

# **OCELOT SUBSTATION SITE GRADING**

B048-25

Proposal Due Wednesday, April 16, 2025 until 5:00 PM Proposal to Be Opened Thursday, April 17, 2025 at 2:30 PM

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# PART II – TECHNICAL SPECIFICATIONS

### LEGAL NOTICE AND INVITATION TO BID B #048-25

Sealed bids will be received by the PUBLIC UTILITIES BOARD of the City of Brownsville, Texas ("BPUB"), at the PUB Purchasing Department office; 1155 FM 511, Olmito, Texas 78575 **until 5:00 PM, April 16, 2025** for the Project described in the Contract Documents and Specifications entitled:

### **OCELOT SUBSTATION SITE GRADING**

### Bids received after this time will not be considered.

Bids will be publicly opened and read aloud on April 17, 2025 at 2:30 PM. Bidders can request a copy of the bid tabulation by emailing <u>hlopez@brownsville-pub.com</u>. Vendors can call in at 2:30 PM, April 17, 2025 to (956) 214-6020 to listen to the bid opening.

Detailed specifications may be obtained at the following website: <u>https://www.brownsville-pub.com/rfp\_status/open/.</u> A pre-bid conference meeting will be held via conference call. Vendors can call (956) 214-6020 to attend the pre-bid conference on April 9, 2025 at 10:00 AM.

Each bid, in duplicate, shall be enclosed in a sealed envelope and shall be plainly marked on the outside of the envelope: "**B048-25**, **OCELOT SUBSTATION SITE GRADING**, **April 16**, **2025**, **5:00 PM**". This envelope shall be addressed to Diane Solitaire; Brownsville Public Utilities Board; Purchasing Department; 1155 FM 511, Olmito, Texas 78575.

Each bid shall constitute an offer to the Board, as outlined therein, and shall be irrevocable for at least ninety (90) days after the time announced for the opening thereof.

Each bid shall be accompanied by a Certified or Cashier's check payable to the order of the Brownsville Public Utilities Board, City of Brownsville, Texas for a sum not less than five (5%) percent of the total amount bid. In lieu of a check, a Bid Bond may be submitted in an amount not less than five (5%) percent of the total amount bid with a Corporate Surety licensed to do business in the State of Texas, conditioned that the BIDDER will pay the BPUB, as mutually agreed to liquidated damages, and not as a penalty, the amount specified in the Bond unless he enters into a contract in accordance with his bid. BIDDER is required to execute a contract and furnish a Performance Bond, Payment Bond and a Certificate of Insurance. If the BIDDER fails to execute the contract and to furnish satisfactory Performance and Payment Bonds and Insurance Certificates within ten (10) days from the date on which he is notified that his bid has been accepted, the amount of his check or bid bond shall be forfeited to the BPUB as mutually agreed to liquidated damages, and not as a penalty. **No bid will be considered if the Bid Security is not submitted.** 

The BPUB will not be responsible in the event that the U.S. Postal Service or any other courier system fails to deliver the sealed bids to the Brownsville Public Utilities Board, Purchasing

Office by the given deadline above. No bids will be accepted via facsimile or electronic transmission.

The BPUB specifically reserves the right to reject any or all bids, to waive irregularities or informalities in any or all bids and to accept any bid which is deemed to be in the best interest of the Board.

Diane Solitaire Purchasing Department (956) 983-6366

# INSTRUCTIONS TO BIDDERS Please submit this page upon receipt Acknowledgment Form OCELOT SUBSTATION SITE GRADING B048-25

For any clarifications, please contact Hugo E. Lopez at the Brownsville Public Utilities Board, Purchasing Department at (956) 983-6375 or e-mail: <u>hlopez@brownsville-pub.com</u>

Please e-mail this page upon receipt of the bid package or legal notice. If you only received the legal notice and you want the bid package mailed, please provide a method of shipment with account number in the space designated below.

Check one:

- ( ) Yes, I will be able to send a bid; obtained bid package from website.
- ( ) Yes, I will be able to send a bid; please email the bid package. Email:
- ( ) Yes, I will be able to send a bid; please mail the bid package using the carrier & account number listed below:

Carrier:	
Account:	

( ) No, I will not be able to send a bid for the following reason:

If you are unable to send your bid, kindly indicate your reason for "No bid" above and return this form **via email to:** <u>hlopez@brownsville-pub.com</u> or to <u>dsolitaire@brownsville-pub.com</u>. This will ensure you remain active on our vendor list.

Date			
Company:			_
Name:			_
Address:			_
City:	State:	Zip Code:	_
Phone:	Fax	:	_
Email:			_

# **Special Instructions**

# **Contract Information**

### • Interpretation

Questions concerning terms, conditions, and technical specifications should be directed to:

Hugo E. Lopez,	or	Diane Solitaire,
Purchasing Administrator		Purchasing & Materials Manager
(956) 983-6375		(956) 983-6366

# • Tentative Time Line

- 1. April 7, 2025 through April 16, 2025 Vendor bid preparation.
- 2. April 16, 2025 at 5:00 PM Vendor must submit bid, in duplicate, sealed in an envelope to:

Diane Solitaire, Purchasing & Materials Manager 1155 FM 511 Olmito, TX 78575

# **Bid #048-25 – OCELOT SUBSTATION SITE GRADING**

# Due: April 16, 2025 at 5:00 PM CST

The above noted information must be included on bid envelope and on any carrier's envelope/package. The Brownsville Public Utilities Board will not be held responsible for missing, lost or late mail. Brownsville Public Utilities Board will not accept facsimile or electronic transmission of sealed bids.

- 1. April 9, 2025 Pre-bid meeting via conference call
- 2. April 11, 2025 Last day to submit questions
- 3. April 17, 2025 Open bids at 2:30 PM
- 4. April 18 April 25, 2025 Evaluate bids
- 5. April 28, 2025 Provide Final Recommendations
- 6. May 12, 2025 Send to Utilities Board for approval
- 7. Term of contract will commence May 2025

# • "Or Equal"

Brand name and/or manufacturer's references used in this Request are descriptive – not restrictive – they are intended to generally indicate type and quality desired. Brands of like nature and quality will generally be considered. If bidding on other than referenced Specifications, please provide complete descriptive information of said material/equipment article. BPUB also reserves the legal right to specify a "sole source" component if such component is critical for integration to

a larger assembly and alternative manufactured items will not meet the design and/or performance needs of the BPUB, in BPUB's sole discretion.

# • Pricing

Bid unit prices on BPUB estimated quantities specified, extend and show total. In case of errors in extension, unit prices expressed in written words and not numerals, shall govern. Prices shall remain firm throughout the Contract.

All fields (UNIT PRICE & TOTAL PRICE) in the Bid Schedule must be filled in. The data must be complete to identify any bidding brand called for specifically.

Failure to submit any of the above information with the sealed bid may disqualify bid as non-responsive.

# • Contractor Representative

The successful contractor agrees to send a personal representative with binding authority for the company to the Brownsville Public Utilities Board, upon request, to make any minor clarifications or adjustments and/or assist with the coordination of all transactions as needed to allow Contract entry.

# • Quality of Products

All material and equipment items specified must be new, and first-class condition, including containers suitable for shipment and storage. No substitutions in standard grades or lesser quality will be accepted.

# • Determining Factors for Award

- 1. Price
- 2. Responsibility of the contractor to perform the intended work and responsiveness to the bid request.
- 3. Compliance with requirements of the technical specifications
- 4. Quality of performance on previous work on similar contracts
- 5. Recent successful completion of similar projects
- 6. BPUB financial and legal responsibility evaluations of any identified teaming arrangements involving significant joint ventures, subcontractors, and suppliers.
- 7. Safety record will be considered when determining the responsibility of the bidder

# • Contract with Vendor/Entity Indebted to BPUB

It is a policy of the BPUB to refuse to enter into a contract or other transaction with an individual, sole proprietorship, joint venture, Limited Liability Company or other entity indebted to BPUB.

# • Vendor ACH (Direct Deposit) Services

The BPUB has implemented a payment service for vendors/contractors by depositing the contract payment directly to the contractor's/vendor's bank account. Successful vendor(s)/contractors will be required to receive payments directly through Automated Clearing House (ACH) in lieu of a paper check. The awarded vendor must agree to receive payments via ACH (Direct Deposit).

### • Tax Identification Number (TIN)

In accordance with IRS Publication 1220, aW9 form, or a W8 form in cases of a foreign vendor, will be required of all vendors doing business with the Brownsville PUB. If a W9 or W8 form is not made available to Brownsville PUB, the first payment will be subject to income tax withholding at a rate of 28% or 30% depending on the U.S. status and the source of income as per IRS Publication 1220. **The W9 or W8 form must be included with bid response.** Attached are sample forms.

### • Taxes

The City of Brownsville and its Brownsville Public Utilities Board are exempt from Federal Excise Tax, State Tax and local sales Taxes. Do not include any taxes in the bid proposal. If it is later determined that tax was included in the bid it will not be included in the tabulation or any awards. Tax exemption certificates will be furnished by BPUB upon request.

### • Signing of Bid

**Failure to sign bid will disqualify it.** Person signing bid should show title or authority to bind their firm to a contract.

# • EEOC Guidelines

During the performance of this contract, the contractor agrees not to discriminate against any employee or applicant for employment because of race, national origin, age, religion, gender, sexual preference, marital or veteran status, or physically challenging condition.

### • Contract and Purchase Order

The services shall be completed in a timely manner as specified in specifications. A contract for the services will be placed into effect by means of a purchase order issued by the Brownsville Public Utilities Board after tabulation and final Contract approval by the Board.

# • Brownsville Public Utilities Board Rights

- 1. If only one or no bid is received by "submission date", the BPUB has the right to reject, re-bid, accept and/or extend the bid by up to an additional two (2) weeks from original submission date.
- 2. The right to reject any/or all bids and to make award as they may appear to be advantageous to the Brownsville Public Utilities Board.
- 3. The right to hold bid for 90 days from submission date without action, and to waive all formalities in bid.
- 4. The right to extend the total bid beyond the original 90-day period prior to an award, if agreed upon in writing by all parties (BPUB and vendor/contractor) and if bidder/vendor holds original bid prices firm.
- 5. The right to terminate for cause or convenience all or any part of the unfinished portion of the Project resulting from this solicitation within Thirty (30) calendar days written notice; for cause: upon default by the vendor/contractor, for delay or non-performance by the vendor/contractor; or if it is deemed in the best interest of the BPUB for BPUB's convenience.
- 6. The right to increase or decrease quantities. In bid, stipulate whether an increase or decrease in quantities will affect bid price
- 7. The Brownsville PUB has the right to refuse to enter into a contract or other transaction with any individual or entity indebted to the municipality as per Local Government Code 252.0436.

# • Corrections

Any interpretation, correction, or change of the Invitation to Bid will be made by written ADDENDUM. Changes or corrections will be issued by the Brownsville PUB Purchasing Department. Addenda will be e-mail to all who have returned the bid acknowledgment form. Addenda will be issued as expeditiously as possible. It is the responsibility of the vendors/contractors to determine whether all Addenda have been received. It will be the responsibility of all respondents to contact the Brownsville PUB prior to submitting a response to the Invitation to Bid to ascertain if any/all Addenda have been issued, and to obtain any all Addenda, execute them, and return Addenda with the response to the Invitation to Bid. Addenda may also be posted on BPUB's website.

