MINIMIZE TRENCHING WHILE REDUCING LENGTHS OF CABLE AND CONDUIT. HOWEVER, WITH THE APPROVAL OF THE PROJECT REPRESENTATIVE, THE CONTRACTOR MAY CHOOSE TO FIND OTHER ROUTINGS FOR CONDUITS, PROVIDED THAT SUCH ROUTINGS DO NOT CAUSE A COST INCREASE FOR ADDITIONAL CABLE OR CONDUIT. SUCH CHANGES, IF ANY, SHALL BE NOTED ON THE AS-BUILT DRAWINGS.
3. THE CONTRACTOR SHALL FURNISH AND INSTALL THE PRECAST CABLE TRENCH, THIRTY-SIX (36") INCHES NOMINAL WIDTH AND SIXTEEN (16") INCHES NOMINAL DEPTH, IN THE LOCATION AS SHOWN ON THESE DRAWINGS AND THE FOUNDATION PLAN. REFER TO SECTION IX OF THE SPECIFICATIONS FOR DETAILS CONCERNING THE CABLE TRENCH.
4. THE CONTRACTOR SHALL SUPPLY ALL SERVICE PANELS WITH BREAKERS, NEMA 3R ENCLOSURE, HINGED COVER, AND HARDWARE TO COMPLETE THE INSTALLATION DEPICTED. THE CONTRACTOR SHALL ALSO SUPPLY THE PTJ/B/FUSE AND CT JUNCTION BOXES TO COMPLETE THE INSTALLATION DEPICTED.
5. WIRING DETAILS FOR THE SERVICE PANELS, THE AUTOMATIC TRANSFER SWITCH, AND MAIN BREAKER PANEL ARE PROVIDED IN DRAWING LV1.
6. WIRING DETAILS FOR THE PT/CT JUNCTION BOXES, BREAKERS, POWER TRANSFORMERS, CONTROL HOUSE PANELS, ETC. ARE PROVIDED BY THE RESPONSIBLE RELAY ENGINEER OF THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR THE TERMINATIONS TO ALL EQUIPMENT, JUNCTION BOXES, PANELS, ETC., UNLESS OTHERWISE NOTED, AND SHOULD ORDER THE RESPECTIVE INTERCONNECTION DRAWINGS THROUGH THE PROJECT REPRESENTATIVE TWO WEEKS IN ADVANCE OF NEED.
7. THE AUTOMATIC TRANSFER SWITCH SHALL BE FURNISHED BY THE OWNER AND INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL ORDER THE TRANSFER SWITCH THROUGH THE PROJECT REPRESENTATIVE TWO WEEKS IN ADVANCE OF NEED, AND TRANSPORT THE TRANSFER SWITCH TO THE JOB SITE FROM A LOCATION WITHIN JACKSONVILLE TO BE SPECIFIED BY THE PROJECT REPRESENTATIVE.
8. ALL CABLES SHALL BE CLEARLY LABELED AT BOTH ENDS AND AT ALL ENTRANCE AND EXIT POINTS TO THE CABLE TRENCH. ALL CONDUIT RUNS SHALL ALSO BE CLEARLY LABELED AT BOTH ENDS. REFER TO SPECIFICATION SECTION IX FOR LABELING DETAILS.
9. ALL CONDUIT ENDS SHALL BE SEALED WITH AN EXPANDING WATERPROOF FOAM SPRAY TO KEEP THE CONDUIT FREE FROM DIRT AND OTHER FOREIGN MATERIAL. ALL CONDUIT MATERIALS SHALL BE THOSE SPECIFIED IN THE CONDUIT SCHEDULE. ABOVE GRADE CONDUIT SHALL BE INSTALLED TO CLOSELY CONFORM TO THE FOUNDATION AND STRUCTURE TO WHICH IT IS TO BE MOUNTED. AFTER THE INSTALLATION AND BACKFILLING OF THE UNDERGROUND CONDUITS, THE CONTRACTOR SHALL COMPACT THE AREA TO THE SAME DENSITY, AND WITH SIMILAR MATERIAL, AS THE ADJACENT UNDISTURBED MATERIALS.
10. ALL CONDUIT ENTRY POINTS INTO THE CABLE TRENCH SHALL BE CONSTRUCTED AS DEPICTED IN DETAIL 5 OF DRAWING CD2.
11. MOUNTING BRACKETS HAVE BEEN SUPPLIED ON THE STRUCTURES FOR MOST OF THE OUTLETS, RELAY BOXES OR JUNCTION BOXES. ALL LOW VOLTAGE OUTLETS WITH BOXES WILL BE SUPPLIED BY THE OWNER'S MANUFACTURER. HOWEVER, THE CONTRACTOR SHALL SUPPLY ALL HARDWARE NECESSARY FOR FASTENING THE OUTLETS WITH BOX TO THE MOUNTING BRACKETS. FOR THOSE STRUCTURES WHICH DO NOT INCLUDE MOUNTING BRACKETS FOR THE REMAINING OUTLETS, RELAY BOXES OR JUNCTION BOXES, THE CONTRACTOR SHALL SUPPLY ALL STAINLESS STEEL HARDWARE AND SUPPORT CHANNELS NECESSARY TO MOUNT THE ITEMS TO THE STRUCTURES WITHOUT PENETRATING THE GALVANIZED SURFACES. THIS MAY INCLUDE BACK TO BACK UNISTRUT, ETC.
12. ELBOW RADIUS FOR 2", 3" & 4" CONDUITS TO BE 24", UNLESS OTHERWISE NOTED. ALL FIBER OPTIC CONDUIT 45 AND 90 DEGREE ELBOWS SHALL HAVE A 36" RADIUS. ALL 6" CONDUIT ELBOWS SHALL HAVE A 48" RADIUS.
13. MANHOLES TO BE FURNISHED AND TRANSPORTED TO THE JOBSITE BY THE CONTRACTOR. THE CONTRACTOR TO INSTALL MANHOLES PER SPECIFICATION SECTION X AND THESE DRAWINGS.
14. A PULL CORD SHALL BE PULLED IN ALL SPARE CONDUITS.
15. SUPPORT BRACKETS FOR THE YARD PANELS, THE ATS AND THE MAIN BREAKER PANEL HAVE BEEN PROVIDED ON THE APPROPRIATE STRUCTURES. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY STAINLESS STEEL HARDWARE AND SUPPORT CHANNELS/FITTINGS NECESSARY FOR FASTENING THE PANELS TO THE STRUCTURE SUPPORT BRACKETS AS NEEDED.
16. CONTRACTOR SHALL INSTALL 1" PVC CONDUITS TO CONNECT UNDERGROUND WITH CONDUIT CAST INTO FOUNDATIONS FOR YARD LIGHTING. CONTRACTOR SHALL THEN TRANSITION TO LIQUID TITE FLEXIBLE CONDUIT ABOVE GROUND TO CONNECT INTO JUNCTION BOX EMBEDDED IN STRUCTURES.
17. CONTRACTOR TO COORDINATE CONDUIT INSTALLATION WITH SUBSTATION DRAINAGE PIPING, WATER/SEWER PIPING, AND IRRIGATION SYSTEM, AS DETAILED ELSEWHERE IN THIS DRAWING SET.
18. CONTRACTOR SHALL STUB OUT DUCT RUN FOR FUTURE EQUIPMENT. CONDUIT PLUGS SHALL BE CEMENTED INTO DUCT ENDS AT STUB OUT LOCATION. CONTRACTOR SHALL INSTALL A 1" PVC CONDUIT VERTICALLY FROM STUB OUT LOCATION EXTENDING 6" ABOVE ROCK SURFACING TO MARK END OF DUCT RUN.
19. CONTRACTOR SHALL FURNISH AND INSTALL PT/FUSE & CT JUNCTION BOXES AT LOCATIONS SHOWN, AND AS DETAILED IN DRAWING ED3. CONTRACTOR SHALL FURNISH GALVANIZED STEEL SUPPORT CHANNELS, MOUNTING BRACKETS, AND STAINLESS STEEL MOUNTING HARDWARE NECESSARY FOR FASTENING THE JUNCTION BOXES TO THE STRUCTURE LEG. THE TOP OF THE JUNCTION BOXES SHALL BE MOUNTED 6'-0" ABOVE FINISHED ROCK GRADE.
20. THIS DRAWING DEPICTS THE INSTALLATION OF CONDUITS FOR MAJOR YARD EQUIPMENT. FOR YARD PERIMETER LIGHTING, SECURITY AND DISTRIBUTION CONDUITS, REFER TO REFERENCE DRAWINGS LISTED ON THIS SHEET.

LEGEND:

- CONDUIT RUN, SEE NOTE 1
- ⊗ 240 VOLT GAS CART/VACUUM PUMP RECEPTACLE, 60A, THREE PHASE, 4-WIRE, RUSSELLSTOLL TYPE SCA, CATALOG NO. 3324-78
- ⊕ 240 VOLT TRUCK RECEPTACLE, 60A, SINGLE PHASE, 3-WIRE RUSSELLSTOLL TYPE SCA, CATALOG NO. 3323-78.
- ⊕ 120 VOLT DUPLEX RECEPTACLE, 20A, DUPLEX, GROUNDING TYPE WITH WEATHERPROOF COVER.
- 250103 AC YARD/PT/BUS DIFF. PANELS

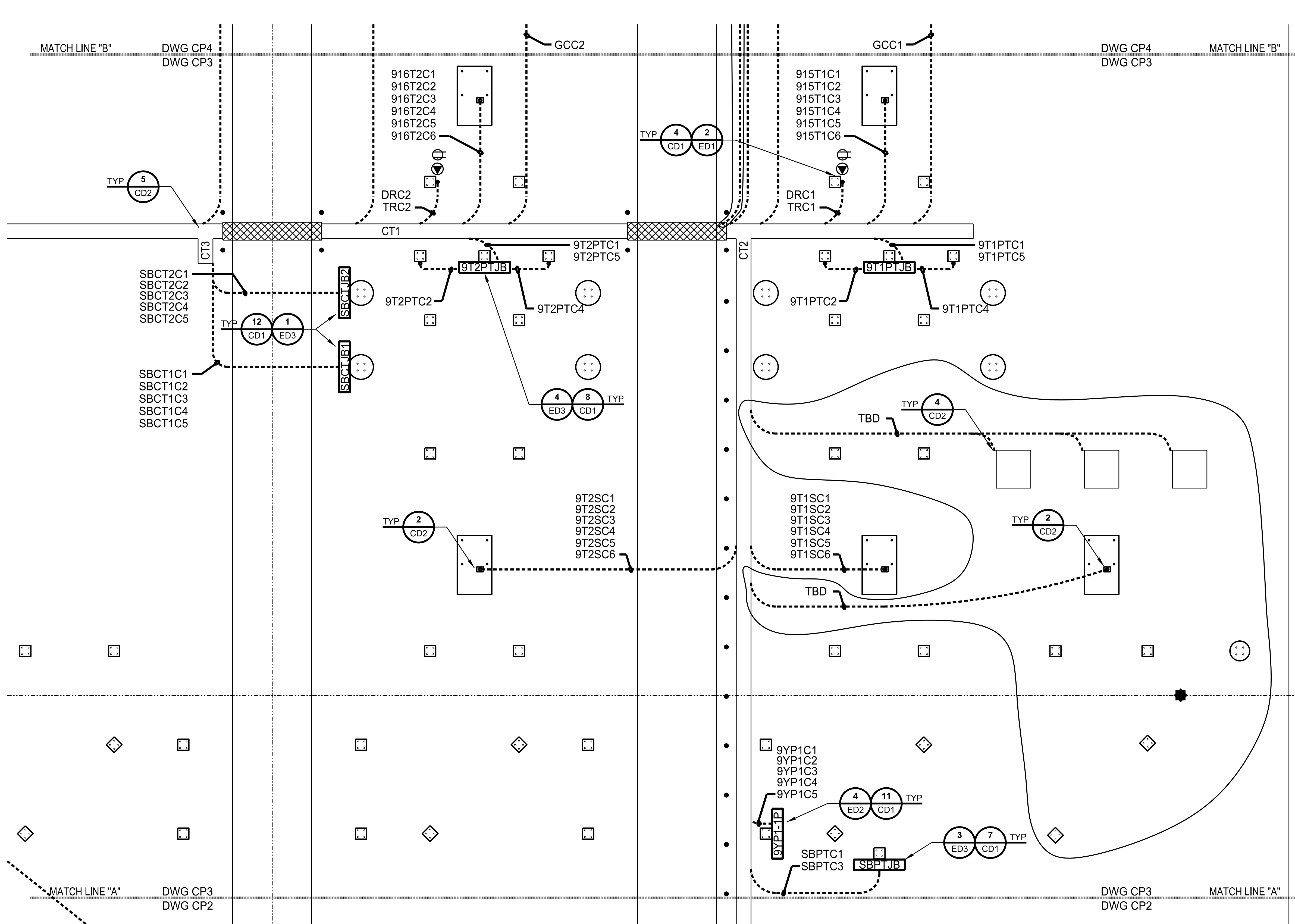
REFERENCE DRAWINGS:

1. SEE CP2, CP3 & CP4 FOR CONTINUATION OF CONDUIT PLAN.
2. SEE CP5 FOR YARD LIGHTING & SECURITY CONDUIT PLAN.
3. SEE CP6 FOR FIBER OPTIC CONDUIT PLAN.
4. SEE CP7 FOR DISTRIBUTION CONDUIT PLAN.
5. SEE CD1, CD2, CD3 AND CD4 FOR CONDUIT DETAILS.
6. SEE LV1 FOR YARD PANEL DETAILS.
7. SEE CE1, CE2, CE3 & CH2 FOR CONDUITS WITHIN CONTROL ROOM.



NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	OFFSET 230KV PTs AND LAs PER 90% REVIEW, RELOCATED B-PHASE PTs	REM	3-4-09		DESIGNED	REM	6-15-08
2	ISSUED FOR CONSTRUCTION BID	REM	4-1-09		CHECKED	REM	3-4-09
3	ISSUED FOR CONSTRUCTION	REM	6-18-09		APPROVED		
4	UPDATED FOR 230KV CAP BANK INSTALL	KRK-STN	7-10-17		DRAFTING	BY	DATE
					PRELIMINARY	TLB	8-26-08
					FINAL DESIGN	REM	3-4-09
					AS BUILT		

BARTRAM SUBSTATION				DESIGN FILENAME	
EQUIPMENT CONDUIT PLAN MASTER				BT172CP1.DGN	
230/26kV LOW PROFILE SUBSTATION				DRAWING NO.	
				BT-23026-17	
				SHEET NO.	
				61 OF 72	
SCALE		1" = 30'		IPL NO.	
PROJECT DESIGN SEGMENT 20410				N/A	



NOTES:  
1. REFER TO DRAWINGS CP1 FOR CONDUIT INSTALLATION NOTES.

- LEGEND:
- CONDUIT RUN, SEE NOTE 1
  - 240 VOLT GAS CART/VACUUM PUMP RECEPTACLE, 60A, THREE PHASE, 4-WIRE, RUSSELLSTOLL TYPE SCA, CATALOG NO. 3324-78
  - 240 VOLT TRUCK RECEPTACLE, 60A, SINGLE PHASE, 3-WIRE RUSSELLSTOLL TYPE SCA, CATALOG NO. 3323-78.
  - 120 VOLT DUPLEX RECEPTACLE, 20A, DUPLEX, GROUNDING TYPE WITH WEATHERPROOF COVER.
  - 25PTJB1 AC YARD/PT/BUS DIFF. PANELS



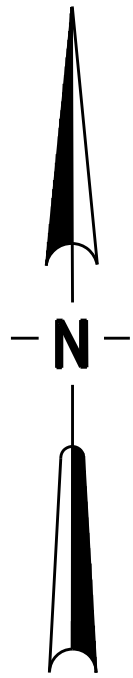
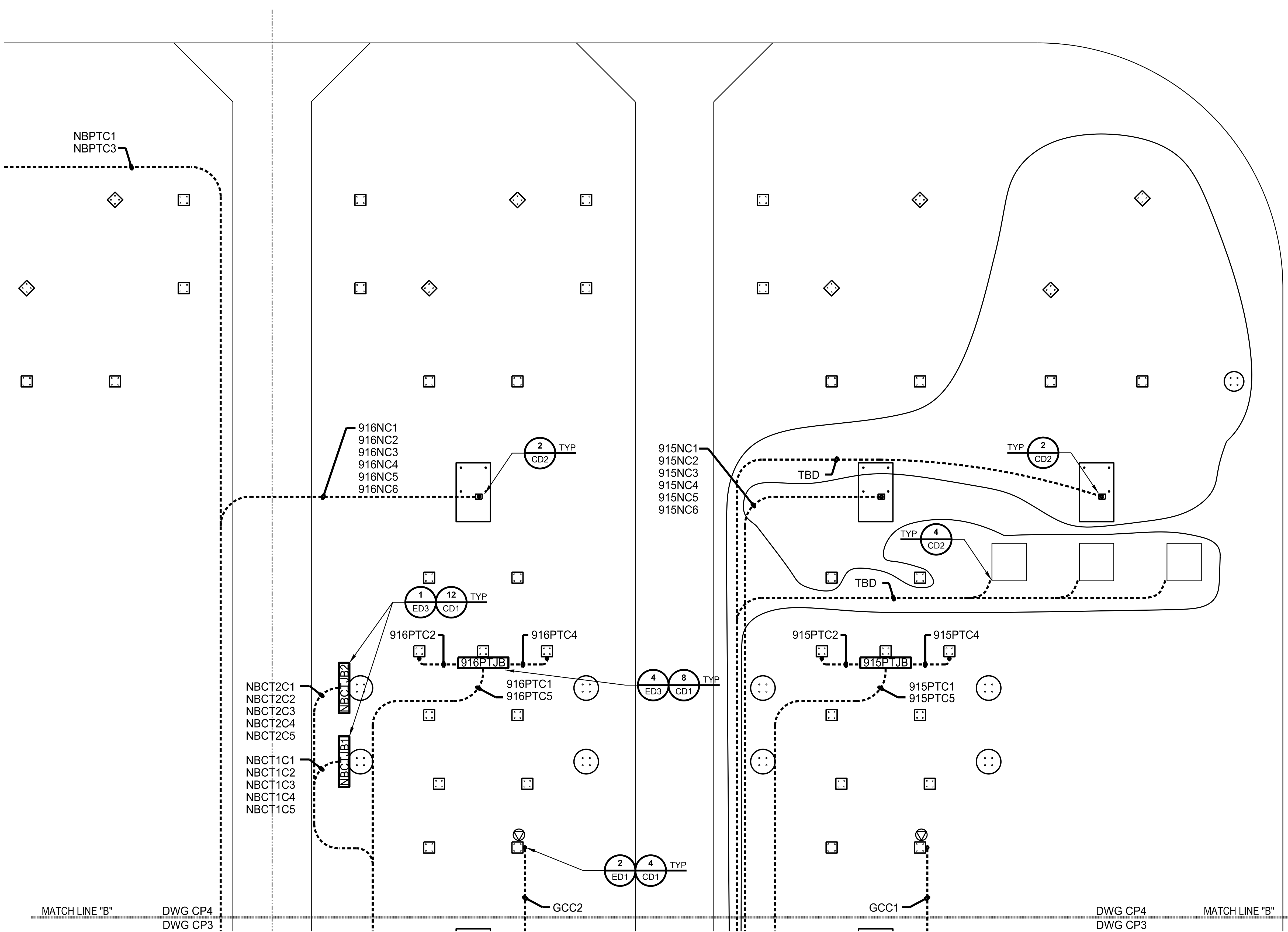
NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	OFFSET 230KV PTs AND LAs PER 90% REVIEW, RELOCATED B-PHASE PTs	REM	3-4-09		DESIGNED	REM	8-26-08
2	ISSUED FOR CONSTRUCTION BID	REM	4-1-09		CHECKED	REM	3-4-09
3	ISSUED FOR CONSTRUCTION	REM	6-18-09		APPROVED		
4	UPDATED FOR 230KV CAP BANK INSTALL	KRK-STN	7-10-17		DRAFTING	BY	DATE
					PRELIMINARY	TLB	8-26-08
					FINAL DESIGN	REM	3-4-09
					AS BUILT		

BARTRAM SUBSTATION  
EQUIPMENT CONDUIT PLAN DETAIL 2  
230/26KV LOW PROFILE SUBSTATION

PROJECT DESIGN SEGMENT 20410



DESIGN FILENAME:  
BT172CP3.DGN  
DRAWING NO.:  
BT-23026-17  
SHEET NO.:  
63 OF 72



**NOTES:**  
1. REFER TO DRAWINGS CP1 FOR CONDUIT INSTALLATION NOTES.

- LEGEND:**
- CONDUIT RUN, SEE NOTE 1
  - 240 VOLT GAS CART/VACUUM PUMP RECEPTACLE, 60A, THREE PHASE, 4-WIRE, RUSSELLSTOLL TYPE SCA, CATALOG NO. 3324-78
  - 240 VOLT TRUCK RECEPTACLE, 60A, SINGLE PHASE, 3-WIRE, RUSSELLSTOLL TYPE SCA, CATALOG NO. 3323-78
  - 120 VOLT DUPLEX RECEPTACLE, 20A, DUPLEX, GROUNDING TYPE WITH WEATHERPROOF COVER.
  - AC YARD/PT/BUS DIFF. PANELS



NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	OFFSET 230KV PTs AND LAs PER 90% REVIEW, RELOCATED B-PHASE PTs	REM	3-4-09		DESIGNED	REM	8-26-08
2	ISSUED FOR CONSTRUCTION BID	REM	4-1-09		CHECKED	REM	3-4-09
3	ISSUED FOR CONSTRUCTION	REM	6-18-09		APPROVED		
4	UPDATED FOR 230KV CAP BANK INSTALL	KRK-STN	7-10-17		DRAFTING	BY	DATE
					PRELIMINARY	TLB	8-26-08
					FINAL DESIGN	REM	3-4-09
					AS BUILT		

BARTRAM SUBSTATION

EQUIPMENT CONDUIT PLAN DETAIL 3

230/26KV LOW PROFILE SUBSTATION

SCALE: 1" = 10'

PROJECT DESIGN SEGMENT 20410

ITA NO: JCF-040-09

DESIGN FILENAME: BT172CP4.DGN

DRAWING NO: BT-23026-17

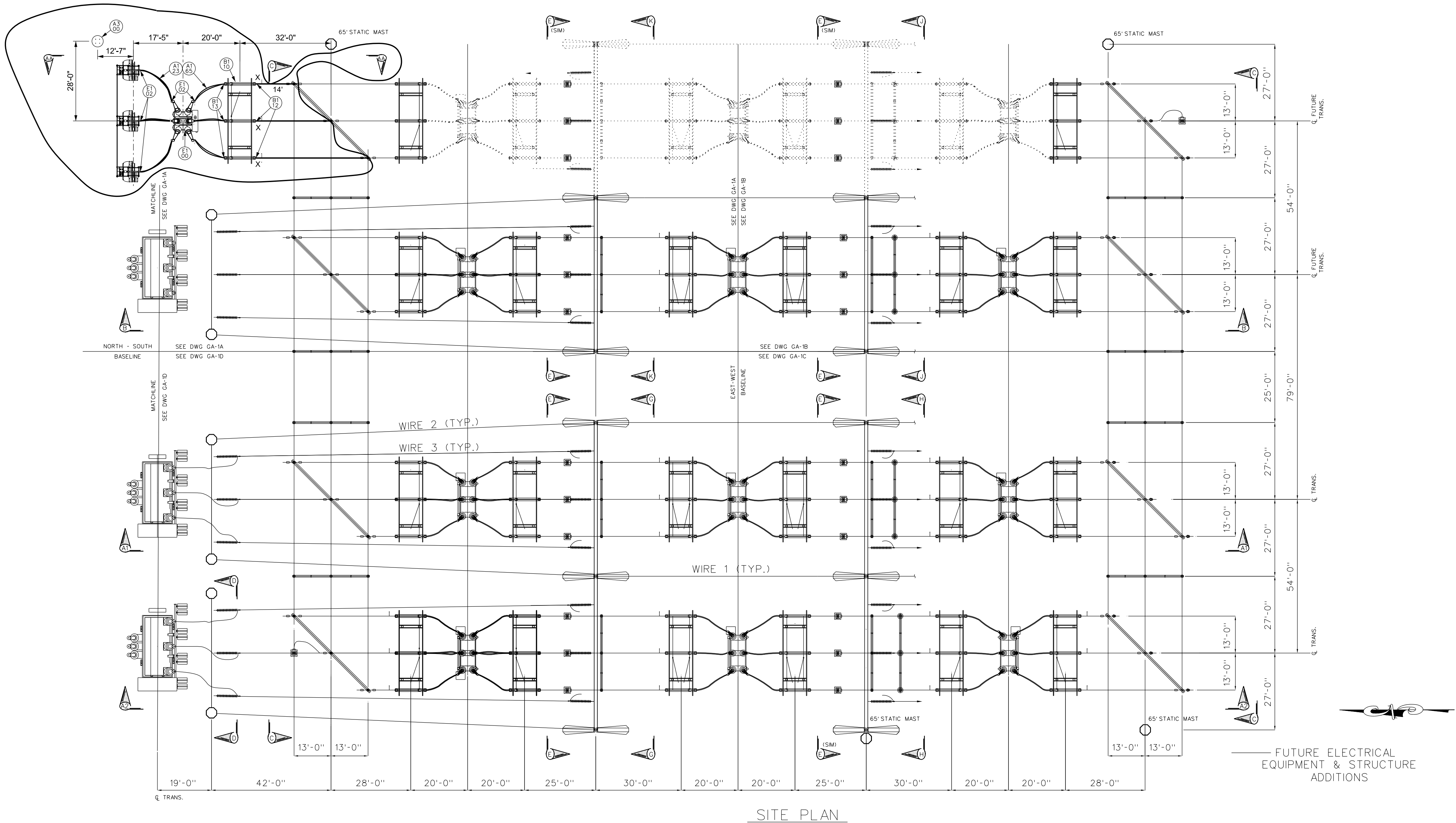
SHEET NO: 64 OF 72

SAG AND TENSION - WIRE INSTALLATION CHART

		CONDUCTOR	SPAN	TEMP. (° F)	30	40	50	60	70	80	90	100	110	120
WIRE 1	3/8" HSS	95'	TENSION (LBS)	768	682	604	534	473	422	379	344	315	291	
			SAG (FT-IN)	0-5	0-6	0-7	0-7	0-8	0-9	0-10	0-11	1-0	1-1	
WIRE 2	3/8" HSS	135'	TENSION (LBS)	453	422	395	372	352	335	319	305	293	282	
			SAG (FT-IN)	1-5	1-6	1-7	1-9	1-10	1-11	2-0	2-1	2-2	2-3	
WIRE 3	1590 ACSR 54/19 STRAND "FALCON"	135'	TENSION (LBS)	924	913	904	892	882	879	870	864	858	852	
			SAG (FT-IN)	5-1	5-2	5-2	5-3	5-4	5-4	5-5	5-5	5-6	5-6	

