



CITY OF BRENHAM ELECTRIC

**BM 130 JACKSON STREET SUBSTATION
UNDERGROUND FEEDER EXIT RELOCATION
PHASE 1**

RFP No. 23-012

December 8, 2023

Sealed Bids to be Submitted by:
2:00 p.m. (CST) January 9, 2024.

BIDDER'S NAME: _____

Engineer: McCord Engineering, Inc.
916 Southwest Parkway East
College Station, TX
979-764-8356

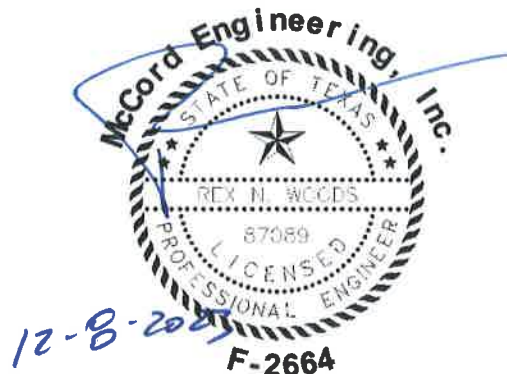


TABLE OF CONTENTS

PART 1

NOTICE TO BIDDERS
INSTRUCTIONS TO PROPOSERS
RFP 23-012
ATTACHMENT A: TERMS AND CONDITIONS FOR BIDS

PART 2

TECHNICAL SPECIFICATIONS

- I. CONTRACTOR-FURNISHED MATERIALS
- II. MOBILIZATION
- III. EXCAVATING, TRENCHING, AND BACKFILLING
- IV. EROSION AND SEDIMENTATION CONTROL
- V. TRENCH SAFETY
- VI. PIPE BORING, JACKING, TUNNELING AND ENCASEMENT
- VII. INSTALLATION OF CONDUIT
- VIII. INSTALLATION OF MANHOLE AND PULL BOXES
- IX. HYDRO-MULCH SEEDING
- X. RIGHT-OF-WAY RESTORATION SPECIFICATION
- XI. DISTRIBUTION SPECIFICATIONS – CONSTRUCTION

EXHIBITS

EXHIBIT A: CONSTRUCTION DRAWINGS & STAKING SHEETS
EXHIBIT B: CITY OF BRENHAM ASSEMBLY UNITS, PULL BOX SPECIFICATIONS, STREET SPECIFICATIONS AND CONSTRUCTION STANDARDS

PART 3

PROPOSAL FORM
CONTRACTOR'S QUALIFICATION STATEMENT AND EXPERIENCE
UNIT PRICE SCHEDULE
BID BOND FORM
CERTIFICATIONS

PART 4

EXAMPLE CONTRACT
GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

PART 1

TABLE OF CONTENTS

PART 1

NOTICE TO BIDDERS

INSTRUCTIONS TO PROPOSERS

RFP 23-012

ATTACHMENT A: TERMS AND CONDITIONS FOR BIDS

PART 2

TECHNICAL SPECIFICATIONS

- I. CONTRACTOR-FURNISHED MATERIALS
- II. MOBILIZATION
- III. EXCAVATING, TRENCHING, AND BACKFILLING
- IV. EROSION AND SEDIMENTATION CONTROL
- V. TRENCH SAFETY
- VI. PIPE BORING, JACKING, TUNNELING AND ENCASEMENT
- VII. INSTALLATION OF CONDUIT
- VIII. INSTALLATION OF MANHOLE AND PULL BOXES
- IX. HYDRO-MULCH SEEDING
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CONTRACTOR'S QUALIFICATION STATEMENT AND EXPERIENCE

UNIT PRICE SCHEDULE

BID BOND FORM

CERTIFICATIONS

PART 4

EXAMPLE CONTRACT

GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT



NOTICE

CITY OF BRENHAM

BM 130 JACKSON STREET SUBSTATION UNDERGROUND FEEDER EXIT RELOCATION PHASE 1 RFP NO. 23-012 BRENHAM, TEXAS

The City of Brenham will receive Competitive Sealed Proposals for the “**RFP No. 23-012, BM 130 JACKSON STREET SUBSTATION UNDERGROUND FEEDER EXIT RELOCATION PHASE 1, RFP No. 23-012**” until 2:00 p.m. local time on January 9, 2024. Proposals shall be addressed to Kyle Branham, City of Brenham Texas, 200 W. Vulcan, Brenham, TX 77833 and shall be submitted in a sealed envelope marked with the project name and RFP number or, submitted electronically as detailed in the RFP form.

A copy of the bid specifications may be obtained in person, at the City of Brenham City Hall, 200 W. Vulcan St., Suite 203, Brenham, Texas 77833. They may also be obtained by calling (979-337-7537) or by visiting the City of Brenham’s website at www.cityofbrenham.org/purchasing. They may also be obtained through CivCast at www.civcastusa.com (account setup required).

A non-mandatory pre-proposal meeting will be held at the City of Brenham, Texas city offices located at 200 W. Vulcan, Brenham, TX 77833 at 10:00 a.m. local time on December 19, 2023.

INSTRUCTIONS TO PROPOSERS

I. DEFINITIONS

- A. Proposal Documents include the Proposal Requirements and the proposed Contract Documents. The Proposal Requirements consist of the Advertisement for Proposals, RFP Form, Terms and Conditions, Instructions to Proposers, Proposal Form, Contractor's Qualifications Statement and Experience Record and other required legal forms as may be included and listed in the Table of Contents. The proposed Contract Documents consist of the form of Agreement between the City and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications and all Addenda issued prior to execution of the Contract.
- B. Definitions set forth in the General Conditions of the Contract or in other Contract Documents are applicable to the Proposal Documents.
- C. Addenda are written or graphic instruments issued by the Engineer prior to the execution of the Contract which modify or interpret the Proposal Documents by additions, deletions, clarifications or corrections.
- D. A Proposal is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Proposal Documents, along with a bid bond.
- E. The Base Proposal is the sum stated in the Proposal Form for which the Proposer offers to perform the work described in the Contract Documents as the base, to which additional sums may be added to or deleted from as the result of the of the City accepting Alternate Proposal(s).
- F. An Alternate Proposal (or Alternate) is an amount stated in the Proposal Form to be added to or deducted from the amount of the Base Proposal if the corresponding change in the Work, as described in the Proposal Documents for each Alternate is accepted.
- G. A Proposer is a person or entity who submits a Proposal who meets the requirements set forth in the Proposal Documents.
- H. A Sub-proposer is a person or entity who submits a proposal to a Proposer for materials, equipment or labor for a portion of the Work.

II. PROPOSER'S REPRESENTATIONS

- A. The Proposer by making a Proposal represents that:
- B. The Proposer has read and understands the Proposal Documents to the extent that such documentation relates to the work for which the Proposal is submitted, and for other portions of the Project, if any, being concurrently or presently under construction.
- C. The Proposal is made in compliance with the Proposal Documents.
- D. The Proposer has visited the site, become familiar with local conditions under which the Work is to be performed and has correlated the Proposer's personal observations with the requirements of the Proposal Documents.
- E. The Proposal is based upon the materials, equipment and systems required by the Proposal Documents without exception.

III. PROPOSAL DOCUMENTS

A. COPIES

1. Proposers may obtain complete sets of the Proposal Documents from the issuing office designated in the Advertisement for Proposals in the number and for the sum stated therein.
2. Proposers shall use complete sets of Proposal Documents in preparing Proposals; neither the City nor Engineer assumes responsibility for errors or misinterpretations resulting from the use of incomplete sets of Proposal Documents.
3. The City and Engineer may make copies of the Proposal Documents available on the above terms for the purpose of obtaining Proposals on the Work. No license or grant of use is conferred by issuance of copies of the Proposal Documents.

B. INTERPRETATION OR CORRECTION OF PROPOSAL DOCUMENTS

1. The Proposer shall carefully study and the Proposal Documents and shall examine the site and local conditions of the Work, and shall at once report to the Engineer errors, inconsistencies or ambiguities discovered.
2. Proposers and Sub-Proposers requiring clarification or interpretation of the Proposal Documents shall make a written request which shall reach the Engineer at least five days prior to the date for receipt of Proposals.
3. Interpretations, corrections and changes of the Proposal Documents will be made by Addendum. Interpretations, corrections, and changes of the Proposal Documents made in any other manner will not be binding, and Proposers shall not rely upon them.

C. SUBSTITUTIONS

1. The materials, products and equipment described in the Proposal Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.
2. If the Engineer approves a proposed substitution prior to receipt of Proposals, such approval will be set forth in an Addendum. Proposers shall not rely upon approvals made in any other manner.
3. No substitutions will be considered before the Contract award unless specifically provided for by addenda.

D. ADDENDA

1. Addenda will be transmitted to all who are known by the issuing office to have received a complete set of Proposal Documents.
2. Copies of Addenda will be made available for inspection wherever Proposal Documents are on file for that purpose.
3. Addenda will be issued no later than three days prior to the date for receipt of Proposals except an Addendum withdrawing the request for Proposals or one which includes postponement of the date for receipt of Proposals.

4. Each Proposer shall ascertain prior to submitting a Proposal that the Proposer has received all Addenda issued, and the Proposer shall acknowledge their receipt on the Proposal Form.

IV. PROCEDURES

A. PREPARATION OF PROPOSALS

1. Proposals shall be submitted on the Proposal Form included with the Proposal Documents. Proposer shall also ensure that the information required on the Contractor's Qualifications Statement and Experience Record and all forms listed in Part I of the Table of Contents are addressed and included in full and submitted with the Proposal.
2. All blanks on the Proposal Form shall be legibly executed in a non-erasable medium.
3. Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.
4. Interlineations, alterations and erasures must be initialed by the signer of the Proposal.
5. All requested Alternates shall be proposed upon. If Alternate renders no change in the Base Proposal, enter "No Change".
6. Where two or more Proposals for designated portions of the Work have been requested, the Proposer may, without forfeiture of the proposal security, state the Proposer's refusal to accept award of less than the combination of Proposals stipulated by the Proposer. The Proposer shall make no additional stipulations on the proposal form nor qualify the Proposal in any other manner.
7. Each copy of the Proposal shall state the legal name of the Proposer and the nature of legal form of the Proposer. The Proposer shall provide evidence of legal authority to perform within the jurisdiction of the Work. Each copy shall be signed by the person or persons legally authorized to bind the Proposer to a contract. A Proposal by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Proposal submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Proposer.

B. PROPOSAL SECURITY

1. Each Proposal shall be accompanied by a proposal security in the form of a cashier's check or bond in the amount of 5% of the Base Proposal Price. The Proposer pledges to enter into a Contract with the City on the terms stated in the Proposal and will furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Proposer refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the proposal security shall be forfeited to the City as liquidated damages, not as penalty. The amount of the proposal security shall not be forfeited to the City in the event the City fails to comply with Paragraph VI, B.
2. The attorney in fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney.
3. The City will have the right to retain the proposal security of Proposers to whom an award is being considered until either (a) the Contract has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Proposals may be withdrawn or (c) all

Proposals have been rejected.

C. SUBMISSION OF PROPOSALS

1. The completed Proposal Form, the proposal security and any other documents containing information that is required to be submitted with the Proposal shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Proposals and shall be identified with the Project name and the Proposer's name. If the Proposal is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED PROPOSAL ENCLOSED" on the face thereof.
2. Proposals shall be deposited at the designated location prior to the time and date for receipt of Proposals. Proposals received after the time and date for receipt of Proposals will be return unopened.
3. The Proposer shall assume full responsibility for timely delivery at the location designated for receipt of Proposals.

D. MODIFICATION OR WITHDRAWAL OF PROPOSAL

1. A Proposal may not be modified, withdrawn or canceled by the Proposer during the stipulated time period following the time and date designated for the receipt of Proposals, and each Proposer so agrees in submitting a Proposal.
2. Prior to the time and date designated for receipt of Proposals, a Proposal submitted may be modified or withdrawn by notice to the party receiving Proposals at the place designated for receipt of Proposals. Such notice shall be in writing over the signature of the Proposer. Written confirmation over the signature of the Proposer shall be received, and date- and time-stamped by the receiving party on or before the date and time set for receipt of Proposals. A change shall be so worded as not to reveal the amount of the original Proposal.
3. Withdrawn Proposals may be resubmitted up to the date and time designated for the receipt of Proposals provided that they are then fully in conformance with these Instructions to Proposers.
4. Proposal security shall be in an amount sufficient for the Proposal as resubmitted.
5. Proposal Withdrawal: No proposal may be withdrawn within thirty days after proposal opening without consent of City.
6. The City has stated that according to the State Attorney General, proposal modifications made on the outside of proposal envelope are to be considered non- responsive and shall not be considered.

V. CONSIDERATION OF PROPOSALS

A. OPENING OF PROPOSALS

At the discretion of the City the properly identified Proposals received on time, as defined in the Advertisement for Proposals, will be publicly opened and will be read aloud. Within 10-day of the Proposal Opening, an abstract of the Proposals may be made available to Proposers.

B. REJECTION OF PROPOSALS

The City shall have the right to reject any or all Proposals. A Proposal not accompanied by the correctly completed Proposal Form, a required proposal security, and/or that is lacking data required by the Proposal Documents is subject to rejection.

C. ACCEPTANCE OF PROPOSAL (AWARD)

1. It is the intent of the City to award a Contract to the Proposer who provides a Proposal that has been submitted in accordance with the requirements of the Proposal Documents; that does not exceed the funds available for this project; and that the City, based upon established criteria, feels is the most advantageous.
2. The City shall have the right to waive informalities and irregularities in a Proposal received that are not related to the Proposal price and to accept the Proposal which, in the City's judgment, is in the City's own best interests.
3. The City shall have the right to accept Alternates in any order or combination, and to determine the most advantageous Proposal while considering of the sum of the Base Proposal and Alternates accepted.
4. In determining the most advantageous Proposal, City will give serious consideration to information derived from Contractor's Qualifications Statement and Experience Record, and other information submitted on the Proposal Form. Proposers not completing these forms and submitting all information and materials required will be subject to rejection.
5. Following the proposal deadline, City staff will evaluate and rank each proposal submitted in relation to the selection criteria set forth. The Proposal scoring the highest overall value upon evaluation will be deemed the most advantageous Proposal.
6. Following the Proposal evaluation, the City will attempt to negotiate an agreement with the Proposer whom they determine to offer the most advantageous Proposal. The City may discuss with the selected Proposer options for a scope or time modification and any price change associated with the modification. If the City is unable to negotiate an agreement with the selected Proposer, the City may begin the negotiation process with the second ranked Proposer. This process shall continue until an agreement has been negotiated with a ranked Proposer or the City rejects all proposals for this project.

7. The City will select a contractor from the respondents to this request for proposals, or reject all proposals. The City will rank the proposals based on the following:

| WEIGHT | POINTS | CRITERIA |
|--------|--------|---|
| 40% | 40 | Total price of Base Proposal and any selected alternates. |
| 20% | 20 | Reputation of Contractor and Contractor's experience record with projects similar to the scope of this project. |
| 20% | 20 | Ability of Contractor to meet project timeline. |
| 20% | 20 | Extent to which goods and services proposed by the contractor meet City's needs |

8. The City reserves the right to verify the accuracy and completeness of all responses by utilizing any information available to the City without regard to whether such information appears in the proposal.

VI. POST-PROPOSAL INFORMATION

A. CONTRACTOR'S QUALIFICATION STATEMENT

1. Proposers shall provide all information required in the Contractor's Qualification Statement and Experience Record. After the proposal date, the City reserves the right to request any additional pertinent information from any Proposer as pertaining to the qualifications and experience of the that Proposer's company.

B. CITY'S FINANCIAL CAPABILITY

1. The City shall, at the request of the Proposer to whom award of a Contract is under consideration and no later than seven days prior to the expiration of the time for withdrawal of Proposals, furnish to the Proposer Reasonable evidence that financial arrangements have been made to fulfill the City's obligation under the Contract. Unless such reasonable evidence is furnished, the Proposer will not be allowed to execute the Agreement between the City and Contractor.

VII. PERFORMANCE BOND AND PAYMENT BOND

A. BOND REQUIREMENTS

1. The Proposer shall furnish bonds in accordance with the General and Supplemental General Conditions of this Proposal covering the faithful performance of the Contract and payment of all obligations arising thereunder. Bonds may be secured through the Proposer's usual sources, but surety company must have a Best Key Rating of B+ or better.

2. The cost of securing such bonds shall be included in the Proposal.

B. TIME OF DELIVERY AND FORM OF BONDS

1. The Proposer shall deliver the required bonds to the City not later than fifteen days following the date of execution of the Contract. If the Work is to be commenced prior thereto in response to a letter of intent, the Proposer shall, prior to commencement of the work, submit evidence satisfactory to the City that such bonds will be furnished and delivered in accordance with this Subparagraph 7.2.1.
2. Performance Bond and Payment Bonds shall be written in the amount of the Contract Sum. Bonds shall be written on forms in accordance with applicable State of Texas laws.
3. The bonds shall be dated on or after the date of the Contract.
4. The Proposer shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

VIII. FORM OF AGREEMENT BETWEEN CITY AND CONTRACTOR

- A. Unless otherwise required in the Proposal Documents, the Agreement for the Work will be written the Form of Agreement Between City and Contractor Where the Basis of Payment Is a Stipulated Sum as contained in the Proposal Documents.

IX. SUPPLEMENTARY INSTRUCTIONS

A. Pre-Proposal Conference

1. A non-mandatory pre-proposal meeting will be held at the City of Brenham Texas city offices located at 200 W. Vulcan, Brenham, TX 77833 at 10:00 a.m. local time on December 19, 2023. Representatives of City and Engineer will be present to discuss Project. Proposers are encouraged to attend conference. Engineer will transmit to Proposers of record such addenda as Engineer considers necessary in response to questions arising during the conference. Oral statements may not be relied upon and will not be binding or legally effective.

B. Non-Collusion Certification

1. By signing this proposal, the proposer certifies that, to the best of his/her knowledge: neither the proposer nor any business entity represented by the proposer has received compensation for participation in the preparation of the item specifications related to this Proposal Invitation, this proposal has been arrived at independently and is submitted without collusion with any other proposer, with any competitor or potential competitor, or with any other person or entity to obtain any information or gain any special treatment or favoritism that would in any way limit competition or give any proposer an unfair advantage over any other proposer with respect to this proposal, the proposer has not accepted, offered, conferred, or agreed to confer, and will not in the future accept, offer, accepted, offered, conferred, or agreed to confer, and will not in future accept, offer, confer, or agree to confer, any benefit or anything of value to any person or entity related to the City in connection with any information or submission related to this proposal, any recommendation, decision, vote, or award related to this proposal, or the exercise of any influence or discretion concerning the sale, delivery, or performance of any product or service related to this proposal, no attempt has been or will be made to induce any other person or entity to submit a proposal.

2. The person signing this proposal certifies that he/she has fully informed himself/herself regarding the accuracy of the statements contained in this certification.

C. Equal Employment Opportunity (EEO) Disclosures

1. By submission of a proposal, the proposer agrees that in the performance of any contract resulting from award under this proposal, the proposer will comply for the period of the contract with all applicable equal employment opportunity laws and regulations, including, but not limited to an agreement not to deny any benefit to, exclude from any opportunity, or discriminate in any way against, any applicant, employee, or any other person because of age, color, creed, gender, handicapping condition, marital status, national origin, political affiliation or belief, race religion or veteran status.
2. The occurrence of any prohibited discrimination will constitute proposer's breach of contract due to a substantial failure by the vendor to fulfill its obligations, whereupon the City may terminate the proposer's contract for cause.



Request for Proposals (“RFP”)
BM 130 Jackson Street Substation
Underground Feeder Exit Relocation Phase 1
RFP NO. 23-012

| EVENT | DATE |
|---|-----------------------------|
| Issuance of RFP | Friday, December 8, 2023 |
| 1st Publication Date | Thursday, December 14, 2023 |
| 2nd Publication Date | Thursday, December 21, 2023 |
| Non-Mandatory Pre-proposal Meeting (10:00 a.m.) | Tuesday, December 19, 2023 |
| RFP Question Deadline (5:00 p.m.) | Tuesday, January 2, 2024 |
| Deadline to Request Electronic Submission (2:00 p.m.) | Monday, January 8, 2024 |
| Proposal Submission Deadline (2:00 p.m.) | Tuesday, January 9, 2024 |
| Possible City Council Consideration/Award | Thursday, January 18, 2024 |

INTENT

The City of Brenham is seeking proposals from qualified contractors for an electric distribution project: *BM 130 Jackson Street Substation Underground Feeder Exit Relocation Phase 1*. A detailed scope of this project can be found in the section of this document titled “SCOPE” and technical specifications are provided.

RECEIPT AND OPENING OF PROPOSALS

Proposers shall submit **one (1) original and one (1) copy** of their proposal. The original proposal must be clearly marked “**Proposal for RFP No. 23-012**” and include an original signature, in ink, in order to be accepted. Proposals must be received in the City Secretary’s Office no later than **2:00 p.m. (CST) on Tuesday, January 9, 2024**. It is the Proposer’s sole responsibility to assure that the proposal is delivered in a timely fashion. Proposals received after this time will be rejected and returned unopened. There will be no public opening; however, the name of each proposal received will be read aloud for public record. **Any proposal received after 2:00 p.m. (CST) on Tuesday, January 9, 2024 shall not be considered.**

To the extent allowed by applicable law, and subject to the ruling of any administrative agency or court having jurisdiction, the City intends that trade secrets and confidential information contained in the proposals and clearly identified as “Confidential” in **bolded font** will not be open for public inspection at any time, even after a contract has been awarded and executed, whether or not the proposer wins the contract.

Proposals should be prepared simply, providing straightforward, concise description of the Proposer’s approach and capabilities necessary to satisfy the requirements of the RFP. Technical literature and elaborate promotional materials, if any, must be submitted separately. Emphasis in the proposal should be on completeness, clarity of content and adherence to the presentation structure required by the RFP.

Proposals shall be delivered using one of the following methods:

Hand-deliver to:

200 W. Vulcan Street
Suite 203
Brenham, TX 77833

Mail to:

P.O. Box 1059
Brenham, TX 77834-1059
ATTN: City Secretary

Ship to (FedEx, UPS, DHL, etc.)

200 W. Vulcan Street
Brenham, TX 77833
ATTN: City Secretary

The city does accept electronic bids via download into a secure electronic depository. Bids submitted by email will not be accepted. If a bidder would like to submit electronically, they must notify the city no later than **2:00 pm, Monday, January 8, 2024**.

Notifications for electronic submissions must be sent to Kyle Branham, Purchasing and Public Works Project Manager, P. O. Box 1059 (200 W. Vulcan St.), Brenham, Texas 77834, or e-mailed to kbranham@cityofbrenham.org. All e-mails must indicate “RFP No. 23-012 –Electronic Submission Request” in the subject line. It is the sender’s responsibility to verify receipt of email; read receipt is acceptable.

CHANGES, QUESTIONS, AND INQUIRIES

Any and all questions regarding this RFP must be submitted in writing and addressed to Kyle Branham, Purchasing and Fleet Supervisor, P.O. Box 1059 (200 W. Vulcan St.), Brenham, Texas 77834, or e-mailed to kbranham@cityofbrenham.org. All e-mails must indicate “RFP No. 23-012” in the subject line. It is the sender’s responsibility to verify receipt of email. The deadline for submittal of questions regarding this RFP is **end of day Tuesday, January 2, 2024**.

No person has the authority to verbally alter the terms of this RFP. Any changes to this RFP will be made in the form of an Addendum which will be made available online at www.cityofbrenham.org. It shall be the responsibility of interested proposers to check the website for addenda up to the proposal submission deadline. The complete RFP and all Addendums will be posted on the City’s website.

GENERAL TERMS

This RFP does not commit the City of Brenham to award a contract. No other party, including any proposer, is intended to be granted any rights hereunder. Proposals which, in the sole discretion of the City of Brenham, do not meet minimum qualification requirements will not be reviewed. This RFP and the process it describes are proprietary to the City of Brenham and are for the sole and exclusive benefit of the City of Brenham. Any response to this RFP will become the property of the City of Brenham and subject to the Public Information Act of Texas. The City of Brenham is not liable for any costs associated with the development, preparation, transmittal or presentation of any proposal or material submitted in response to this RFP. The City of Brenham reserves the right to award contracts on the basis of proposals submitted or to negotiate with selected proposer for modification of the selected proposals (which may include alternate concepts), at the City of Brenham’s option. By submission of a proposal, the selected proposer agrees to be legally bound if the City of Brenham accepts the proposal. The City of Brenham reserves the right to make an award without further discussion of the proposals. The selected Proposer will be expected to enter into an Agreement with the City. The Agreement shall incorporate the City’s standard contract terms and conditions, attached hereto as “EXHIBIT A” to this RFP.

BOND REQUIREMENTS

All proposals shall be required to submit a Proposal Security in the amount of five percent (5%) of the total bid amount payable to the City of Brenham, from a surety company authorized to do business in Texas as a guarantee that the Proposer will enter into a contract and provide required insurance within ten (10) business days after receiving a Notice of Intent to Award, and will provide to City all submittals required by this contract within ten (10) business days from Notice of Intent to Award, and will provide to the City executed Performance, Maintenance and Payment bonds within ten (10) business days after City Council Award of Contract. The bond shall be on the forms provided, each in the amount of 100% of the contract price from a Surety Company holding a permit in the State of Texas and approved by the Federal Government, and must bear the impressed seal of the surety company and the name of the

Proposer, and be signed by the Proposer and an authorized representative of the surety company. Powers of attorney must be attached to the Proposal Guaranty. A proposal that has been fully completed and signed by the person authorized to represent the company submitting the proposal. The proposal must use the same form or a photocopy of the form provided in the RFP document. Acknowledgment of the receipt of any and all addenda must be provided on the proposal. If the Proposer is a corporation or other legal entity subject to the Texas franchise tax, a copy of its "Franchise Tax Certificate of Account Status" showing all franchise taxes are current (this item may be submitted to the City within three (3) business days of the proposal opening for the proposal to be considered).

CONTRACT TERMS AND CONDITIONS

GENERAL TERMS AND CONDITIONS

General Terms and Conditions for request for proposals from the City of Brenham may be found in Attachment "A" of this document. Should any contradiction be found to exist between those terms and conditions and the body of this RFP, the RFP will prevail.

INDEMNITY

The Contractor agrees to indemnify and hold harmless the City of Brenham and its officers, agents, and employees from any and all claims, causes of action, and damages of every kind, for injury to or death of any person and damages to property arising out of or in connection with the work done by the Contractor, and including acts or omissions of the City of Brenham, its officers, agents or employees in connection with said Contract.

H.B. 1295 COMPLIANCE

The Awarded Vendor for the contract shall comply with the requirements of Section 2252.908 of the Texas Government Code as adopted in 2015 as House Bill 1295. The law requires that a governmental entity may not enter in certain contracts with a business entity unless the business entity submits a Disclosure of Interested Parties to the governmental entity. The law applies only to a contract that either (1) requires an action or vote by the governing body of the entity or agency before the contract may be signed or (2) has a value of at least \$1 million.

Compliance with the law requires that the awarded Vendor utilize the Texas Ethics Commission website to enter the required information on Form 1295 and print a copy of the complete form. The form must be signed and submitted to the contracting government entity.

The City of Brenham, in the case of contracts formalized by Purchase Order or by other written contract, will notify the Vendor of Award by Council and request the completed Form 1295 within five (5) working days thereafter.

CHAPTER 220 COMPLIANCE

The Awarded Vendor for the contract shall comply with the requirements of Subtitle F, Title 10, Government Code Chapter 2270 and shall be required to provide conformation that the Vendor: Does not boycott Israel currently; and will not boycott Israel during the term of the contract the above-named Company, business or individual with the City of Beaumont, Texas. Pursuant to Section 2270.001, Texas Government Code:

Boycott Israel” means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli- controlled territory, but does not include an action made for ordinary business purposes; and Company” means a for-profit sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or any limited liability company, including a wholly- owned subsidiary, majority-owned subsidiary, parent company or affiliate of those entities or business associations that exist to make a profit.

The City of Brenham, in the case of contracts formalized by Purchase Order or by other written contract, will notify the Vendor of Award by Council and request the required confirmation within five (5) working days thereafter. Confirmation shall, by reference, be included as a part of the contract.

INSURANCE

The awarded contractor shall obtain insurance as specified in Attachment “A” of this RFP and shall maintain coverage in full effect through the duration of the contract. Certificates of Insurance shall be provided to the City within ten (10) working days of formal notice of award by the City.

TERM OF CONTRACT

The contract shall remain in force and effect throughout the duration of the construction period and throughout the terms of the associated warranty periods which shall be one (1) year from the date of substantial completion.

SCOPE

This electric distribution project consists of the installation of:

- I. Approximately 48’ of a directional bore with (3) 4” Schedule 40 conduits which will ultimately have primary cable installed in them, at a minimum depth of 60”.
- II. Approximately 834’ of open trench with multiple (3) 4” Schedule 40 conduits which will ultimately have primary cable installed in them, at a minimum depth of 60”.

Alternate Bid - 834’ installed by bore from pull pit or box.

III. Two (2) traffic load bearing pull boxes (installed to manufacturer specifications) to be located within S. Austin Street.

IV. One (1) load bearing pull box (installed to manufacturer specifications) to be located near the substation fence at the W. Stone Street and S. Austin Street intersection.

Contractors are required to field verify the location and depth of any existing underground utilities as required and locate by use of hydro pole-hole to verify any interference during boring. This is included as a lump sum bid item on the bidding sheets.

The Contractor shall only furnish any miscellaneous materials required including, but not limited to, concrete, asphalt, backfill material, and water. The City of Brenham will furnish all of the remaining overhead and underground electric materials including conduit for this project. The Contractor shall include the miscellaneous material price in their bid unit pricing.

The City shall be allowed the opportunity to inspect the installation of conduit and boxes at various stages of construction to ensure adherence to the COB specifications. Contractor may provide photos of installation if City staff are not available.

The total number of calendar days to be substantially complete with construction is 180 days.

Texas Department of Transportation Specifications

The Texas Department of Transportation standard specifications for construction and maintenance of highways, streets, and bridges referenced in this bid are available online at <https://ftp.txdot.gov/pub/txdot-info/trf/tmutcd/2011-rev-2/revision-2.pdf>.

Technical Specifications are detailed in Part 2.

TERMS AND CONDITIONS FOR BIDS

Definitions:

In order to simplify the language throughout this request for bids, the following definitions shall apply:

CITY – OWNER - Same as City of Brenham.

CONTRACT - An agreement between the City and a Vendor to furnish goods or services over a designated period of time during which repeated purchases may be made of the goods or services specified.

VENDOR – The successful Bidder(s) of this bid request.

Instructions:

The following instructions apply to all bids and become a part of terms and conditions of any bid submitted to the City of Brenham Purchasing Department, unless otherwise specified elsewhere in this bid request.

Form:

Bids must be submitted on this form only. **Bidders are required to submit one (1) original and one (1) copy.** All bids submitted must be itemized with prices extended when practical. **BIDDER MUST RETURN THE ENTIRE ORIGINAL BID DOCUMENT WITH BID OR PROPOSAL.**

Bid Return:

Bid must be sealed, and to ensure proper recognition upon its arrival, list the Bid Number, Bid Description and the Bid Opening Date on the outside of your envelope.

Late Bids:

Bids must be received by the Purchasing Department prior to the time indicated on this form. Late bids will not be opened and will be returned to the bidder only upon written request.

Acceptance:

The City of Brenham reserves the right to accept or reject any or all bids, to waive any informalities and technicalities, to accept the offer considered most advantageous **in order to obtain the best value for the City.** Causes for rejection of a bid may include but are not limited to the bidder's current violation of any City ordinance, the bidder's current inability to satisfactorily perform the work or service, or the bidder's previous failure to timely perform its obligation under a contract with the City.

Bidders may be disqualified and rejection of proposals may be recommended for any of (but not limited to) the following causes:

1. Failure to use the proposal form furnished by the Owner;
2. Lack of signature by an authorized representative on the proposal form;
3. Failure to properly complete the proposal;
4. Evidence of collusion among proposers;
5. Omission of uncertified personal or company check as a proposal guarantee (**if Bid Bond required**); or
6. Unauthorized alteration of bid form.

Owner reserves the right to waive any informality or irregularity.

All bidders are hereby notified that the City of Brenham shall consider all factors it believes to be relevant in selecting the offer that provides the best value for the City including, but not limited to the purchase price, the proximity of the bidder as it relates to bidder's ability to perform the contract for the City, the delivery date, the reputation of the bidder and the bidder's goods or services, the quality of the bidder's goods or services, the extent to which the goods or services meet the City's needs, the impact on the ability of the City to comply with laws and rules relating to contracting with historically underutilized business and non-profit organizations employing persons with disabilities, the total long-term cost of the City to acquire the bidder's goods or services, the bidder's past performance under contracts with the City, the bidder's compliance

with City ordinances, and any relevant criteria specifically listed in this request for bid.

The City is committed to obtaining its goods, products and services at the lowest price possible which benefits all citizens of Brenham. Therefore, in order to accomplish this objective/goal, it is not the intention of the City to exclude particular vendors or manufacturers nor to create restrictive situations in its request for bids and proposals. Any manufacturer's name, trade names, brand names, catalog numbers, technical data, etc. used in the specifications are there for the sole purpose of establishing and describing general performance, quality levels, type and dimensions and such references are not intended to be restrictive. Alternate bids on similar or comparable products and/or services of any manufacturer or vendor equal to the products and/or services described in the specifications are invited and will be given careful consideration provided the alternate will accomplish the same task. The City shall be the sole judge on whether the alternate product and/or service is similar to, equal to and in compliance with that specified. The decision of the City shall be final.

Award of Contract:

The contract may be awarded either to the lowest responsible bidder or to the bidder who provides goods or services at the best value for the City. The bid award may be based on, but not necessarily limited to, the following factors:

- a. the purchase price, including payment discount terms;
- b. the reputation of the bidder and of the bidder's goods or services;
- c. the quality of the bidder's goods or services;
- d. the extent to which the goods or services meet the City's needs;
- e. the bidder's past relationship with the City;
- f. the impact on the ability of the City to comply with laws and rules relating to contracting with historically underutilized businesses and nonprofit organizations employing persons with disabilities;
- g. the total long-term cost of the City to acquire the bidder's goods or services; and

- h. any relevant criteria specifically listed in this request for bid.

The City prefers to award the entire contract to a single bidder; although, the City reserves the right to award a primary contract and a secondary contract in an effort to secure a back-up contractor to be used in emergency situations in the event the primary contractor is unable to respond as needed.

Term of Contract:

This Contract shall become effective from date of acceptance and approval by the City of Brenham. It shall remain in force and effect with firm fixed bid prices for a period of one (1) year, beginning on the date of award of contract.

Extension of Contract:

Upon completion of the term of the original contract and mutual agreement of both parties, the contract may be extended for up to two (2) additional one (1) year terms (three (3) years total). The renewal will be under the same terms and conditions as the original contract. In the event a new contract cannot be executed at the anniversary date of the original term or any renewal term, the contract may be renewed month-to-month until a new contract is executed.

Assignment of Contract:

This contract cannot be transferred or assigned to another party without written consent of the City and may be subject to cancellation by the City if such consent is requested.

Contract Termination:

The City may terminate this Contract at any time upon thirty (30) calendar day's written notice. Upon the Vendor's receipt of such notice, the Vendor shall cease work immediately. The Vendor shall be compensated for the services satisfactorily performed prior to the termination date.

If, through any cause, the Vendor fails to fulfill its obligations under this contract, or if the Vendor violates any of the agreements of this Contract, the City has the right to terminate this

Contract by giving the Vendor five (5) calendar days written notice. The Vendor will be compensated for the services satisfactorily performed before termination date. Termination of the contract for cause shall be deemed as sufficient evidence and cause to remove the Vendor's name from the bidder's list for receiving future bids.

No term or provision of this Contract shall be construed to relieve the Vendor of liability to the City for damages sustained by the City because of any breach of contract by the Vendor. The City may withhold payments to the Vendor for the purpose of setoff until the exact amount of damages due the City from the Vendor is determined and paid.

Reimbursements:

There is no expressed or implied obligation for the City to reimburse responding firms for any expenses incurred in preparing bids in response to this Request for Bids and the City will not reimburse responding firms for these expenses, nor will the City of Brenham pay any subsequent costs associated with the provision of any additional information or presentation, or to procure a contract for these services.

Minority Owned Businesses:

Minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, creed, sex, or national origin in consideration for an award.

Error-Quantity:

Bids must be submitted on units of quantity specified. In the event of errors in extended process, the unit price shall govern. Any suggested quantity to secure better prices is welcomed. When discrepancies occur between words and figures, the words shall govern.

Quantities:

Quantities indicated in the Bid are estimated based upon the best available information. The City reserves the right to increase or decrease the quantities by any amount deemed necessary to

meet its needs without any adjustments in the unit bid prices.

Variations:

Any variation (deviation) from these specifications must be indicated on a separate form and be made part of the bid.

F.O.B. – Damage

Bids will not be considered unless bid F.O.B. delivered to Brenham, Texas. If shipping costs are not included in the unit bid price, bidder must give exact delivery cost, which is to be prepaid or added to the invoice. The City assumes no liability of goods delivered in a damaged or unacceptable condition.

Firm Prices:

Bidders must hold bid prices firm for 90 days after the bid opening date to allow the City sufficient time to award a contract. Once a Contract is awarded, the successful bidder must hold bid prices firm for the duration of the Contract. Sealed competitive bids may not be negotiated, amended or changed after the bid opening date.

Cooperative Agreements:

Successful bidder agrees to extend prices and terms to all governmental entities that have entered into, or will enter into, joint purchasing interlocal cooperation agreements with the City.

Authorized Signature:

Bids must show full firm name and mailing address of bidder and be manually signed by an authorized representative of the bidder. Firm name and authorized signature should appear on each page of bid where spaces are provided. Submission of a signed bid will be interpreted to mean that bidder has hereby agreed to all terms and conditions set forth in all of the sheets which make up this invitation.

Withdrawal-Alteration Of Bids:

Bids cannot be altered after receiving time or opening time. No bid may be withdrawn after

opening time without acceptable reason in writing and with the approval of the City Council.

Lump Sum Bids:

Lump sum bids will be considered only if unit prices are quoted also. However, the totals of such quoted unit prices and the lump sum bids will not be considered if the price quoted also involves prices of commodities requested on an entirely separate bid request.

All-Or-None Bids:

All-or-none bids will be considered only if bidder quoted prices on all items requested. If a bidder desires the City to consider an all-or-none bid, it must be stated in the bid document. All-or-none bids will not be considered if prices quoted involved prices of items and services requested on an entirely separate bid request.

Payment Of Invoices:

Invoices must be submitted by the successful bidder to the City of Brenham, Finance Department, P.O. Box 1059, Brenham, Texas 77835-1059. All invoices to be paid in full within thirty (30) days after satisfactory delivery and billing, whichever is the latter. The City will not be liable for payment of invoices received more than sixty (60) days after delivery of order, or completion of service.

Cash Discounts:

Bidders may quote additional cash discount terms. If no discount is shown, prices are to be assumed net. Discount period to be started from the date of completion of entire order or date of receipt of invoice, whichever occurs last regardless of date of invoice.

Taxes:

The City of Brenham is exempt from Federal Excise, State Sales and Transportation Taxes. TAX MUST NOT BE INCLUDED IN BID. The City upon request will execute Tax Exemption Certificates. The City of Brenham is statutorily exempt from State and Local Sales tax and a permit number is not required.

Delivery:

Bids must show the number of consecutive calendar days required to deliver the materials, services or equipment under normal conditions. Failure to specify delivery time will be considered reason enough to cause the bid to be disregarded. Delivery time quoted will be given consideration in awarding bids. If delivery is not made within ten (10) days after number of days specified on bid, entire order may be canceled and bidder's name removed from mailing list.

All deliveries are to be made to the Central Warehouse located at 315 West Second Street, unless otherwise specified in the Bid Request or Purchase Order. Deliveries will be accepted only during normal working hours on normal working days. Unless otherwise indicated, items received must be new and in first-class condition. Types of materials normally packaged for protection and convenience in storage shall be in the proper containers.

Liability:

Vendor shall be liable for all damages incurred while in performance of the work to be performed hereunder. Vendor assumes full responsibility for the work to be performed hereunder, and hereby releases, relinquishes, and discharges the City, its officers, agents, and employees, from all claims, demands, and causes of action of every kind and character including the cost of defense thereof, for any injury to, including death of, any person whether that person be a third person, vendor, or an employee of either parties hereto, and any loss of or damage to property, whether the same be that of either of the parties hereto or of third parties, caused by or alleged to be caused by, arising out of or in connection with the issuance of this order to Vendor, whether or not said claims, demands and causes of action in whole or in part are covered by insurance. Certificate of Insurance may be required for but not limited to Commercial General Liability, Commercial Auto Liability, Workers Compensation, and Professional Liability Insurance.

Material Safety Data Sheets (MSDS):

MSDS's must be provided prior to or with receipt of order, and when revised. Containers must be properly labeled and identified in accordance with the OSHA Hazard Communications Standard. Improperly labeled containers will result in refusal of the shipment and possible change in vendors.

Patents, Franchises, etc.:

The successful bidder agrees to protect the City from any claim involving patent right infringements, copyrights or sales franchises.

No Bids:

If bidder is unable to quote, the bid form should be returned to the purchasing agent before opening time, and reason given for not bidding if bidder desires to bid on future purchases.

Addenda:

In the event of a needed change in the published documents, it is understood that all the foregoing terms and conditions and all performance requirements will apply to any published addendum.

All published addenda shall be signed and included with your response package as acknowledgement of the addendum. Bidders are responsible for obtaining all published addenda from the City of Brenham Purchasing office. The City assumes no responsibility for the Bidders failure to obtain and/or properly submit any addendum. Failure to acknowledge and submit any addendum may be cause for the bid to be rejected. The City's decision to accept or reject any particular bid due to a failure to acknowledge and submit addenda shall be final.

Fiscal Funding:

The City operates and is funded on a fiscal year basis; accordingly, the City reserves the right to terminate, without liability, any contract for which funding is not available. Renewal of a contract will be in accordance with Local Government Code 271.903 concerning non-appropriation of funds for multi-year contracts.

The City reserves the right to rescind the contract at the end of each fiscal year if it is determined that there are insufficient funds to extend the contract. The fiscal year for the City extends from October 1st of each calendar year to September 30th of the following calendar year.

H.B. 1295 Compliance:

The Vendor for the Contract shall comply with the requirements of Section 2252.908 of the Texas Government Code as adopted in 2015 as House Bill 1295. The law requires that a governmental entity may not enter in certain contracts with a business entity unless the business entity submits a Disclosure of Interested Parties to the governmental entity. The law applies only to a contract that either (1) requires an action or vote by the governing body of the entity or agency before the contract may be signed or (2) has a value of at least \$1 million.

Compliance with the law requires that the Vendor utilize the Texas Ethics Commission website to enter the required information on Form 1295 and print a copy of the complete form. The form must be signed, notarized and submitted to the contracting government entity

The City, in the case of contracts formalized by Purchase Order or by other written contract, will notify the Vendor of Award by Council and request the completed Form 1295 within five (5) working days thereafter.

No Boycott of Israel:

By acceptance of this Contract, Vendor hereby certifies that it is not a company identified on the Texas Comptroller's list of companies known to have contacts with, or provide supplies or services to, a foreign organization designated as a Foreign Terrorist Organization by the U.S. Secretary of State. Vendor further certifies and verifies that neither vendor, nor any affiliate, subsidiary, or parent company of Vendor, if any, the "Vendor Companies"), boycotts Israel, and Vendor agrees that Vendor and Vendor Companies will not boycott Israel during the term of this Agreement. For purposes of this Agreement, the term "boycott" shall mean and include terminating business activities or otherwise taking any action that is intended to

penalize, inflict economic hoard on, or limit commercial relations with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory.

Engaged in Business with Iran, Sudan, or Foreign Terrorist Organization:

Pursuant to Texas Government Code Chapter 2252, Subchapter F, Vendor affirms that it is not identified on a list created by the Texas Comptroller of Public Accounts as a company known to have contracts with or provide supplies or services to a foreign terrorist organization.

Conflict of Interest:

By doing business or seeking to do business with the City, Vendor acknowledges that they have been notified of the requirements of Chapter 176 of the Texas Local Government Code and that they are solely responsible for compliance.

Applicable Law and Venue

This Contract shall be governed by the laws of the State of Texas. The parties agree that performance and all matters related thereto shall be in Washington County, Texas and venue for any lawsuit, claim or dispute arising out of the contract shall be in Washington County, Texas. Further, neither party will seek to remove such litigation to the federal court system by application of conflicts of laws or any other removal process.

Insurance

1. The Vendor shall procure and maintain at its sole cost and expense for the duration of the Contract insurance coverage for injuries to persons or damages to property that may arise from or in connection with the performance of the work hereunder by the Contractor, its agents, representatives, volunteers, employees or subcontractors. The Contractor's insurance coverage shall be primary insurance with respect to the City, its officials, employees and volunteers. Any insurance or self-insurance maintained by the City, its

officials, employees or volunteers shall be considered in excess of the Contractor's insurance and shall not contribute to it. Further, the Contractor shall include the City as an additional insured under its policy. All coverage for subcontractors shall be subject to all of the requirements stated herein. Certificates of Insurance and endorsements shall be furnished to the City and approved by the City before work commences.

2. Standard Insurance Policies Required:
 - a) Commercial General Liability Policy
 - b) Automobile Liability Policy
 - c) Workers' Compensation Policy
3. General Requirements Applicable to All Policies:
 - a) General Liability and Automobile Liability insurance shall be written by a carrier with an A: VIII or better rating in accordance with the current Best Key Rating Guide.
 - b) Only Insurance Carriers licensed and admitted to do business in the State of Texas will be accepted.
 - c) Deductibles shall be listed on the Certificate of Insurance and are acceptable only on a per occurrence basis for property damage only.
 - d) "Claims Made" policies will not be accepted.
 - e) The City of Brenham, its officials, employees and volunteers, are to be added as "Additional Insured" to the General Liability policy. The coverage shall contain no special limitations on the scope of protection afforded to the City, its officials, employees or volunteers.
 - f) A Waiver of Subrogation in favor of the City with respect to Workers' Compensation Insurance must be included.
 - g) Each insurance policy shall be endorsed to state that coverage shall not be suspended, voided, canceled, reduced in coverage or in limits except after thirty (30) days prior

written notice has been given to the City.

- h) Upon request, certified copies of all insurance policies shall be furnished to the City.

4. Commercial General Liability

- a) Minimum Combined Single Limit of \$1,000,000.00 per occurrence for bodily injury and property damage.
- b) No coverage shall be deleted from the standard policy without notification of individual exclusions being attached for review and acceptance.

5. Automobile Liability

- a) Minimum Combined Single limit of \$500,000.00 per occurrence for bodily injury and property damage.

6. Worker's Compensation

- a) Statutory

7. Certificates of Insurance shall be prepared and executed by the insurance company or its authorized agent. And shall contain the following provisions and warranties:

- a) The company is licensed and admitted to do business in the State of Texas.
- b) The insurance policies provided by the insurance company are underwritten on forms that have been provided by the Texas Board of Insurance.
- c) All endorsements and insurance coverage according to requirements and instructions contained herein.
- d) The form of the notice of cancellation, termination, or change in coverage provisions to the City of Brenham.
- e) Original endorsements affecting coverage required by this section shall be furnished with the certificates of insurance.

Workers' Compensation Provisions
(State law requires the following language in contracts on public works projects).

DEFINITIONS:

Certificate of Coverage (certificate) – A copy of a certificate of insurance, a certificate of authority to self-insure issued by the Texas Workers' Compensation Commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

Duration of the Project – includes the time from the beginning of the work on the project until the contractor's/person's work on the project has been completed and accepted by the City.

Persons providing services on the project ("subcontractor" in 406.096) – includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitations, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnished persons to provide services on the project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other services related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, that meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all employees of the Contractor providing services on the project, for the duration of the project.

The Contractor must provide a certificate of coverage to the City **prior** to being awarded the contract.

If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the City showing that coverage has been extended.

The Contractor shall obtain from each person providing services on a project, and provide to the City:

- a. a certificate of coverage, prior to that person beginning work on the project, so the City will have on file certificates showing coverage for all persons providing services on the project; and
- b. no later than seven calendar days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

The Contractor shall retain all required certificates of coverage for the duration of the project and for one (1) year thereafter.

The Contractor shall notify the City in writing by certified mail or personal delivery, within ten (10) calendar days after the Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.

The Contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation commission, informing all persons providing services on the project that they are required to be covered and stating how a person may verify coverage and report lack of coverage.

The Contractor shall contractually require each person with whom it contracts to provide services on a project, to:

- (a) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, that meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the project, for the duration of the project;
- (b) provide to the Contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on a project, for the duration of the project;
- (c) provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
- (d) obtain from each person with whom it contracts, and provide to the Contractor:
 1. a certificate of coverage, prior to the person beginning work on the project; and
 2. a new certificate of coverage showing the extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project.
- (e) retain all required certificates of coverage on file for the duration of the project and for one (1) year thereafter;
- (f) notify the City in writing by certified mail or personal delivery, within ten (10) calendar days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and
- (g) contractually require each person with whom it contracts, to perform as required by paragraphs (a) – (g), with the certificates of coverage to be provided to the person for whom they are providing services.

By signing the contract, or providing, or causing to be provided a certificate of coverage, the Contractor is representing to the City that all employees of the Contractor who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the Commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor that entitles the City to declare the contract void if the contractor does not remedy the breach within ten (10) calendar days after receipt of notice of breach from the City.

PART 2

TECHNICAL SPECIFICATIONS
BM 130 Jackson Street Substation Underground Feeder Exit Relocation Phase 1

I. CONTRACTOR-FURNISHED MATERIALS

All materials and equipment required in the construction of this project, except those materials specifically being furnished by the City of Brenham, are to be furnished by the Contractor, and shall become the property of the City of Brenham when erected in place. It shall be the responsibility of the Bidder to review and ascertain that the quantities of materials to be provided by the Owner are sufficient, and furnish hereunder any additional materials and equipment required to provide the desired construction. All materials supplied shall be new, of high quality, and of modern design. They shall be carefully packaged for shipment to prevent damage enroute. The Contractor shall be responsible for any equipment damaged, lost, or stolen until the material is installed and accepted by the City of Brenham.

All materials and equipment shall meet the applicable standards of the N.E.M.A., A.S.A., I.E.E.E., A.S.T.M., and E.E.I. Items of material may in some cases be specified herein by a manufacturer's catalog number or type. This is not intended to limit the Contractor to this particular manufacturer's item, but rather to more fully identify the materials desired and to specify quality, workmanship, specifications or dimensions. Where other manufacturer's equipment is offered as an "or equal" item, the Engineer's evaluation shall be final. Where a manufacturer's catalog number or type is not specified, the Bidder shall furnish only such materials and equipment as are included in the current "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers."

Prior to the ordering of materials, the successful Contractor shall submit to the Engineer for approval a complete tabulation of the manufacturer and catalog number or type of the material items the Contractor proposes to furnish.

Where there develop shortages of materials provided herein, either from miscalculation, omission, other than misuse by the Bidder, the Contractor will be required to furnish these items. If the Bidder's misuse causes breakage, the Bidder will be required to replace the material at the Bidder's expense.

The Contractor will purchase all materials and equipment (other than Owner-furnished materials) outright and not subject to any conditional sales agreements, bailment, lease or other agreement reserving unto the seller any right, title or interest therein. All such materials and equipment shall become the property of the City of Brenham when erected in place. For this project, the Contractor shall only furnish the steel casing required for the steel encased bores and all miscellaneous materials including, but not limited to, concrete, asphalt, back fill material, and water. The Contractor shall include any material costs in their unit pricing.

Contractor shall follow procedures for tax exempt purchases as per the Standard Form of Agreement.

Note that the City of Brenham is to furnish all of the overhead and underground electric material including conduit for this project.

II. MOBILIZATION

A. PART 1 – GENERAL

1. Description

This item shall govern for the establishment of office and other facilities at the project site and the movement of personnel, construction equipment and supplies to the project site or to the vicinity of the project site in order to enable the Contractor to begin work on the other contract items that will be performed by the Contractor. The cost of the payment bond, performance bond, and insurance can be included in the mobilization unit. The unit price for mobilization shall not exceed 5% of the total bid price.

2. Measurement and Payment

This Item will be measured by the “Lump Sum.”

III. EXCAVATING, TRENCHING, AND BACKFILLING

All excavation will meet the most current OSHA Regulations. See TRENCH SAFETY for trench safety requirements.

A. PART 1 – GENERAL

1. Description

The work to be performed under this Specification shall consist of furnishing all labor, equipment and materials and performing all operations in connection with the excavating, trenching, and backfilling for electric conduit and equipment as shown on the plans and as specified herein.

2. Measurement and Payment

All trench excavation, backfill and compaction are included in this pay item. Payment for this item shall be included in the unit price laid in the Proposal for each size of trench at their respective depths. This unit price shall be full remuneration for performing the trench and backfill complete including grading, bell holes, sheeting, dewatering, tamping, and water soaking; and all equipment, labor, materials, power, teams, tools, and transportation necessary or incidental thereto; but not including tunneling, or boring, all of which will be paid for extra.

3. Contractors are required to field verify the location and depth of any existing underground utilities as required and locate by use of hydro pole-hole to verify any interference during boring. This is included as a lump sum bid item on the bidding sheets.

B. PART 2 – PRODUCTS

1. Testing Requirements

Compaction tests for all backfill may be required for every 200 linear feet of trench and for each 12 inches vertically. Density tests, shall be measured as one unit for each test. The Owner shall pay for Geotechnical tests ordered that meet the requirements of the plans and specifications. Failed tests shall be charged to the Contractor. All compaction shall be a minimum of 95% standard density.

C. PART 3 – EXECUTION

1. Construction Methods

a. Control of Water

Provide sufficient pumping equipment, in good working order, available at all times to remove any water that accumulates in excavations. When the excavation crosses a drainage pathway, the contractor shall provide for means of alternate drainage. The discharge of dewatering equipment shall not cause damage to private or public property.

b. Sheeting, Shoring, and Bracing

See TRENCH SAFETY.

In caving ground, or in wet, saturated, or flowing materials, the contractor shall sheet, shore, or brace the sides of the trench so as to maintain the excavation properly in place. When excavations are made adjacent to existing building or other structures or in paved streets, particular care must be taken to adequately sheet, shore, and brace the sides of the excavation to prevent undermining of, or settlement beneath, the structures or pavement. Underpinning of adjacent structures or pavement shall be done by the Contractor at the Contractor's own cost and expense, in a manner satisfactory to the Engineer and when required by the Engineer. The pavement shall be removed, the void satisfactorily refilled and compacted, and the pavement replaced by the Contractor. The entire expense of such removal and subsequent replacement thereof shall be borne by the Contractor. Sheeting, shoring, and bracing shall not be left in place, unless otherwise provided for in the contract or authorized by the Engineer. The removal of sheeting, shoring and bracing shall be done in such a manner as not to endanger or damage either new or existing structure, private or public properties, and so as to avoid cave-ins or sliding of the banks. All holes or voids left by the removal of the sheeting, shoring, or bracing shall be immediately and completely filled and compacted with suitable materials.

c. Guarantee

- i. Guarantee the backfilling of excavation and trenches against settlement for a period of one (1) year after the final completion of the contract under which the work is performed.
- ii. Make all repairs or replacements made necessary by settlement, including refilling, compacting, and reseeding or resodding the upper portion of the ditch and repairing broken or settled pavements, driveways, and sidewalks within five (5) days after notice from the Engineer.

d. Preparation

i. Site Preparation

Prepare the construction site for construction operations by removing and disposing of all obstructions and objectionable materials in accordance with contract documents.

ii. Alignment, Grade, and Minimum Cover

1. General

The electrical conduit shall be laid and maintained to lines and grades established by the plans and specifications with fittings, manholes, pull boxes and equipment pads at the required locations, unless otherwise pre-approved by the Engineer.

2. Cut sheets shall be provided to the City of Brenham Inspector. The contractor shall determine the alignment and grade or elevation of the conduit from offset stakes. Offset stakes shall be placed every 100 feet. The contractor shall also provide a continuous chalk line along the alignment of the trench for use by the operator of the excavating equipment. The contractor shall provide a laser beam and grade pole to assist in grading the ditch to the proper elevation.

3. Where conduit grades or elevations are not definitely fixed by contract drawings, trenches shall be excavated to a depth sufficient to provide a minimum depth of backfill cover over the conduit. Greater pipe cover depths may be necessary for clearance beneath existing pipes, conduits, drains, drainage structures, or other obstructions encountered at normal pipe grades. Measurement of conduit cover depth shall be made vertically from the outside top of pipe to finished ground or pavement surface elevations.

iii. Prior Investigation

Prior to excavation, investigation shall be made to the extent necessary to determine the location of existing underground structures and conflicts. Care should be exercised by the Contractor during excavation avoid damage to existing structures.

iv. Unforeseen Obstructions

When obstructions that are not shown on the plans are encountered during the progress of work and interfere so that an alteration of the plans is required, the Engineer will alter the plans or order a deviation in line and grade or arrange for removal, relocation or reconstruction of the obstructions.

v. Clearance

When crossing existing pipelines or other structures, alignment and grade shall be adjusted as necessary, with the approval of the Engineer, to provide clearance as required by federal, state or local regulations or as deemed necessary by the Engineer to prevent future damage or contamination of either structure.

e. Excavation

All excavation shall meet the most current OSHA regulations.

i. Classification

Excavation of trenches for conduit is unclassified. Soils will be classified utilizing OSHA Standards and Regulations. The Contractor shall assume that the site contains the worse type of soils and make provisions for shoring the work area.

ii. Trench Excavation

1. General

The trench shall be excavated to the required alignment, depth and width and in conformance with all federal, state and local regulations for the protection of the workmen.

Note: Contractors are required to field verify the location and depth of any existing underground utilities as required and locate by use of hydro pole-hole to verify any interference during boring. This is included as a lump sum bid item on the bidding sheets.

2. Trench Preparation

- a) Trench preparation shall proceed in advance of conduit installation for only as far as conduit will be laid that day.
- b) The contractor shall keep the trench dry from both storm water and seepage from the sides of the trench. Discharge from any trench dewatering pumps shall be conducted to natural drainage channels, storm sewers or a pre-approved reservoir. Do not discharge into any municipal sewer system without municipal approval. The contractor shall be responsible for cleaning any storm drain system, which was used for dewatering discharge.
- c) Excavated material shall be placed in a manner that will not obstruct the work nor endanger the workmen, obstruct sidewalks, driveways, or other structures and shall be done in compliance with federal, state, or local regulations.

3. Pavement Removal

Removal of pavement and road surfaces shall be a part of the trench excavation, and the amount removed shall depend upon the width of trench required for installation of the conduit and the dimensions of area required for the installation of equipment pads, manholes or other structures. The dimensions of pavement removed shall not exceed the dimensions of the opening required for installation of conduit, equipment pads, manholes and other structures by more than 12 inches in any direction, unless otherwise required or pre-approved by the Engineer.

4. Subgrade in Earth

- a) Where a firm and stable foundation for the conduit can be obtained in the natural soil, and where special embedment is not shown on the plans, or specified herein, carefully and accurately trim the bottom of the trench to fit the lower portion of the conduit barrel. The bottom of the trench shall be firm, stable and free of standing water.
- b) If water is allowed to collect in an originally dry trench after a reasonable time has passed to complete the embedment of the conduit, as determined by the Engineer, the contractor shall place a minimum of four inches of clean rounded pea gravel in the ditch and pump out all accumulated water before placing the conduit. No deleterious materials will be allowed in the gravel. No extra compensation will be allowed for this work.

- c) Where wet, soft, or spongy material is encountered in the excavation at subgrade level, the contractor shall remove such material at the direction of the Engineer and replace it with crushed stone of sufficient quantity such that when fully compacted, the subgrade is firm and stable.

5. Subgrade in Rock

- a) When excavation of rock is encountered, all rock shall be removed to provide a clearance of at least six inches below and on each side of all conduit. When excavation is completed, the proper embedment material shall be placed on the bottom of the trench to the previously mentioned depths, leveled and tamped.
- b) These clearances and bedding procedures shall also be observed for pieces of concrete or masonry and other debris or subterranean structures, such as masonry walls, piers or foundations that may be encountered during excavation.
- c) The installation procedures specified in this section shall be followed when gravel formations containing loose boulders greater than eight inches in diameter are encountered.
- d) In all cases, the specified clearances shall be maintained between the bottom of all conduit and appurtenances and any part, projection or point of rock, boulder or stones of sufficient size and placement, which, in the opinion of the Engineer, could cause a fulcrum point.

f. Backfilling

i. General

- 1. The Contractor shall not begin backfilling until approval has been obtained from the Inspector. Backfilling includes refilling and consolidation of the fill in trenches and excavations up to the natural ground surface or road grade.
- 2. Backfill shall be accomplished in accordance with the specified laying condition as shown on the plans.

ii. Backfill Material

- 1. All backfill material shall meet latest edition of ASTM D2321 unless otherwise specified by the Engineer.
- 2. If excavated material is indicated on the drawings or specified for backfill, and there is a deficiency due to a rejection of part thereof, the contractor shall provide the required amount of sand, gravel or other pre-approved material.

- iii. Do not leave trenches open overnight without backfilling to the natural ground level. Steel plates (one-half inch in thickness) may be used to cover open trenches only with the approval of the Engineer.

iv. Compaction

Compaction shall be a minimum of 95% standard density.

IV. EROSION AND SEDIMENTATION CONTROL

A. PART 1 – GENERAL

1. Description

The work covered by this section consists of the installation and maintenance of all erosion siltation control devices, wash down areas, or seeding and sodding applications necessary to effectively prevent storm water pollution of adjoining or downstream areas that may occur as a direct or indirect result of the construction of this project. The contractor is responsible for creating and maintaining the storm water pollution prevention plan

B. PART 2 – EXECUTION

1. General

- a. It is the responsibility of the Contractor to utilize whatever techniques are necessary to address erosion problems as they occur during construction.
- b. Siltation control and sediment trapping devices shall be installed prior to site clearing, grading or utility construction operations. All devices should be positioned so as to effectively remove silt from storm water before it leaves the site. Of particular concern, are gravel or stone blankets placed at construction traffic exits and entrances. These controls should be closely monitored to see that they trap sediment before it reaches the existing street and drainage system.
- c. Construction activities should be phased to expose a minimum of graded area at one time. Earth exposed by the construction process shall be re-vegetated every two weeks until vegetation is established. Re-vegetation shall require seeding, hydro-mulching or sodding. Fresh growth of vegetation shall eliminate the need for additional re-vegetation but does not constitute stabilization.
- d. Should a construction process remove any portion of the perimeter controls, the controls should be replaced in accordance with the TCEQ guidelines. Prior to the completion of the project, all bare areas shall be re-vegetated with a cellulose fiber hydro-mulch seeding process or sodded.
- e. Siltation control devices placed at storm drain inlets and culverts shall be removed by the Contractor once the site has been stabilized.

2. Maintenance and Inspection

- a. The contractor shall become familiar with the erosion control requirements of TCEQ. The site superintendent, or representative, shall make a visual inspection of all structural and/or natural controls and newly stabilized areas as required by TCEQ, especially after a rainfall to ensure that all controls are maintained and properly functioning. Any damaged controls shall be repaired prior to the end of the work day, including re-seeding and mulching or re-sodding if necessary. All inspections shall be documented with a written report. Reports

shall include the effectiveness of erosion control measures, construction activities conducted since the last report and their location. Reports shall be maintained by the Contractor along with the Erosion Control Plan per the TCEQ guidelines.

- b. The contractor is responsible for the ECP. The contractor shall continuously update the plan with all changes. Areas already stabilized shall be noted on the plan. All sediment trapping devices shall be installed as soon as practical after the area has been disturbed (never more than 14 days). All sediment trapping devices shall be cleaned when the sediment level reaches 25% capacity. Sediment shall be disposed of by spreading on site or hauling away if not suitable for fill.
- c. The Contractor shall be responsible for any and all materials, improvements, and maintenance activities necessary to keep dust, silt, and mud from leaving the work zone, including being tracked by vehicles traveling throughout the zone.
- d. Should, in the opinion of the Owner, the Contractor fail to prevent the escape of dust or contain silt and mud within the project, after due notification by the City Representative, Owner forces will be used to clean up those affected areas, and the cost of same will be deducted from the contract.
- e. Prior to Substantial Completion, the Contractor shall verify that no dust, silt, or mud exists within the work zone in deposits deeper than two inches as a result of the contractor's containment procedures. Should the Contractor claim final completion without removing such deposits, they will be removed by Owner forces and the cost of which shall be deducted from the contract.

V. TRENCH SAFETY

A. PART 1 – GENERAL

1. Description

The work specified under this section requires the Contractor to provide for the safety of the workmen in strict compliance with 29 CFR Part 1926 1993 (Revised as of July 1, 1996 of latest Edition or Revision to) Excavations and Applicable Subparts. The submission of a "TRENCH SAFETY PLAN" which shall fully satisfy the requirements of this specification is required prior to a notice to proceed to start the project.

2. Measurement and Payment

a. Measurement

Measure "Trench Safety" as shown on the bid proposal. Shoring of trench at manholes and other unusual structures to be included in this cost.

b. Payment

Pay for "Trench Safety" as shown on the bid proposal. Payment to be full compensation for all work described herein. There will be no increase in the Contract price because of the incorporation of CONTRACTOR's Trench Safety Plan or CONTRACTOR's detailed plans and specifications for the trench safety system into the bid documents and the Construction Contract. There will be no increase in the Contract price because of modifications to CONTRACTOR's plan and/or the CONTRACTOR's detail plans and

specifications for the trench safety system, whether or not the result of unforeseen or differing site or soil conditions.

“Trench Safety Plan” shall be included as part of the “Trench Safety” bid item and shall not be paid for as a separate pay item.

3. Submittals

a. Certificates

Submit manufacturer’s “Certificate of Compliance” stating that the devices (trench boxes, speed shoring, etc.) to be used for trench safety comply with the requirements of this specification. The certificate should show the design assumptions and limitations of the device and should be sealed by an engineer registered and licensed to practice in the state of Texas.

b. Trench Safety Plan

Submit a detailed TRENCH SAFETY PLAN for all work areas. Calculations shall be provided for any areas beyond the capacity of the trench box or speed shoring and sealed by an engineer registered and licensed to practice in the state of Texas. This plan shall include evacuation routes for personnel.

c. Competent Person

Contractor shall have a “Competent Person” with regard to OSHA standards, on site at all times. Competent person is generally defined as an individual who, by training and experience, is knowledgeable of applicable standards, capable of identifying hazards, is designated by the employer, and has the authority to take actions as needed. Contractor shall provide written proof showing the competent person(s) for the work being performed.

B. PART 2 – PRODUCTS

1. Materials

a. Materials

i. Timber

Trench sheeting materials shall be full size, a minimum of two inches in thickness, solid and sound, free from weakening defects such as loose knots and splits.

ii. Sheet Piling

Steel sheet piling shall conform to one or more of ASTM A328/328M, ASTM A572/A572M/ ASTM A690/A690M material requirements.

iii. Structural Steel

Steel for stringers (wales) and cross braces shall conform to ASTM A588.

iv. Trench Boxes

Steel trench Boxes to be constructed of steel conforming to ASTM A36/A36M. Connecting bolts used to conform to ASTM A307. Welds shall conform to the requirements of AWS D1.1.

v. Miscellaneous

Miscellaneous materials to be utilized shall conform to applicable ASTM standards.

b. Referenced Specifications

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

American Society of Testing and Materials (ASTM)

| | |
|-----------------|---|
| ASTM A36/A36M | 1997 Standard Specification for Carbon Structural Steel |
| ASTM A307 | 1997 Revision A-Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile length |
| ASTM A328/A328M | 1996 (REV) Standard Specification for Steel Sheet Piling |
| ASTM A572/A572M | 1997 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality |
| ASTM A588/A588M | 1997 Standard Specification for High-Strength Low-Alloy Structural Steel With 50 ksi (345 MPa) Minimum Yield Point to 4 inch (100 mm) thick |
| ASTM A690/A690M | 1994 Standard Specification for High-Strength Low-Alloy Steel H-Pipes and Sheet Piling for Use in Marine Environments |

American Welding Society, Inc. (AWS)

| | |
|----------|------------------------------------|
| AWS D1.1 | 1998 Structural Welding Code-Steel |
|----------|------------------------------------|

Occupation Safety and Health Administration (OSHA)

| | |
|------------------|--|
| 29 CFR Part 1926 | 1993 (Revised as of July 1, 1996 of latest Edition or Revision to) Excavations and Applicable Subparts |
|------------------|--|

C. PART 3 – EXECUTION

1. Construction Methods

a. General

The trench safety system shall be constructed, installed and maintained in accordance with the Trench Safety Plan as outlined in 131.03. Bed and backfill pipe to a point at least one foot above top of pipe or other embedded items prior to removal of any portion of trench safety system. Bedding and backfill shall be in accordance to other applicable Specification Sections. Backfilling and removal of trench supports shall be in accordance with Contractor's Trench Safety Plan. Removal of trench safety system to be accomplished in such a manner to cause no damage to pipe or other embedded items. Remove no braces or trench supports until all personnel have evacuated the trench. The trench shall be backfilled to within five feet of natural ground prior to removal of entire trench safety system.