# **1. RECEIPT AND OPENING OF BIDS:**

The Brownsville Public Utilities Board, City of Brownsville, Texas (hereinafter called OWNER), invites bids on the form attached hereto, all blanks of which must be appropriately filled in, in ink, for Project entitled **"OCELOT SUBSTATION SITE GRADING."** 

The OWNER may consider informal and non-responsive, any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn by vendor/contractor prior to the above scheduled time for the opening of bids or OWNER authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No BIDDER may withdraw a bid within at least ninety (90) days after the actual date of the opening thereof.

# 2. INSPECTION OF SITE:

Each BIDDER shall visit the Project site of the proposed work and fully acquaint himself with the existing conditions there relating to construction and labor, and shall fully inform himself as to the facility involved, the difficulties and restrictions attending the performance of the Contract. The BIDDER shall thoroughly examine and familiarize himself with the Drawings, Technical Specifications, and all other Contract Documents. The Contractor, by the execution of the Contract, shall in no way be relieved of any obligation under it due to his failure to receive or examine any form or legal instrument, or to visit the Project site and acquaint himself with the conditions there existing and the OWNER will be justified in rejecting any claim for extra time, or compensation, or both, based on facts regarding which Contractor should have been on notice as a result of such a diligent Project site visitation. Visits to the Project site shall be arranged by calling **Cesar Cortinas, Director of Electrical Engineering Dpt. at telephone no. 956-983-6216.** 

# 3. PREPARATION OF BID AND USE OF SEPARATE BID FORMS:

These Contract Documents include a complete set of bidding documents. The BIDDER shall copy all Documents listed in the table of contents under the heading BIDDING DOCUMENTS and shall submit two sets (original signed and one signed photocopy) of his bid on these forms. A bid shall be comprised of the BIDDING DOCUMENTS completed by the BIDDER plus supplemental information required by the Specifications and Contract Documents.

If any of the information submitted as part of the bid is considered to be proprietary by the BIDDER, he shall conspicuously identify such intended confidential information in his bid. BPUB is subject to the provisions of the Texas Public Information Act and cannot legally guarantee confidentiality of submittals and may need to consult with its legal counsel and the Texas Attorney General in rendering decisions on any requested disclosures.

a) Preparation. Each bid shall be carefully prepared using the bid and bid data forms included as a part of the bidding documents. Entries on the bid and bid data forms shall be typed, using dark black ribbon, or legibly written in black ink. All prices shall be stated in written words and numeric figures, except where the forms provide for figures only. In case of discrepancy, especially in any sum total extensions, the amount shown in written words will generally prevail over numeric unit prices.

The BIDDER shall acknowledge, in the space provided in the bid form, receipt of each Addendum issued for the Specifications and Documents during the bidding period.

The BIDDER shall assemble all drawings, catalog data, and other supplementary information necessary to thoroughly describe work, materials and equipment covered by the bid, and shall attach such supplemental information to the copies of the specifications and documents submitted.

b) Signatures. Each BIDDER shall sign the bid with his usual signature and shall give his full business address. The BIDDER's name stated on the bid shall be the exact legal name of the firm. The names of all persons signing should also be typed or printed below the signature.

Bids by partnerships shall be signed with the partnership name followed by the signature and designation of one of the partners or other authorized representative. A complete list of the partners shall be included with the bid.

Bids by a corporation shall be signed in the official corporate name of the corporation, followed by the signature and designation of the "president," "secretary," or other appropriate person authorized to bind the corporation.

A bid by a person who affixes to his signature the word "president," "secretary," "agent," or other designation, without disclosing his principal, will be rejected. Satisfactory evidence of the authority of the officer signing on behalf of the corporation shall be furnished. Bidding corporations shall designate the state in which they are incorporated and the address of their principal office.

c) Submittal. The original signed bid (and its accompanying photocopy) shall be transmitted to arrive at the designated BPUB address not later than the date and time stipulated in the Legal Notice and Invitation to Bid.

Submit the original signed bid (and its accompanying photocopy) to:

Brownsville Public Utilities Board 1155 FM 511 Olmito, Texas 78575 Attention: Ms. Diane Solitaire Purchasing Department

Each bid must be submitted in duplicate as stated above (original signature and photocopy), in a sealed envelope bearing on the outside the name of the BIDDER, his address, and the name of the Project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid itself must be enclosed in another mailing envelope addressed as specified in the bid form.

# 4. METHOD OF BIDDING:

Prices shall be firm, not subject to qualification, condition or adjustment. Prices shall be in United States dollars. Prices shall be lump sum, except where unit prices are requested by the bid forms. When unit price items are required by the bid, the unit prices for each of the several items in the bid of each BIDDER shall include its pro-rata share of overhead, so that the sum of the products obtained by multiplying the quantity shown for each item, by the unit price bid, represents the total bid. Any bid not conforming to that requirement may be rejected as informal and non-responsive. The special attention of all BIDDERS is called to this provision, for should conditions make it necessary to revise the quantities, no limit will be fixed for such increased or decreased quantities

nor extra compensation allowed, provided the net monetary value of all such additive and subtractive changes in quantities of such items of work pursuant to public competitive bidding statutes (i.e., difference in cost) shall not cumulatively increase or decrease the original Contract price by more than twenty-five (25%) percent. A proposed decrease only that exceeds twenty-five (25%) percent of the original Contract price must be agreed to in advance by the Contractor.

# 5. DISCLOSURE BY BIDDER:

Each BIDDER shall submit with the bid documents, on the form furnished for that purpose, his Pre-Bid Disclosure Statement showing his experience record in performing the type of work embraced in the contract, his organization and equipment available for the work contemplated, and, when specifically requested by the OWNER, a detailed financial statement. The OWNER shall have the right to take such steps as it deems necessary, including telephonic contact to other owner references, to determine the ability and responsibility of the BIDDER to perform his obligations under the Contract and the BIDDER shall be responsive in furnishing the OWNER all such information and data for this purpose as it may request. OWNER reserves the right to reject any bid where an investigation of the available evidence or information does not satisfy the OWNER that the BIDDER is responsible to properly carry out the terms of the Contract. This shall also apply to any proposed subcontractor(s).

# 6. SUBCONTRACTS:

The BIDDER is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this contract must be acceptable to the OWNER, and that a Pre-Bid Disclosure Statement for each proposed subcontractor must also be submitted with the bid documents.

# 7. **BID SECURITY:**

Each bid must be accompanied by a certified or cashier's check, or a bid bond prepared on the form of the bid bond attached hereto, duly executed by the BIDDER as principal, and having as surety therein a surety company approved by the OWNER, and authorized to do business in the State of Texas, in the amount of not less than five (5%) percent of the total bid amount, but not less than \$2,500.00. Such checks, or bid bonds will be returned to all except the three lowest BIDDERS within fifteen (15) days after the opening of bids, and the remaining checks, or bid bonds will be returned promptly after the OWNER and the accepted successful BIDDER have executed the Contract or if no award has been made, within Ninety (90) calendar days after the date of the opening of bids. The bid security will be returned upon demand of the BIDDER at any time thereafter, so long as he has not been notified of the acceptance of his bid.

# 8. ADDENDA AND INTERPRETATIONS:

No oral interpretations by OWNER and its representatives shall be binding upon OWNER as to the meaning of the Plans, Specifications, Contract Documents, or other pre-bid documents.

Any interpretation, correction, or change of the bid documents will be made by ADDENDUM

only. Changes or corrections will only be issued by the Brownsville PUB Purchasing Department. Addenda will be faxed to all who have returned the bid acknowledgment form. Addenda will be issued as expeditiously as possible. It is the responsibility of the vendors/contractors to determine whether all Addenda have been received. It will be the responsibility of all respondents to contact the Brownsville PUB Purchasing Department prior to submitting a response to the bid to ascertain if any Addenda have been issued, and to obtain any all Addenda, execute them, and return Addenda with the response to the bid. All Addenda so issued shall become part of the Contract Documents.

# 9. FACSIMILE MODIFICATION:

Any BIDDER may modify (not originally submit) his bid by facsimile communication at any time <u>prior to</u> the scheduled bid closing time for receipt of bids, provided such communication is received by the OWNER, in the BPUB Purchasing Department, <u>prior to</u> the bid closing time, and provided further, the OWNER is satisfied that a written confirmation of the facsimile modification, over the original signature of the BIDDER, was also mailed <u>prior to</u> the bid closing time. The facsimile communication should <u>not reveal the total bid price</u>, but only should provide the clarification, addition or subtraction, or other modification, so that the final bid prices or terms intended will <u>not</u> be known by the OWNER, until the original sealed bid is opened and the modification computed by OWNER.

Revised bids submitted before the opening of bids, whether forwarded by mail or facsimile, if representing an increase in excess of two percent (2%) of the original bid submittal, must have the bid security (bid bond or check) adjusted accordingly; otherwise the bid will not be considered responsive.

If the written and originally signed confirmation of a bid revision is not received within three (3) calendar days after the bid closing time, no consideration will be given to any proposed adjustment contained in the facsimile modification.

# **10. TIME FOR RECEIVING BIDS:**

Bids received prior to the advertised hour of opening will be securely kept sealed by BPUB. The officer whose duty it is to open them will decide when the specified time has arrived, and no bid received thereafter will be considered; except that when a bid arrives by mail after the time fixed for opening, but before the public reading of all other bids is completed, and it is shown to the satisfaction of the OWNER that the non-arrival on time was due solely to delay in the mails for which the BIDDER was not responsible, such bid will be received and considered.

BIDDERS are cautioned that, while facsimile modifications of bids may be received as provided above, such modifications, if not explicit and if in any sense subject to misinterpretation, shall make the bid so modified or amended, subject to rejection for non-responsiveness.

# 11. **OPENING OF BIDS:**

At the time and place fixed for the public opening of bids, the OWNER will cause to be opened and publicly read aloud every bid received within the time set for receiving bids, irrespective of any irregularities therein. BIDDERS and other persons properly interested may be present, in person or by representative.

# 12. WITHDRAWAL OF BIDS:

Bids may be withdrawn on written, facsimile or electronic transmission request dispatched by the BIDDER in time for delivery in the normal course of business <u>prior to</u> the time fixed for bid opening; provided, that written confirmation of any facsimile withdrawal over the signature of the BIDDER is placed in the mail and postmarked prior to the time set for bid opening. The bid security of any BIDDER withdrawing the bid in accordance with the foregoing conditions will be returned promptly.

# **13.** AWARD OF CONTRACT: REJECTION OF BIDS:

The Contract will be awarded to the responsive and responsible BIDDER submitting the lowest bid complying with the conditions of the Legal Notice and Invitation for Bids. The BIDDER to whom the award is made will be notified at the earliest possible date. The OWNER, however, reserves the right to reject any and all bids and to waive any informality in bids received, whenever such rejection or waiver is in BPUB's interest.

The OWNER reserves the right to consider as not responsible, any BIDDER who does not habitually perform with his own forces the major portions of the work involved in construction of the improvements embraced in this proposed Contract. This provision is meant to prevent wholesale assignment and "brokering" of awarded contracts.

# 14. EXECUTION OF AGREEMENT: PERFORMANCE AND PAYMENT BOND:

Subsequent to the Notice of Award and within ten (10) calendar days after the prescribed forms are presented for signature, the successful BIDDER shall execute and deliver to the OWNER an Agreement in the form included in the Contract Documents in such number of copies as the OWNER may require.