STAND. FRACTION CONVERSION

q = 1/16	o = 9/16
w = 1/8	p = 5/8
e = 3/16	a = 11/16
r = 1/4	s = 3/4
t = 5/16	d = 13/16
y = 3/8	f = 7/8
u = 7/16	g = 15/16
i = 1/2	

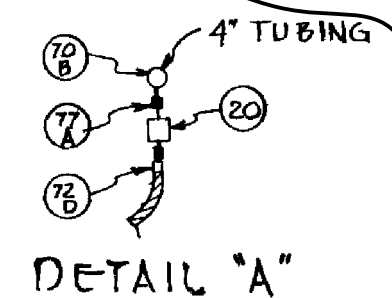
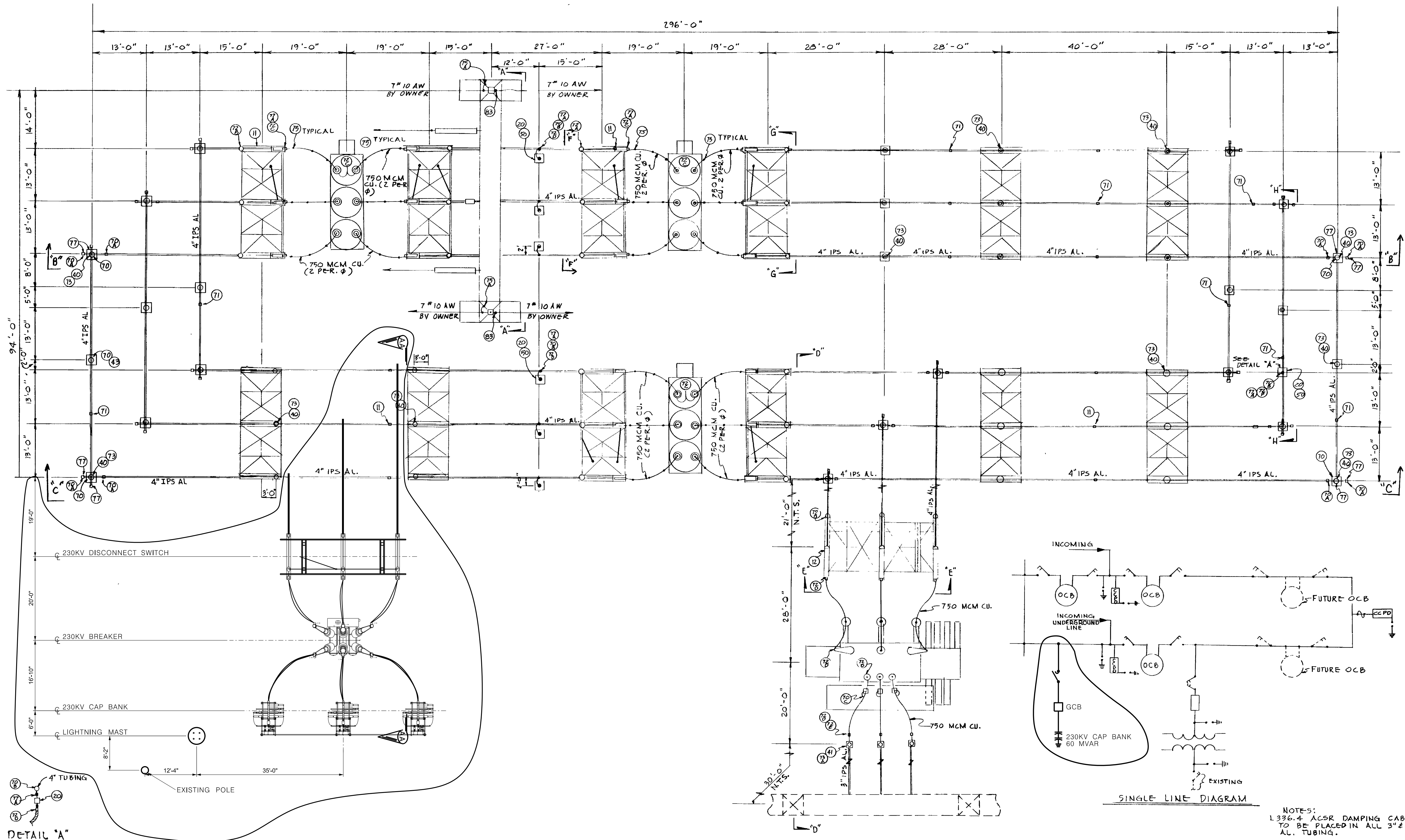


NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	UPDATED TO ADD 2-230KV CAP BANKS	KRK /STN	7-17-17		DESIGNED		
					CHECKED		
					APPROVED		
					DRAFTING	BY	DATE
					PRELIMINARY		
					FINAL DESIGN		
					AS BUILT		

FOREST SUBSTATION		DESIGN FILENAME	
ELECTRICAL ARRANGEMENT		GA-117.DGN	
230 TAPERED TUBE/26KV SQAURE TUBE		DRAWING NO.	
PROJECT DESIGN SEGMENT		CC-03-7227-17	
SCALE 1" = 20'		SHEET NO.	
		14 OF 71	
		IPL NO. NA	








NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	UPDATED FOR 230KV CAP BANK INSTALL	KRK-STN	7-10-17		DESIGNED	GLM	7-12-82
					CHECKED		
					APPROVED	CRH	9-17-82
					DRAFTING	BY	DATE
					PRELIMINARY		
					FINAL DESIGN		
					AS BUILT		

# FORT CAROLINE 230KV ADDITION ELETRICAL PLAN VIEW

PROJECT DESIGN SEGMENT 20410

NOTE-5:  
1. 336.4 ACSR DAMPING CABLE  
TO BE PLACED IN ALL 3" x 4"  
AL. TUBING.

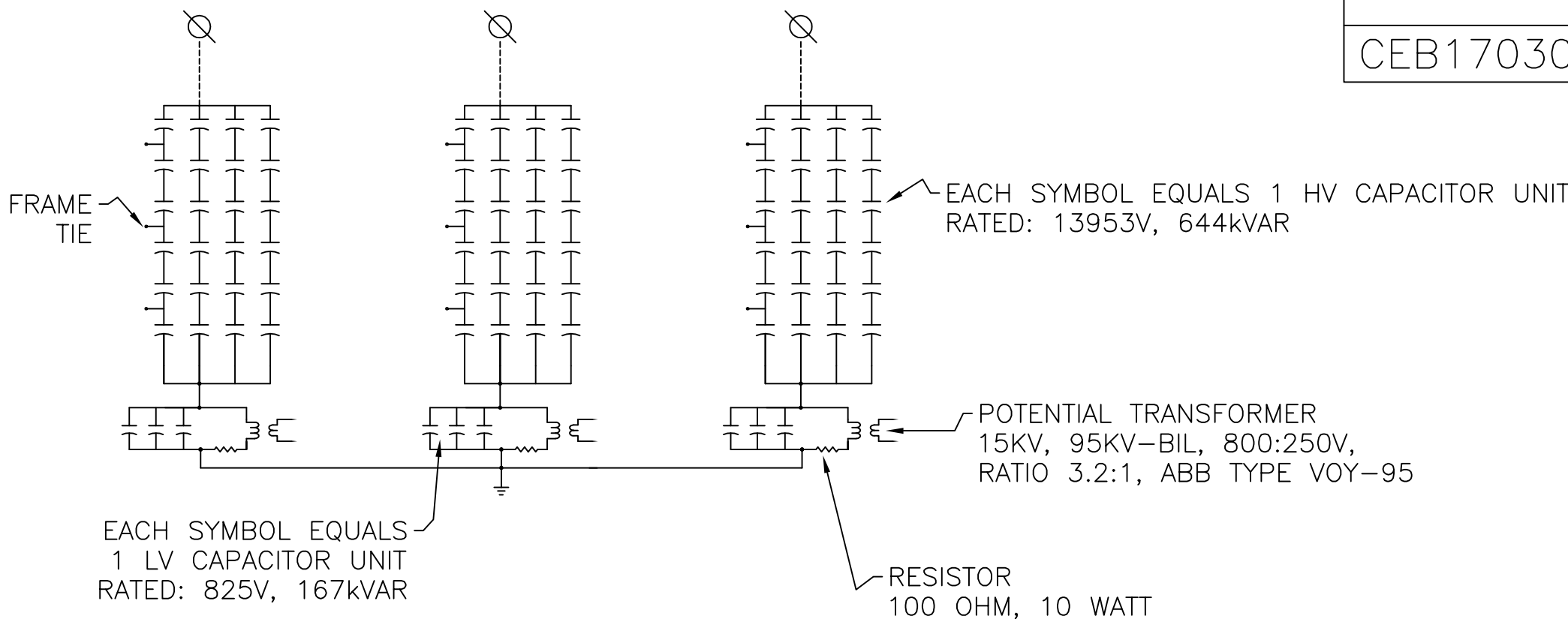
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	DRAWING NO.:	S-007-835-17
	SHEET NO.:	1 OF 1

FORT CAROLINE 230KV ADDITION		 BUILDING COMMUNITY	DESIGN FILENAME: FC172E92.DGN
ELECTRICAL DETAILS			DRAWING NO: S-007-83S-17
SCALE: 1" = 10'	PROJECT DESIGN SEGMENT 2010	SHEET NO: 2 OF 2	

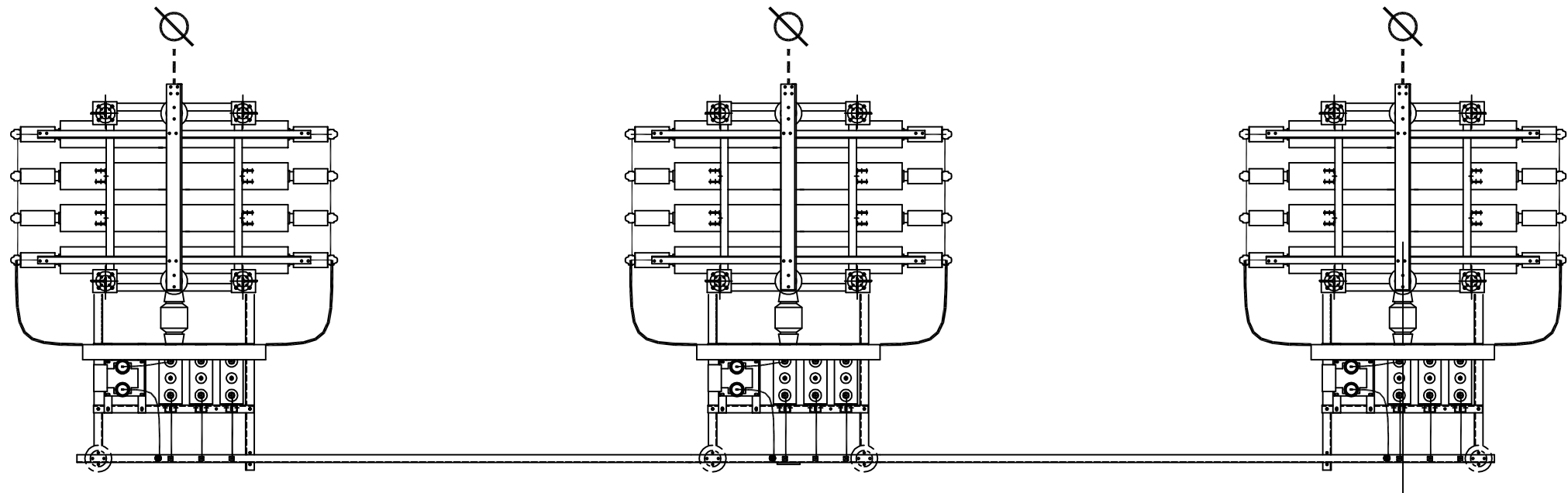




PART NO	BANK KV BIL	KV		KVAR		CAPACITOR HD
		RATED	OPERATED	RATED	OPERATED	
CEB17030F0908F1	650	145/83.72	138/79.67	46400	42000	13953VOLT, 644KVAR 125KV BIL 2-22" [559] CRP. BUSHING