- b. Supervision
Provide competent supervisory personnel at each trench while work is in progress to ensure Contractor's methods, procedures, equipment and materials pertaining to the safety systems in this Section are sufficient to meet requirements of OSHA Standards.
- c. Inspection
The CONTRACTOR shall make daily inspection of trench safety system to ensure that the system meets OSHA requirements. Daily inspection shall be made by competent personnel. If evidence of possible cave-ins or slides is apparent, all work in the trench is to cease until necessary precautions have been taken to safeguard personnel entering trench. The CONTRACTOR shall maintain permanent record of daily inspections.
- d. Timber Sheeting
Timber sheeting and size of uprights, stringers (wales,) and cross bracing to be installed in accordance with the TRENCH SAFETY PLAN. Place cross braces in true horizontal position, spaced vertically, and secure to prevent sliding, falling or kick outs. Cross braces to be placed at each end of stringers (wales) in addition to other locations required. Cross braces and stringers (wales) to be placed at splices of uprights, in addition to other locations required.
- e. Steel Sheet Piling
Steel sheet piling of equal or greater strength may be used in lieu of timber trench shoring shown in the OSHA tables (proposed standards). Drive steel sheet piling to a least minimum depth below trench bottom as recommended by CONTRACTOR's Registered Licensed Professional Engineer providing design. Place cross braces in true horizontal position and spaced vertically. Secure to prevent sliding, falling, or kick outs. Cross braces to be placed at each end of stringers (wales), in addition to other locations required.
- f. Maintenance of Safety System
The safety system to be maintained in the condition as shown on the Trench Excavation and Shoring Safety Plan as designed by the CONTRACTOR's Registered Licensed Professional ENGINEER. The CONTRACTOR shall take all necessary precaution to ensure the safety systems are not damaged during their use. If at any time during its use a safety system is damaged, personnel to be immediately removed from the trench excavation area and the safety system repaired. The CONTRACTOR is to take all necessary precautions to ensure no loads, except those provided for in the plan, are imposed upon the trench safety system.

VI. PIPE BORING, JACKING, TUNNELING, AND ENCASEMENT

A. PART 1 – GENERAL

- 1. Description
 - a. The work to be performed under this Specification shall consist of furnishing and installing all materials and equipment and performing all labor required to install pipelines crossing under highways, railroads, and streets by boring, jacking, and tunneling, as specified herein.

- b. When the work per this item falls within a TxDOT or Railroad right of way, the stricter of the applicable standards apply. This requirement includes all insurance, notification, permitting, signage, etc. required by the right of way owner.
- c. Contractors are required to field verify the location and depth of any existing underground utilities as required and locate by use of hydro pole-hole to verify any interference during boring. This is included as a lump sum bid item on the bidding sheets.

2. Measurement and Payment

a. Measurement

- i. Openings provided by boring, jacking, and tunneling (including carrier pipe) will be measured by the linear foot along the centerline of the opening, as measured from end of pipe to end of pipe placed by boring, jacking and tunneling. There will not be any classification for payment according to depth.
- ii. Concrete support slab in the pits and all other work necessary to meet the requirements of the Texas Department of Transportation, Railroad Company, County, and City will not be measured.
- iii. Openings provided by boring, jacking and tunneling will be paid for at the unit price bid per linear foot. The unit price bid for boring jacking and tunneling shall be full compensation for furnishing and placing all materials, labor, tools, carrier pipe, carrier pipe restraint, casing spacers, equipment, pits, concrete support slabs and incidentals necessary to complete the work.

3. Submittals

- a. Submit manufacturer's product data on encasement pipe.
- b. Submit manufacturer's "Certificate of Compliance" to this part of the specifications for materials furnished for the project.
- c. The Contractor or subcontractor performing the work described under this section shall demonstrate technical skill and experience in previous work of this nature. Work experience shall be submitted to the Engineer.
- d. Casing spacer data sheets demonstrating compliance with this specification.

B. PART 2 – PRODUCTS

1. Materials

Steel Pipe, shall be used as encasement material, unless otherwise shown on the plans. The nominal inside diameter of the encasement pipe shall be as indicated below, unless otherwise shown on the plans.

a. Steel Pipe

Encasement pipe shall conform to ASTM Specification A134, Mild Carbon Steel, A139, Grade A, or AWWA C200-91 Grade B, butt-welded joints with entire circumference

welded by a certified welder shall be in accordance with AWWA C200-86 Section 3. All steel casing shall have a wall thickness as shown in the table below:

| Casing Pipe Nominal Diameter | Casing Pipe Minimum Thickness |
|------------------------------|-------------------------------|
| 14" | 1/2" |
| 16" | 1/2" |
| 18" | 1/2" |
| 20" | 1/2" |
| 24" | 1/2" |
| 30" | 1/2" |
| 36" | 1/2" |

- i. Casing Pipe Thickness for Railroad crossings shall be a minimum of one-half inch thick, regardless of diameter.
- ii. Nominal diameter of casing pipe may be larger as needed for restrained joint pipe.

2. Testing Requirements

- a. Allowable Tolerances
Where grades or elevations are shown on the plans for the pipeline to be installed by boring, jacking, and tunneling operations, maximum deviation of plan elevation shall be 0.2 feet. The maximum deviation of alignment over the length of the bore shall be 0.2 feet. The Engineer shall determine the corrective action to be taken for tolerances above those stated in this specification.

C. PART 3 – EXECUTION

1. Construction Methods

- a. Encasement Requirements
The casing pipe shall extend a minimum of five feet beyond the back of curb.
- b. Bore and Tunnel Pits
Unless more stringent requirements regarding location of bore and tunnel pits are noted on the plans, or are required by TxDOT, Railroad, County, or City, to conform to the requirements that follow:
 - i. The Conduit to be installed by boring, jacking and tunneling shall extend to distances as shown in the Standard Details.
 - ii. If necessary to prevent cave-ins, sheet, shore, or brace the pit in accordance with OSHA regulations. All pits shall be covered with half-inch thick steel plates. Steel plates shall be on-site prior to excavating the pit. If bore pits are too big to cover with steel plates, Contractor shall install chain link fence, completely and securely, around exposed pit to a height of six feet.
 - iii. General: Unless otherwise noted, extend auger hole ten feet beyond edge of pavement, railroad tie, or other structure. The hole is to be bored mechanically, using a pilot hole. An approximate two-inch hole shall be bored the entire length of the crossing and shall

be checked for line and grade on the opposite end of the bore from the work pit. This pilot hole shall serve as the centerline of the larger diameter hole to be bored. The use of water or other fluids in connection with the boring operation will be permitted only to the extent to lubricate cuttings, jetting will not be permitted. In unconsolidated soil formations, a gel-forming colloidal drilling fluid consisting of at least 10% of high-grade, carefully processed bentonite may be used to consolidate cuttings of the bit, seal the walls of the hole, and furnish lubrication for subsequent removal of cuttings and installation of the pipe immediately thereafter. Overcutting in excess of one inch shall be remedied by pressure grouting the entire length of the installation.

2. Construction Methods for Dry Boring

- a. All TxDOT bores will be accomplished by dry mechanical bore unless otherwise pre-approved by the Engineer.
- b. Only workmen experienced in boring operations shall perform the work.
- c. The use of water or other fluids in connection with the boring operation will NOT be permitted except for a minor required amount of bentonite solution for cutting head.
- d. The casing pipe shall be placed in the bore hole simultaneously while boring is being performed. Installing the encasement conduit immediately by pulling it in place from opposite the boring machine or by jacking the conduit through the bore is not acceptable. Take proper care to secure the joints of the conduit as subsequent sections are installed by welding joints. Provide a steel rail or timber cradle in the pit to support and guide the conduit in its installation.
- e. If, after completion of the installation of the conduit, there is more than one inch of clearance between the outside of the barrel of the conduit and the wall of the bore, grouting of these voids will be required. If during construction of the bore, a cave-in occurs within the bore, grouting of the voids between the conduit and the walls of the bore will be required throughout the length of the bore.
- f. Conform to the requirements of the Texas Department of Transportation, Railroad Company, County, or City having jurisdiction over the right-of-way involved, as to details of construction methods and time of construction. All work necessary to meet the requirements of the Texas Department of Transportation, Railroad Company, County, or City will be considered incidental to the installation of the pipeline in the right-of-way. The Contractor shall abide by the more stringent of these specifications, or the specifications of the regulatory agencies.

3. Construction Methods for Wet Boring

- a. All TxDOT bores will be accomplished by dry mechanical bore unless otherwise pre-approved by the Engineer (see above).
- b. Only workmen experienced in boring operations shall perform the work. A pilot hole must be successfully completed to the satisfaction of the engineer prior back reaming the bore.
- c. The use of water or other fluids in connection with the boring operation will be permitted only to lubricate cuttings. Jetting will not be permitted. In consolidated soil formations, a

gel-forming colloidal drilling fluid consisting of at least 10% percent of high-grade bentonite may be used to consolidate cuttings of the bit, seal the walls of the hole, and lubricate removal of cuttings and installation of the pipe immediately thereafter.

- d. While boring is being performed, install the encasement conduit immediately by pulling it in place from opposite the boring machine or by jacking the conduit through the bore. Encasement conduit may be placed after the boring operation is complete, if permission is obtained from TxDOT, the Railroad Company, the City, or the County. Take proper care to secure the joints of the conduit as subsequent sections are installed, by use of cables or welding joints. Provide a steel rail or timber cradle in the pit to support and guide the conduit in its installation.
 - e. If, after completion of the installation of the conduit, there is more than one inch of clearance between the outside of the barrel of the conduit and the wall of the bore, grouting of these voids will be required. If during construction of the bore, a cave-in occurs within the bore, grouting of the voids between the conduit and the walls of the bore will be required throughout the length of the bore.
 - f. Conform to the requirements of the Texas Department of Transportation, Railroad Company, County, or City having jurisdiction over the right-of-way involved, as to details of construction methods and time of construction. All work necessary to meet the requirements of the Texas Department of Transportation, Railroad Company, County, or City will be considered incidental to the installation of the pipeline in the right-of-way. The Contractor shall abide by the more stringent of these specifications, or the specifications of the regulatory agencies.
4. Construction Methods for Jacking
- a. Unless otherwise specified, the methods and equipment used in jacking conduit shall be the Contractor's option, provided that the proposed method is pre-approved by the Engineer. Such approval, however, shall in no way relieve the Contractor of the responsibility for making a satisfactory installation meeting the criteria set forth herein.
 - b. If, after completion of the installation of the conduit, there is more than one inch of clearance between the outside of the barrel of the conduit and the wall of the tunnel, the Contractor shall completely grout the conduit in place throughout its entire length. If, during the jacking operation, a cave-in occurs, the Contractor shall grout the entire conduit in place throughout its entire length.
5. Spoils
- Spoil locations shall be pre-approved by the engineering inspector. When no suitable location for spoil can be found on site, the contractor shall be required to haul and dispose of this material at no extra cost. Where spoils are to be placed on parking areas (asphalt or concrete), sidewalks, or other paved surfaces, the spoils shall be placed on a barrier to prevent the soil from embedding into the paved surface.

VII. INSTALLATION OF CONDUIT

1. Scope

These specifications provide for practices which are essential for proper installation of a conduit system. The City shall be allowed the opportunity to inspect the installation of

conduit and boxes at various stages of construction to ensure adherence to the COB specifications. Contractor may provide photos of installation if City staff are not available.

2. Basic Material

The conduit, sleeves, and fittings used in this specification are those designed to meet the requirements for concrete encased or direct burial applications. All PVC plastic conduits and fittings shall be gray schedule 40 or greater.

3. Workmanship & Installation

- a. A fine-tooth saw shall be used to cut conduit. The conduit must be cut straight and cleaned of burs.
- b. Wipe dirt and foreign material from conduit and fittings with a clean, dry cloth.

4. PVC to PVC Joints

- a. Apply purple primer/cleaner to both the fitting socket and the conduit, avoid puddling of the primer, and verify all surfaces to be joined are covered.
- b. Apply gray PVC to PVC cement to both parts of the joint, and immediately push the joint together with a slight rotating motion (in one direction only). When the joint bottoms out, hold for 15 seconds, do not twist or drive conduit after insertion is complete. Wipe off excess cement with a clean, dry cloth.

5. Aluminum Conduit

- a. All rigid or intermediate conduits and fittings shall be aluminum.
- b. Rigid intermediate aluminum conduit shall be installed with threaded couplings and joints made up tight. Conduit shall not be cut with a torch, welded, or brazed.

6. Electrical High-Density Polyethylene (HDPE) SDR-11 Conduit

HDPE Conduit shall comply with the following standards: NEC Articles 300 and 353, UL 651A, UL 651B, ASTM F 2160, ASTM D 3035 and NEMA TC-7.

HDPE conduit shall be manufactured from suitable thermoplastic polymer conforming to the minimum standard of PE334420E/C as defined in ASTM D3350. The conduit shall have smooth interior and exterior walls and be suitable to be installed by directional boring.

a. HDPE to HDPE Joints

- i. Square cut and de-burr edges of both conduits.
- ii. HDPE joints shall be fused by thermal weld. Weld to be trimmed internally to create a smooth surface on the inside diameter of the conduit.

b. HDPE to PVC Joints

There are two approved options to transition from HDPE to PVC conduit.

i. Option One

1. Square cut and de-burr HDPE conduit edge.
2. Insert HDPE conduit into an aluminum transition treaded coupling. Tighten the coupling until conduit is seated into coupling.
3. Thread PVC male adapter into the opposite end of coupling and tighten until adapter is seated into coupling.
4. Apply PVC cement to PVC adapter and PVC conduit. Insert the PVC conduit into adapter to complete joint.

ii. Option Two

1. Square cut and de-burr HDPE conduit edge.
2. Apply Polywater BonDuit adhesive according to the manufacture's specifications on the outside of the HDPE conduit and install the PVC coupling to the outside of the HDPE conduit to complete joint.
3. Apply PVC cement to PVC adapter and PVC conduit. Insert the PVC conduit into adapter to complete joint.

7. Expansion and Contraction

Due to expansion and contraction of plastic conduit, 1.5 inches per 100 feet for every 22 °F change in temperature, the following precautions shall be taken:

- a. Allow extra conduit footage at each tie-in for contraction when conduit temperature is higher than that of earth, or allow extra room for expansion if the reverse condition exists.
- b. Place concrete encasement from center of trench both ways to compensate for expansion and/or contraction of plastic conduit.
- c. After encasement has been completed, conduit may be cut off and matched up for connections.

8. Mandreling

Care shall be exercised to ensure that any foreign matter do not enter the conduit being laid, while encasing, or at any time thereafter. The usability of all conduit systems must be ensured. All conduits shall be mandreled. The mandrel outside diameter shall be no less than 2.58 inches for 3-inch conduit, 3.58 inches for 4-inch conduit, and 5.41 inches for 6-inch conduit smaller than the smallest element (sweeps) diameter in the conduit system.

After mandrelling the conduit, a 2,500-pound test mule tape pull rope shall be installed in each conduit. This will be provided by the contractor and shall be subsidiary to the appropriate bid item.

9. Pull Line

- a. The pulling calculations used to calculate tensions are predicated upon the proper use of cable pulling lubricant. Cable lubricant is required. (Polywater J or approved equal)
- b. The maximum speed for pulling line and cable into conduit which contains sweeps or bends while using a steel pull rope is as follows:

| | |
|--|---------------------|
| Tensions of 500 lbs. or less | 200 feet per minute |
| Tensions over 500 lbs. – 1000 lbs. | 100 feet per minute |
| Tensions over 1000 lbs. – 4000 lbs. | 60 feet per minute |
| Tensions over 4000 lbs. – 5000 lbs. | 30 feet per minute |
| Maximum tension shall not exceed 5000 lbs. | |

10. Guidelines for Conduit Sweeps

- a. Plastic Sweeps. All plastic sweeps shall be factory bent, sections of straight conduit to be bent (for long radius bends) in a ditch shall be firmly staked for the desired radius to provide a smooth curvature which distributes the stresses uniformly throughout the radius. The configuration shall ensure that there is no deformation of the conduit before or after encasement is completed. Long radius bends may be installed utilizing 5° couplings.

In cases where a plastic connection is made with the joints under stress due to misalignment or other factors, the plastic joint shall be held rigid after insertion until completely cured. Where stakes are located at the center of a bend or sweep, care shall be exercised to prevent deformation of conduit due to movement by contraction and expansion. Stakes shall be removed as encasement is placed.

- b. Aluminum Sweeps. All sweeps and fittings shall be aluminum. All aluminum sweeps shall be manufactured with an extrusion process. Segmental bending of aluminum conduits is not acceptable.
- c. Standard Radii. All rigid PVC and aluminum sweeps radii shall be as follows:

| | |
|----------------------------|------------|
| 2" or 3" diameter conduit | 36" radius |
| 4" diameter conduit | 48" radius |
| 5" and 6" diameter conduit | 60" radius |

11. Conduit Termination

When installing, schedule 40 or 80 sweeps for primary feeder cable at manholes, vaults, pull-boxes, equipment pads, and pad vaults. A short section of straight conduit (minimum 8 inches long) shall be installed on the end of each sweep to facilitate the use of the cable blowing tool. A short straight section of conduit is also required wherever an expandable plug or a conduit and cable seal plug is required.

In manholes conduit shall be terminated into manufacturer's knockouts with bell ends installed inside the manhole and grouted inside and out.

After pulling cable into conduit, the conduit ends shall be sealed using conduit and cable seal plugs, wherever the conduit ends are located below the final grade. This includes manholes, vaults, pull-boxes, and pad-mounted equipment.

All exposed conduit ends shall be “covered” at the end of each workday unless other means of ensuring a clean internal wall is used.

When a Contractor leaves a conduit system (for more than one day) in which others will be responsible for installing the cable, any conduit ends left exposed shall be "primered, glued, and capped" and conduit ends which are not exposed shall be sealed with expandable conduit plugs.

When a Contractor leaves a conduit system, temporarily (for more than one day), but is also the responsible party which must later install the cable, then the conduit system can be plugged or can be primered, glued, and capped at the Contractors discretion.

12. Cover – General

A minimum of 48 inches of cover shall be required.

The minimum distance between other utilities shall be 12 inches vertically and 12 inches horizontally.

VIII. INSTALLATION OF MANHOLE AND PULL BOXES

All pull boxes are to be installed to manufacturer specifications.

A. OBSTRUCTIONS AT PULL-BOXES AND MANHOLES

All foreign facilities which cross above the manhole roof shall maintain a minimum of 12 inches of horizontal separation from the outside wall of the manhole grade ring. After the manhole has been installed, foreign facilities may be installed directly above the manhole provided the facilities are suitably supported to prevent the transfer of any load onto the manhole roof.

Wherever practical, manholes and pull-boxes shall be located with a minimum of 24 inches of free horizontal separation around the perimeter of the manhole or pull-box.

Note: Contractors are required to field verify the location and depth of any existing underground utilities as required and locate by use of hydro pole-hole to verify any interference during boring. This is included as a lump sum bid item on the bidding sheets.

B. EXCAVATION AND BACKFILL FOR CONCRETE STRUCTURES AND PAD VAULTS

Proper excavation shall be provided to ensure proper location, correct size, correct depth, and alignment. The job site shall be prepared to provide adequate space and overhead clearance for equipment and/or crane. Acceptable bidding, backfill, compaction and resurfacing shall be provided.

Compaction around the pull-box or manhole shall be a minimum of 95% of the maximum density.

Contractors shall make provisions for ground rods in foundation.

All substructures shall be set in relation to final grade prior to backfilling. Final grade stakes for all four corners of manholes, pull-boxes, and pad vaults shall be maintained until final backfill and compaction have been completed.

To ensure adequate working space for compacting the backfill, excavations for manholes, pull-boxes and pad vaults shall provide an additional 12 inches of free horizontal separation from the trench wall to the outside wall of the manhole. This separation is required around the perimeter of the manhole.

Backfill around pull-box or manhole shall consist of clean, compactable three-quarter inch ABC. Voids between manhole or pull-box and natural soil shall not be acceptable. Back fill shall be performed after pull-box or manhole has been properly set and aligned.

If a high water table exists, the water shall be pumped from the excavation to permit the manhole to be set without allowing water to enter the base unit.

All duct banks and pull-boxes shall have a minimum cover of 48 inches.

IX. HYDRO-MULCH SEEDING

A. PART 1 – GENERAL

1. Description

- a. The work covered by this section consists of furnishing all plant, labor, materials, equipment, supplies, supervision and tools and performing all work necessary to top soiling, smoothing, seeding, fertilizing, watering, maintenance and cleanups of side slopes, all in accordance with these specifications.
- b. The hydro-mulch seeding operations, together with all necessary related work, shall conform to the requirements specified in this section. The area(s) to be hydro-mulch seeded shall be as shown on the construction drawings.

2. Measurement and Payment

- a. The unit of measurement for all work performed and materials furnished, as described herein, will be the acre or per station as indicated in the bid documents. Measurement shall be done upon completion of the work performed within the limits shown on the drawings and as described herein. The area measured for payment will be computed to the nearest one-tenth acre or station.
- b. Payment for hydro-mulch seeding will be made at the contract unit price per acre or per station and includes topsoil (when specified), smoothing, mulch, seed fertilizer, watering, maintenance and clean-up. Additional payment shall not be made for those areas that are replanted.

B. PART 2 – PRODUCTS

1. Materials

- a. All seed must meet the requirements of the U.S. Department of Agriculture Rules & Regulations as set forth in the Federal Seed Act and the Texas Seed Law.
- b. Type of seed, purity and germination requirements, rate of application and planting dates are as follows:

| Table 1 Application Rate-Pounds | | |
|---|----------------------------|----------------------|
| <u>TYPE/COMBINATION</u> | PER ACRE | PLANTING DATE |
| Hulled Common Bermuda Grass 98/88 and , Unhulled Common Bermuda Grass 98/88 and , Annual Rye Grass, including Gulf | 40 40 50 | Jan. 1 to Apr. 15 |
| Hulled Common Bermuda Grass 98/88 | 40 | Apr. 15 to Oct. 1 |
| Hulled Common Bermuda Grass 98/88 and , Unhulled Common Bermuda Grass 98/88 | 40 40 | Oct. 1 to Jan. 1 |

- c. Fertilizer shall be water soluble with an analysis of 10% nitrogen, 20% phosphoric acid and 10% potash. Rate of application shall be 500 pounds per acre, except during the period of April 15 through September 1, when the rate shall be reduced to 400 pounds per acre. The fertilizer shall be delivered to the site in bags or other convenient containers, each fully labeled, conforming to the applicable State Fertilizer Laws and bearing the name and warranty of the producer.
- d. Mulch shall be virgin wood cellulose fiber made from whole wood chips. Within the fiber mulch material, at least 20% of the fibers will be 10.7 mm in length and 0.27 mm in diameter. Rate of application shall be 2,000 pounds per acre. Soil stabilizers such as Terra Type III (or pre-approved equal) shall be applied at a rate of 40 pounds per acre on side slopes and Terra Tack I (or pre-approved equal) shall be applied at a rate of 40 pounds per acre on flatter portions.
- e. Wood cellulose fiber mulch, for use in the grass seed and fertilizer, shall be processed in such a manner that it will not contain germination or growth inhibiting factors. It shall be dyed an appropriate color to allow visual metering of its application. The wood cellulose fibers shall have the property of becoming evenly dispersed and suspended when agitated in water. When sprayed uniformly on the surface of the soil, the fibers shall form a blotter-

like ground cover, which readily absorbs water and allows infiltration to the underlying soil. Weight specifications from suppliers for all applications shall refer only to the underlying soil. Weight specifications from suppliers, shall refer only to the air dry weight of the fiber. The mulch material shall be supplied in packages having a gross weight not in excess of 100 pounds and must be marked by the manufacturer to show the dry weight content. Suppliers shall be prepared to certify that laboratory and field testing of their product has been accomplished and that it meets all of the foregoing requirements.

- f. Water shall be free from oil, acid, alkali, salt and other substances harmful to the growth of grass. The water source shall be subject to approval, prior to use.

C. PART 3 – EXECUTION

1. Construction Methods

- a. EXECUTION: Immediately after the finished grade has been approved, begin hydro-mulching operations to reduce erosion and excessive weed growth.

Hydraulic equipment used for the application of fertilizer, seed and slurry of prepared wood fiber mulch shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend and homogeneously mix a slurry containing up to 40 pounds of fiber plus a combined total of 70 pounds of fertilizer solids for each 100 gallons of water. The slurry distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with a set of hydraulic spray nozzles which provide even distribution of the slurry on the area to be seeded. The slurry tank shall have a minimum capacity of 800 gallons and shall be mounted on a traveling unit, which may either be self-propelled or drawn with a separate unit which will place the slurry tank and spray nozzles within sufficient proximity to the areas to be seeded, so as to provide uniform distribution without waste. The Engineer may authorize equipment with a smaller tank capacity, provided the equipment has the necessary agitation system and sufficient pump capacity to spray the slurry in a uniform coat.

Care shall be taken that the slurry preparation takes place on the site of the work. The slurry preparation should begin by adding water to the tank when the engine is at half throttle. When the water level has reached the height of the agitator shaft, good re-circulation shall be established and seed shall be added. Fertilizer shall then be added, followed by wood pulp mulch. The wood pulp mulch shall only be added to the mixture after the seed and when the tank is at least one-third filled with water. The engine throttle shall be opened to full speed when the tank is half filled with water. All the wood pulp mulch shall be added by the time the tank is two-thirds to three-fourths full. Spraying shall commence immediately when the tank is full. The operator shall spray the area with a uniform visible coat, by using the green color of the wood pulp as a guide.

- b. APPLICATION: The contractor shall obtain approval of hydro-mulch area preparation from the Engineer prior to application.

Operators of hydro-mulching equipment shall be thoroughly experienced in this type of application. Apply the specified slurry mix in a motion to form a uniform mat at the specified rate. Operators shall keep the hydro-mulch within the areas designated and keep from contact with other plant material. Immediately after application, thoroughly wash off any plant material, planting areas or paved areas not intended to receive slurry mix.

Keep all paved and planting areas clean during maintenance operations. Contractor shall keep hydro-mulching within the areas designated and keep from contact with other plant material. If in the opinion of the Engineer, unplanted skips and areas are noted after hydro-mulching, the contractor shall be required to seed the unplanted areas with the grasses that were to have been planted at no additional cost to owner.

- c. **CONTRACTOR'S MAINTENANCE & GUARANTEE PERIOD:** The hydro-mulch seeding shall be adequately watered until established. Any areas damaged by erosion or areas that do not have an acceptable turfing shall be redone to the satisfaction of the Engineer. Maintenance of grass areas shall be for 60 days after the completion of the project and shall consist of watering, weeding, repair of all erosion and reseeded, as necessary to establish a uniform stand of the specified grasses. Contractor shall guarantee growth and coverage of hydro-mulch planting under this contract to the effect that a minimum of 95% of the area planted will be covered with the specified planting after 60 days.

The Contractor shall be responsible for one mowing every two weeks between the months of April to October. The Contractor shall also be responsible for one mowing every three weeks between the months of November to March. In addition, the Contractor shall water the entire sodded and hydro-mulched areas to a saturated depth of one inch at least once a week between the months of April to September and at least once a month between the months of October to March.

The Contractor shall make a second application of specified hydro-mulch planting those bare areas not meeting specified coverage as determined by the Engineer. Such replanting is to be performed within 60 days of initial application and upon notification by the Engineer to replant.

The Contractor shall apply top dress fertilizer (delayed action) at the rate of 10 pounds per 1,000 square feet at 25 days after hydro-mulching of all new lawn areas.

Top dress fertilizer shall be 16-6-8.

Prior to final inspection, the Contractor shall mow the entire right-of-way within the project limits, including weeding around existing structures.

X. RIGHT-OF-WAY RESTORATION SPECIFICATION

A. GENERAL

Following line construction activities, the right-of-way restoration for the project area shall be completed prior to acceptance of the project. Any areas that have been disturbed by the Contractor's equipment, crews, or facilities shall be restored. Right-of-way restoration shall include the removal of all Contractor's equipment, materials, spoils, etc.

Restoration shall include but is not limited to:

1. Asphalt Repairs
2. Concrete Repairs
3. Rutting
4. Wash Outs/Holes
5. Top Soil (if applicable to project)
6. Fence Repairs

Restore right-of-way as follows:

1. Damage to asphalt roads will be patched or resurfaced per landowner, City of Brenham's or TxDOT's specifications whichever is applicable.
2. Damage to concrete, brick driveways, or sidewalks will be repaired to the landowner's, City of Brenham's, or TxDOT's specifications, whichever is applicable. All locations where poles are removed within concrete sidewalks or drives shall be filled and leveled with concrete per the landowner's, City of Brenham's, or TxDOT's specifications, whichever is applicable.
3. Rutting
 - a. All ruts in existing roads shall be filled and compacted in six-inch lifts and the roads graded to approximately the original contours.
 - b. Construction roads and ruts in agricultural and forest land shall be plowed and disked to remove any hard, compacted areas and shall be graded to approximately the original contours.
4. The area within 20 feet of all structures shall be finish graded as near as practical to the original ground contours. Dockets, swales, and high points shall be graded, using hand methods where necessary, to provide an un-concentrated flow of runoff around foundations and through structures.
5. Topsoil
 - a. Place topsoil over areas disturbed by the construction.
 - b. Distribute over required areas without compaction other than that obtained with spreading equipment.
 - c. Place, to the extent material is available, within the following limits:
 - i. Not less than four inches in depth.
 - ii. Do not exceed six inches in depth.
 - d. Shape and grade to match contours of adjacent areas and permit good natural drainage.
 - e. Maintenance and Repair of Top Soil
 - i. Maintenance – Protect newly top soiled areas from actions of the elements.
 - ii. Correction of Settlement – Contractor is responsible for correcting settlement in excess of 18 inches and damages created thereby within one year after acceptance of the Work.
 - iii. Make repairs within ten days from and after due notification by Owner of embankment or backfill settlement and resulting damage.
 - iv. Make own arrangements for access to the site for purposes of repair.

f. Fence Repairs

Includes but is not limited to damage to board privacy fences, cyclone fencing, brick columns, and retaining walls. Replace or repair as necessary.

XI. DISTRIBUTION SPECIFICATIONS – CONSTRUCTION

A. WORK ON ENERGIZED LINES

Unless stated otherwise, all construction work on new or existing poles and line/conductor changes shall be done with the lines energized.

The Contractor must provide personnel capable of working on or near energized lines. All such work shall be performed to meet at least the safety rules and regulations prescribed by the City of Brenham for its own employees including the use of rubber gloves, hot sticks, and associated protective equipment.

The 2023 or latest edition of the National Electrical Safety Code (NESC), ANSI C2, shall be followed except where local regulations are more stringent, in which case local regulations shall govern.

All construction work shall be done in accordance with the plans and specifications, and the construction drawings.

All prices in the proposal are to include provisions for the hot work.

B. CITY OF BRENHAM REPRESENTS

1. All easements and rights-of-way will be obtained from the owners of the properties prior to starting construction.
2. All staking will be completed by the construction date, and sufficient staking crews will be available to maintain stakes at all times in advance of construction.

All construction work shall be done in a thorough and workmanlike manner in accordance with the Plans, Specifications, and Construction Drawings, and shall be subject to the acceptance of the OWNER. Deviations from the Plans, Specifications, and Construction Drawings shall not be permitted except upon the written permission of the City of Brenham's Representative.

3. Pole Setting

Structures shall be placed in locations determined by the Engineer and staked by the Engineer as shown on the Staking Sheets. Structures shall not be erected in any other location without prior approval of the Engineer. All utility locations are to be called in by the Contractor for underground utility locates before construction is to begin.

Any extra pole depths are to be figured into the pole setting labor price.

On sloping ground, the depth of the hole shall be measured from the low side of the hole.

Poles shall be set so that alternate crossarm gains face in opposite directions, except at terminals and dead-ends where the gains of the last two poles shall be on the side facing the terminal or dead-end. On unusually long spans, the poles shall be set so that the crossarm is located on the

side of the pole away from the long span. Where pole top insulator brackets or pole top pins are used, they shall be located on the opposite side of the pole from the gain.

Wood pole hole diameters shall be approximately 12 inches larger than the butt diameter of the pole, and shall be at least as large at the bottom as at the top of hole. Wood pole hole depth, unless indicated elsewhere, shall be 10% of the pole length plus two feet. If the ground is excessively wet and unstable, special backfilling of the pole will be required to be determined by the Engineer.

All poles shall be set in alignment and plumb, except on line angles. All poles shall be plumb after conductors are strung. Any poles leaning over three inches in any direction will need to be re-set by the Contractor at no expense to the City of Brenham.

The void between the hole and the pole shall be completely backfilled with native soil or TxDOT road base (if rocky soil) compacted in six-inch lifts.

All pole installations include loading and hauling pole from the City of Brenham's pole yard to the job site location, checking with all entities to clear possible underground interferences, digging hole, setting pole, and tamping backfill with air or hydraulic equipment.

All pole removals include pulling pole, backfilling hole and tamping, removing ground wire and miscellaneous hardware, and disposing of pole. Sawing pole at or below ground line is NOT acceptable.

All excess soil excavated from the holes shall be hauled from the site and disposed of at no cost to the City of Brenham. After completion of the job, the backfill around the poles shall be inspected to locate settled areas. Any settled areas shall be refilled with dirt to bring it up to the unit standard.

Concrete poles will be backfilled with foam.

4. Handling of Materials

- a. The Contractor shall exercise care in the handling of all materials. Once approved and accepted materials leave the City of Brenham's warehouse the Contractor assumes ownership and is liable for damages to materials. The Contractor shall not install any material found to be defective or damaged.
- b. The Contractor shall furnish the necessary equipment to load and haul to the job site all material including wood, concrete, and steel poles furnished by the City of Brenham. The Contractor shall bear the cost of all handling, such as loading, hauling, and unloading. These costs shall be included in the Contractors prices.
- c. Materials or equipment shall not be placed where it will be damaged by or cause damage to vehicular traffic, livestock, persons, and property.

5. Guys and Anchors

Guys shall be placed before the conductors are strung and shall be attached to the pole and anchor rod as shown in the unit drawings.

All anchors and rods shall be in line with the strain and shall be installed so that approximately six inches of the rod remain out of the ground. In cultivated fields or other locations, as deemed necessary, the projection of the anchor rod above earth may be increased to a maximum of 12 inches to prevent burial of the rod eye.

6. Bolts, Nuts, Washers, Lock Nut

Bolts will be long enough to protrude a minimum of the nut thickness beyond nut and no more than 2" beyond nut. Locknuts shall be installed with each nut, eyenut, or fastener on all bolts or threaded hardware such as insulator pins and studs, upset bolts, double arming bolts, etc.

7. Splices and Dead-ends

Conductors shall be spliced and dead-ended as shown on the unit and construction drawings. There shall be not more than one splice per conductor in any span and splices shall be located at least ten feet from the conductor support. No splices shall be located in Grade B crossing spans and preferably not in the adjacent spans. Splices shall be installed in accordance with the manufacturer's recommendations.

8. Taps and Jumpers

Jumpers and other leads connected to line conductors shall have sufficient slack to allow free movement of the conductors. Where slack is not shown on the construction drawings, it will be provided by at least two bends in a vertical plane, or one in a horizontal plane, or the equivalent. In areas where aeolian vibration occurs, special measures to minimize the effects of jumper breaks shall be used.

All leads on equipment such as transformers, reclosers, etc., shall provide minimum ampacity of main line or equipment whichever is less. Where aluminum jumpers are used, a connection to an unplated bronze terminal shall be made by splicing a short stub of copper to the aluminum jumper using a compression connector suitable for the bimetallic connection.

9. Hot-Line Clamps and Connectors

Connectors and hot-line clamps suitable for the purpose shall be installed per the manufacturer's specifications. On all hot-line clamp installations, the clamp and jumper shall be installed so that they are permanently bonded to the load side of the line, allowing the jumper to be de-energized when the clamp is disconnected.

10. Surge Arrester Gap Settings

The external gap electrodes of surge arresters, combination arrester cutout units, and transformer mounted arresters shall be adjusted to the manufacturer's recommended spacing. Care shall be taken that the adjusted gap is not disturbed when the equipment is installed.

11. Conductor Ties

Hand-formed ties shall be used when factory formed ties are not available or recommended for the applications. Factory-formed ties shall be installed in accordance with the manufacturer's recommendations.

12. Conductors

All wire prices include installing or removing wire, temporary jumpers, dead-ending wire, tying or untying wire, sagging wire, spreading wire, installing or removing stirrups, clamps and connectors, splices and permanent jumpers on new wire, and removing armor rods from old wire.

New primary, and neutral conductor shall be sagged in accordance with the conductor manufacturer's recommendations. All conductors shall be sagged evenly using a dynamometer or wave return method with sags charts provided per Exhibit A. The air temperature at the time and place of sagging shall be determined by a certified thermometer. The sag and tension of all conductors after stringing shall be in accordance with the Engineer's instructions.

13. Grounds

Ground rods shall be driven full length in undisturbed earth in accordance with the construction drawings. The top of the ground rod shall be at least 12 inches below the surface of the earth. The ground wire (#6 Soft Drawn Copper) shall be attached to the rod with a clamp and shall be secured to the pole with galvanized staples. The staples on the ground wire attached to the pole shall be spaced two feet apart, except for a distance of eight feet above the ground and 8 feet down from the top of the pole where they shall be six inches apart.

All equipment shall have at least two #6 Soft Drawn Copper ground connections from the frame, case, or tank to the multi-grounded neutral conductor.

The equipment ground, neutral wires, and surge-protection equipment shall be interconnected and attached to a common ground wire.

14. Insulators and Hardware

a. Handling and Storage

- i. Insulators and hardware shall be stored in their appropriate shipping containers until installation. They shall be properly supported and stacked so as not to damage the individual items. They shall be blocked up off the ground so that they cannot come in contact with the ground or standing water.
- ii. Insulators shall be carefully handled to prevent damage to the porcelain or polymer skirts, pins, galvanizing, and cotter keys. All cotter key shall be stainless steel.
- iii. Insulators that are cracked, chipped, or damaged in any way shall be replaced with units that are not defective. The cost for replacement of previously accepted units shall be borne by the Contractor.
- iv. All insulators shall be wiped clean with a clean, soft, nonabrasive cloth.

b. Installation

- i. All connections shall be made in accordance with drawings or manufacturers specifications. Bolts shall be torqued to the manufacturer's specifications.
- ii. Stainless steel cotter keys, where required, shall be fully inserted.

Stainless steel cotter key eyes on insulators and hardware items shall be oriented toward the structure, or in such a way as to facilitate easy removal during hot line maintenance.

15. Conductors and Overhead Neutral Wires

a. General

- i. All conductor and neutral wire installation work shall be done in accordance with the manufacturer's recommendations.

The neutral conductor should be maintained on one side of the pole (preferably the road side) for tangent construction and for angles not exceeding 20°.

With pin-type or post-type insulators, the conductors shall be tied in the top groove of the insulator on tangent poles and on the side of the insulator away from the strain at angles. Pin-type and post-type insulators shall be tight on the pins and brackets, respectively, and the top groove must be in line with the conductor after tying.

For line angles of 0° to 5° in locations known to be subject to considerable conductor vibration, insulated brackets, may be substituted for the single and double upset bolts used for supporting the neutral and secondary conductors.

All conductors shall be cleaned thoroughly by wire brushing before splicing or installing connectors or clamps. A suitable inhibitor shall be used before splicing or applying connectors over aluminum conductor.

- ii. Conductors must be handled with care. Each reel shall be examined and the wire shall be inspected for cuts, kinks, or other injuries. Injured portions shall be cut out and the conductor spliced. It shall be the Contractor's responsibility to protect the wire and fittings against damage. If the wire and associated materials are damaged due to the Contractor's mishandling, negligence, or faulty equipment, the Contractor shall repair or replace the damaged sections, including furnishing of necessary materials, in a manner satisfactory to the Engineer and at no additional cost to the City of Brenham.
- iii. Conductors may be strung by either conventional or tension stringing method as elected by the Contractor and approved by the Engineer.
- iv. Care shall be exercised to avoid kinking, twisting, or abrading the conductor or neutral wire in any manner. Conductors or neutral wires shall not be trampled on, run over by vehicles, or dragged over sharp objects or rocks. Injured portions or crooked or imperfect splices in either the conductor or neutral wire shall be cut out and the wire re-spliced at no additional cost to the City of Brenham.

b. Handling and Storage

- i. Reels of wire shall be stored off the ground and adequately supported so as to avoid damage to the reel, protective covering, and wire. Wire and reels shall be kept free of standing water, excessive dust, and mud, and stored no closer than 50 feet from an energized portion of a substation, distribution line, or transmission line. The conductor reels must be covered.
- ii. Protective covering shall be removed at the job site and the outside layer of each reel shall be examined by the Contractor and the City of Brenham's Representative to be sure that

the wire is in good condition and that no nails, staples, or other sharp objects, which could damage the wire during unreeling, protrude on the inside of the reel heads.

- iii. Identification tags and markers shall be retained on the reels. For future reference, the Contractor shall record the reel number, length of wire, net weight, and the structure numbers where the wire was installed.
- iv. In general, conductor reels should not be rolled. They should be lifted or transported by a reel dolly. If they do need to be rolled to a location where they can be easily handled, they should be rolled in the direction that would tend to tighten rather than loosen the conductor on the reel.
- v. Any costs associated with moving the existing wire reels to the job location shall be the responsibility of the Contractor and shall be included in the labor unit price.

c. Tools and Equipment

- i. Tools and equipment for wire work shall be of the proper size and type for the job and shall be in good working condition.
- ii. Sheaves, tensioners, pullers, wire grips, compressors, and dies shall be properly sized for the specific wires to be installed. The conductors shall be pulled with tensioner over suitable rollers or stringing blocks properly mounted on the pole or arm if necessary to prevent binding while stringing.
- iii. Stringing blocks shall be free running, and of the proper diameter and groove size for the wire being pulled.
- iv. Tensioner bull wheels shall be of the proper size and design for the wire being pulled.

d. Guard Structure

Guard structures shall be furnished and installed by the Contractor, where required, to prevent the conductor or overhead neutral wires which are being pulled from coming into contact with existing overhead electric supply lines, communication lines, roads, highways, and railroads crossed by the distribution line. All labor and materials required shall be furnished by the Contractor and included in the unit cost for conductor units.

e. Stringing

- i. Controlled tension stringing may be performed and subject to the manufacturer's concurrence controlled tension stringing.
- ii. Extreme care shall be exercised during the wire stringing operation to avoid damage to conductor or neutral wire strands. If damage is found, the stringing shall be stopped. Damage is defined as any deformity of the wire which can be detected by sight or touch. Kinked, twisted, abraded, "bird-caged," or flattened wire will not be allowed to remain on the line. Any wire so damaged shall be repaired or replaced by the Contractor at the Contractor's own expense and to the satisfaction of the Engineer.

- iii. The Contractor shall continuously inspect the wire as it leaves the reels. If the wire has an accumulation of dirt, oil, grease, or any other foreign substance, such substance shall be removed as the wire leaves the reels during the stringing operation by a method approved by the Engineer.
- iv. Wire tension during stringing shall be high enough to ensure that the wire does not drag across the ground, underbrush, trees, poles, towers, fences, guard structures, or any other surface other than the stringing sheaves. A stringing tension of not less than 50% nor more than 80% of the initial sagging tension should be used.
- v. No more than one reel of wire per phase may be pulled at a time. Full tension compression splices shall not be pulled through the stringing blocks.
- vi. Wire shall not be pulled during adverse weather conditions during the night or when such conditions are imminent as determined by the City of Brenham or Engineer.
- vii. Conductors and overhead neutral wires shall be spliced with the proper size and type compression sleeves. These splices shall be made and installed according to conductor manufacturer's recommendations. Sufficient number of splices are to be supplied by the City of Brenham. Any extra splices are to be provided by the Contractor. The cost for the extra splices is to be included in the wire unit price.
- viii. Utmost care shall be exercised in installing parallel groove clamps. The contact surface of the clamp and the wire shall be clean and bright. A steel brush shall be the principal cleaning medium. Bolts shall be brought down hard, but the threads must not be overstressed. These same precautions for cleaning shall apply to the conductor before splicing.

f. Sagging

- i. Wires shall be sagged to the proper tensions in accordance with the initial stringing sag and tension tables provided by the Engineer. Sags will be checked by sighting with target and transit as indicated in the IEEE Standard 524 or by wave return and stopwatch method. Sags shall be within a tolerance of +3 and -0 inches of the specified values.
- ii. The air temperature at the time and place of clipping in shall be determined using a certified thermometer placed on the line to accurately measure air temp adjusted for wind cooling. The temperature at which the conductor is sagged in and the spans in which sags are measured shall be recorded, and the information given the Engineer.
- iii. The Contractor shall select the length of each sag and the sag-checking spans, subject to the review and approval of the Engineer. The Contractor's sagging method shall result in uniform tensions throughout the sag and the allowable sag tolerances must not be exceeded.
- iv. The Contractor shall budget the stringing time so that a reel of wire is sagged within 72 hours after the start of the stringing operation. If this is not possible in isolated areas, the Engineer shall be consulted regarding the necessity of using creep correction factors with the specified chart sags.

- v. The Contractor shall make any necessary adjustments in the wires or clamps at any time during the construction period to ensure that the wire is at the proper tension, sags are within tolerance, suspension insulator, and overhead neutral wire assemblies are plumb.
- g. Clipping, Dead-ending, and Splicing
- i. The Contractor shall be cognizant of and take into consideration the strength limitations of all structures in so far as the application of temporary wire stringing loads. All temporary back snubs and pull-downs on structures other than strain structures shall be carefully planned and shall meet the approval of the Engineer.
 - ii. Use of conductor from wire reels shall be carefully planned to minimize the number of full tension splices and to minimize waste. There shall never be more than one compression fitting per conductor in any span and no splice shall be located within ten feet of a conductor support. Splices shall not be located over major highway, railroad, and utility crossings, or where the conductor is to be dead-ended.
 - iii. Compression dead-ends and splices shall be installed in accordance with the manufacturer's recommendations. Conductor strands within the splice area shall be carefully cleaned with a steel brush, cotton rags, and solvents. Filler compound shall be furnished and pressure installed by the Contractor. Special care shall be exercised in making compression fittings to ensure use of proper die size, accurate cutting of wire, complete insertion of the cable strands, and pressing to produce a straight, uniform fitting. The Contractor shall make up one splice and dead-end to use as a sample in order to determine how much wire needs to be cut back.
 - iv. After completion of pressing operations, the Contractor shall clean the wire and fittings of excess grease and compound. All burrs and die flash marks shall be removed with emery cloth.
 - v. U-bolts on suspension clamps and strain dead-end clamps shall be evenly torqued to the manufacturer's recommended values. Keeper plates shall be in place and properly seated. Conductor strands within the area of the fitting shall be clean. The recommended cleaning method is to use a steel brush, cotton rags, and solvents.
 - vi. Wires shall be clipped into suspension clamps within but not less than 12 hours and not more than 72 hours after the start of each individual wire pulling operation. Cables shall be lifted from the sheaves using standard suspension clamps or plate hooks 8 inches or larger to provide adequate support for the cables without damaging individual strands or kinking the wire.
- h. Jumpers
- i. Jumpers shall be installed as shown on the drawings. Compression jumper terminals shall be used with compression dead-ends and compression jumper connectors shall be used with strain clamps. The cost of material and installation of these items shall be included with the bid. All jumpers shall be installed in accordance with the manufacturer's recommendations.

- ii. Jumper wire loops shall be of sufficient length to present a smooth, uniformly curving appearance. Excess length of conductor from the wire stringing operation may be used to make up the jumper loops.
- i. Temporary Grounds
 - i. During the wire work, the Contractor shall take all necessary steps to insure proper temporary grounding of the structures, cables, and equipment. All applicable Federal, state, and local safety regulations shall be strictly adhered to.
 - ii. A record of all temporary conductor grounds shall be kept to ensure that all grounds are removed and the line can be safely energized at the end of the construction period.
 - iii. All temporary grounding costs shall be the responsibility of the Contractor.
- j. Reels and Excess Conductor
 - i. The Contractor shall be responsible for salvaging the wire reels and all excess conductor and neutral wire. All such wire shall be inventoried, placed on reels, and returned to the City of Brenham or disposed of as directed by the City of Brenham's representative.
 - ii. All reels shall be returned to the City of Brenham's Warehouse. Nonreturnable wooden reels shall be disposed of in a manner meeting the approval of the City of Brenham.
 - iii. All costs associated with the receiving, handling, shipping, or disposal of excess wire and reels shall be in the labor costs for installation of wire units.
- k. Transfer of Third-Party Attachments
 - i. Transfers only apply to poles with tangent attachment and drops, noted on staking sheets as "Comm T." Transfers do not include third-party hardware dead-end or terminated on poles, noted on staking sheets as "Comm D."
 - ii. The Contractor shall be responsible for the removal and transfer of all third-party attachments (Comm T) on existing poles to be changed-out. The Contractor shall also attach third-party cables (Comm T) to new poles added in mid-span.
 - iii. Third-party attachments to be transferred are defined as those attachments not related to serving electricity to the homes, or owned by OWNER.
 - iv. Transfers (Comm T) include all drops. The existing cable drop must be long enough to allow transfer without cutting or splicing.
 - v. The Contractor will be responsible for the removal of all abandoned poles to include poles abandoned by communication companies (Comm D) with prior electrical attachments prior to the OWNER determining the project substantially complete.
 - vi. Pricing to transfer drops (Comm T) to be included within section pricing.
 - vii. Contractor will be required to count all Comm T removals and installs, and identify Comm T location by section and pole number.

l. Top Pole

“Top Pole” is defined as removing the upper most portion of the pole that is no longer needed or used. The removed portion is typically removed with a chainsaw.

m. Wood Fence

- i. This specification covers the removal and installation of a 6’ wooden fence with pressure treated 2” x 4” rails, 1” x 6” cedar pickets, and galvanized hardware.
- ii. 8’ galvanized steel post with 2” diameter embedded be set 2’ into a concrete footing 10” in diameter. The steel post shall have a 2” galvanized steel cap plate on top of the post to prevent water from entering the post. Post shall be installed on 8’ centers.
- iii. 2” x 4” rails shall be pressure treated, Number 2 Grade or better. The 2” x 4” material shall be fastened with galvanized clamps and nails at each attachment point. Three 2” x 4” rails shall be installed equally spaced between the steel post.
- iv. 1” x 6” x 6’ cedar pickets shall be Number 2 Grade or better. The cedar pickets shall be installed without any space between the pickets and fastened with two #8D galvanized nails (or approved equal) at each attachment point.
- v. The fence shall be installed according to all the City of Brenham regulations.
- vi. The price for this unit shall include the removal and disposal of existing wooden fence, installation of the new fence, and cleanup of the construction site. This unit will be paid by the linear foot of removal and installation of the six-foot wooden fence.

n. Large Fiberglass Pull Box Unit Pull Box - LG

The unit to install Pull box – LG shall include the 6’x8’x7’ excavation to install the box level with the existing grade. The bottom of the pull box shall be placed on a minimum of 8” of ½” crushed rock to level the pull box.

o. Service Transfer Unit SVC

Transfer existing overhead service conductor from old pole to new pole. This unit to include any new clamps, grips, splicing of conductor and miscellaneous materials required to transfer service.

C. UNIT PRICING NOTES

Unit prices shall include all necessary labor, Contractor furnished minor material, equipment (to include backyard tracked units as needed), vehicles, tools, supervision, fuel, maintenance, travel time, traffic control, utility locates, mobilization, demobilization, and any associated expense involved including, digging, loading, unloading and delivery of City of Brenham-furnished material to or from the City of Brenham’s material yard to job sites.

It shall be assumed that all work performed on this contract will be on energized lines as it may not be possible to de-energize any particular section of line as needed.

All unit prices shall reflect having to perform the work on an energized circuit.

NOTE: All pole installations include loading and hauling pole from the City of Brenham's pole yard to the job site location, checking with all entities to clear possible underground interferences, digging hole, setting pole, and tamping backfill with air or hydraulic equipment.

All pole removals include pulling or topping pole, backfilling hole and tamping, removing ground wire and miscellaneous hardware, hauling and disposing of pole. Sawing pole at or below ground line is NOT acceptable.

NOTE: All wire prices include installing or removing wire, dead-ending wire, temporary jumpers, tying or untying wire, sagging wire, spreading wire, installing or removing stirrups, clamps and connectors, splices and permanent jumpers on new wire, and removing armor rods from old wire. New primary, neutral and open wire secondary conductor shall be sagged with dynamometer or wave return method with sags charts provided by the Engineer.

1. It is understood the Contractor is responsible for ensuring that any existing utilities are properly located prior to digging and shall make a reasonable effort not to damage any existing utilities. All locating expenses shall be included in the unit prices.
2. All poles and/or material shall be picked up by the Contractor at the City of Brenham's warehouse and this shall be included in the unit pricing. Unless otherwise specified, the City of Brenham shall furnish all material.
3. All equipment, hardware and wire removed shall be stripped and returned to the City of Brenham's warehouse. This shall be included in the unit pricing.
4. All services that will not reattach to the new pole shall not be replaced. Splices will be accepted.

PART 3

PROPOSAL FORM

PROJECT: CITY OF BRENHAM, TEXAS, BM130 JACKSON STREET SUBSTATION UNDERGROUND FEEDER EXIT RELOCATION PHASE 1

NAME OF PROPOSER: _____

The undersigned, in compliance with Invitation to make Proposal for Construction Work, has received and examined the Proposal Documents and conditions regarding this project and, having examined the project site, propose to:

1. Hold Proposal valid for at least 60 days after Proposal date.
2. Enter into and execute a contract, if awarded, on the basis of this proposal and to furnish required bonds.
3. Accomplish Work in accordance with the Proposal Documents.
4. Accept provisions of Instructions to Proposers regarding disposition of Proposal Security.
5. The following dates shall apply for:
6. Base Proposal:

Work shall be substantially completed by no later than March 2, 2024 and completed and ready for final payment by March 9, 2024. It is anticipated that Work will commence as of _____ 2023.

Acknowledgment of receipt of the following Addenda: _____

BASE PROPOSAL:

1. Proposer agrees to accept as full compensation for the Work proposed in the Proposal Documents (INCLUDING the Contingency Allowance) the total from the unit price sheets based upon the Undersigned's own estimate of quantities and costs, including sales, consumer, use and other taxes and overhead and profit the following sum of:

Numeric Dollars: (\$) _____

Written Words _____

ALTERNATE PROPOSAL NO.1:

1. Proposer agrees to accept as full compensation for the Lump Sum Work proposed on the drawings as Alternate Proposal No.1, being all work related to the southwest field, following sum of:

Numeric Dollars: (\$) _____

Written Words _____

PROPOSAL FORM

PROJECT: CITY OF BRENHAM, TEXAS, BM130 JACKSON STREET SUBSTATION UNDERGROUND FEEDER EXIT
RELOCATION PHASE 1

ACCEPTANCE: Upon notification of the acceptance of proposal, Undersigned agrees to execute a contract for above work, for stated compensation. Undersigned further agrees, if awarded Contract, to execute and deliver to the Engineer within three days of the execution of the Agreement, Performance Bond and labor and Material Payment Bond equal to 100 % of the contract sum in accordance with the General and Supplementary Conditions.

Respectfully submitted,

Name of Contracting Firm _____

Address _____

BY: _____

Seal – If Proposal is by Corporation

CONTRACTOR'S QUALIFICATION STATEMENT AND EXPERIENCE RECORD

Name of Contractor: _____

Address: _____

Contact Name: _____

Phone: _____

E-mail: _____

Number of years company has been in Business under its current name: _____

Names that your company has previously operated under (if any): _____

Current Bonding Capacity (\$) _____

Name and Best Key Rating of Bonding Company: _____

List which portions (if any) of this project will be Substituted out to other Contractors including the name of each subcontractor? (Attach additional sheets if required)

Personnel:

List all key personnel that your company currently employs that will be assigned to perform work for this project including job title, related experience and time.

Employee Name: _____

Job Assignment for this Project: _____

Related Experience: _____

Duration of Related Experience: _____

Employee Name: _____

Job Assignment for this Project: _____

Related Experience: _____

Duration of Related Experience: _____

Employee Name: _____

Job Assignment for this Project: _____

Related Experience: _____

Duration of Related Experience: _____

Employee Name: _____

Job Assignment for this Project: _____

Related Experience: _____

Duration of Related Experience: _____

(Add additional sheets as needed to complete this category)

Project Experience:

Provide details and contact information for clients for whom your company has performed work for within the last three years that are best related to the scope of this project. Contractor shall provide the following information based on his/her own company's experience or that of a company with whom he/she has agreed to sub-contract with for the completion of the Work. (Attach additional sheets if required)

Project Name: _____

Owner's Contact Name Phone # of Contact Description of Work: _____

Was Work Completed on Time? _____

If no, describe circumstances: _____

Were Change Orders greater than 5% of the Contract Price necessary? _____

If Yes, explain why: _____

Has the Owner asked your Company to respond to any items covered under the warranty(s) of the Project? _____

If Yes, explain what problem occurred, the timeliness with which your company responded to the problem, and the measures your company took to resolve the problem. _____

Project Name: _____

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If no, describe circumstances: _____

Were Change Orders greater than 5% of the Contract Price necessary? _____

If Yes, explain why: _____

Has the Owner asked your Company to respond to any items covered under the warranty(s) of the Project? _____

If Yes, explain what problem occurred, the timeliness with which your company responded to the problem, and the measures your company took to resolve the problem. _____

Unit Price Schedule for

BM 130 Jackson Street Substation Underground Feeder Exit Relocation Phase 1

New Units Installed - UNDERGROUND

| Item No. | Unit No. | Description | Unit | UG/OH | QTY # | Unit Price Total \$ | Extended Price \$ |
|--|-------------------------|--|------|-------|----------|---------------------------|-------------------------|
| 1 | UPVC 4 90 | 4" PVC ELBOW 48" RADIUS | EA | UG | 21 | \$ - | \$ - |
| 2 | UPVC 4 | 4" PVC CONDUIT INSTALLED | EA | UG | 2,700 | \$ - | \$ - |
| 3 | BORE-DIR-51 | DIRECTIONAL BORE TO INCLUDE 3-4" SCHEDULE 40 CONDUITS | FT | UG | 60 | \$ - | \$ - |
| 4 | UM-TPB TRAFFIC RATED | LARGE PULLBOX 5X9 WITH A FOUNDATION 8" OF 1/2" CRUSHED ROCK. TRAFFIC RATED. | EA | UG | 2 | \$ - | \$ - |
| 5 | UM-PB NON TRAFFIC RATED | LARGE PULLBOX 5X8 WITH A FOUNDATION 8" OF 1/2" CRUSHED ROCK. | EA | UG | 1 | \$ - | \$ - |
| 6 | TRENCH 60 | 60" DEEP TRENCH 18" TO 32" WIDE | FT | UG | 810 | \$ - | \$ - |
| 7 | UM-GND | GROUNDING FOR PULL BOX | EA | UG | 3 | \$ - | \$ - |
| TOTAL FOR NEW UNITS - UNDERGROUND | | | | | | | \$ - |

ALTERNATE BID

| Item No. | Unit No. | Description | Unit | UG/OH | QTY # | Unit Price Total \$ | Extended Price \$ |
|--------------------------------|-------------|---|------|-------|----------|---------------------------|-------------------------|
| 3 (Alternate) | BORE-DIR-51 | DIRECTIONAL BORE TO INCLUDE 3-4" SCHEDULE 40 CONDUITS | FT | UG | 834 | \$ - | \$ - |
| TOTAL FOR ALTERNATE BID | | | | | | | \$ - |

Unit Price Schedule for

BM 130 Jackson Street Substation Underground Feeder Exit Relocation Phase 1

Miscellaneous Units

| Item No. | Unit No. | Description | Unit | QTY # | Unit Price Total \$ | Extended Price \$ |
|--------------------------------------|----------------------------|--|----------|-------------|---------------------------|-------------------------|
| 1 | TRENCH SAFETY | TRENCH SAFETY PLAN AND TRENCH SAFETY | LUMP SUM | 1 | \$ - | \$ - |
| 2 | ROW RESTORATION | ROW RESTORATION AND HYDRO-MULCH | LUMP SUM | as required | \$ - | \$ - |
| 3 | MOBILIZATION | MOBILIZATION NOT TO EXCEED 5% OF TOTAL BID PRICE | LUMP SUM | 1 | \$ - | \$ - |
| 4 | TRAFFIC CONTROL | W. STONE, AUSTIN, AND W. LUBBOCK STREETS | LUMP SUM | 1 | \$ - | \$ - |
| 5 | ECP | EROSION AND SEDIMENT CONTROL | LUMP SUM | 1 | \$ - | \$ - |
| 9 | PAVEMENT REPAIR | W. STONE, AUSTIN, AND W. LUBBOCK STREETS | LUMP SUM | 2460 ft | \$ - | \$ - |
| 10 | GROUND REPAIR PULL BOX 2 | W. STONE AND AUSTIN STREET INTERSECTION | LUMP SUM | 1 | \$ - | \$ - |
| 11 | PAVEMENT REPAIR PULL BOX 3 | W. BRYAN AND AUSTIN STREET INTERSECTION | LUMP SUM | 1 | \$ - | \$ - |
| 12 | PAVEMENT REPAIR PULL BOX 4 | W. LUBBOCK AND AUSTIN STREET INTERSECTION | LUMP SUM | 1 | \$ - | \$ - |
| 13 | PAVEMENT REPAIR BORE PIT | W. STONE AND AUSTIN STREET INTERSECTION | LUMP SUM | 1 | \$ - | \$ - |
| 14 | GROUND REPAIR BORE PIT | W. STONE AND AUSTIN STREET INTERSECTION | LUMP SUM | 1 | \$ - | \$ - |
| 15 | HYDRO-HOLE | FIELD VERIFICATION OF EXISTING UTILITIES AS REQUIRED | LUMP SUM | 1 | \$ - | \$ - |
| TOTAL FOR MISCELLANEOUS UNITS | | | | | | \$ - |

Unit Price Schedule for

BM 130 Jackson Street Substation Underground Feeder Exit Relocation Phase 1

SUMMARY

| | | |
|-------------------------------|-----------|----------|
| NEW UNITS - UG | \$ | - |
| MISCELLANEOUS UNITS | \$ | - |
| TOTAL | \$ | - |
| NEW UNITS - UG ALTERNATE BID | \$ | - |
| TOTAL W/ ALTERNATE BID | \$ | - |

BID BOND

1. KNOW ALL MEN that we, _____, as Principal, and _____, as Surety, are held and firmly bound unto City of Brenham in the penal sum of five (5) percent of the amount of the bid referred to in paragraph 2 below, as hereinafter set forth and for the payment of which sum well and truly to be made, we bind ourselves, our executors, administrators, successors and assigns, jointly and severally, by these presents:

2. WHEREAS, the Principal has submitted a bid to City of Brenham for Request for Proposals for BM Jackson Street Substation Underground Feeder Exit Relocation Phase 1 known as Bid No. 23-012.

3. NOW, THEREFORE, the condition of this obligation is such that if City of Brenham shall accept the bid of the Principal, and

(a) the Principal shall execute such contract documents, if any, as may be required by the terms of the bid and give such Contractor's Bond or Bonds for the performance of the contract and for the prompt payment of labor and material furnished for the Project as maybe specified in the bid, or

(b) in the event of the failure of the principal to execute such contract documents, if any, and such Contractor's bond or bonds, if the principal shall pay to the Owner the difference, not to exceed the penal sum hereof, between the amount specified in the bid and such larger amount for which the Owner may in good faith contract with another party to construct the electric power facilities, then this obligation shall be void, otherwise to remain in full force and effect.

IN WITNESS WHEREOF, the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this _____ day of _____, 20_____.

(Seal)

Principal

Attest:

By: _____

Secretary

Title

(Seal)

Surety

Attest:

By: _____

Secretary

Title

CERTIFICATIONS

PROPOSAL SUBMISSION AUTHORIZATION

- An authorized representative must sign proposal, with the Proposer's address, telephone and email information provided. Unsigned proposals may not be considered.
- If the proposal is made by an individual, the name, mailing address and signature of the individual must be shown.
- If the proposal is made by a firm or partnership, the name and mailing address of the firm or partnership and the signature of at least one of the general partners must be shown.
- If the proposal is made by a corporation, the name and mailing address of the corporation and the signature and title of the person who signs on behalf of the corporation must be shown.
- The City reserves the right to request documentation showing the authority of the individual signing the proposal to execute contracts on behalf of anyone, or any corporation, other than himself/herself. Refusal to provide such information upon request may cause the proposal to be rejected as non-responsive.

The undersigned certifies that the information provided above is a true representation of its company's qualifications and agrees to comply with these assurances following award of the RFP.

Signature: _____

Printed Name: _____

Title: _____ Date: _____

Address: _____

Telephone: _____

Email: _____

FELONY CONVICTION NOTICE

State of Texas Legislative Senate Bill No. 1, Section 44.034, Notification of Criminal History, Subsection (a), states "a person or business entity that enters into a contract with a school district must give advance notice to the district if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony."

Subsection (b) states "a school district may terminate a contract with a person or a business entity if the district determines that the person or business entity failed to give notice as required by subsection (a) or misrepresented the conduct resulting in the conviction. The district must compensate the person or business entity for services performed before the termination of the contract."

This Notice is not Required of a Publicly Held Corporation

I, the undersigned agent for the firm named below, certify that the information concerning notification of felony convictions has been reviewed by me and the following information furnished is true to the best of my knowledge.

Vendor's Name:

Authorized Company Official's Name (Printed)

A. My firm is a publicly held corporation; therefore, this reporting requirement is not applicable.

Signature of Company Official:

B. My firm is not owned or operated by anyone who has been convicted of a felony:

Signature of Company Official:

C. My firm is owned or operated by the following individual(s) who has/have been convicted of a felony:

Name of Felon(s):

Details of Conviction(s):

Signature of Company Official:

NON-COLLUSION CERTIFICATE

STATE OF _____

COUNTY OF _____

The undersigned, being duly sworn, deposes and says that the person, firm, association, co-partnership or corporation herein named, has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competition in the preparation and submission of a proposal to the City of Brenham for consideration in the award of a contract on the improvement described as follows:

RFP NO. 23- _____ – BM 130 Jackson Street Substation Circuit Exit Relocation Phase 1

(Name of Firm)

By: _____
(Authorized Signature)

Title: _____

Sworn to before me this _____ day of _____, 2023.

Notary Public

NOTARY SEAL:

CONFLICT OF INTEREST QUESTIONNAIRE

FORM CIQ

For vendor or other person doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 1491, 80th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

OFFICE USE ONLY

Date Received

1 Name of person who has a business relationship with local governmental entity.

2 Check this box if you are filing an update to a previously filed questionnaire.

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 Name of local government officer with whom filer has employment or business relationship.

Name of Officer

This section (item 3 including subparts A, B, C & D) must be completed for each officer with whom the filer has an employment or other business relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the filer of the questionnaire?

Yes No

B. Is the filer of the questionnaire receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?

Yes No

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?

Yes No

D. Describe each employment or business relationship with the local government officer named in this section.

4

Signature of person doing business with the governmental entity

Date

PART 4

**STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
ON THE BASIS OF A STIPULATED PRICE**

THIS AGREEMENT is by and between City of Brenham, Texas

(hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1 - WORK

1.01 CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

The installation of approximately 3000' of 4" PVC underground conduit. Ultimately, approximately 1000' of MCM three-phase 12.5 kV underground distribution line will be pulled into the 4" PVC conduit, but the installation of the wire is not included as part of Phase 1. Three pull boxes shall be installed as part of Phase 1.

ARTICLE 2 - THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

BM130 Jackson Steet Substation Underground Feeder Exit Relocation Phase 1

ARTICLE 3 -ENGINEER

3.01 The Project has been designed by McCord Engineering, Inc. (MEI) who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities, and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 - CONTRACT TIMES

4.1 Time of the Essence

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.2 *Date to Achieve Substantial Completion and Final Payment*

- A. The Work will be substantially completed with all materials scheduled for salvage, salvaged and stored in safe condition by no later than March 2, 2024 and completed and ready for final payment by no later than: March 9, 2024, all in accordance with the General Conditions and Supplementary Conditions of the Contract.

4.3 *Liquidated Damages*

A. CONTRACTOR and OWNER recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty), CONTRACTOR shall pay OWNER \$600.00 for each day that expires after the time specified in paragraph 4.02 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if CONTRACTOR shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER \$300.00 for each day that expires after the time specified in paragraph 4.02 for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 - CONTRACT PRICE

5.1 OWNER shall pay CONTRACTOR for the Work actually completed in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraphs 5.01.A below, with the following exceptions made thereto:

- A. For all Work based on the Lump Sum Costs proposed in the Proposal Form for the Base Proposal and for:

| | | |
|-------------|----|----------|
| <hr/> | \$ | <hr/> |
| (use words) | | (figure) |

All specific cash allowances are included in the above price and have been computed in accordance with paragraph 11.02 of the General Conditions.

ARTICLE 6 - PAYMENT PROCEDURES

6.1 *Submittal and Processing of Payments*

A. CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

6.2 *Progress Payments; Retainage*

A. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment on or about the 25th day of each month during performance of the Work as provided in paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements:

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such

amounts as ENGINEER may determine or OWNER may withhold, in accordance with paragraph 14.02 of the General Conditions:

- a. 95% of Work completed (with the balance being retainage).
- b. 95% of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

2. Upon Substantial Completion, OWNER shall pay an amount sufficient to increase total payments to CONTRACTOR to 95% of the Work completed, less such amounts as ENGINEER shall determine in accordance with the General Conditions and less 100% of ENGINEER's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

B. OWNER must retain a minimum of five percent (5%) of each periodic construction payment. If the contract provides for retainage of greater than five percent of the periodic payments, the entire retainage must be deposited into an interest bearing account and paid to the prime contractor upon completion (and acceptance) of the project. The Owner may authorize a partial release of the five percent only after substantial completion of construction. Full payment of retainage may be made only after final project completion and approval.

6.3 Final Payment

A. Upon final completion and acceptance of the Work in accordance with paragraph 14.07 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.07.

ARTICLE 7 - INTEREST

7.01 Interest shall not be accumulated or paid on retainage unless conditions stated above in sub-paragraph 6.02-B apply.