Having satisfied all conditions of award as set forth elsewhere in these Documents, the successful BIDDER shall, within the period specified in the preceding paragraph, furnish a Performance Bond and Payment Bond, in accordance with the following parameters:

- a.) For a Contract in excess of \$100,000.00, a Performance Bond shall be executed in the full amount of the Contract, conditioned upon the faithful and timely performance of the Work in accordance with the Plans, Specifications, and Contract Documents. Said Bond shall be solely for the protection of the OWNER.
- b.) For a Contract in excess of \$50,000.00, a Payment Bond shall be executed in the full amount of the Contract, solely for the protection of all proper claimants supplying labor and material in the prosecution of the Work provided for in the Contract, for the use of each such claimant perfecting a proper claim. Payment Bonds are required under Texas law, since no mechanics' liens are allowed against

# BPUB's public property assets.

When bonds are required, they shall serve as security for the faithful performance of the Contract, and for the payment of all persons, firms or corporations to whom the Contractor may become legally indebted to for labor, materials, tools, equipment, or services of any nature, including utility and transportation services employed or used by him in performing the work. Such bonds shall be in the same form as that included in the Contract Documents and shall bear the same date as, or a date subsequent to that of the Agreement. The current power of attorney for the person who signs for any surety company shall be attached to such bonds. These bonds shall be signed by a guaranty or surety company legally authorized to do business in the State of Texas.

The failure of the successful BIDDER to execute such Agreement and to supply the required bonds and insurance certificates within ten (10) calendar days after the prescribed forms are presented for signature, or within such extended period as the OWNER may grant in writing, based upon reasons determined sufficient by the OWNER, shall constitute a default, and the OWNER may either award the contract to the next lowest responsive and responsible BIDDER, or re-advertise for bids, and may charge against the defaulting BIDDER the difference between the amount of the defaulted bid and the amount for which a final contract for the work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the bid bond. If a more favorable bid is received by re-advertising, the defaulting BIDDER shall have no claim against the OWNER for a bid bond refund.

# **15. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT:**

The successful BIDDER, upon his failure or refusal to execute and deliver the Contract, Bonds and insurance certificates required within ten (10) calendar days after he has received notice of the acceptance of his bid, shall forfeit to the OWNER, as mutually agreed to liquidated damages (and not as a penalty) for such failure or refusal, the security provided in the bid bond or otherwise deposited with his bid.

# 16. TIME OF COMPLETION AND LIQUIDATED DAMAGES:

BIDDER agrees by submission of his bid to commence Work on the date to be specified in a written "Notice to Proceed" issued by the OWNER and to Substantially Complete the Project as provided in Article 2 of the Construction Agreement.

BIDDER agrees by submission of his bid to pay as mutually agreed to liquidated damages, and not as a penalty, the sum as provided in said Construction Agreement, Article 2.

# **17.** NOTICE OF SPECIAL CONDITIONS:

Attention is particularly called to those parts of the Contract Documents and Specifications which address the following:

- A. Inspection and testing of materials.
- B. Insurance requirements.

- C. Wage and Hour Provisions.
- D. State Sales and Use Tax Exemption Provisions

# **18. LAWS AND REGULATIONS:**

The BIDDER's attention is directed to the fact that all applicable federal, State and local laws, statutes, ordinances, codes and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be mutually deemed to be included in the Contract, the same as though herein written out in full.

# **19. EQUAL EMPLOYMENT OPPORTUNITY:**

Attention of BIDDERS is particularly called to the requirement for ensuring that employees and applicants for employment are not discriminated against because of their race, religion, gender, sexual preference, physically challenging condition or national origin.

# **20. PRE-BID CONFERENCE:**

A pre-bid meeting between the OWNER, prospective bidders, suppliers, etc., will be held to answer any questions concerning the Work. No Addenda will be issued at this meeting. Subsequent thereto, if necessary to clear up any written questions, a written Addendum will be issued by the OWNER to all pre-bid conference attendees. The pre-bid meeting will be held at the place, time and date indicated in the Legal Notice. Interested parties are invited to attend. Attendance at the Pre-Bid Conference is <u>not mandatory</u>, but is recommended for all contractors and suppliers interested in bidding the Work for the Project.

# 21. SUBMITTAL OF TRENCH SAFETY DESIGN: (RESERVED)

The apparent low BIDDER shall provide the OWNER with a Trench Safety System Plan and a certificate signed and sealed by a Registered Professional Engineer licensed by the State of Texas, within 21 calendar days after the date of the opening of Bids prior to award of the Contract. Failure to timely comply may disqualify BIDDER.

# 22. INFORMATION TO BE SUBMITTED WITH BID:

Each BIDDER shall submit with his bid pertinent information concerning proposed equipment and materials and proposed construction organization.

a) Equipment and Materials. In addition to the information submitted on the bid and bid data forms, each BIDDER shall submit all specifications, preliminary drawings, and similar descriptive information necessary to describe completely the equipment and materials he proposes to furnish.

The bid shall be based on using new equipment and materials which comply with the Specifications and Documents in every respect, unless existing equipment is specifically noted by OWNER for reuse. If alternate or "equal" equipment and materials are indicated in the bid, it shall be understood that the OWNER will have the option of selecting any one of the alternates so

indicated and such selection shall not be a cause for extra contractor compensation or extension of time. OWNER specifically reserves the legal right to specify "sole source" equipment or materials in the Specifications when unique circumstances warrant.

- b) <u>Contractor's Field Organization and Safety Record.</u>
  - (i) An organization chart showing the names of field management, supervisory, technical personnel, and number of employees/workforce available and the details of the management, supervisory, and technical organization which he proposes to use for this project. The successful BIDDER's organizational concept will be subject to the review and acceptance of the OWNER.
  - (ii) The experience record of the Contractor's field superintendent(s) shall be submitted with the bid.
  - (iii)The Contractor's job-safety record summary for the previous five (5) years
  - (iv)The two most recent year's Financial Statements
  - (v) List of three (3) projects completed by CONTRACTOR of both similar size and scope over the past five (5) years

# 23. **PREFERENCE LAW:**

Bid evaluations will take into consideration any Preference Laws of the State of Texas, and any reciprocity laws of other states as they may be addressed by current Texas law.

# 24. SUBSURFACE GEOLOGIC CONDITIONS: (RESERVED)

Each BIDDER shall be responsible for determining prior to bidding, the types of subsurface materials which will be found in the event that any new footings and upright structural supports for the Project are required. If test borings have been made on the Project site by the BPUB or its consultants, the locations and logs of the test borings are bound as an appendix to these Specifications and Documents.

It is to be expressly understood and acknowledged by the BIDDER, that any information on subsurface geology made available by OWNER for BIDDER'S convenience shall <u>not be a part</u> of the Contract Documents and there is no expressed or implied guarantee of the data given, nor of the interpretation thereof.

All <u>excavation</u> for this Project will be <u>unclassified</u> and the BIDDER shall be responsible for investigating and satisfying himself of subsurface geologic conditions (including the presence or likelihood of encountering soils requiring dewatering, rock or rock-like materials) prior to submitting his bid, which shall include any and all costs BIDDER associates with avoiding, managing or removing said subsurface geologic conditions without claim for extra compensation against OWNER.

# 25. DISPOSAL OF EXCESS MATERIALS:

After completion of this Project there may be in some instances an excess of spoil material or waste material left over. In such cases where there is an excess of material, BIDDER shall load

and haul it away from the job site and dispose of it in a legal manner so as not to: trespass; adversely impact any protected wetlands; adversely impact the 100 year flood plain; adversely impact any endangered species; or otherwise create drainage diversions or impoundments. No extra remuneration for this Work will be allowed.

# 26. EROSION AND SEDIMENT CONTROL MEASURES:

The BIDDER is expected to conduct his Work in such a manner as to minimize any soil erosion or sediment runoff from the construction site. Earth cuts and fills shall have smooth, flat side slopes, as generally indicated on the PLANS, to preclude erosion of the soil. Such operations should be timed consistent with the actual need for doing the Work and only to leave raw, unprotected surfaces for a minimum of time.

Existing lawns are to remain intact as far as practical. Such areas as are disturbed shall be duly restored by the BIDDER to as good as or better than original condition using the same type of grass, shrubs, or cover as the original. The BIDDER shall be responsible for correcting any erosion that occurs at his sole cost without claim for extra compensation.

As construction progresses, and in accordance with State and federal laws regulating storm water runoff and management from construction sites greater than five acres in size, if applicable, (See: Section 405 of the Water Quality Act of 1987, Section 402(P) as amended), and at locations where erosion with sediment runoff occurs or is likely to occur, the BIDDER shall construct temporary ditches, perimeter siltation screens, retainage levees, drains, inlets, or other works to manage, prevent, or correct the possible conditions. Upon completion of the Work, such facilities shall be removed.

During construction, the BIDDER shall take the necessary precautions to see that erosion is controlled and sediment runoff is prevented so as to protect the quality of any neighboring water bodies.

# 27. SAFETY PROVISIONS:

BIDDER shall provide barricades, flares, warning signs, and/or flagmen so that danger and inconvenience to the OWNER, public, and any job site working personnel, will be mitigated. In addition to any other requirements of the Contract Documents, the BIDDER shall be responsible for familiarity and compliance with all Federal (OSHA), State, railroad and local safety rules, laws and requirements.

# 28. PROTECTION OF PROPERTY AND EXISTING UTILITIES:

Within developed areas, all public and private property along and adjacent to the BIDDER'S operations, including roads, driveways, lawns, yards, shrubs, drainage gradients, and trees, shall be adequately protected, and when damages occur, they shall be repaired, replaced, or renewed or otherwise put in a condition equal to, or better than, that which existed before the BIDDER caused the damage or removal.

An attempt has been made by BPUB to show all known existing utilities on the PLANS, <u>but the</u> <u>possibility remains strong that some underground utilities may exist that have not been shown</u>. The BIDDER, through mandatory contact with local utility owners, shall keep himself informed and take such precautions as necessary to avoid utility damage and unsafe working conditions for employees.

# 29. WAGES AND HOURS:

The most recent wage rate determination from the U.S. Department of Labor for Cameron County, Texas as amended within the previous three (3) years and as locally adopted by the BPUB, is a part of these Specifications and controls minimum wage, hour and any fringe benefits, with the exception that <u>no wage shall be paid below \$8.00 as established locally by the BPUB</u>.

A copy of the appropriate (building and/or heavy/highway) wage rate schedule(s) must be posted at the job site in both English and Spanish and kept posted in a conspicuous place on the site of the Project at all times during construction. The BIDDER shall familiarize himself with the included General Conditions Section entitled "Wage and Labor Standard Provisions - 100% Non-Federally Funded Construction." Copies of the wage rate schedule(s) are included herein, but the responsibility for initial posting and keeping same posted, rests upon the BIDDER.

# **30. GUARANTEE:**

The BIDDER shall warranty and guarantee the Work, equipment and materials for a period of at least one (1) year after date of final acceptance in writing by the OWNER. During this period, the BIDDER shall make any repairs and/or replacements of defective equipment and materials and corrections of Work due to poor workmanship, all as may be required for full compliance with the General Conditions, Plans and Specifications. This combined workmanship quality guarantee, and minimal equipment and materials warranty, shall apply to all matters reported by the OWNER in writing within said one (1) year period and this post-construction guarantee/warranty period shall be included in the coverage period set forth in the Performance Bond.