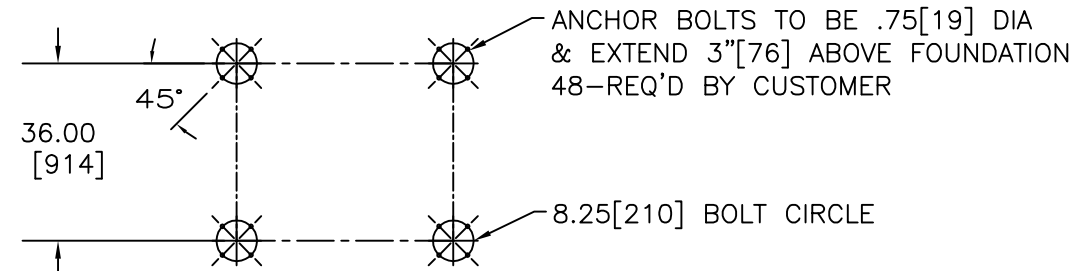
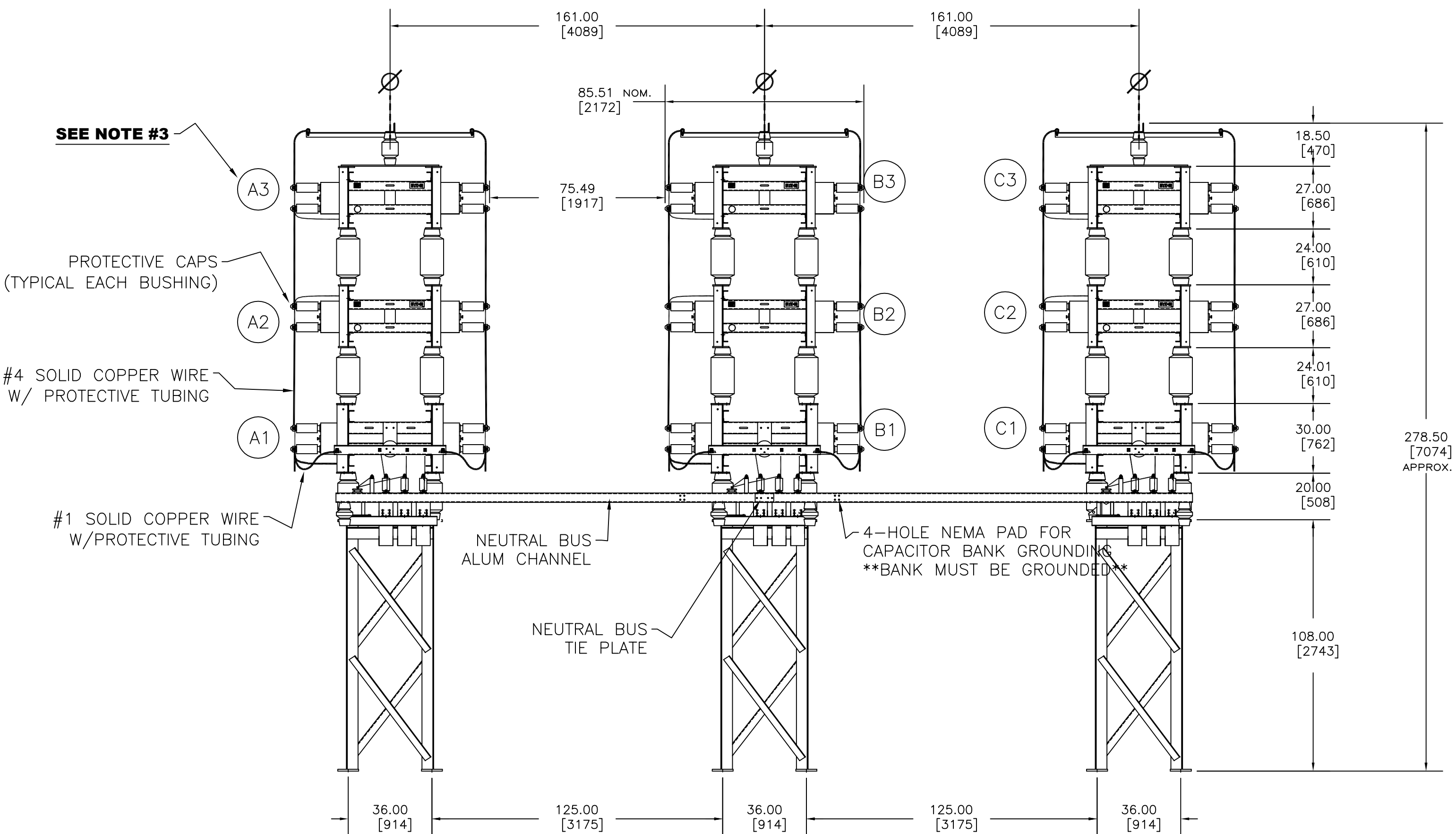
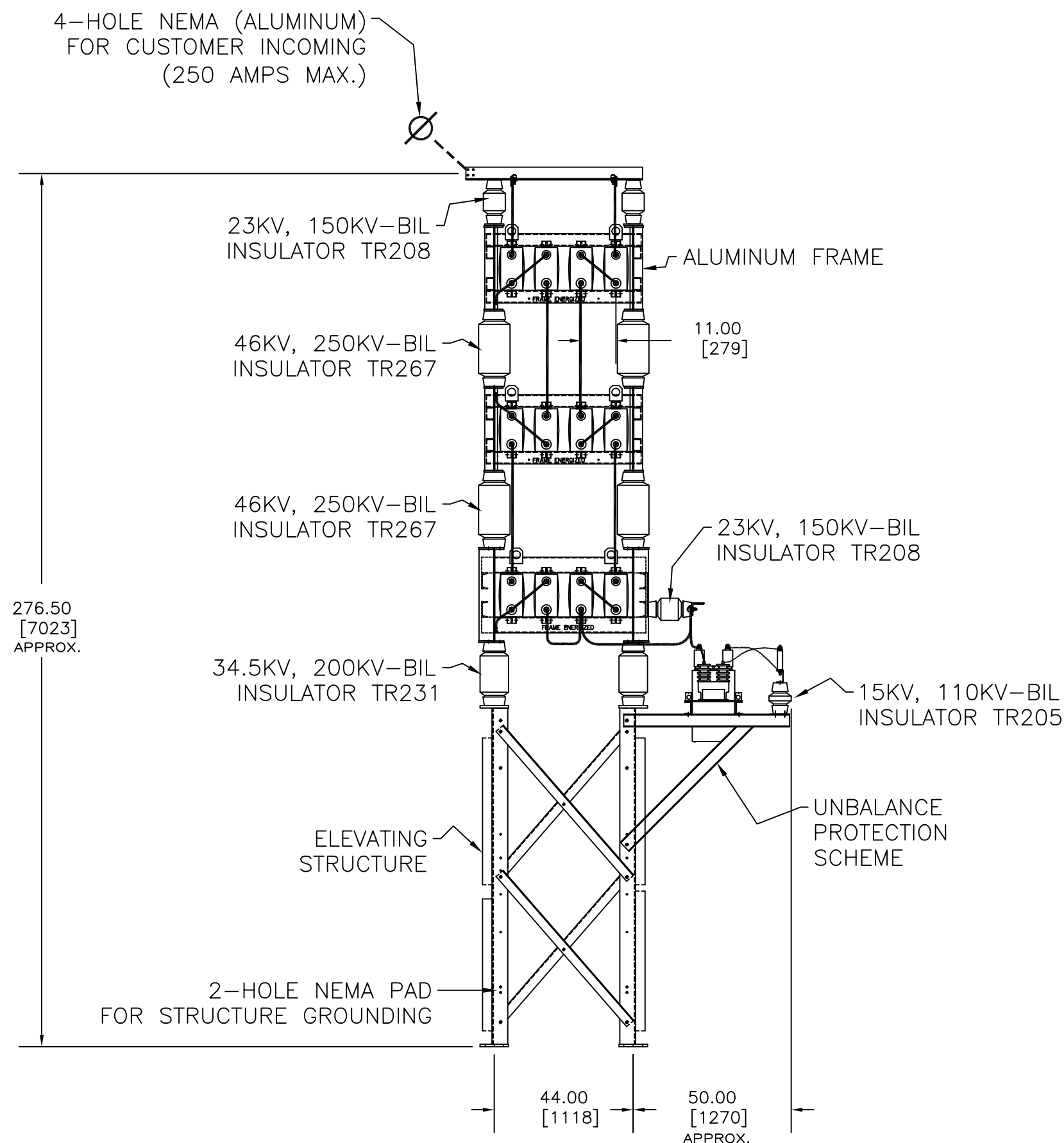
WIRING DIAGRAM



**NOTE #1:** CUSTOMER TO APPLY ELECTRICAL JOINING COMPOUND TO ALL CURRENT CARRYING CONNECTIONS.

**NOTE #2:** CUSTOMER TO VERIFY THAT HARDWARE ASSEMBLIES ON CAPACITOR TERMINALS ARE TORQUED TO 16-19 FT.LBS. IN CASE OF LOOSENING DURING SHIPMENT.

**NOTE #3:** FIELD ERECTION NOTE: BLOCKS ARE SHIPPED WITH STACK LOCATION STICKERS. STACK BLOCKS AS SHOWN. ALL BLOCK NAMEPLATES TO FACE SAME DIRECTION.



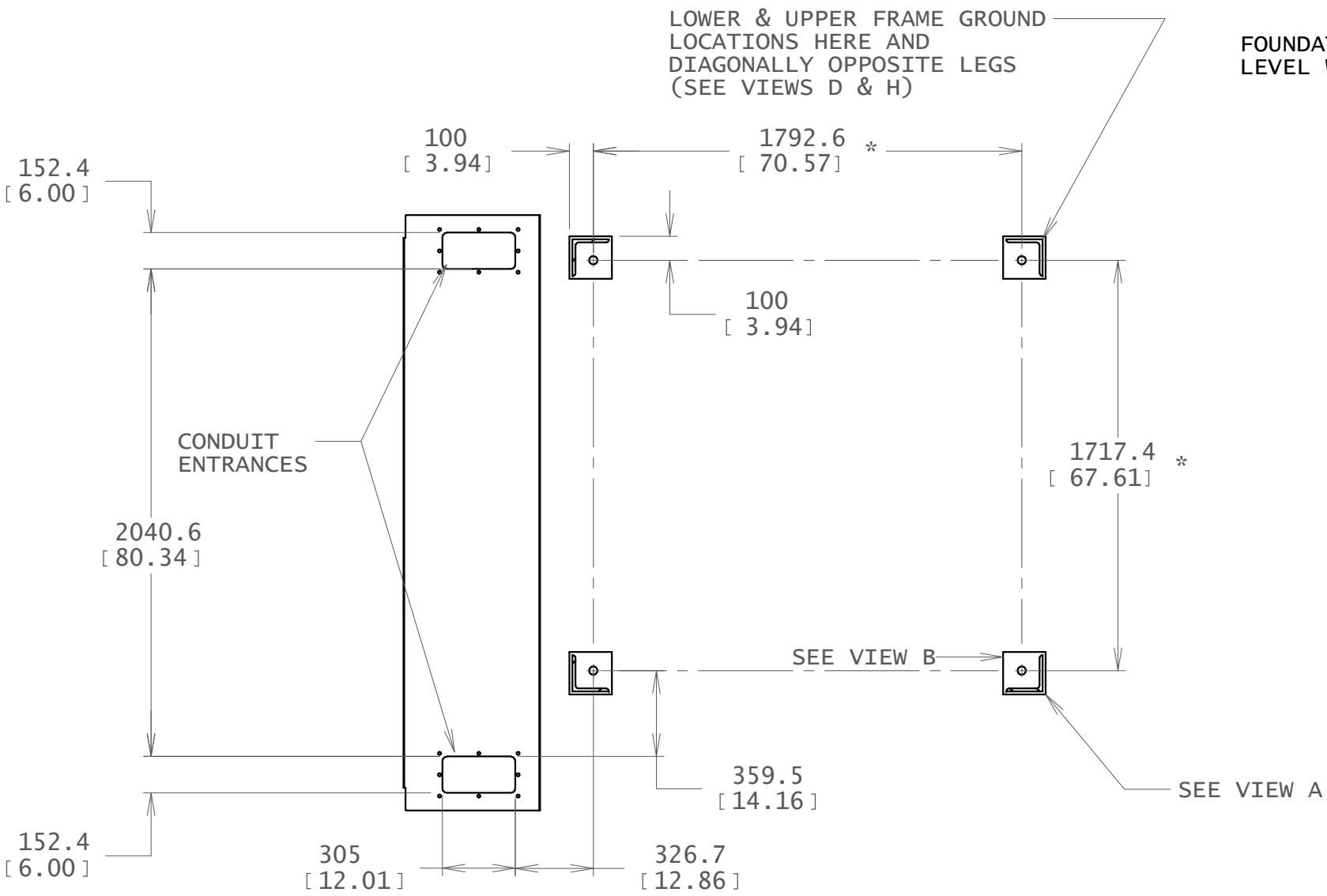
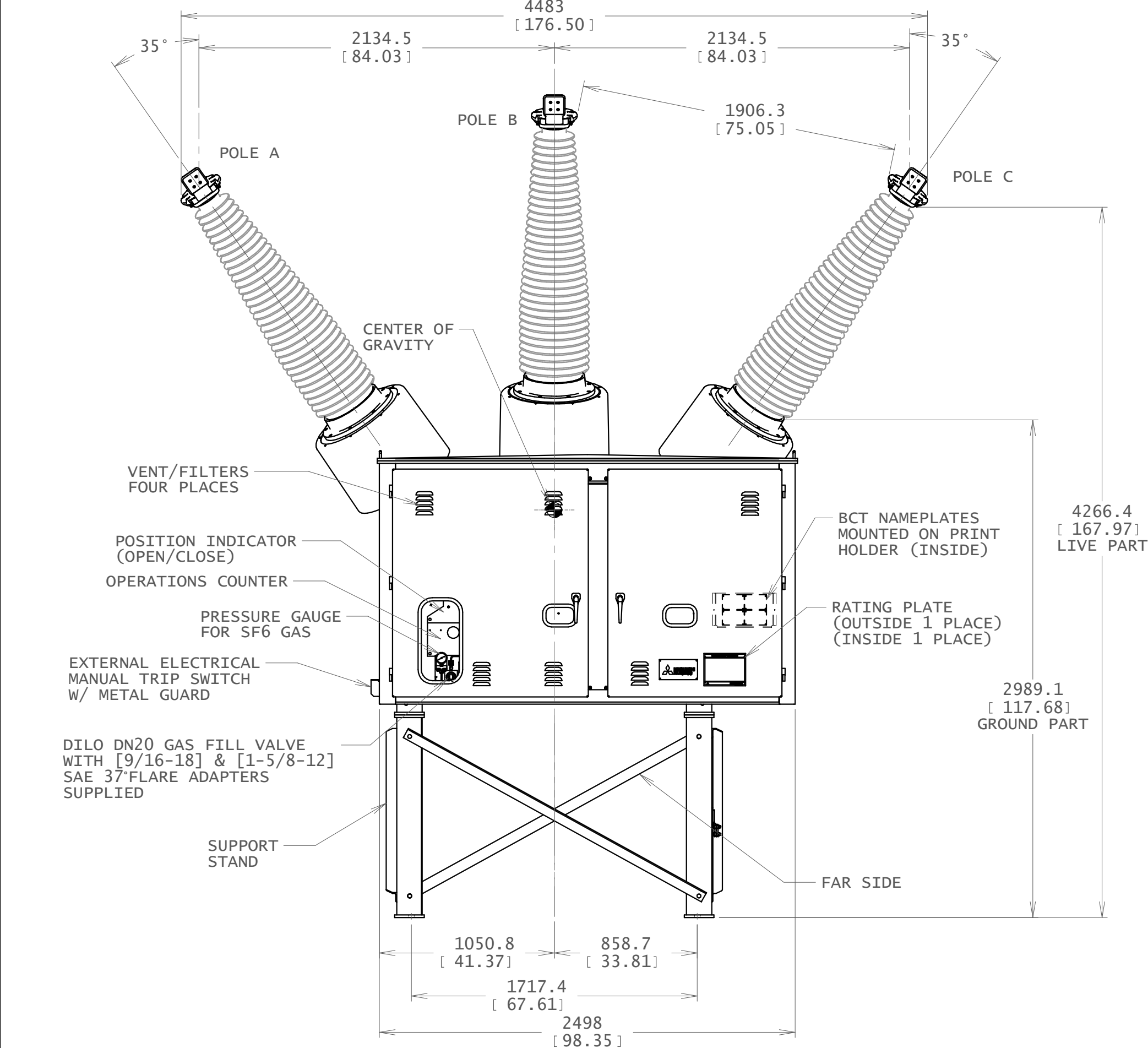
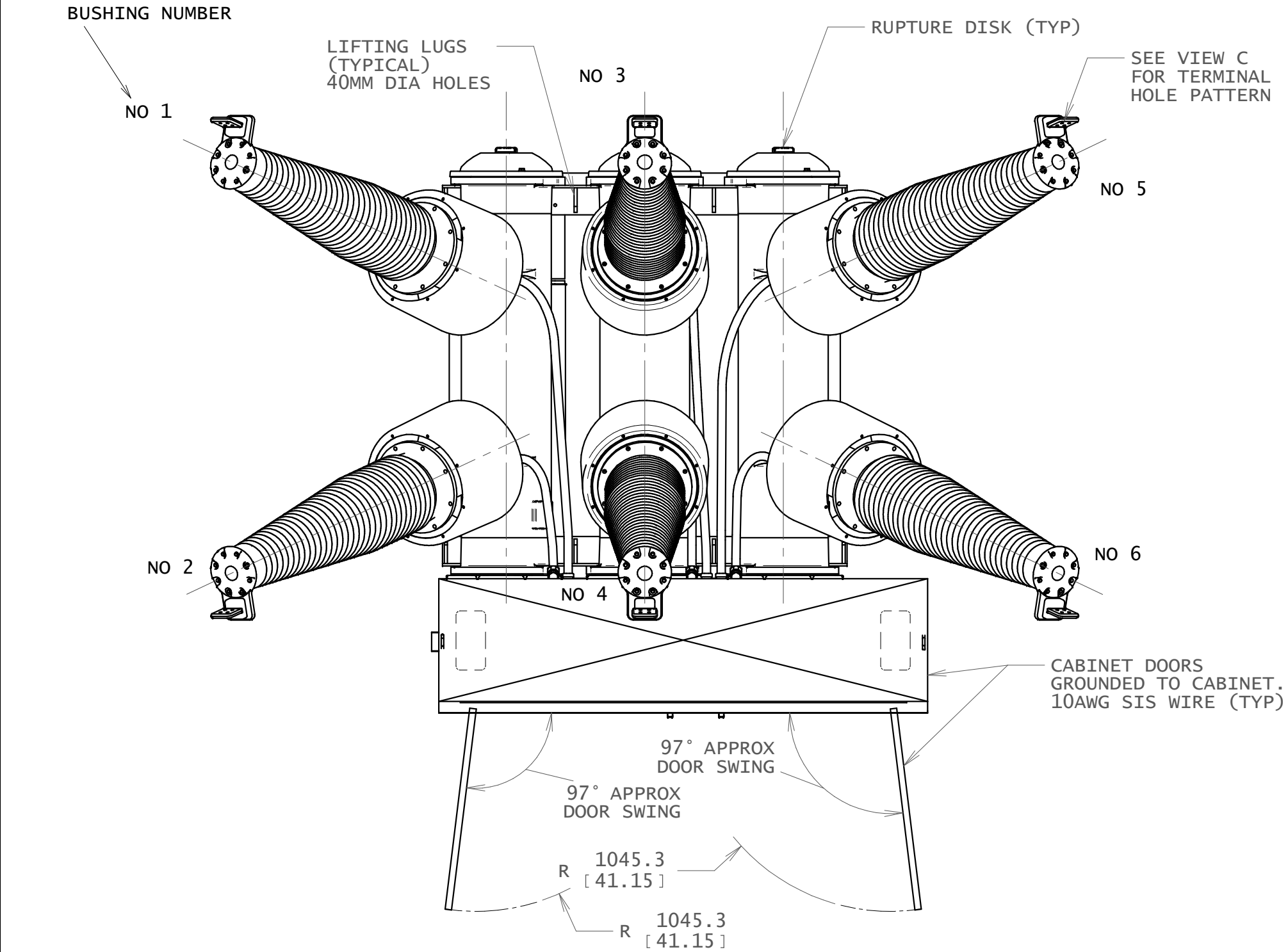
ANCHOR BOLT PLAN