ARTICLE 8 - CONTRACTOR'S REPRESENTATIONS

8.1 In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

A. CONTRACTOR has examined and carefully studied the Contract Documents and the other related data identified in the Proposal Documents.

B. CONTRACTOR has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. CONTRACTOR is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

D. CONTRACTOR has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided the General Conditions and (2) reports and drawings of a Hazardous Environmental Condition, if any, at the Site which has been identified in the Supplementary Conditions as provided the General Conditions.

E. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, including applying the specific means, methods, techniques, sequences, and procedures of

construction, if any, expressly required by the Contract Documents to be employed by CONTRACTOR, and safety precautions and programs incident thereto

F. CONTRACTOR does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

G. CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Contract Documents.

H. CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

I. CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that CONTRACTOR has discovered in the Contract Documents, and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

J. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 9 - CONTRACT DOCUMENTS

9.1 Contents

A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to 6, inclusive);
2. Performance Bond (pages 1 to 2, inclusive);
3. Payment Bond (pages 1 to 2, inclusive);
4. General Conditions (pages 1 to 31, inclusive);
5. Specifications as listed in the table of contents of the Project Manual;
6. Drawings consisting of 5 sheets
7. Exhibits to this Agreement (enumerated as follows):
 - a. Notice to Award
 - b. Notice to Proceed
8. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Written Amendments;
 - b. Work Change Directives;
 - c. Change Order(s).

B. The documents listed in paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 - MISCELLANEOUS

10.1 Terms

- A. Terms used in this Agreement will have the meanings indicated in the General Conditions.

10.2 Assignment of Contract

A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.3 Successors and Assigns

A. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.4 Severability

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.5 Felony Conviction

A. Contractor and all subcontractors and suppliers shall insure that all entities with which it contracts or employs shall supply information regarding criminal records history of any full-time employee, agent or consultant and subcontractor who shall be present on City of Brenham property at any time. Under no circumstances shall any entity be allowed to use employees, agents or consultants who have been convicted involving violent behavior and/or sexual misconduct.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in three (3) copies. One counterpart each (minimum) has been delivered to OWNER and CONTRACTOR. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or on their behalf.

This Agreement will be effective on _____ (which is the Effective Date of the Agreement).

OWNER: CITY OF BRENHAM, TX

CONTRACTOR:

By: _____

By: _____

[CORPORATE SEAL]

Attest _____

Attest _____

Date: _____

Date: _____

Address for giving notices:

Address for giving notices:

License No. _____
(Where applicable)

Agent for service of process: _____

(If CONTRACTOR is a corporation or a partnership,
attach evidence of authority to sign.)

Designated Representative:

Designated Representative:

Name: _____

Name: _____

Title: _____

Title: _____

Address: _____

Address: _____

Phone: _____

Phone: _____

Facsimile: _____

Facsimile: _____

Performance Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place
of Business):

OWNER (Name and Address):

CITY OF BRENHAM, TX
200 W. Vulcan, Brenham, TX 77833

CONTRACT

Date:

Amount:

Description (Name and Location): BM130 Jackson Street Substation Underground Feeder Exit Relocation Phase 1

BOND

Date (Not earlier than Contract Date):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent or representative.

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____
Name and Title:

SURETY

Company: _____ (Corp. Seal)

Signature: _____
Name and Title:
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____
Name and Title:

SURETY

Company: _____ (Corp. Seal)

Signature: _____
Name and Title:

EJCDC No. 1910-28-A (1996 Edition)

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, and the American Institute of Architects.

1. The CONTRACTOR and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Contract, which is incorporated herein by reference.

2. If the CONTRACTOR performs the Contract, the Surety and the CONTRACTOR have no obligation under this Bond, except to participate in conferences as provided in paragraph 3.1.

3. If there is no OWNER Default, the Surety's obligation under this Bond shall arise after:

3.1. The OWNER has notified the CONTRACTOR and the Surety at the addresses described in paragraph 10 below, that the OWNER is considering declaring a CONTRACTOR Default and has requested and attempted to arrange a conference with the CONTRACTOR and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Contract. If the OWNER, the CONTRACTOR and the Surety agree, the CONTRACTOR shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive the OWNER's right, if any, subsequently to declare a CONTRACTOR Default; and

3.2. The OWNER has declared a CONTRACTOR Default and formally terminated the CONTRACTOR's right to complete the Contract. Such CONTRACTOR Default shall not be declared earlier than twenty days after the CONTRACTOR and the Surety have received notice as provided in paragraph 3.1; and

3.3. The OWNER has agreed to pay the Balance of the Contract Price to:

3.3.1. The Surety in accordance with the terms of the Contract;

3.3.2. Another contractor selected pursuant to paragraph 4.3 to perform the Contract.

4. When the OWNER has satisfied the conditions of paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

4.1. Arrange for the CONTRACTOR, with consent of the OWNER, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the OWNER for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by the OWNER and the contractor selected with the OWNER's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the Bonds issued on the Contract, and pay to the OWNER the amount of damages as described in paragraph 6 in excess of the Balance of the Contract Price incurred by the OWNER resulting from the CONTRACTOR Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances;

4.4.1. After investigation, determine the amount for which it may be liable to the OWNER and, as soon as practicable after the amount is determined, tender payment therefor to the OWNER; or

4.4.2. Deny liability in whole or in part and notify the OWNER citing reasons therefor.

5. If the Surety does not proceed as provided in paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the OWNER to the Surety demanding that the Surety perform its obligations under this Bond, and the OWNER shall be entitled to enforce any remedy available to the OWNER. If the Surety proceeds as provided in paragraph 4.4, and the OWNER refuses the payment tendered or the Surety has denied

liability, in whole or in part, without further notice the OWNER shall be entitled to enforce any remedy available to the OWNER.

6. After the OWNER has terminated the CONTRACTOR's right to complete the Contract, and if the Surety elects to act under paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the OWNER shall not be greater than those of the CONTRACTOR under the Contract, and the responsibilities of the OWNER to the Surety shall not be greater than those of the OWNER under the Contract. To a limit of the amount of this Bond, but subject to commitment by the OWNER of the Balance of the Contract Price to mitigation of costs and damages on the Contract, the Surety is obligated without duplication for:

6.1. The responsibilities of the CONTRACTOR for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional and delay costs resulting from the CONTRACTOR's Default, and resulting from the actions or failure to act of the Surety under paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of the CONTRACTOR.

7. The Surety shall not be liable to the OWNER or others for obligations of the CONTRACTOR that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the OWNER or its heirs, executors, administrators, or successors.

8. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after CONTRACTOR Default or within two years after the CONTRACTOR ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to the Surety, the OWNER or the CONTRACTOR shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the Contract was performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1. Balance of the Contract Price: The total amount payable by the OWNER to the CONTRACTOR under the Contract after all proper adjustments have been made, including allowance to the CONTRACTOR of any amounts received or to be received by the OWNER in settlement of insurance or other Claims for damages to which the CONTRACTOR is entitled, reduced by all valid and proper payments made to or on behalf of the CONTRACTOR under the Contract.

12.2. Contract: The agreement between the OWNER and the CONTRACTOR identified on the signature page, including all Contract Documents and changes thereto.

12.3. CONTRACTOR Default: Failure of the CONTRACTOR, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4. OWNER Default: Failure of the OWNER, which has neither been remedied nor waived, to pay the CONTRACTOR as required by the Contract or to perform and complete or comply with the other terms thereof.

Payment Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place
of Business):

OWNER (Name and Address):

CITY OF BRENHAM, TX
200 W. Vulcan, Brenham, TX 77833

CONTRACT

Date:

Amount:

Description (Name and Location): BM130 Jackson Street Substation Underground Feeder Exit Relocation Phase 1

BOND

Date (Not earlier than Contract Date):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Payment Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____

Name and Title:

SURETY

Company: _____ (Corp. Seal)

Signature: _____

Name and Title:

(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____

Name and Title:

SURETY

Company: _____ (Corp. Seal)

Signature: _____

Name and Title:

EJCDC No. 1910-28-B (1996 Edition)

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, the American Institute of Architects, the American Subcontractors Association, and the Associated Specialty Contractors.

1. The CONTRACTOR and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the OWNER to pay for labor, materials and equipment furnished for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to the OWNER, this obligation shall be null and void if the CONTRACTOR:

- 2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and
- 2.2. Defends, indemnifies and holds harmless the OWNER from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Contract, provided the OWNER has promptly notified the CONTRACTOR and the Surety (at the addresses described in paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the CONTRACTOR and the Surety, and provided there is no OWNER Default.

3. With respect to Claimants, this obligation shall be null and void if the CONTRACTOR promptly makes payment, directly or indirectly, for all sums due.

4. The Surety shall have no obligation to Claimants under this Bond until:

4.1. Claimants who are employed by or have a direct contract with the CONTRACTOR have given notice to the Surety (at the addresses described in paragraph 12) and sent a copy, or notice thereof, to the OWNER, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2. Claimants who do not have a direct contract with the CONTRACTOR:

1. Have furnished written notice to the CONTRACTOR and sent a copy, or notice thereof, to the OWNER, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
2. Have either received a rejection in whole or in part from the CONTRACTOR, or not received within 30 days of furnishing the above notice any communication from the CONTRACTOR by which the CONTRACTOR had indicated the claim will be paid directly or indirectly; and
3. Not having been paid within the above 30 days, have sent a written notice to the Surety and sent a copy, or notice thereof, to the OWNER, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the CONTRACTOR.

5. If a notice required by paragraph 4 is given by the OWNER to the CONTRACTOR or to the Surety, that is sufficient compliance.

6. When the Claimant has satisfied the conditions of paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

- 6.1. Send an answer to the Claimant, with a copy to the OWNER, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
- 6.2. Pay or arrange for payment of any undisputed amounts.

7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8. Amounts owed by the OWNER to the CONTRACTOR under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any Performance Bond. By the CONTRACTOR furnishing and the OWNER accepting this Bond, they agree that all funds earned by the CONTRACTOR in the performance of the Contract are dedicated to satisfy obligations of the CONTRACTOR and the Surety under this Bond, subject to the OWNER's priority to use the funds for the completion of the Work.

9. The Surety shall not be liable to the OWNER, Claimants or others for obligations of the CONTRACTOR that are unrelated to the Contract. The OWNER shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by paragraph 4.1 or paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the OWNER or the CONTRACTOR shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, the OWNER or the CONTRACTOR, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is, that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, the CONTRACTOR shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

15.1. Claimant: An individual or entity having a direct contract with the CONTRACTOR or with a Subcontractor of the CONTRACTOR to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of the CONTRACTOR and the CONTRACTOR's Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2. Contract: The agreement between the OWNER and the CONTRACTOR identified on the signature page, including all Contract Documents and changes thereto.

15.3. OWNER Default: Failure of the OWNER, which has neither been remedied nor waived, to pay the CONTRACTOR as required by the Contract or to perform and complete or comply with the other terms thereof.

NOTICE OF AWARD

Dated _____, 2023

TO: _____
(PROPOSER)

ADDRESS _____

OWNER'S PROJECT NO. RFP NO. 23-012

PROJECT BM 130 JACKSON STREET SUBSTATION UNDERGROUND FEEDER EXIT RELOCATION PHASE 1

PROPOSAL NO. _____

CONTRACT FOR BM 130 Jackson Street Substation Underground Feeder Exit Relocation Phase 1
(Insert name of Contract as it appears in Proposal Documents)

You are notified that your Proposal dated _____, 2023 for the above Contract has been considered. You are the apparent successful Proposer and have been awarded a contract for

(Indicate total Work, alternates or sections of Work awarded)

The Contract Price of your contract is _____

You must comply with the following conditions precedent within ten (10) days of the date of this Notice of Award, that is by _____, 2023.

1. You must deliver to the OWNER three (3) fully executed counterparts of the Agreement including all the Contract Documents.
2. You must deliver with the executed Agreement the Contract Security (Bonds) as specified in the Instructions to Proposers (paragraph 17) and General Conditions (paragraph 5.1).

3. (List other conditions precedent).

Failure to comply with these conditions within the time specified will entitle OWNER to consider your Proposal abandoned, to annul this Notice of Award and to declare your Proposal Security forfeited. Within ten days after you comply with those conditions, OWNER will return to you two fully signed counterpart of the Agreement with the Contract Documents attached.

CITY OF BRENHAM _____
(OWNER)

By: _____

(SIGNATURE)

(TITLE)

Copy to ENGINEER
 (Use Certified Mail,
 Return Receipt Requested)

NOTICE TO PROCEED

Dated: _____

TO: _____
(Proposer)

ADDRESS: _____

CONTRACT FOR BM 130 Jackson Street Substation Underground Feeder Exit Relocation Phase 1
(Insert name of Contract as it appears in Proposal Documents)

PROJECT BM 130 Jackson Street Substation Underground Feeder Exit Relocation Phase 1

OWNER's Contract No. RFP 23-012

You are notified that the Contract Times under the above contract will commence to run on _____, 2023. By that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement the date of Substantial Completion is _____.

Before you may start any Work at the Site, the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must
(add other requirements)

CITY OF BRENHAM

(OWNER)

By: _____

(AUTHORIZED SIGNATURE)

(TITLE)

Copy to ENGINEER
(Use Certified Mail,
Return Receipt Requested)

**INDEX TO THE
GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT**

| | <u>Page</u> |
|--|-------------|
| ARTICLE 1 - DEFINITIONS AND TERMINOLOGY | 4 |
| 1.01 <i>Defined Terms</i> | 4 |
| 1.02 <i>Terminology</i> | 6 |
| ARTICLE 2 - PRELIMINARY MATTERS | 7 |
| 2.01 <i>Delivery of Bonds</i> | 7 |
| 2.02 <i>Copies of Documents</i> | 7 |
| 2.03 <i>Commencement of Contract Times; Notice to Proceed</i> | 7 |
| 2.04 <i>Starting the Work</i> | 7 |
| 2.05 <i>Before Starting Construction</i> | 8 |
| 2.06 <i>Preconstruction Conference</i> | 8 |
| 2.07 <i>Initial Acceptance of Schedules</i> | 8 |
| ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE | 8 |
| 3.01 <i>Intent</i> | 8 |
| 3.02 <i>Reference Standards</i> | 9 |
| 3.03 <i>Reporting and Resolving Discrepancies</i> | 9 |
| 3.04 <i>Amending and Supplementing Contract Documents</i> | 9 |
| 3.05 <i>Reuse of Documents</i> | 9 |
| ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS | 10 |
| 4.01 <i>Availability of Lands</i> | 10 |
| 4.02 <i>Subsurface and Physical Conditions</i> | 10 |
| 4.03 <i>Differing Subsurface or Physical Conditions</i> | 10 |
| 4.04 <i>Underground Facilities</i> | 11 |
| 4.05 <i>Reference Points</i> | 12 |
| 4.06 <i>Hazardous Environmental Condition at Site</i> | 12 |
| ARTICLE 5 - BONDS AND INSURANCE | 13 |
| 5.01 <i>Performance, Payment, and Other Bonds</i> | 13 |
| 5.02 <i>Licensed Sureties and Insurers</i> | 14 |
| 5.03 <i>Certificates of Insurance</i> | 14 |
| 5.04 <i>CONTRACTOR's Liability Insurance</i> | 14 |
| 5.05 <i>OWNER's Liability Insurance</i> | 15 |
| 5.06 <i>Property Insurance</i> | 15 |
| 5.07 <i>Waiver of Rights</i> | 15 |
| 5.08 <i>Receipt and Application of Insurance Proceeds</i> | 16 |
| 5.09 <i>Acceptance of Bonds and Insurance; Option to Replace</i> | 16 |
| 5.10 <i>Partial Utilization, Acknowledgment of Property Insurer</i> | 17 |
| ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES | 17 |
| 6.01 <i>Supervision and Superintendence</i> | 17 |
| 6.02 <i>Labor; Working Hours</i> | 17 |
| 6.03 <i>Services, Materials, and Equipment</i> | 17 |
| 6.04 <i>Progress Schedule</i> | 17 |
| 6.05 <i>Substitutes and "Or-Equals"</i> | 18 |

| | | |
|---|--|----|
| 6.06 | <i>Concerning Subcontractors, Suppliers, and Others</i> | 19 |
| 6.07 | <i>Patent Fees and Royalties</i> | 20 |
| 6.08 | <i>Permits</i> | 20 |
| 6.09 | <i>Laws and Regulations</i> | 20 |
| 6.10 | <i>Taxes</i> | 20 |
| 6.11 | <i>Use of Site and Other Areas</i> | 21 |
| 6.12 | <i>Record Documents</i> | 21 |
| 6.13 | <i>Safety and Protection</i> | 21 |
| 6.14 | <i>Safety Representative</i> | 22 |
| 6.15 | <i>Hazard Communication Programs</i> | 22 |
| 6.16 | <i>Emergencies</i> | 22 |
| 6.17 | <i>Shop Drawings and Samples</i> | 22 |
| 6.18 | <i>Continuing the Work</i> | 23 |
| 6.19 | <i>CONTRACTOR's General Warranty and Guarantee</i> | 23 |
| 6.20 | <i>Indemnification</i> | 24 |
| ARTICLE 7 - OTHER WORK | | 24 |
| 7.01 | <i>Related Work at Site</i> | 24 |
| 7.02 | <i>Coordination</i> | 25 |
| ARTICLE 8 - OWNER'S RESPONSIBILITIES | | 25 |
| 8.01 | <i>Communications to Contractor</i> | 25 |
| 8.02 | <i>Replacement of ENGINEER</i> | 25 |
| 8.03 | <i>Furnish Data</i> | 25 |
| 8.04 | <i>Pay Promptly When Due</i> | 25 |
| 8.05 | <i>Lands and Easements; Reports and Tests</i> | 25 |
| 8.06 | <i>Insurance</i> | 25 |
| 8.07 | <i>Change Orders</i> | 25 |
| 8.08 | <i>Inspections, Tests, and Approvals</i> | 25 |
| 8.09 | <i>Limitations on OWNER's Responsibilities</i> | 25 |
| 8.10 | <i>Undisclosed Hazardous Environmental Condition</i> | 25 |
| 8.11 | <i>Evidence of Financial Arrangements</i> | 26 |
| ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION | | 26 |
| 9.01 | <i>OWNER'S Representative</i> | 26 |
| 9.02 | <i>Visits to Site</i> | 26 |
| 9.03 | <i>Project Representative</i> | 26 |
| 9.04 | <i>Clarifications and Interpretations</i> | 26 |
| 9.05 | <i>Authorized Variations in Work</i> | 26 |
| 9.06 | <i>Rejecting Defective Work</i> | 26 |
| 9.07 | <i>Shop Drawings, Change Orders and Payments</i> | 27 |
| 9.08 | <i>Determinations for Unit Price Work</i> | 27 |
| 9.09 | <i>Decisions on Requirements of Contract Documents and Acceptability of Work</i> | 27 |
| 9.10 | <i>Limitations on ENGINEER's Authority and Responsibilities</i> | 27 |
| ARTICLE 10 - CHANGES IN THE WORK; CLAIMS | | 27 |
| 10.01 | <i>Authorized Changes in the Work</i> | 27 |
| 10.02 | <i>Unauthorized Changes in the Work</i> | 28 |
| 10.03 | <i>Execution of Change Orders</i> | 28 |
| 10.04 | <i>Notification to Surety</i> | 28 |
| 10.05 | <i>Claims and Disputes</i> | 28 |

| | |
|---|----|
| ARTICLE 11 - COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK | 29 |
| 11.01 <i>Cost of the Work</i> | 29 |
| 11.02 <i>Cash Allowances</i> | 31 |
| 11.03 <i>Unit Price Work</i> | 31 |
| ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES | 31 |
| 12.01 <i>Change of Contract Price</i> | 31 |
| 12.02 <i>Change of Contract Times</i> | 32 |
| 12.03 <i>Delays Beyond CONTRACTOR's Control</i> | 32 |
| 12.04 <i>Delays Within CONTRACTOR's Control</i> | 32 |
| 12.05 <i>Delays Beyond OWNER's and CONTRACTOR's Control</i> | 32 |
| 12.06 <i>Delay Damages</i> | 32 |
| ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK | 33 |
| 13.01 <i>Notice of Defects</i> | 33 |
| 13.02 <i>Access to Work</i> | 33 |
| 13.03 <i>Tests and Inspections</i> | 33 |
| 13.04 <i>Uncovering Work</i> | 33 |
| 13.05 <i>OWNER May Stop the Work</i> | 34 |
| 13.06 <i>Correction or Removal of Defective Work</i> | 34 |
| 13.07 <i>Correction Period</i> | 34 |
| 13.08 <i>Acceptance of Defective Work</i> | 34 |
| 13.09 <i>OWNER May Correct Defective Work</i> | 35 |
| ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION | 35 |
| 14.01 <i>Schedule of Values</i> | 35 |
| 14.02 <i>Progress Payments</i> | 35 |
| 14.03 <i>CONTRACTOR's Warranty of Title</i> | 37 |
| 14.04 <i>Substantial Completion</i> | 37 |
| 14.05 <i>Partial Utilization</i> | 37 |
| 14.06 <i>Final Inspection</i> | 38 |
| 14.07 <i>Final Payment</i> | 38 |
| 14.08 <i>Final Completion Delayed</i> | 39 |
| 14.09 <i>Waiver of Claims</i> | 39 |
| ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION | 39 |
| 15.01 <i>OWNER May Suspend Work</i> | 39 |
| 15.02 <i>OWNER May Terminate for Cause</i> | 40 |
| 15.03 <i>OWNER May Terminate For Convenience</i> | 40 |
| 15.04 <i>CONTRACTOR May Stop Work or Terminate</i> | 40 |
| ARTICLE 16 - DISPUTE RESOLUTION | 40 |
| 16.01 <i>Methods and Procedures</i> | 40 |
| ARTICLE 17 - MISCELLANEOUS | 40 |
| 17.01 <i>Giving Notice</i> | 40 |
| 17.02 <i>Computation of Times</i> | 40 |
| 17.03 <i>Cumulative Remedies</i> | 41 |
| 17.04 <i>Survival of Obligations</i> | 41 |
| 17.05 <i>Controlling Law</i> | 41 |

GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Contract Documents and printed with initial or all capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Proposals which clarify, correct, or change the Proposal Requirements or the Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between OWNER and CONTRACTOR covering the Work.

3. *Application for Payment*--The form acceptable to ENGINEER which is to be used by CONTRACTOR during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Proposal*--The offer or proposal of a Proposer submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Proposal Documents*--The Proposal Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Proposals).

7. *Proposal Requirements*--The Advertisement or Invitation to Proposal, Instructions to Proposers, Proposal security form, if any, and the Proposal form with any supplements.

8. *Bonds*--Performance and payment bonds and other instruments of security.

9. *Change Order*--A document recommended by ENGINEER which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the

Agreement.

10. *Claim*--A demand or assertion by OWNER or CONTRACTOR seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the OWNER and CONTRACTOR concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*--The Contract Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Proposal (including documentation accompanying the Proposal and any post Proposal documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders, and ENGINEER's written interpretations and clarifications issued on or after the Effective Date of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by OWNER to CONTRACTOR are not Contract Documents.

13. *Contract Price*--The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Substantial Completion; and (ii) complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment.

15. *CONTRACTOR*--The individual or entity with whom OWNER has entered into the Agreement.

16. *Cost of the Work*--See paragraph 11.01.A for

definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by ENGINEER which graphically shows the scope, extent, and character of the Work to be performed by CONTRACTOR. Shop Drawings and other CONTRACTOR submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *ENGINEER*--The individual or entity named as such in the Agreement.

20. *ENGINEER's Consultant*--An individual or entity having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

21. *Field Order*--A written order issued by ENGINEER which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

22. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

23. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

24. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

25. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

27. *Milestone*--A principal event specified in the

Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

28. *Notice of Award*--The written notice by OWNER to the apparent successful Proposer stating that upon timely compliance by the apparent successful Proposer with the conditions precedent listed therein, OWNER will sign and deliver the Agreement.

29. *Notice to Proceed*--A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform the Work under the Contract Documents.

30. *OWNER*--The individual, entity, public body, or authority with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be performed.

31. *Partial Utilization*--Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

32. *PCBs*--Polychlorinated biphenyls.

33. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

34. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part as may be indicated elsewhere in the Contract Documents.

35. *Project Manual*--The bound documentary information prepared for the Proposal and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

36. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

37. *Resident Project Representative*--The authorized representative of ENGINEER who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some

portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

40. *Site*--Lands or areas indicated in the Contract Documents as being furnished by OWNER upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by OWNER which are designated for the use of CONTRACTOR.

41. *Specifications*--That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

42. *Subcontractor*--An individual or entity having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the Site.

43. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

44. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

45. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

46. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or

chemicals, or traffic or other control systems.

47. *Unit Price Work*--Work to be paid for on the basis of unit prices.

48. *Work*--The entire completed construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

49. *Work Change Directive*--A written statement to CONTRACTOR issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

50. *Written Amendment*--A written statement modifying the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

1.02 Terminology

A. Intent of Certain Terms or Adjectives

1. Whenever in the Contract Documents the terms "as allowed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of ENGINEER as to the Work, it is intended that such action or determination will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of

paragraph 9.10 or any other provision of the Contract Documents.

B. *Day*

1. The word “day” shall constitute a calendar day of 24 hours measured from midnight to the next midnight.

C. *Defective*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.04 or 14.05).

D. *Furnish, Install, Perform, Provide*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of CONTRACTOR, “provide” is implied.

E. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 *Delivery of Bonds*

A. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to

OWNER such Bonds as CONTRACTOR may be required to furnish.

2.02 *Copies of Documents*

A. OWNER shall furnish to CONTRACTOR up to ten copies of the Contract Documents. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Proposal opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

A. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *CONTRACTOR’s Review of Contract Documents:* Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity, or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless CONTRACTOR knew or reasonably should have known thereof.

B. *Preliminary Schedules:* Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for its timely review:

1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary schedule of Shop Drawing and

Sample submittals which will list each required submittal and the times for submitting, reviewing, and processing such submittal; and

3. a preliminary schedule of values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

C. *Evidence of Insurance:* Before any Work at the Site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are required to purchase and maintain in accordance with Article 5.

2.06 *Preconstruction Conference*

A. Within 20 days after the Contract Times start to run, but before any Work at the Site is started, a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.05.B, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 *Initial Acceptance of Schedules*

A. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.05.B. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until acceptable schedules are submitted to ENGINEER.

1. The progress schedule will be acceptable to ENGINEER if it provides an orderly progression of the Work to completion within any specified Milestones and the Contract Times. Such acceptance will not impose on ENGINEER responsibility for the progress schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefor.

2. CONTRACTOR's schedule of Shop Drawing and Sample submittals will be acceptable to ENGINEER if it provides a workable arrangement for reviewing and processing the required submittals.

3. CONTRACTOR's schedule of values will be acceptable to ENGINEER as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to OWNER.

C. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in Article 9.

3.02 *Reference Standards*

A. *Standards, Specifications, Codes, Laws, and Regulations*

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Proposals (or on the Effective Date of the Agreement if there were no Proposals), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of OWNER, CONTRACTOR, or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall any such provision or instruction be effective to assign to OWNER, ENGINEER, or any of ENGINEER's Consultants, agents, or employees any duty or authority to supervise or direct the performance of the Work or any

duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, CONTRACTOR shall report it to ENGINEER in writing at once. CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as required by paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.04; provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity, or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways: (i) a Written Amendment; (ii) a Change Order; or (iii) a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways: (i) a Field Order; (ii) ENGINEER's approval of a Shop

Drawing or Sample; or (iii) ENGINEER's written interpretation or clarification.

3.05 *Reuse of Documents*

A. CONTRACTOR and any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work under a direct or indirect contract with OWNER: (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER's Consultant, including electronic media editions; and (ii) shall not reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER. This prohibition will survive final payment, completion, and acceptance of the Work, or termination or completion of the Contract. Nothing herein shall preclude CONTRACTOR from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. OWNER shall furnish the Site. OWNER shall notify CONTRACTOR of any encumbrances or restrictions not of general application but specifically related to use of the Site with which CONTRACTOR must comply in performing the Work. OWNER will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If CONTRACTOR and OWNER are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in OWNER's furnishing the Site, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

B. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary

Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that ENGINEER has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that ENGINEER has used in preparing the Contract Documents.

B. *Limited Reliance by CONTRACTOR on Technical Data Authorized:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER, or any of ENGINEER's Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from

conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *ENGINEER's Review:* After receipt of written notice as required by paragraph 4.03.A, ENGINEER will promptly review the pertinent condition, determine the necessity of OWNER's obtaining additional exploration or tests with respect thereto, and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

C. *Possible Price and Times Adjustments*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in CONTRACTOR's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.08 and 11.03.

2. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a Proposal or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Proposal Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or

c. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.03.A.

3. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in paragraph 10.05. However, OWNER, ENGINEER, and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities, including OWNER, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and CONTRACTOR shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities, including OWNER, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), identify the owner of such Underground Facility and give written

notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility.

2. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, OWNER or CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

4.05 *Reference Points*

A. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the ENGINEER in the preparation of the Contract Documents.

B. *Limited Reliance by CONTRACTOR on Technical Data Authorized:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the

Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. CONTRACTOR shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. CONTRACTOR shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by CONTRACTOR, Subcontractors, Suppliers, or anyone else for whom CONTRACTOR is responsible.

D. If CONTRACTOR encounters a Hazardous Environmental Condition or if CONTRACTOR or anyone for whom CONTRACTOR is responsible creates a Hazardous Environmental Condition, CONTRACTOR shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by paragraph 6.16); and (iii) notify OWNER and ENGINEER (and promptly thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. CONTRACTOR shall not be required to resume Work in connection with such condition or in any affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by CONTRACTOR, either party may make a Claim therefor as

provided in paragraph 10.05.

F. If after receipt of such written notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in paragraph 10.05. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.E shall obligate OWNER to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.F shall obligate CONTRACTOR to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of paragraphs 4.02, 4.03, and 4.04 are not intended to apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Contract Documents.

B. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

C. If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.01.B, CONTRACTOR shall within 20 days thereafter substitute another Bond and surety, both of which shall comply with the requirements of paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the

Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain.

5.04 *CONTRACTOR's Liability Insurance*

A. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance so required by this paragraph 5.04 to be purchased and maintained shall:

1. with respect to insurance required by paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners,

employees, agents, and other consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering CONTRACTOR's indemnity obligations under paragraphs 6.07, 6.11, and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing, or replacing defective Work in accordance with paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).

5.05 *OWNER's Liability Insurance*

A. In addition to the insurance required to be provided by CONTRACTOR under paragraph 5.04, OWNER, at OWNER's option, may purchase and maintain at OWNER's expense OWNER's own liability insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the Site in the amount of the full

replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER;

5. allow for partial utilization of the Work by OWNER;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR, and ENGINEER with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.07.

D. OWNER shall not be responsible for purchasing and maintaining any property insurance specified in this paragraph 5.06 to protect the interests of CONTRACTOR, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by CONTRACTOR, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policies provided under paragraph 5.06, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the Site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

5.07 *Waiver of Rights*

A. OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraph 5.06 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as

insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

B. OWNER waives all rights against CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to OWNER's property or the Work caused by, arising out of, or resulting from fire or other peril whether or not insured by OWNER; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization pursuant to paragraph 14.05, after Substantial Completion pursuant to paragraph 14.04, or after final payment pursuant to paragraph 14.07.

C. Any insurance policy maintained by OWNER covering any loss, damage or consequential loss referred to in paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against CONTRACTOR, Subcontractors, ENGINEER, or ENGINEER's Consultants and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by paragraph 5.06 will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.08.B. OWNER shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

B. OWNER as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the

occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, OWNER as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, OWNER as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either OWNER or CONTRACTOR has any objection to the coverage afforded by or other provisions of the Bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by paragraph 2.05.C. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. CONTRACTOR shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be

necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of OWNER or ENGINEER in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

B. At all times during the progress of the Work, CONTRACTOR shall assign a competent resident superintendent thereto who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the Site and shall have authority to act on behalf of CONTRACTOR. All communications given to or received from the superintendent shall be binding on CONTRACTOR.

6.02 *Labor; Working Hours*

A. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out, and construct the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday, or any legal holiday without OWNER's written consent (which will not be unreasonably withheld) given after prior written notice to ENGINEER.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the General Requirements, CONTRACTOR shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required

tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.07 as it may be adjusted from time to time as provided below.

1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.07) proposed adjustments in the progress schedule that will not result in changing the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of Article 12. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to ENGINEER for review under the circumstances described below.

1. *"Or-Equal" Items:* If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment ENGINEER determines that: (i) it is at least equal in quality, durability, appearance, strength, and design characteristics; (ii) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole, and;

b. CONTRACTOR certifies that: (i) there is no increase in cost to the OWNER; and (ii) it will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items*

a. If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR.

c. The procedure for review by ENGINEER will be as set forth in paragraph 6.05.A.2.d, as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances.

d. CONTRACTOR shall first make written application to ENGINEER for review of a proposed substitute item of material or equipment that CONTRACTOR seeks to furnish or use. The application shall certify that the proposed substitute item will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified, and be suited to the same use as that specified. The application will state the extent, if any, to which the use of the proposed substitute item will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute item and whether or not incorporation or use of the proposed substitute item in connection with the Work is subject

to payment of any license fee or royalty. All variations of the proposed substitute item from that specified will be identified in the application, and available engineering, sales, maintenance, repair, and replacement services will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute item. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute item.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.05.A.2.

C. *Engineer's Evaluation:* ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.05.A and 6.05.B. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized until ENGINEER's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." ENGINEER will advise CONTRACTOR in writing of any negative determination.

D. *Special Guarantee:* OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.

E. *ENGINEER's Cost Reimbursement:* ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitute proposed or submitted by CONTRACTOR pursuant to paragraphs 6.05.A.2 and 6.05.B and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER approves a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed substitute.

F. *CONTRACTOR's Expense:* CONTRACTOR shall provide all data in support of any proposed substitute or "or-equal" at CONTRACTOR's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. CONTRACTOR shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to OWNER as indicated in paragraph 6.06.B), whether initially or as a replacement, against whom OWNER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to OWNER in advance for acceptance by OWNER by a specified date prior to the Effective Date of the Agreement, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Proposal Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. CONTRACTOR shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

C. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other individual or entity, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract

with CONTRACTOR.

E. CONTRACTOR shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with ENGINEER through CONTRACTOR.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.06, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

6.07 *Patent Fees and Royalties*

A. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees or agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but

not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Proposals, or, if there are no Proposals, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto, such as plant investment fees.

6.09 *Laws and Regulations*

A. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

B. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Proposals (or, on the Effective Date of the Agreement if there were no Proposals) having an effect on the cost or time of performance of the Work may be the subject of an adjustment in Contract Price or Contract Times. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in paragraph 10.05.

6.10 *Taxes*

A. CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultant, and the officers, directors, partners, employees, agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER, or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work CONTRACTOR shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work CONTRACTOR shall clean the Site and make it ready for utilization by OWNER. At the completion of the Work CONTRACTOR shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

A. CONTRACTOR shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to ENGINEER for OWNER.

6.13 *Safety and Protection*

A. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. All damage, injury, or loss to any property referred to in paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any

of the Work, or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER's Consultant, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. CONTRACTOR shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CONTRACTOR is obligated to act to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to

show ENGINEER the services, materials, and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.17.E.

B. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.17.E. The numbers of each Sample to be submitted will be as specified in the Specifications.

C. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER as required by paragraph 2.07, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

D. *Submittal Procedures*

1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incident thereto; and

d. CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR's review and approval of that submittal.

3. At the time of each submittal, CONTRACTOR shall give ENGINEER specific written notice of such

variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

E. ENGINEER's Review

1. ENGINEER will timely review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER. ENGINEER's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. ENGINEER's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of each submittal as required by paragraph 6.17.D.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.17.D.1.

F. Resubmittal Procedures

1. CONTRACTOR shall make corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.18 Continuing the Work

A. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.04 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.19 CONTRACTOR's General Warranty and Guarantee

A. CONTRACTOR warrants and guarantees to OWNER, ENGINEER, and ENGINEER's Consultants that all Work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, Suppliers, or any other individual or entity for whom CONTRACTOR is responsible; or
2. normal wear and tear under normal usage.

B. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:

1. observations by ENGINEER;
2. recommendation by ENGINEER or payment by OWNER of any progress or final payment;
3. the issuance of a certificate of Substantial Completion by ENGINEER or any payment related thereto by OWNER;
4. use or occupancy of the Work or any part thereof by OWNER;
5. any acceptance by OWNER or any failure to do so;
6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER;
7. any inspection, test, or approval by others; or
8. any correction of defective Work by OWNER.

6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants,

and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage:

1. is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom; and

2. is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such individual or entity.

B. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of CONTRACTOR under paragraph 6.20.A shall not extend to the liability of ENGINEER and ENGINEER's Consultants or to the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

ARTICLE 7 - OTHER WORK

7.01 *Related Work at Site*

A. OWNER may perform other work related to the Project at the Site by OWNER's employees, or let other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to CONTRACTOR prior to starting any such other work; and

2. if OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in paragraph 10.05.

B. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the other work with OWNER's employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

C. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure to so report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If OWNER intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority

and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility for such coordination.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.02 *Replacement of ENGINEER*

A. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer to whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER.

8.03 *Furnish Data*

A. OWNER shall promptly furnish the data required of OWNER under the Contract Documents.

8.04 *Pay Promptly When Due*

A. OWNER shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.01 and 4.05. Paragraph 4.02 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by ENGINEER in preparing the Contract Documents.

8.06 *Insurance*

A. OWNER's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are

set forth in Article 5.

8.07 *Change Orders*

A. OWNER is obligated to execute Change Orders as indicated in paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. OWNER's responsibility in respect to certain inspections, tests, and approvals is set forth in paragraph 13.03.B.

8.09 *Limitations on OWNER's Responsibilities*

A. The OWNER shall not supervise, direct, or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. OWNER's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract Documents, OWNER's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *OWNER'S Representative*

A. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and will not be changed without written consent of OWNER and ENGINEER.

9.02 *Visits to Site*

A. ENGINEER will make visits to the Site at intervals appropriate to the various stages of construction as

ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER, for the benefit of OWNER, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work.

B. ENGINEER's visits and observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.10, and particularly, but without limitation, during or as a result of ENGINEER's visits or observations of CONTRACTOR's Work ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more extensive observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.10 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the Site who is not ENGINEER's Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Clarifications and Interpretations*

A. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, that should be allowed as a

result of a written clarification or interpretation, a Claim may be made therefor as provided in paragraph 10.05.

9.05 *Authorized Variations in Work*

A. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR, who shall perform the Work involved promptly. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of a Field Order, a Claim may be made therefor as provided in paragraph 10.05.

9.06 *Rejecting Defective Work*

A. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, or that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.07 *Shop Drawings, Change Orders and Payments*

A. In connection with ENGINEER's authority as to Shop Drawings and Samples, see paragraph 6.17.

B. In connection with ENGINEER's authority as to Change Orders, see Articles 10, 11, and 12.

C. In connection with ENGINEER's authority as to Applications for Payment, see Article 14.

9.08 *Determinations for Unit Price Work*

A. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding (except as modified by ENGINEER to reflect changed factual conditions or more accurate data) upon OWNER and CONTRACTOR, subject to the provisions of paragraph 10.05.

9.09 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work, the quantities and classifications of Unit Price Work, the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, and Claims seeking changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing, in accordance with the provisions of paragraph 10.05, with a request for a formal decision.

B. When functioning as interpreter and judge under this paragraph 9.09, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to this paragraph 9.09 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.07) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such Claim, dispute, or other matter.

9.10 *Limitations on ENGINEER's Authority and Responsibilities*

A. Neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by ENGINEER shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

C. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other individual or entity performing any

of the Work.

D. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this paragraph 9.10 shall also apply to ENGINEER's Consultants, Resident Project Representative, and assistants.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If OWNER and CONTRACTOR are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in paragraph 3.04, except in the case of an emergency as provided in paragraph 6.16 or in the case of uncovering Work as provided in paragraph 13.04.B.

10.03 *Execution of Change Orders*

A. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:

1. changes in the Work which are: (i) ordered by

OWNER pursuant to paragraph 10.01.A, (ii) required because of acceptance of defective Work under paragraph 13.08.A or OWNER's correction of defective Work under paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.18.A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility. The amount of each applicable Bond will be adjusted to reflect the effect of any such change.

10.05 *Claims and Disputes*

A. *Notice:* Written notice stating the general nature of each Claim, dispute, or other matter shall be delivered by the claimant to ENGINEER and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. Notice of the amount or extent of the Claim, dispute, or other matter with supporting data shall be delivered to the ENGINEER and the other party to the Contract within 60 days after the start of such event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of such Claim, dispute, or other matter). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to ENGINEER and the claimant within 30 days after receipt of the claimant's last submittal (unless ENGINEER allows additional time).

B. *ENGINEER's Decision:* ENGINEER will render a formal decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. ENGINEER's written decision on such Claim, dispute, or other matter will be final and binding upon OWNER and CONTRACTOR unless:

1. an appeal from ENGINEER's decision is taken within the time limits and in accordance with the dispute resolution procedures set forth in Article 16; or

2. if no such dispute resolution procedures have been set forth in Article 16, a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within 30 days after the date of such decision, and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction within 60 days after the date of such decision or within 60 days after Substantial Completion, whichever is later (unless otherwise agreed in writing by OWNER and CONTRACTOR), to exercise such rights or remedies as the appealing party may have with respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

C. If ENGINEER does not render a formal decision in writing within the time stated in paragraph 10.05.B, a decision denying the Claim in its entirety shall be deemed to have been issued 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.

D. No Claim for an adjustment in Contract Price or Contract Times (or Milestones) will be valid if not submitted in accordance with this paragraph 10.05.

ARTICLE 11 - COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to CONTRACTOR will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by OWNER.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

3. Payments made by CONTRACTOR to Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive Proposals from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such Proposals to OWNER, who will then determine, with the advice of ENGINEER, which Proposals, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in this paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of CONTRACTOR.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressage, and similar petty cash items in connection with the Work.

i. When the Cost of the Work is used to determine the value of a Change Order or of a Claim, the cost of premiums for additional Bonds and insurance required because of the changes in the Work or caused by the event giving rise to the Claim.

j. When all the Work is performed on the basis of cost-plus, the costs of premiums for all Bonds and insurance CONTRACTOR is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnerships and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by CONTRACTOR, whether at the Site or in CONTRACTOR's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.01.A.1 or specifically covered by paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the CONTRACTOR's fee.

2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the Site.

3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

4. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraphs 11.01.A and 11.01.B.

C. *CONTRACTOR's Fee:* When all the Work is performed on the basis of cost-plus, CONTRACTOR's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, CONTRACTOR's fee shall be

determined as set forth in paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to paragraphs 11.01.A and 11.01.B, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

11.02 *Cash Allowances*

A. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:

1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. CONTRACTOR's costs for unloading and handling on the Site, labor, installation costs, overhead, profit, and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

B. Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Proposals and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER subject to the provisions of paragraph 9.08.

B. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

C. OWNER or CONTRACTOR may make a Claim for an adjustment in the Contract Price in accordance with paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in paragraph 11.01) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 12.01.C).

C. *CONTRACTOR's Fee*: The CONTRACTOR's fee

for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under paragraphs 11.01.A.1 and 11.01.A.2, the CONTRACTOR's fee shall be 15 percent;

b. for costs incurred under paragraph 11.01.A.3, the CONTRACTOR's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times (or Milestones) may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Times (or Milestones) shall be based on written notice submitted by the party making the claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. Any adjustment of the Contract Times (or Milestones)

covered by a Change Order or of any Claim for an adjustment in the Contract Times (or Milestones) will be determined in accordance with the provisions of this Article 12.

12.03 *Delays Beyond CONTRACTOR's Control*

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in paragraph 12.02.A. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

12.04 *Delays Within CONTRACTOR's Control*

A. The Contract Times (or Milestones) will not be extended due to delays within the control of CONTRACTOR. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.05 *Delays Beyond OWNER's and CONTRACTOR's Control*

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay.

12.06 *Delay Damages*

A. In no event shall OWNER or ENGINEER be liable to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:

1. delays caused by or within the control of CONTRACTOR; or
2. delays beyond the control of both OWNER and CONTRACTOR including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

B. Nothing in this paragraph 12.06 bars a change in Contract Price pursuant to this Article 12 to compensate

CONTRACTOR due to delay, interference, or disruption directly attributable to actions or inactions of OWNER or anyone for whom OWNER is responsible.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which OWNER or ENGINEER has actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. OWNER, ENGINEER, ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

A. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by paragraphs 13.03.C and 13.03.D below;
2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.04.B shall be paid as provided in said paragraph 13.04.B; and
3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection or approval.

D. CONTRACTOR shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to OWNER and ENGINEER.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.

F. Uncovering Work as provided in paragraph 13.03.E shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

B. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

13.05 *OWNER May Stop the Work*

A. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. CONTRACTOR shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by ENGINEER, remove it from the Project and replace it with Work that is not defective. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for CONTRACTOR's use by OWNER or permitted by Laws and Regulations as contemplated in paragraph 6.11.A is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) repair such defective land or areas, or (ii) correct such defective Work or, if the defective Work has been rejected by OWNER, remove it from the Project and replace it with Work that is not defective, and (iii) satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or repaired or may have the rejected Work removed and replaced, and all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by

CONTRACTOR.

B. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

C. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

D. CONTRACTOR's obligations under this paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER's recommendation of final payment, ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to OWNER's evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by CONTRACTOR pursuant to this sentence. If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and OWNER shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

13.09 *OWNER May Correct Defective Work*

A. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.06.A, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER

may, after seven days written notice to CONTRACTOR, correct and remedy any such deficiency.

B. In exercising the rights and remedies under this paragraph, OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the Site, take possession of all or part of the Work and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other contractors, and ENGINEER and ENGINEER's Consultants access to the Site to enable OWNER to exercise the rights and remedies under this paragraph.

C. All Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by OWNER in exercising the rights and remedies under this paragraph 13.09 will be charged against CONTRACTOR, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, OWNER may make a Claim therefor as provided in paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of CONTRACTOR's defective Work.

D. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies under this paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The schedule of values established as provided in paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments*

1. At least 20 days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect OWNER's interest therein, all of which must be satisfactory to OWNER.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the Work have been applied on account to discharge CONTRACTOR's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to pro-gress payments will be as stipulated in the Agreement.

B. *Review of Applications*

1. ENGINEER will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

2. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's observations on the Site of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.08, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.

3. By recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents; or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

4. Neither ENGINEER's review of CONTRACTOR's Work for the purposes of recommending payments nor ENGINEER's recommendation of any payment, including final payment, will impose responsibility on ENGINEER to supervise, direct, or control the Work or for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for CONTRACTOR's failure to comply with Laws and Regulations applicable to CONTRACTOR's performance of the Work. Additionally, said review or recommendation will not impose responsibility on ENGINEER to make any examination to ascertain how or for what purposes CONTRACTOR has used the moneys paid on account of the Contract Price, or to determine that title to any of the Work, materials, or equipment has passed to OWNER free and clear of any Liens.

5. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.02.B.2. ENGINEER may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss

because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Written Amendment or Change Orders;
- c. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.09; or
- d. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraph 15.02.A.

C. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of paragraph 14.02.D) become due, and when due will be paid by OWNER to CONTRACTOR.

D. *Reduction in Payment*

1. OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

- a. claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work;
- b. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens;
- c. there are other items entitling OWNER to a set-off against the amount recommended; or
- d. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.02.B.5.a through 14.02.B.5.c or paragraph 15.02.A.

2. If OWNER refuses to make payment of the full amount recommended by ENGINEER, OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR any amount remaining after deduction of the amount so withheld. OWNER shall promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to

OWNER's satisfaction the reasons for such action.

3. If it is subsequently determined that OWNER's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by paragraph 14.02.C.1.

14.03 *CONTRACTOR's Warranty of Title*

A. CONTRACTOR warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

A. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Promptly thereafter, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within 14 days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said 14 days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform

ENGINEER in writing prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

B. OWNER shall have the right to exclude CONTRACTOR from the Site after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Use by OWNER at OWNER's option of any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER, and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following conditions.

1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

2. No occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will promptly make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment*

1. After CONTRACTOR has, in the opinion of ENGINEER, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in paragraph 6.12), and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.04.B.7; (ii) consent of the surety, if any, to final payment; and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in paragraph 14.07.A.2 and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

B. *Review of Application and Acceptance*

1. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for

Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application for Payment to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.09. Otherwise, ENGINEER will return the Application for Payment to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due*

1. Thirty days after the presentation to OWNER of the Application for Payment and accompanying documentation, the amount recommended by ENGINEER will become due and, when due, will be paid by OWNER to CONTRACTOR.

14.08 *Final Completion Delayed*

A. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by OWNER against CONTRACTOR, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from

CONTRACTOR's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by CONTRACTOR against OWNER other than those previously made in writing which are still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *OWNER May Suspend Work*

A. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes a Claim therefor as provided in paragraph 10.05.

15.02 *OWNER May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. CONTRACTOR's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.07 as adjusted from time to time pursuant to paragraph 6.04);

2. CONTRACTOR's disregard of Laws or Regulations of any public body having jurisdiction;

3. CONTRACTOR's disregard of the authority of ENGINEER; or

4. CONTRACTOR's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in paragraph 15.02.A occur, OWNER may, after giving CONTRACTOR (and the surety, if any) seven days written notice, terminate the services of CONTRACTOR, exclude CONTRACTOR from the Site, and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the Site or for

which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case, CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by OWNER arising out of or relating to completing the Work, such excess will be paid to CONTRACTOR. If such claims, costs, losses, and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses, and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and, when so approved by ENGINEER, incorporated in a Change Order. When exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

C. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.03 *OWNER May Terminate For Convenience*

A. Upon seven days written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Contract. In such case, CONTRACTOR shall be paid (without duplication of any items):

1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. for all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. for reasonable expenses directly attributable to termination.

B. CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *CONTRACTOR May Stop Work or Terminate*

A. If, through no act or fault of CONTRACTOR, the Work is suspended for more than 90 consecutive days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within 30 days after it is submitted, or OWNER fails for 30 days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Contract and recover from OWNER payment on the same terms as provided in paragraph 15.03. In lieu of terminating the Contract and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within 30 days after it is submitted, or OWNER has failed for 30 days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may, seven days after written notice to OWNER and ENGINEER, stop the Work until payment is made of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.04 are not intended to preclude CONTRACTOR from making a Claim under paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping the Work as permitted by this paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Dispute resolution methods and procedures, if any, shall be as set forth in the Supplementary Conditions. If no method and procedure has been set forth, and subject to the provisions of paragraphs 9.09 and 10.05, OWNER and CONTRACTOR may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

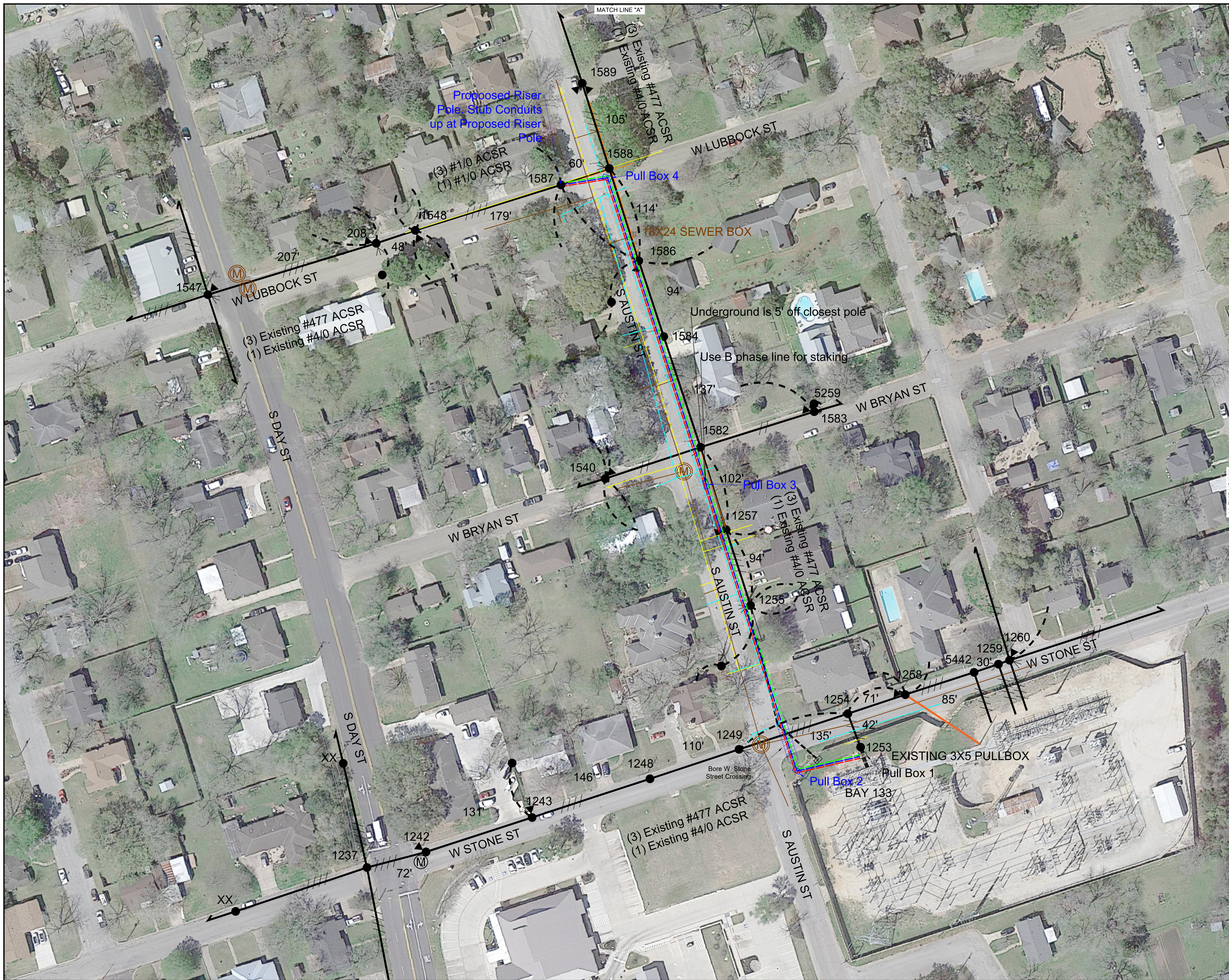
A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

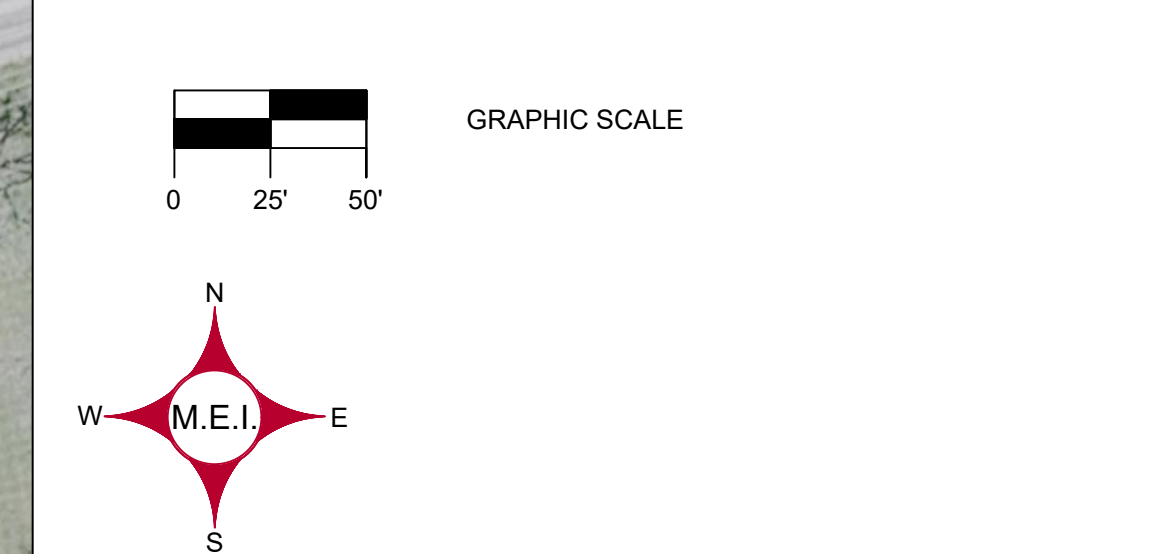
A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Agreement.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.



- CUSTOMER CONSTRUCTION NOTES:**
- 1) Before construction starts, Contractor shall meet with the Electrical Division Representative.
 - 2) All empty conduits are to be stubbed and plugged. When stubbed at the following locations, the conduits shall be the given distance above grade:
 - a. Poles: First Conduit at 6" and Second Conduit at 1"
 - b. Pull-Boxes: Flush with interior wall.
 - c. Transformers, Junction Boxes, and Switchgears: 1"
 - 3) Contractor to contact City for conduit location on riser pole.
 - 4) Service conduit stub-outs required to be installed from all transformers and pedestals as shown on detail. Temporary service stubs also required to be installed from all transformers and pedestals as shown on detail.
 - 5) A minimum separation of 2' horizontal and 2' vertical shall be maintained between all proposed electric facilities and all other proposed or existing utility facilities except water and communication facilities. A minimum separation of 5' horizontal and 2' vertical shall be maintained for water, and a minimum separation of 1' horizontal and 1' vertical shall be maintained for communications. 1-800-DIG-TEST - Contractor to call for the locating of existing underground utility facilities.
 - 6) All conduits are to include 2500lbs Mule Tape for primary and secondary runs, stub-out conduits included.
 - 7) Clearance requirements for all COG pad-mounted equipment and pull-boxes are as follows:
 - a. Ten feet at the doors, and five feet on all other sides.
 (Note: Pad-mounted equipment is classified as, but not limited to, transformers junction boxes, and switchgears)
 - 8) All new conduits are required to pass a mandrel test with a Brenham Electric Project Coordinator present during testing.
 - 9) Contractor is required to field verify the location and depth of any underground utilities with the use of Hydro Pole-Hole to verify appropriate clearance from other utilities before trenching or boring.
- NOTE: ANY UNDERGROUND TRENCHING IS TO BE A MINIMUM OF 5' FROM EXISTING POWER POLES.**



THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF BIDDING UNDER THE AUTHORITY OF: REX N. WOODS, P.E. 87089 October 26, 2023 IT IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.

ISSUED FOR BIDDING

City of
BRENHAM

CONSTRUCTION DRAWING
**JACKSON STREET CIRCUIT (BM130)
CIRCUIT UNDERGROUND UPGRADE PO# 61C-215C**

MCCORD ENGINEERING, INC.
Texas Registered Engineering Firm F-2664
916 Southwest Parkway East
College Station, TX 77840
(979) 764-8356

| | | | |
|-----------------|--------------------|-----------|------------------|
| SCALE: 1" = 50' | DATE: 8/6/2023 | DWG NO: | SHEET NO: 1 OF 1 |
| DRAWN BY: AJDM | JOB CODE: BR-2-J-2 | MEI-16870 | REV: |

PO : 61C-215C
New Construction :
System Improvement :
Replacement :
Retirement No-Replacement :
No. of Services :
Map Reference :

STAKING SHEET

System Designation: BM 130 JACKSON STREET CIRCUIT UPGRADE
Location: SOUTH AUSTIN ST NEAR SUBSTATION
Line Section Number:
Ruling Span:
Guy Wire:

Date : 27 Oct 2023
MEI Job Number : BR-2-J.2
Staking Sheet # : STA-3268
Work Plan Number :
Line :
Engineer : McCORD ENGINEERING, INC.
Staked by : A. MILLER
Checked by :
Approved for construction :
Released for construction : FIRM # F-2664

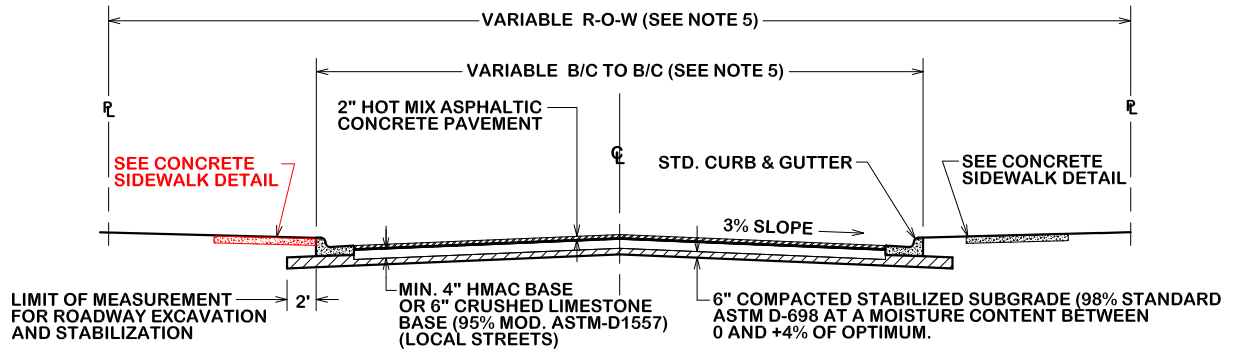


R Primary: 3Ø Wire: 3 Size: #477 ACSR Neutral: #4/0 ACSR
N Primary: 3Ø Wire: 3 Size: MCM1000AL Neutral: 1000 KCMIL AL
N Primary: 3Ø Wire: 3 Size: #477 ACSR Neutral: #4/0 ACSR

| Pole No. | Const. Code | Wire | | | Poles | | YR | Primary Unit Misc | | Primary Unit Misc | | Line Angle Deg | Trans. G | Ground Unit Code | Guy | | | Anchor | | Secondary | | | Service | | | | Misc. & Remarks | | | | | | | | |
|----------|-------------|----------|------------|--------------|-----------|-------------|----|-------------------|-------------|-------------------|------|----------------|----------|------------------|-----|------|-----|--------|------|-----------|--------|-----------------|---------|------|------|----------|-----------------|-----------------|------|------|-----|----------|--|--|--|
| | | Conduct. | Code | Neutral Code | Back Span | H & C MISC. | | Qty | Code | Qty | Code | | | | Qty | Code | No. | Unit E | Lead | No. | Unit F | Wire or Conduit | | | Unit | | | Wire or Conduit | | Unit | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | No. | Code | Span | No. | J,K,etc. | | No. | Code | Span | No. | J,K,etc. | | | |
| P Box 1 | E E N | 3 | 4" CONDUIT | | 33 | | | 1 UM-PB | 6 UPVC 4 90 | | | | | UMGND | | | | | | | | | | | | | | | | | | | | | |
| P Box 2 | N N N | 3 | 4" CONDUIT | | 78 | | | 1 UM-PB | 6 UPVC 4 90 | | | | | UMGND | | | | | | | | | | | | | | | | | | | | 1) 264' of 4" PVC Conduit (UPVC 4) 2) Pull Box Non Traffic Rated | |
| P Box 3 | N N N | 3 | 4" CONDUIT | | 376 | | | 1 UMT-PB | 6 UPVC 4 90 | | | | | UMGND | | | | | | | | | | | | | | | | | | | | 1) 1,039' of 4" PVC Conduit (UPVC 4) 2) Pull Box HeavyTraffic Rated | |
| P Box 4 | N N N | 3 | 4" CONDUIT | | 380 | | | 1 UMT-PB | 6 UPVC 4 90 | | | | | UMGND | | | | | | | | | | | | | | | | | | | | 1) 1,158' of 4" PVC Conduit (UPVC 4) 2) Pull Box HeavyTraffic Rated | |
| 1587 | N | 3 | 4" CONDUIT | | 58 | | | 3 UPVC 4 | 3 UPVC 4 90 | | | | | | | | | | | | | | | | | | | | | | | | | 1) 204' of 4" PVC Conduit (UPVC 4) | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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NOTES:

1. ALL SUBGRADES SHALL BE STABILIZED.
2. FOR SUBGRADES WITH PI > 15 AND % PASSING THE #200 SIEVE \geq 35%, USE LIME STABILIZATION.
3. FOR SUBGRADES WITH PI < 7 AND % PASSING THE #200 SIEVE < 35%, USE PORTLAND CEMENT STABILIZATION.
4. SIDEWALK PLACEMENT VARIES WITH EACH LOCATION AND WILL BE DETERMINED BY THE ENGINEER.
5. REFER TO B/C'S UNIFIED DESIGN GUIDELINE MANUAL FOR ACCEPTED RIGHT OF WAY AND PAVEMENT WIDTH.
6. COLLECTOR STREETS WILL BE REQUIRED TO USE 5" HMAC BASE OR 8" CRUSHED LIMESTONE BASE AND STABILIZED SUBGRADE IN ACCORDANCE WITH THE B/C'S UNIFIED DESIGN GUIDELINE MANUAL OR AS DIRECTED BY CITY ENGINEER.



ASPHALTIC CONCRETE PAVEMENT

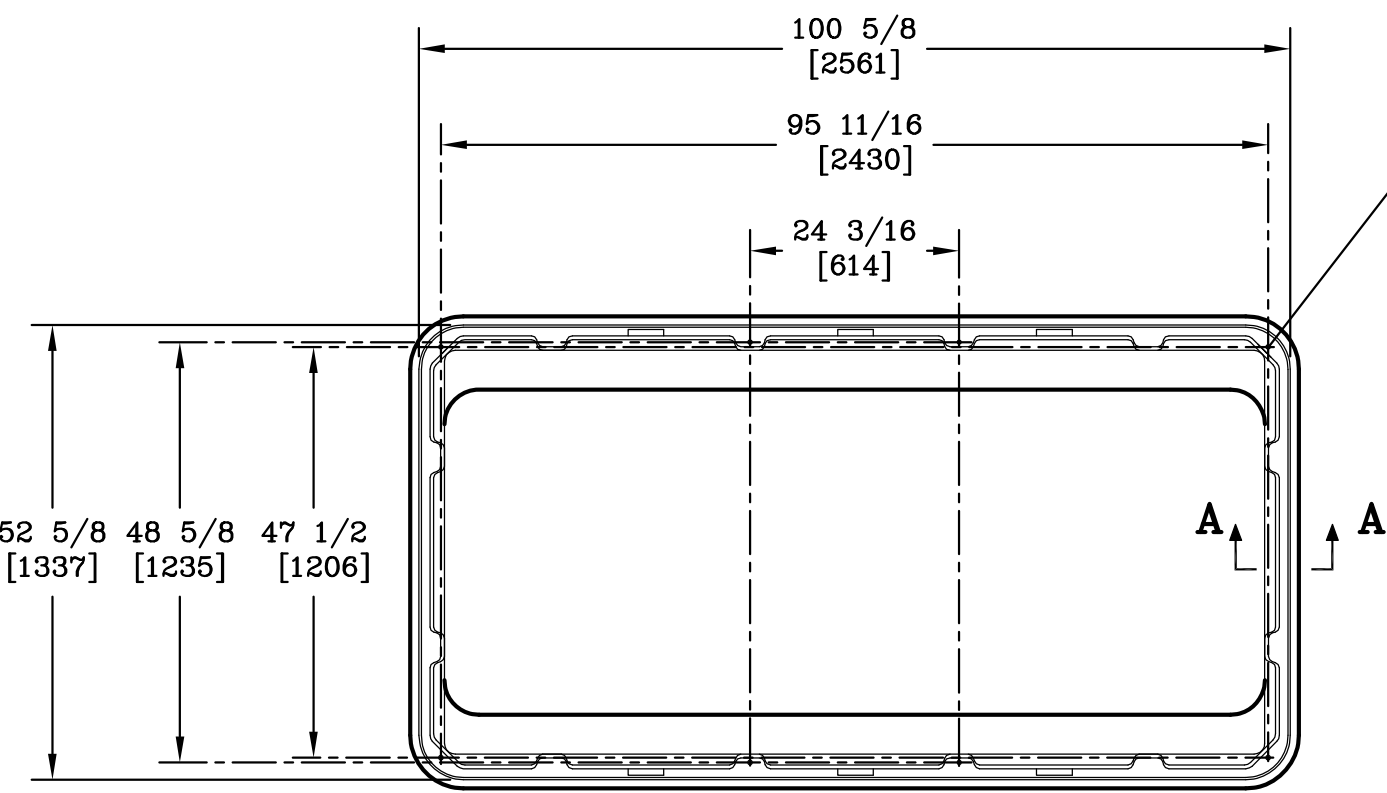
TYPICAL STREET SECTION

DATE

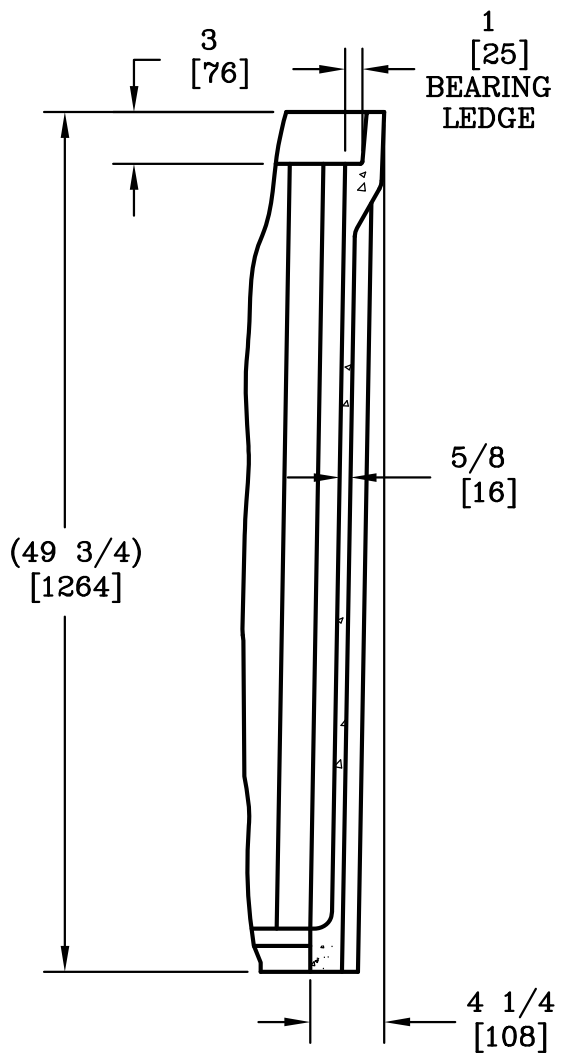
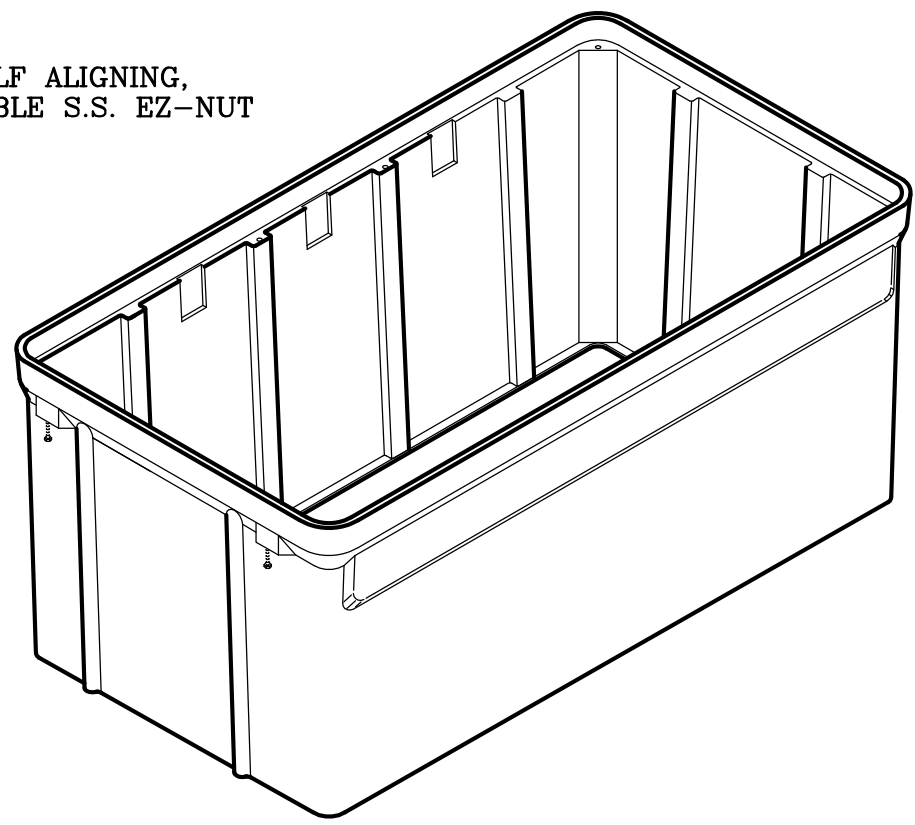
FEB. 2021

DETAIL NO.