# 31. STATE SALES AND USE TAX EXEMPTION:

Pursuant to 34 Texas Administrative Code 3.291, in order for the Brownsville PUB to continue to benefit from its status as a State Sales and Use Tax Exempt Organization, after August 14, 1991, construction contracts must be awarded on a "separated contract" basis. A "separated contract" is one that distinguishes the value of the tangible personal property (materials such as pipe, bricks, lumber, concrete, paint, etc.) to be physically incorporated into the Project realty, from the total Contract price. Under the "separated contract" format, the Contractor in effect becomes a "seller" to the Brownsville PUB of materials that are to be physically incorporated into the Project realty. As a "seller", the Contractor will issue a "Texas Certificate of Resale" to the supplier in lieu of paying the sales tax on materials at the time of purchase. The contractor will also issue a "Certificate of Exemption" to the supplier demonstrating that the personal property is being purchased for resale and that the resale is to the Brownsville PUB, which is a sales tax exempt entity under UTCA Tax Code Section 151.309(5). Contractors should be careful to consult the most recent guidelines of the State Comptroller of Public Accounts regarding the sales tax status

of supplies and equipment that are used and/or consumed during project work (gas, oil, rental equipment), but that are not physically incorporated into the project realty. Such items are generally not tax exempt. Contractors that have questions about the implementation of this statute are asked to inquire directly with the State Comptroller of Public Accounts, Tax Administration Division, State of Texas, Austin, Texas 78774. Bidders will not include any federal taxes in bid prices since the City of Brownsville and Brownsville PUB are exempt from payment of such federal taxes. "Texas Certificates of Exemption", "Texas Certificates of Resale" and "Texas Sales Tax Permits" are forms available to the Contractor through the regional offices of the State Comptroller of Public Accounts.

### BID B048-25 OCELOT SUBSTATION SITE GRADING Place: BPUB Purchasing Department 1155 FM 511, Olmito, TX 78575 Due Date: April 16, 2025 at 5:00 PM

Bid of \_\_\_\_\_\_ hereinafter called "BIDDER," a \_\_\_\_\_\_ (insert type of legal entity e.g. corporation, partnership, individual with d/b/a, etc.) organized and existing under the laws of the State of \_\_\_\_\_.

To: the Public Utilities Board of the City of Brownsville, Texas, hereinafter called "OWNER."

Gentlemen:

The undersigned BIDDER, in compliance with your Invitation to Bid for the **OCELOT SUBSTATION SITE GRADING**, having read and examined the Plans and Specifications with related Documents and visited the site of the proposed Work, and being familiar with all of the federal, state and local conditions surrounding the construction of the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, equipment and supplies, and to construct the project in accordance with the contract documents, within the time set forth herein, and at the Total Base Bid Amount prior to OWNER options on additive/deductive alternates of: (in words and numeric figures)

\_. These price(s) are to cover all

expenses incurred in performing the Work required under the Contract Documents, of which this bid is a part. These price(s) are firm and shall not be subject to adjustment, provided this Bid is accepted by OWNER within ninety (90) calendar days after the time set for receipt of bids.

BIDDER hereby agrees to commence Work under this Contract on or before a date to be specified in a written "Notice to Proceed" to be issued by the OWNER.

BIDDER agrees to perform all Work for which he contracts as described in the Plans and Specifications for the unit prices and/or lump sums shown on the attached Bid Schedule.

### BID SCHEDULE BASE BID – B048-25 BROWNSVILLE PUBLIC UTILITIES BOARD

The Bidder, in compliance with the Invitation for Bids for the <u>OCELOT SUBSTATION SITE</u> <u>GRADING</u>, having examined the scope of work and written Specifications, hereby proposes to furnish construction services for the following Unit prices.

ITEM	DESCRIPTION	UNIT PRICE	TOTAL PRICE
		\$	
А.	Clear & Grub (Including Offsite Disposal)	Ý /YD3	\$
		<i>ф</i>	
	Pad Development (Establish Grades/Slopes)	\$	
B.	including Contractor supplied Select Fill	/YD3	\$
	Finish Grade (Crushed Limestone Base)	\$	
C.	including Contractor supplied material	/YD3	\$
A+B+C	TOTAL BID	\$	

# TOTAL AMOUNT OF BID (ITEMS A-C): \$\_\_\_\_\_

(written in words)

NOTE: Quantities are estimated. The Brownsville PUB reserves the right to increase or decrease quantities as allowed by Texas law (plus or minus 25%) and as deemed necessary by OWNER, without impacting the quoted unit prices. Prospective bidders are encouraged to visit and assess the existing Project site and structures prior to submitting a bid.

BIDDER Acknowledges receipt of the following Addenda:

SUBCONTRACTORS. The undersigned BIDDER proposes that he will be responsible to perform major portions of the Work at the Project site with his own forces and that specific portions of the Work not performed by the undersigned will be subcontracted and performed by the following subcontractors.

Work Subcontracted


Bid amounts are to be legibly shown in both words and figures. In case of discrepancy, the unit price shown in words will govern.

The above unit prices shall include all labor, materials, excavation, bailing, shoring, removal, backfill, overhead, profit, insurance, etc., to cover the finished Work of the several kinds called for.

BIDDER understands that the OWNER reserves the right to reject any or all bids and to waive any informalities in the bidding.

BIDDER agrees that this bid shall be good and may not be withdrawn for a period of ninety (90) calendar days after the scheduled bid opening.

The undersigned hereby declares that only the persons or firms interested in the bid as principal or principals are named herein, and that no other persons or firms than are herein mentioned have any interest in this Bid or in the Contract to be entered into; that this Bid is made without connection with any other person, company, or parties likewise submitting a bid or bid; and that it is in all respects for and in good faith, without collusion or fraud.

Seal affixed here if BID is by a Corporation: Respectfully submitted, By:\_\_\_\_

Signature (failure to sign disqualifies bid)

Title

Address

Attest:\_\_\_\_\_

### **BID BOND**

STATE OF TEXAS § KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF CAMERON §

THAT WE. undersigned, the Principal, as and \_ as Surety, are hereby held and firmly bound unto the PUBLIC UTILITIES BOARD OF THE CITY OF BROWNSVILLE, TEXAS as OWNER in liquidated damages (not as a penalty) of \_\_\_\_\_ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this \_\_\_\_\_\_ day of \_\_\_\_\_\_, 20\_\_\_.

The Condition of the above obligation is such that whereas the Principal has submitted to the OWNER a certain BID attached hereto and hereby made a part hereof to enter into a contract in writing, for OCELOT SUBSTATION SITE GRADING.

### NOW, THEREFORE,

- If said BID shall be rejected, or (a)
- If said BID shall be accepted and the Principal shall execute and deliver a contract (b) in the form of Agreement attached hereto (properly completed in accordance with said BID) and shall furnish payment and performance bonds for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall furnish insurance certificates, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void. Otherwise the same shall remain in force and effect, it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by an extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Signed, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_.

\_\_\_\_\_

Principal

Surety

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

IMPORTANT - Surety companies executing BONDS must be legally authorized by the State Board of Insurance to transact business in the State of Texas, and be listed as approved federal sureties in the most recently issued (as of the date of legal notice) edition of the U. S. Treasury Circular 570.

### **CONTRACTOR'S**

### PRE-BID DISCLOSURE STATEMENT

All questions must be answered or your bid will be deemed non-responsive and subject to rejection. The data given must be clear and comprehensive. **This statement must be notarized.** If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he desires, so long as that information does not constitute a condition, qualification or exception to the Bid Submittal.

1. This Pre-Bid Disclosure Statement is submitted to the Brownsville Public Utilities Board by:

a Corporation, a F	artnership, a Texas Joint	Venture, or an	Individual.
Address:			Contractor's #:
City	State _		Zip Code

2. Years in business under present business name: \_\_\_\_\_

3. Years of experience in construction work of the type called for in this contract as: A General Contractor \_\_\_\_\_, A Subcontractor \_\_\_\_\_.

4. What projects has your organization completed within the last five (5) years? List most recent FIRST.

Contract	Type of Work	Date Completed	Owners Name and Address	Amount
		1		

5. What projects does your organization have under way as of this date?

Contract	Type of Work	Date Completed	Owners Name and Address	Amount
		Γ		

6. Have you ever failed to complete any work awarded to you?

\_\_\_\_Yes \_\_\_\_No. If "Yes", state where and why. \_\_\_\_\_

7. Are you at present in any binding arbitrations and/or lawsuits involving construction work of any type?

\_\_\_\_Yes \_\_\_\_No. If "Yes", explain: \_\_\_\_\_\_

8. Explain in detail the manner in which you have inspected the work and jobsite proposed in this contract:

9. Explain in detail your plan or layout for performing the work proposed in this contract:

10. If this contract is awarded to you, your company's office administrative manager for the work will be Mr. (Ms.) \_\_\_\_\_\_\_, and your resident construction superintendent will be Mr. (Ms.) \_\_\_\_\_\_.

11. What experience in this type of work does the individual designated as resident superintendent above have?

12. What portions of the work do you intend to subcontract?\_\_\_\_\_

### 13. What equipment do you own that is available for the proposed work?

Quantity	Description, Size Capacity, Etc.	Condition	Years in Service	Present Location
		-	-	-

14. Have you received firm offers from suppliers or manufacturers for all major items of material and/or equipment within the price totals used in preparing your bid? Yes No

15. Attach resumes for the principal members of your organization, including the officers as well as the proposed superintendent for the project.

Credit available: \$\_\_\_\_\_ Bank Reference:\_\_\_\_\_

Bonding Capacity available: \$\_\_\_\_\_

The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the Owner in verification of the recitals comprising this Pre-Bid Disclosure Statement.

The signatory of this questionnaire guarantees the truth and accuracy of all statements herein made and all answers herein expressed.

Dated this \_\_\_\_\_ day of \_\_\_\_\_\_, 20\_\_\_\_.

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

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

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Notary Public

My commission expires: \_\_\_\_\_

### SUBCONTRACTOR'S PRE-BID DISCLOSURE STATEMENT

All questions must be answered or the general contractor's bid will be deemed non-responsive and subject to rejection. The data given must be clear and comprehensive. **This statement must be notarized**. If necessary, questions may be answered on separate attached sheets. The subcontractor may submit any additional information he desires.

1. This Pre-Bid Disclosure Statement is submitted to the Brownsville Public Utilities Board by:

a Corporation, a Partnership,	a Texas Joint Venture, or	an Individual.
Address:		Contractor's #:
City	State	Zip Code

2. Years in business under present business name: \_\_\_\_\_

3. Years of experience in construction work of the type called for in this contract as: A General Contractor \_\_\_\_\_, A Subcontractor \_\_\_\_\_.

4. Have you ever previously worked as a subcontractor for this general contractor? \_\_Yes\_\_\_No; If yes, list the three most recent projects in which your company has served as a subcontractor to this general contractor.

5. What projects has your organization completed within the last five (5) years? List most recent FIRST.

Contract	Type of Work	Date Completed	Owners Name and Address	Amount
			1	1

### 6. What projects does your organization have under way as of this date?

Contract	Type of Work	Date Completed	Owners Name and Address	Amount
	-			-

7. Have you ever failed to complete any work awarded to you?

\_\_\_\_Yes \_\_\_\_No. If "Yes", state where and why. \_\_\_\_\_

8. Are you at present in any finding arbitrations and/or lawsuits involving construction work of any type?

\_\_\_\_\_

\_\_\_\_Yes \_\_\_\_No. If "Yes", explain: \_\_\_\_\_\_

9. Explain in detail the manner in which you have inspected the work and jobsite proposed in this contract:

10. Explain in detail your plan or layout for performing the work proposed in this contract:

11. If this subcontract is awarded to you by the general contractor, your company's office administrative manager for the work will be Mr. (Ms.) \_\_\_\_\_\_, and your resident construction superintendent will be Mr. (Ms.)

29

12. What experience in this type of work does the individual designated as resident superintendent above have?

What portions of the work do you intend to subtier subcontract? 13. 