REV.	DATE	BY	ECN NO.
DR	JKM	AP	FILE NO. S17CB059

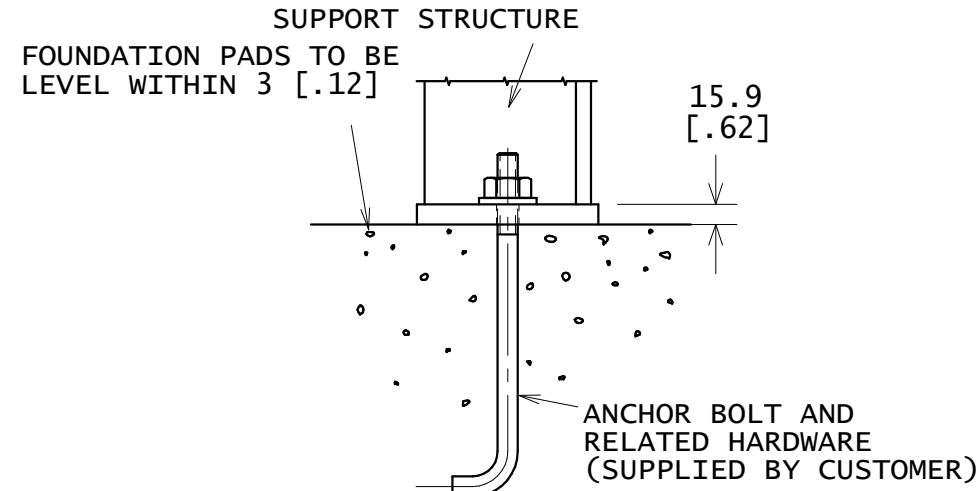
MATERIAL:		EATON Powering Business Worldwide	
ALL DIMENSIONS ARE IN INCHES [MM]		TITLE: FUSELESS CAPACITOR BANK ASSEMBLY	
THE INFORMATION ON THIS DOCUMENT WAS CREATED BY EATON. IT WAS DISCLOSED IN CONFIDENCE AND IS ONLY TO BE USED FOR THE PURPOSE IN WHICH IT WAS SUPPLIED.		DESC: COOPER POWER SERIES FOR DIS-TRAN PACKAGED SUBSTATIONS LLC	
DWG: PGR	DATE: 07-11-2017	REF:	SHEET # 1 OF 1 SCALE: 1=40 REV: 00

DWG. NO.