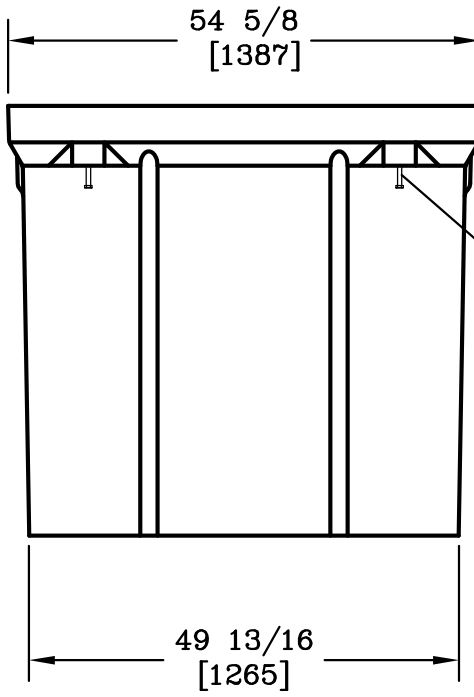
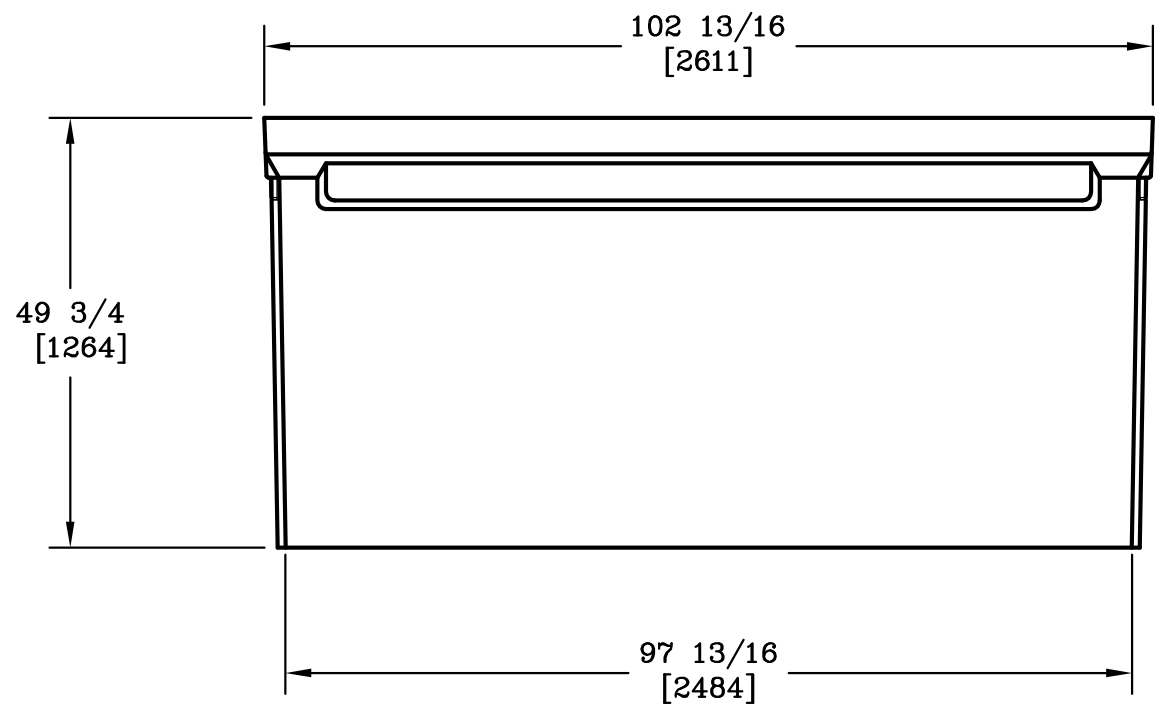
STANDARD DETAIL



1/2-6 SELF ALIGNING,
REPLACEABLE S.S. EZ-NUT
8 PLACES




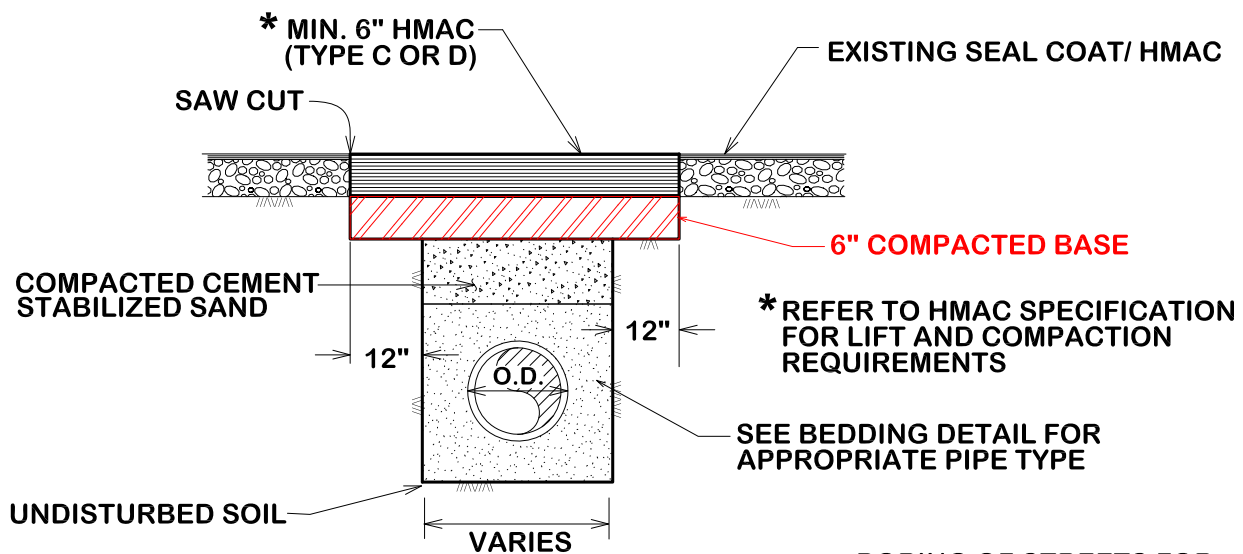
SECTION A-A
SCALE: 1"=1'



1/2-13 UNC
LIFTING BOLT
4 PLACES

NOTE:
1. DIMENSIONS IN BRACKETS ARE IN MILLIMETERS
UNLESS NOTED OTHERWISE.

| | | | | | | |
|---|----|------|----------------|---|---|------|
| DIMENSIONS ARE IN INCHES OR MILLIMETERS IN BRACKETS UNLESS OTHERWISE NOTED. | | | | | | |
| DRN | BY | DATE | WEIGHT |  | 3621 INDUSTRIAL PARK DR LENOIR CITY, TN 37771 800-346-3062 www.quazite.com | LOC |
| CHK | | | 1384# 628kg | | | S |
| ENG | | | SCALE | QUAZITE® BOX | | REV |
| APR | | | 1/2"=1' | | | E |
| APR | | | SIZE | | | 3/12 |
| PROJECT NUMBER | | | DRAWING NUMBER | | | |
| 98296 | | | PG4896BA48 | | SHEET 1 OF 1 | |



BORING OF STREETS FOR UTILITY PIPE IS THE CITY STANDARD. OPEN CUTTING OF STREETS SHALL BE BY APPROVAL OF THE CITY ENGINEER ONLY.

OPEN CUT SEAL COAT/ OVERLAY STREET

DATE

FEB. 2021

DETAIL NO.

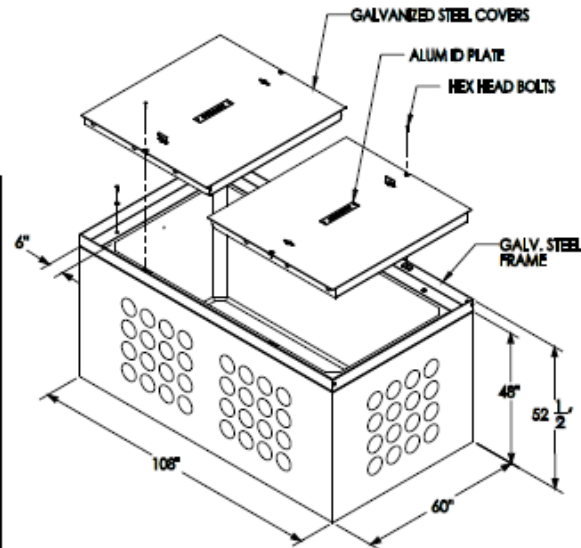
STANDARD DETAIL

60 X 108 Heavy Traffic Pull Boxes



| 4" OR 6" CON-DUCT TERMINATORS ON ALL 4 SIDES - HEAVY TRAFFIC RATED | | |
|--|---|---|
| 9 Con-Ducts | 16 Con-Ducts | Included Cover(s) |
| PB9-60-108-48-RSG PB96-60-108-48-RSG | PB16-60-108-48-RSG PB166-60-108-48-RSG | 2 Galvanized Steel Covers 60-54-RSG |
| PB9-60-108-48-MH PB96-60-108-48-MH | PB16-60-108-48-MH PB166-60-108-48-MH | Concrete Cap 60-108-MH w/Cast Iron Frame & Cover CI-38-32 |
| PB9-60-108-48-SA PB96-60-108-48-SA | PB16-60-108-48-SA PB166-60-108-48-SA | Concrete Cap w/Galv Steel Spring Assisted Cover 60-108-SA |
| PB9-60-108-48-SPA PB96-60-108-48-SPA | PB16-60-108-48-SPA PB166-60-108-48-SPA | Galv. Steel Spring Assisted Cover 60-108-SPA |
| PB9-60-108-72-RSG PB96-60-108-72-RSG | PB16-60-108-72-RSG PB166-60-108-72-RSG | 2 Galvanized Steel Covers 60-54-RSG |
| PB9-60-108-72-MH PB96-60-108-72-MH | PB16-60-108-72-MH PB166-60-108-72-MH | Concrete Cap 60-108-MH w/Cast Iron Frame & Cover CI-38-32 |
| PB9-60-108-72-SA PB96-60-108-72-SA | PB16-60-108-72-SA PB166-60-108-72-SA | Concrete Cap w/Galv Steel Spring Assisted Cover 60-108-SA |
| PB9-60-108-72-SPA PB96-60-108-72-SPA | PB16-60-108-72-SPA PB166-60-108-72-SPA | Galv. Steel Spring Assisted Cover 60-108-SPA |

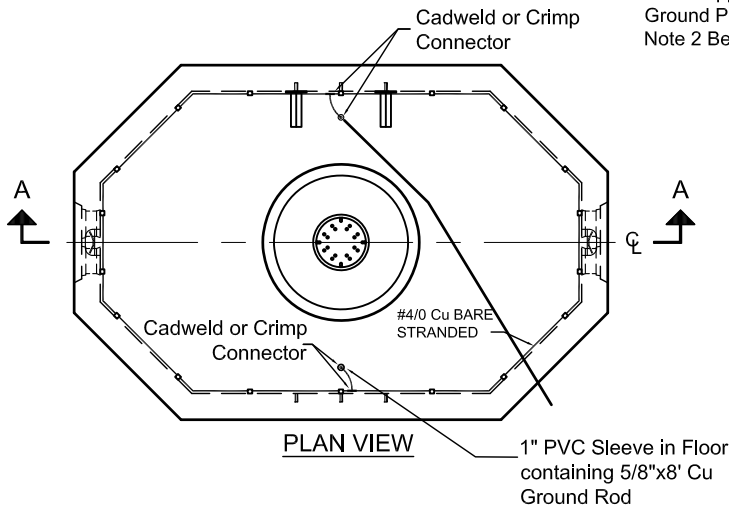
| KNOCKOUTS ON ALL 4 SIDES PEDESTRIAN OR LIGHT TRAFFIC RATED | |
|---|---|
| 42" X 24" KO's | Included Cover(s) |
| PBK01-60-108-48-RSG | 2 Galvanized Steel Covers 60-54-RSG |
| PBK01-60-108-48-MH | Concrete Cap 60-108-MH w/Cast Iron Frame & Cover CI-38-32 |
| PBK01-60-108-48-SA | Concrete Cap w/Galv Steel Spring Assisted Cover 60-108-SA |
| PBK01-60-108-48-SPA | Galv. Steel Spring Assisted Cover 60-108-SPA |
| PBK01-60-108-72-RSG | 2 Galvanized Steel Covers 60-54-RSG |
| PBK01-60-108-72-MH | Concrete Cap 60-108-MH w/Cast Iron Frame & Cover CI-38-32 |
| PBK01-60-108-72-SA | Concrete Cap w/Galv Steel Spring Assisted Cover 60-108-SA |
| PBK01-60-108-72-SPA | Galv. Steel Spring Assisted Cover 60-108-SPA |



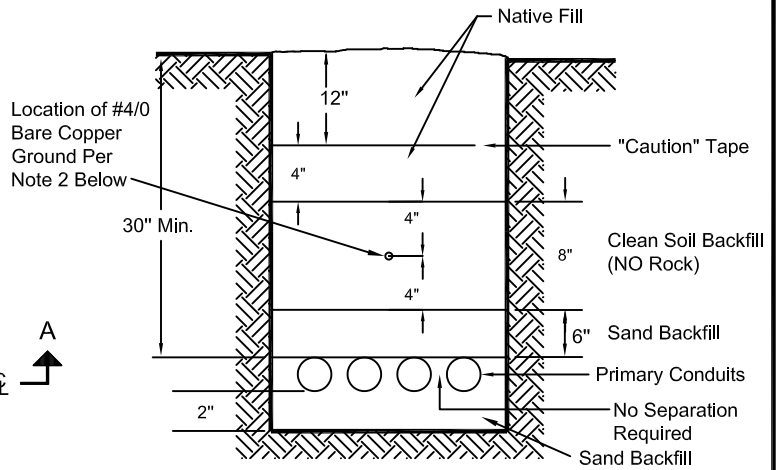
**DUCT TERMINATOR BOX
PB166-60-108-48-RSG**

Pull Boxes

TYPICAL MANHOLE (2-WAY)

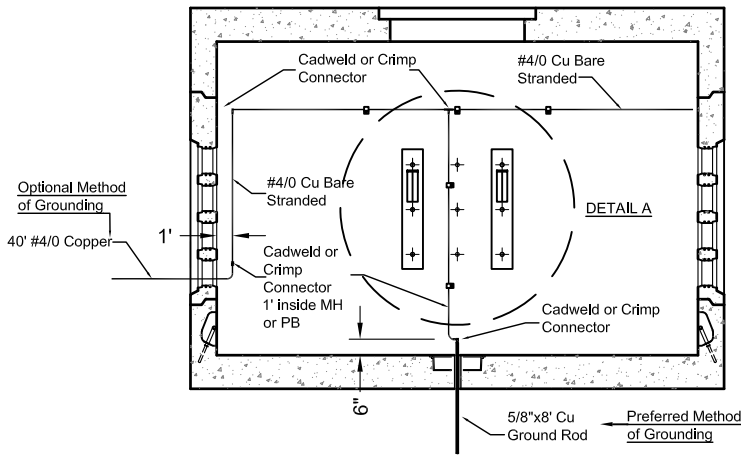


PLAN VIEW

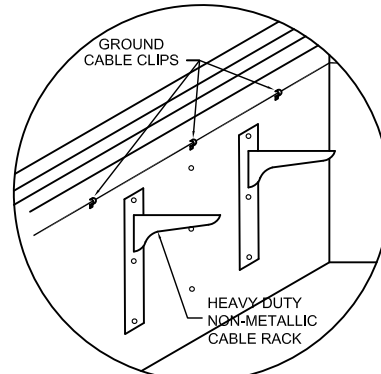


TYPICAL TRENCH DETAIL

SHOWING THE #4/0 BARE COPPER GROUND WIRE LOCATION. CONDUIT SIZE AND NUMBER MAY VARY



SECTION A-A



DETAIL A SCALE: NTS

Notes:

1. When in soil, the preferred method of grounding is to drive two 5/8" x 8' ground rods in 1" PVC in the floor and leave 6" of the ground rod above the floor before installing the top portion of the manhole or pull-box. The party responsible for the installation of the manhole system or pull box shall be responsible for the installation of the ground rods and the #4/0 bare copper ground ring. #4/0 bare copper cable is to be installed between the ground rods creating a ring around the manhole or pull-box. #4/0 bare copper is to be secured to the manhole or pull-box wall with cable clips and mason anchors. #4/0 bare cable is to be cadwelded or crimped to each ground rod. Resistance measurements shall be taken to ensure ground resistance is less than 25 Ohms.
2. When in rock, install a 40' run of #4/0 bare copper cable in the adjacent trench (as shown in the Trench Detail above). One foot of the grounding cable shall remain in the manhole or pull-box to be cadwelded or crimped to the ground ring. Clean soil backfill, without rock, is to be placed over and under the grounding cable in the trench. Resistance measurements shall be taken to ensure ground resistance is less than 25 Ohms. If 25 Ohms or less is not met, an additional 40' run of #4/0 bare copper cable is to be installed on the opposite side of the installed equipment.
3. 25 Ohms or less is the resistance reading that must be obtained inside any manhole or pull box. If 25 Ohms or less is not met by performing the grounding options detailed in Notes 1 or 2, please consult with the City as to additional grounding options.
4. The detail above is for the grounding in a manhole. Grounding in a pull box will be similar, but actual pull box details are not shown.

McCord Engineering, Inc.
 Texas Registered Engineering Firm F-2664
 916 Southwest Parkway East
 College Station, TX 77840
 (979) 764-8356

CITY OF GEORGETOWN
MANHOLE AND PULL BOX
GROUNDING DETAIL

DRAWING NAME:

GEO-260

| | |
|-----------|-----------------|
| SCALE: | DATE: |
| NTS | 12-10-09 |
| DRAWN BY: | REV. BY: |
| CDT | JAM 01-24-19 |

GUM-GND

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**United States
Department of
Agriculture**

Rural
Utilities
Service

RUS Bulletin
1728F-806
(D-806)

June 2000

Specifications and Drawings for Underground Electric Distribution

UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Utilities Service

BULLETIN 1728F-806

SUBJECT: Specifications and Drawings for Underground Electric Distribution

Incorporated by reference (IBR) in 7 CFR Part 1728

TO: RUS Electric Staff
RUS Electric Borrowers

DATES:

Effective Date: June 26, 2000*.

Incorporation by Reference: IBR approved by the Director, Office of the Federal Register June 26, 2000.

Expiration Date: Date of change in 7 CFR Part 1728 by rulemaking.

OFFICE OF PRIMARY INTEREST: Electric Staff Division

FILING INSTRUCTIONS: This bulletin replaces Bulletin 50-6 (D-806), Specifications and Drawings for Underground Electric Distribution, dated February 27, 1990. Discard Bulletin 50-6 and replace it with this bulletin, RUS Bulletin 1728F-806.

AVAILABILITY: This bulletin is available on the RUS electric web page at:
<http://www.usda.gov/rus>.

PURPOSE: This bulletin contains complete specifications setting forth the RUS requirements for constructing rural underground electric distribution systems using state-of-the-art materials, equipment, and construction methods. This information is incorporated by reference in 7 CFR Part 1728.



Assistant Administrator
Electric Program

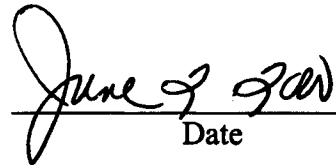

Date

TABLE OF CONTENTS

| | |
|---|---|
| 1. General | 1 |
| 2. Storage of Material and Equipment | 1 |
| 3. Handling of Cable | 2 |
| 4. Plowing | 2 |
| 5. Special Requirements for Coordination Between Owner and Contractor Where Cable is to be Installed by Plowing | 3 |
| 6. Trenching | 3 |
| 7. Installing Cable in Trench | 4 |
| 8. Minimum Bending Radius of Cable | 5 |
| 9. Conduit | 5 |
| 10. Tagging of Cables at Termination Points | 5 |
| 11. Splices | 5 |
| 12. Primary Cable Termination and Stress Cones | 5 |
| 13. Special Precautions for Cable Splices and Terminations | 6 |
| 14. Secondary and Service Connections | 6 |
| 15. Pedestals | 6 |
| 16. Inspection and Inventory of Buried Units | 7 |
| 17. Backfilling | 7 |
| 18. Equipment Pads..... | 7 |
| 19. Transformers..... | 7 |
| 20. Equipment Enclosures..... | 7 |
| 21. Utility Safety Signs | 8 |
| 22. Sacrificial Anodes | 8 |
| 23. Grounding..... | 8 |
| 24. Cable Location Markers | 8 |
| 25. Installed Cable and Acceptance Tests..... | 8 |

Attachment A: Index of Drawings

Attachment B: Construction Drawings

INDEX:

ASSEMBLIES:

Underground Distribution – Bul. 1728F-806

SPECIFICATIONS AND STANDARDS:

Construction Specifications and Drawings – Bul. 1728F-806

Underground Electric Distribution – Bul. 1728F-806

UNDERGROUND DISTRIBUTION:

Underground Rural Distribution – Bul. 1728F-806

1. GENERAL

1.1 These specifications provide for the construction of underground distribution power facilities as specified by the owner. The owner is the organization contracting for the services and, when used in connection with RUS financed facilities, is synonymous with the term borrower as defined in §1710.2.

1.2 It is the responsibility of the borrower to ensure that all construction work shall be accomplished in a thorough and workmanlike manner in accordance with the staking sheets, plans and specifications, and the construction drawings.

1.3 If construction work is performed by the Owner's force account crews instead of a contractor, any reference to "Contractor" apply to the force account crews.

1.4 The provisions of section §1724.50, Compliance with National Electrical Safety Code (NESC) apply to all borrower electric system facilities regardless of the source of financing.

- a. A borrower must ensure that its electric system, including all electric distribution, transmission, and generating facilities, is designed, constructed, operated, and maintained in accordance with all applicable provisions of the most current and accepted criteria of the NESC and all applicable and current electrical and safety requirements of any State or local government entity. Copies of the NESC may be obtained from the Institute of Electrical and Electronic Engineers, Inc., 345 East 47th Street, New York, New York 10017-2394. This requirement applies to the borrower's electric system regardless of the source of financing.
- b. Any electrical standard requirements established by RUS are in addition to, and not in substitution for or a modification of, the most current and accepted criteria of the NESC and any applicable electrical or safety requirements of any State or local governmental entity.
- c. Overhead distribution circuits shall be constructed with not less than the Grade C strength requirements as described in Section 26, Strength Requirements, of the NESC when subjected to the loads specified in NESC Section 25, Loadings for Grades B and C. Overhead transmission circuits shall be constructed with not less than the Grade B strength requirements as described in NESC Section 26.

2. STORAGE OF MATERIAL AND EQUIPMENT: It is the responsibility of the borrower to ensure that all material and equipment to be used in construction must be stored so as to be protected from deteriorating effects of the elements. If outdoor storage cannot be avoided, the material and equipment must be stacked on supports well above the ground line and protected from the elements as appropriate, and with due regard to public safety.

3. HANDLING OF CABLE: It is the responsibility of the borrower to ensure that the cable shall be handled carefully at all times to avoid damage, and shall not be dragged across the ground, fences or sharp projections. Care shall be exercised to avoid excessive bending of the cable. The borrower shall ensure that the ends of the cable be sealed at all times against moisture with suitable end caps. Where it is necessary to cut the cable, the ends will be terminated or sealed immediately after the cutting operation.

4. PLOWING

4.1 When cables are to be installed by plowing, it is the responsibility of the borrower to ensure that the plowing equipment be subject to the approval of the Owner and the public authorities having jurisdiction over highway and road rights-of-way. The plow must be provided with a means to assure positive holddown of the plow blade to provide proper depth at all times.

4.2 The design of the plowshare must ensure that the cable passing through the plow will not be bent in a radius less than 12 times the outside diameter of the cable. The equipment must be capable of extending the plow a minimum of 6 inches below the specified depth under all terrain conditions of plow utilization.

4.3 The borrower must ensure that equipment and construction methods used during construction cause minimum displacement of the soil. The slot made in the soil by the cable plows must be closed immediately by driving a vehicle track or wheel over the slot or by other suitable means.

4.4 Starting and terminating points of the plowing operation must be excavated prior to cable installation to reduce possible cable damage and to assure sufficient burial depth.

4.5 During the plowing operation, care is to be exercised to feed the cable or wire into the ground through the plow loosely and at minimum tension. Besides using proper equipment and construction methods, supervision by the borrower or the borrower's representative shall be furnished at all times at the site of plowing operations to assure compliance with these specifications.

4.6 If, during the plowing operation, the plow should strike a buried object or rock that would stop the equipment and necessitate removal of the plow from the ground, the plow must be removed from the ground carefully and, if practical, without backing the plow. If it should be necessary to back the plow to remove it from the ground, the cable must be uncovered a sufficient distance back for inspection by the Owner to determine whether the cable or wire has been damaged.

4.7 The cable must be inspected carefully as it is payed out from the reel to be certain that it is free from visible defects. Every instance of damaged cable observed at any time, whether prior to installation, during installation, or when discovered by test or observation subsequent to installation in plant, shall be immediately called to the attention of the Owner. Repair or correction of such damage must be completed promptly and in accordance with the written instruction of the Owner. The location of any such repair must be indicated on the staking sheet.

5. SPECIAL REQUIREMENTS FOR COORDINATION BETWEEN OWNER AND CONTRACTOR WHERE CABLE IS TO BE INSTALLED BY PLOWING

5.1 It is the responsibility of the borrower to ensure that the Contractor and the Owner shall jointly review the staking sheets prior to the start of construction. At that time, the Contractor shall propose any desirable changes or clarifications. These changes, if approved by the Owner, shall be made and recorded on the staking sheets. No changes on the staking sheets shall be made by the Contractor without the prior written approval of the Owner. A representative of the Owner shall remain in the immediate vicinity of the plowing operations at all times and shall consider and possibly approve any acceptable changes proposed by the Contractor. A representative of the Owner shall also inspect any damage to cable and approve acceptable methods of repair or correction of such damage in accordance with the provisions of these specifications.

5.2 In the event that rock is encountered during the plowing operation so that the buried cable cannot be installed to the required minimum depths in soil, the Contractor shall determine for the Owner the nature and extent of the rock encountered. Based on this information, the Owner shall determine whether the cable is to be rerouted, trenched in rock or a change made to aerial construction. This decision shall be made promptly, and appropriate changes in units shall be made on the staking sheets. Such changes shall be in writing, dated, and initialed by the Owner.

5.3 Due to the necessity of making on-the-spot corrections and changes on staking sheets, it may not be possible for the Owner to issue revised staking sheets to the Contractor in all cases. When changes are made, dated, and initialed by the Owner on a set of the Contractor's staking sheets, it shall be the Contractor's responsibility to transfer these changes to all other sets of staking sheets being used by the Contractor for construction purposes.

5.4 The Contractor shall provide a competent representative to work with the Owner on the inventory and inspection of buried cable units. The inventory of buried cable will be made as soon after the plowing operation as practical to avoid later disagreements on the quantity of cable installed when changes are required in the project.

6. TRENCHING

6.1 It is the responsibility of the borrower to ensure that all trenching depths specified are minimum as measured from the final grade to the top surface of the cable. The routing must be as shown on the staking sheets and plans and specifications unless conditions encountered are such that changes are necessary to accomplish the work. In such event, the Owner shall be notified promptly. If rock or other difficult digging is involved, the Contractor shall determine the nature and extent of the difficulty, and the Owner shall determine whether rerouting, rock trenching, plowing or other changes are necessary. Loose soil or crumbly rock shall not be considered as "difficult digging." The trench widths specified are minimum and should be increased as necessary to obtain the required depths in loose soils.

6.2 Where trenches are intended for more than one cable, particular care must be taken to provide for extra depth and width to allow for soil falling into the trench during the laying of the first cables.

6.3 Care shall be exercised to minimize the likelihood of waterflow since this may cause trench damage and reduction in trench depth. If this occurs, the trench must be cleared to the specified depth before installing the cable.

6.4 All trenches must follow straight lines between staked points to the greatest extent possible. Secondary and service trenches must extend in a straight line from takeoff points wherever possible. The trenches must be dug so that the bottom has a smooth grade. Large rocks, stones and gravel in excess of 1 inch must be removed from the bottom of the trench. Where this cannot be accomplished, a 2 inch bed of sand or clean soil must be placed in the bottom of the trench.

6.5 Construction shall be arranged so that trenches may be left open for the shortest practical time to avoid creating a hazard to the public and to minimize the likelihood of collapse of the trench due to other construction activity, rain, accumulation of water in the trench, etc.

7. INSTALLING CABLE IN TRENCH

7.1 It is the responsibility of the borrower to ensure that the cable must be placed in the trench as soon after the trenching operation as feasible. Wherever possible, cable must be payed out from the reel mounted on a moving vehicle or trailer. The reel must be supported so that it can turn easily without undue strain on the cable. The cable must be carefully placed in the trench by hand. All cable placement will be done under constant supervision by the borrower or the borrower's representative who assure that no damage to the cable occurs.

7.2 The cable must be inspected carefully as it is removed from the reel in laying operations to be certain that it is free from visible defects. The Owner shall decide upon corrective action when defects are discovered.

7.3 Where more than one cable is to be placed in a trench, the spacings required by the specifications must be observed. Care must be taken that any soil falling into the trench during the laying of the first cable does not reduce the clearances of the last cable below that specified. Should this occur, the excess soil must be removed carefully by hand or with equipment that will not damage the installed cables.

7.4 Sufficient slack, and in no case less than 24 inches, must be left at all risers, transformer pads, pedestals and terminal points so that movements of cable after backfilling will not cause damaging strain on the cable or terminals. The cable trench must be mechanically compacted at least 36 inches from all riser poles, pads, pedestals and terminal points.

7.5 The ends of all secondary cable terminated below ground must be long enough to reach at least 12 inches above the top of the underground enclosure.

8. MINIMUM BENDING RADIUS OF CABLE: It is the responsibility of the borrower to ensure that the minimum bending radius of primary cable is 12 times the overall diameter of the cable. The minimum bending radius of secondary and service cable is six times the overall diameter of the cable. In all cases the minimum radius specified is measured to the surface of the cable on the inside of the bend. Cable bends must not be made within 6 inches of a cable terminal base.

9. CONDUIT: It is the responsibility of the borrower to ensure that all exposed ends of conduit must be plugged during construction to prevent the entrance of foreign matter and moisture into the conduit. Burrs or sharp projections which might injure the cable must be removed. Riser shield or conduit must extend at least 18 inches below grade at all riser poles. If full round conduit is used as a riser shield, an end bell must be installed on the lower end to prevent damage to the cable.

10. TAGGING OF CABLES AT TERMINATION POINTS: As the cables are laid, it is the responsibility of the borrower to ensure that they must be identified and tagged. The identification must be of a permanent type, such as that done on plastic or corrosion resistant metal tags. The tag must be securely attached to the cable. Paper or cloth tags are not acceptable.

11. SPLICES

11.1 It is the responsibility of the borrower to ensure that cable splices must be of the pre-molded rubber, heat-shrink, or cold-shrink type, of the correct voltage rating and must be installed in accordance with the splice manufacturer's instructions. Splices that depend solely on tape for a moisture barrier must not be used.

11.2 Not more than one splice may be permitted for each 2000 feet of cable installed unless authorized by the Owner. No bends may be permitted within 12 inches of the ends of a splice. The cable or circuit numbers and the exact location of all splices must be noted on the staking sheets (as built).

12. PRIMARY CABLE TERMINATION AND STRESS CONES: It is the responsibility of the borrower to ensure that prefabricated stress cones or terminations must be installed in accordance with the manufacturer's instructions at all primary cable terminals. They must be suitable for the size and type of cable that they are used with and for the environment in which they will operate. Any indication of misfit, such as a loose or exceptionally tight fit, must be called to the Owner's attention. The outer conductive surface of the termination must be bonded to the system neutral. A heat-shrink or cold-shrink sleeve must be installed to seal between the body of the termination and the cable jacket.

13. SPECIAL PRECAUTIONS FOR CABLE SPLICES AND TERMINATIONS: It is the responsibility of the borrower to ensure that a portable covering or shelter must be available for use when splices or terminations are being prepared and when prefabricated terminations are being switched. The shelter must be used as necessary to keep rain, snow and windblown dust off the insulating surfaces of these devices. Since cleanliness is essential in the preparation and installation of primary cable fittings, care shall be exercised to prevent the transfer of conducting particles from the hands to insulating surfaces. Mating surfaces must be wiped with a solvent such as denatured alcohol to remove any possible accumulation of dirt, moisture or other conducting materials. A silicone grease or similar lubricant should be applied afterwards in accordance with the manufacturer's recommendations. Whenever prefabricated cable devices are opened, the unenergized mating surfaces must be lubricated with silicone grease before the fittings are reconnected.

14. SECONDARY AND SERVICE CONNECTIONS

14.1 It is the responsibility of the borrower to ensure that a suitable inhibiting compound must be used with all secondary and service connections.

14.2 All secondary cable connections located below grade or in secondary pedestals must be made with pre-insulated secondary connector blocks. Diving bells with open terminals, insulating boots or moisture barriers that depend solely on tape are not acceptable.

14.3 All transformer secondary phase terminal connections must be completely insulated. If the secondary phase terminals are threaded studs, the connection must be made with a pre-insulated secondary transformer connection block. If the transformer secondary phase terminals are insulated cable leads, connection must be made with a pre-insulated secondary connector block or with a secondary prefabricated splice when the transformer leads continue directly to the service.

14.4 If a transformer is so large that it must have secondary spades, the spades must be taped or otherwise insulated. Boots used for insulation must be taped so that they cannot be readily slipped off.

14.5 Secondary connections to terminals of pole-mounted transformers must be made so that moisture cannot get inside the cable insulation. This may be accomplished by covering the terminals and bare conductor ends with an appropriate moisture sealant or providing a drip loop.

14.6 The secondary connections and insulation must have accommodations for all future and existing services as shown on the plans and specifications.

15. PEDESTALS: Where required, it is the responsibility of the borrower to ensure that pedestal stakes must be driven vertically into the bottom of the trench before cables are placed, and shall be located as shown on the staking sheets. Pedestal posts and supporting stakes must be in place before the cable is installed. All pedestals should be approximately at the same height above finished grade.

16. INSPECTION AND INVENTORY OF BURIED UNITS: Before any backfilling operations are begun, it is the responsibility of the borrower to ensure that the Contractor and Owner shall jointly inspect all trenches, cable placement, risers, pedestal stakes, and other construction that will not be accessible after backfilling, and an inventory of units shall be taken. If corrections are required, a second inspection shall be made after completion of the changes.

17. BACKFILLING

17.1 It is the responsibility of the borrower to ensure that the first 6 inches of trench backfill shall be free from rock, gravel or other material which might damage the cable jacket. In lieu of cleaning the trench, the Contractor may, at the Contractor's option, place a 2 inch bed of clean sand or soil under the cable and 4 inches of clean soil above the cable. Cleaned soil backfill when used shall contain no solid material larger than 1 inch. This soil layer must be carefully compacted so that the cable will not be damaged.

17.2 Backfilling must be completed in such a manner that voids will be minimized. Excess soil must be piled on top and must be well tamped. All rock and debris must be removed from the site, and any damage to the premises repaired immediately.

17.3 Pieces of scrap cable or other material remaining after installation must not be buried in the trench as a means of disposal.

18. EQUIPMENT PADS: It is the responsibility of the borrower to ensure that the site for the pad shall be on undisturbed earth adjacent to but not over the trench. The site shall be cleared of all debris and excavated to the specified depth. Gravel or sand may be added to the site and thoroughly compacted. The pad shall be installed level at the specified elevation.

19. TRANSFORMERS: It is the responsibility of the borrower to ensure that transformers shall be handled carefully to avoid damage to the finish and shall be positioned in accordance with the staking sheets and the plans and specifications. Only qualified and experienced personnel shall be allowed to make connections and cable terminations.

20. EQUIPMENT ENCLOSURES: It is the responsibility of the borrower to ensure that excavations for sleeve-type transformer pads and other below-grade enclosures shall be made so as to disturb the surrounding earth as little as practical. Enclosures shall be installed with side walls plumb. When enclosures are of fiber, plastic, or other semiflexible material, backfilling should be done with covers in place and with careful tamping so as to avoid distortion of the enclosure. When installation is complete, the cover of the enclosure shall not be lower than and not more than 2 inches higher than the grade specified by the Owner. Soil in the immediate vicinity shall be tamped and sloped away from the enclosure. At the Owner's option, the excess soil shall be removed from the site or spread evenly over the surface of the ground to the satisfaction of the Owner.

21. UTILITY SAFETY SIGNS: It is the responsibility of the borrower to ensure that utility safety signs must be in accordance with ANSI Z535.2, Environmental and Facility Safety Signs, and shall be applied in accordance with RUS drawings. Copies of the ANSI Z535.2 may be obtained from the National Electrical Manufacturers Association (NEMA), 1300 North 17th Street, Suite 1847, Rosslyn, Virginia 22209.

22. SACRIFICIAL ANODES: It is the responsibility of the borrower to ensure that sacrificial anodes specified shall be installed with backfill package intact and connecting leads positioned for proper connection after the equipment is in place. Anodes shall neither be moved, positioned, lifted, nor lowered into place by pulling on the connecting leads.

23. GROUNDING

23.1 It is the responsibility of the borrower to ensure that all neutral conductors, grounding electrodes, sacrificial anodes and groundable parts of equipment shall be interconnected. All interconnections shall be made as shown on the construction drawings. A copper-clad or galvanized steel ground rod with minimum length of 8 feet shall be installed at all equipment locations as shown in the construction drawings and at all cable splices and taps.

23.2 All pad-mounted equipment enclosures, including transformers, shall be grounded in such a manner that two separate grounding paths exist between the enclosure and the grounding rod(s).

24. CABLE LOCATION MARKERS: It is the responsibility of the borrower to ensure that location of permanent cable markers shall be as shown on the staking sheets.

25. INSTALLED CABLE AND ACCEPTANCE TESTS

25.1 It is the responsibility of the borrower to ensure that:

- a. Continuity: After installation of the cable and prior to the high potential test specified below, authorized personnel shall perform a simple continuity test on the system. This can easily be accomplished by grounding the conductor at the source and checking for continuity from the end of each tap with an ohmmeter or with a battery and ammeter.
- b. High Potential: After successful continuity tests, authorized personnel should perform high potential tests on each length of cable, with terminations in place but disconnected from the system.

25.2 The installation shall withstand for a minimum of 15 minutes a DC test potential as follows:

| Primary URD Cable (XLP-TR, and EPR) | | |
|--|--|---|
| <u>Rated Voltage</u> | <u>Insulation Thickness Inches</u> | <u>Field DC Acceptance Test Voltage</u> |
| 15 kV | .220 | 64.0 kV |
| 25 kV | .260 | 80.0 kV |
| 25 kV | .345 | 100.0 kV |

The voltage may either be increased continuously or in steps to the maximum test value:

- a. If increased continuously, the rate of increase of test voltage should be approximately uniform and increasing to maximum voltage in not less than 10 seconds and in not more than approximately 60 seconds.
- b. If applied in steps, the rate of increase of test voltage from one step to the next should be approximately uniform. The duration at each step shall be long enough for the absorption current to attain reasonable stabilization (1 minute minimum). Current and voltage readings should be taken at the end of each step duration. The number of steps should be from five to eight.

25.3 **Warning:** A hazardous voltage may still exist on the cable after the above testing has been completed. Therefore, before handling the cable, it is the responsibility of the borrower to ensure that the conductor shall be grounded to permit any charge to drain to earth.

Attachment A

INDEX OF DRAWINGS

Primary Terminal Pole Assemblies:

| | |
|-------|---|
| UA1 | Single Phase Cable Deadend Terminal Pole |
| UA2 | Single Phase Cable Deadend Terminal Pole |
| UA3 | Single Phase Cable Tangent Terminal Pole |
| UB1 | Vee-Phase Cable Terminal Pole with Cutouts and Crossarm Mounting Arresters |
| UB2 | Vee-Phase Cable Terminal Pole with Cutouts and Bracket Mounting Arresters |
| UB3 | Vee-Phase Cable Terminal Pole without Cutout, with Crossarm Mounting Arresters |
| UB4 | Vee-Phase Cable Terminal Pole without Cutout, with Bracket Mounting Arresters |
| UC1 | Three Phase Cable Terminal Pole with Cutouts and Crossarm Mounting Arresters |
| UC2 | Three Phase Cable Terminal Pole with Cutouts and Bracket Mounting Arresters |
| UC2-1 | Three Phase Cable Deadend Terminal Pole |
| UC2-2 | Three Phase Cable Tangent Terminal Pole |
| UC5-1 | Three Phase Cable Deadend Terminal Pole with Disconnect Switches |
| UC6-1 | Three Phase Cable Tangent Terminal Pole with Disconnect Switches |

Transformer Assemblies:

| | |
|--------------------|---|
| UG6, UG6B, | Single Phase Pad-Mounted Transformer (Radial Feed) |
| UG7, UG7B | Single Phase Pad Mounted Transformer (Loop Feed) |
| UG17, UG17B | Three Phase Pad Mounted Transformer (Radial Feed) |
| UG17-2, UG17-2B | Three Phase Pad Mounted Transformer (Loop Feed) |
| UG17-3, UG17-3B | Three Phase Pad Mounted Loop Feed Transformer with Radial Feed |

Secondary Assemblies:

| | |
|-------------|--------------------------------------|
| UJ1, UJ2 | Secondary Connector Blocks |
| UK5 | Secondary Pedestal Underground Cable |
| UK6 | Secondary Handhole Underground Cable |

Pad Assemblies:

| | |
|--------------------|---------------------------------------|
| UM1-5C, UM1-5NC | Pad Assemblies |
| UM1-6C | Three Phase Transformer Concrete Pads |
| UM1-7C, UM1-7NC | Ground Sleeve Assembly |

Sectionalizing Assemblies:

| | |
|-------------------|--|
| UM3-14 | Single Phase Sectionalizing Enclosure |
| UM3-44, UM3-45 | Single Phase Pad Mounted Sectionalizer or Recloser |
| UM3-46 | Three, Single Phase Pad Mounted Reclosers |

| | |
|-------------------|--|
| UM3E | Fuse/Switch Enclosure Installation |
| UM3E-1, UM3E-2 | Single Pole Switching 200 AMP Fuse Enclosure Installation Wiring Diagrams (Single Phase and Two Phase) |
| UM3E-3 | Fuse Enclosure (200 - 600 AMP) Wiring Diagrams (Three Phase) |

Secondary Terminal Pole Assemblies:

| | |
|------------------|--|
| UM5 | Secondary Cable Terminal Pole |
| UM5-6, UM5-6A | Secondary Cable Terminal to Meter Base |

Miscellaneous Accessories:

UM6-1 – UM6-8 Miscellaneous Accessories

Regulator Assembly:

| | |
|-------|---|
| UM7-1 | Single Phase Regulator Assembly with By-Pass Switching Function Underground to Underground |
|-------|---|

Metering Assemblies:

| | |
|------------------|--|
| UM8 | Meter Installation Underground Source |
| UM8-2 | Meter Pedestal Wood Post |
| UM8-3 UM8-3A | Trough Type Meter Pedestal |
| UM8-4, UM8-4A | Meter & Switch Installation Underground Source |
| UM8-5 | Pad Mounted Switch Installation Underground Source |
| UM8-6 | C.T. Meter Installation Single Phase |
| UM8-7 | C.T. Meter Installation Three Phase |

Miscellaneous Assemblies:

UM9-2 Pad Mounted Switched Capacitor Enclosure

UM12 Cable Route Marker

Corrosion Control Assemblies:

UM27-1 Sacrificial Anode for Cable Splice Protection
(Bare to Jacketed Cable)

UM27-2 Sacrificial Anode for Equipment Ground Protection

UM27-3 Sacrificial Anode for Cable Ground Protection

UM28 Test Station

Sectionalizing Assembly:

UM33 Multi Phase Sectionalizing Enclosure Pad or Sleeve
Mounted

Grounding Assemblies:

UM48-1 Grounding Assembly for Pad Mounted Single Phase
Transformers and Enclosures

UM48-2 Grounding Assembly for Pad Mounted Multi Phase
Transformers and Enclosures

UM48-3 Grounding Assembly for Underground Primary Cable

UM48-4 Grounding Assembly for Underground Primary Cable
(with Test Station)

UM48-5 Grounding Grid for Pad Mounted Equipment
Installation

UM48-6 Grounding Array for Pad Mounted Equipment
Installation

Conduit and Trenching Assemblies:

UR2 to Trenches for Direct Burial Cables
UR2-2

UR2-3 to Trenches for Direct Burial Cables
UR2-5

UR2-NT Trenches for Direct Burial Cable
UR2-ST

Guideline Drawings:

UX1 Open Delta Connection with Single Phase Pad Mount
 Transformers

UX2 Single Phase Pad Mounted Transformer Deferred Unit
 Pedestal Type

UX3 Single Phase Padmounted Transformer Deferred Unit
 Pad-Sleeve Type

UX4 Installation of Neutral Connection in Above Grade
 Pedestal

UX5 Sectionalizing Pedestal Grounding

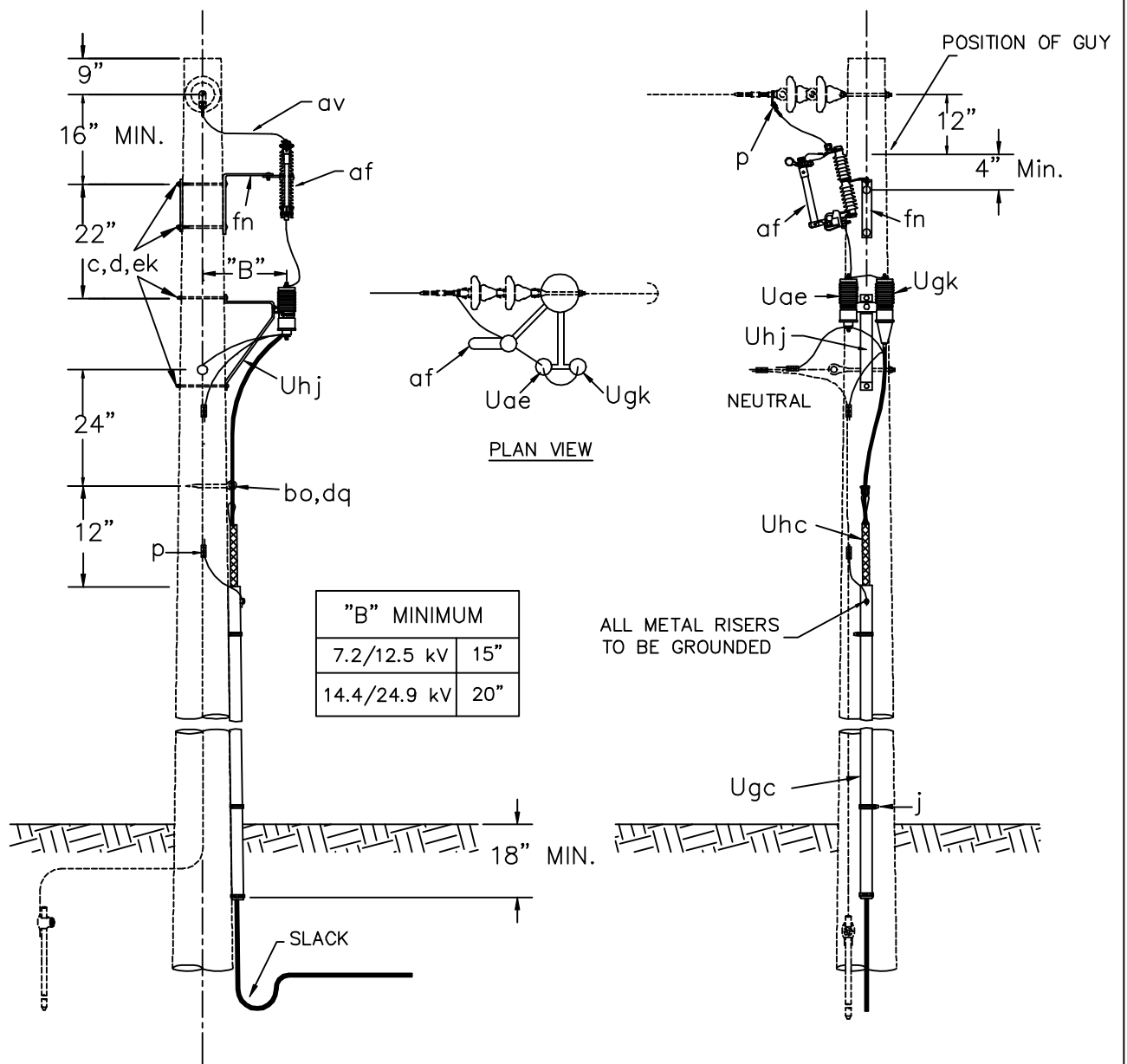
UX7 Location Methods for Below Grade Enclosure

UX8 Temporary Primary or Secondary Cable Termination
 for Future Use

UX11 Connection of Terminator/Arrester to Overhead Line

Attachment B

Construction Drawings



| ITEM | QTY. | MATERIAL |
|------|------|--|
| c | 4 | Bolt, machine, 5/8" x required length. |
| d | 4 | Washer, square 2 1/4". |
| j | | Screws, lag 1/2" X 4" as required. |
| p | | Connectors, as required. |
| af | 1 | Fuse link. |
| af | 1 | Cutout |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. Do not use if drive hook is used. |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | 4 | Locknuts |
| fn | 1 | Bracket, cutout extension. |
| Uae | 1* | Surge arrester |
| Ugc | 1 | Cable riser shield. Length as required. |
| Ugk | 1 | Cable termination. |
| Uhc | 1 | Cable support. |
| Uhj | 1 | Bracket combination. |

NOTES:

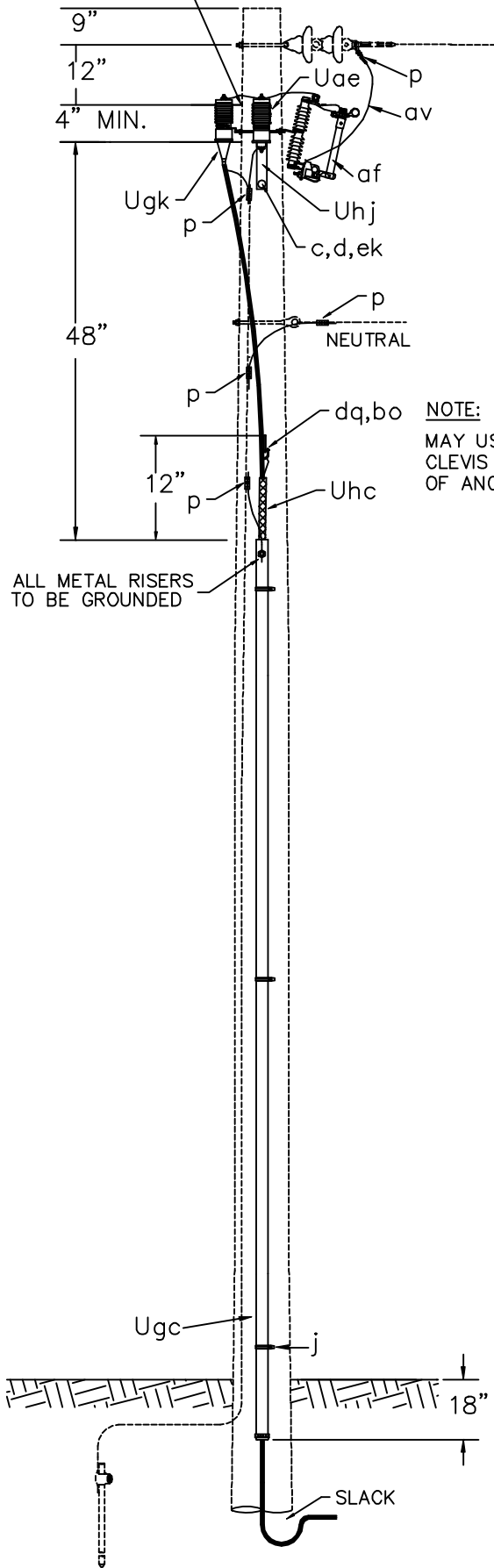
1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

SINGLE PHASE CABLE DEADEND
TERMINAL POLE

2000

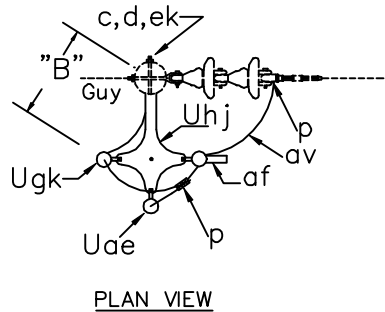
UA1

POSITION OF GUY



| "B" MINIMUM | |
|--------------|-----|
| 7.2/12.5 kV | 15" |
| 14.4/24.9 kV | 20" |

NOTE:
MAY USE 2" SWINGING CLEVIS (ITEM s) INSTEAD OF ANCHOR SHACKLE.



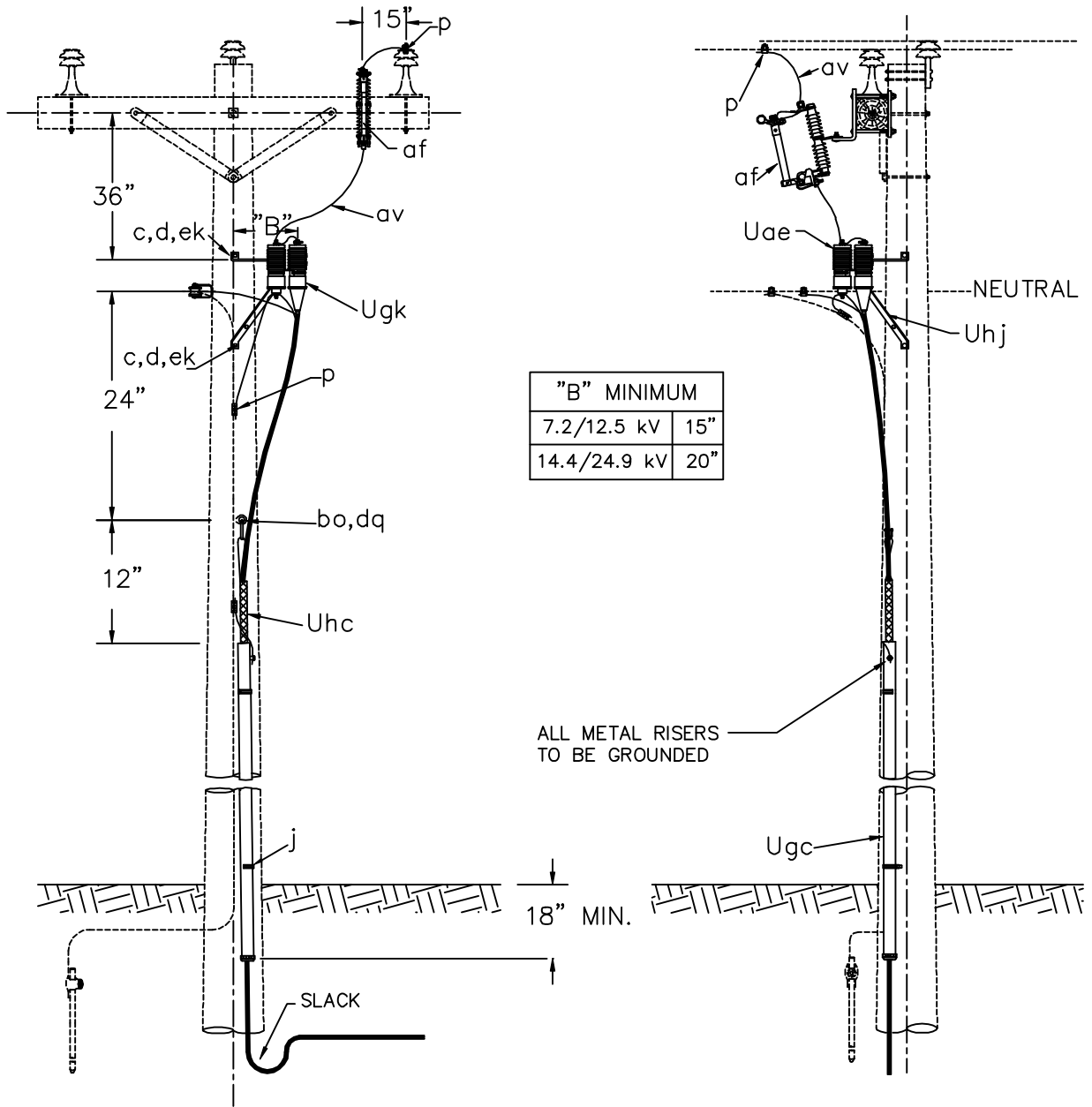
PLAN VIEW

NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

| ITEM | QTY. | MATERIAL |
|------|------|--|
| c | 2 | Bolt, machine, 5/8" x required length. |
| d | 2 | Washer, square 2 1/4". |
| p | | Connectors, as required. |
| j | | Screw, lag, 1/2" x 4", as required. |
| af | 1 | Fuse link. |
| af | 1 | Cutout |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. Do not use if drive hook is used. |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | 2 | Locknuts, as required. |
| Uae | 1* | Surge arrester |
| Ugc | | Cable Riser Shield, length as required |
| Ugk | 1 | Cable termination. |
| Uhc | 1 | Cable support. |
| Uhj | 1 | Equipment support bracket. |

| | | | |
|---|--|------|-----|
| SINGLE PHASE CABLE DEADEND TERMINAL POLE | | 2000 | UA2 |
| | | | |



| ITEM | QTY. | MATERIAL |
|------|------|--|
| c | 2 | Bolt, machine, 5/8" x required length. |
| d | 2 | Washer, square 2 1/4". |
| j | | Screw, lag 1/2" x 4" as required. |
| p | | Connectors, as required. |
| af | 1 | Fuse link. |
| af | 1 | Cutout |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. Do not use if drive hook is used. |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | 2 | Locknuts |
| Uae | 1* | Surge arrester |
| Ugc | 1 | Cable riser shield. Length as required. |
| Ugk | 1 | Cable termination. |
| Uhc | 1 | Cable support. |
| Uhj | 1 | Bracket combination. |

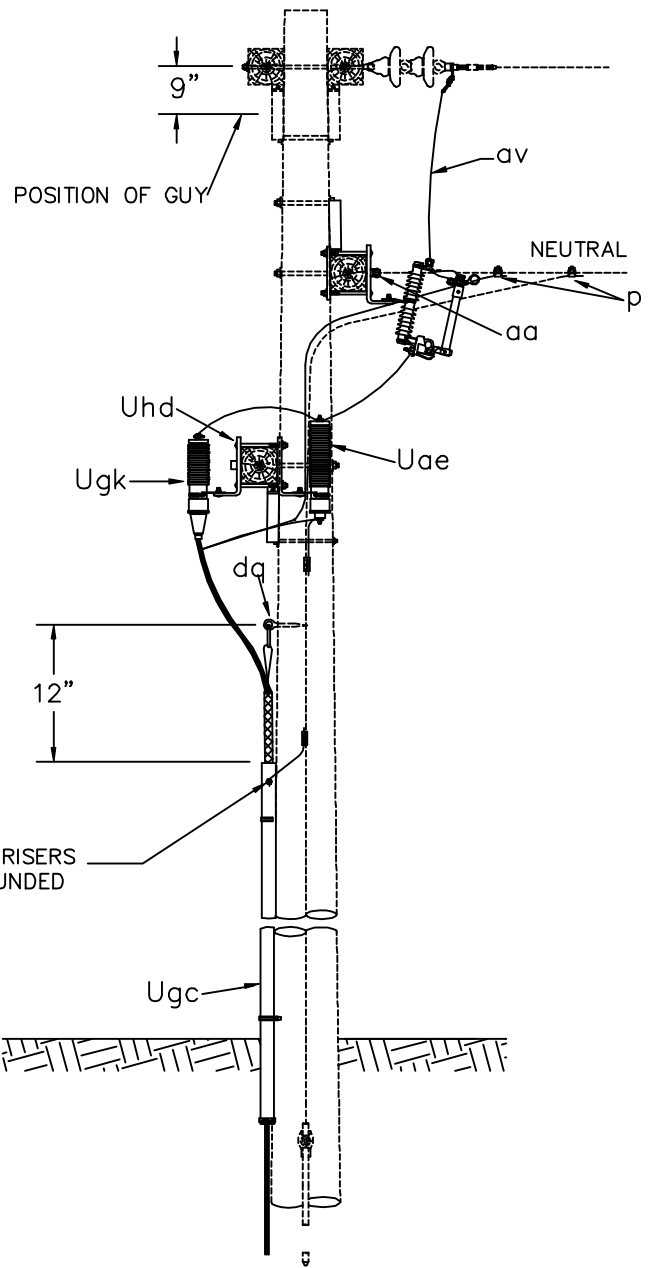
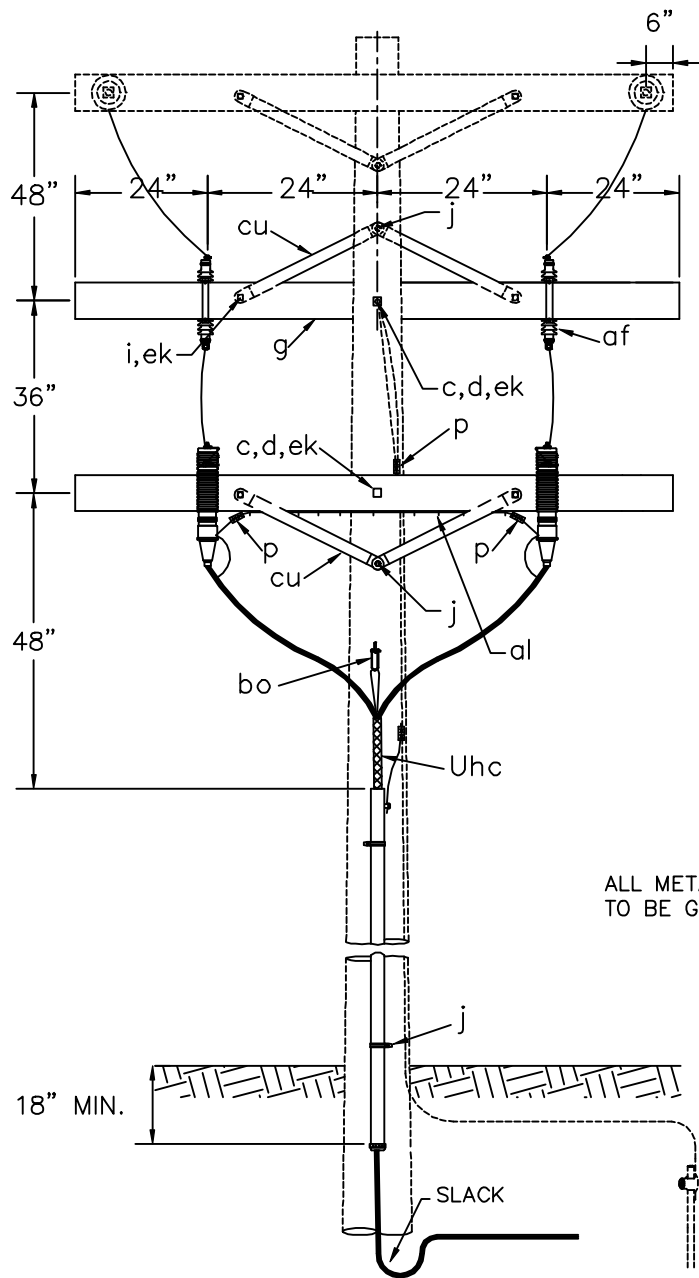
NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

SINGLE PHASE CABLE TANGENT
TERMINAL POLE

2000

UA3



| ITEM | QTY. | MATERIAL |
|------|------|---|
| c | 2 | Bolt, machine, 5/8" x required length. |
| d | 2 | Washer, square 2 1/4". |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| i | 4 | Bolt, carriage, 3/8" x 4 1/2" |
| j | | Screw, lag 1/2" x 4" as required. |
| p | | Connectors, as required. |
| aa | 1 | Eyenuits, 5/8" |
| af | 2 | Cutout |
| al | | Staples, as required. |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. |
| cu | 4 | Brace, wood, 28" |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | 6 | Locknuts, as required. |
| Uae | 2* | Surge arrester |
| Ugc | 1 | Cable riser shield. Length as required. |
| Ugk | 2 | Cable termination. |
| Uhc | 2 | Cable support. |
| Uhd | 2 | Crossarm mounting bracket. |

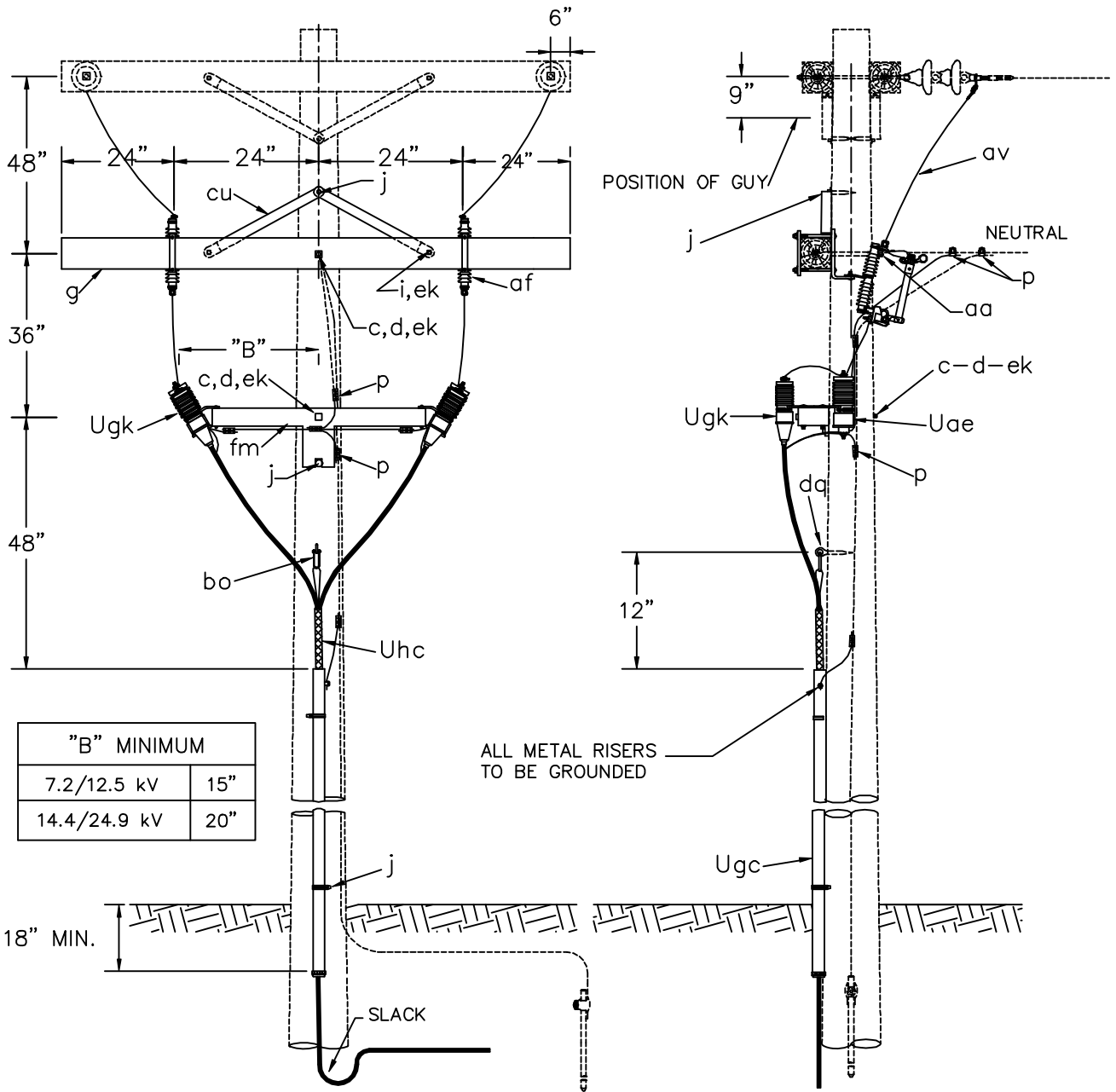
NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISERS.