14. What equipment do you own that is available for the proposed work?

Quantity	Description, Size Capacity, Etc.	Condition	Years in Service	Present Location

15. Have you received firm offers from suppliers or manufacturers for all major items of material and/or equipment within the prices totals used in preparing your subcontractor bid? \_\_\_Yes \_\_\_No

Attach resumes for the principal members of your organization, including the officers as 16. well as the proposed superintendent for the project.

Credit available: \$\_\_\_\_\_ Bank Reference:\_\_\_\_\_

Bonding Capacity available: \$\_\_\_\_\_

The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the Engineer and Owner in verification of the recitals comprising this Pre-Bid Disclosure Statement.

The signatory of this questionnaire guarantees the truth and accuracy of all statements herein made and all answers herein expressed.

Dated this \_\_\_\_\_ day of \_\_\_\_\_\_, 20\_\_\_\_.

By:	 		
•			

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Notary Public

My commission expires: \_\_\_\_\_

### **REQUIRED FORMS CHECKLIST**

NAME	FORM DESCRIPTION	SUBMITTED WITH BID		
	Acknowledgement Form			
Required	Debarment Certification			
Forms (if applicable)	Ethics Statement			
upprover)	Conflict of Interest Questionnaire			
	Certification of Interested Party Form 1295			
	Residence Certification			
	State Law Verification			
	House Bill 89 Verification			
	W9 or W8 Form			
	Bid Schedule/Cost sheet completed and signed			
Special Instructions (if	Cashier Check or Bid Bond of 5% of Total Amount of Bid (if applicable)			
applicable)	OSHA 300 Log (if applicable)			
	Contractor Pre-Bid Disclosure completed, signed and notarized (if			
	Sub-Contractor Pre-Bid Disclosure completed, signed, and notarized (if			
References	Complete the Previous Customer Reference Worksheet for each reference			
Addenda				

The following documents are to be submitted as a part of the Bid/RFP/RFQ document

Prospective Bidders are respectfully reminded to completely read and thoroughly respond to the BPUB Instructions for Bidders and Pre-Bid Disclosure Statement. When BPUB evaluates the Bids, it reviews indices regarding the prospective contractors' responsibility to perform the project based upon prior job performances for BPUB and other public owners. Additionally, BPUB carefully reviews the prospective contractors' responsiveness to the BPUB Bid Advertisement. Bidders should thoroughly check their submittal for completeness prior to responding to BPUB. Do not imbalance your Bid line items to overload portions of the work. Remember to answer all written questions in the Pre-Bid Disclosure Statement and then notarize it when signing. Bidders are often required to submit OSHA 300 Logs from prior job performance records as well. BPUB can, has, and will reject Bids that fail the responsibility and/or responsiveness standards so as to protect the integrity of the bidding process for all participants. The Bidding community's compliance with these guideline standards will be appreciated by the BPUB.

Brownsville Public Utilities Board Required Forms

### ETHICS STATEMENT (Complete and return with bid)

The undersigned bidder, by signing and executing this bid, certifies and represents to the Brownsville Public Utilities Board that bidder has not offered, conferred or agreed to confer any pecuniary benefit, as defined by (1.07 (a) (6) of the Texas Penal Code, or any other thing of value as consideration for the receipt of information or any special treatment of advantage relating to this bid; the bidder also certifies and represents that the bidder has not offered, conferred or agreed to confer any pecuniary benefit or other thing of value as consideration for the recipient's decision, opinion, recommendation, vote or other exercise of discretion concerning this bid, the bidder certifies and represents that bidder has neither coerced nor attempted to influence the exercise of discretion by any officer, trustee, agent or employee of the Brownsville Public Utilities Board concerning this bid on the basis of any consideration not authorized by law; the bidder also certifies and represents that bidder has not received any information not available to other bidders so as to give the undersigned a preferential advantage with respect to this bid; the bidder further certifies and represents that bidder has not violated any state, federal, or local law, regulation or ordinance relating to bribery, improper influence, collusion or the like and that bidder will not in the future offer, confer, or agree to confer any pecuniary benefit or other thing of value of any officer, trustee, agent or employee of the Brownsville Public Utilities Board in return for the person having exercised their person's official discretion, power or duty with respect to this bid: the bidder certifies and represents that it has not now and will not in the future offer, confer, or agree to confer a pecuniary benefit or other thing of value to any officer, trustee, agent, or employee of the Brownsville Public Utilities Board in connection with information regarding this bid, the submission of this bid, the award of this bid or the performance, delivery or sale pursuant to this bid.

THE VENDOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE CITY OF BROWNSVILLE AND THE BROWNSVILLE PUBLIC UTILITIES BOARD, ALL OF THEIR OFFICERS, AGENTS AND EMPLOYEES FROM AND AGAINST ALL CLAIMS, ACTIONS, SUITS, DEMANDS, PROCEEDING, COSTS, DAMAGES, AND LIABILITIES, ARISING OUT OF, CONNECTED WITH, OR RESULTING FROM ANY ACTS OR OMISSIONS OF CONTRACTOR OR ANY AGENT, EMPLOYEE, SUBCONTRACTOR, OR SUPPLIER OF CONTRACTOR IN THE EXECUTION OR PERFORMANCE OF THIS BID.

I have read all of the specifications and general bid requirements and do hereby certify that all items submitted meet specifications.

COMPANY: \_\_\_\_\_

AGENT NAME:		

AGENT SIGNATURE:\_\_\_\_\_

ADDRESS:	

|--|

STATE:	ZIP CODE:	

FEDERAL ID#: \_\_\_\_\_AND/OR SOCIAL SECURITY #: \_\_\_\_\_

### DEVIATIONS FROM SPECIFICATIONS IF ANY:

NOTE: QUESTIONS AND CONCERNS FROM PROSPECTIVE CONTRACTORS SHOULD BE RAISED WITH OWNER AND ITS CONSULTANT (IF APPLICABLE) AND RESOLVED IF POSSIBLE, <u>PRIOR TO</u> THE BID SUBMITTAL DATE. ANY LISTED DEVIATIONS IN A FINALLY SUBMITTED BID MAY ALLOW THE OWNER TO REJECT A BID AS NON-RESPONSIVE.

Brownsville Public Utilities Board Required Forms

### CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS (Complete and Return with Bid)

Name of Entity:\_\_\_\_\_

The prospective participant certifies to the best of their knowledge and belief that they and their principals:

- a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency:
- b) Have not within a three year period preceding this bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, Local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and
- d) Have not within a three year period preceding this bid had one or more public transactions (Federal, State, Local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this bid or termination of the award. In addition, under 18 USC Section 1001, a false statement may result in a fine up to a \$10,000.00 or imprisonment for up to five (5) years, or both.

Name and Title of Authorized Representative (Typed)

Signature of Authorized Representative

Date

 $\Box$  I am unable to certify to the above statements. My explanation is attached.
#### THIS FORM MUST BE COMPLETED IN ITS ENTIRETY & SUBMITTED WITH BID RESPONSE

CONFLICT OF INTEREST QUESTIONNAIRE For vendor doing business with local governmental entity	FORM CIQ
This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.	OFFICE USE ONLY
This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).	Date Received
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 vendor becomes aware of facts that require the statement to be filed. <i>See</i> Section 176.006(a-1), Local Government Code.	
A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor	
1         Name of vendor who has a business relationship with local governmental entity.	
Check this box if you are filing an update to a previously filed questionnaire. (The law re completed questionnaire with the appropriate filing authority not later than the 7th busines you became aware that the originally filed questionnaire was incomplete or inaccurate.)	equires that you file an updated ss day after the date on which
<sup>3</sup> Name of local government officer about whom the information is being disclosed.	
Name of Officer	
4 Describe each employment or other business relationship with the local government off officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with Complete subparts A and B for each employment or business relationship described. Attact CIQ as necessary.	icer, or a family member of the th the local government officer. Th additional pages to this Form
A. Is the local government officer or a family member of the officer receiving or l other than investment income, from the vendor?	ikely to receive taxable income,
Yes No	
B. Is the vendor receiving or likely to receive taxable income, other than investmen of the local government officer or a family member of the officer AND the taxable local governmental entity?	t income, from or at the direction income is not received from the
Yes No	
Describe each employment or business relationship that the vendor named in Section 1 n other business entity with respect to which the local government officer serves as an o ownership interest of one percent or more.	naintains with a corporation or officer or director, or holds an
6 Check this box if the vendor has given the local government officer or a family member as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.	of the officer one or more gifts 003(a-1).
Signature of vendor doing business with the governmental entity	Date
Form provided by Texas Ethics Commission www.ethics.state.tx.us	Revised 1/1/2021

Brownsville Public Utilities Board Required Forms

## CONFLICT OF INTEREST QUESTIONNAIRE For vendor doing business with local governmental entity

A complete copy of Chapter 176 of the Local Government Code may be found at http://www.statutes.legis.state.tx.us/ Docs/LG/htm/LG.176.htm. For easy reference, below are some of the sections cited on this form.

Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:

(A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;

(B) a transaction conducted at a price and subject to terms available to the public; or

(C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

#### Local Government Code § 176.003(a)(2)(A) and (B):

(a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

(2) the vendor:

(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds \$2,500 during the 12-month period preceding the date that the officer becomes aware that

 $(\bar{\mathrm{l}})$  a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor;

(B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than \$100 in the 12-month period preceding the date the officer becomes aware that:

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor.

#### Local Government Code § 176.006(a) and (a-1)

(a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:

(1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);

(2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or

(3) has a family relationship with a local government officer of that local governmental entity.(a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:

(1) the date that the vendor:

(A) begins discussions or negotiations to enter into a contract with the local governmental entity; or

(B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or

- (2) the date the vendor becomes aware:
  - (A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);
  - (B) that the vendor has given one or more gifts described by Subsection (a); or
  - (C) of a family relationship with a local government officer.

## **BROWNSVILLE PUBLIC UTILITIES BOARD RESIDENCE CERTIFICATION**

In accordance with Art. 601g, as passed by the 1985 Texas Legislature, the following will apply. The pertinent portion of the Act has been extracted and is as follows:

#### Section 1. (a)

(1) "Nonresident bidder" means a bidder whose principal place of business is not in this state, but excludes a contractor whose ultimate parent company or majority owner has its principal place of business in this state.

(2) "Texas resident bidder " means a bidder whose principal place of business is in this state, and includes a contractor whose ultimate parent company or majority owner has its principal place of business in this state.

#### Section 1. (b)

The state or governmental agency of the state may not award a contract for general construction, improvements, services, or public works projects or purchases of supplies, materials or equipment to a nonresident bidder unless the nonresident's bid is lower than the lowest bid submitted by a responsible Texas resident bidder by the same amount that a Texas resident bidder would be required to underbid a nonresident bidder to obtain a comparable contract in the state in which the nonresident's principal place of business is located.