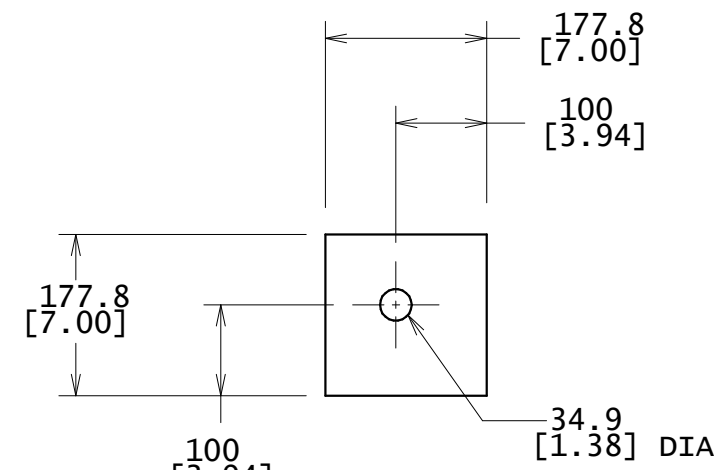
D406830



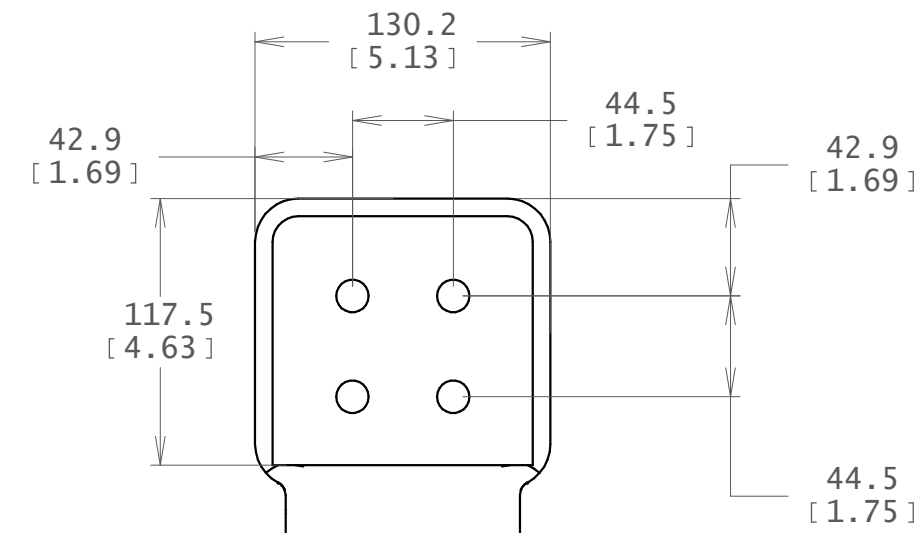
FOUNDATION PLAN SECTION E-E



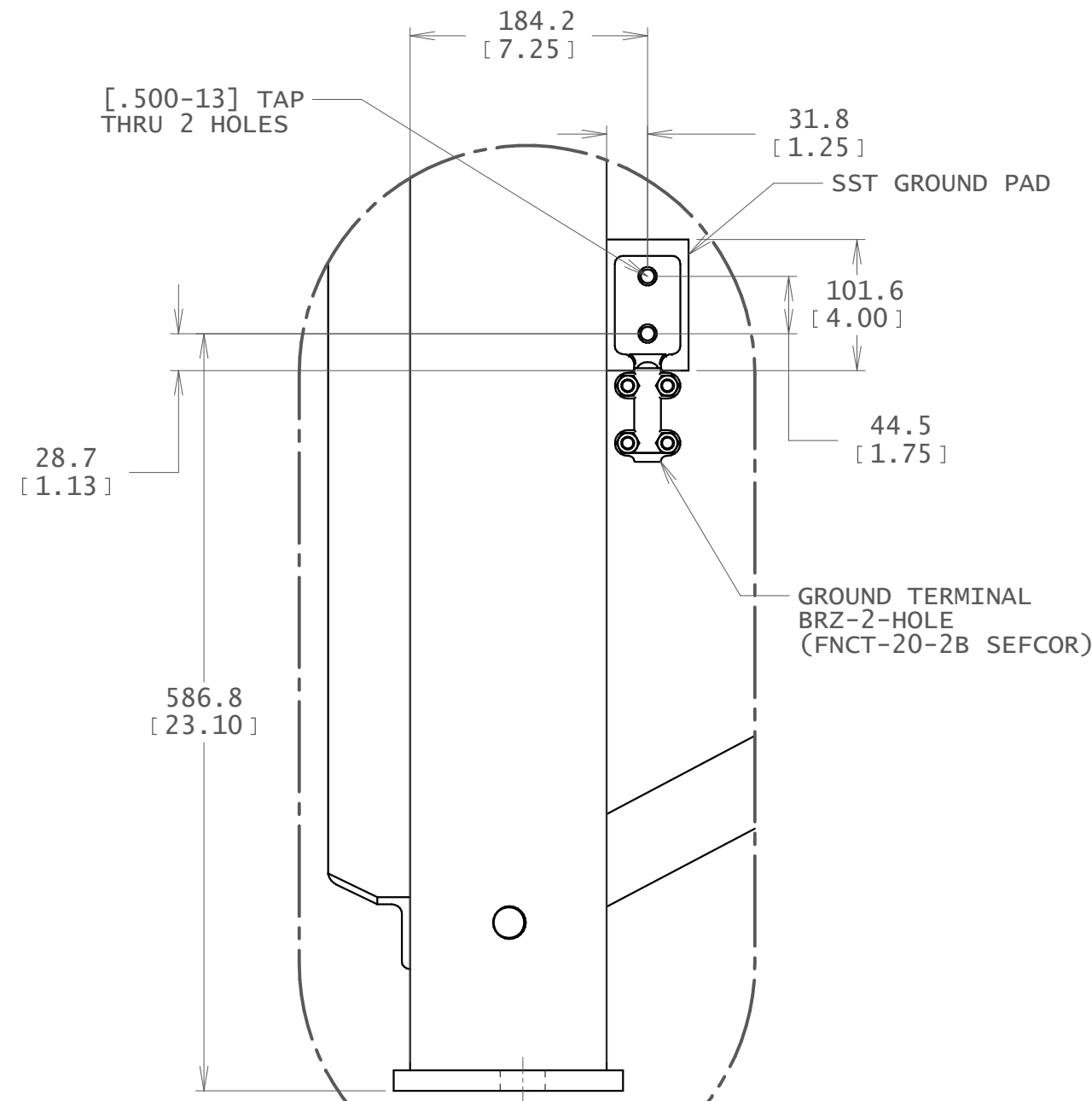
VIEW B



VIEW A



VIEW C




DETAIL D

1. RATINGS  
RATED MAXIMUM VOLTAGE ----- 245 kV  
RATED CONTINUOUS CURRENT ----- 2000 A  
RATED SHORT-CIRCUIT CURRENT ----- 50 kA  
RATED LOW FREQUENCY WITHSTAND VOLTAGE (60 HZ) ----- 425 kV  
RATED FULL WAVE IMPULSE WITHSTAND VOLTAGE ----- 900 kV  
RATED GAS PRESSURE (at 68° F) ----- 85 psig (590 kPag)  
\*3000pF CAPACITANCE REQUIRED FOR 50 KA SHORT LINE FAULT INTERRUPTION ONLY.
2. WEIGHT  
TOTAL WEIGHT -- (W/12 X 3000:5 BCT\_ -- 10,000 lb. (4356 kg)  
SF6 GAS WEIGHT ----- 149 lb (67.6 kg)
3. INSULATOR  
TYPE ----- GAS BUSHING  
MINIMUM CREEPAGE DISTANCE ALONG PORCELAIN SURFACE -- 3962 mm [156]
4. SURFACE TREATMENTS  
SUPPORT STRUCTURE ----- HOT DIP GALVANIZED  
CONTROL CABINET ----- STAINLESS STEEL  
SF6 GAS ENCLOSURE ----- UNFINISHED ALUMINUM  
BCT COVER ----- UNFINISHED ALUMINUM
5. DYNAMIC LOADING  
HORIZONTAL FORCE ----- 6600 lb (3000 kg)  
UPWARD FORCE ----- 2205 lb (1000 kg)  
DOWNWARD FORCE ----- 15432 lb (7000 kg)
6. INSTALLATION NOTE  
LEVEL THE BREAKER BY INSERTING SHIMS BETWEEN THE BREAKER STRUCTURE AND THE FOUNDATION

REVISIONS

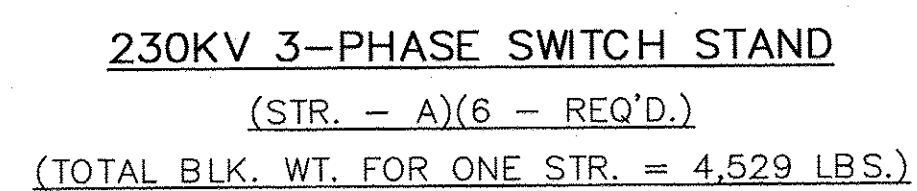
NOZW

JACKSONVILLE ELECTRIC AUTHORITY  
SEE SPECIFICATION TABLE D401194  
FOR DETAILS

DIM. IN	MM [IN]	SCALE 1:25	DRAFTER M OTT	DATE 06/26/17	 <b>MITSUBISHI ELECTRIC</b>	<b>MITSUBISHI ELECTRIC POWER PRODUCTS, INC. WARRENDALE, PA</b>
PROPRIETARY This document is the property of Mitsubishi Electric Power Products, Inc. and contains proprietary and confidential information which must not be duplicated, used or disclosed other than as expressly authorized by Mitsubishi Electric Power Products, Inc.			CHECKED KDC	DATE 06/29/17		
			ENGINEER JMB	DATE 06/29/17		
REF DWG. NO. D402562, D405889			APPROVED HEB	DATE 06/29/17		
FILE LOCATION:					DWG. NO.	REV.

D406830

SHEET 1 OF 1


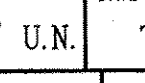


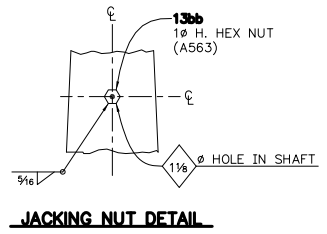
TOTAL FIELD BOLTS REQ'D. FOR ONE STR. - A (***) DENOTES BOLT LOCATIONS)					
BWT	MARK	QTY.	DESCRIPTION	SIZE	
4.917	A*	16	A325 TYPE 1 (HEX BOLT)	5/8" - 11 UNC	- 2 1/4
9.031	B*	8	A325 TYPE 1 (HEX BOLT)	5/8" - 11 UNC	- 11 3/4
1.183		24	F436 TYPE 1 (FLAT WASHER)	5/8"	
3.224		24	A563 GRADE DH (HEX NUT)	5/8" - 11 UNC	
1.471		24	M.F. LOCKNUT	5/8" - 11 UNC	
19.826					

1. REFERENCE DIS-TRAN 200 SERIES DRAWINGS FOR PROPER STRUCTURE ORIENTATION.
2. BACKCHARGES FOR CORRECTIVE WORK OR REPLACED MATERIALS WILL NOT BE ACCEPTED UNLESS EXPRESSLY AUTHORIZED BY DIS-TRAN BEFORE ANY SUCH COST ARE INCURRED.

⬠ DENOTES BOLT LOCATIONS.

5262-601

REGISTERED PROFESSIONAL ENGINEER STAMP <small>THIS SEAL PERAINS ONLY TO THE PHYSICAL DESIGN ASPECTS OF THIS WORK, AND DOES NOT          PERTAIN TO THE ELECTRICAL DESIGN ASPECTS OF THIS WORK.</small>	<div style="text-align: center;">  </div>				4725 Highway 28 East Pineville, LA 71360 318.448.0274 substations@distran.com distransubstations.com	
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF REVIEW UNDER THE AUTHORITY OF ERIC VEULEMAN, P.E.# 82965 ON 7/7/17, IT IS NOT TO BE USED FOR CONSTRUCTION.	<div style="text-align: center;"> <b>230KV CAP BANKS</b>          JEA          JEA  <b>JACKSONVILLE, FL</b> </div>					
DIS-TRAN PACKAGED SUBSTATIONS, LLC. FLORIDA COA# 27071	<div style="text-align: center;"> <b>ERECTION ELEVATIONS</b> </div>					
L STEEL TO BE HOT DIP GALV. AFTER FAB PER ASTM-A123 1 HOLES/116.0 FOR 5/8" GALV. BOLTS A-325 W/(ONE) P.W., HEX NUT & M.F. LOCKNUT EACH, UNLESS NOTED. ALL DIMENSIONS STAMPED INTO METAL WITH NOT LESS THAN 1/8" HIGH CHARACTERS BEFORE GALV.	SCALE 1/2" = 1'-0" U.N.	DATE 7/7/2017	JOB NUMBER 5262	DRAWING NUMBER 601	REV. NO. A	
	DRAWN BY KD	CHECKED BY 	APPROVED BY J.B.P.			



DISTRAN JOB NO. 14-4642P

**DIS-TRAN Steel, LLC**  
P.O. BOX 5109 • ALEXANDRIA, LA, 71307-5709  
PHONE 318-448-0274 • FAX 318-445-4454

CECIL COMMERCE CENTER NORTH SUBSTATION  
JEA  
JACKSONVILLE, FL / P.O. #4854-D1

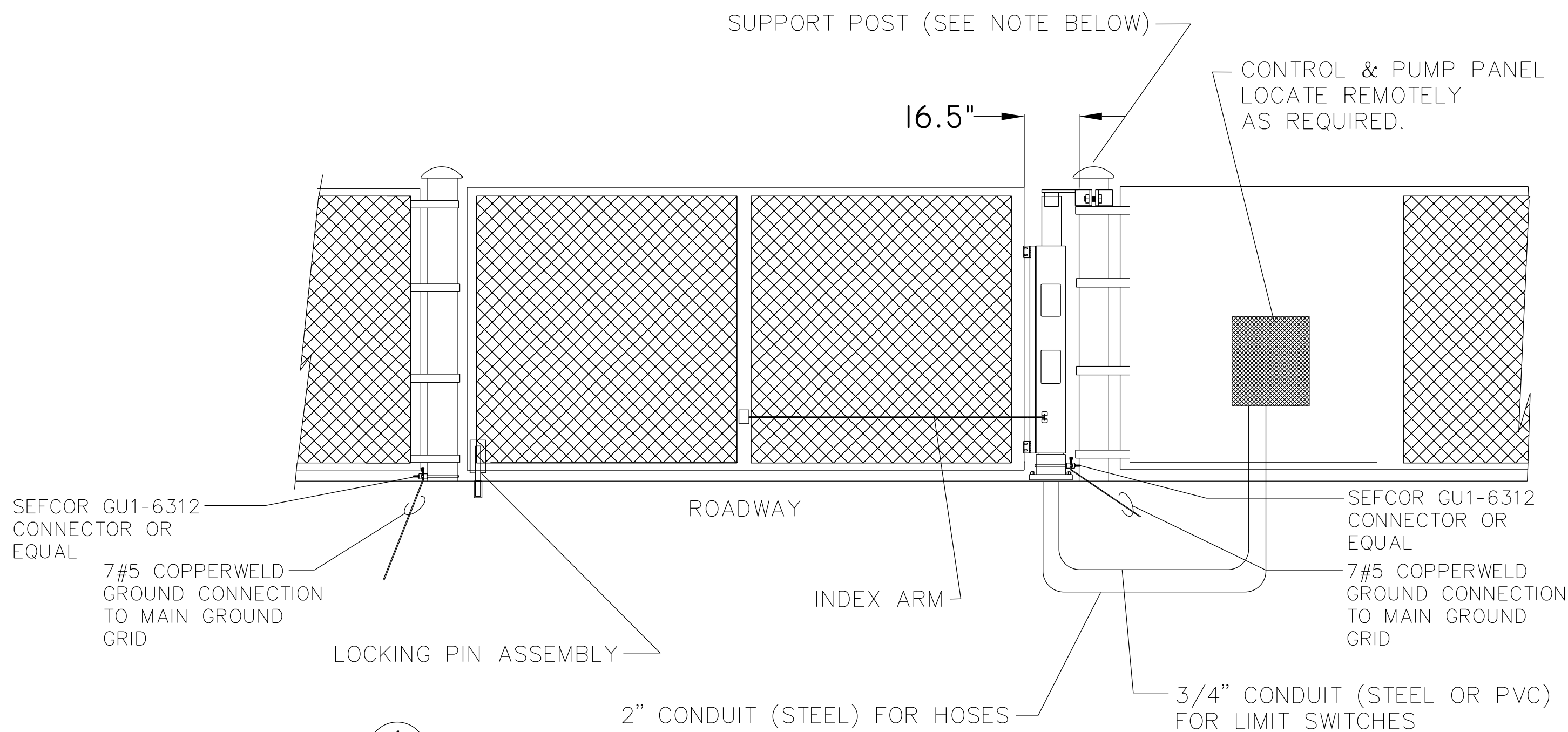
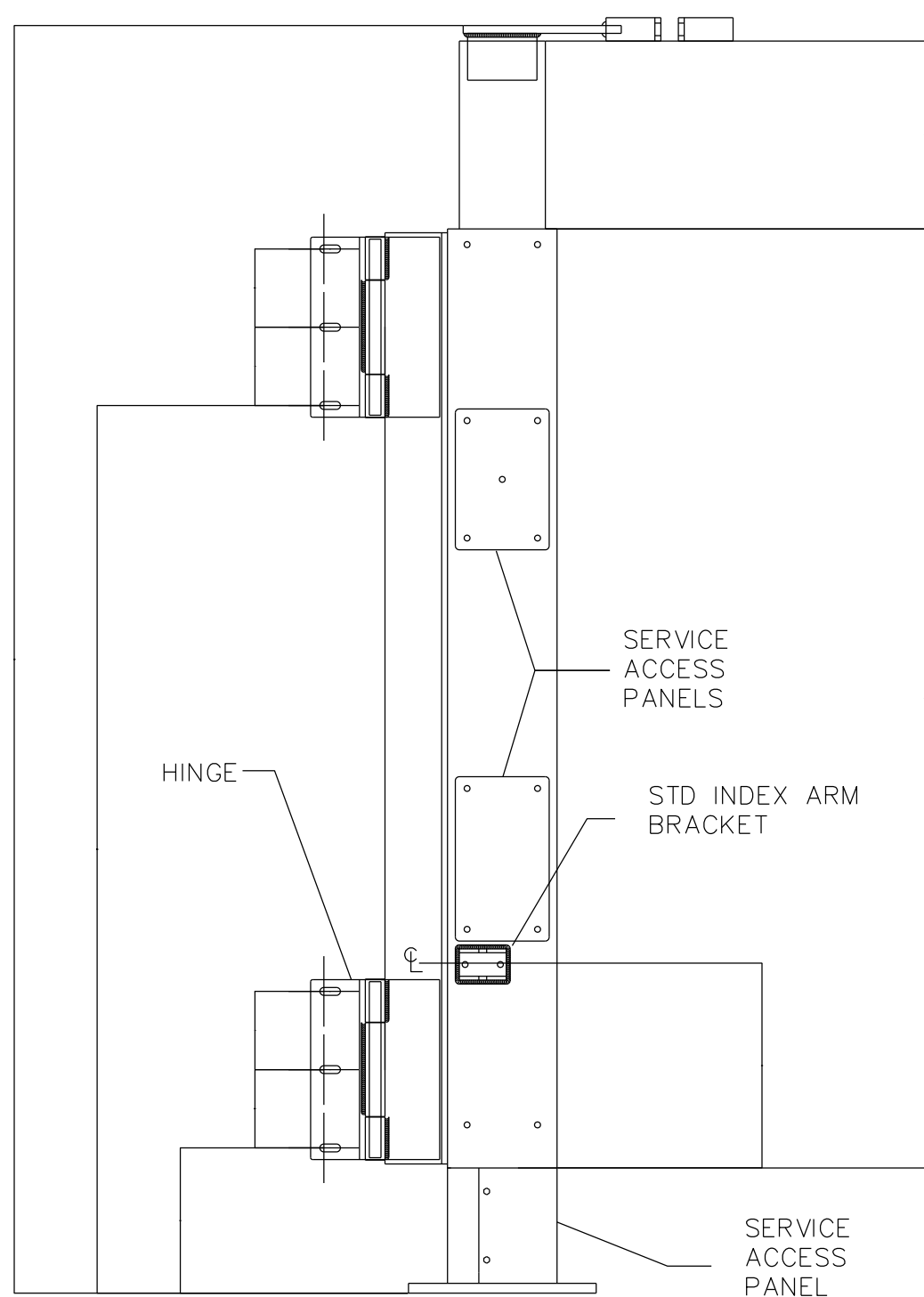
70' STATIC POLE / ITEM - 9  
ERECTION ELEVATION, SECTIONS & DETAILS