VEE-PHASE CABLE TERMINAL POLE
WITH CUTOUTS AND CROSSARM
MOUNTING ARRESTERS

2000

UB1



| ITEM | QTY. | MATERIAL |
|------|------|---|
| c | 2 | Bolt, machine, 5/8" x required length. |
| d | 2 | Washer, square 2 1/4". |
| g | 1 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| i | 2 | Bolt, carriage, 3/8" x 4 1/2" |
| j | | Screw, lag 1/2" x 4" as required. |
| p | | Connectors, as required. |
| aa | 1 | Eyenuits, 5/8" |
| af | 2 | Cutout |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. |
| cu | 2 | Brace, wood, 28" |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | 3 | Locknuts, as required. |
| fm | 1 | Mounting bracket. |
| Uae | 2* | Surge arrester |
| Ugc | 1 | Cable riser shield. Length as required. |
| Ugk | 2 | Cable termination. |
| Uhc | 2 | Cable support. |

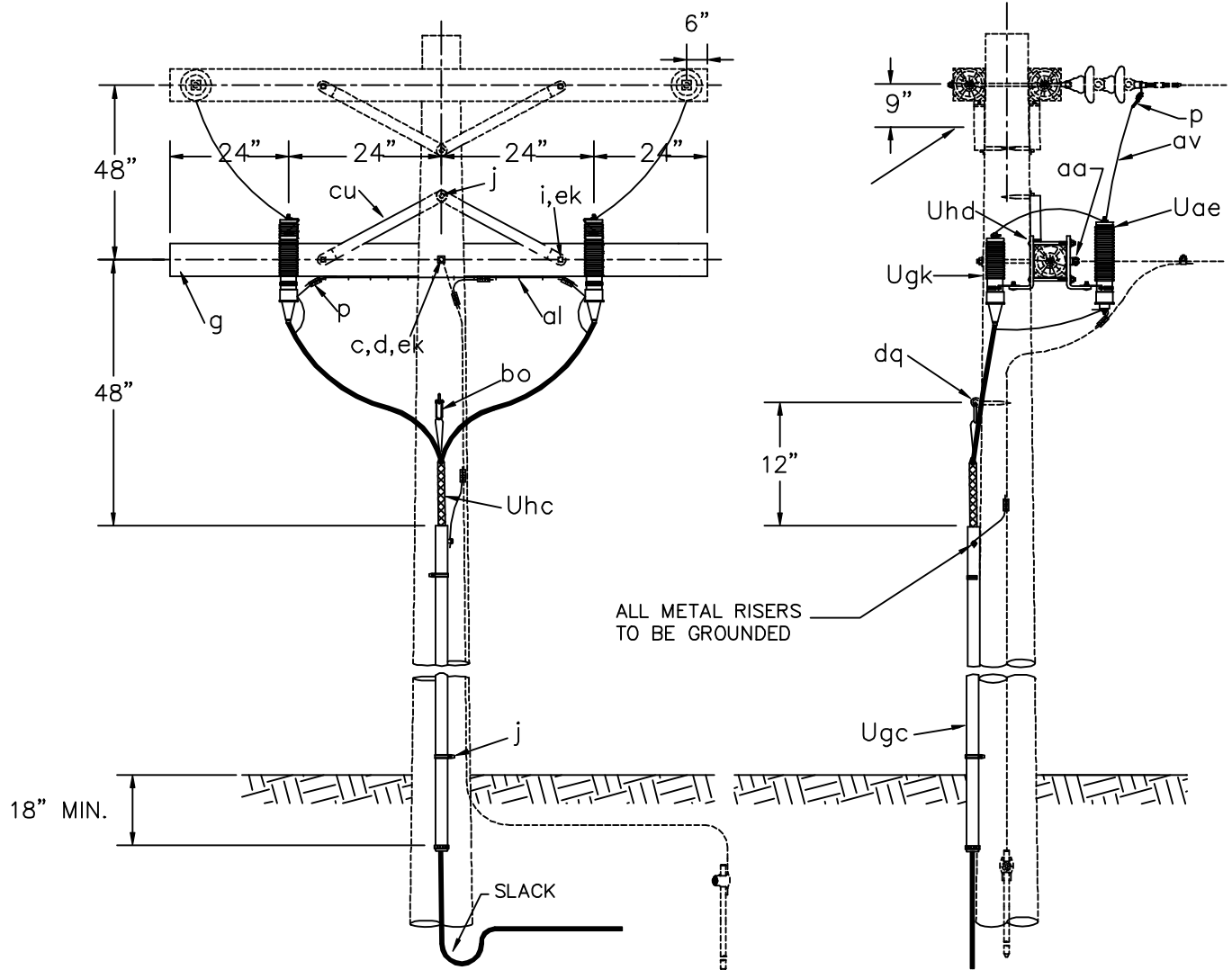
NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

VEE-PHASE CABLE TERMINAL POLE
WITH CUTOUTS AND BRACKET
MOUNTING ARRESTERS

2000

UB2



| ITEM | QTY. | MATERIAL |
|------|------|---|
| c | 1 | Bolt, machine, 5/8" x required length. |
| d | 1 | Washer, square 2 1/4". |
| g | 1 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| i | 2 | Bolt, carriage, 3/8" x 4 1/2" |
| j | | Screw, lag 1/2" x 4" as required. |
| p | | Connectors, as required. |
| aa | 1 | Nut, eye, 5/8" |
| al | | Staples, as required. |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. |
| cu | 2 | Brace, wood, 28" |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | 3 | Locknuts, as required. |
| Uae | 2* | Surge arrester |
| Ugc | 1 | Cable riser shield. Length as required. |
| Ugk | 2 | Cable termination. |
| Uhc | 2 | Cable support. |
| Uhd | 2 | Crossarm mounting bracket. |

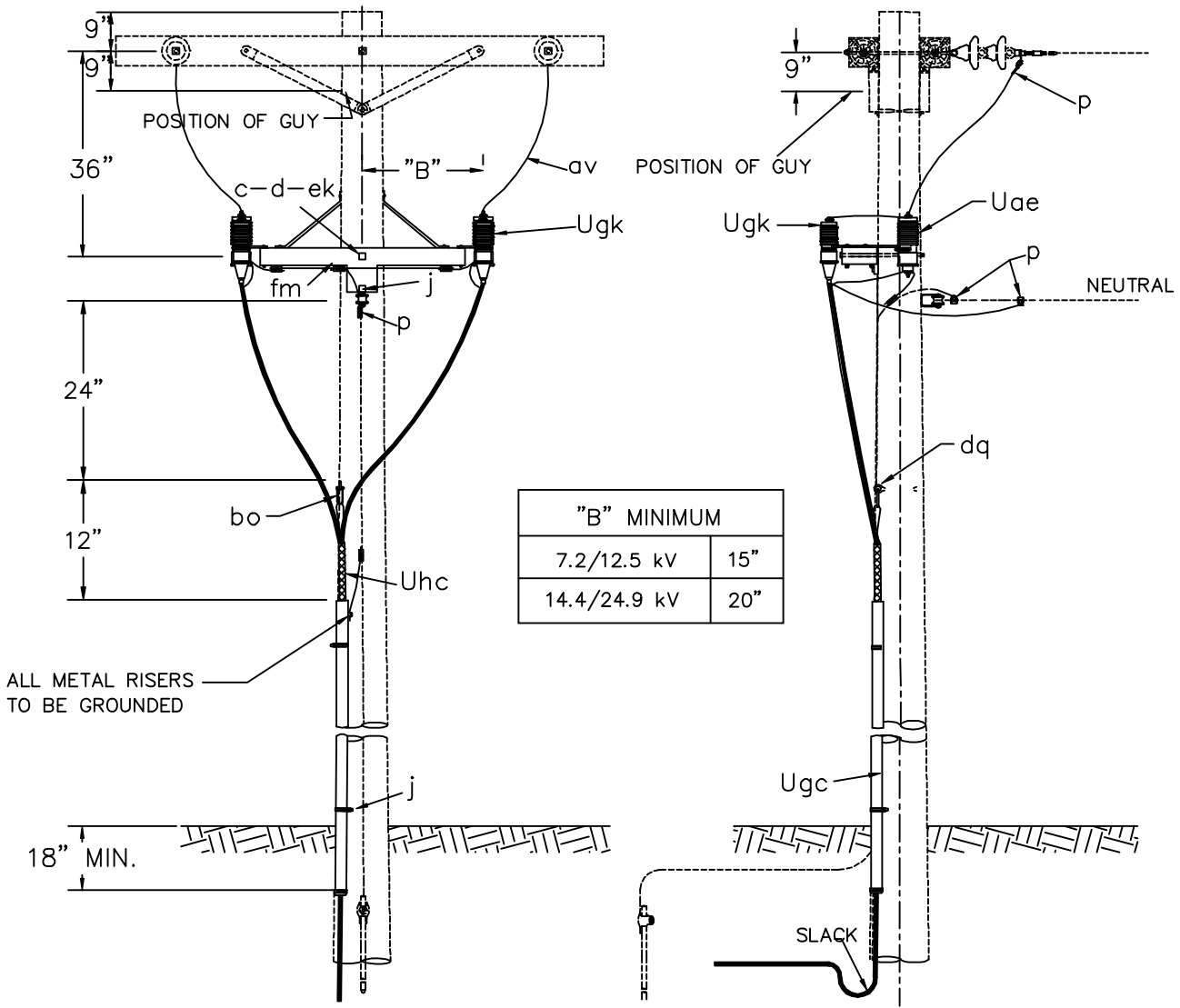
NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

VEE-PHASE CABLE TERMINAL POLE
WITHOUT CUTOUT, WITH CROSSARM
MOUNTING ARRESTERS

2000

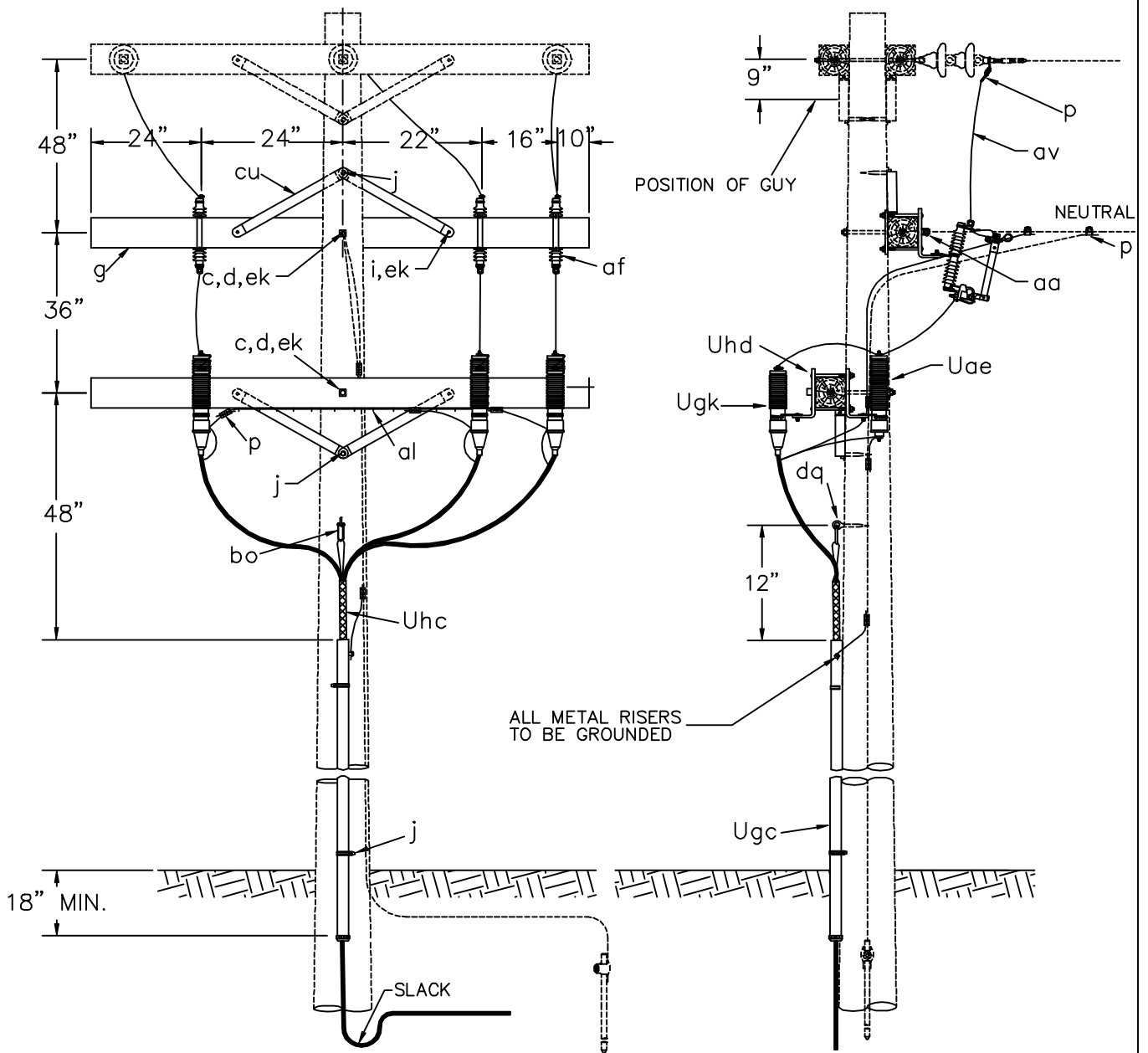
UB3



| ITEM | QTY. | MATERIAL |
|------|------|---|
| c | 1 | Bolt, machine, 5/8" x required length. |
| d | 1 | Washer, square 2 1/4". |
| j | | Screw, lag 1/2" x 4" as required. |
| p | | Connectors, as required. |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | | Locknuts, as required. |
| fm | 1 | Mounting bracket. |
| Uae | 2* | Surge arrester |
| Ugc | | Cable riser shield. Length as required. |
| Ugk | 2 | Cable termination. |
| Uhc | 2 | Cable support. |

- NOTES:**
- TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
 - NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
 - ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

| | | |
|---|------|-----|
| VEE-PHASE CABLE TERMINAL POLE WITHOUT CUTOUT, WITH BRACKET MOUNTING ARRESTERS | | |
| | 2000 | UB4 |



| ITEM | QTY. | MATERIAL |
|------|------|---|
| c | 2 | Bolt, machine, 5/8" x required length. |
| d | 2 | Washer, square 2 1/4". |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| i | 4 | Bolt, carriage, 3/8" x 4 1/2" |
| j | | Screw, lag 1/2" x 4" as required. |
| p | | Connectors, as required. |
| aa | 1 | Eye nut, 5/8" |
| af | 3 | Cutout |
| al | | Staples, as required. |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. |
| cu | 4 | Brace, wood, 28" |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | 6 | Locknuts, as required. |
| Uae | 3* | Surge arrester |
| Ugc | 1 | Cable riser shield. Length as required. |
| Ugk | 3 | Cable termination. |
| Uhc | 3 | Cable support. |
| Uhd | 2 | Crossarm mounting bracket. |

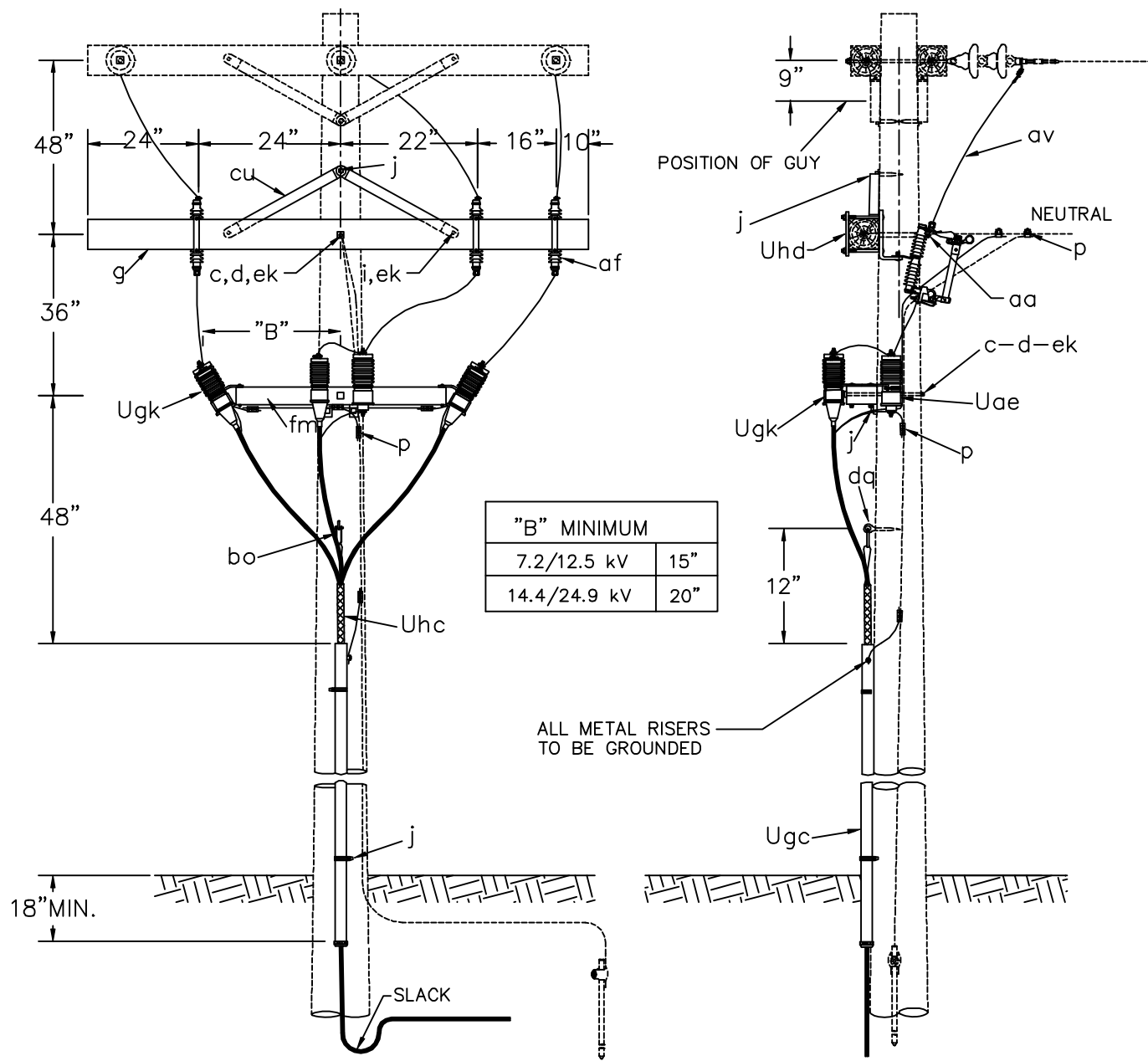
NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

THREE PHASE CABLE TERMINAL POLE WITH CUTOUTS AND CROSSARM MOUNTING ARRESTERS

2000

UC1



| "B" MINIMUM | |
|--------------|-----|
| 7.2/12.5 kV | 15" |
| 14.4/24.9 kV | 20" |

ALL METAL RISERS TO BE GROUNDED

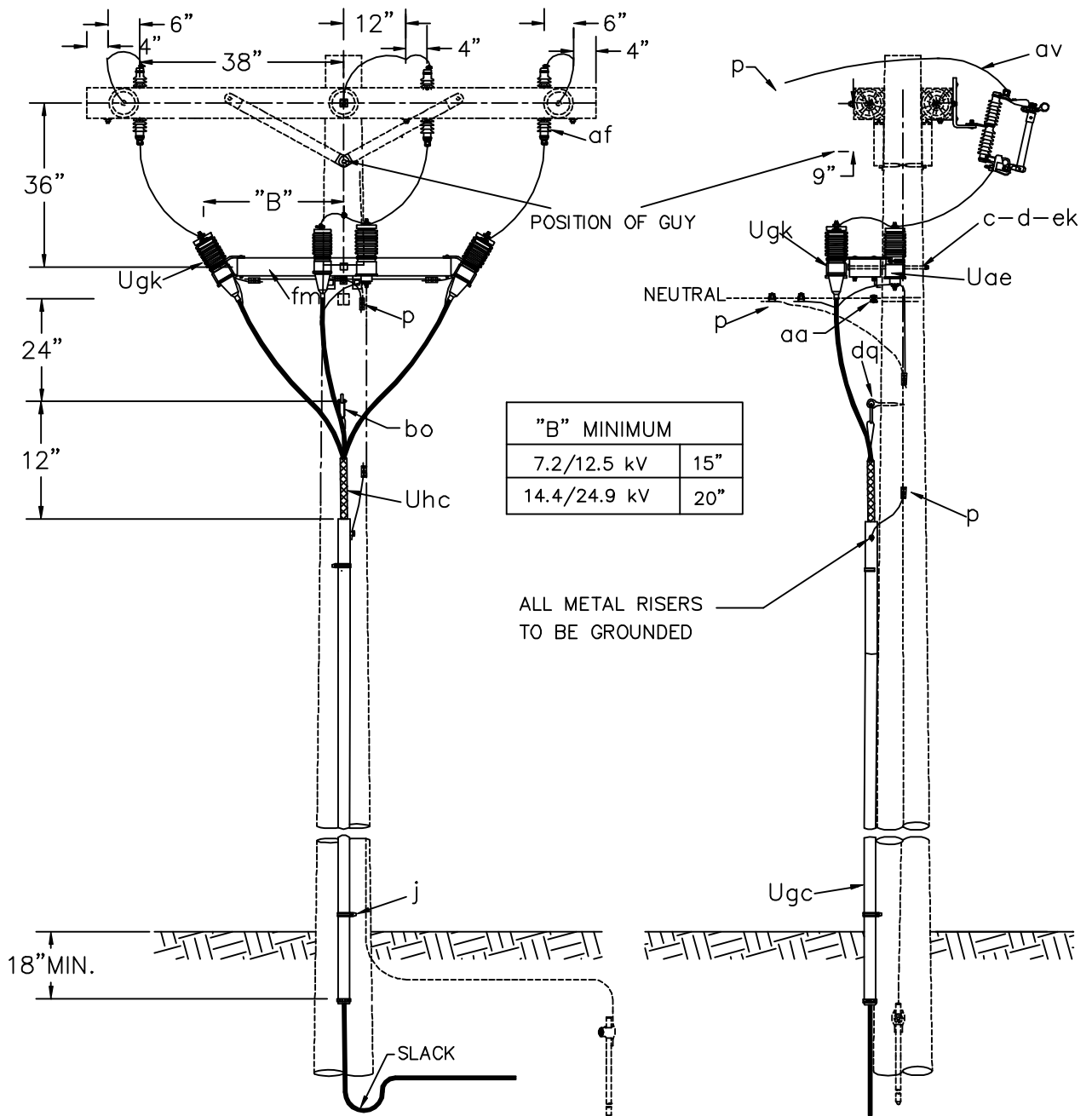
| ITEM | QTY. | MATERIAL |
|------|------|---|
| c | 2 | Bolt, machine, 5/8" x required length. |
| d | 2 | Washer, square 2 1/4". |
| g | 1 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| i | 2 | Bolt, carriage, 3/8" x 4 1/2" |
| j | | Screw, lag 1/2" x 4" as required. |
| p | | Connectors, as required. |
| aa | 1 | Eyenuit, 5/8" |
| af | 3 | Cutout |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. |
| cu | 2 | Brace, wood, 28" |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | 4 | Locknuts, as required. |
| fm | 1 | Mounting bracket. |
| Uae | 3* | Surge arrester |
| Ugc | 1 | Cable riser shield. Length as required. |
| Ugk | 3 | Cable termination. |
| Uhc | 3 | Cable support. |

NOTES:

- TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
- NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
- ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

THREE PHASE CABLE TERMINAL POLE WITH CUTOUTS AND BRACKET MOUNTING ARRESTERS

2000 UC2



| "B" MINIMUM | |
|--------------|-----|
| 7.2/12.5 kV | 15" |
| 14.4/24.9 kV | 20" |

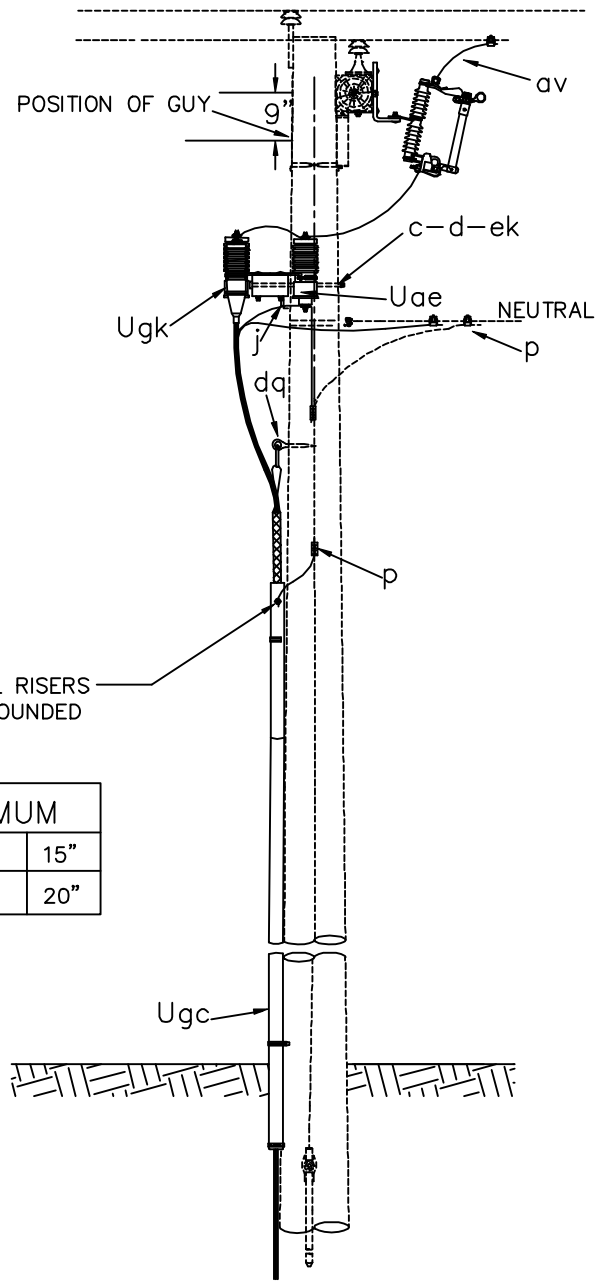
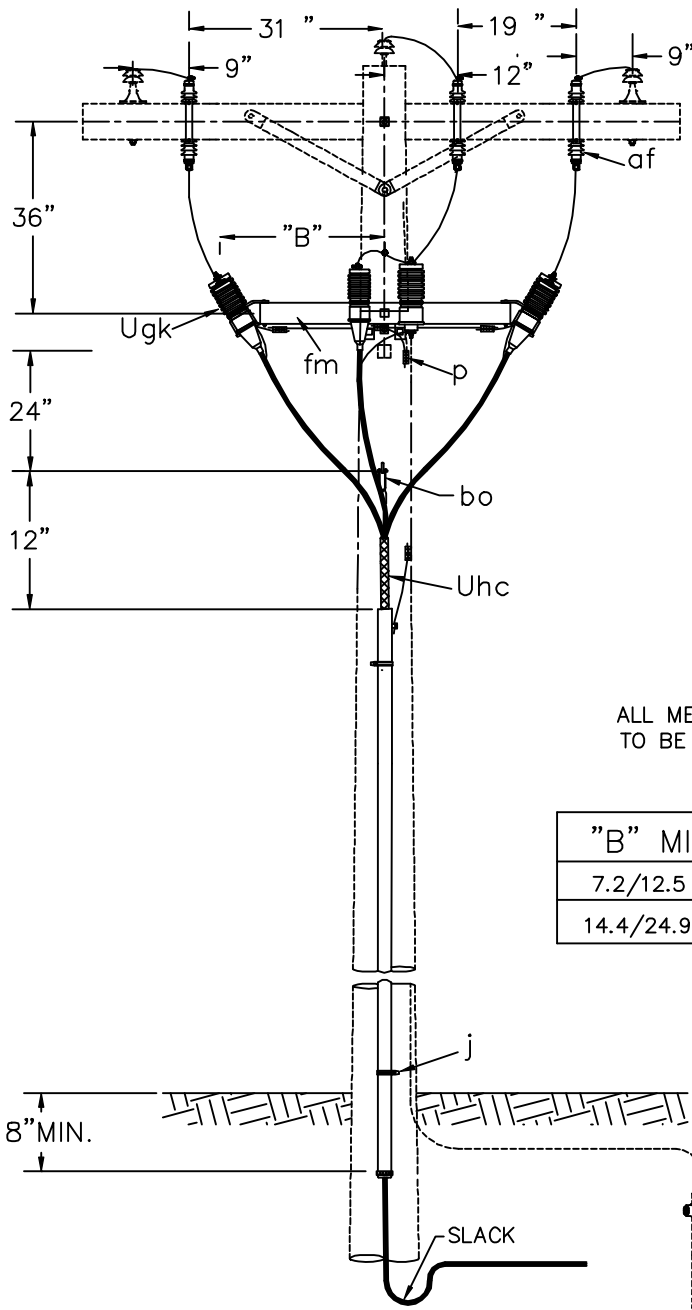
ALL METAL RISERS TO BE GROUNDED

| ITEM | QTY. | MATERIAL |
|------|------|---|
| a | 3 | Insulator, pin type |
| c | 1 | Bolt, machine, 5/8" x required length. |
| d | 1 | Washer, square 2 1/4". |
| f | 3 | Pin, crossarm |
| j | | Screw, lag 1/2" x 4" as required. |
| p | | Connectors, as required. |
| aa | 1 | Eyenut, 5/8" |
| af | 3 | Cutout |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | | Locknuts, as required. |
| fm | 1 | Mounting bracket. |
| Uae | 3* | Surge arrester |
| Ugc | 1 | Cable riser shield. Length as required. |
| Ugk | 3 | Cable termination. |
| Uhc | 3 | Cable support. |

NOTES:

- TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
- NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
- ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

THREE PHASE CABLE DEADEND
TERMINAL POLE



ALL METAL RISERS TO BE GROUNDED

| "B" MINIMUM | |
|--------------|-----|
| 7.2/12.5 kV | 15" |
| 14.4/24.9 kV | 20" |

| ITEM | QTY. | MATERIAL |
|------|------|---|
| c | 1 | Bolt, machine, 5/8" x required length. |
| d | 1 | Washer, square 2 1/4". |
| j | | Screw, lag 1/2" x 4" as required. |
| p | | Connectors, as required. |
| | | |
| | | |
| | | |
| aa | 1 | Eyenuit, 5/8" |
| af | 3 | Cutout |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | | Locknuts, as required. |
| fm | 1 | Mounting bracket. |
| | | |
| | | |
| Uae | 3* | Surge arrester |
| Ugc | 1 | Cable riser shield. Length as required. |
| Ugk | 3 | Cable termination. |
| Uhc | 3 | Cable support. |

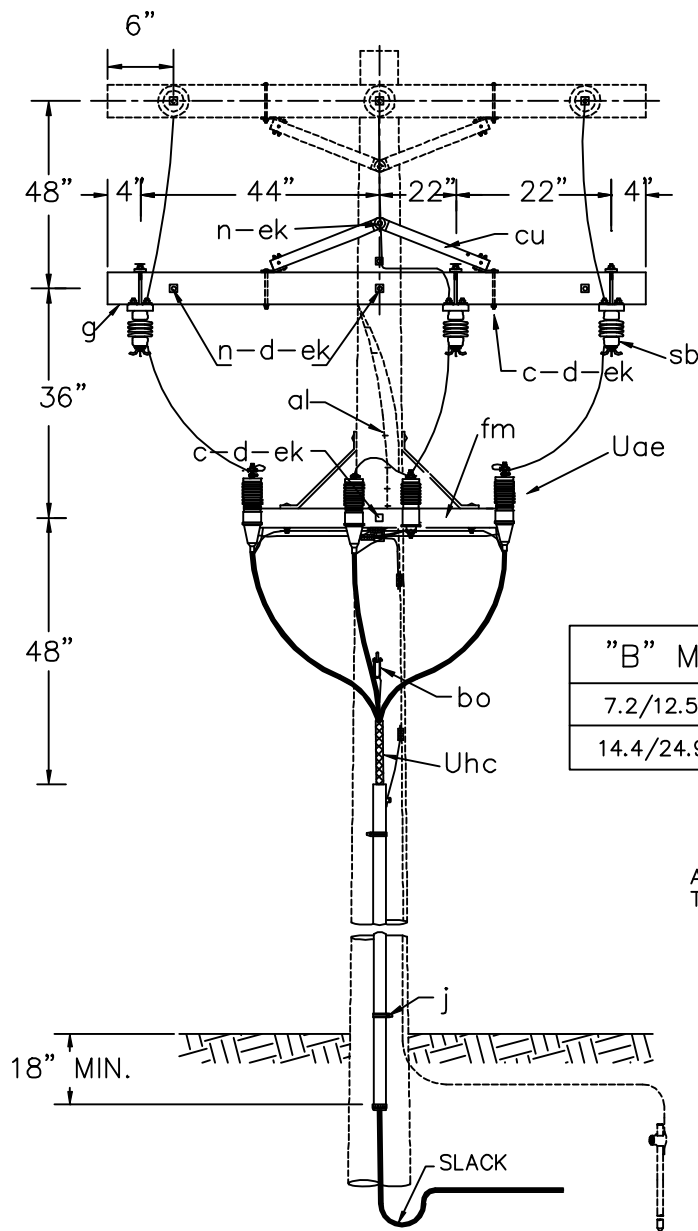
NOTES:

- TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
- NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
- ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

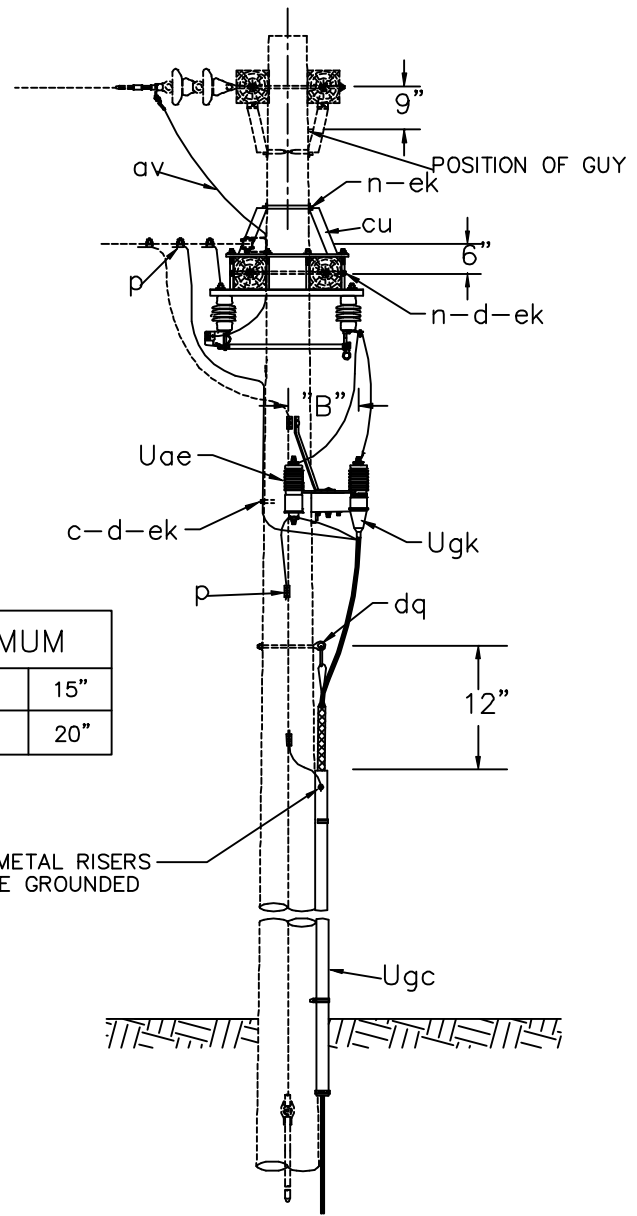
THREE PHASE CABLE
TANGENT TERMINAL POLE

2000

UC2-2



| "B" MINIMUM | |
|--------------|-----|
| 7.2/12.5 kV | 15" |
| 14.4/24.9 kV | 20" |

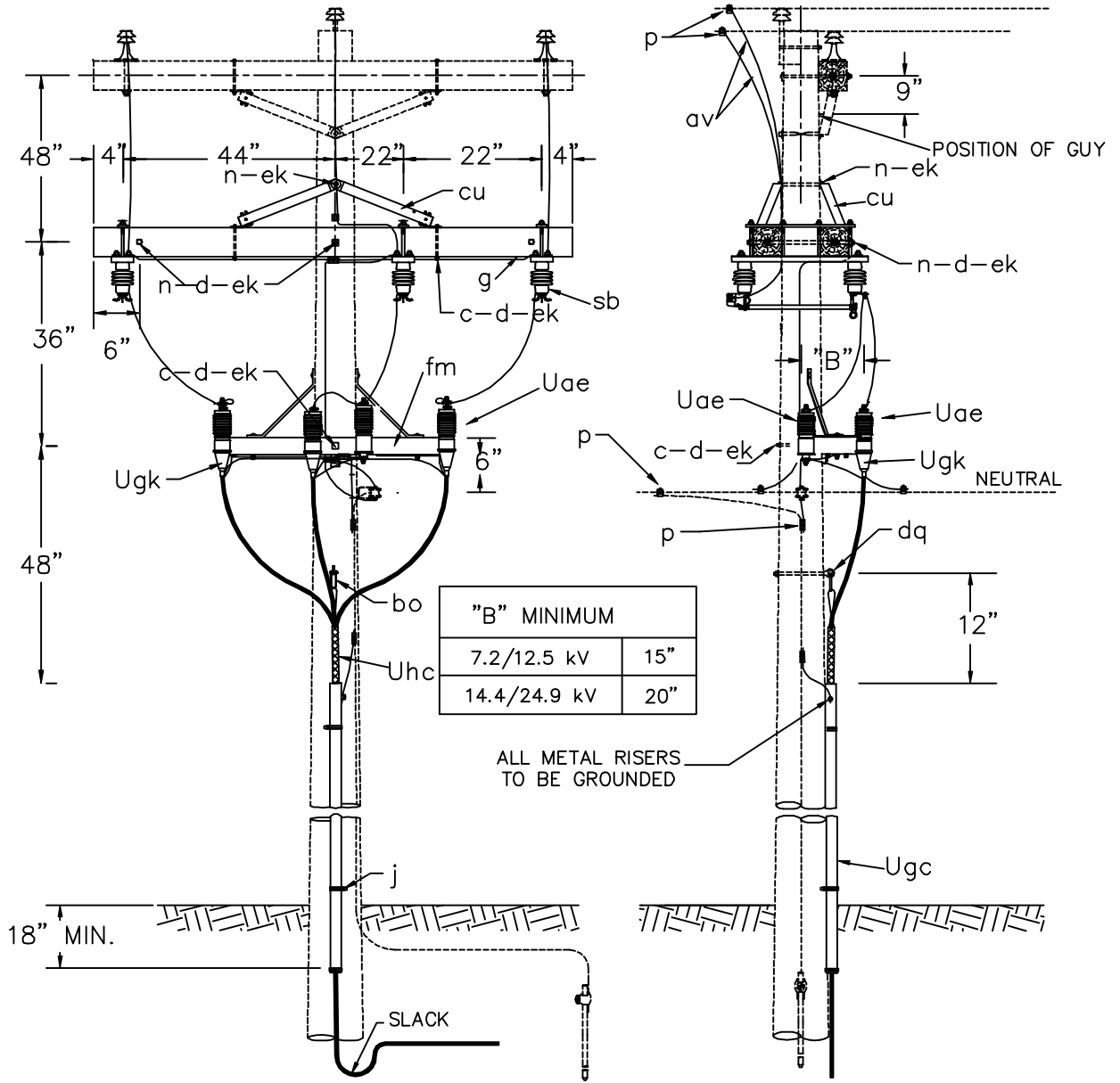


ALL METAL RISERS TO BE GROUNDED

| ITEM | QTY. | MATERIAL |
|------|------|--|
| c | 5 | Bolt, machine, 5/8" x as required |
| d | 4 | Washer, 1 3/8" x 9/16" round |
| d | 12 | Washer, 2 1/2" square |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| j | | Screw, lag 1/2" x 4", as required |
| n | 4 | Bolt, double arming, 5/8" x req'd length |
| p | | Connectors, as required. |
| al | | Staples, as required. |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. |
| cu | 4 | Brace, crossarm 60" span |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | 16 | Locknuts, as required. |
| fm | 1 | Bracket, pothead-arrester 3 phase |
| sb | 3 | Disconnect, 600 A load break |
| Uae | 3 | Surge arrester |
| Ugc | 1 | Cable riser shield. Length as required. |
| Ugk | 3 | Cable termination. |
| Uhc | 3 | Grips |

- NOTES:
- TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
 - NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
 - ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

| | | |
|--|------|-------|
| THREE PHASE CABLE DEADEND TERMINAL POLE WITH DISCONNECT SWITCHES | | |
| | 2000 | UC5-1 |



| "B" MINIMUM | |
|--------------|-----|
| 7.2/12.5 kV | 15" |
| 14.4/24.9 kV | 20" |

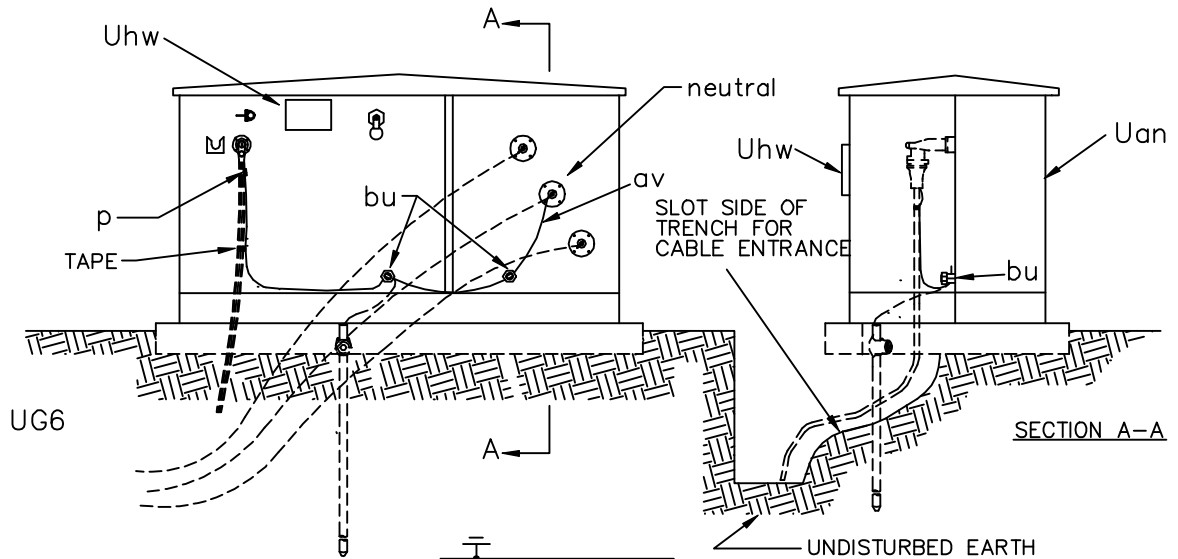
ALL METAL RISERS TO BE GROUNDED

| ITEM | QTY. | MATERIAL |
|------|------|--|
| c | 4 | Bolt, machine, 5/8" x as required |
| d | 4 | Washer, 1 3/8" x 9/16" round |
| d | 12 | Washer, 2 1/2" square |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| j | | Screw, lag 1/2" x 4", as required |
| n | 4 | Bolt, double arming, 5/8" x req'd length |
| p | | Connectors, as required. |
| al | | Staples, as required. |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. |
| cu | 4 | Brace, crossarm 60" span |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | | Locknuts, as required. |
| fm | 1 | Bracket, pothead-arrester 3 phase |
| sb | 3 | Disconnect, 600 A load break |
| Uae | 3 | Surge arrester |
| Ugc | | Cable riser shield. Length as required. |
| Ugk | 3 | Cable termination. |
| Uhc | 3 | Grips |

NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

| | | |
|--|------|-------|
| THREE PHASE CABLE TANGENT TERMINAL POLE WITH DISCONNECT SWITCHES | | |
| | 2000 | UC6-1 |



WIRING DIAGRAM
UG6

DESIGNATE AS:

| TRANSFORMER WITHOUT SECONDARY BREAKERS | TRANSFORMER WITH SECONDARY BREAKERS | |
|---|--|--|
| UG6 | UG6B | SINGLE TERMINATION TYPE WITH INTERNAL FUSE |

| ITEM | QTY. | MATERIAL |
|------|------|---|
| p | | Connectors, as required |
| av | | Jumpers, copper as required |
| bu | 2 | Connector, equipment ground |
| Uan | 1 | Transformer, pad mounted, single primary load break bushing and internal fuse (UG6 & UG6B). |
| Uhw | 2 | Signs, "DANGER" and "WARNING" |
| | | Tape, as required |

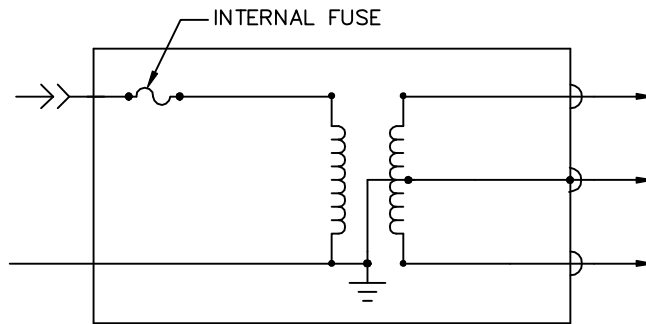
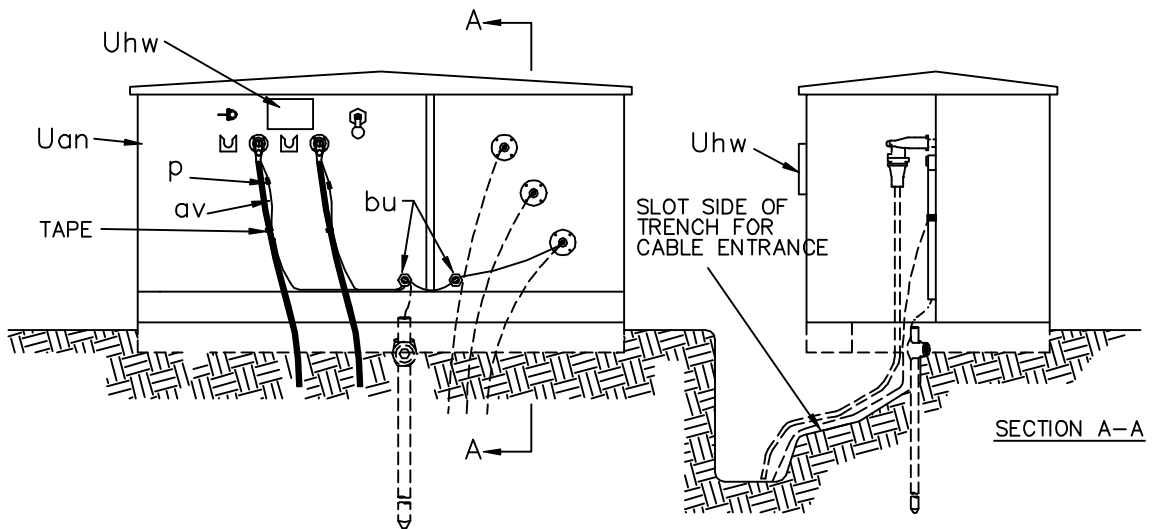
NOTES:

1. PROVIDE SUFFICIENT PRIMARY NEUTRAL PIGTAIL AND CABLE SLACK TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND. TRAIN CABLES AS SHOWN.
2. INSTALL WITH UNIT UM48-1 OR OTHER GROUNDING UNIT TO BE SPECIFIED SEPARATELY.
3. SPECIFY PAD OR SLEEVE SEPARATELY.
4. INSTALL "DANGER" SIGN ON TRANSFORMER INSIDE ENCLOSURE. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE.

SINGLE PHASE
PAD-MOUNTED TRANSFORMER
(RADIAL FEED)

2000

UG6,
UG6B



WIRING DIAGRAM
UG7

DESIGNATE AS:

| TRANSFORMER WITHOUT SECONDARY BREAKERS | TRANSFORMER WITH SECONDARY BREAKERS | |
|---|--|-------------------------|
| UG7 | UG17B | UNIT WITH INTERNAL FUSE |

| ITEM | QTY. | MATERIAL |
|------|------|---|
| p | | Connectors, as required |
| av | | Jumpers, copper as required |
| bu | 2 | Connector, equipment ground |
| Uan | 1 | Transformer, pad mounted, single phase with one load break bushing per phase and internal fuses (UG7 & UG17B) |
| Uhw | 2 | Signs, "DANGER" and "WARNING" |
| Uhp | 1 | Elbow Termination |
| | | Ground wire (See Note #3) |
| | | Tape, as required |

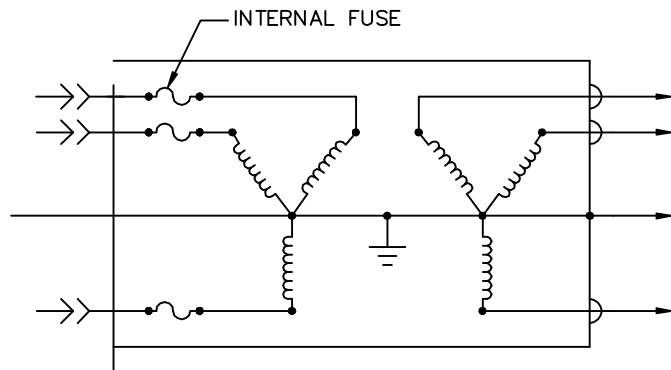
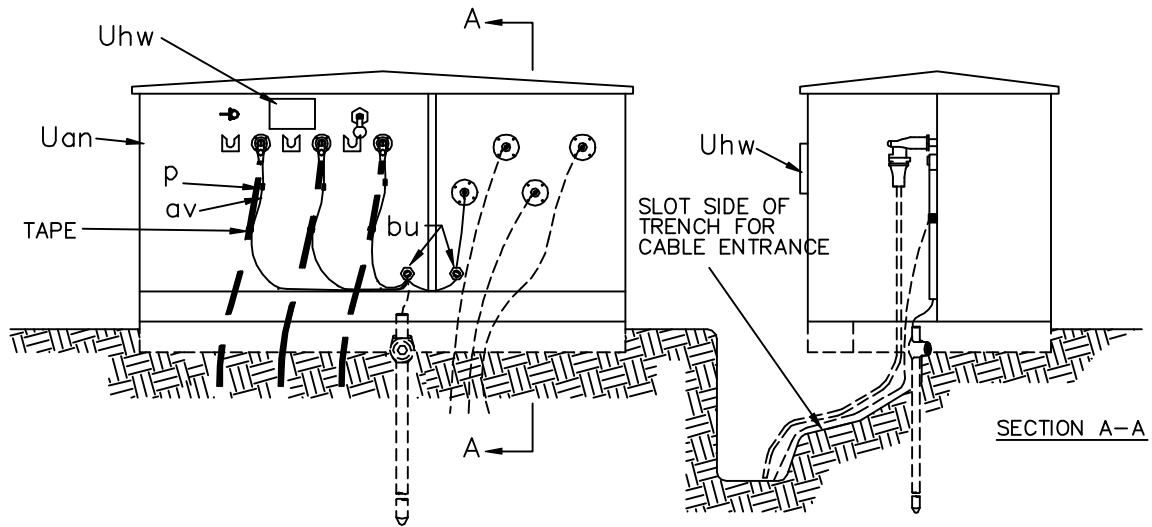
NOTES:

1. PROVIDE SUFFICIENT PRIMARY NEUTRAL PIGTAIL AND CABLE SLACK TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND. TRAIN CABLES AS SHOWN.
2. INSTALL WITH UNIT UM48-1 OR OTHER GROUNDING UNIT TO BE SPECIFIED SEPARATELY.
3. SPECIFY PAD OR SLEEVE UNIT SEPARATELY.
4. INSTALL "DANGER" SIGN ON TRANSFORMER AND "WARNING" SIGN ON ENCLOSURE.

SINGLE PHASE
PAD MOUNTED TRANSFORMER
(LOOP FEED)

2000

UG7
UG7B



DESIGNATE AS:

WIRING DIAGRAM
UG 17

| TRANSFORMER WITHOUT SECONDARY BREAKERS | TRANSFORMER WITH SECONDARY BREAKERS | |
|---|--|-------------------------|
| UG17 | UG17B | UNIT WITH INTERNAL FUSE |

NOTES:

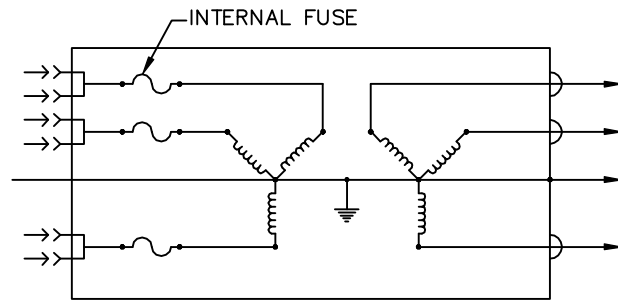
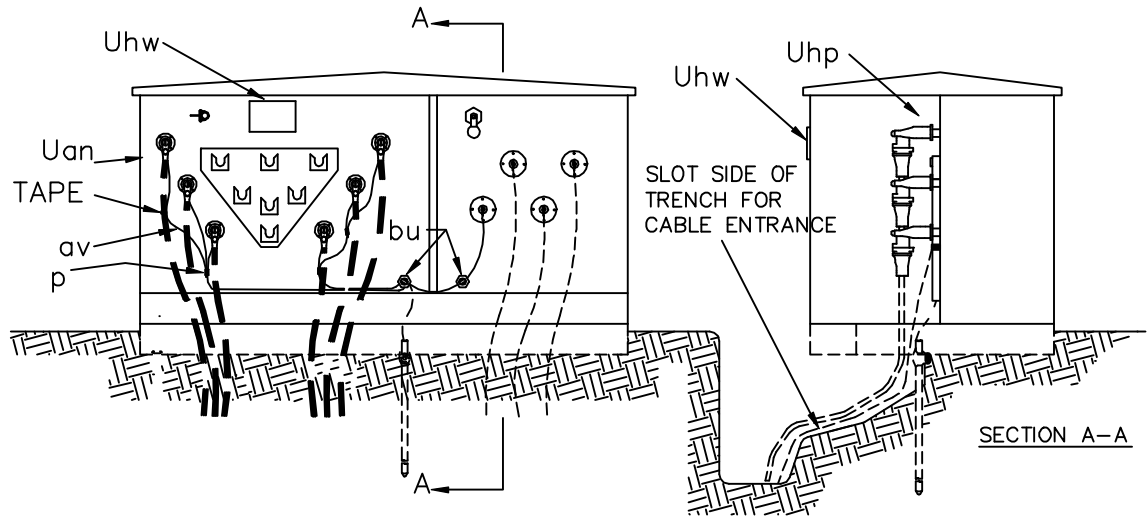
1. ONLY THE WYE-WYE CONNECTION SHOULD BE USED TO MINIMIZE FERRO-RESONANCE.
2. PROVIDE SUFFICIENT PRIMARY NEUTRAL PIGTAIL AND CABLE SLACK TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND. TRAIN CABLES AS SHOWN.
3. INSTALL WITH UNIT UM48-1 OR OTHER GROUNDING UNIT TO BE SPECIFIED SEPARATELY.
4. SPECIFY PAD OR SLEEVE UNIT SEPARATELY.
5. INSTALL "DANGER" SIGN ON TRANSFORMER INSIDE ENCLOSURE. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE.
6. THREE PHASE SWITCHING OF PRIMARY SHOULD BE INSTALLED WHERE FERRORESONANCE MAY OCCUR.

| ITEM | QTY. | MATERIAL |
|------|------|---|
| p | | Connectors, as required |
| av | | Jumpers, copper as required |
| bu | 2 | Connector, equipment ground |
| Uan | 1 | Transformer, pad mounted, three phase with one load break bushing per phase and internal fuses (UG17 & UG17B) |
| Uhw | 2 | Signs, "DANGER" and "WARNING" |
| Uhp | 3 | Elbow Termination |
| | | Ground wire (See Note #3) |
| | | Tape, as required |

THREE PHASE PAD MOUNTED
TRANSFORMER
(RADIAL FEED)

2000

UG17
UG17B



WIRING DIAGRAM
UG17-2

DESIGNATE AS:

| TRANSFORMER WITHOUT SECONDARY BREAKERS | TRANSFORMER WITH SECONDARY BREAKERS | |
|---|--|-------------------------|
| UG17-2 | UG17-2B | UNIT WITH INTERNAL FUSE |

NOTES:

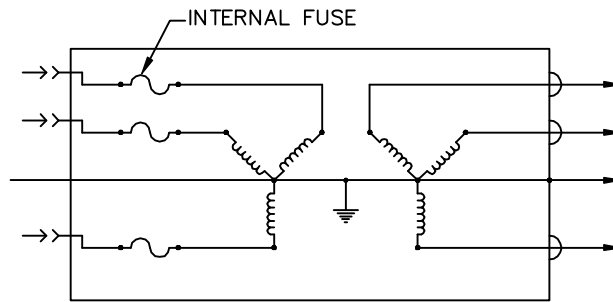
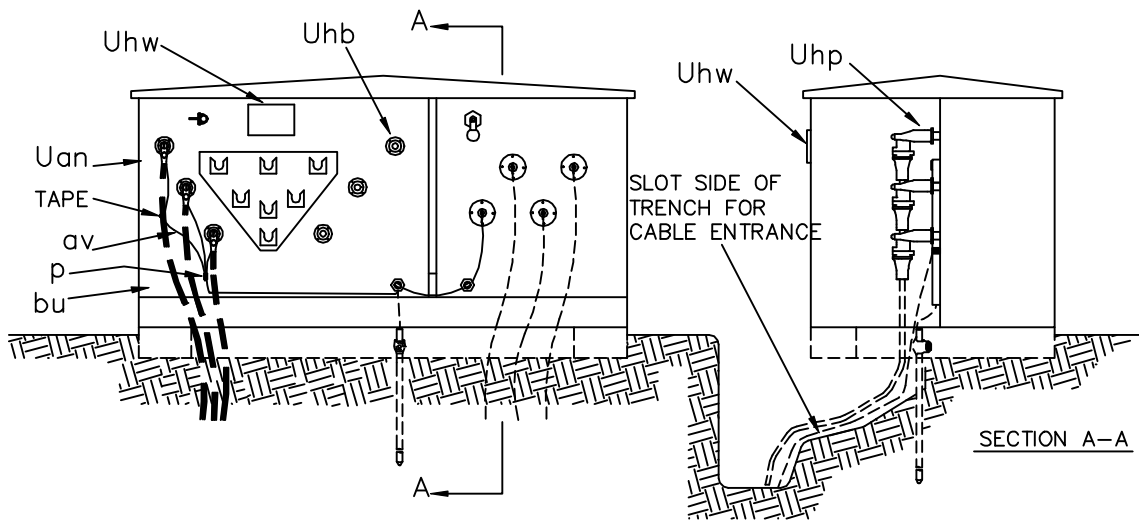
- ONLY THE WYE-WYE CONNECTION SHOULD BE USED TO AVOID FERRORESONANCE.
- PROVIDE SUFFICIENT PRIMARY NEUTRAL PIGTAIL AND CABLE SLACK TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND. TRAIN CABLES AS SHOWN.
- INSTALL WITH GROUNDING ASSEMBLY TO BE SPECIFIED.
- SPECIFY kVA SIZE OF TRANSFORMER.
- SPECIFY PAD OR SLEEVE UNIT SEPARATELY.
- INSTALL "DANGER" SIGN ON TRANSFORMER INSIDE ENCLOSURE. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE.

| ITEM | QTY. | MATERIAL |
|------|------|---|
| p | | Connectors, as required |
| av | | Jumpers, copper, as required |
| bu | 2 | Connector, equipment ground |
| Uan | 1 | Transformer, pad mounted, three phase with two load break bushings per phase and internal fuse. |
| Uhv | 2 | Signs, "DANGER" and "WARNING" |
| Uhp | 6 | Elbow termination |
| | | Tape, as required |
| | | Ground wire (See Note #3) |

THREE PHASE
PAD MOUNTED TRANSFORMER
(LOOP FEED)

2000

UG17-2
UG17-2B



WIRING DIAGRAM

DESIGNATE AS:

| | | |
|---|--|-------------------------|
| TRANSFORMER WITHOUT SECONDARY BREAKERS | TRANSFORMER WITH SECONDARY BREAKERS | |
| UG17-3 | UG17-3B | UNIT WITH INTERNAL FUSE |

NOTES:

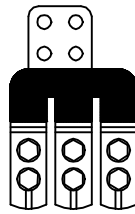
1. ONLY THE WYE-WYE CONNECTION SHOULD BE USED TO AVOID FERRORESONANCE.
2. PROVIDE SUFFICIENT PRIMARY NEUTRAL PIGTAIL AND CABLE SLACK TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND. TRAIN CABLES AS SHOWN.
3. INSTALL WITH GROUNDING ASSEMBLY TO BE SPECIFIED SEPARATELY.
4. SPECIFY PAD OR SLEEVE UNIT SEPARATELY.
5. INSTALL "DANGER" SIGN ON TRANSFORMER INSIDE ENCLOSURE. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE.

| ITEM | QTY. | MATERIAL |
|------|------|--|
| p | | Connectors, as required |
| av | | Jumpers, copper, as required |
| bu | 2 | Connector, equipment ground |
| Uan | 1 | Transformer, pad mounted, three phase, with two load break bushings per phase and internal fuse. |
| Uhb | 3 | Insulated covers |
| Uhw | 2 | Signs, "DANGER" and "WARNING" |
| Uhp | 3 | Elbow termination |
| | | Tape, as required |
| | | Ground wire (See Note #3) |

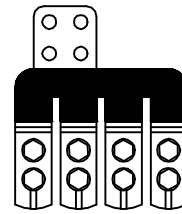
| | |
|--|-------------------|
| THREE PHASE PAD MOUNTED LOOP FEED TRANSFORMER WITH RADIAL FEED | |
| 2000 | UG17-3 UG17-3B |



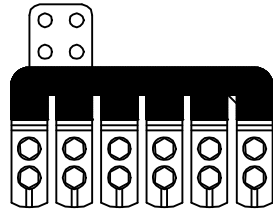
UJ1-2



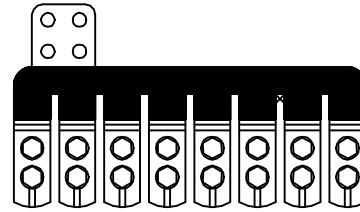
UJ1-3



UJ1-4

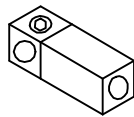


UJ1-6

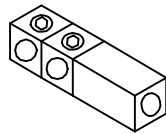


UJ1-8

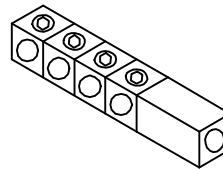
CONNECTOR BLOCKS



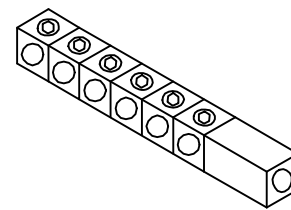
UJ2-1



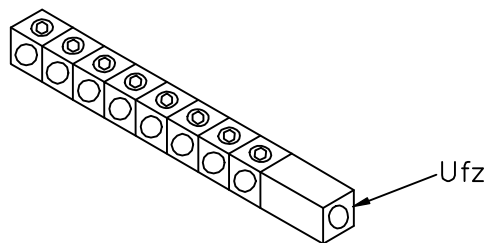
UJ2-2



UJ2-4



UJ2-6

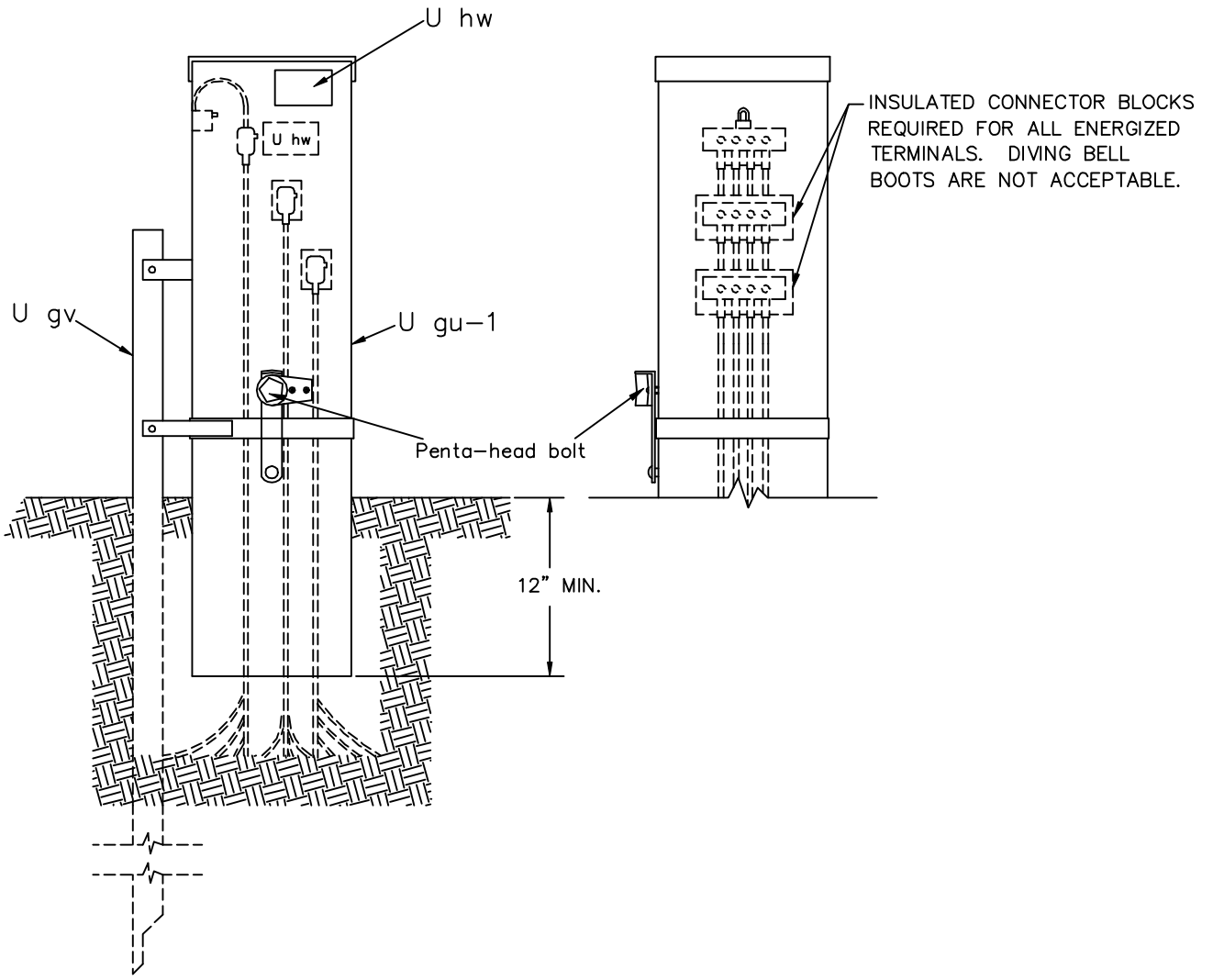


UJ2-8

TRANSFORMER CONNECTOR BLOCKS

NOTE: Insulated covers are not shown.

| ITEM | QTY. | MATERIAL | SECONDARY CONNECTOR BLOCKS | |
|------|------|--|----------------------------|--------|
| Ufz | | Transformer connector blocks, as required | 2000 | UJ1-__ |
| Ugp | | Connector blocks, as required | | UJ2-__ |

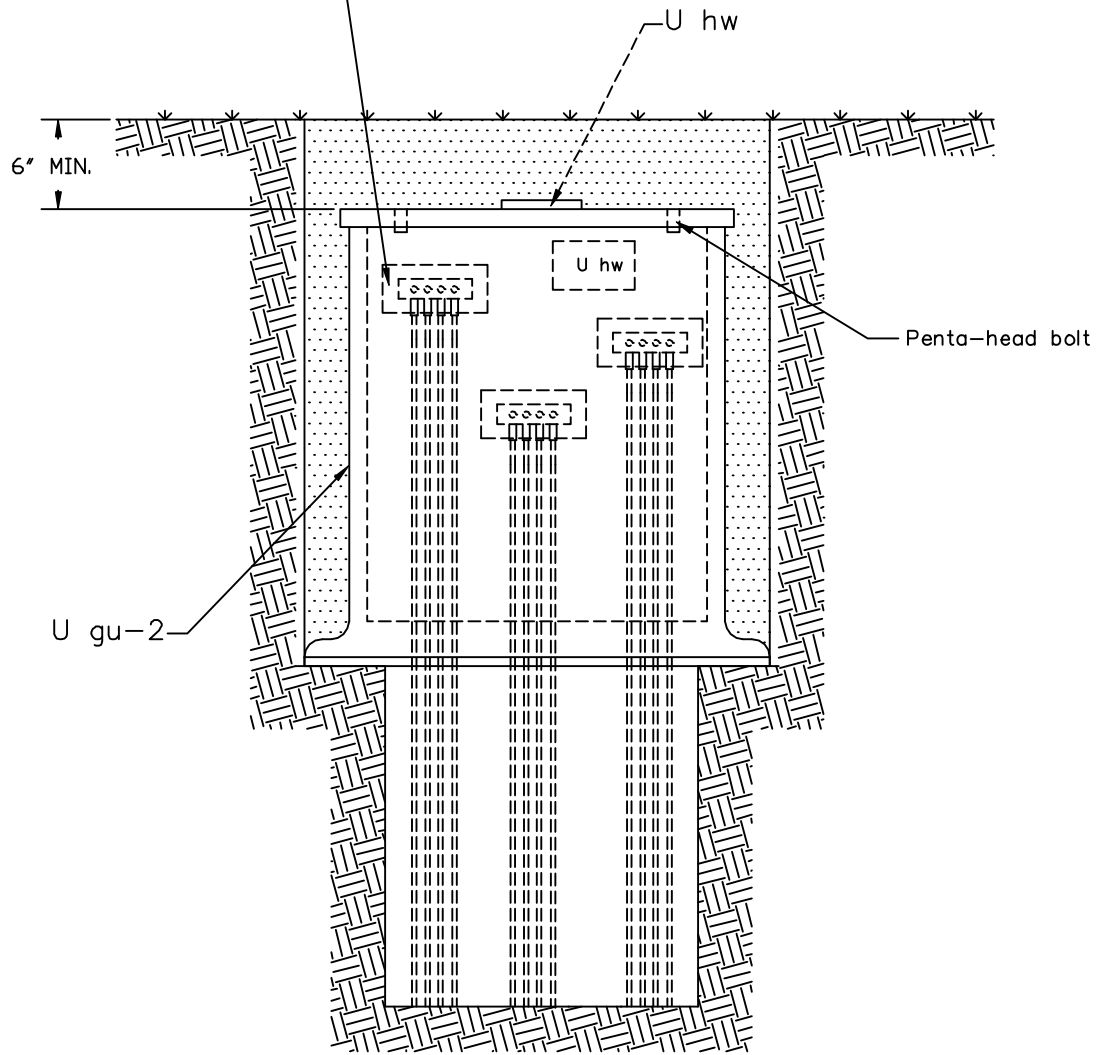


NOTES:

1. INSTALL "WARNING" SIGN ON OUTSIDE OF PEDESTAL.
2. ITEM Ugv OPTIONAL – SEE PEDESTAL MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
3. ALL PEDESTALS SHALL BE GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL SAFETY CODE (NESC).

| ITEM | QTY. | MATERIAL | | |
|-------|------|------------------------------------|---|--|
| Ugw-1 | 1 | Power pedestal | SECONDARY PEDESTAL UNDERGROUND CABLE | |
| Ugv | 1 | Stake (if necessary) | | |
| Uhw | 1 | Sign, "WARNING" (outside pedestal) | 2000 UK5 | |
| Uhw | 1 | Sign, "DANGER" (inside pedestal) | | |

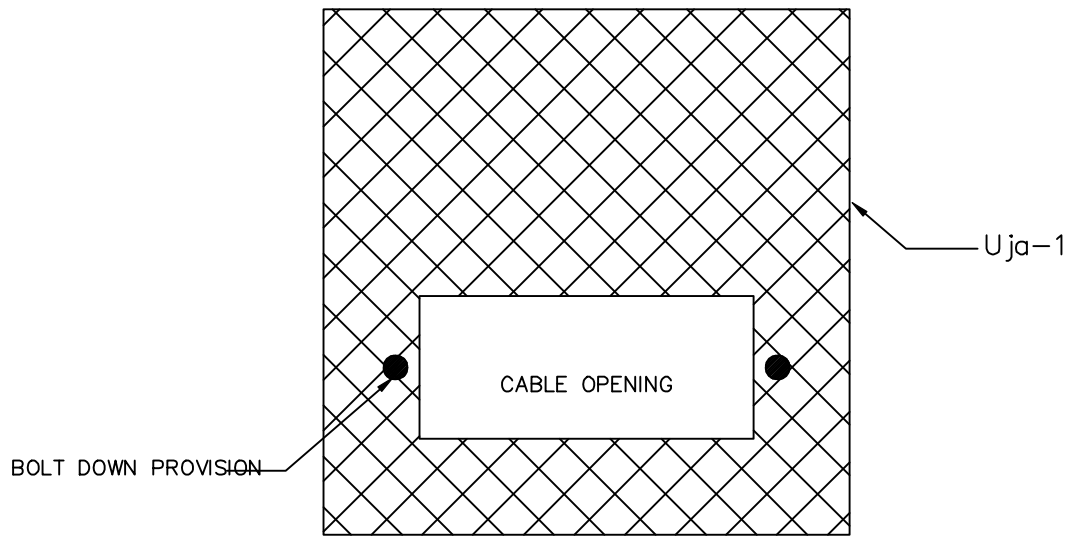
INSULATED SUBMERSIBLE CONNECTOR BLOCKS
 REQUIRED FOR ALL TERMINALS.
 DIVING BELL BOOTS ARE NOT ACCEPTABLE.