I certify that		
(Company Name) is a resident	<b>Texas bidder</b> as defined in A	rt. 601g.
Signature:		
Print Name:		
I certify that		
(Company Name) is a nonresid	lent bidder as defined in Art.	501g. and our principal place of
business is:		
(City and	1 State)	
Signature:		
Print Name:		
Brownsville Public Utilities Board Required Forms	37	Bid No.048-25

#### Organization Name State Law Verifications

I,	(Person's name), the undersigned
representative of (Company or Business name)	

"Company") being an adult over the age of eighteen (18) years of age, after being duly sworn by the undersigned notary, do hereby depose and verify under oath as follows:

- IRAN, SUDAN AND FOREIGN TERRORIST ORGANIZATIONS: By submission of a response to City of Brownsville Public Utilities Board ("BPUB") Request for Bids B048-25 (the "RFB"), the responding Company represents that, to the extent this proposal submission or any contracts executed in response to this proposal constitutes a governmental contract within the meaning of Section 2252.151 of the Texas Government Code, as amended, solely for purposes of compliance with Section 2252.152 of the Texas Government Code, and except to the extent otherwise required by applicable federal law, neither the responding Company or affiliate of the Company is a company listed by the Texas Comptroller of Public Accounts under Sections 806.051, 807.051, or 2252.153 of the Texas Government Code.
- ANTI-BOYCOTT ISRAEL VERIFICATION: By submission of a response to the BPUB RFQ, the responding Company represents that, to the extent this proposal submission, or any contracts executed in response to this proposal, constitutes a contract for goods or services within the meaning of Section 2271.002 of the Texas Government Code, as amended, solely for purposes of compliance with Chapter 2271 of the Texas Government Code, and subject to applicable federal law, including without limitation, 50 U.S.C. Section 4607, the responding Company, as well as any wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of the Company, (1) does <u>not</u> boycott Israel and (2) will <u>not</u> boycott Israel through the term of any such contract. The term "boycott Israel" as used in this paragraph has the meaning assigned to such term in Section 808.001 of the Texas Government Code, as amended.
- VERIFICATION REGARDING NO DISCRIMINATION AGAINST FIREARMS: By submission of a response to the BPUB RFQ, the responding Company represents that, to the extent this proposal submission, or any contracts executed in response to this proposal, constitutes a contract for goods or services for which a written verification is required under Section 2274.002, Texas Government Code (as added by Senate Bill 19, 87th Texas Legislature, Regular Session), as amended, the responding Company hereby verifies that it, as well as any wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of the Firm, (1) does <u>not</u> have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association; and (2) will <u>not</u> discriminate during the term of any such contract against a

firearm entity or firearm trade association. The foregoing verification is made solely to comply with Section 2274.002, Texas Government Code (as added by Senate Bill 19, 87th Texas Legislature, Regular Session), as amended, to the extent such section does not contravene applicable Texas or federal law. As used in the foregoing verification, "discriminate against a firearm entity or firearm trade association" shall have the meaning assigned to such term in Section 2274.001, Texas Government Code (as added by Senate Bill 19, 87th Texas Legislature, Regular Session).

• VERIFICATION REGARDING NO ENERGY COMPANY BOYCOTTS: By submission of a response to the BPUB RFQ, the responding Company represents that, to the extent this proposal submission, or any contracts executed in response to this proposal, constitutes a contract for goods or services for which a written verification is required under Section 2274.002, Texas Government Code (as added by Senate Bill 13, 87th Texas Legislature, Regular Session), as amended, the responding Company hereby verifies that the responding Company, as well as any wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of the Firm, (1) does <u>not</u> boycott energy companies and (2) will <u>not</u> boycott energy companies during the term of any such contract. The foregoing verification is made solely to comply with Section 2274.002, Texas Government Code (as added by Senate Bill 13, 87th Texas Legislature, Regular Session), as amended, to the extent such section does not contravene applicable Texas or federal law. As used in the foregoing verification, "boycott energy companies" shall have the meaning assigned to such term in Section 809.001(1), Texas Government Code.

DATE	SIGNATURE OF COMPANY REPRESENTATIVE
On this theday of _	, 20, personally appeared
being duly sworn, did swe	, the above-named person, who after by me ear and confirm that the above is true and correct.
NOTARY SEAL	

NOTARY SIGNATURE\_\_\_\_\_

Date

#### Organization Name House Bill 89 Verification

I, \_\_\_\_\_(Person name), the undersigned representative of (Company or Business name)

\_\_\_\_\_\_(hereafter referred to as company) being an adult over the age of eighteen (18) years of age, after being duly sworn by the undersigned notary, do hereby depose and verify under oath that the company named- above, under the provisions of Subtitle F, Title 10, Government Code Chapter 2270:

1. Does not boycott Israel currently; and

2. Will not boycott Israel during the term of the contract providing that:

- (1) "company" does not include a sole proprietorship; and
- (2) the law applies only to a contract that:

(a) is between a governmental entity and a company with 10 or more full-time employees; and(b) has a value of \$100,000 or more that is to be paid wholly or partly from public funds or the governmental entity

Pursuant to Section 2270.001, Texas Government Code:

1. "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

2. "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.

DATE	SIGNATURE OF COMPA	NY REPRESENTATIVE
On this theday of	, 20	_, personally appeared
duly sworn, did swear and confir	, the above-nation that the above is true and cor	med person, who after by me being rect.
NOTARY SEAL		
NOTARY SIGNATURE	Doto	
Brownsville Public Utilities Board	Date	
Required Forms	40	Bid No.048-25

## **CERTIFICATE OF INTERESTED PARTIES-FORM 1295**

Special message: Please read the Special Notification regarding HB 1295 effective January 1, 2016, implemented by the Texas Ethics Commission, which requires business entities to provide a completed Form 1295 to Brownsville PUB with signed contracts in order to execute them.

In 2015, the Texas Legislature adopted House Bill 1295. The law states that a governmental entityor state agency may not enter into certain contracts with a business entity unless the business entitysubmits a disclosure of interested parties to the governmental entity or state agency at the time thebusiness entity submits the signed contract to the governmental entity or state agency. The law applies to a contract of a governmental entity or state agency 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 avalue of at least \$1 million. The disclosure requirement applies to a contract entered into on or after January 1, 2016.

To implement the law, the Texas Ethics Commission (TEC) adopted new rules necessary to prescribe the disclosure of interested parties form, and post a copy of the form on the commission'swebsite. The commission adopted the Certificate of Interested Parties form, Form 1295, on October 5, 2015. The commission also adopted new rules as part of Chapter 46 of the Texas Administrative Code on November 30, 2015.

On January 1, 2016, TEC made a new filing application available on their website for business entities to use to both create and file Form 1295. Business entities will enter the required information on Form 1295 within the application and print a copy of the completed form, which will include a certification of filing with a unique certification number. An authorized agent of thebusiness entity will need to sign the printed copy of the form and have the form notarized. The completed Form 1295 with the certification of filing must be included with the signed contract to the governmental body or state agency in order for the governmental body to execute the contract.

Brownsville PUB will then notify the commission, using TEC's filing application, of the receipt of the filed Form 1295 with the certification of filing not later than the 30th day after the date the contract binds all parties to the contract.

TEC will then post the business entity's completed Form 1295 to its website within seven (7) business days after receiving notice from Brownsville PUB acknowledging that it was received.

To obtain additional information on HB 1295, to learn more about TEC's process to create a newaccount or to complete an electronic version of Form 1295 for submission with a signed contract, please go to the following link: https://ethics.state.tx.us/whatsnew/elf\_info\_form1295.htm

## NOTE: IF AWARDED THIS CONTRACT, FORM 1295 WILL BE SUBMITTED AT THETIME THE SIGNED CONTRACT IS SUBMITTED TO BPUB. \_\_YES \_\_\_\_NO

Brownsville Public Utilities Board Required Forms

CERTIFICATE OF INTE	RESTED	PARTIES				FORM 1295
Complete Nos. 1 - 4 and 6 if the	ere are interes	ted parties.			OFFI	CE USE ONLY
Complete Nos. 1, 2, 3, 5, and 6	if there are no	o interested pa	arties.			
1 Name of husiness antity filing form	and the city ctor	to and country o	f the busin			
entity's place of business.	ind the city, sta	te and country o		622		
2 Name of governmental entity or s	tate agency tha	at is a party to th	e contract	for		
which the form is being filed.	into agono, inc		000000000000000000000000000000000000000			
3 Provide the identification number us	ed by the gover	nmental entity o	or state age	ency to	track or ider	tify the contract,
and provide a description of the goo	ds or services t	to be provided u	nder the co	ontract.		
4						
Name of Interested Party	City, (plac	State, Country		Natu	re of Interest	(check applicable)
Name of interested 1 arty	(pide			Co	ntrolling	Intermediary
5 Check only if there is NO Interested I	Party					
<sup>6</sup> UNSWORN DECLARATION						
My name is		, and my	date of birt	h is		·
My address is(street)		, (city)	(state) (zii	_, o code)	,, _,, _	 htry)
I declare under penalty of periury that th	e foregoing is tru	ue and correct.	. /	,		.,
Executed in County	. State of	. on the	dav	of		. 20
	,	, en une	uu; (r	nonth)	(year)	)
		Signature of	authorized ag	gent of co	ontracting busir	ness entity
			(Declarant	)		
ADI	<b>ADDITION</b>	AL PAGES A	S NECES	SARY	(	
Form provided by Texas Ethics Commi	ssion <u>w</u>	ww.ethics.state.tx	. <u>us</u>	I	Revised 12/22	2/2017

## **Previous Customer Reference Worksheet**

Name of Customer:	Customer Contact:
Customer Address:	Customer Phone Number:
	Customer Email:
Name of Company Performing Referenced Work:	

What was the Period of Performance?	What was the Final Acceptance Date?
From:	
To:	
Dollar Value of Contract?	What Type of Contract?
	Firm Fixed Price
\$	Time and Material
	Not to Exceed
	Cost Plus Fixed Fee
	Other, Specify:
Provide a brief description of the work performed for	this customer (add additional page if required)
Trovide a other description of the work performed for	this customer (aud additional page if required)

A Job Safety Analysis (JSA) form is to be completed, executed, and submitted by the vendor prior to entering into a contractual agreement with the OWNER. The JSA form will be valid for a period of 1 month after which an updated JSA form is to be completed, executed and submitted by the vendor. The completed JSA form must be included along with other Contract Documents included herein. Assistance in completing this form is available from Adolfo Vasquez, BPUB Safety Department, at (956) 983-6254.



## **Contractor JSA Form**

	<b>PUBLIC UTILITIES BOARD</b>	
	JOB SAFETY ANALYSIS FORM	
PROJECT NAME:		DATE:
PROJECT CONTRACTOR:	POINT OF CONTACT & TEL #:	ANALYSIS BY:
BPUB DEPARTMENT:	SECTION:	REVIEWED BY:
REQUIRED AND/OR RECOMMENDED PE	RSONAL PROTECTIVE EQUIPMENT:	APPROVED BY:
SEQUENCE OF BASIC JOB STEPS Beware of being too detailed; record only the information needed to describe each job action. Rule of thumb, nor more than 10 steps/task being evaluated.	POTENTIAL ACCIDENTS OR HAZARDS HAZARD CLASSIFICATION CATEGORIES: Struck By/Against, Caught In/Between, Slip, Trip, or Fall, Overexention, Ergonomic (Awkward Postures, Excessive Force, Vibration, Repetitive Motion)	RECOMMENDED SAFE JOB PROCEDURE HAZARD CONTROL CATEGORIES: Engineer Out (New Way to Do, Change Physical Conditions or Work Procedures, Adjust/Modify/Replace Work Station Components/Tools, Decrease Performance Frequency), Personal Protective Equipment (PPE), Training, Improve Housekeeping.
•	•	•
•	•	•
•	•	•
·	•	•
•	•	•

•	•	•
•	•	•
•	•	•
	JOB SAFETY ANALYSIS	WORKSHEET
Comments:		
Contractor Representative & Title	Signature	Date



#### Request for Taxpayer Identification Number and Certification

Go to www.irs.gov/FormW9 for instructions and the latest information.

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

Before you begin. For guidance related to the purpose of Form W-9, see Purpose of Form, below,

1 Name of entity/individual. An entry is required. (For a sole proprietor or disregarded entity, enter the owner's name on line 1, and enter the business/disregarded entity's name on line 2.)