SCALE N.T.S.	DATE 10/31/14	JOB NUMBER 4854P	DRAWING NUMBER E16	REV. NO. 1
DRAWN BY KLV	CHK'D. BY RAS	APP'D. BY STC		

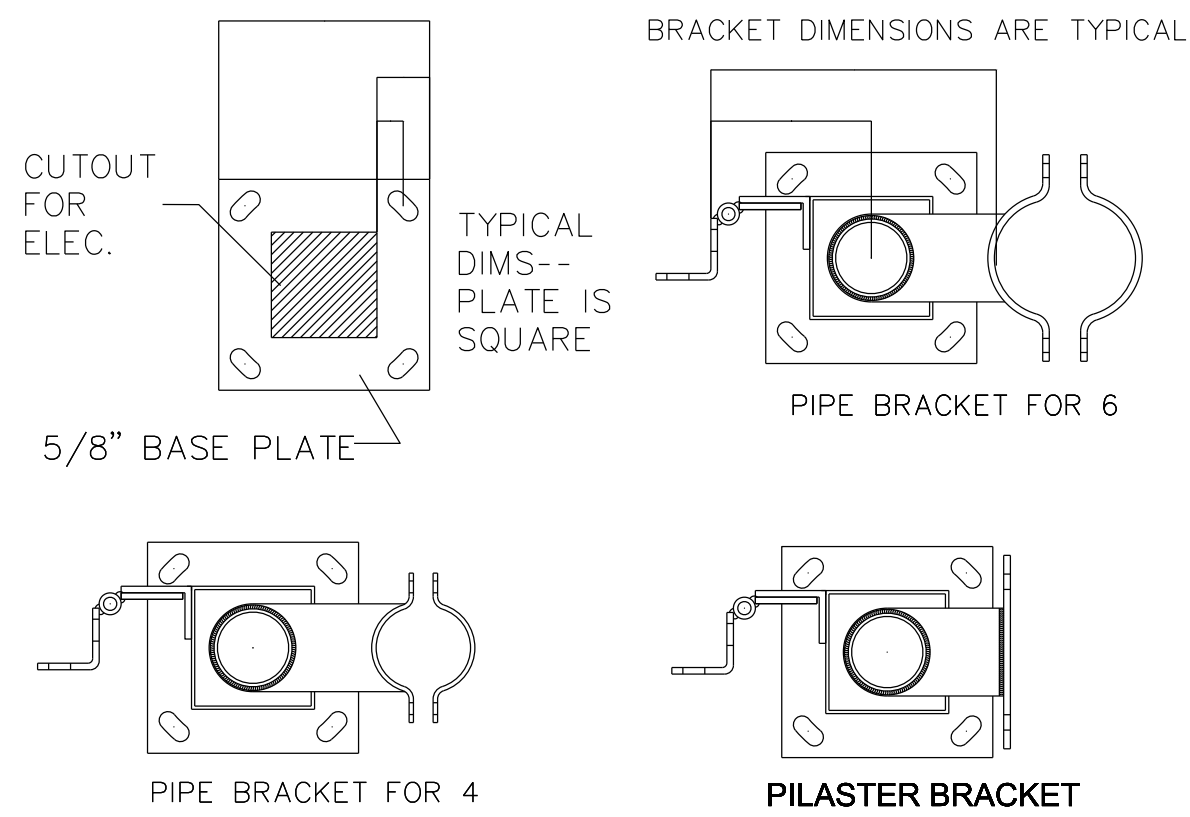
**NOTICE TO ERECTOR**  
BACKCHARGES FOR CORRECTIVE WORK OR REPLACED MATERIALS WILL NOT BE ACCEPTED UNLESS EXPRESSLY AUTHORIZED BY DIS-TRAN BEFORE ANY SUCH COST ARE INCURRED.

[illegible]

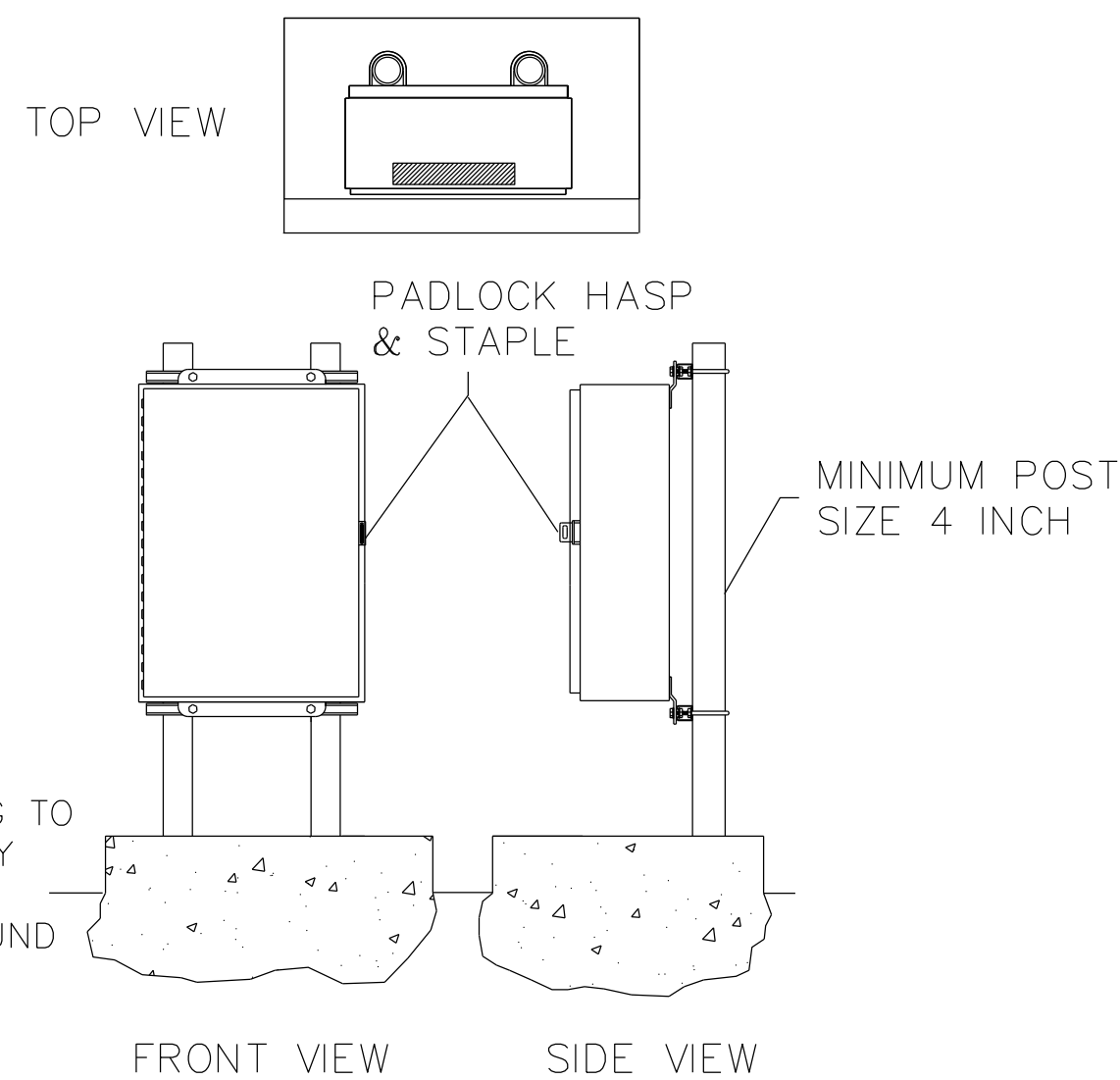




DETAIL  
MAIN GATE DETAIL  
(NOT TO SCALE)