NOTES:

1. OWNER TO SPECIFY WHETHER UNIT IS TO BE BURIED AS SHOWN OR INSTALLED FLUSH WITH FINAL GRADE. METAL COVER IF USED SHOULD BE GROUNDED.
2. ALL PEDESTALS SHALL BE GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL SAFETY CODE (NEC).

| ITEM | QTY. | MATERIAL | | | |
|--------|------|------------------------------------|---|-----|--|
| U gu-2 | 1 | Power pedestal, buried type | SECONDARY HANDHOLE UNDERGROUND CABLE | | |
| U hw | 1 | Sign, "DANGER" (inside pedestal) | | | |
| U hw | 1 | Sign, "WARNING" (outside pedestal) | | | |
| | | | 2000 | UK6 | |



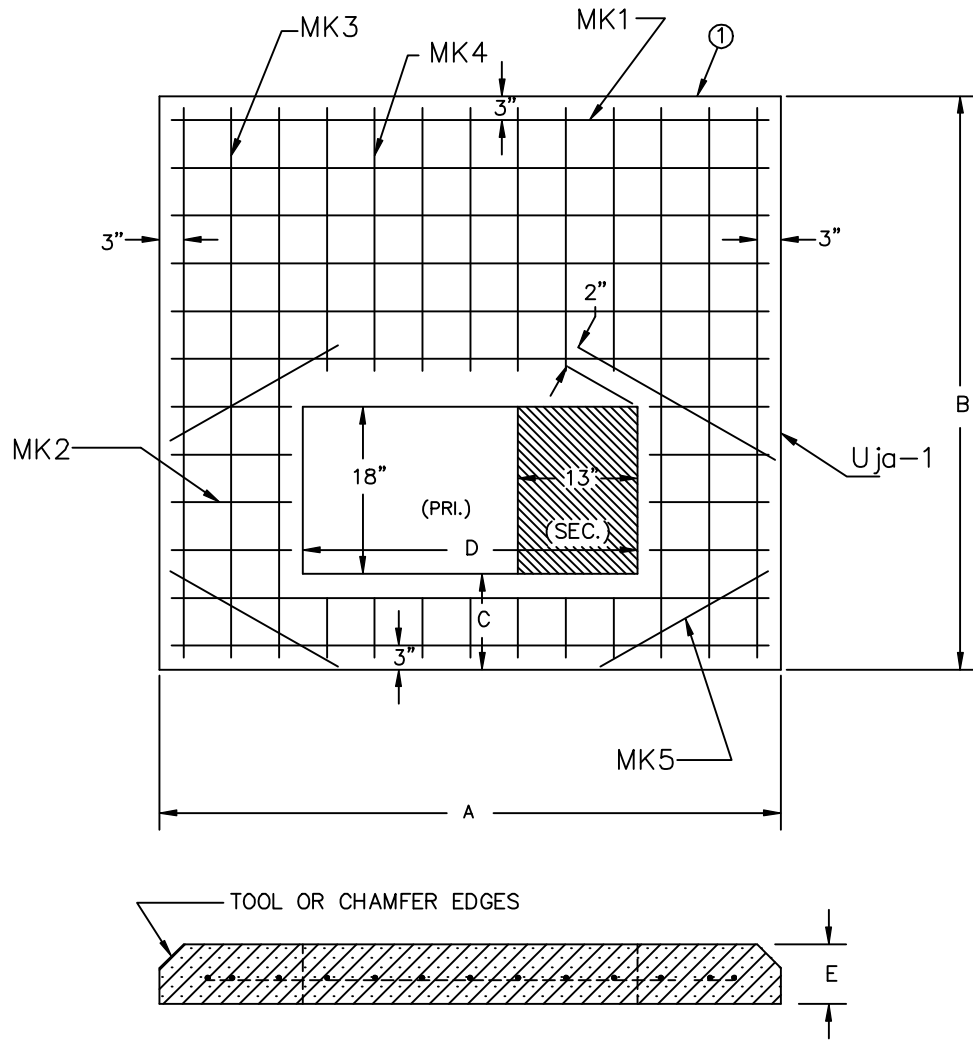
NOTES:

1. PAD ASSEMBLIES INCLUDE SITE PREPARATION, BEDDING AND DRAINAGE.
2. EQUIPMENT SHALL BE SECURED TO PAD IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
3. CABLE OPENING AND PAD DIMENSIONS SHALL BE AS REQUIRED.

UNIT DESIGNATION:

| | |
|---------|--------------|
| UM1-5C | CONCRETE |
| UM1-5NC | NON-CONCRETE |

| | | | |
|--|----------------|-------------------|--|
| | PAD ASSEMBLIES | | |
| | 2000 | UM1-5C UM1-5NC | |

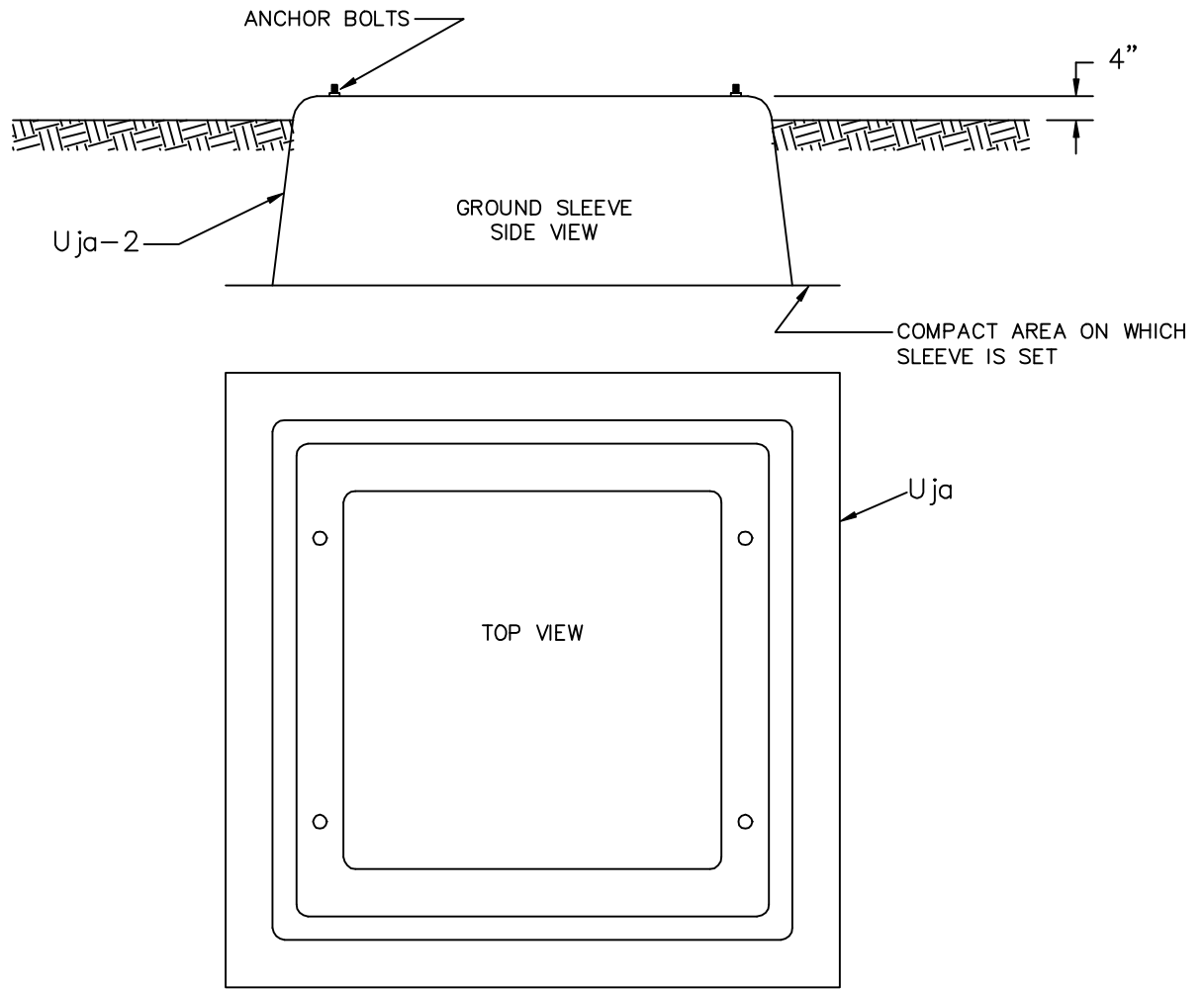


| PAD | 3-PHASE TRANSF. kVA | DIMENSIONS IN INCHES | | | | | REINFORCING BARS | | | | |
|-----|------------------------------------|----------------------|-----|----|----|---|------------------|-------------|-------------|-------------|-------------|
| | | A | B | C | D | E | MK1 | MK2 | MK3 | MK4 | MK5 |
| #1 | 75, 112 1/2, 150, 225, 300, 500 | 76 | 62 | 10 | 42 | 6 | 7 #4 70" | 4 #4 10" | 6 #4 57" | 6 #4 28" | 4 #4 26" |
| #2 | 750, 1000 1500, 2500 | 104 | 100 | 10 | 54 | 8 | 12 #4 98" | 6 #4 19" | 6 #4 94" | 7 #4 66" | 4 #4 29" |

NOTES:

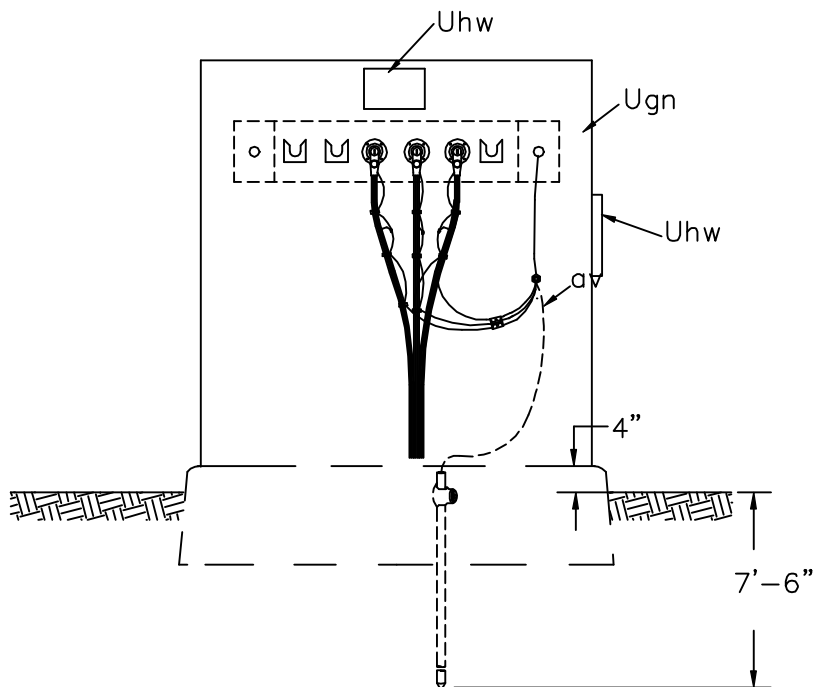
1. CONCRETE TESTING, 3000 POUNDS MIN. PER SQUARE INCH; 4% TO 6% ENTRAINED AIR, 3/4" MAXIMUM SIZE AGGREGATE.
2. REINFORCING STEEL, ATSM-A615 GRADE 60, PLACE APPROX. 6" O.C. EACH WAY AND SECURELY TIED TOGETHER.
3. MINIMUM CONCRETE COVER OVER REINFORCING STEEL 2 INCHES UNLESS NOTED.
4. WOOD FLOAT FINISH, LEAVING NO DEPRESSIONS.

| | | | |
|--|--|--|--------|
| | | THREE PHASE TRANSFORMER CONCRETE PADS | |
| | | 2000 | UM1-6C |



UNIT DESIGNATIONS:
 UM1-7C CONCRETE
 UM1-7NC NON-CONCRETE

| | | | |
|--|--|------------------------|-------------------|
| | | GROUND SLEEVE ASSEMBLY | |
| | | 2000 | UM1-7C UM1-7NC |



NOTE:

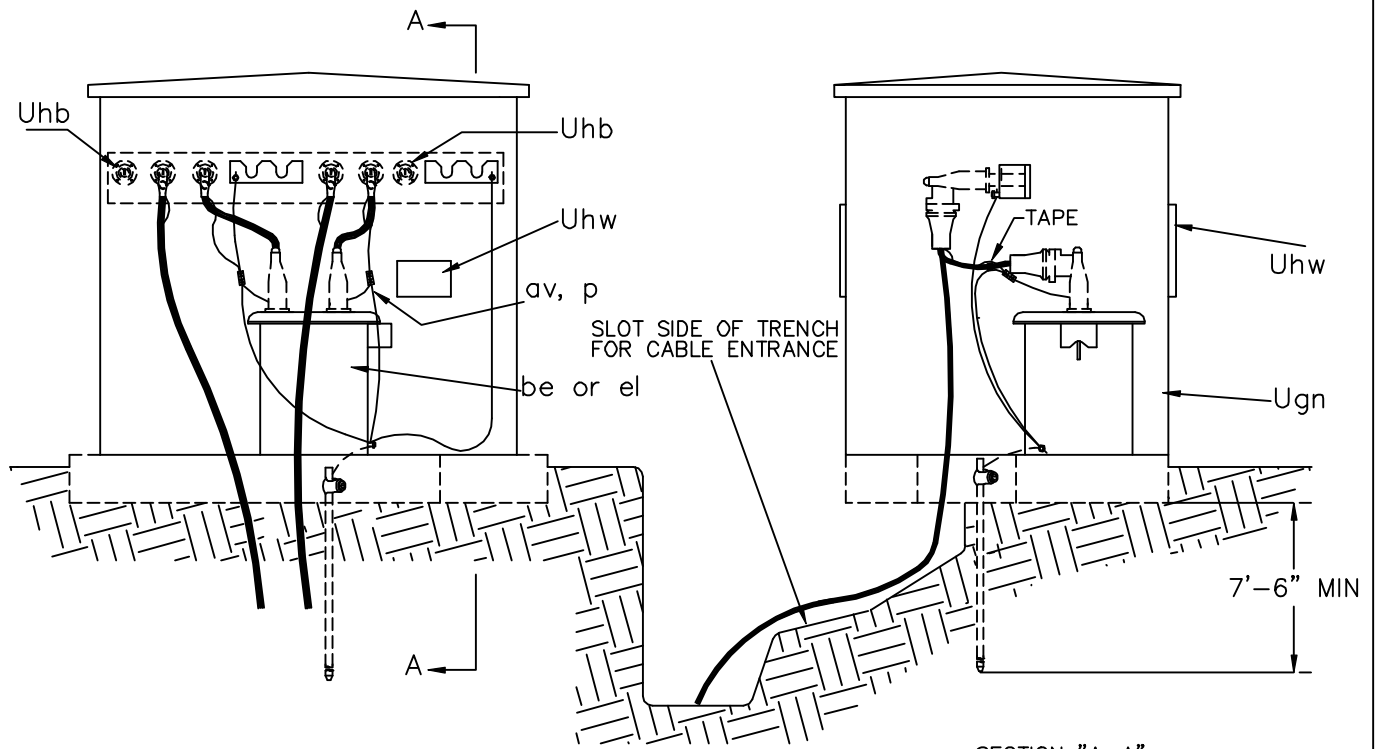
1. THE FOLLOWING UNITS/ASSEMBLIES ARE NOT PART OF THIS UNIT. SPECIFY SEPARATELY:
 - A. MULTIPPOINT TERMINATION AND OTHER ACCESSORIES
 - B. FUSED OR NON-FUSED LOADBREAK ELBOWS
 - C. GROUNDING ASSEMBLY UM48-1 OR OTHER
 - D. PAD OR SLEEVE (IF REQUIRED)

2. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE AND "DANGER" SIGN INSIDE ENCLOSURE.

3. PROVIDE SUFFICIENT PRIMARY NEUTRAL PIGTAIL AND CABLE SLACK TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND.

| ITEM | QTY. | MATERIAL |
|------|------|--|
| | | |
| | | |
| | | |
| p | | Connectors, as required |
| | | |
| av | | Jumpers, as required |
| | | |
| Ugn | 1 | Enclosure |
| Uhw | 2 | Signs, "DANGER" and "WARNING" |
| Ugc | | Cable riser shield, length as required |
| | | |

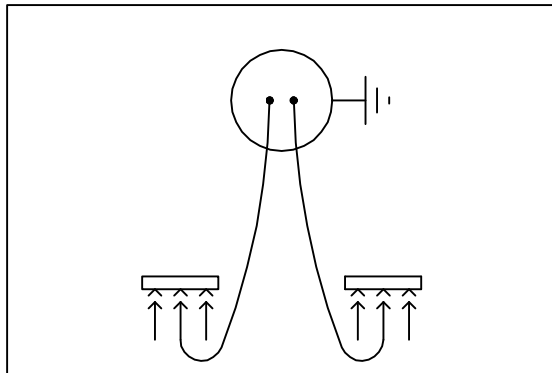
| | | | |
|--|--|--|--------|
| | | SINGLE PHASE SECTIONALIZING ENCLOSURE | |
| | | 2000 | UM3-14 |



DESIGNATE AS:

RECLOSER ASSEMBLY UM3-44

SECTIONALIZER ASSEMBLY UM3-45



WIRING DIAGRAM

NOTES:

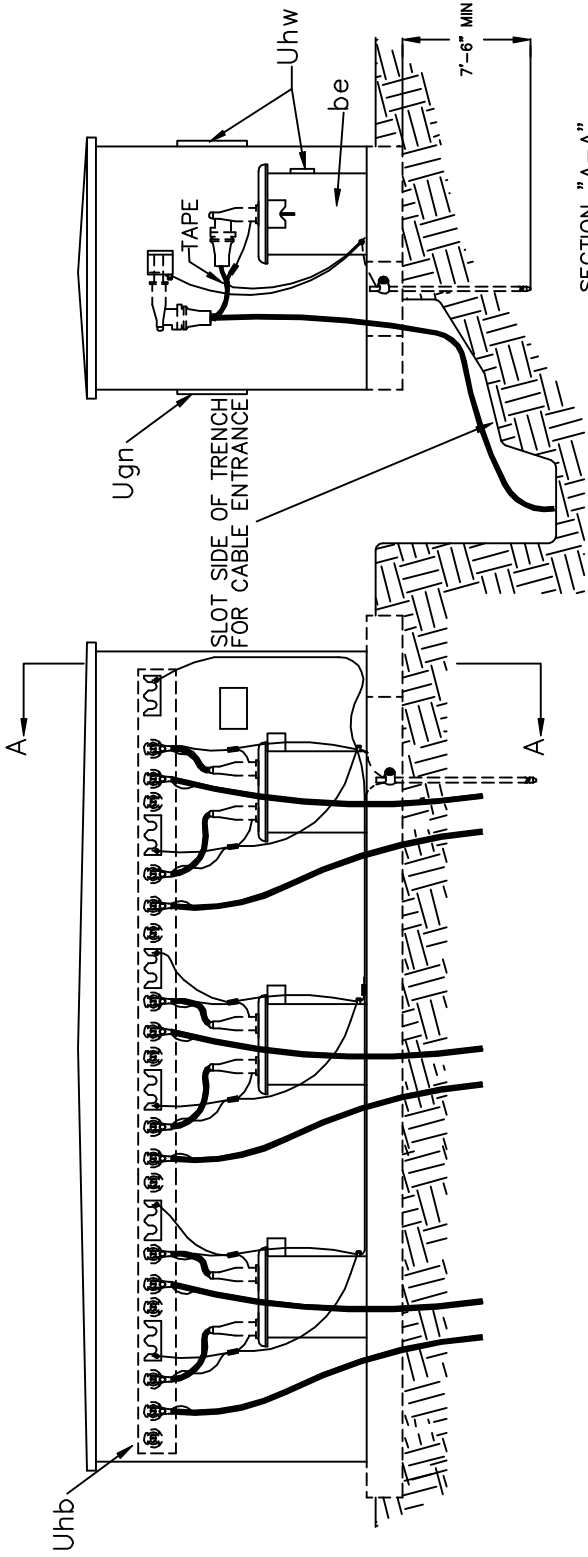
1. THE FOLLOWING UNITS/ASSEMBLIES ARE NOT PART OF THIS UNIT. SPECIFY SEPARATELY:
 - A. MULTIPoint TERMINATIONS AND OTHER ACCESSORIES
 - B. LOADBREAK ELBOWS
 - C. GROUNDING ASSEMBLY UM48-1 OR OTHER
 - D. PAD ASSEMBLY
2. PROVIDE SUFFICIENT SLACK IN ALL CABLES TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND.
3. ANCHOR RECLOSER AND ENCLOSURE TO PAD.
4. INSTALL "WARNING" SIGN OUTSIDE SURFACE OF ENCLOSURE AND "DANGER" SIGN INSIDE ENCLOSURE.

| ITEM | QTY. | MATERIAL |
|------|------|--|
| p | | Connectors, as required |
| av | | Jumpers, as required |
| be | 1 | Recloser, oil circuit with bushing wells (UM3-44). |
| el | 1 | Sectionalizer, with bushing wells (UM3-45). |
| Ugn | 1 | Enclosure |
| Uhb | 2 | Insulated covers |
| Uhw | 2 | Signs, "DANGER" and "WARNING" |

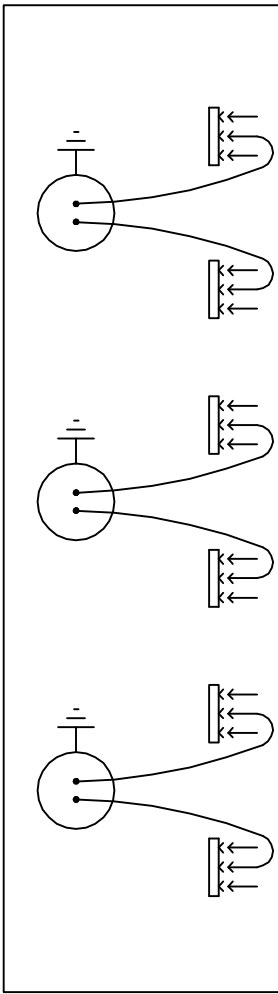
SINGLE PHASE PAD MOUNTED
SECTIONALIZER OR RECLOSER

2000

UM3-44
UM3-45



SECTION "A-A"



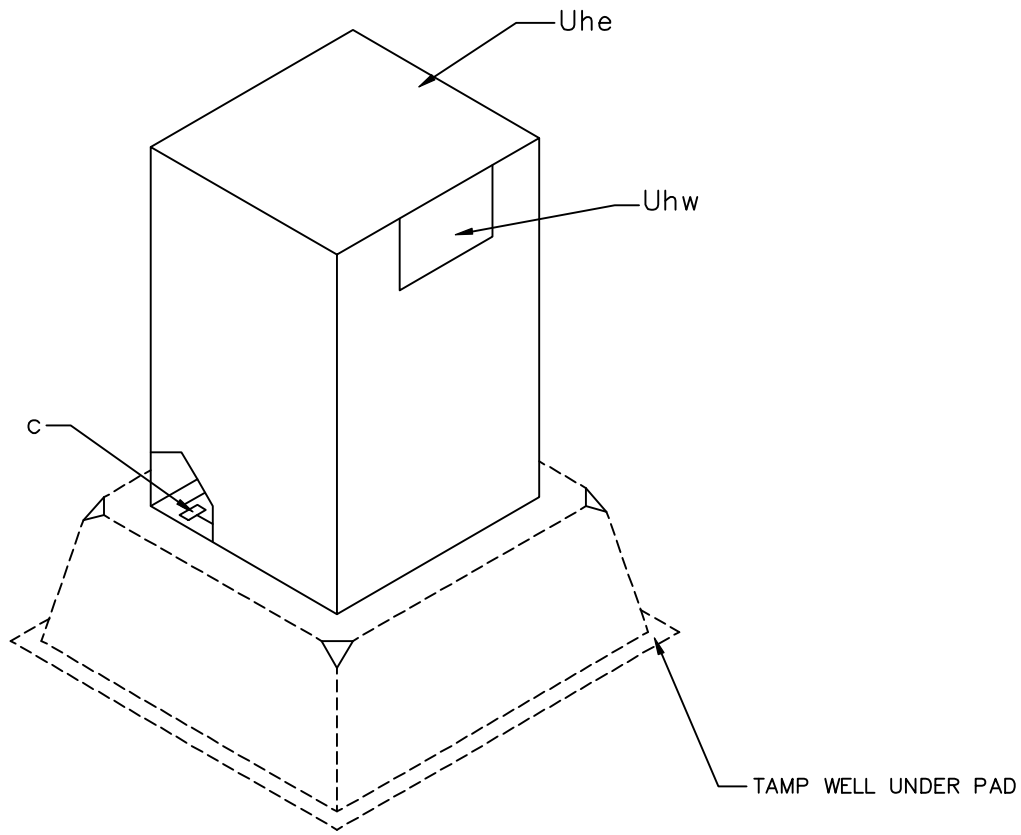
WIRING DIAGRAM

NOTES:

1. THE FOLLOWING UNITS/ASSEMBLIES ARE NOT PART OF THIS UNIT. SPECIFY SEPARATELY:
 - A. MULTIPoint TERMINATIONS AND OTHER ACCESSORIES
 - B. LOADBREAK ELBOWS
 - C. GROUNDING ASSEMBLY UM48-1 OR OTHER
 - D. PAD ASSEMBLY
2. PROVIDE SUFFICIENT SLACK IN ALL CABLES TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND.
3. ANCHOR RECLOSER AND ENCLOSURE TO PAD.
4. INSTALL "WARNING" SIGN OUTSIDE SURFACE OF ENCLOSURE AND "DANGER" SIGN INSIDE ENCLOSURE.

| ITEM | QTY. | MATERIAL |
|------|------|--|
| be | 3 | Recloser, oil circuit with bushing wells |
| Ugn | 1 | Enclosure |
| Uhb | 6 | Insulated covers |
| Uhw | 2 | Signs, "DANGER" and "WARNING" |

| | |
|--|--------|
| THREE, SINGLE PHASE PAD MOUNTED RECLOSERS | |
| 2000 | UM3-46 |



SPECIFICATION NUMBERING CODES:
 UM3E-(1,2 or 3) - (FIG. NO.)

SEE DRAWING UM3E-1, 2, OR 3
 NUMBER OF PHASES

EXAMPLE:

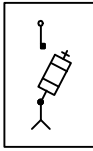
UM3E-3-9
 WIRING DIAGRAM
 THREE PHASE CONFIGURATION
 FUSE ENCLOSURE

NOTES:

1. PAD OR GROUND SLEEVE LOAD BREAK ELBOWS, STRESS CONES, FUSES OR SWITCH BLADES ARE NOT PART OF THIS ASSEMBLY. THEY SHOULD BE SPECIFIED SEPARATELY ON THE STAKING SHEETS.
2. TAMP WELL UNDER SLEEVE. LEAVE SLACK COIL OF CABLE IN GROUND SLEEVE.
3. PLACE 6" OF FILL AGAINST INSIDE EDGE OF GROUND SLEEVE.
4. ON DEAD FRONT FUSE ENCLOSURES USE GROUNDING ASSEMBLY TO BE SPECIFIED SEPARATELY.
5. TOP OF GROUND SLEEVE TO BE INSTALLED 3" ABOVE GROUND LEVEL.
6. INSTALL "DANGER" SIGN ON EQUIPMENT INSIDE ENCLOSURE. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE.
7. GROUND SLEEVES ARE SPECIFIED.

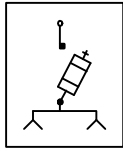
| ITEM | QTY. | MATERIAL | | |
|------|------|-------------------------------|--|--|
| c | | Bolt, machine, as necessary | | |
| Uhe | 1 | Enclosure as specified | FUSE / SWITCH ENCLOSURE INSTALLATION 2000 UM3E-__ -__ | |
| Uhw | 2 | Signs, "DANGER" and "WARNING" | | |

FIG. 1A



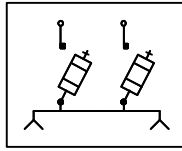
SINGLE PHASE
RADIAL FEED
1 - FUSE

FIG. 1B



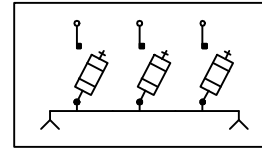
SINGLE PHASE
LOOP FEED
1 - FUSE

FIG. 1C



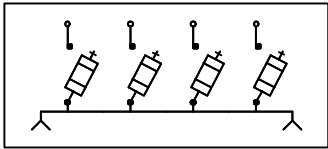
SINGLE PHASE
LOOP FEED
2 - FUSE

FIG. 1D



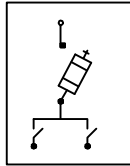
SINGLE PHASE
LOOP FEED
3 - FUSE

FIG. 1E



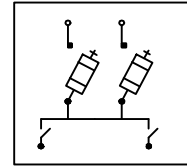
SINGLE PHASE
LOOP FEED
4 - FUSE

FIG. 1F



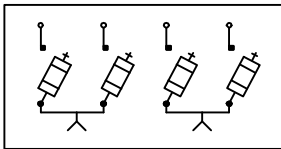
SINGLE PHASE
LOOP FEED
1 - FUSE

FIG. 1G



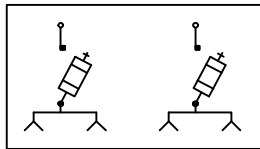
SINGLE PHASE
LOOP FEED
2 - FUSE

FIG. 2A



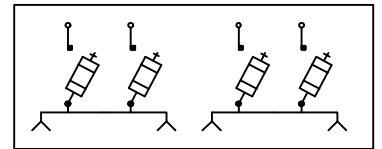
TWO PHASE
RADIAL FEED
2 - FUSE

FIG. 2B



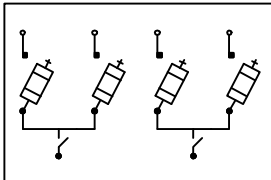
TWO PHASE
LOOP FEED
1 - FUSE

FIG. 2C



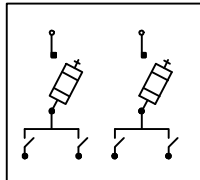
TWO PHASE
LOOP FEED
2 - FUSE

FIG. 2D



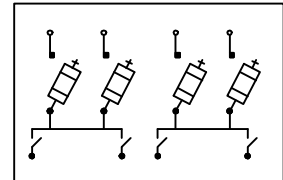
TWO PHASE
RADIAL FEED
2 - FUSE

FIG. 2E




TWO PHASE
RADIAL FEED
1 - FUSE

FIG. 2F




TWO PHASE
LOOP FEED
2 - FUSE

 - FUSE

• - TERMINATIONS CAN BE WITH ELBOWS, STRESS CONES OR TERMINATORS

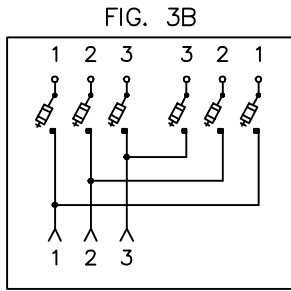
^ - LOADBREAK ELBOW LINE SWITCHING

 - SINGLE POLE SOLID BLADE SWITCHING

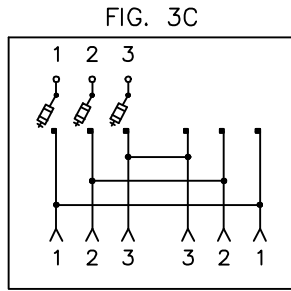
SINGLE POLE SWITCHING
200 AMP FUSE ENCLOSURE
INSTALLATION WIRING DIAGRAMS
(SINGLE PHASE AND TWO PHASE)

2000

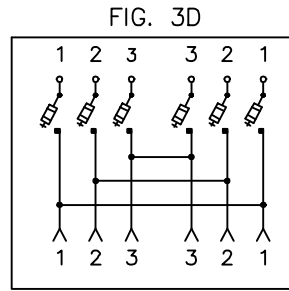
UM3E-1
UM3E-2



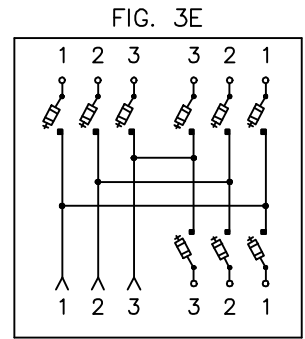
ELBOW SWITCH
2 - FUSE



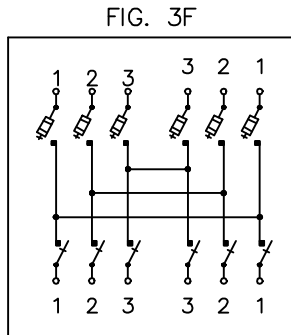
ELBOW SWITCH
1 - FUSE



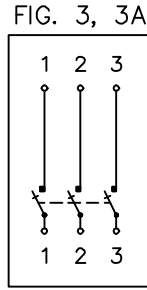
ELBOW SWITCH
2 - FUSE



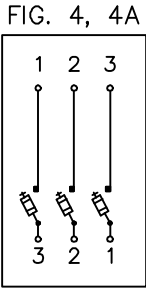
ELBOW SWITCH
3 - FUSE



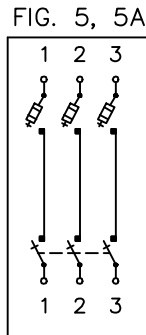
SINGLE POLE SWITCH
2 - FUSE



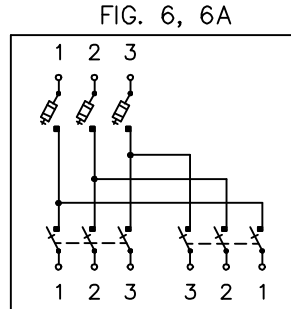
THREE PHASE
SWITCH



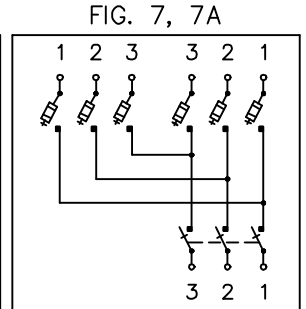
THREE PHASE
SWITCH OR
FUSE



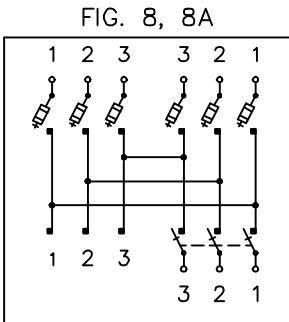
THREE PHASE
SWITCH
1 - FUSE



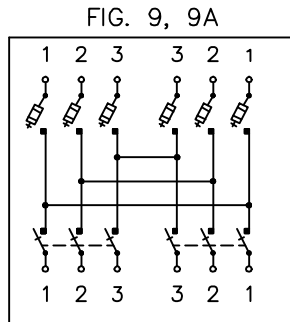
THREE PHASE
SWITCHES
1 - FUSE



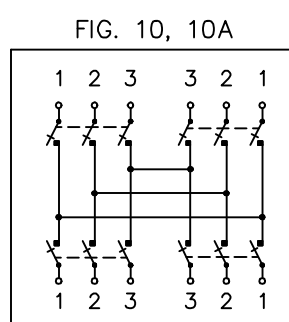
THREE PHASE
SWITCH
2 - FUSE



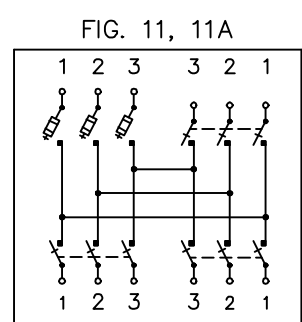
THREE PHASE SWITCH
2 - FUSE
1 - TERMINAL



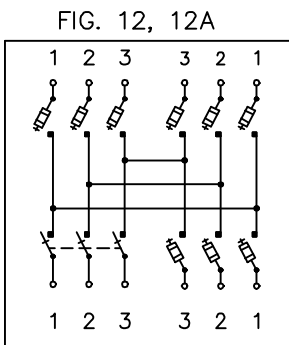
THREE PHASE SWITCHES
2 - FUSES



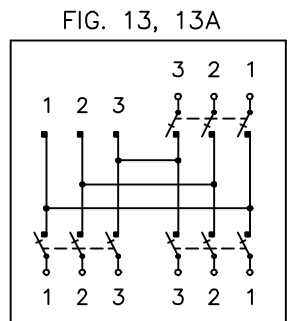
THREE PHASE SWITCHES



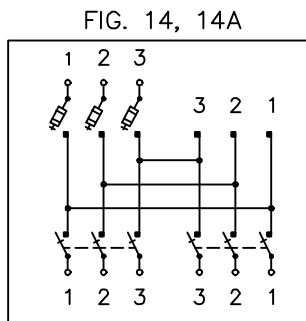
THREE PHASE SWITCHES
1 - FUSE



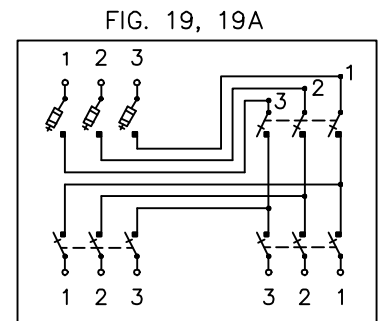
THREE SWITCH
3 - FUSES



THREE PHASE SWITCHES
1 - TERMINAL



THREE PHASE SWITCHES
1 - FUSE
1 - TERMINAL



THREE PHASE SWITCHES
THREE PHASE SWITCHED / FUSE TAP

EXAMPLE:

FIG. 3 = 600 AMP MAIN
LINE SWITCH

FIG. 3A = 200 AMP MAIN
LINE SWITCH

□ - FUSE

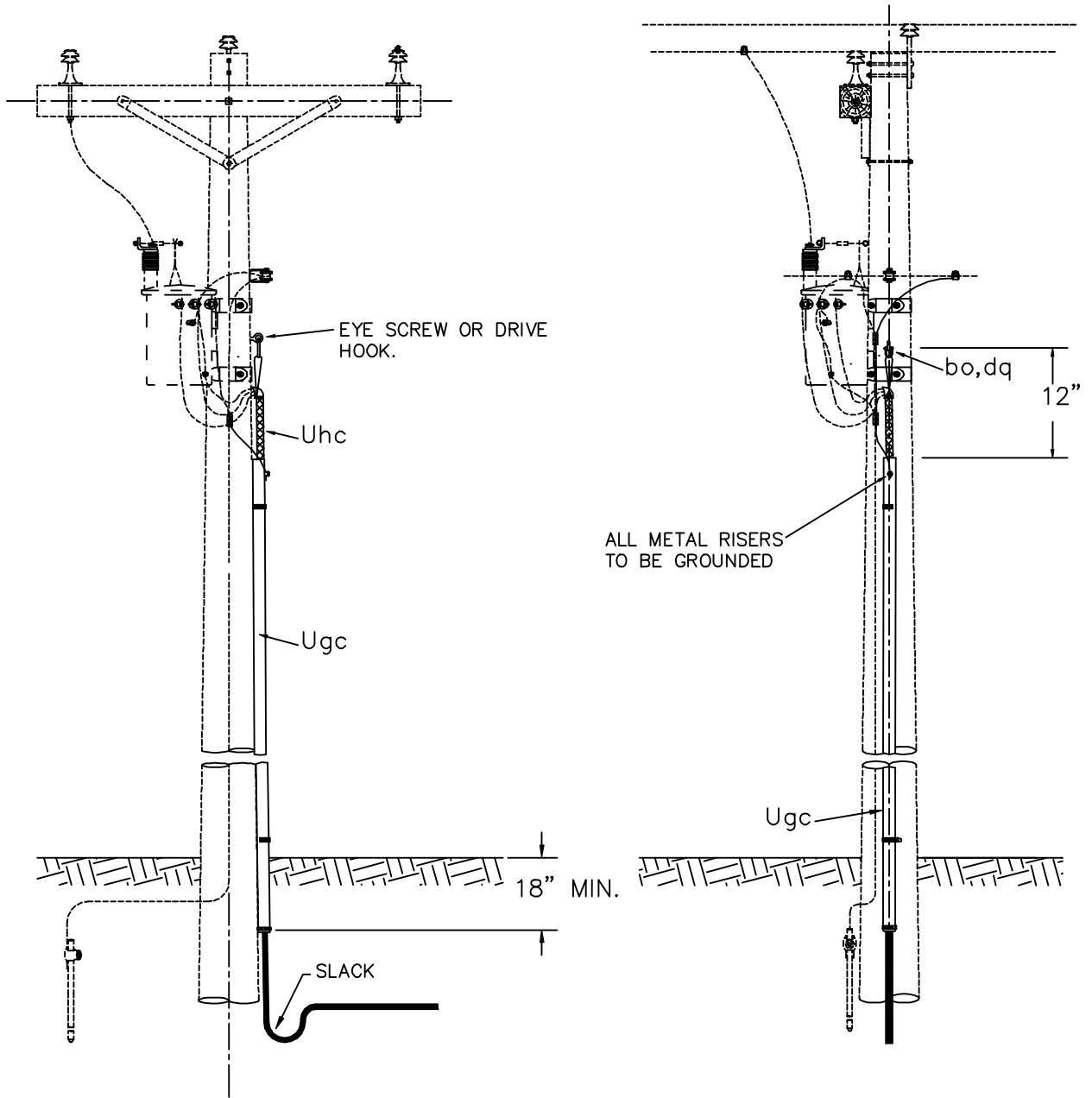
• - TERMINATIONS CAN BE
WITH ELBOWS, STRESS
CONES OR TERMINATORS

∧ - LOADBREAK ELBOW LINE
SWITCHING

FUSE ENCLOSURE (200 - 600 AMP)
WIRING DIAGRAMS
(THREE PHASE)

2000

UM3E-3



NOTES:

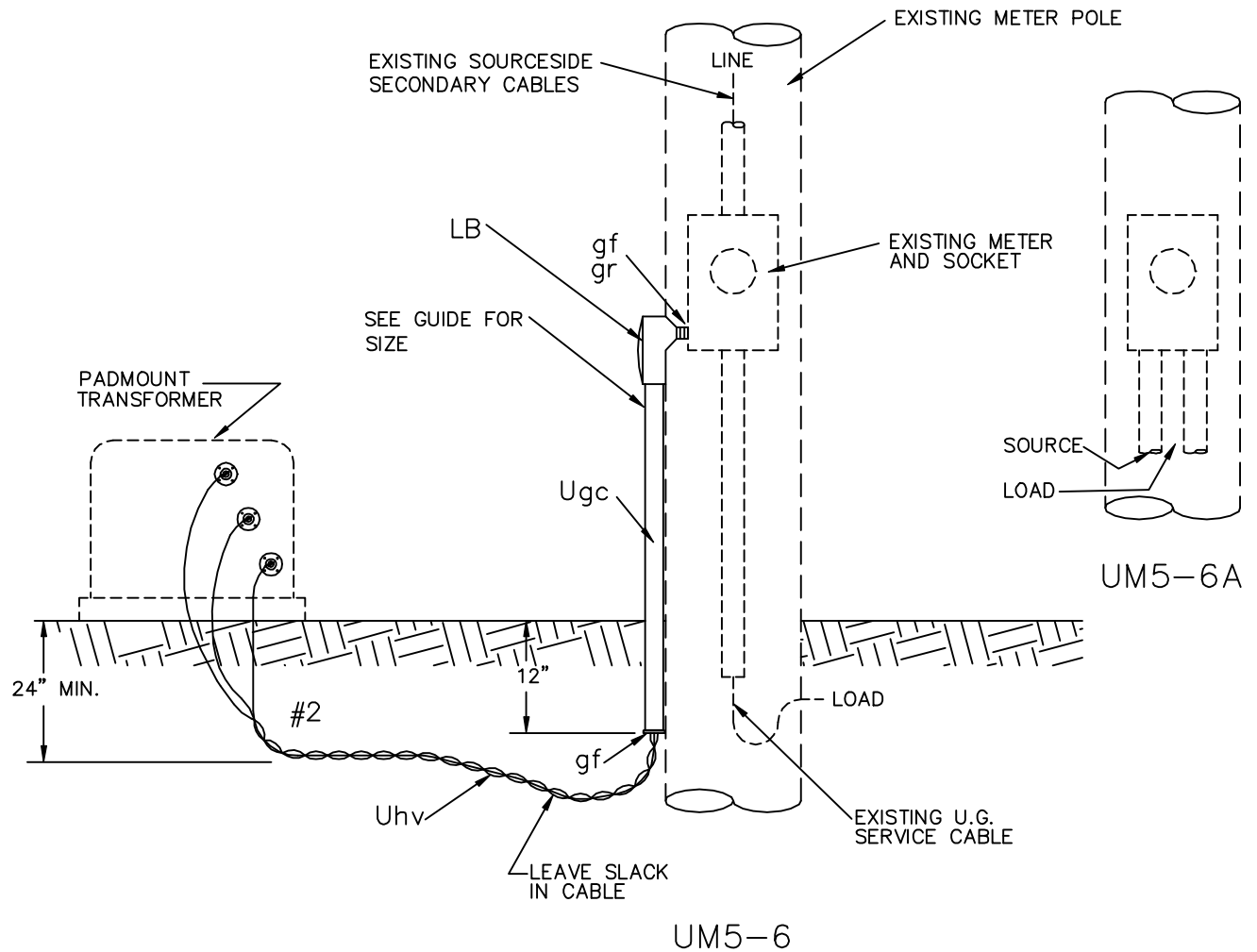
1. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

| ITEM | QTY. | MATERIAL |
|------|------|--|
| bo | | Anchor, shackle. Do not use if drive hook is used. |
| dq | 1 | Eye screw, elliptical or drive hook. |
| Ugc | 1 | Cable riser shield. Length as required. |
| Uhc | 1 | Cable support. |

SECONDARY CABLE TERMINAL POLE

2000

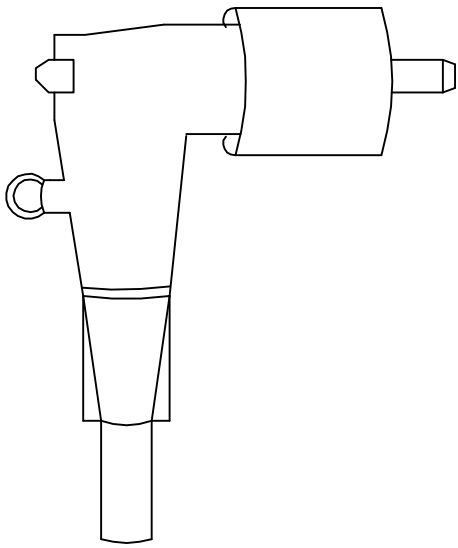
UM5



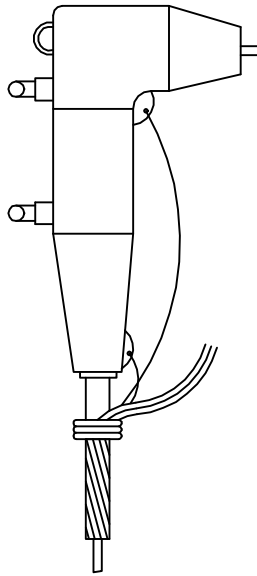
NOTES:

1. DISCONNECT SOURCESIDE CONDUCTORS IN METER SOCKET.
2. CONNECT NEW CABLE TO SOURCESIDE OF METER SOCKET.
3. SECONDARY CABLE, UNIT Uhv, SPECIFIED ON SEPARATE UNIT.
4. IF UNIT UM5-6A IS SPECIFIED, EXISTING METER SOCKET AND TYPE "LB" CONDUIT FITTING ARE REPLACED BY A METER SOCKET WITH TWO CONDUIT KNOCKOUTS ON BOTTOM SIDE.

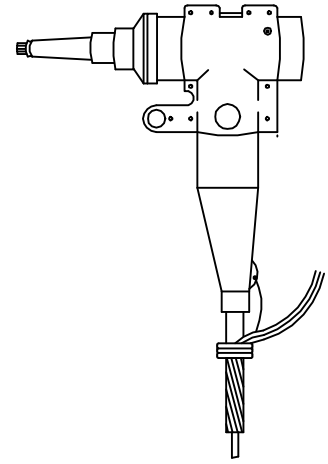
| ITEM | QTY. | MATERIAL | | |
|------|------|--|--|-----------------|
| gf | 2 | Bushings, insulated | | |
| gr | 2 | Locknut | | |
| | 1 | Type "LB" conduit fitting | | |
| | 1 | conduit short nipple, with bushing | | |
| Ugc | | Conduit, as required | | |
| Uhv | | Cable, underground, 600 V, as required | | |
| | | | SECONDARY CABLE TERMINAL TO METER BASE | |
| | | | 2000 | UM5-6 UM5-6A |



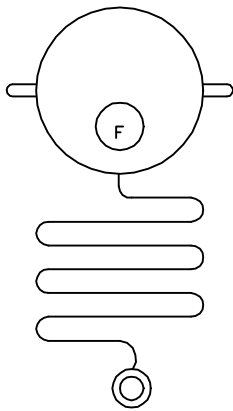
UM6-1 Uhp
LOAD BREAK ELBOW
(200 A)



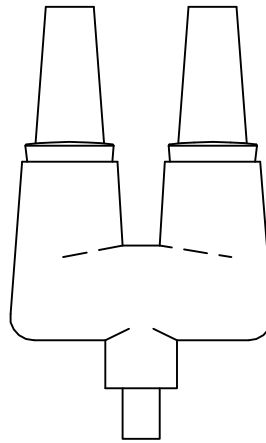
UM6-2 Uhp
FUSED ELBOW TERMINATION
(200 A)



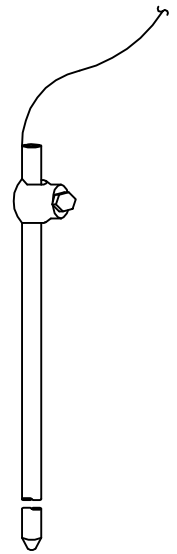
UM6-3 Uhb
DEAD BREAK TERMINATION
(600 A)



UM6-4 Ugo
FAULT INDICATOR



UM6-5 Uhb
FEED THROUGH LOAD BREAK INSERT



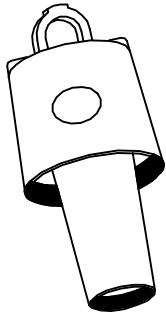
UM6-6 ai, aj, cj
GROUND ROD ASSEMBLY

MISCELLANEOUS ACCESSORIES

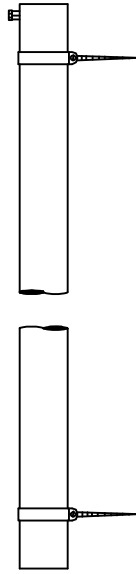
2000

Page 1 of 8

UM6-__



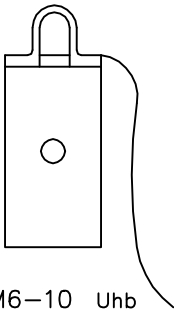
UM6-7 Uhb
BUSHING WELL PLUG
(200 A)



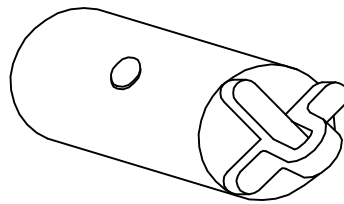
UM6-8 Ugc
RISER SHIELD (U GUARD)



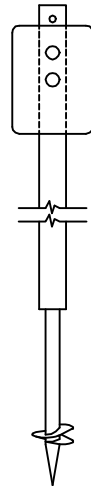
UM6-9 Ugc
CONDUIT CABLE RISER



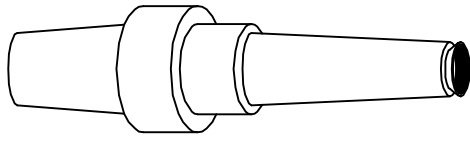
UM6-10 Uhb
INSULATED PROTECTIVE CAP
(200 A)



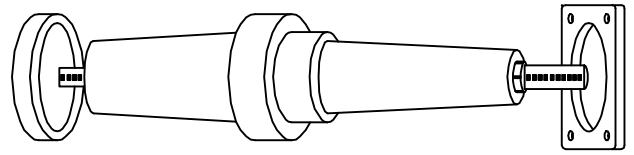
UM6-11 Uhb
INSULATED PROTECTIVE CAP
(600 A)



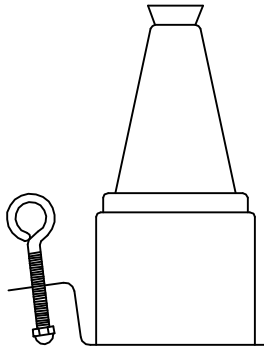
UM6-12 Uhx
CABLE MARKER ASSEMBLY



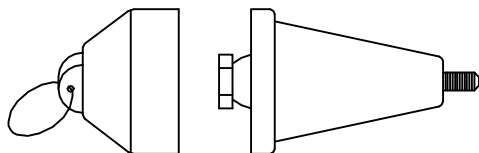
UM6-13 Uhb
LOAD BREAK INSERT
(200 A)



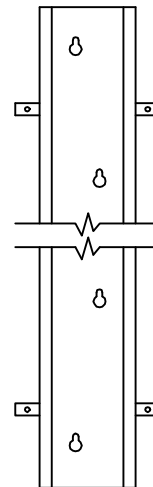
UM6-14 Uhb
DEADBREAK INSERT
(600 A)



UM6-15 Uhq
STAND-OFF INSULATOR
(200 A)



UM6-17 Uhb
INSULATING PLUG
600 AMP CONNECTOR



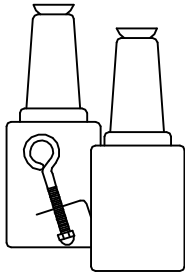
UM6-18
BACKING PLATE FOR
U-GUARD RISER SHIELD

MISCELLANEOUS ACCESSORIES

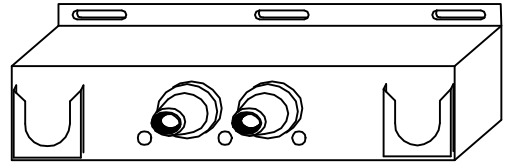
2000

Page 3 of 8

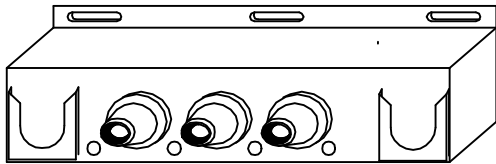
UM6-__



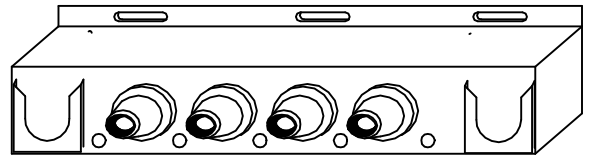
UM6-19 Uhq
STAND-OFF INSULATOR
FEED THROUGH
(200 A)



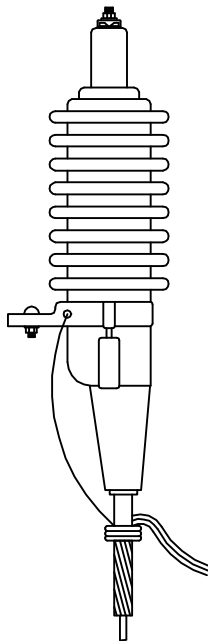
UM6-20 Uhq
TWO POINT JUNCTION
(200 A)



UM6-21 Uhq
THREE POINT JUNCTION
(200 A)



UM6-22 Uhq
FOUR POINT JUNCTION
(200 A)



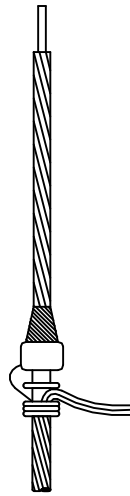
UM6-24 Ugk
OUTDOOR TERMINATION

MISCELLANEOUS ACCESSORIES

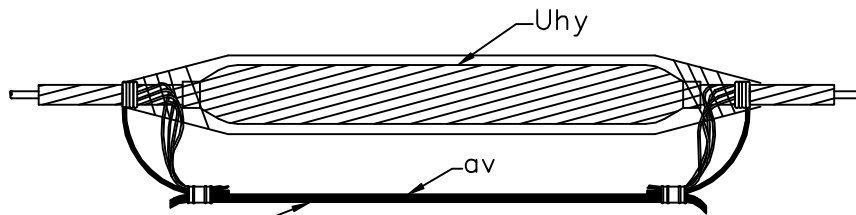
2000

Page 4 of 8

UM6-__



UM6-26 U_{gk}
INDOOR STRESS RELIEF CONE



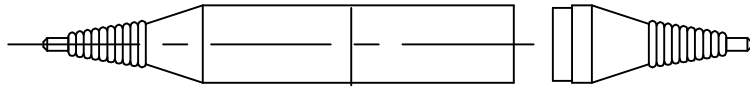
CONCENTRIC NEUTRAL
OR
EQUIVALENT EXTENSION

UM6-28 U_{hy}
IN LINE PRIMARY SPLICE
(FOR JACKETED CABLE)

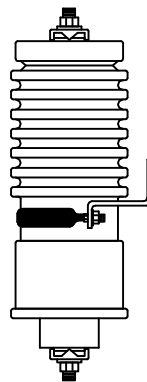
NOTES:

1. Jacketed cable restoration and termination sealing kits (items U_{hf}) are available for resealing concentric neutral wires after installation of splices, elbows, and outdoor terminations; also for connecting a grounding lead wire to the concentric neutral wires and resealing the jacket.