	Check the appropriate box for federal tax classification of the entity/individual whose name is entered on line 1. Check only one of the following seven boxes.	4 Exemptions (codes apply only to certain entities, not individuals;
	Individual/sole proprietor C corporation S corporation Partnership Trust/estate	see instructions on page 3);
	LLC. Enter the tax classification (C = C corporation, S = S corporation, P = Partnership)	Exempt payee code (if any)
	Note: Check the "LLC" box above and, in the entry space, enter the appropriate code (C, S, or P) for the tax: classification of the LLC, unless it is a disregarded entity. A disregarded entity should instead check the appropriate box for the tax classification of its owner.	Exemption from Foreign Account Tao Compliance Act (FATCA) reporting
	Other (see instructions)	code (if any)
Зb	If on line 3a you checked "Partnership" or "Trust/estate," or checked "LLC" and entered "P" as its tax classification,	(Applies to execute projectoined
	and you are providing this form to a partnership, trust, or estate in which you have an ownership interest, check this box if you have any foreign partners, owners, or beneficiaries. See instructions	outside the United States.)
5	and you are providing this form to a partnership, trust, or estate in which you have an ownership interest, check this box if you have any foreign partners, owners, or beneficiaries. See instructions .	outside the United States.) and address (optional)
5 6	and you are providing this form to a partnership, trust, or estate in which you have an ownership interest, check this box if you have any foreign partners, owners, or beneficiaries. See instructions	outside the United States.) and address (optional)

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

ar i			
Employer	identificat	ion number	

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

#### Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and

2. I am not subject to backup withholding because (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and

3. I am a U.S. citizen or other U.S. person (defined below); and

4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

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

Sign	Signature of
Here	U.S. person

#### **General Instructions**

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

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

#### What's New

Line 3a has been modified to clarify how a disregarded entity completes this line. An LLC that is a disregarded entity should check the appropriate box for the tax classification of its owner. Otherwise, it should check the "LLC" box and enter its appropriate tax classification.

Cat. No. 10231X

New line 3b has been added to this form. A flow-through entity is required to complete this line to indicate that it has direct or indirect foreign partners, owners, or beneficiaries when it provides the Form W-9 to another flow-through entity in which it has an ownership interest. This change is intended to provide a flow-through entity with information regarding the status of its indirect foreign partners, owners, or beneficiaries, so that it can satisfy any applicable reporting requirements. For example, a partnership that has any indirect foreign partners may be required to complete Schedules K-2 and K-3. See the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

#### Purpose of Form

Date

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS is giving you this form because they

Form W-9 (Rev. 3-2024)

Form	W-8BEN-E	11	Certificate of St	atus of I	Beneficial	Owner for	itios)	
(Rev. C Depart	October 2021) ment of the Treasury	► For use by	y entities. Individuals must use Forr Go to www.irs.gov/FormW8	n W-8BEN. ► BENE for ins	Section references	are to the Interna	I Revenue Code. on.	OMB No. 1545-1621
Interna	I Revenue Service		Give this form to the with	nolding agent	t or payer. Do no	t send to the IRS		
	OT USE THIS FORM FOR	n or residen	+					Instead use Form:
• A for	reign individual	II OI TESIGEIT	1				 W-8BFI	N (Individual) or Form 8233
• A for	reign individual or en	ntity claimin	a that income is effectively co	nnected wit	h the conduct o	f trade or busin	ess within the l	Inited States
(unle	ess claiming treaty be	enefits) .						W-8ECI
• A foi	reign partnership, a f	foreign simp	ole trust, or a foreign grantor t	rust (unless	claiming treaty	benefits) (see ir	structions for e	exceptions) W-8IMY
• A for gove 501(	reign government, in ernment of a U.S. po c). 892, 895, or 1443	nternational ossession cla 3(b) (unless	organization, foreign central b aiming that income is effective claiming treaty benefits) (see i	ank of issue by connecte	e, foreign tax-ex ed U.S. income of for other except	empt organizat or that is claimir ions)	ion, foreign priv ng the applicab	ate foundation, or ility of section(s) 115(2), W-8FCI or W-8FXP
• Any	person acting as an	intermediar	y (including a qualified interm	ediary acting	g as a qualified	, derivatives dea	ler)	W-8IMY
Pa	rt I Identific	cation of	Beneficial Owner					
1	Name of organizat	tion that is t	ne beneficial owner			2 Country o	f incorporation	or organization
3	Name of disregard	ded entity re	ceiving the payment (if applic	able, see ins	structions)			
		(	() () () () () () () () () () () () () (				Deute auchie	
4	Chapter 3 Status (	(entity type)	(Must check one box only):		poration		Partnersnip	rement Controlled Entity
		oflesuo	Tax-exempt organization	Con	ipiex trust		Foreign Gover	ramont - Controlled Entity
		UI ISSUE			ne mational organi:		Foreigit Gover	nineni - integrai Fart
		irded entity ina	rthership simple trust or granter tru	et above is the	entity a hybrid ma	king a treaty claim?	If "Ves" complete	
5	Chapter 4 Status (	/FATCA stat	us) (See instructions for detail	le and comm	lete the certific	ation below for	the entity's and	plicable status )
	Nonparticipati FFI other than exempt benefit	ing FFI (inclu n a deemed- ficial owner).	uding an FFI related to a Repo compliant FFI, participating FI	orting IGA FI, or	<ul> <li>Nonrepor</li> <li>Foreign g central ba</li> </ul>	ting IGA FFI. Co overnment, gov ink of issue. Co	omplete Part XII rernment of a U mplete Part XIII	.S. possession, or foreign
						nal organization	. Complete Par	t XIV.
		del 1 FFI.			Exempt re	etirement plans.	Complete Part	XV.
		emed-com	oliant FEI (other than a reporti	na Model 1		ing owned by ex	on Complete	owners. Complete Fart Avi.
	FFI, sponsore	ed FFI, or no	nreporting IGA FFI covered in	Part XII).		nonfinancial gr	oup entity. Con	nplete Part XVIII.
	See instruction	ons.				nonfinancial sta	art-up company	/. Complete Part XIX.
	Sponsored FF	-I. Complete	Part IV.			nonfinancial en	titv in liquidatio	n or bankruptcy.
	Certified deem	ned-complia	ant nonregistering local bank.	Complete	Complete	Part XX.		
	Part V.		5 5		501(c) org	anization. Com	plete Part XXI.	
	Certified deem	ned-complia	ant FFI with only low-value ac	counts.	Nonprofit	organization. C	omplete Part X	XII.
	Complete Par	t VI.			Publicly tr	aded NFFE or I	VFFE affiliate of	f a publicly traded
	Certified deem	ned-complia	ant sponsored, closely held in	vestment	corporatio	on. Complete P	art XXIII.	
		piete Part VI			Excepted	territory NFFE.	Complete Part	XXIV.
	Complete Part	iea-compliar EVIII	it limited life debt investment er	ntity.		FE. Complete F	Part XXV.	
		mont ontition	that do not maintain financial a	occupto		inter-affiliate El	Fari AAVI. El Complete Pr	ort YY\/II
	Complete Part	t IX.	that do not maintain inancial a	iccounts.		orting NFFF	1. Completer a	
	Owner-docum	nented FFI.	Complete Part X.			d direct reporti	na NFFE. Comp	olete Part XXVIII.
	Restricted dist	stributor. Co	mplete Part XI.		Account t	hat is not a fina	ncial account.	
6	Permanent residence	ce address (s	street, apt. or suite no., or rural	route). <b>Do no</b>	ot use a P.O. bo	k or in-care-of a	address (other th	nan a registered address).
	City or town, state	e or province	. Include postal code where a	appropriate.			Country	
7	Mailing address (if	f different fro	om above)				I	
	City or town, state	e or province	. Include postal code where a	appropriate.			Country	
For Pa	aperwork Reductio	on Act Notic	e, see separate instructions	6.	Cat. No. 5	9689N	Form	V-8BEN-E (Rev. 10-2021)

## NOTICE OF AWARD

TO:\_\_\_\_\_

\_\_\_\_\_

## Project Description: **B048-25, OCELOT SUBSTATION SITE GRADING**

Dear Sir/Madam:

The Owner has considered the BID submitted by you for the above-described Work in response to its Legal Notice and Invitation to Bid dated April 16, 2025 and Instruction to Bidders.

You are hereby notified that after any Owner adjustments to the Base Bid Amount to account for Owner options regarding, your BID has been accepted in the final Contract Price amount of \$\_\_\_\_\_.

You are required by the Instructions to Bidders to execute the Construction Agreement and furnish any required Contractor's Performance Bond, Payment Bond and Certificates of Insurance within ten (10) calendar days from the date of this Notice to you.

In addition with the Bonds and Insurance Certificates, you must complete, execute, and submit a Contractor Job Safety Analysis (JSA) form. The JSA form is required prior to entering into a contractual agreement with the OWNER, and will be valid for a period of 30 days after which you must complete, execute and submit an updated JSA form. The completed JSA form is included as a part of the Contract Documents.

If you fail to execute this Agreement and furnish any required Bonds, Insurance Certificates, or other certifications within ten (10) days from the date of this Notice, Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your BID as abandoned, and as a forfeiture of your BID BOND.

The Owner will be entitled to such other rights as may be granted by law and equity.

You are required to promptly sign and return an acknowledged copy of this NOTICE OF AWARD to the Owner.

Dated this \_\_\_\_\_ day of \_\_\_\_\_\_, 20\_\_\_\_.

BROWNSVILLE PUBLIC UTILITIES BOARD OF THE CITY OF BROWNSVILLE, TEXAS

By:	
Name:	Marilyn D. Gilbert, MBA
Title:	General Manager / CEO

## ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by:

\_\_\_\_\_ this \_\_\_\_\_ day

of \_\_\_\_\_, 20\_\_\_\_.

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

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

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

## NOTICE TO PROCEED

TO:

ADDRESS:

## Contract For: B048-25, OCELOT SUBSTATION SITE GRADING

You are notified that the Contract Time under the above Contract will commence to run on \_\_\_\_\_\_, 20\_\_\_\_. By that date, you are to start performing your obligations under the Contract Documents. In accordance with the Agreement, the date of Substantial Completion prior to final payment is \_\_\_\_\_\_, 20\_\_\_.

Before you may start any Work at the site, material submittals must be submitted and approved by the BPUB before a Purchase Order is issued and prior to the purchase and shipment of materials.

Brow	vnsville Public Utilities Board:
	(Owner)
BY:	
	(Authorized Signature)

DATE: \_\_\_\_\_

NAME: <u>Marilyn D. Gilbert</u>

TITLE: <u>General Manager/CEO</u>

FOR: Brownsville Public Utilities Board

## \*\*\*SAMPLE CONSTRUCTION AGREEMENT PENDING\*\*\*

## **PERFORMANCE BOND**

#### KNOW ALL MEN BY THESE PRESENTS:

THAT				
	(Name of Co	ontractor)		
	(Address of C	ontractor)		
a				
	(corporation, partners	hip, or individual)		
hereinafter	called	Principal,	and	
	(Name of S	Surety)		
	(Address of	Surety)		
hereinafter called Su	rety, are held and firmly bound	d unto the PUBLIC UTILITI	ES BOARD of the	
City of Brownsville,	Texas, hereinafter called OW	NER, in liquidated damages	(not as a penalty)	
of	Dollars (\$) in lawful money o			
the United States, fo	r the payment of which sum	well and truly to be made, w	ve bind ourselves,	
successors, and assig	ns, jointly and severally, firm	ly by these presents.		