### STANDARD DIMENSIONS

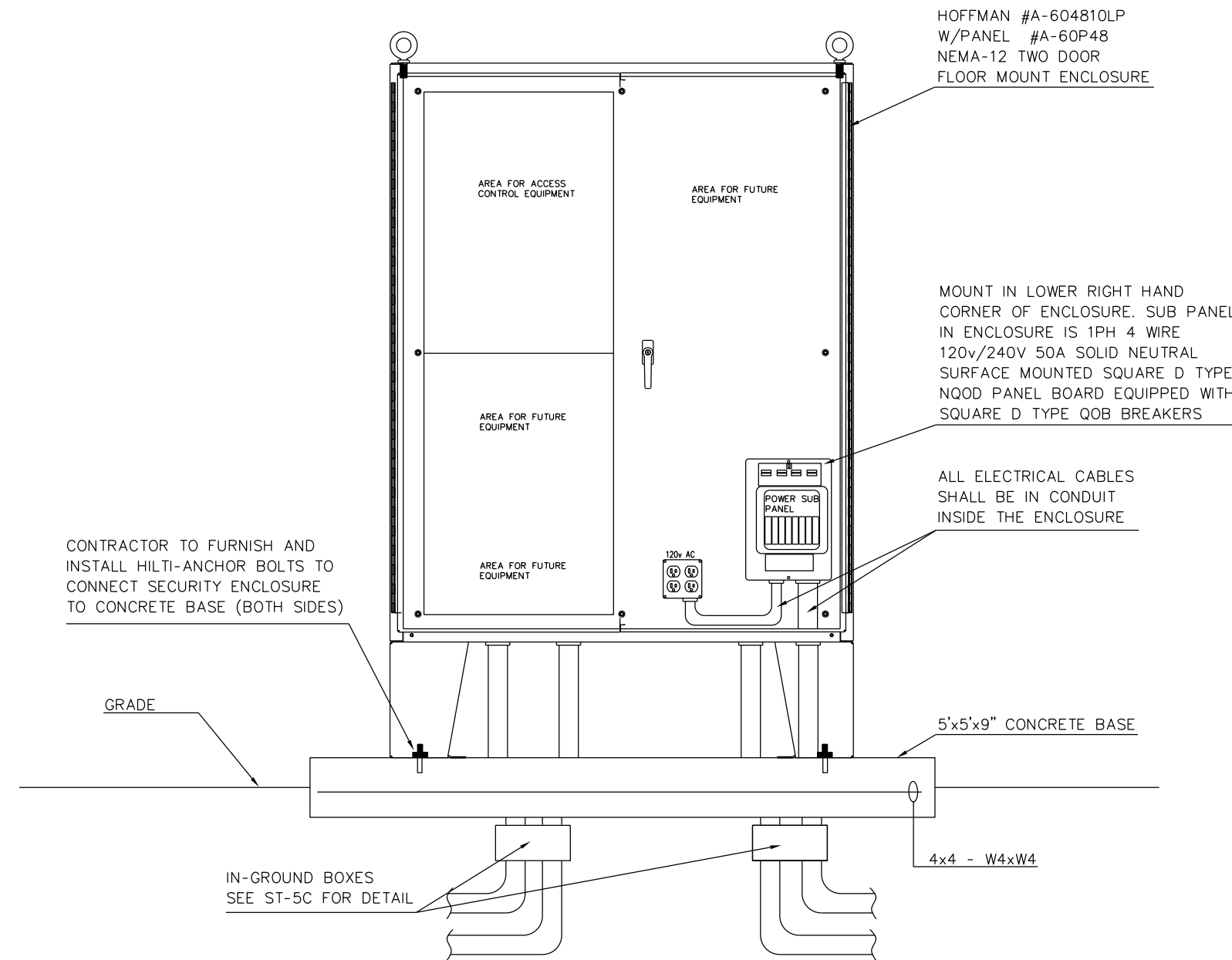


NOT: GROUNDING TO BE USED AT ANY SUBSTATION OTHERWISE GROUND IS NOT NEEDED

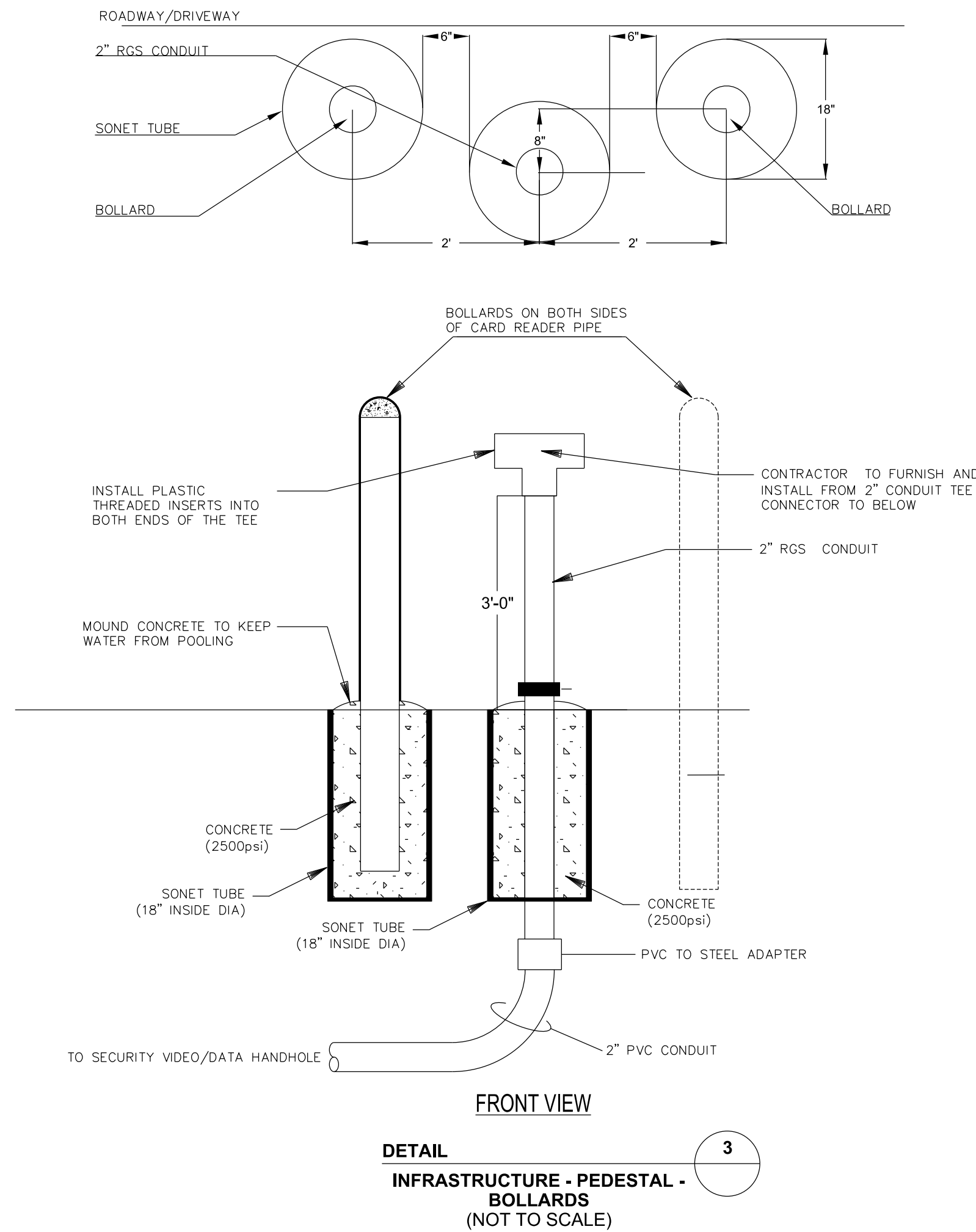
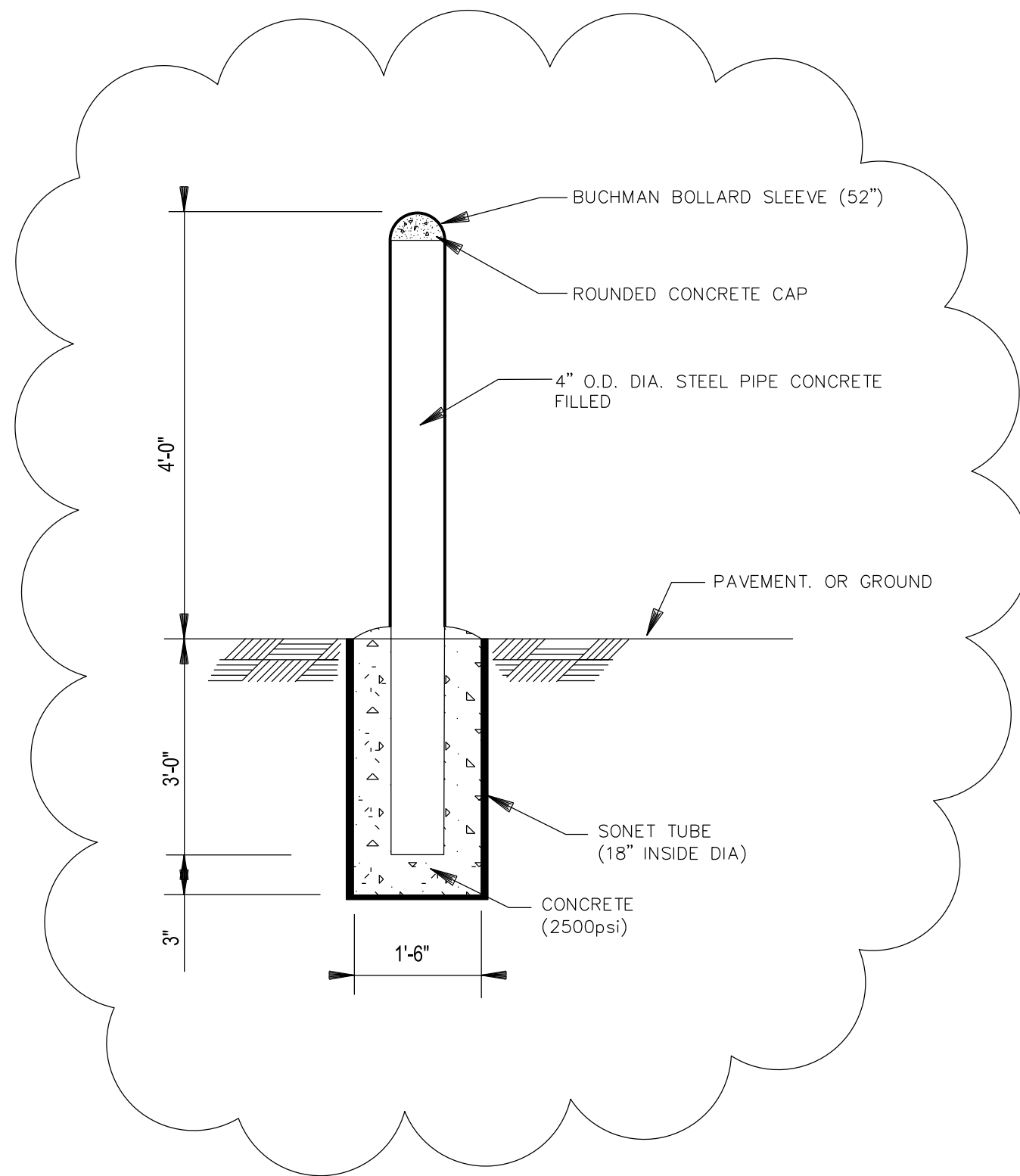
NOTE: ENCLOSURE SIZE IS 30" WIDE, 42" HIGH AND 12" DEEP. STANDARD ENCLOSURE IS "NEMA 3R" PUMP PANEL TO BE LOCATED WITHIN 100 FEET OF GATE OPERATOR.

NOTE: SUPPORT POSTS, STRUT CHANNELS AND "U" BOLTS ARE NOT FURNISHED BY HY-SECURITY GATE OPERATORS.

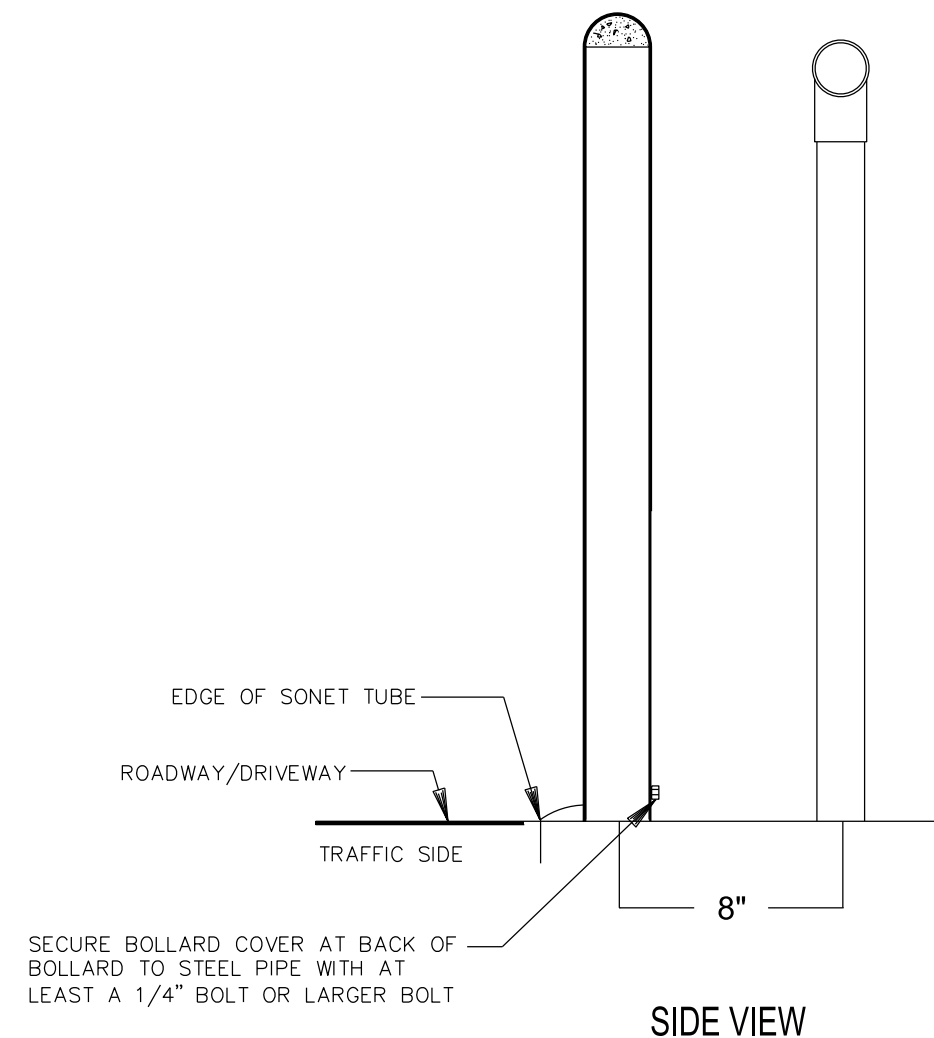
(NOT TO SCALE)



DETAIL  
HOFFMAN ENCLOSURE  
FREE STANDING  
(NOT TO SCALE)



DETAIL  
INFRASTRUCTURE - PEDESTAL -  
BOLLARDS  
(NOT TO SCALE)



NO.	REVISIONS TO DRAWING	BY	DATE	APPROVED	ENGINEERING	BY	DATE
1	ISSUED FOR BID				DESIGNED		
					CHECKED		
					APPROVED		
					DRAFTING	BY	DATE
					PRELIMINARY		
					FINAL DESIGN		
					AS BUILT		

## CONDUIT DETAILS – TYPICAL

23026kV LOW PROFILE SUBSTATION

SCALE:

NONE

PROJECT DESIGN SEGMENT 20410

IFB NO:

N/A

DESIGN FILENAME:

N/A

DRAWING NO:

N/A

SHEET NO:

N/A

**APPENDIX B**  
**BID FORM FOR SOLICITATION # 133-17**  
**Installation of Five 230 kV and one 138 kV Capacitor Banks**

Submit an **original, two (2) copies and one (1) CD or thumb drive** along with other required forms in a sealed envelope to: JEA Procurement Dept., 21 W. Church St., Bid Office, Customer Center, 1<sup>st</sup> Floor, Room 002, Jacksonville, FL 32202-3139.

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

Company's Address \_\_\_\_\_

License Number \_\_\_\_\_

Phone Number: \_\_\_\_\_ FAX No: \_\_\_\_\_ Email Address: \_\_\_\_\_

**BID SECURITY REQUIREMENTS**

- ☐ None required  
☒ Certified Check or Bond Five Percent (5%)

**TERM OF CONTRACT**

- ☐ One Time Purchase  
☐ Annual Requirements  
☒ Other, Specify- Project Completion

**SAMPLE REQUIREMENTS**

- ☐ None required  
☐ Samples required prior to Response Opening  
☐ Samples may be required subsequent to Bid Opening

**SECTION 255.05, FLORIDA STATUTES CONTRACT BOND**

- ☐ None required  
☒ Bond required 100% of Bid Award

**QUANTITIES**

- ☐ Quantities indicated are exacting  
☒ Quantities indicated reflect the approximate quantities to be purchased Throughout the Contract period and are subject to fluctuation in accordance with actual requirements.

**INSURANCE REQUIREMENTS**

**Insurance required**

**PAYMENT DISCOUNTS**

- ☐ 1% 20, net 30  
☐ 2% 10, net 30  
☐ Other \_\_\_\_\_  
☐ None Offered

Item No.	ENTER YOUR BID FOR THE FOLLOWING DESCRIBED ARTICLES OR SERVICES	TOTAL BID PRICE
1	<b>Total Bid Price (from Bid Workbook)</b>	\$ _____

**BIDDER CERTIFICATION**

By submitting this Bid, the Bidder certifies that it has read and reviewed all of the documents pertaining to this Solicitation, that the person signing below is an authorized representative of the Bidding Company, that the Company is legally authorized to do business in the State of Florida, and that the Company maintains in active status an appropriate contractor's license for the work (if applicable). The Bidder also certifies that it complies with all sections (including but not limited to Conflict Of Interest and Ethics) of this Solicitation.

We have received addenda \_\_\_\_\_

\_\_\_\_\_ through \_\_\_\_\_

Handwritten Signature of Authorized Officer of Company or Agent \_\_\_\_\_ Date \_\_\_\_\_

Printed Name and Title \_\_\_\_\_