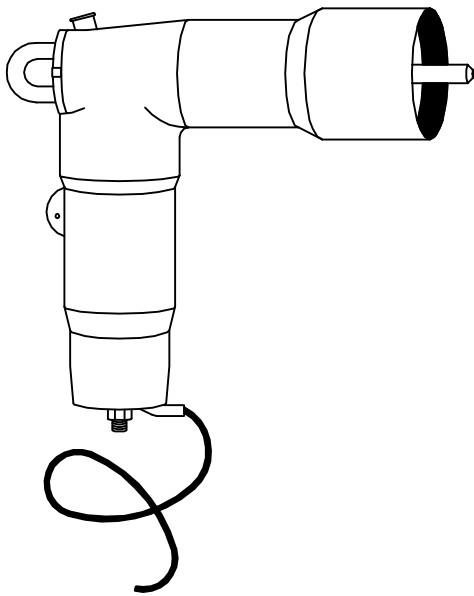
| | | | | |
|------|-------------|--------|---------------------------|--|
| | | | MISCELLANEOUS ACCESSORIES | |
| 2000 | Page 5 of 8 | UM6-__ | | |



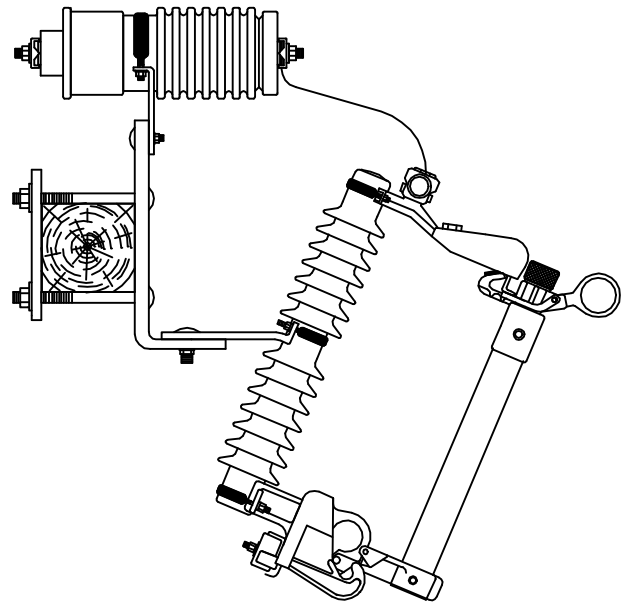
UM6-32 U_{gq}
BOOT OR SLEEVE - INSULATED
(600 VOLT)



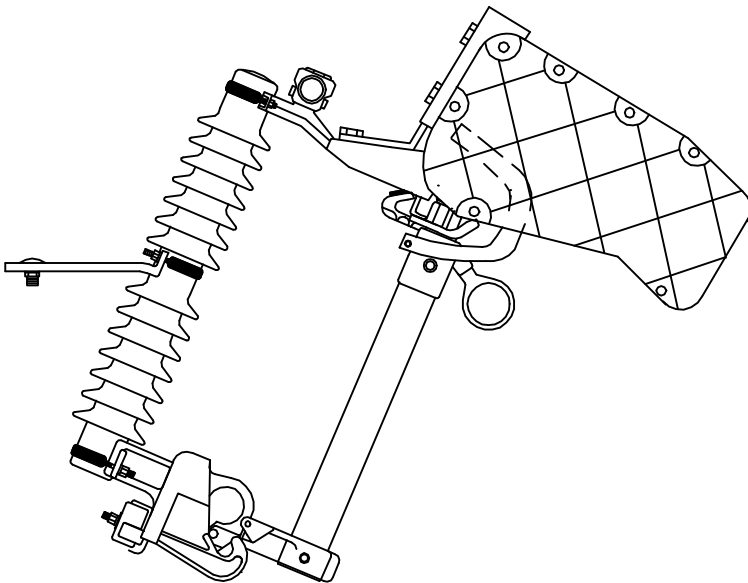
UM6-33 U_{ae}
SURGE ARRESTER



UM6-34 U_{ae}
DEAD BREAK ELBOW
SURGE ARRESTER



UM6-35 U_{ax}
CUTOUT-ARRESTER COMBINATION



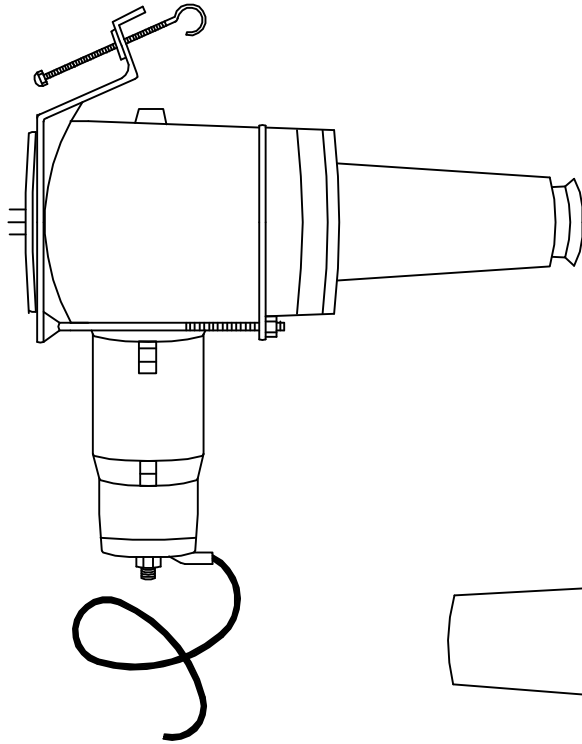
UM6-36 of
LOAD BREAK CUTOUT

MISCELLANEOUS ACCESSORIES

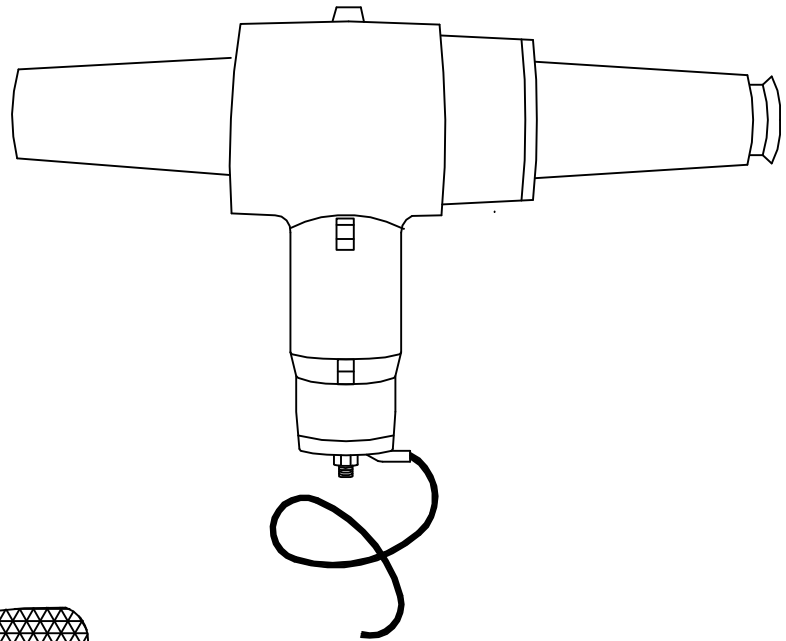
2000

Page 7 of 8

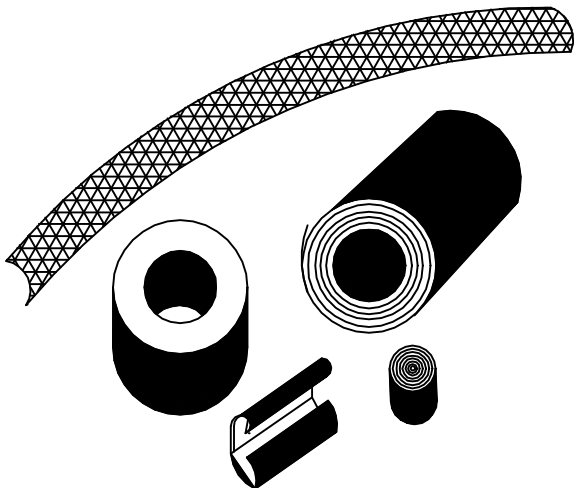
UM6-__



UM6-37 Uae
PARKING STAND ARRESTER

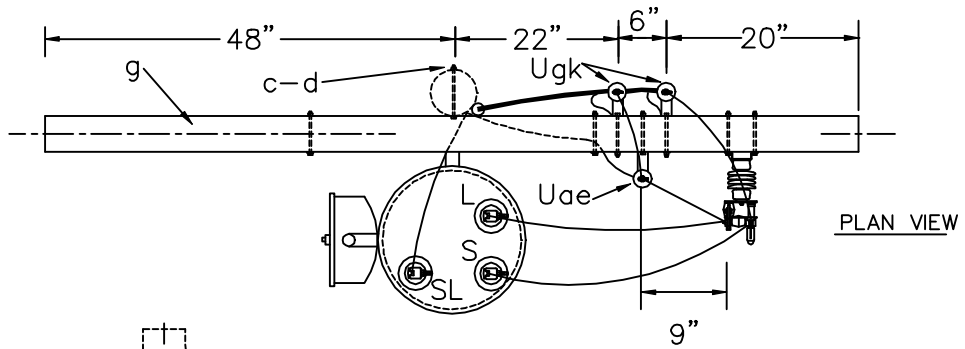


UM6-38 Uae
BUSHING ARRESTERS

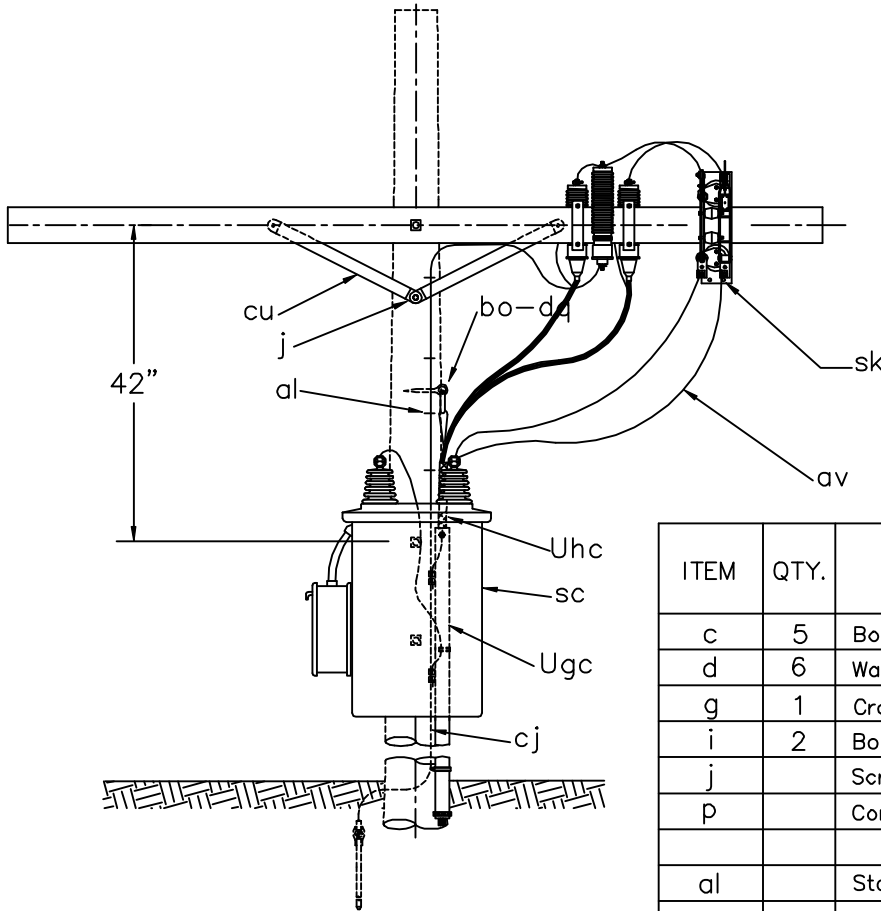


UM6-39 Uhf
JACKETED CABLE GROUNDING KITS

| | | | | | |
|------|--|-------------|---------------------------|--------|--|
| | | | MISCELLANEOUS ACCESSORIES | | |
| 2000 | | Page 8 of 8 | | UM6-__ | |

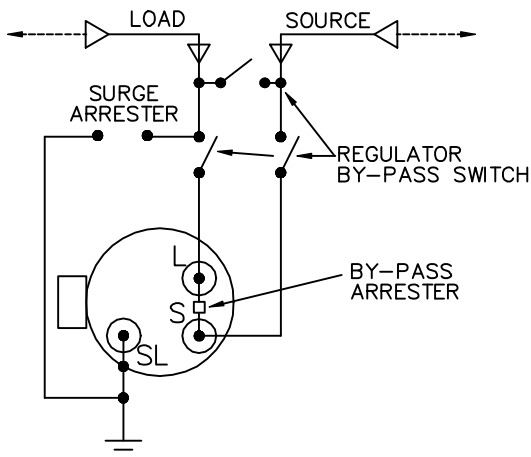


PLAN VIEW



NOTES:

1. Three of these assemblies may be used for three phase installation.
2. Total arrester lead length must be under 3 feet if possible.
3. All clearances must meet NESC requirements.



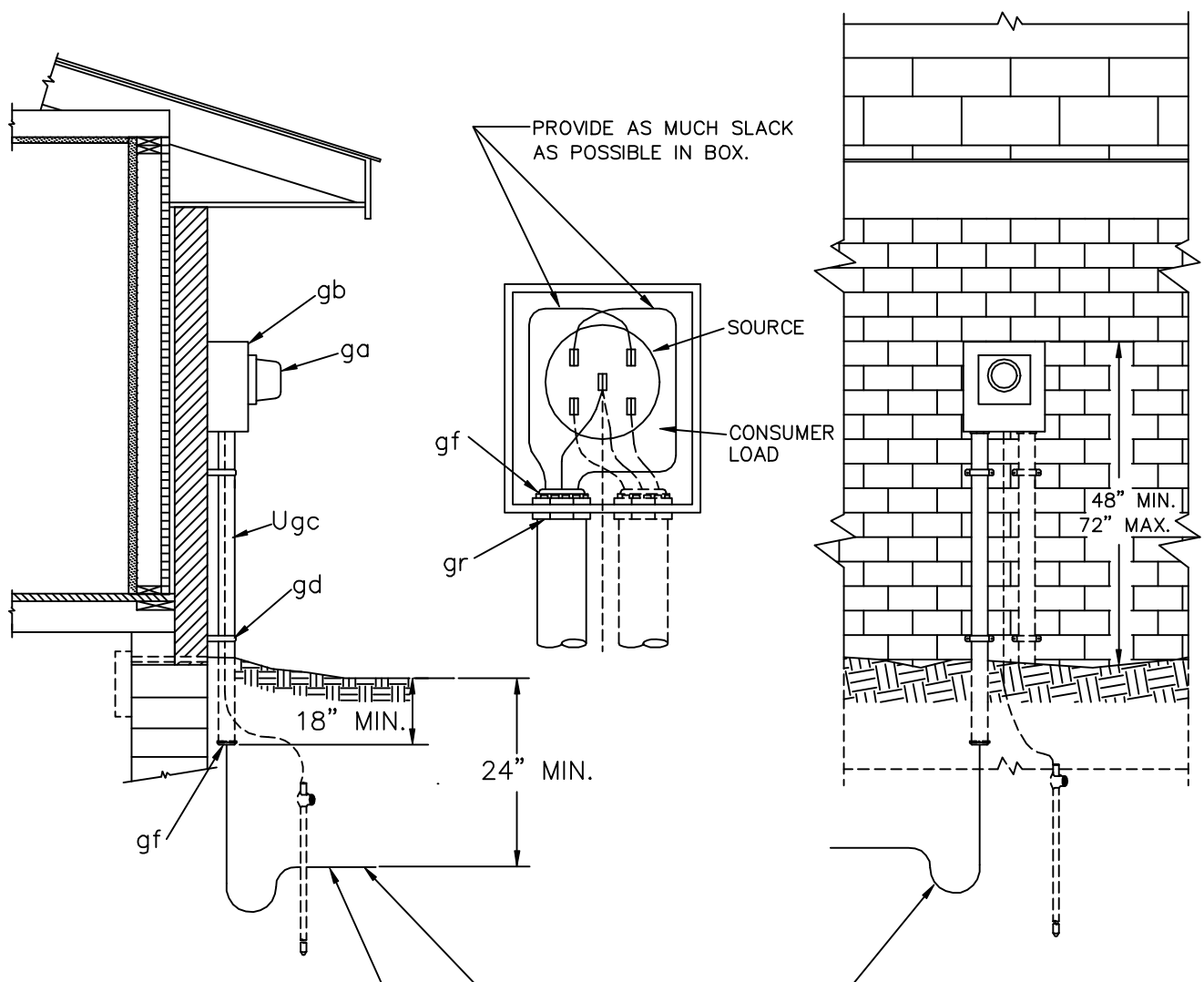
WIRING DIAGRAM

| ITEM | QTY. | MATERIAL |
|------|------|--|
| c | 5 | Bolt, machine, 5/8" x required length. |
| d | 6 | Washer, square 2 1/4". |
| g | 1 | Crossarm, 3 5/8" x 4 5/8" x 8'-0". |
| i | 2 | Bolt, carriage, 3/8" x 4 1/2" |
| j | | Screw, lag 1/2" x 4" as required. |
| p | | Connectors, as required. |
| al | | Staples, as required. |
| av | | Jumpers, as required. |
| bo | 1 | Anchor, shackle. Omit if drive hook is used. |
| cj | | Ground wire, as required. |
| cu | 2 | Brace, wood, 28" |
| dq | 1 | Eye screw, elliptical or drive hook. |
| ek | | Locknuts |
| fn | 1 | Bracket, cutout, extension. |
| sc | 1 | Regulator, step type. |
| sk | 1 | Regulator, by-pass switch. |
| Uae | 1* | Surge arrester |
| Ugc | 1 | Cable riser shield. Length as required. |
| Ugk | 2 | Cable termination. |
| Uhc | 2 | Cable support. |
| Uhd | 2 | Crossarm mounting bracket. |

SINGLE PHASE REGULATOR ASSEMBLY WITH BY-PASS SWITCHING FUNCTION UNDERGROUND TO UNDERGROUND

2000

UM7-1

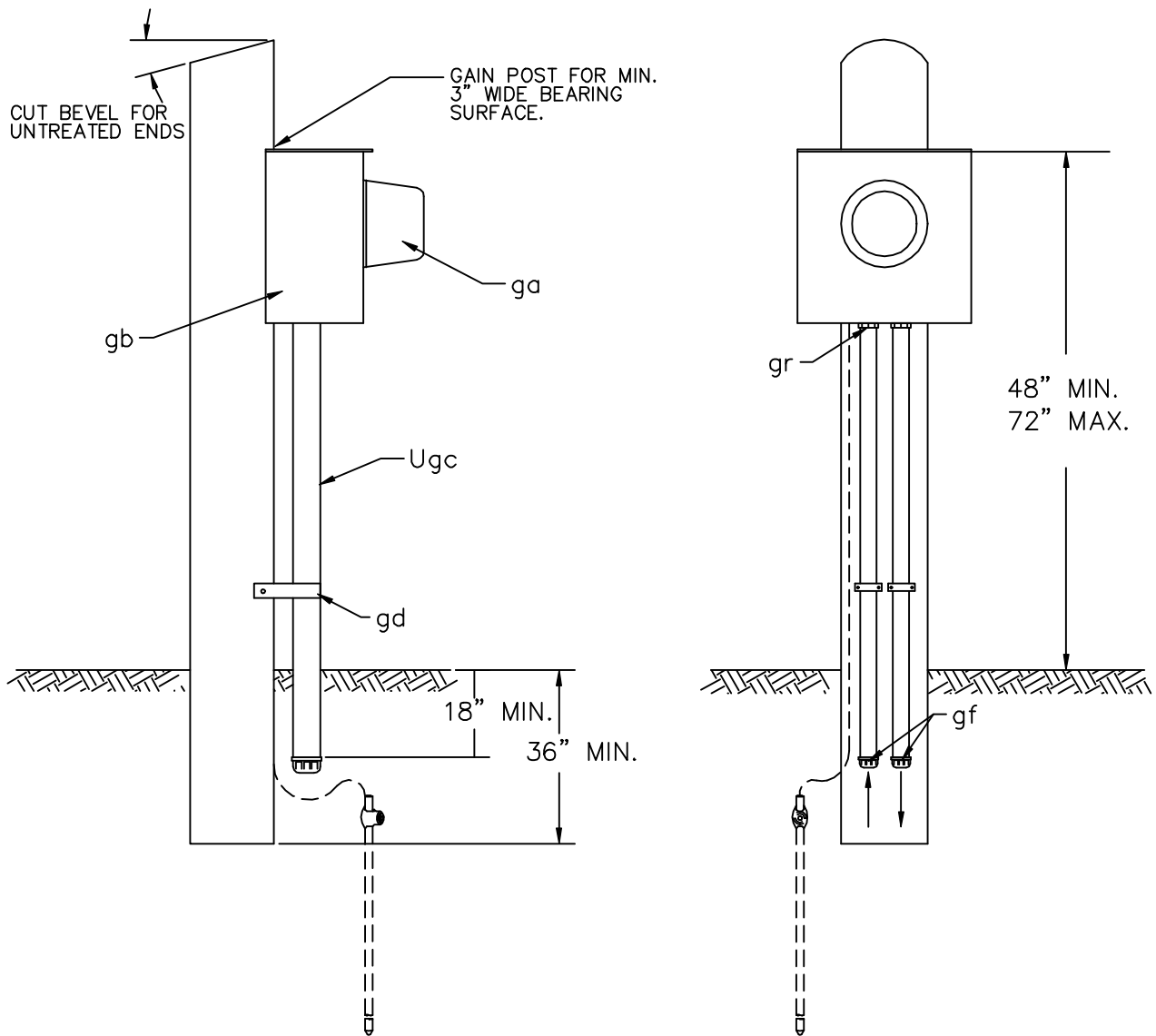


HAND TAMP, PREFERABLY WITH PNEUMATIC TOOL. BACKFILL WITH CLEAN MATERIAL.

SLACK SHALL BE PROVIDED TO PREVENT DAMAGING STRAIN ON THE CABLE AFTER BACKFILLING.

| ITEM | QTY. | MATERIAL |
|------|------|--|
| ga | 1 | Meter, as required |
| gb | 1 | Meter socket |
| gd | 2 | Pipe strap |
| gf | 2 | Insulated bushing, size as required |
| gr | 2 | Conduit locknuts, size as required |
| Ugc | 1 | Conduit, diameter and length as required |

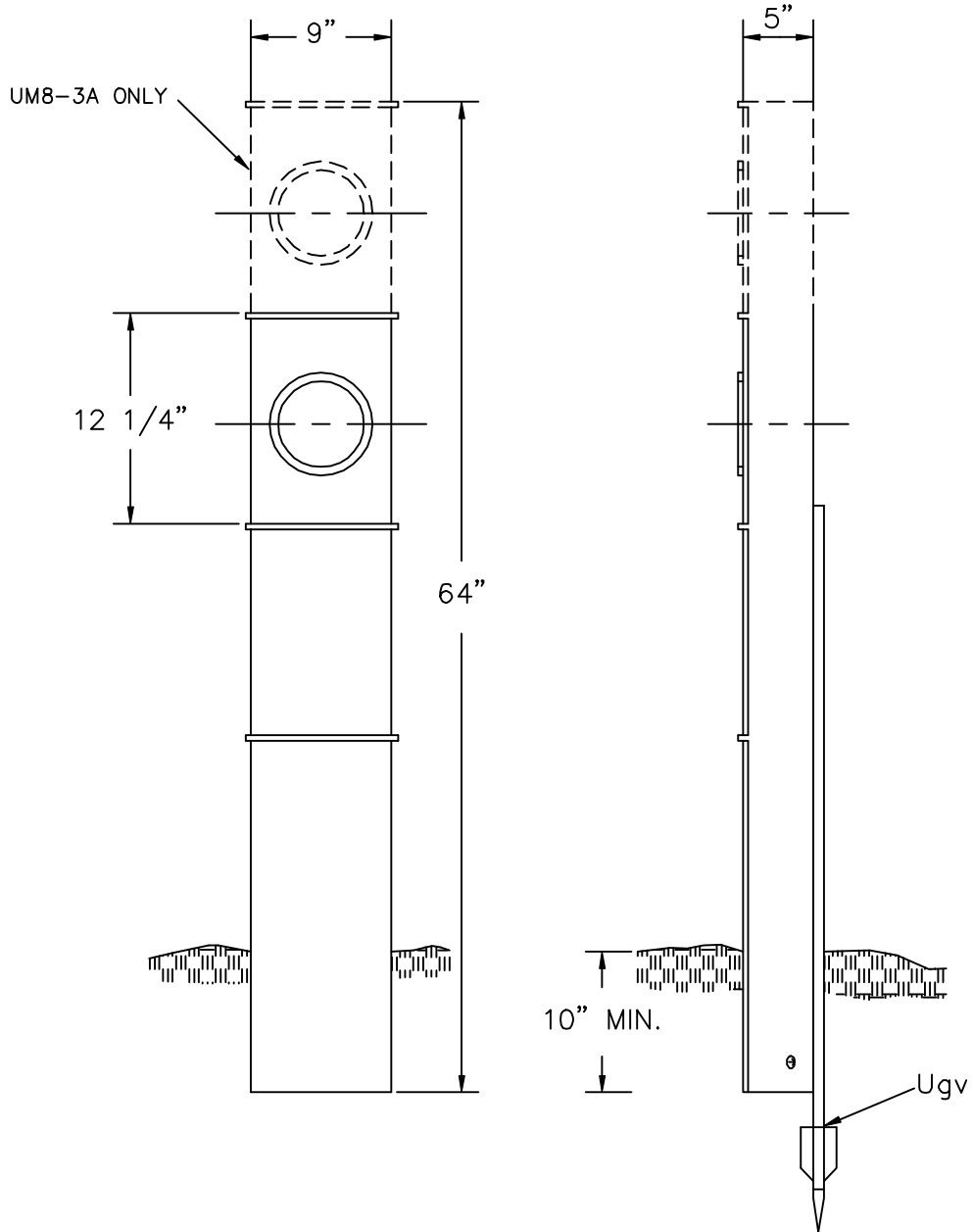
| | | |
|--|------|-----|
| METER INSTALLATION UNDERGROUND SOURCE | | |
| | 2000 | UM8 |



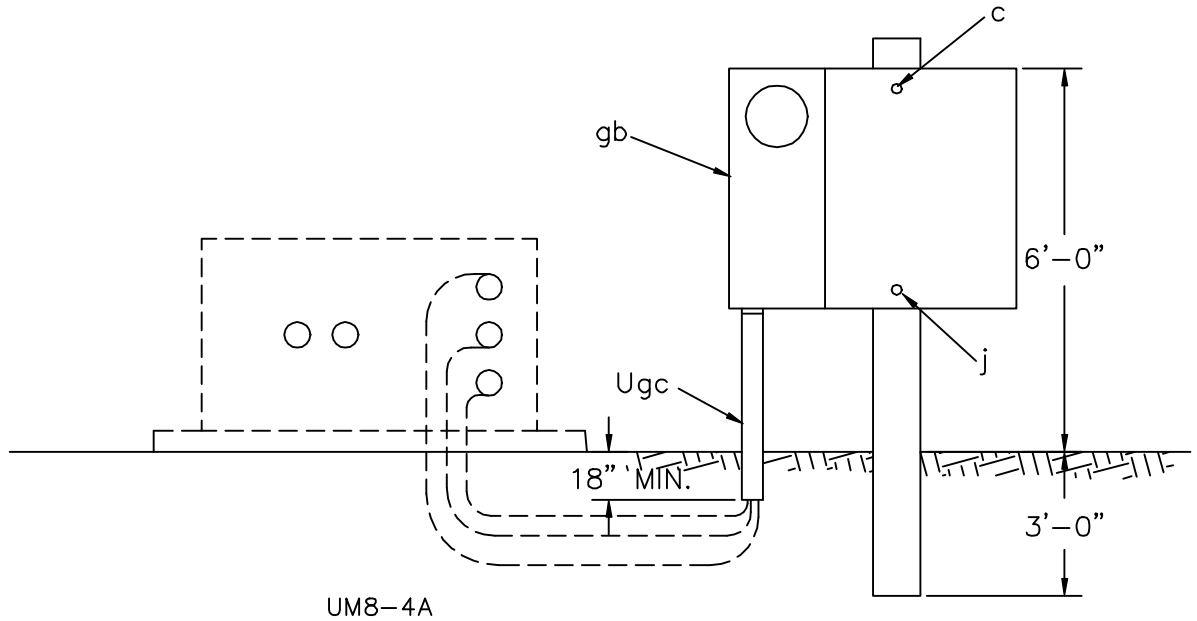
NOTE: MINIMUM POST SIZE SHALL BE FOUR INCHES SQUARE OR IN DIAMETER.

| ITEM | QTY. | MATERIAL |
|------|------|--|
| | 1 | Wood post, approx. 9 ft. long, treated |
| ga | 1 | Meter, as required |
| gb | 1 | Meter socket |
| gd | 1 | Pipe strap |
| gf | 2 | Insulated bushings, size as required |
| gr | 2 | Conduit locknuts, size as required |
| Ugc | 2 | Conduit, diameter and length as required |

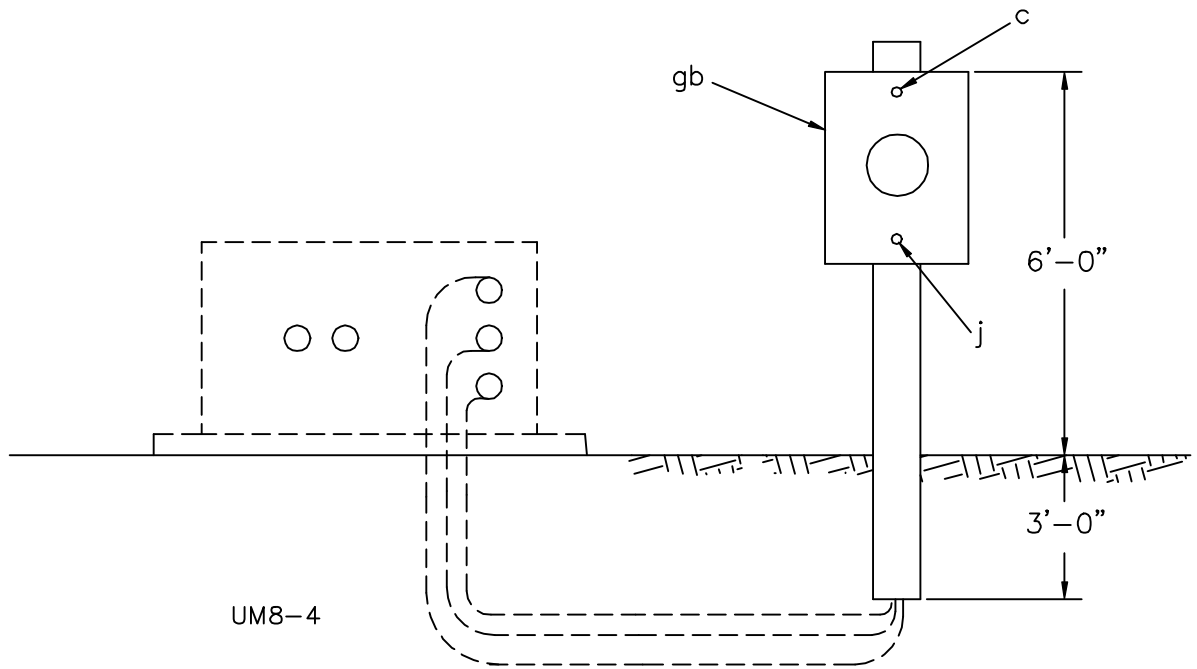
| | | |
|-----------------------------|------|-------|
| METER PEDESTAL WOOD POST | | |
| | 2000 | UM8-2 |



| ITEM | QTY. | MATERIAL | | |
|------|------|--|-------------------------------|-----------------|
| | 1 | Meter, pedestal, 200 A Main, 200 Amp. per position (UM8-3) | | |
| | 1 | Meter, pedestal, 400 A Main, 200 Amp. per position (UM8-3A) | | |
| | | | TROUGH TYPE METER PEDESTAL | |
| Ugv | 1 | Stake, support | 2000 | UM8-3 UM8-3A |



UM8-4A



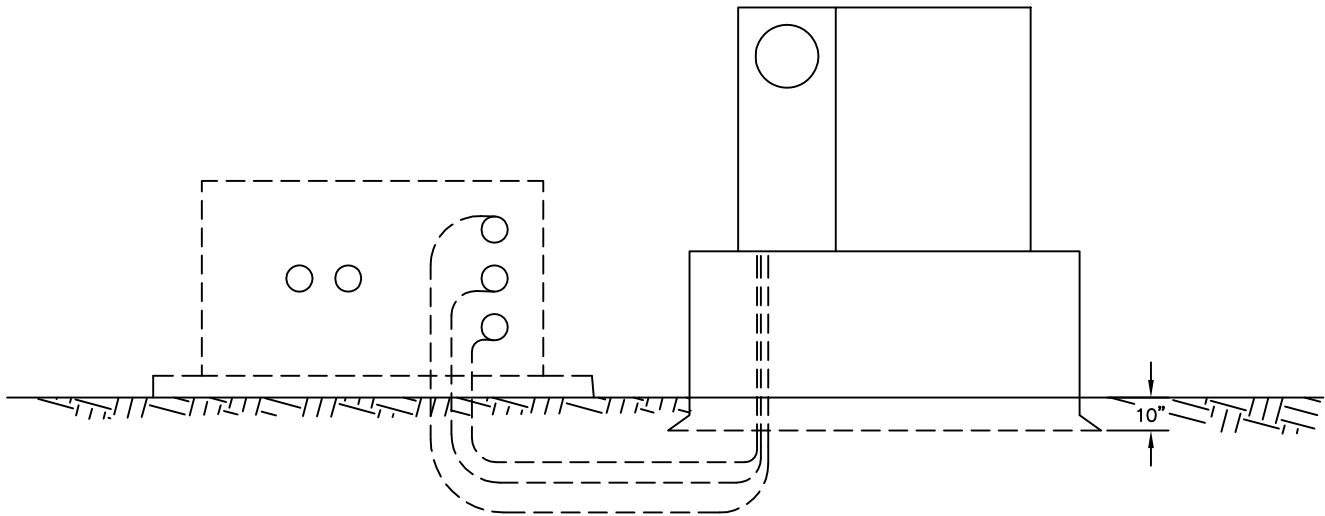
UM8-4

| ITEM | QTY. | MATERIAL |
|------|------|--------------------------|
| | | Stub pole, 9'-0" |
| | | Switch, as required |
| c | 1 | Machine bolt, 1/2" x 10" |
| d | 1 | Washer, square, 2" x 2" |
| j | 1 | Lag screw, 1/2" x 4" |
| ek | 1 | Locknut, 1/2" |
| gb | | Meter base, as required |
| Ugc | | Conduit, as required |

METER & SWITCH INSTALLATION
UNDERGROUND SOURCE

2000

UM8-4
UM8-4A

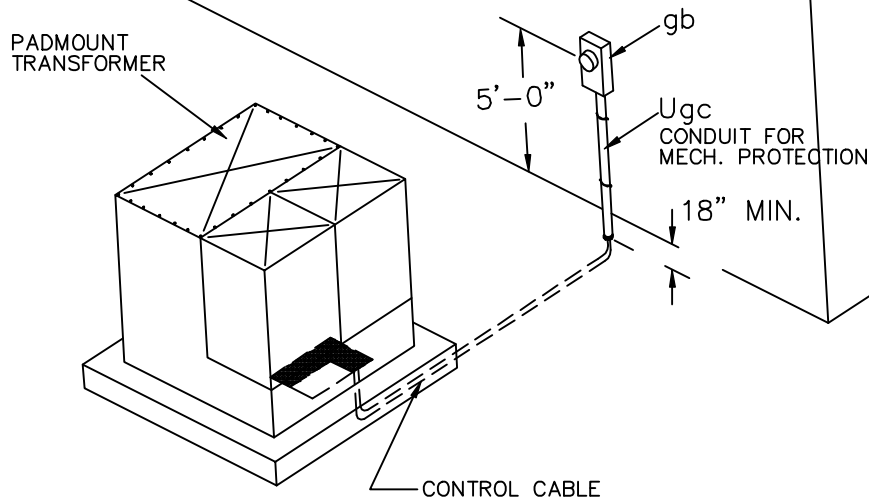


NOTE:
SPECIFY PAD OR SLEEVE UNIT SEPARATELY

| ITEM | QTY. | MATERIAL | PAD MOUNTED SWITCH INSTALLATION UNDERGROUND SOURCE | |
|------|------|---------------------|---|--|
| | 1 | Switch, as required | | |
| | | | | |
| | | | | |
| | | | | |

METHOD 1

PREFERRED METHOD FOR INSTALLATION OF METERING IS TO MOUNT METER SOCKET ON BUILDING WALL.



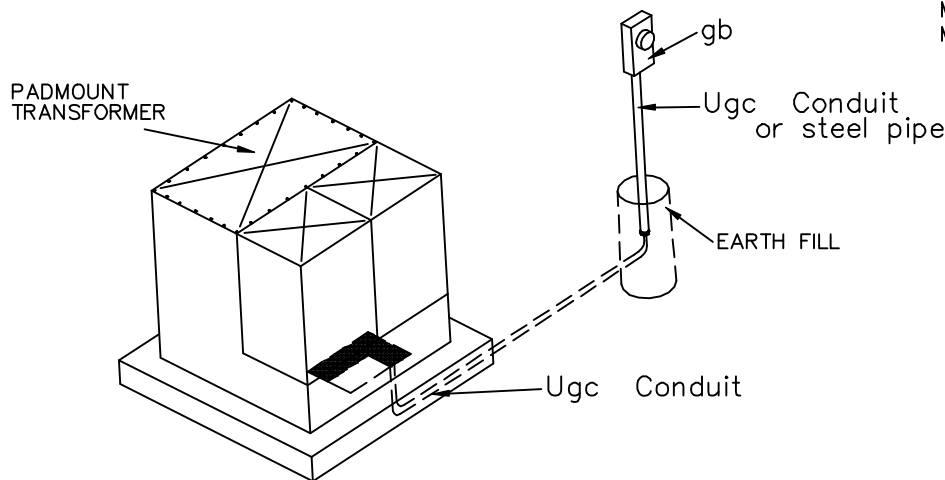
METER HEIGHT SHALL BE 5'-0" TO CENTER OF METER.

METER SOCKET MUST NOT BE ATTACHED DIRECTLY TO PADMOUNTED TRANSFORMER.

CONDUIT SHALL BE USED FOR SECONDARY CONTROL WIRES TO METER SOCKETS.

METHOD 2

METHOD TO USE IF METER CABINET MUST BE MOUNTED FREE STANDING.



METER SOCKET MUST NOT BE ATTACHED DIRECTLY TO PADMOUNTED TRANSFORMER.

4'-0" MINIMUM HEIGHT TO CENTER OF METER.

CONDUIT SHALL BE USED FOR SECONDARY CONTROL WIRES TO METER SOCKET.

NOTE: CT & PT TO BE MOUNTED AS REQUIRED IN TRANSFORMER ENCLOSURE.

| ITEM | QTY. | MATERIAL |
|------|------|------------------------------------|
| | | Control cable, as required |
| | | Pipe strap, as required |
| gb | 1 | Meter socket |
| se | | Potential transformer, as required |
| Ugc | | Steel pipe, as required |
| Ugc | | Conduit, as required |
| Usd | | Current transformer, as required |

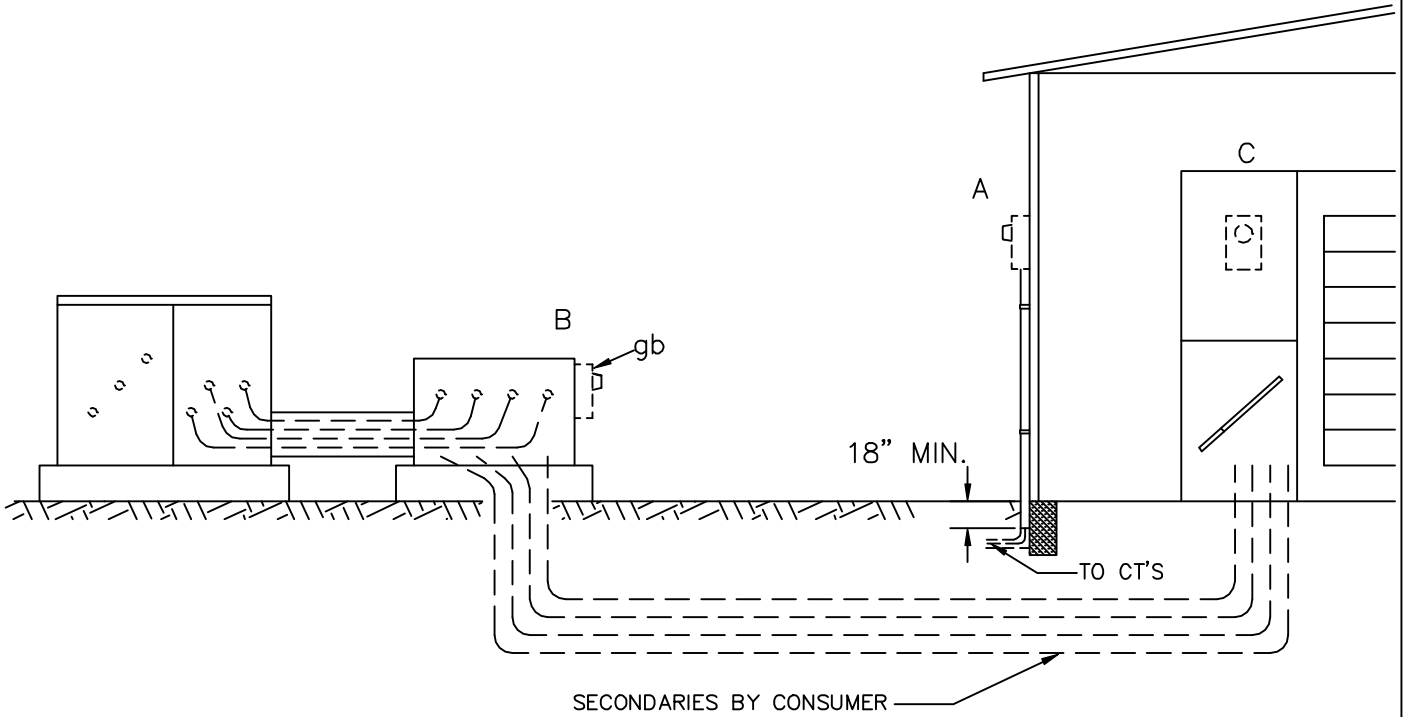
C.T. METER INSTALLATION
SINGLE PHASE

2000

UM8-6

- UM8-7-A METER ON BUILDING
- UM8-7-B METER ON TAP BOX
- UM8-7-C METER ON LOAD CENTER

METER SOCKET MUST NOT BE ATTACHED DIRECTLY TO PADMOUNTED TRANSFORMER.

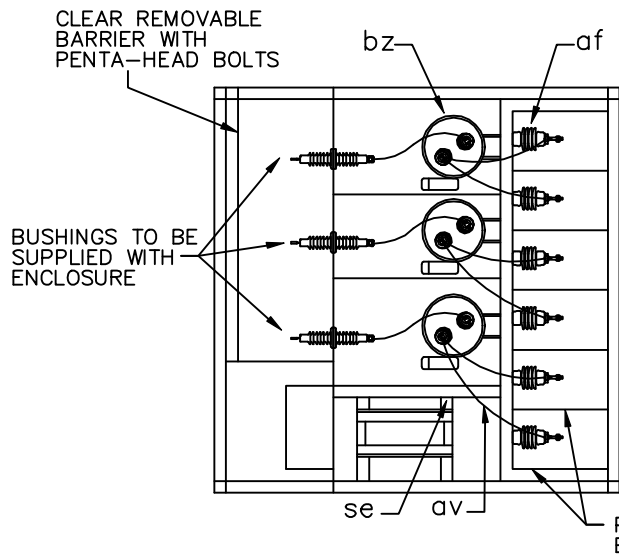


| ITEM | QTY. | MATERIAL |
|------|------|------------------------------------|
| | | Control cable, as required |
| | | Pipe strap, as required |
| gb | 1 | Meter socket |
| se | | Potential transformer, as required |
| Ugc | | Conduit, as required |
| Ugc | | Steel pipe, as required |
| Usd | | Current transformer, as required |

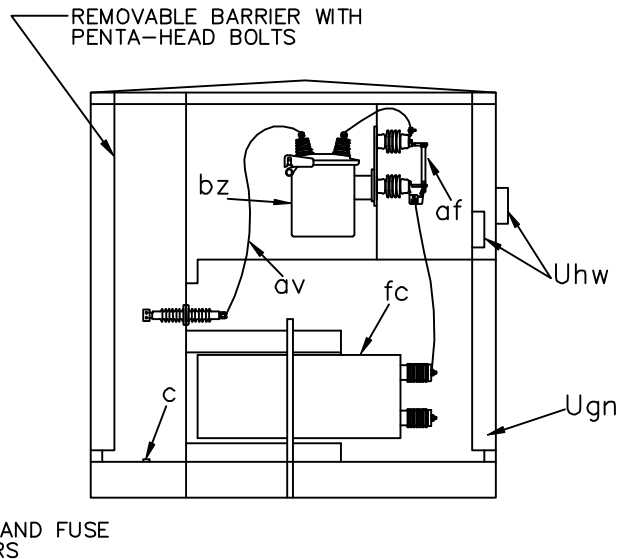
C.T. METER INSTALLATION
THREE PHASE

2000

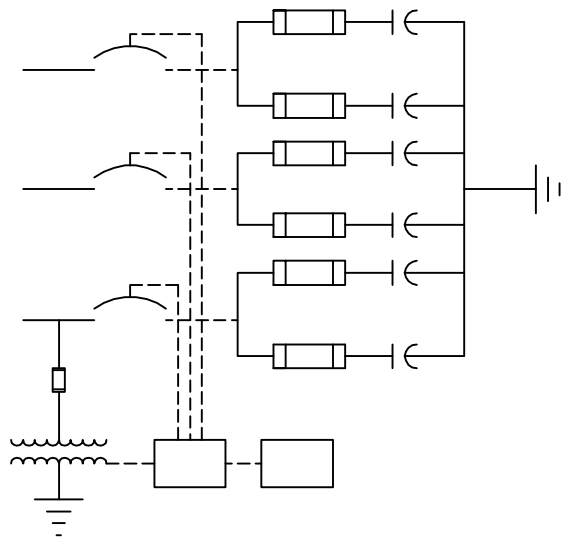
UM8-7-__



TOP VIEW



SIDE VIEW



ONE LINE DIAGRAM

| ITEM | QTY. | MATERIAL |
|------|------|---|
| C | | Bolts, machine, as required |
| af | 6 | Power fuse, current limiting |
| av | | Jumpers, copper, as required |
| bz | 3 | Single phase oil switch |
| fc | 6 | Shunt capacitor |
| se | 1 | Potential transformer line voltage to 120 VAC |
| | 3 | Bushing with spade |
| Ugn | 1 | Enclosure, as specified |
| Uhw | 2 | Signs, "DANGER" and "WARNING" |

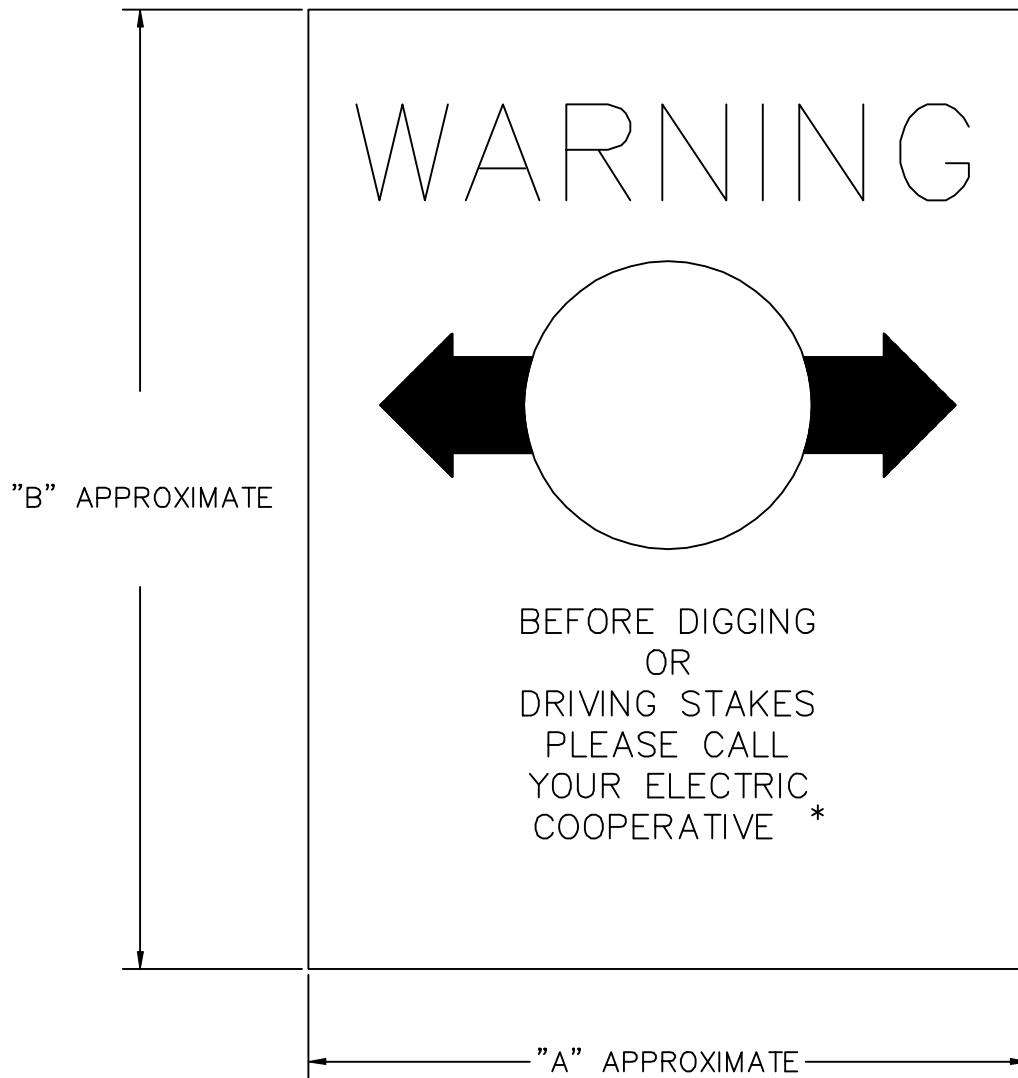
NOTES:

1. LOAD BREAK ELBOWS, STRESS CONES, FUSES OR SWITCH BLADES; GROUND SLEEVE IS NOT PART OF THIS ASSEMBLY. THEY SHOULD BE SPECIFIED SEPARATELY ON THE STAKING SHEETS.
2. TAMP WELL UNDER SLEEVE, LEAVE SLACK COIL OF CABLE IN GROUND SLEEVE.
3. PLACE 6" OF FILL AGAINST INSIDE EDGE OF GROUND SLEEVE.
4. GROUNDING UNIT TO BE SPECIFIED SEPARATELY.
5. INSTALL "WARNING" SIGN ON OUTSIDE OF ENCLOSURE AND "DANGER" SIGN INSIDE ENCLOSURE.

PAD MOUNTED SWITCHED CAPACITOR ENCLOSURE

2000

UM9-2



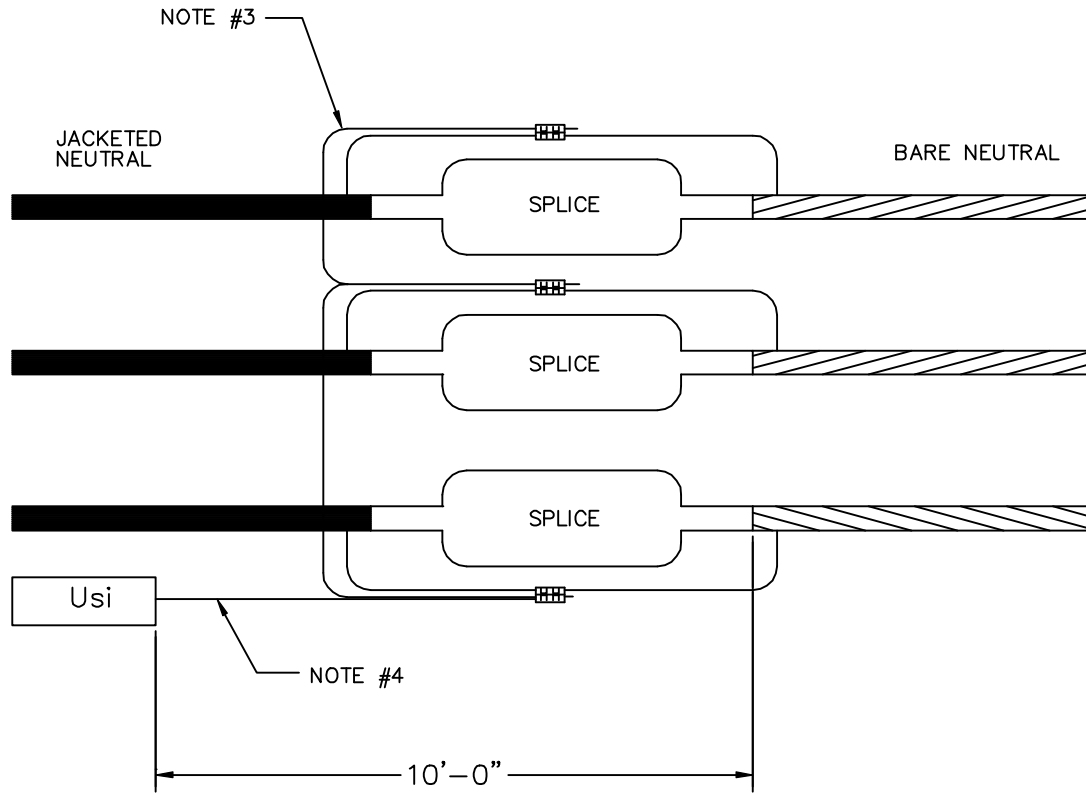
* COOPERATIVE NAME AND TELEPHONE NUMBER MAY BE INSERTED AS AN ALTERNATE.

NOTES:

1. BACKING MATERIAL SHALL BE 16 GAUGE GALVANIZED STEEL, OR EQUAL.
2. SIGN SHALL HAVE A YELLOW BACKGROUND WITH BLACK LETTERS.
3. SIGN SHALL BE SUPPORTED AND DISPLAYED AS SPECIFIED BY OWNER.
4. SIGN SHALL MEET ANSI Z535 STANDARD.

| WIDTH ("A") | HEIGHT ("B") |
|-------------|--------------|
| 4" | 5" |
| 7" | 12" |
| 3" | 12" |

| | | |
|--|--------------------|------|
| | CABLE ROUTE MARKER | |
| | 2000 | UM12 |

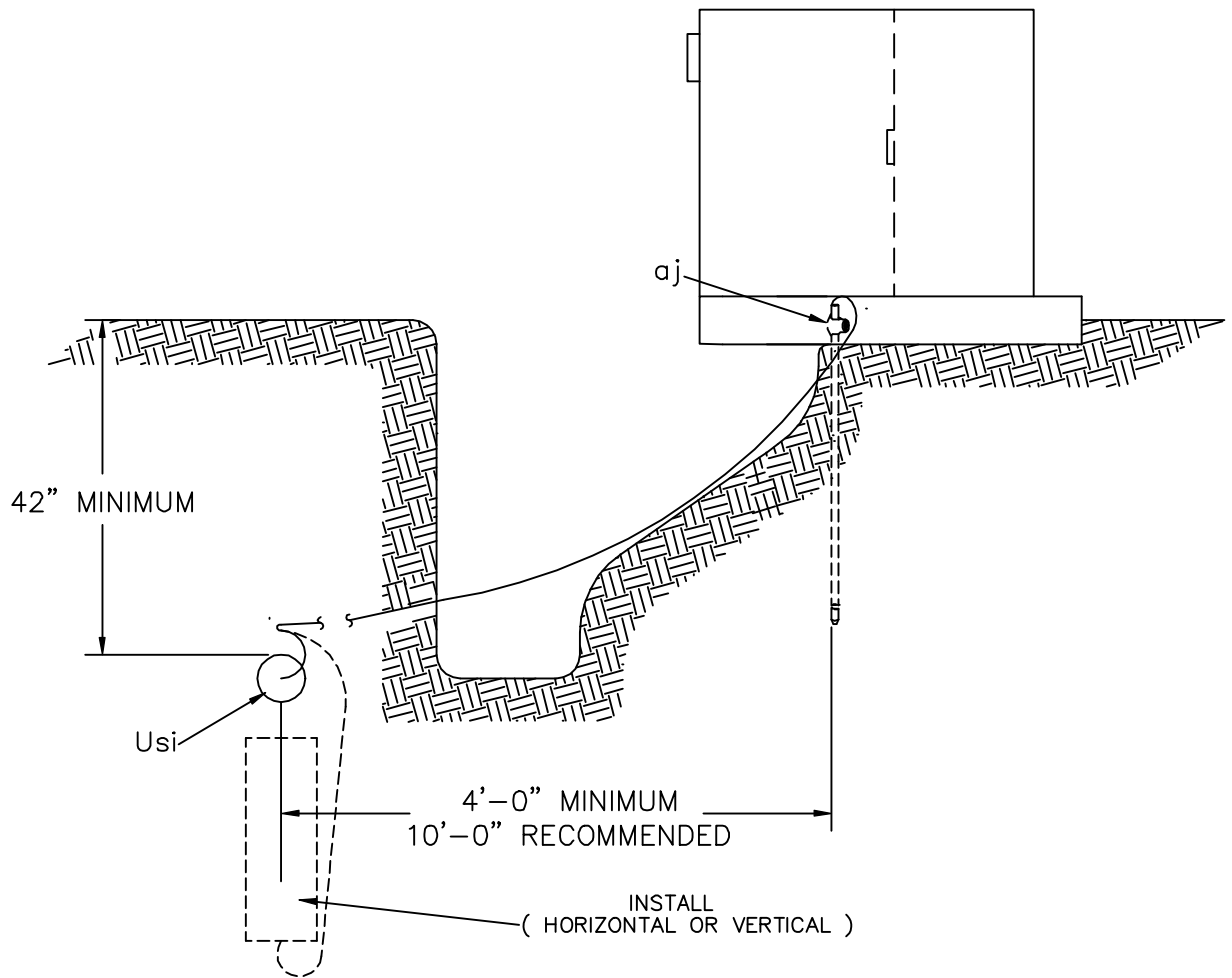


TOP VIEW

NOTES:

1. ENGINEER TO SPECIFY NUMBER AND TYPE OF ANODES.
DESIGNATE AS:
UM27-1-(1, 2, or 3)-(lbs.)-(M or Z)
└─ MAGNESIUM OR ZINC
2. MOISTURE SEAL AROUND CABLE NEUTRAL.
3. INSTALL FULL-SIZE CONCENTRIC NEUTRAL EXTENSION AS IN A PRIMARY CABLE SPLICE.
4. INSTALL No. 14 AWG INSULATED COPPER WIRE TO ANODE.

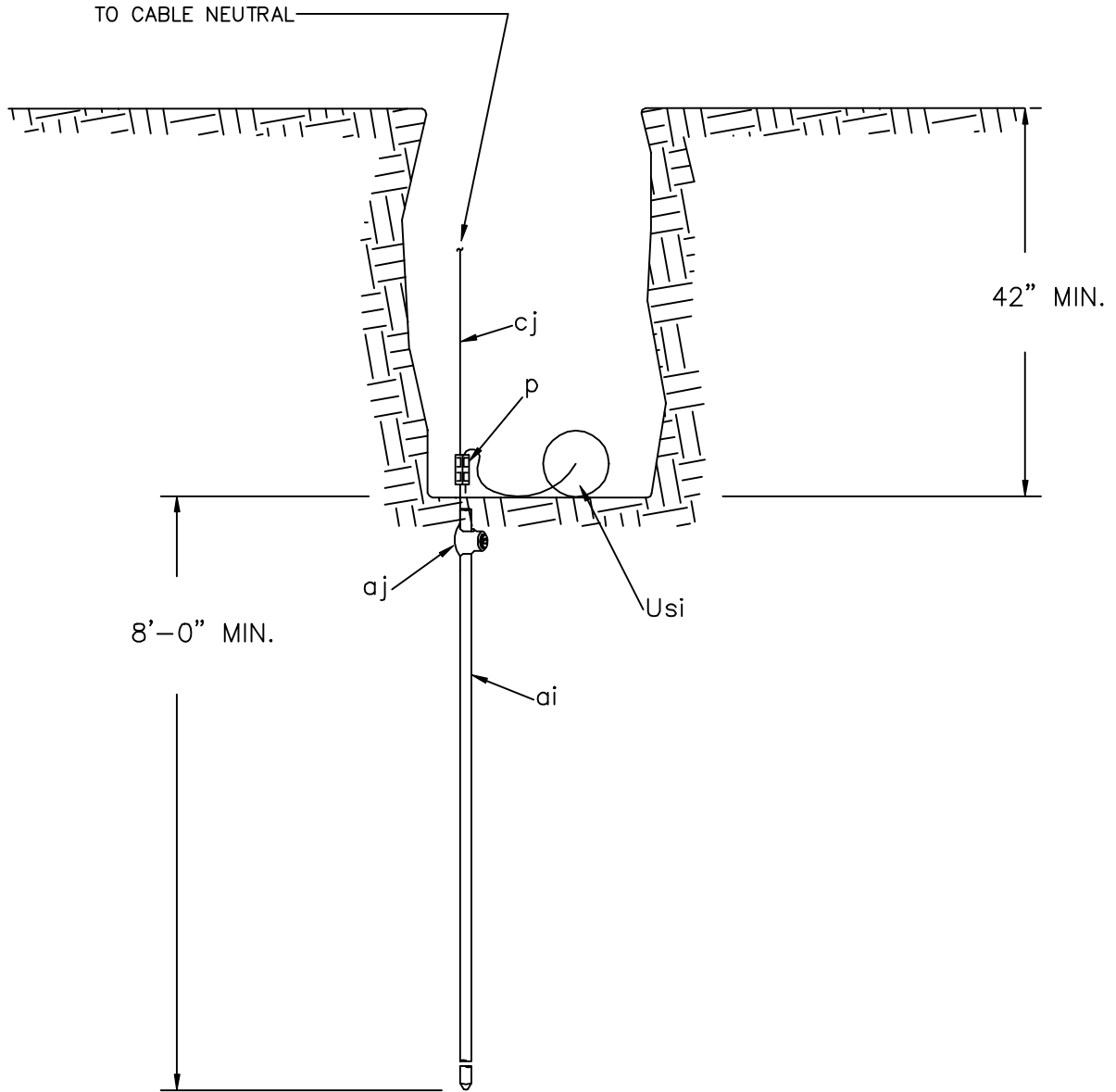
| ITEM | QTY. | MATERIAL |
|------|------|--|
| p | | Connector, compression, as required. |
| Usi | | Anode, sacrificial, insulated, lead length as required. |
| | | Size and quantity specified in note #1. |
| | | SACRIFICIAL ANODE FOR CABLE SPLICE PROTECTION (BARE TO JACKETED CABLE) |
| | | 2000 |
| | | UM27-1 |



NOTE:

1. CONNECT ANODE LEAD WIRE INSIDE PADMOUNTED EQUIPMENT TO ENABLE TESTING OF ANODE OUTPUT.

| ITEM | QTY. | MATERIAL | | |
|------|------|--------------------------------------|---|--------|
| p | | Connectors, compression, as required | | |
| aj | | Clamps, ground rod, as required | SACRIFICIAL ANODE FOR EQUIPMENT GROUND PROTECTION | |
| Usi | | Anode, sacrificial, as required | | |
| | | | 2000 | UM27-2 |



NOTES:

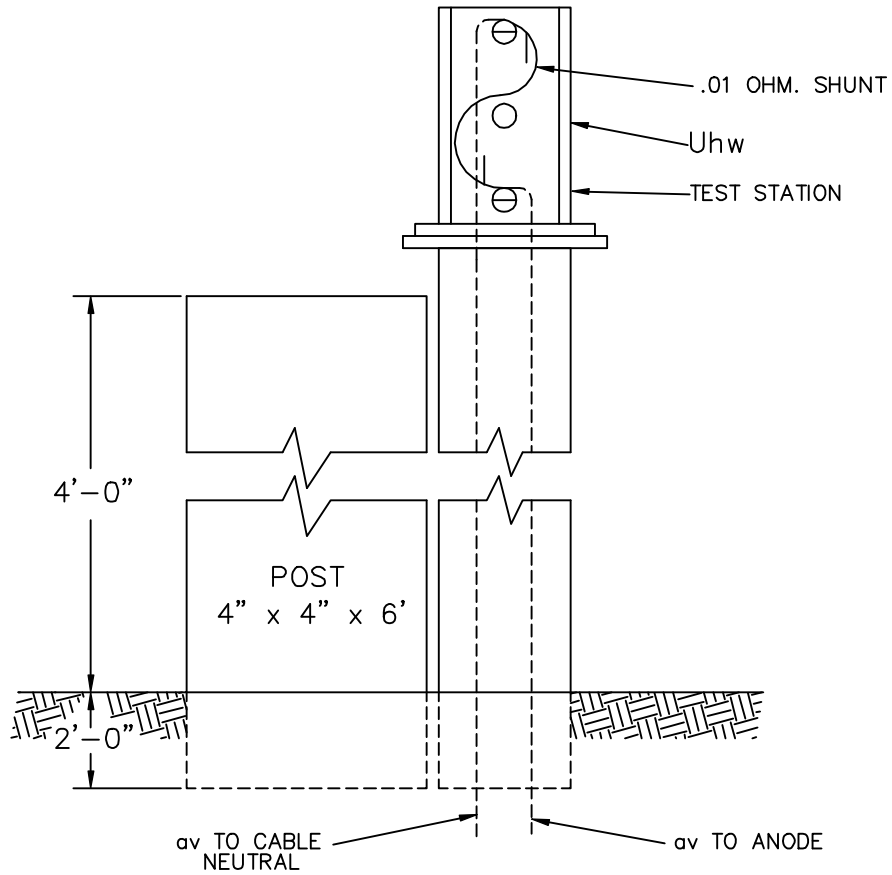
1. INSTALLATION OF AN ANODE IS NOT REQUIRED AT ALL GROUNDING LOCATIONS.
2. ROUTE ANODE LEAD SO AS TO BE ACCESSIBLE FOR TESTING WHENEVER FEASIBLE. (SEE UNITS UM28 OR UM28-1.)

| ITEM | QTY. | MATERIAL |
|------|------|--------------------------------------|
| p | 1 | Connector, compression |
| ai | 1 | Ground rod, 5/8" x 8'-0" Copper clad |
| aj | 1 | Clamp, ground rod |
| cj | | Ground wire, #6 S.D. copper (min.) |
| Usi | 1 | Anode, sacrificial |

SACRIFICIAL ANODE
FOR
CABLE GROUND PROTECTION

2000

UM27-3



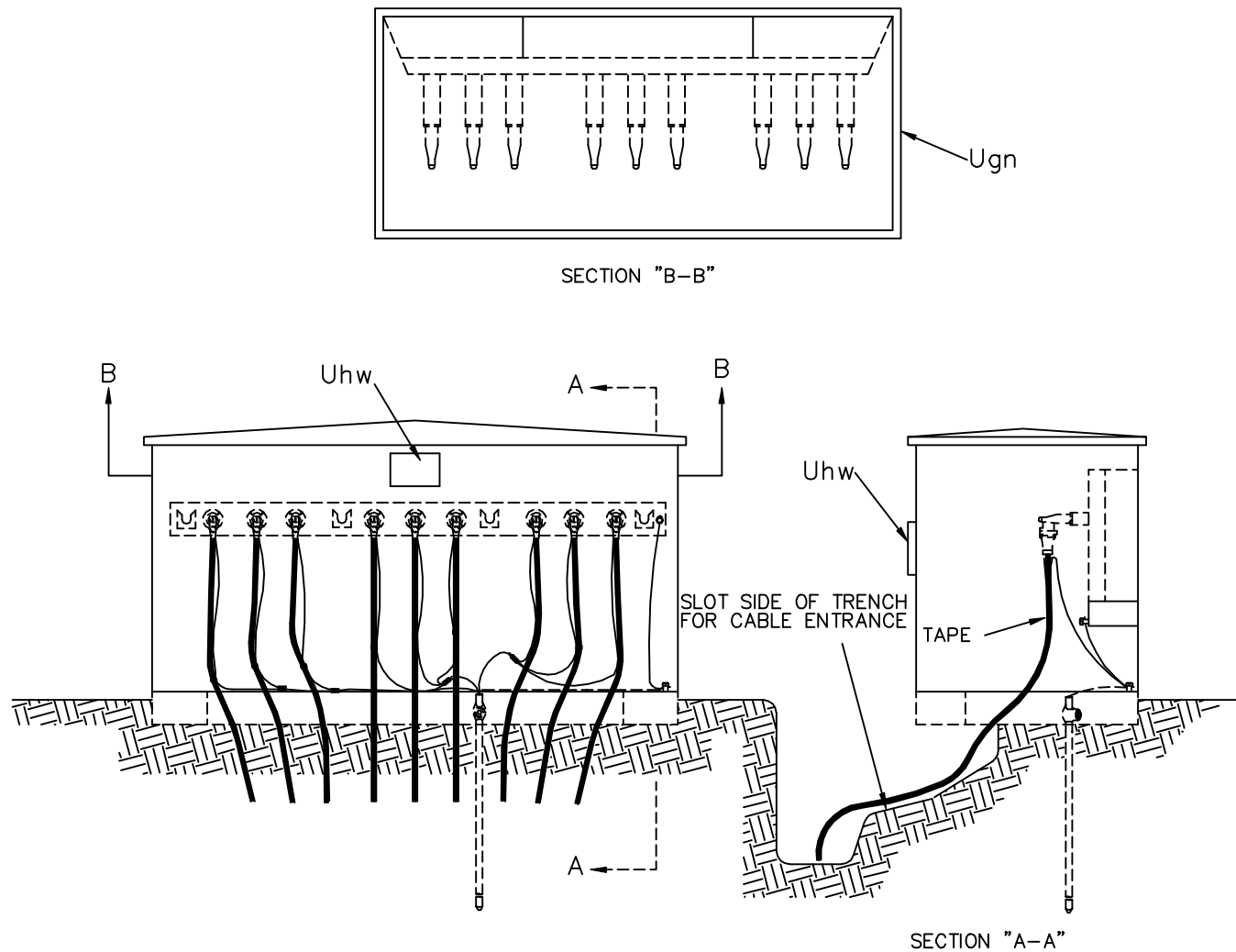
UM28 ABOVE GROUND LEVEL.

UM28-1 FLUSH WITH GROUND LEVEL
(DELETE POST AND ADD SUITABLE METHOD
FOR LOCATING.)

NOTE:

CONNECTIONS TO BE MADE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

| ITEM | QTY. | MATERIAL | | | |
|------|------|--------------------------------|--------------|------|------|
| | 1 | 4" x 4" x 6' Treated post | | | |
| | 1 | Test station, anode | | | |
| | 1 | Shunt, anode | | | |
| av | | Jumper, insulated, as required | TEST STATION | | |
| | | | | | |
| Uhw | 1 | Sign, "WARNING" | | 2000 | UM28 |



NOTES:

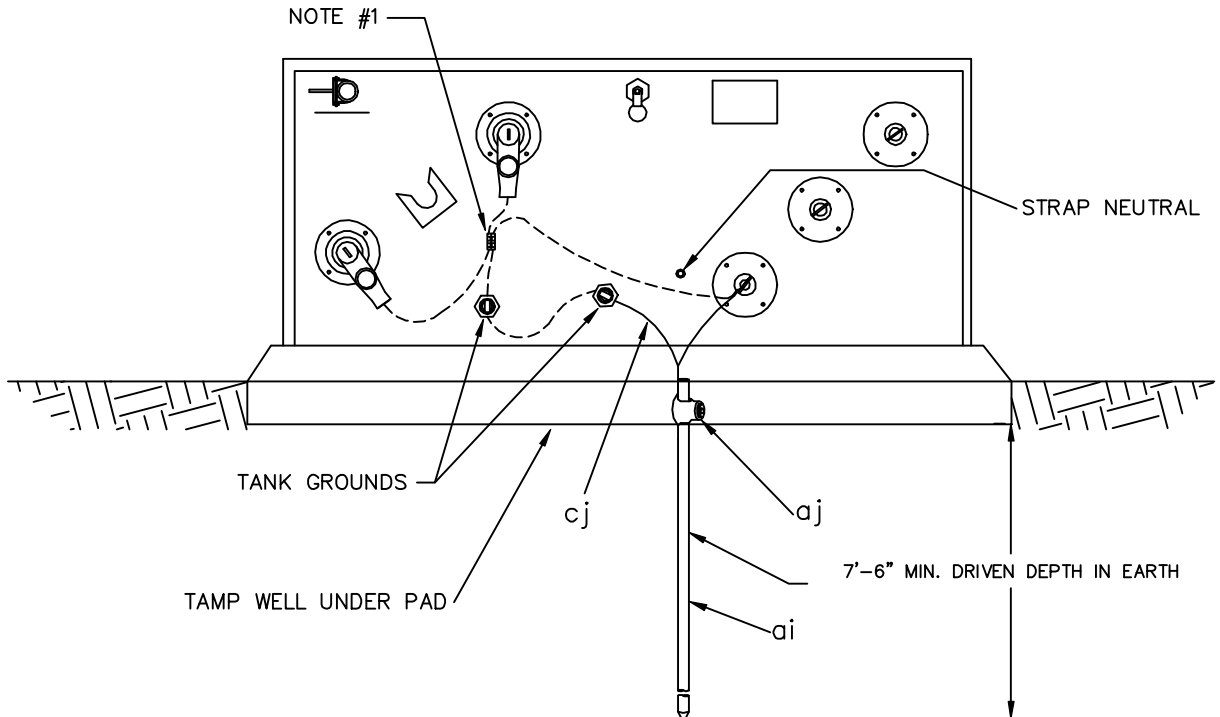
1. THE FOLLOWING UNITS/ASSEMBLIES ARE NOT PART OF THIS UNIT. SPECIFY SEPARATELY:
 - A. MULTIPOINT TERMINATIONS AND OTHER ACCESSORIES
 - B. FUSED OR NON-FUSED LOADBREAK ELBOWS
 - C. GROUNDING ASSEMBLIES UM48-1 OR OTHER
 - D. PAD OR SLEEVE ASSEMBLIES (IF REQUIRED)

2. ALL NEUTRALS AND METALLIC NON-CURRENT CARRYING PARTS SHALL BE INTERCONNECTED AND GROUNDED.

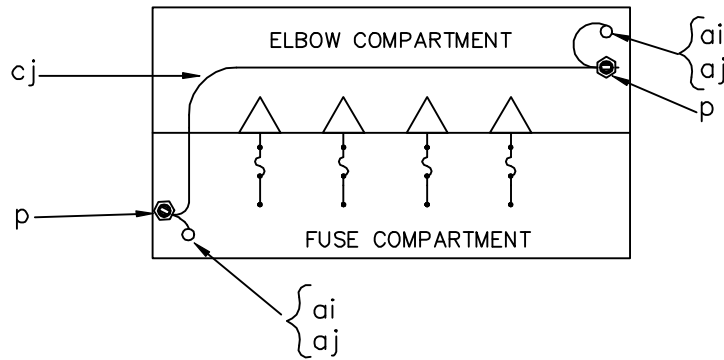
3. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE AND "DANGER" SIGN INSIDE ENCLOSURE.

| ITEM | QTY. | MATERIAL | | |
|------|------|-------------------------------|--|------|
| p | | Connectors, as required | | |
| av | | Jumpers, as required | | |
| Ugn | 1 | Enclosure | MULTI PHASE SECTIONALIZING ENCLOSURE PAD OR SLEEVE MOUNTED | |
| Uhw | 2 | Signs, "DANGER" and "WARNING" | | |
| | | | 2000 | UM33 |

TRANSFORMER INSTALLATION
(FRONT VIEW)



DEADFRONT FUSE ENCLOSURE
(TOP VIEW)



NOTES:

1. TIE CONCENTRIC NEUTRALS TOGETHER BEFORE TAP TO GROUND LOOP TO ASSURE SAME CONDUCTIVITY AS CABLE NEUTRAL.

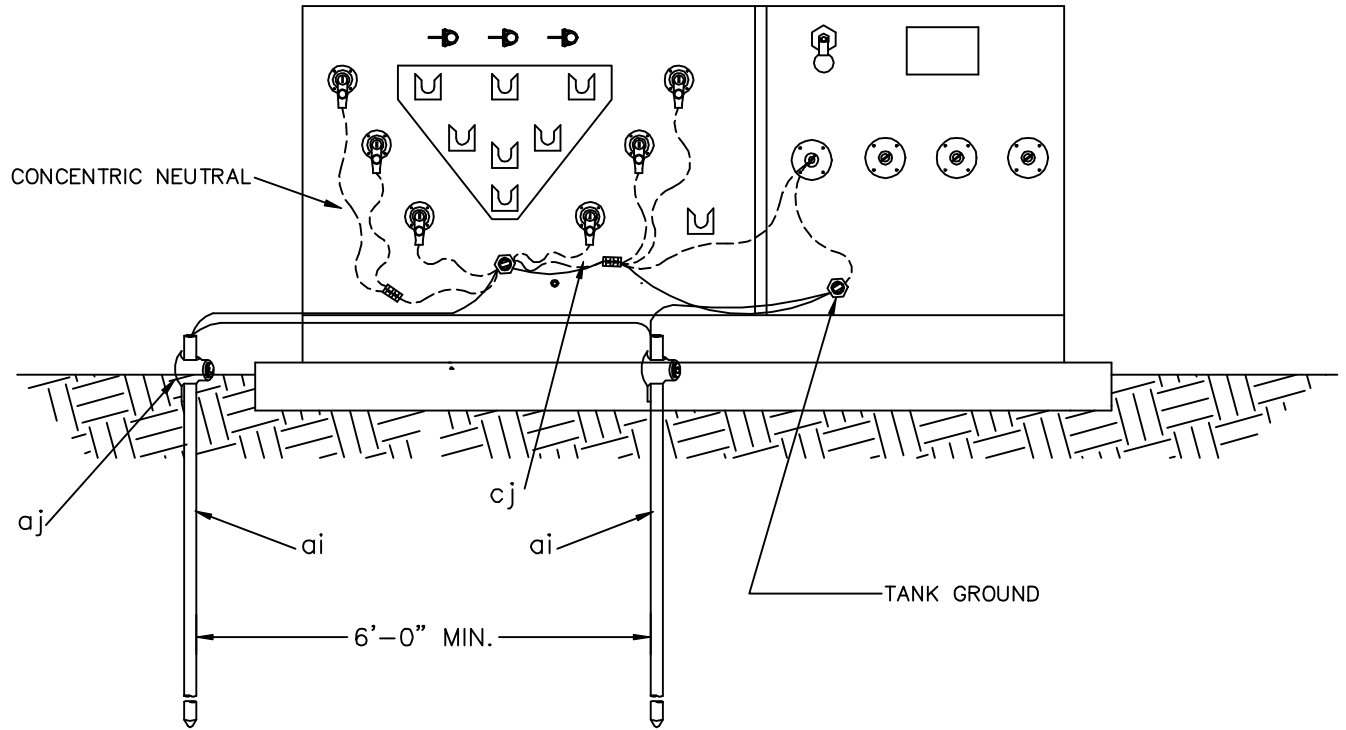
| ITEM | QTY | MATERIAL |
|------|-----|--|
| p | | Connectors, (as required) |
| ai | | Ground rods, specify number and length |
| aj | | Clamp, ground rod (1 per rod) |
| cj | | Ground wire, #4 copper (as required) |

GROUNDING ASSEMBLY FOR
PAD MOUNTED SINGLE PHASE
TRANSFORMERS AND ENCLOSURES

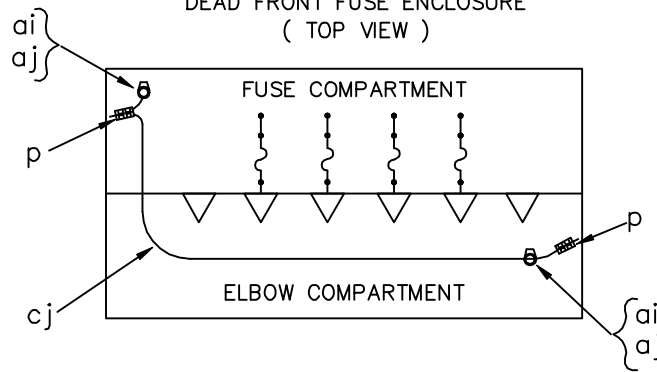
2000

UM48-1

TRANSFORMER INSTALLATION
(FRONT VIEW)



DEAD FRONT FUSE ENCLOSURE
(TOP VIEW)



NOTES:

1. TIE CONCENTRIC NEUTRALS TOGETHER BEFORE TAP TO GROUND LOOP TO ASSURE SAME CONDUCTIVITY AS CABLE NEUTRAL.
2. MULTIPLE RODS MAY NOT FIT INSIDE ENCLOSURE. ONLY 1 ROD MUST BE INSTALLED INSIDE ENCLOSURE.
3. THE QUANTITY OF RODS IS TO BE DETERMINED BY THE SPECIFIER. THE USE OF TWO RODS RATHER THAN ONE AT A MULTI-PHASE TRANSFORMER OR ENCLOSURE IS NOT A STANDARD OR REQUIREMENT BY RUS.

| ITEM | QTY | MATERIAL |
|------|-----|---|
| p | | Connectors, as required |
| ai | | Ground rods, specify number and length |
| aj | | Clamp, ground rod (1 per rod) |
| | | Jumpers, copper, as required |
| cj | | Ground wire, #4 copper min. (as required) |

GROUNDING ASSEMBLY FOR
PAD MOUNTED MULTI PHASE
TRANSFORMERS AND ENCLOSURES

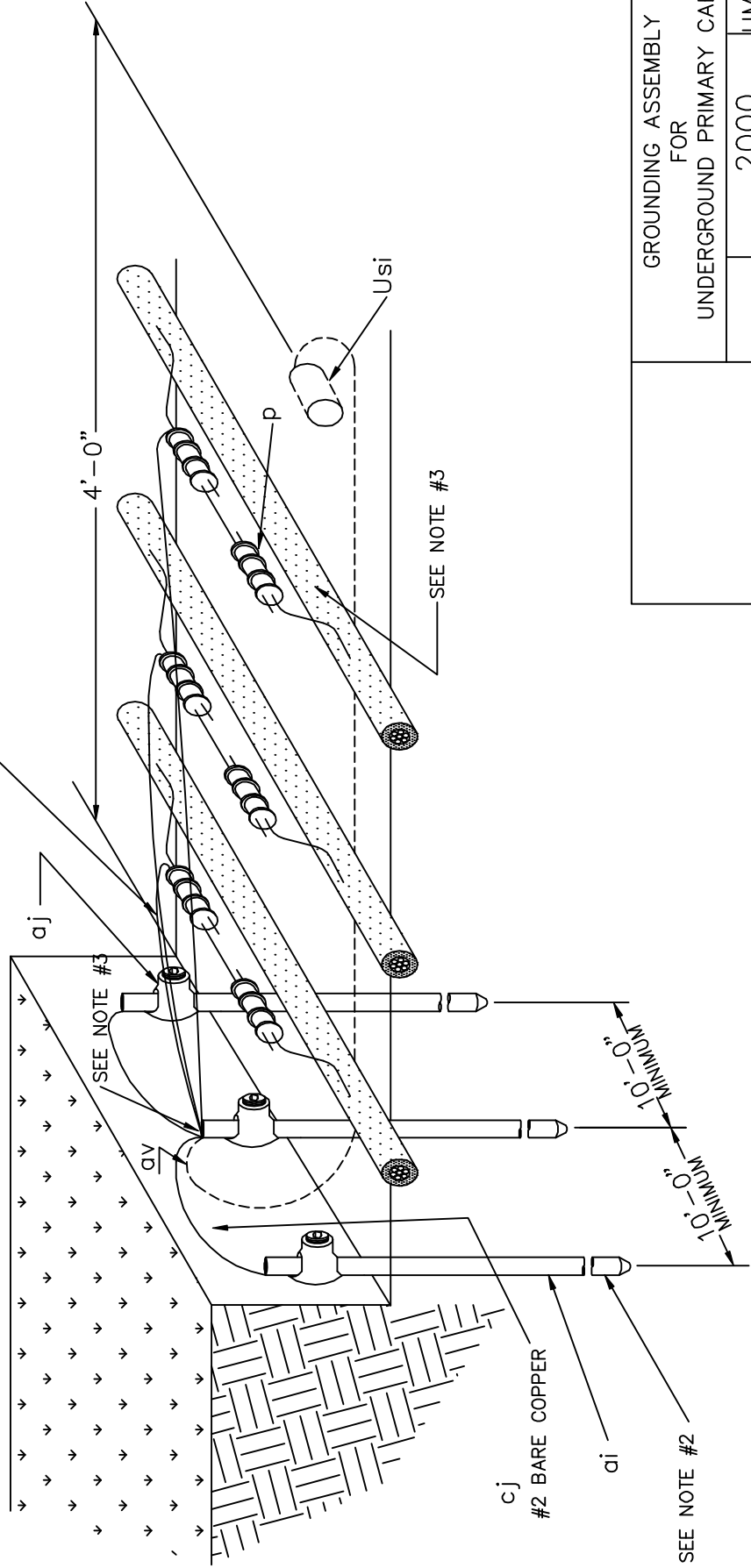
2000

UM48-2

NOTES:

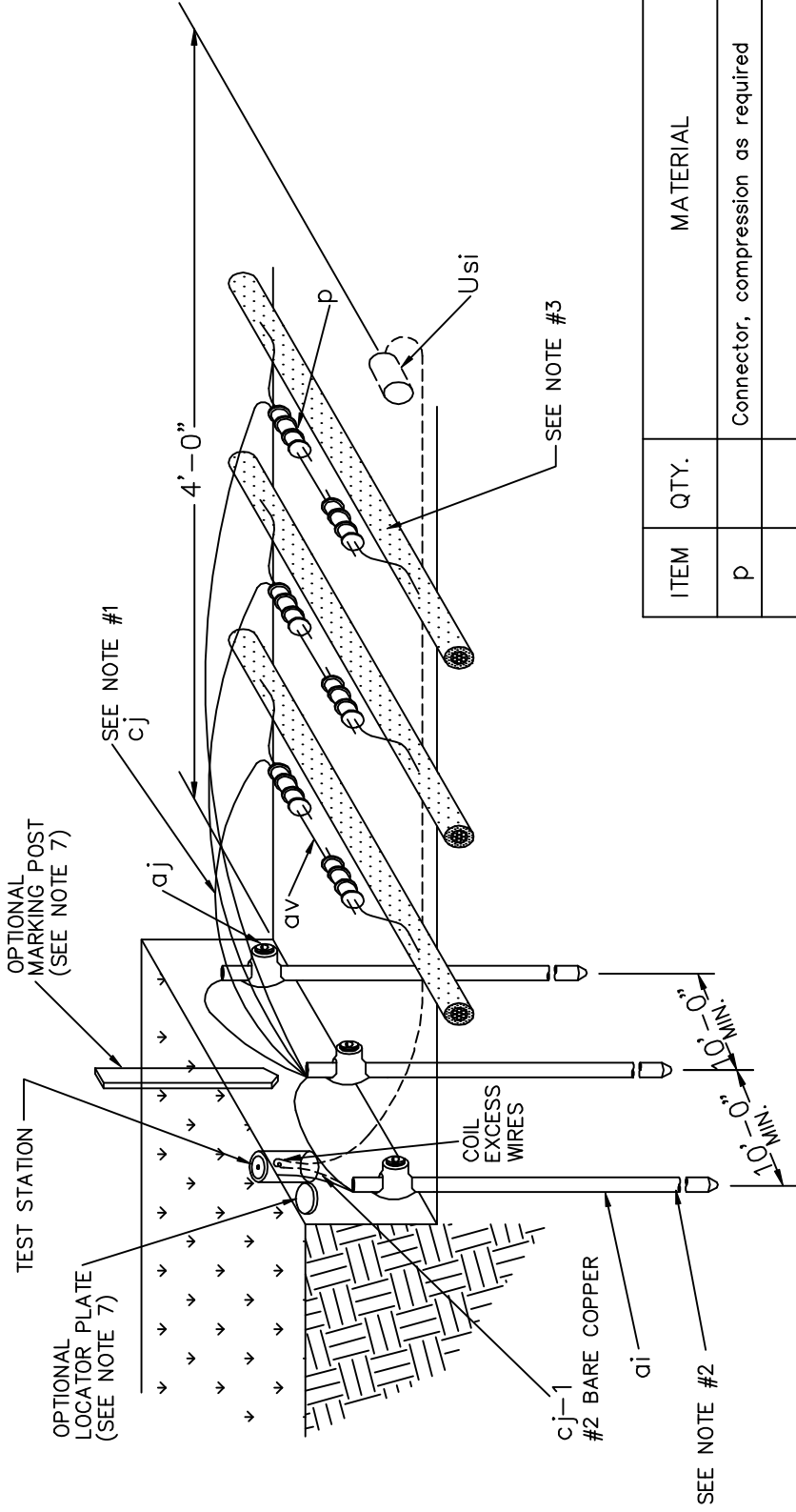
- #2 THRU 4/0 CONDUCTOR - USE #4 BARE, SOLID CU JUMPER (av) #4 STRD CU GROUND WIRE (cj) 500 MCM CONDUCTOR - USE #2/0 BARE SOLID CU JUMPER (av) #2 STRD CU GROUND WIRE (cj).
- ENGINEER TO SPECIFY NUMBER AND LENGTH OF GROUND RODS.
- MOISTURE SEAL AROUND CONNECTIONS TO THE JACKETED CABLE NEUTRAL. USE SOLID COPPER INSIDE AND EXTENDED THROUGH MOISTURE SEAL.
- FOUR GROUNDS PER MILE MINIMUM. MORE REQUIRED WITH HIGH GROUND RESISTANCE.
- GROUND RODS MAY BE INSTALLED IN SEPARATE PITS SPACED 30 FEET APART.

SEE NOTE #1
cj



| ITEM | QTY. | MATERIAL |
|------|------|------------------------------------|
| p | | Connector, compression as required |
| ai | | Ground rods |
| aj | | Clamp, ground rod, as required |
| av | | Jumper, See Note #1 |
| cj | | Grounding wire, #4, #2, copper |
| cj | | Jumpers, (2) - #14 stranded leads |

| | |
|--|--------|
| GROUNDING ASSEMBLY FOR UNDERGROUND PRIMARY CABLE | |
| 2000 | UM48-3 |

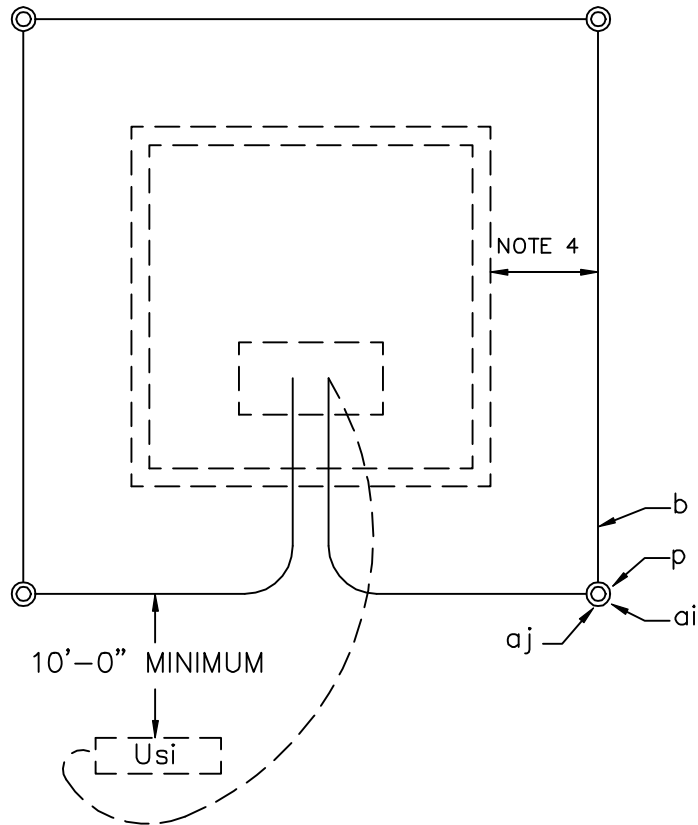


NOTES:

1. #2 THRU 4/0 CONDUCTOR - USE #4 BARE, SOLID CU. JUMPER (aj) #4 STRD. CU. GROUND WIRE (cj) 500 MCM CONDUCTOR - USE #2/0 BARE, SOLID CU. JUMPER (av) #2 STRD. CU. GROUND WIRE (ci).
2. ENGINEER TO SPECIFY NUMBER AND LENGTH OF GROUND RODS.
3. MOISTURE SEAL AROUND CONNECTIONS TO THE JACKETED CABLE NEUTRAL. USE SOLID COPPER INSIDE EXTENDED THROUGH MOISTURE SEAL.
4. FOUR (4) GROUNDS PER MILE MINIMUM. MORE REQUIRED WITH HIGH GROUND RESISTANCE.
5. INSTALL TEST STATION EVEN WITH GRADE.
6. GROUND RODS MAY BE INSTALLED IN SEPARATE PITS SPACED 30 FEET APART.
7. SEE DRAWING UX-7 FOR POSSIBLE LOCATING METHODS.

| ITEM | QTY. | MATERIAL |
|------|------|--|
| p | | Connector, compression as required |
| ai | | Ground rods |
| aj | | Clamp, ground rod, as required |
| av | | Jumper, copper (See Note #1) |
| cj | | Grounding wire #4, #2, copper |
| cj | | Jumper (2) - #14 stranded leads |
| | 1 | Test station, flush mount |
| | | GROUNDING ASSEMBLY FOR UNDERGROUND PRIMARY CABLE (WITH TEST STATION) |
| | | 2000 |
| | | UM48-4 |

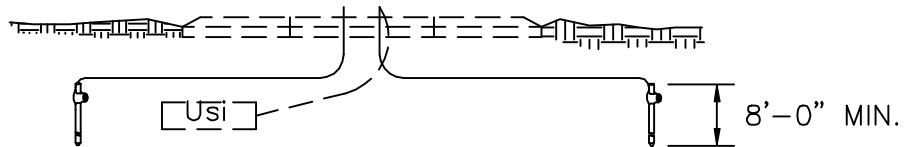
TOP VIEW



NOTE:

CONNECT ANODE, LEAD INSIDE PAD MOUNTED ENCLOSURES FOR TESTING PURPOSES.

FRONT VIEW



NOTES:

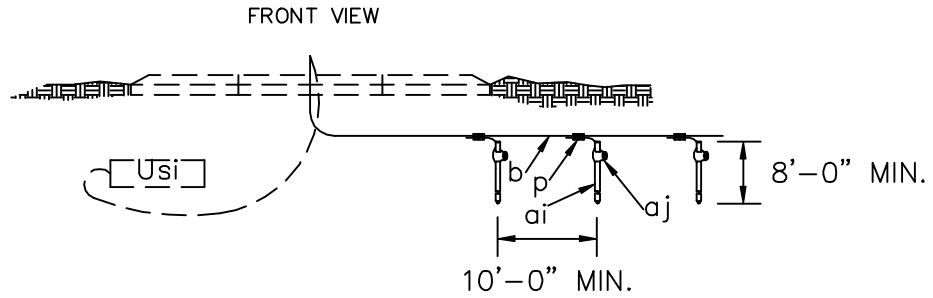
1. PLACE ONE GROUND ROD AT EACH CORNER.
2. GROUNDING GRID 1/0 BARE COPPER BURIED 6" BELOW GROUND, RUN WIRE INTO BASEMENT AND ALLOW 5'-0" FOR GROUNDING LIVE FRONT SWITCH / FUSE ENCLOSURES.
3. PAD OR BASEMENT IS NOT PART OF THIS UNIT.
4. PLACE GROUND WIRE A MINIMUM OF 24" AWAY FROM THE SIDE OR SIDES OF PAD THAT A PERSON WOULD STAND TO OPERATE THE EQUIPMENT. THE GROUND WIRE MAY BE PLACED WITHIN 12" OF THE OTHER SIDES.
5. SPECIFY LENGTH OF GROUND RODS AT EACH CORNER.

| ITEM | QTY. | MATERIAL |
|------|------|---|
| av | | 1/0 bare copper (as required) 30'-0" Min. |
| p | | Connectors (as required) |
| ai | 4 | Ground rods |
| aj | 4 | Clamp, ground rod, 1 per rod |

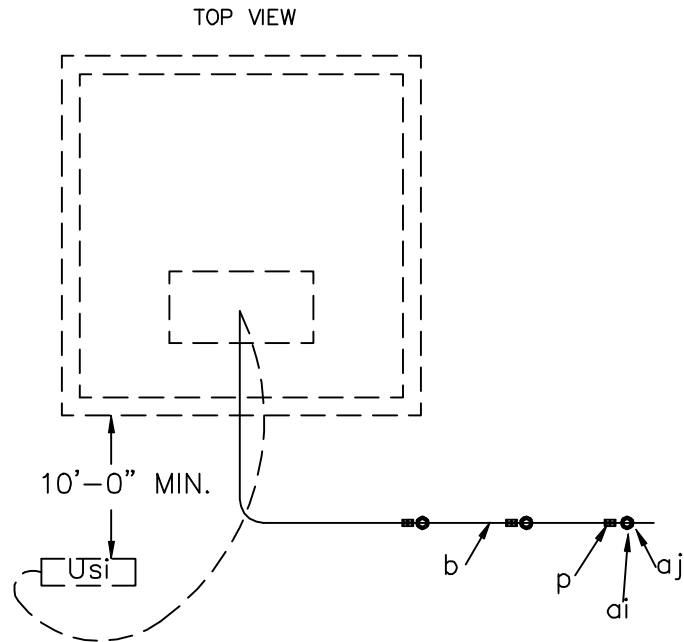
GROUNDING GRID FOR PAD MOUNTED EQUIPMENT INSTALLATION

2000

UM48-5



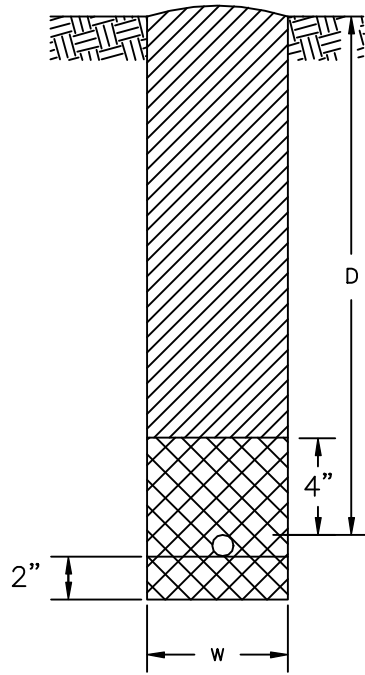
NOTE:
CONNECT ANODE LEAD INSIDE PAD MOUNTED ENCLOSURES FOR TESTING PURPOSES



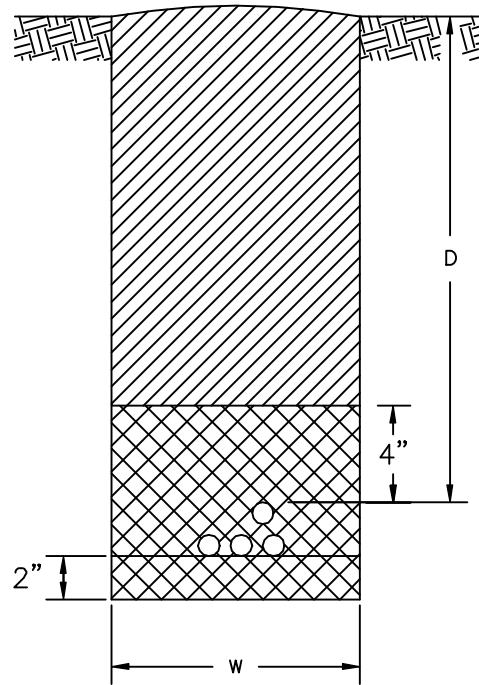
NOTES:

1. PLACE A MINIMUM OF TWO GROUND RODS IN SERIES. MINIMUM DISTANCE BETWEEN GROUND UNIT ASSEMBLIES - 10'-0".
2. GROUNDING GRID 1/0 BARE COPPER BURIED 6" BELOW GROUND, RUN WIRE INTO BASEMENT AND ALLOW 5'-0" FOR GROUNDING LIVE FRONT SWITCH / FUSE ENCLOSURES.
3. PAD OR BASEMENT IS NOT PART OF THIS UNIT.
4. SPECIFY NUMBER AND LENGTH OF GROUND RODS.

| ITEM | QTY. | MATERIAL | | |
|------|------|------------------------------|--|--------|
| av | | 1/0 bare copper as required | GROUNDING ARRAY FOR PAD MOUNTED EQUIPMENT INSTALLATION | |
| p | | Connectors, as required | | |
| | | | | |
| ai | | Ground rods | | |
| aj | | Clamp, ground rod, 1 per rod | | |
| | | | 2000 | UM48-6 |


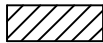



UR2 (D x W)
TRENCHING UNIT
ONE CABLE OR
CABLE ASSEMBLY



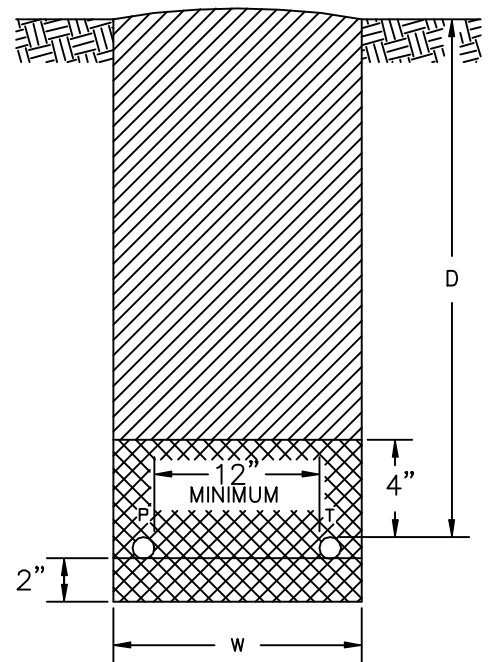
UR2-1 (D x W)
TRENCHING UNIT
MULTIPLE POWER CABLES
PRIMARY, SECONDARY OR SERVICE

LEGEND

-  SAND OR CLEAN SOIL
-  COMPACTED BACKFILL UNLESS OTHERWISE SPECIFIED
-  UNDISTURBED EARTH

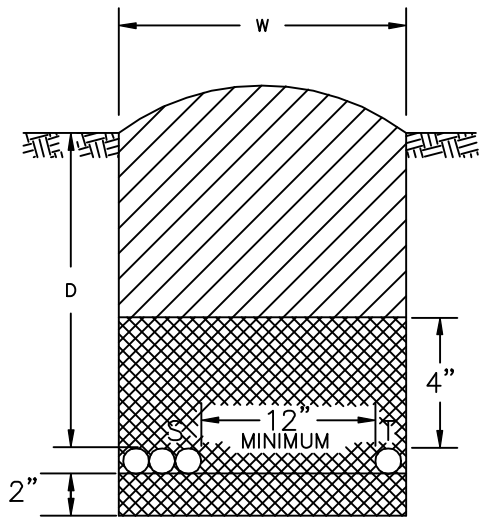
NOTES:

1. DEPTH (D) AND WIDTH (W) ARE SPECIFIED IN DESCRIPTION OF UNITS.
2. DEPTHS SPECIFIED ARE TO FINISHED GRADE.
3. OVER-EXCAVATE TRENCHES AS NECESSARY TO ALLOW FOR (a) SAND BEDDING OR (b) LOOSE SANDY SOILS OR (c) WHERE MORE THAN ONE CABLE WILL INSTALLED IN TRENCH AND LAYING FIRST CABLE MAY CAUSE TRENCH DAMAGE AND REDUCTION IN DEPTH.
4. SAND BEDDING IS NOT PART OF THESE UNITS AND WILL BE SPECIFIED AS NEEDED.
5. BACKFILLING IS PART OF ALL TRENCHING UNITS INCLUDING JOINT-USE TRENCHES.
6. OPTIONAL WARNING TAPE IS RECOMMENDED TO BE PLACED ABOVE THE INSTALLED CABLE.






UR2-2 (D x W)
TRENCHING UNIT
POWER AND TELEPHONE CABLE

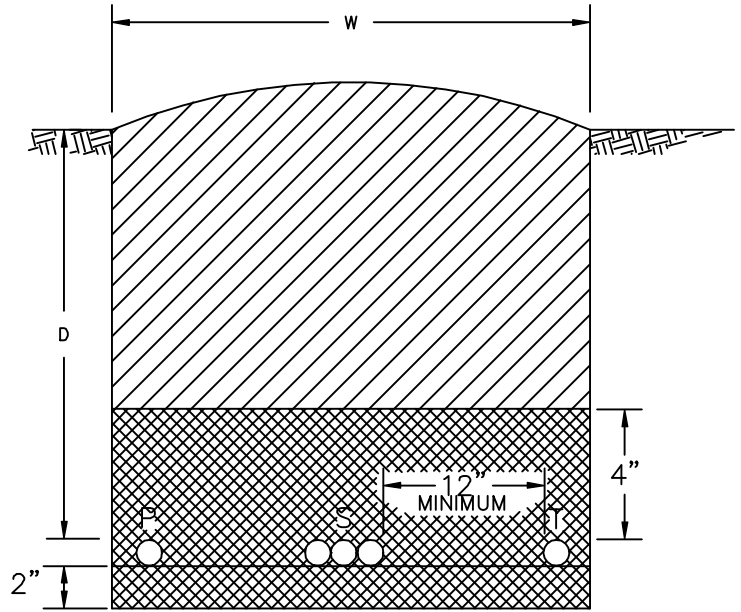
| | | |
|-----------------------------------|------|--------------------|
| TRENCHES FOR DIRECT BURIAL CABLES | | |
| | 2000 | UR2 TO UR2-2 |



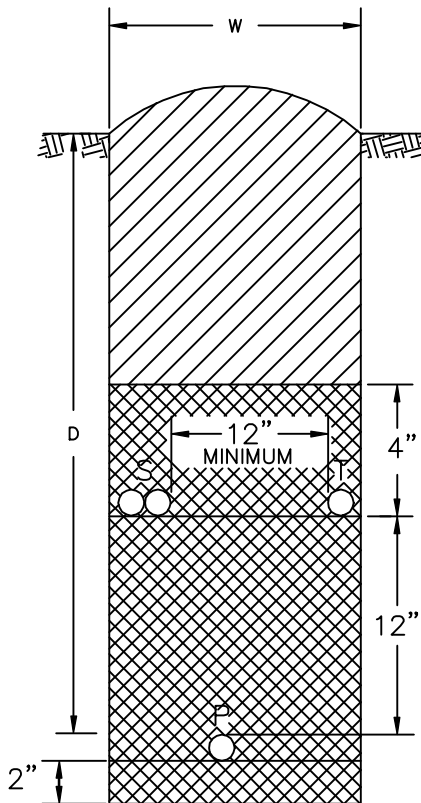
UR2-3 (D x W)
SERVICE OR SECONDARY
AND
TELEPHONE

LEGEND

-  BEDDING SAND OR CLEAN SOIL
-  COMPACTED BACKFILL UNLESS OTHERWISE SPECIFIED
-  UNDISTURBED EARTH



UR2-5 (D x W)
PRIMARY, SECONDARY
AND
TELEPHONE

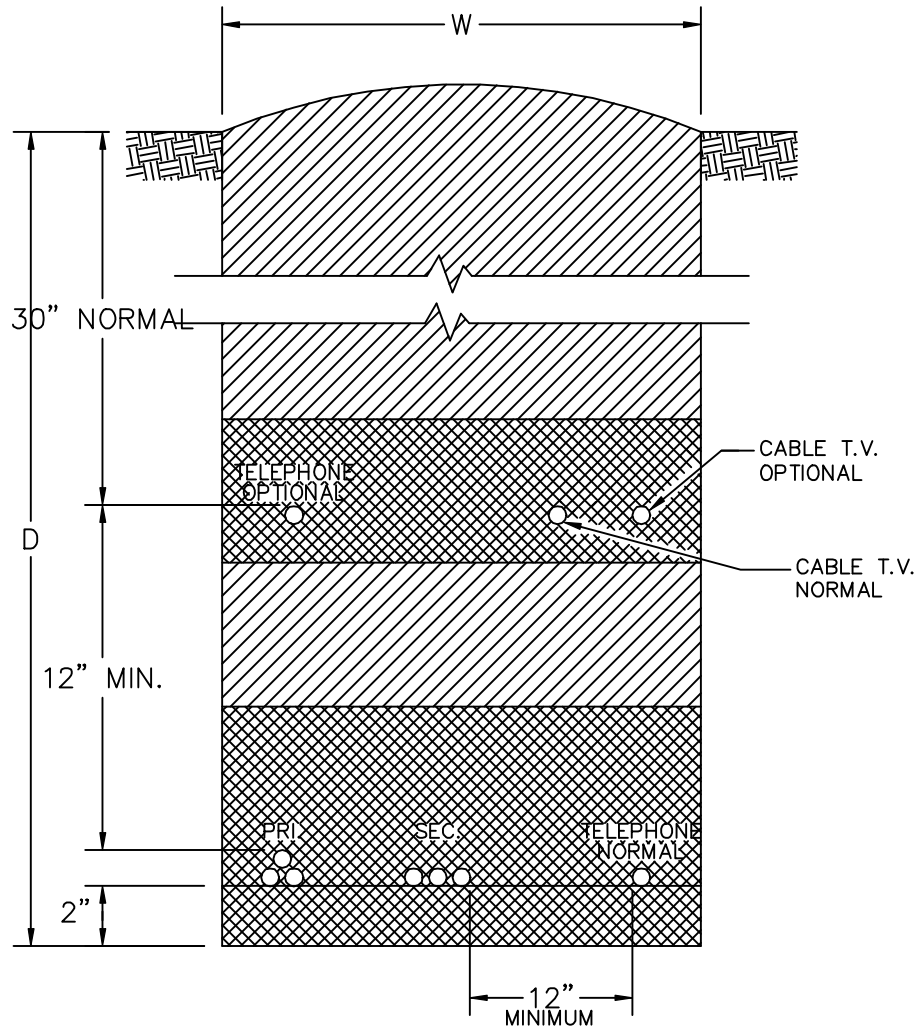


UR2-4 (D x W)
PRIMARY
AND
SECONDARY OR TELEPHONE

NOTES:

1. DEPTH (D) AND WIDTH (W) ARE SPECIFIED IN DESCRIPTION OF UNITS.
2. DEPTHS SPECIFIED ARE TO FINISHED GRADE.
3. OVER-EXCAVATE TRENCHES AS NECESSARY TO ALLOW FOR (a) SAND BEDDING OR (b) LOOSE AND SANDY SOILS OR (c) WHERE MORE THAN ONE CABLE WILL BE INSTALLED IN TRENCH AND LAYING OF FIRST CABLE MAY CAUSE TRENCH DAMAGE AND REDUCTION IN DEPTH.
4. SAND BEDDING IS NOT PART OF THESE UNITS AND WILL BE SPECIFIED AS NEEDED.
5. BACKFILLING IS PART OF ALL TRENCHING UNITS INCLUDING JOINT-USE TRENCHES.

| | | |
|-----------------------------------|------|----------------------|
| TRENCHES FOR DIRECT BURIAL CABLES | | |
| | 2000 | UR2-3 TO UR2-5 |



LEGEND

BEDDING SAND OR CLEAN SOIL

COMPACTED BACKFILL UNLESS OTHERWISE SPECIFIED

UNDISTURBED EARTH

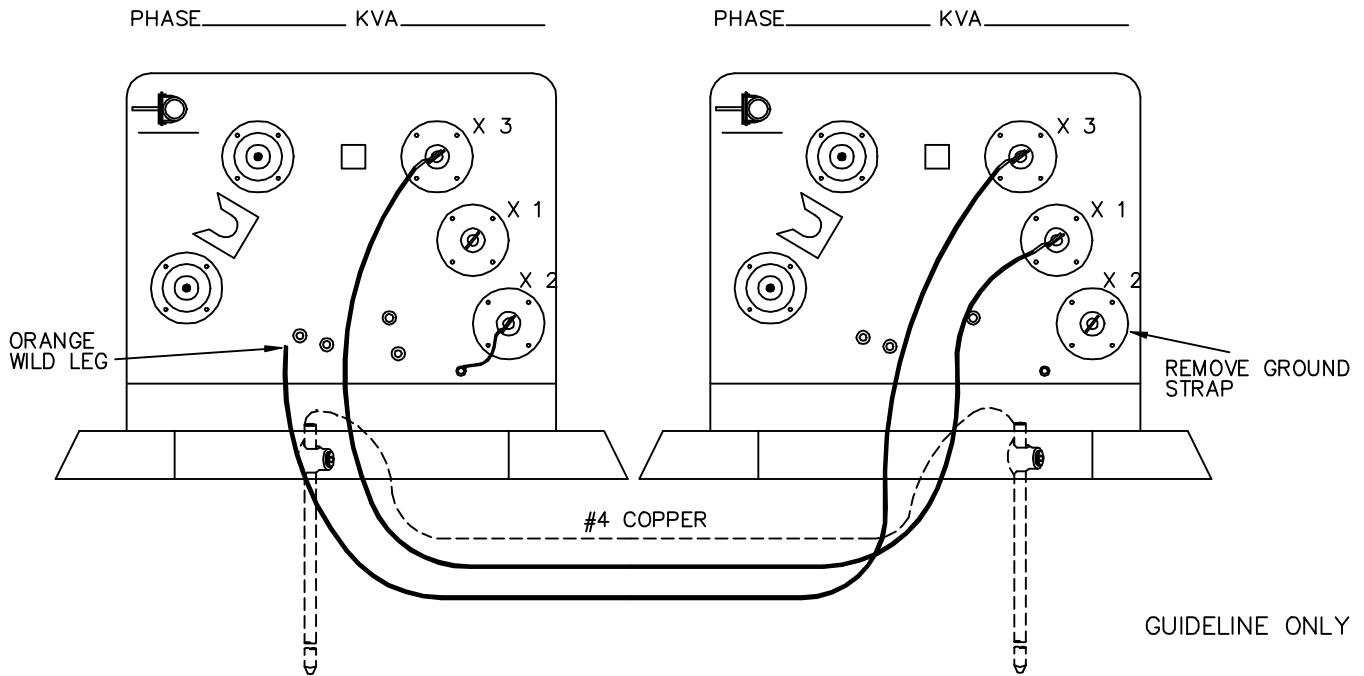
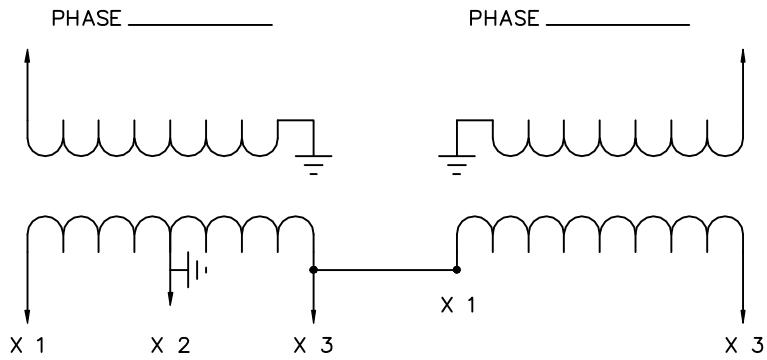
PRI. = PRIMARY SUPPLY CABLES
SEC. = SECONDARY OR STREETLIGHT WIRES

URT-NT = NORMAL TRENCH 42" - 48" DEPTH
URT-ST = SUPER TRENCH 60" + DEPTH
W = 18" - 24" NORMAL

NOTES:

1. DEPTH (D) AND WIDTH (W) ARE SPECIFIED IN DESCRIPTION OF UNITS.
2. DEPTHS SPECIFIED ARE TO FINISHED GRADE.
3. OVER-EXCAVATE TRENCHES AS NECESSARY TO ALLOW FOR (a) SAND BEDDING OR (b) LOOSE AND SANDY SOILS OR (c) WHERE MORE THAN ONE CABLE WILL BE INSTALLED IN TRENCH AND LAYING OF FIRST CABLE MAY CAUSE TRENCH DAMAGE AND REDUCTION IN DEPTH.
4. SAND BEDDING IS NOT PART OF THESE UNITS AND WILL BE SPECIFIED AS NEEDED.
5. BACKFILLING IS PART OF ALL TRENCHING UNITS INCLUDING JOINT-USE TRENCHES.

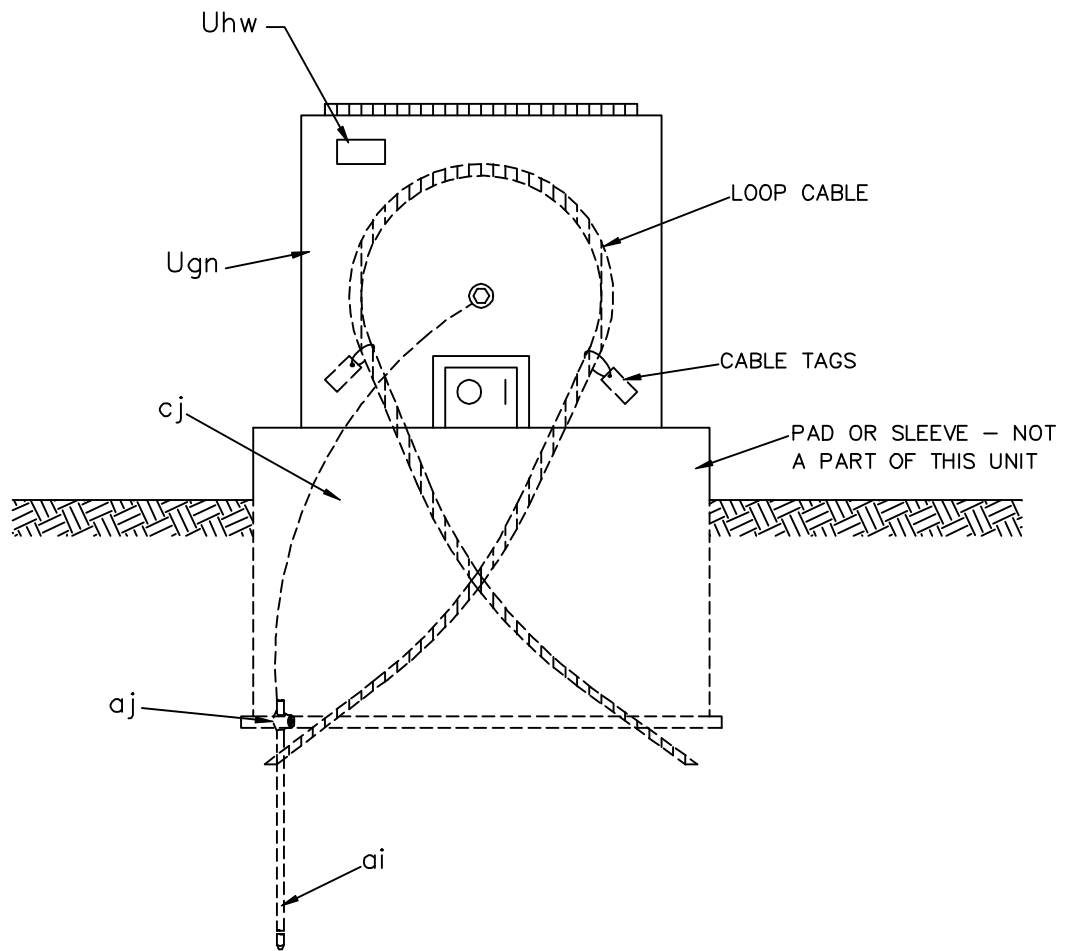
| | | | |
|--|--|----------------------------------|------------------|
| | | TRENCHES FOR DIRECT BURIAL CABLE | |
| | | 2000 | UR2-NT UR2-ST |



NOTE:

1. SPECIFY (2) APPLICABLE SINGLE PHASE TRANSFORMER ASSEMBLIES.

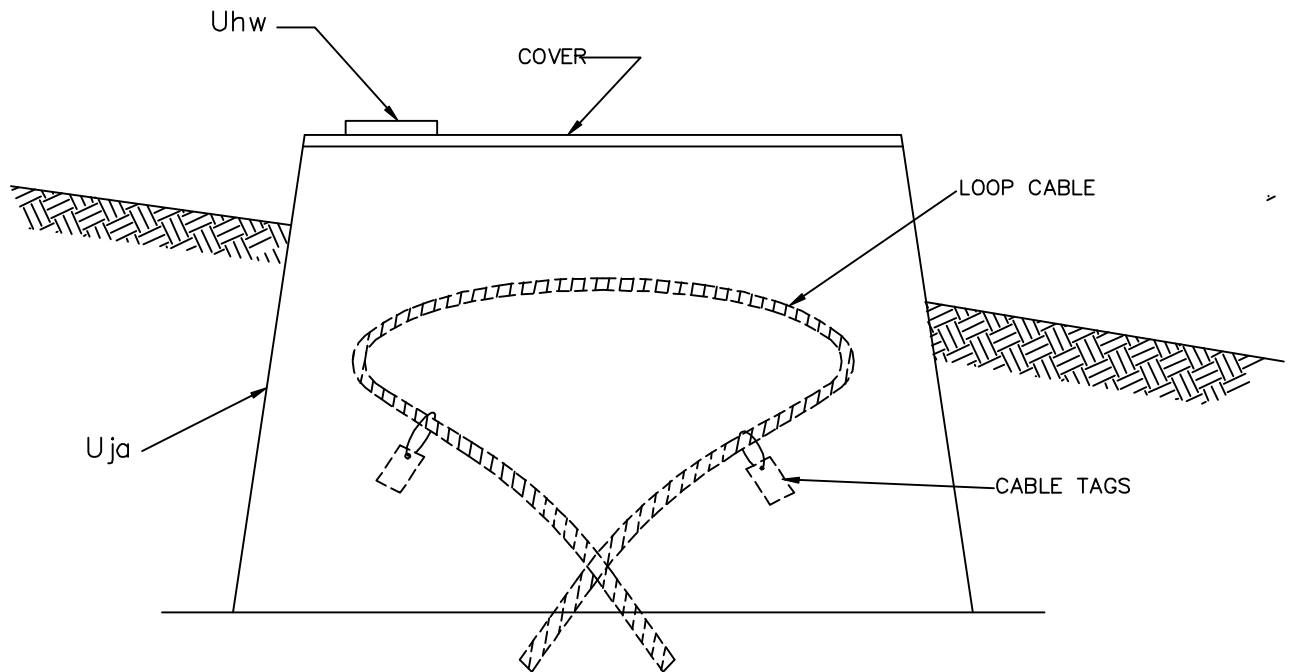
| | | |
|---|------|-----|
| OPEN DELTA CONNECTION WITH SINGLE PHASE PADMOUNT TRANSFORMERS | | |
| | 2000 | UX1 |



INSTALLATION NOTES:

1. LOOP CABLE TO PROVIDE SUFFICIENT LENGTH FOR TERMINATING IN A PAD-MOUNTED TRANSFORMER.
2. INSTALL CABLE TAGS ON CABLE.

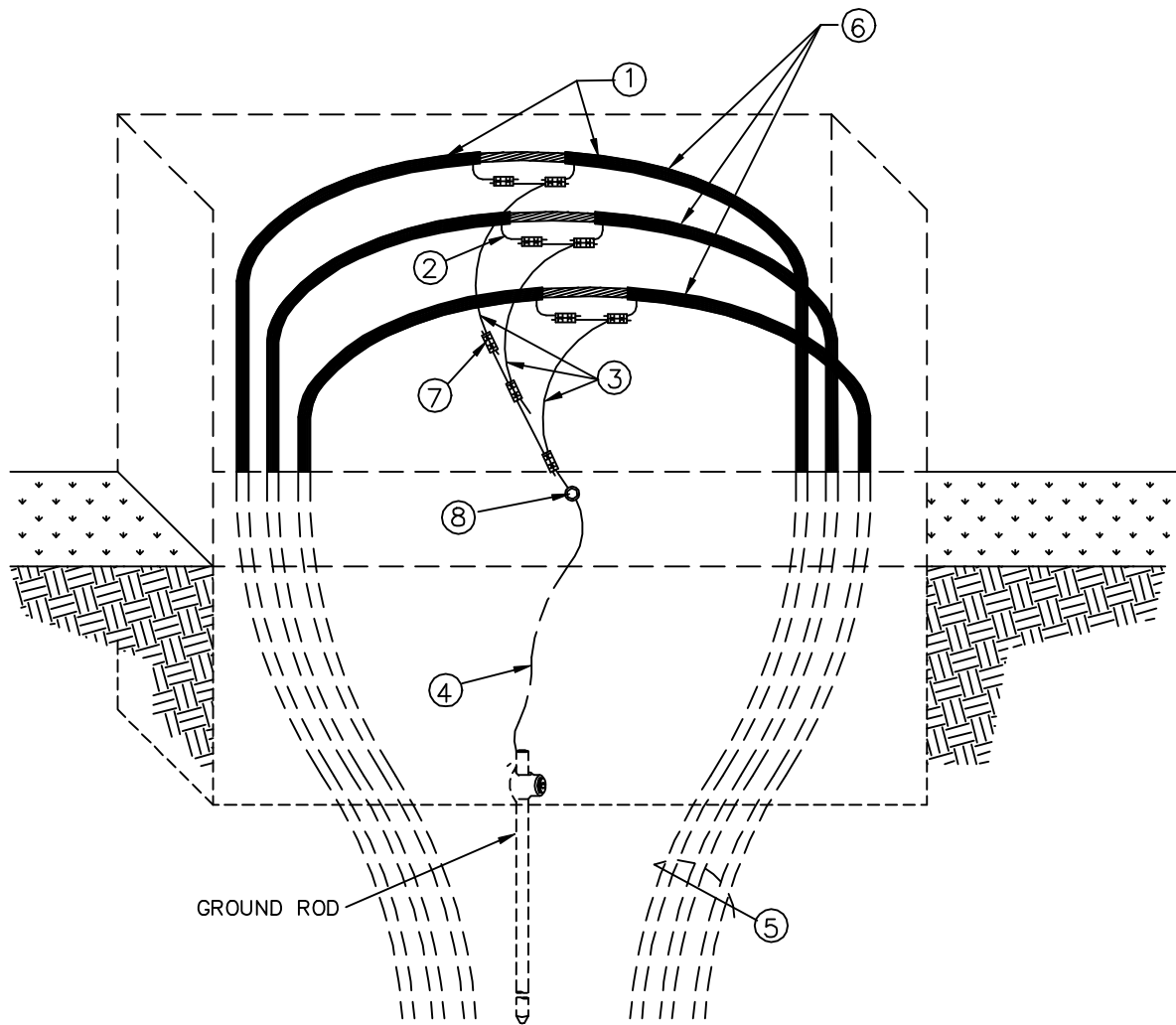
| ITEM | QTY. | MATERIAL | | | |
|------|------|----------------------------|--|--|--|
| ai | 1 | Ground rod | | | |
| aj | 1 | Clamp, ground rod | | | |
| cj | | As required | | | |
| Ugn | 1 | Primary junction enclosure | SINGLE PHASE PAD-MOUNTED TRANSFORMER DEFERRED UNIT PEDESTAL TYPE | | |
| Uhw | 1 | Sign, "WARNING" | | | |



INSTALLATION NOTES:

1. LOOP CABLE TO PROVIDE SUFFICIENT LENGTH FOR TERMINATING IN A LOW PROFILE TRANSFORMER.
2. INSTALL CABLE TAGS ON CABLE.
3. COVER, IF METAL, SHALL BE GROUNDED

| ITEM | QTY. | MATERIAL | | |
|------|------|------------------------------------|---|-----|
| Uhw | 1 | Sign, "WARNING" | SINGLE PHASE PADMOUNTED TRANSFORMER DEFERRED UNIT PAD-SLEEVE TYPE | |
| Uja | 1 | Transformer pad-sleeve combination | | |
| Uja | 1 | Cover | | |
| | | | 2000 | UX3 |



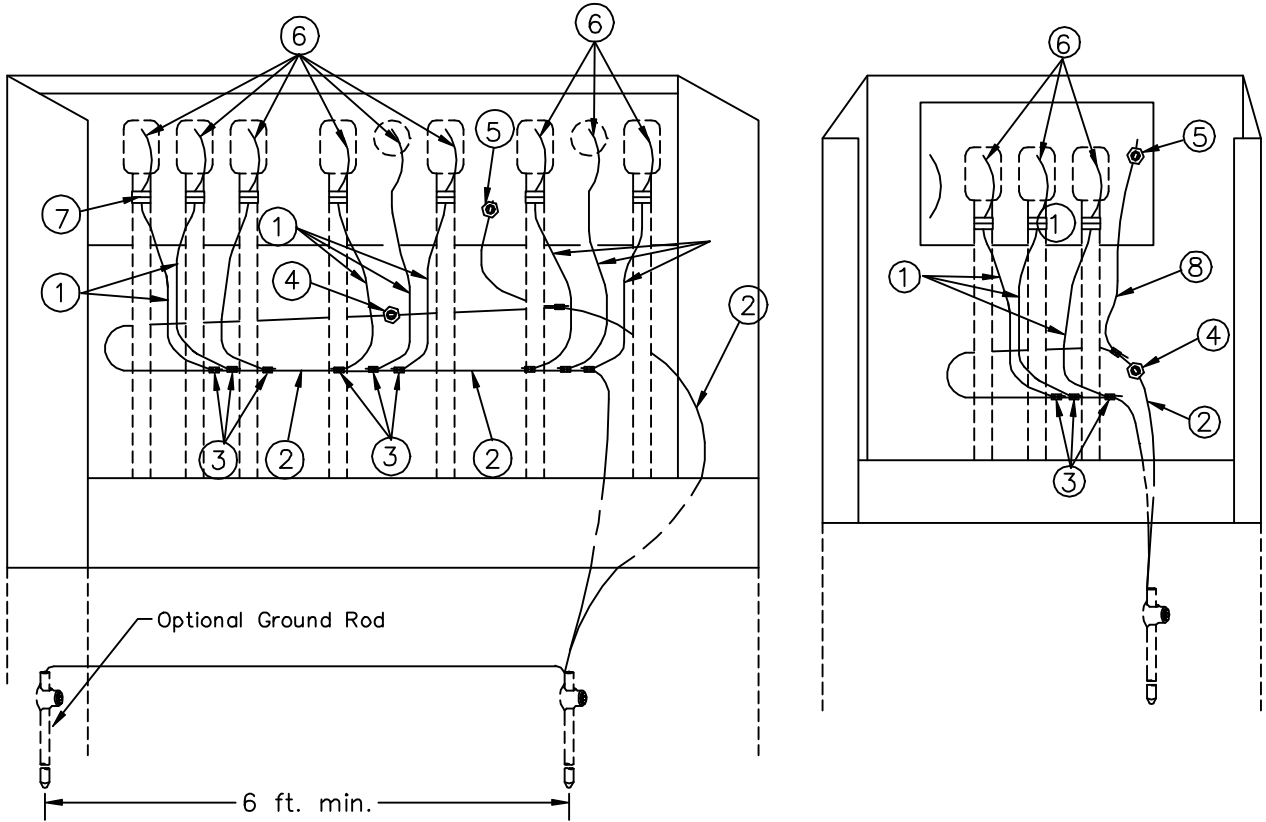
| REFERENCE NO. | MATERIAL |
|---------------|--|
| ① | Label cable for direction leaving sectionalizer |
| ② | Seal cable |
| ③ | Neutral extension |
| ④ | Ground bus |
| ⑤ | Leave sufficient slack in cable for future terminating |
| ⑥ | Label cable per phase (A, B or C) |
| ⑦ | Parallel compression connector |
| ⑧ | Box grounding connector |
| | |

GUIDELINE ONLY

INSTALLATION OF
NEUTRAL CONNECTION IN
ABOVE GRADE PEDESTAL

2000

UX4



NOTE:

1. LEAVE SUFFICIENT SLACK IN NEUTRAL EXTENSION AND GROUND BUS TO FACILITATE REMOVAL AND PARKING OF PRIMARY CABLES.
2. MULTIPLE GROUND RODS MAY NOT FIT INSIDE ENCLOSURE.
3. MULTIPLE GROUND RODS MAY NOT BE NECESSARY.

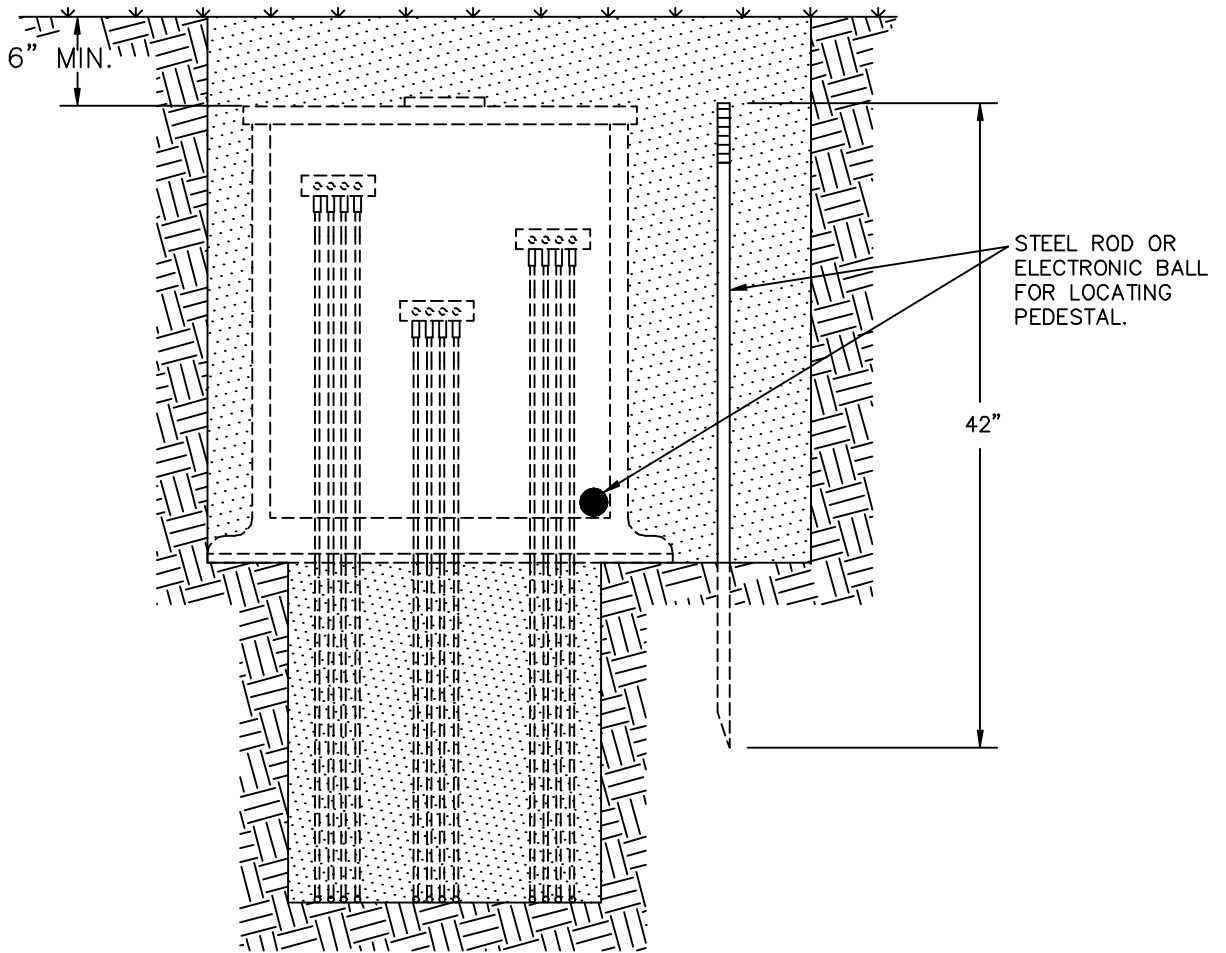
| REFERENCE NO. | MATERIAL |
|---------------|-----------------------------------|
| ① | Neutral extension |
| ② | Ground bus |
| ③ | Parallel compression connector |
| ④ | Box grounding connector |
| ⑤ | Plate grounding connector |
| ⑥ | Bleed wire from elbow termination |
| ⑦ | Bleed wire compression connector |
| ⑧ | #6 SD CU |

GUIDELINE ONLY

SECTIONALIZING PEDESTAL GROUNDING

2000

UX5

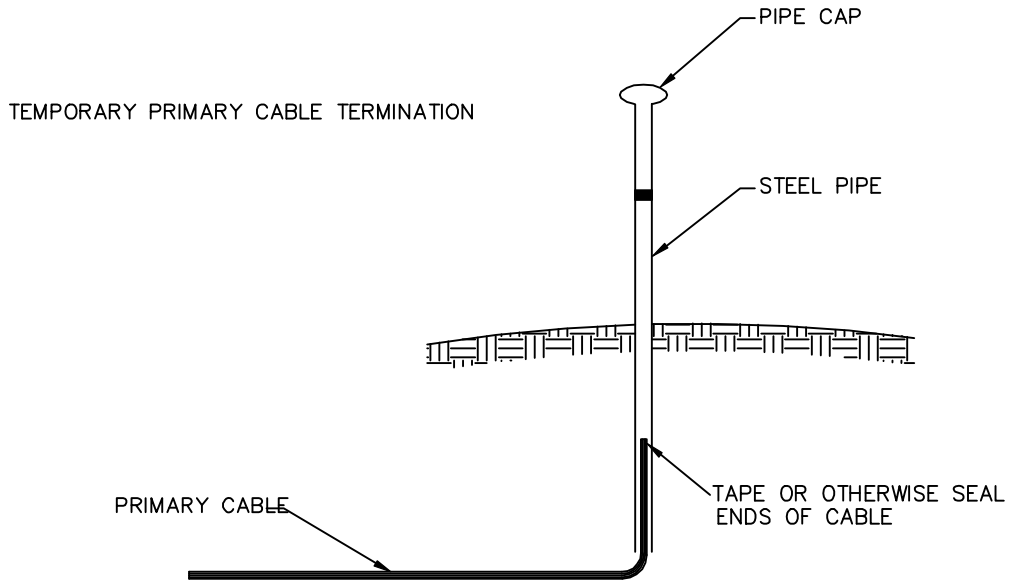


NOTE:

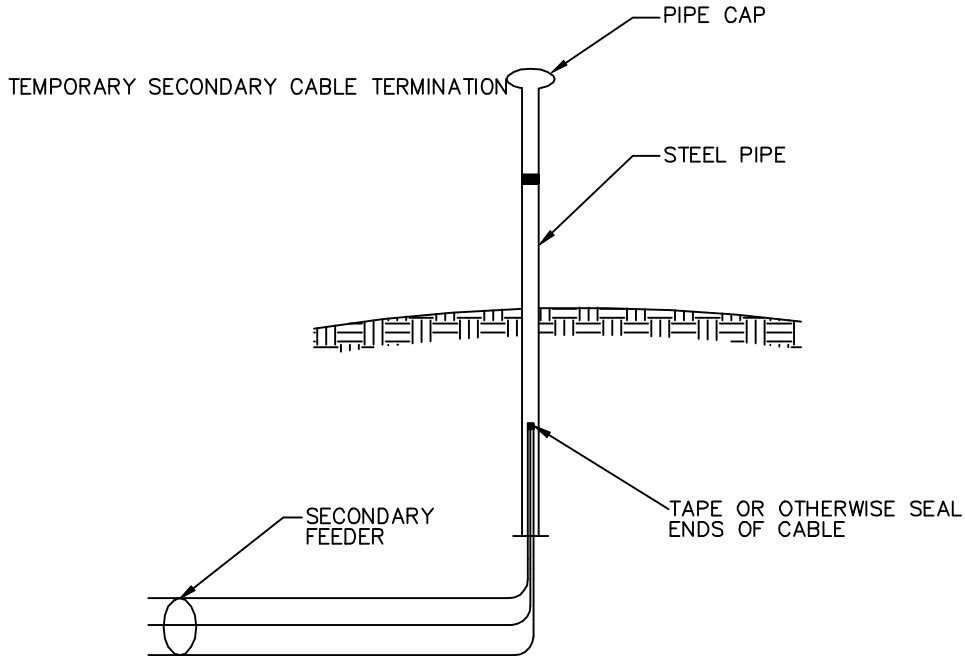
SEE DRAWING UK6

GUIDELINE ONLY

| | | |
|--|---|-----|
| | LOCATION METHODS FOR BELOW GRADE ENCLOSURE | |
| | 2000 | UX7 |

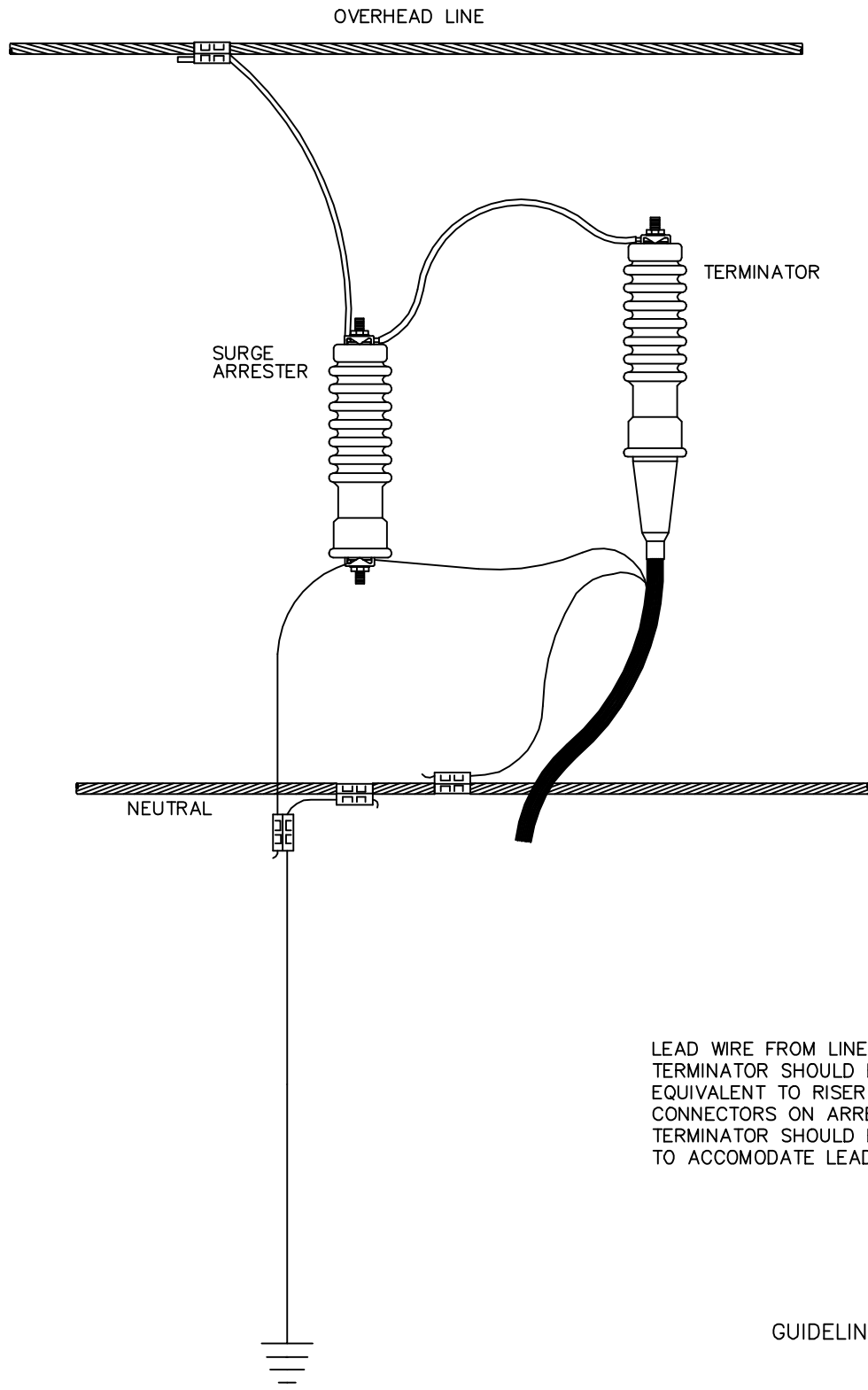


OR



GUIDELINE ONLY

| | | |
|---|------|-----|
| TEMPORARY PRIMARY OR SECONDARY CABLE TERMINATION FOR FUTURE USE | | |
| | 2000 | UX8 |



| | | |
|--|------|------|
| CONNECTION OF TERMINATOR / ARRESTER TO OVERHEAD LINE | | |
| | 2000 | UX11 |