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain Contract with the OWNER, dated the \_\_\_\_\_ day of \_\_\_\_\_\_, 20\_\_\_\_, a copy of which is hereto attached and made a part hereof, for the construction of the: **OCELOT SUBSTATION SITE GRADING.** 

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one (1) year post-construction workmanship guaranty and materials/equipment warranty period, and if he shall satisfy all claims and demands incurred under such Contract, and SHALL FULLY INDEMNIFY AND SAVE HARMLESS THE OWNER FROM ALL COSTS AND DAMAGES WHICH IT MAY SUFFER BY REASON OF FAILURE TO DO SO, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received, hereby stipulates and agrees that no written change, extension of time, alteration or addition to the terms of the Contract or to WORK to be performed thereunder, or the SPECIFICATIONS accompanying the same, shall in any ways affect its obligation on this BOND, and it does hereby waive notice of any such written change, extension of time, alteration or addition to the terms of the Contract, or to the WORK, or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR

shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

This bond is subject to and governed by Section 2253.02 of the Texas Government Code (Vernon's Texas Codes Annotated) and Article 7.19-1 of Vernon's Texas Insurance Code and all amendments thereto.

IN WITNESS WHEREOF, this instrument is executed in triplicate, each counterpart of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_.

(Principal)

ATTEST:

	By:	(s)
(Principal) Secretary	(Signature)	
(SEAL)		
	(A 11)	
(Witness as to Principal)	(Address)	
(Address)		
ATTEST:		
	(Surety)	
	By:	
(Surety) Secretary	(Attorney-in-Fact)	
(SEAL)		
(Witness as to Surety)	(Address)	
(Address)		

NOTE: Date of BOND must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must be legally authorized by the State Board of Insurance to transact business in the State of Texas.

## ATTACH POWER OF ATTORNEY

## **PAYMENT BOND**

## KNOW ALL MEN BY THESE PRESENTS:

THAT \_\_\_\_\_

(Name of Contractor)

(Address of Contractor)

(corporation, partnership, or individual)

hereinafter called Principal, and

a \_\_\_\_\_

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the PUBLIC UTILITIES BOARD of the City of Brownsville, Texas, hereinafter called OWNER, in liquidated damages (not as a penalty) of \_\_\_\_\_\_ Dollars (\$\_\_\_\_\_\_) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain Contract with the OWNER, dated the \_\_\_\_\_ day of \_\_\_\_\_\_, 20\_\_\_\_, a copy of which is hereto attached and made a part hereof, for the construction of the: **OCELOT SUBSTATION SITE GRADING.** 

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials, for or performing labor in, the prosecution of the WORK provided for in such Contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no written change, extension of time, alteration or addition to the terms of the Contract or to WORK to be performed there under, or the SPECIFICATIONS accompanying the same, shall in any ways affect its obligation on this BOND, and it does hereby waive notice of any such written change, extension of time, alteration or addition to the terms of the Contract, or to the WORK, or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge any remaining legal right of any beneficiary hereunder, whose timely filed and legally perfected claim may be unsatisfied.

This bond is subject to and governed by Section 2253.02 of the Texas Government Code (Vernon's Texas Codes Annotated) and Article 7.19-1 of Vernon's Texas Insurance Code and all amendments thereto.

IN WITNESS WHEREOF, this instrument is executed in triplicate, each counterpart of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_.

ATTEST:		
	(Principal)	
	By:	(s)
(Principal) Secretary	(Signature)	()
(SEAL)		
(Witness as to Principal)	(Address)	
(Address)		
ATTEST:	(Surety)	
	Bv:	
(Surety) Secretary	(Attorney-in-Fact)	
(SEAL)		
(Witness as to Surety)	(Address)	
(Address)		

NOTE: Date of BOND must not be prior to date of Contract. If Contractor Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must be legally authorized by the State Board of Insurance to transact business in the State of Texas.

## ATTACH POWER OF ATTORNEY

## INSERT CERTIFICATE OF INSURANCE

**BPUB TECHNICAL SPECIFICATIONS** 

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# REQUEST FOR BID (RFB) COVER LETTER



5706 SW 45<sup>TH</sup> AVENUE AMARILLO, TEXAS 79109-5284 (806) 376-9678 FAX (806) 376-1931 <u>MikeG@egpe.biz</u> <u>MichaelJ@egpe.biz</u>

To: Site Preparation Bidders

Subject: Brownsville Public Utilities Board (BPUB) Ocelot Substation – Site Preparation (Dirt Work) Request for Bid

Attached is a request for bid (RFB) for site preparation (dirt work) for the BPUB Ocelot Substation project located in Brownsville, Texas on Morrison Rd (0.6 miles west of Interstate-69E).

Project Coordinates: 25° 57' 55.00" N, 97° 31' 17.00" W

Scope, Details, and Deliverables include (see specification for full, detailed scope of responsibilities):

- The work shall consist of clearing, grubbing, and disposing of vegetation (including all trees, brush, and exposed roots), debris, and other deleterious material, as well as, excavation, borrow, fill, embankment, and compaction activities which are encountered within the limits of the construction site. All work shall be in compliance with the project specifications and to the lines, grades, and typical sections as shown on the plans, or as established by the Engineer.
- The Contractor shall be responsible for executing, coordinating, scheduling, maintaining, and paying for all necessary erosion control measures (including SWP3/SWPPP).
- The Contractor shall be responsible for obtaining all utility locates and necessary construction permits, notices, and approvals prior to commencing any construction activities.
- The Contractor shall be responsible for executing, coordinating, scheduling, maintaining, and paying for all construction staking. Any replacement staking shall be the responsibility of the Contractor.
- The Contractor shall source and supply off-site (imported) select fill material including dirt/soil, crushed stone, gravel aggregate, and/or aggregate base (AB) which meets, or exceeds, the requirements of the specification, the Geotechnical Engineering Report, and as approved for use by the Engineer.
- The Contractor shall use the provided bid drawings to perform a material takeoff as part of the bid process. Any discrepancies with the estimated bid quantities provided by the Engineer shall be clearly stated in the bid submittal.
- The Contractor shall be responsible for obtaining and submitting for consideration all required material test reports which represent the Contractor's proposed select fill and CLS/flexible base materials. The Contractor shall coordinate with the Owner's testing lab for all testing during construction as required by the specification. All passing construction tests shall be paid for by the Owner and all failing tests shall be paid for by the Contractor.

- The Contractor shall install and maintain a short-term rock construction exit (TXDOT Type 3 with crushed aggregate) as part of their erosion control plan that will prevent construction traffic and debris from negatively impacting Morrison Road and the construction site.
- ASTM C33 No. 4 or No. 5 grade crushed limestone rock (surface topping rock) shall be separately supplied and installed by the substation Erection Contractor and is not within the scope of the Site Preparation Contractor.

Any exceptions taken to the scope, details, deliverables, specifications, or estimated bid quantities shall be clearly stated in your bid submittal and prior to commencing work.

All bid and construction activities shall adhere to the following schedule:

ACTIVITY	DATE
Pre-Bid Conference Call	4 / 9 / 2025
Bids Due	4 / 16 / 2025
Required Construction Completion Date	8 / 1 / 2025

We also request that all bidders submit itemized bids as detailed below:

ITEM	DESCRIPTION	UNIT PRICE	TOTAL PRICE
А.	Clear & Grub (Including Offsite Disposal)	\$ / YD3	\$
B.	Pad Development (Establish Grades/Slopes) including Contractor supplied Select Fill	\$ / YD3	\$
C.	Finish Grade (Crushed Limestone Base) including Contractor supplied material	\$ / YD3	\$
A. + B. + C.	TOTAL BID	\$	

Owner: Mr. Hugo Lopez – Purchasing Administrator Brownsville Public Utilities Board (BPUB) Phone: (956) 983-6375 Email: hlopez@brownsville-pub.com

Engineer(s):Ellett & Gaynor, LLCMr. Michael Jaco, P.E.5706 SW 45th AvenueMichael J@egpe.bizAmarillo, TXMr. Mike Gaynor, P.E.79109-5284MikeG@egpe.bizPH: (806) 376-9678Mr. Matt Shields, P.E.FAX: (806) 376-1931MattS@egpe.biz

Should you have any questions, please contact Mr. Hugo Lopez.

Sincerely,

Matt Shields, P.E. Matth G. Shull

#### APPENDIX



Site Map



Property Overview

Page 3 of 3

# SPECIFICATION FOR SITE PREPARATION

## **SPECIFICATION FOR**

## SITE PREPARATION

for



## B R O W N S V I L L E PUBLIC UTILITIES BOARD

## **OCELOT SUBSTATION**

1425 ROBINHOOD DR.

**BROWNSVILLE, TEXAS 78521** 

MARCH 2025

**REVISION 0 – FOR CONSTRUCTION** 



ELLETT & GAYNOR, LLC Professional Engineers 5706 SW 45<sup>th</sup> Ave Amarillo, TX 79109 Phone: (806) 376-9678 Fax: (806) 376-1931 Email(s): MikeG@egpe.biz MichaelJ@egpe.biz MattS@egpe.biz

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#### 1.0 GENERAL

1.1 These specifications are general in scope and describe the work necessary to clear the site, prepare existing subgrade, identify and submit for approval fill material sources and test reports, construct a pad, develop surface drainage, and implement and maintain erosion control measures for an electric substation site for the Brownsville Public Utilities Board (BPUB) located in Brownsville, Texas.

Latitude: 25° 57' 55.00" N Longitude: 97° 31' 17.00" W

1.2 The work shall consist of clearing, grubbing, and disposing of vegetation (including all trees, brush, and exposed roots), debris, and other deleterious material, as well as, excavation, borrow, fill, embankment, and compaction activities which are encountered within the limits of the construction site. All work shall be in compliance with these specifications and to the lines, grades, and typical sections as shown on the plans, or as established by the Engineer.

The Contractor shall be responsible for executing, coordinating, scheduling, maintaining, and paying for all necessary erosion control measures (Section 3.0), utility locates (Section 3.0), and construction staking (Section 4.0). No associated costs shall be borne by the Owner unless explicitly mentioned and listed as an exclusion in the Contractor's bid/proposal.

The Contractor shall be responsible for coordinating with their preferred materials testing lab to conduct and submit for consideration all required material tests and reports which represent the Contractor's proposed select fill and CLS/flexible base materials. The inclusion of these material tests and reports shall be a key component in the consideration of the Contractor's bid. The Contractor shall coordinate with the Owner's testing lab for all testing during construction (Section 5.0).

The Contractor shall install and maintain a short-term rock construction exit as part of their erosion control plan that will prevent construction traffic and debris from negatively impacting Morrison Road and the construction site (see Section 3.1.7).

The Contractor shall haul away and dispose of all clear and grub material to an offsite location identified by the Contractor (including, but not limited to, trees, bushes, roots, vegetation, organic materials, debris, and deleterious topsoil).

The Contractor shall source and supply off-site (imported) select fill material including dirt/soil, crushed stone, gravel aggregate, and/or aggregate base (AB) which meets, or exceeds, the requirements of the specification, the Geotechnical Engineering Report, and as approved for use by the Engineer. Any material installed without prior approval by the Engineer is subject to removal and replacement at the cost of the Contractor.

The Contractor shall use the provided bid drawings to perform a material takeoff as part of the bid process. Any discrepancies with the estimated bid quantities provided by the Engineer shall be clearly stated in the proposal. In addition to the

all-encompassing, total bid amount, the Contractor's bid shall include itemized unit prices per cubic yard for Clear & Grub (including offsite disposal), Pad Development (including Contractor supplied select fill), and Finish Grade (including Contractor supplied material/crushed limestone base) activities.

ASTM C33 No. 4 or No. 5 grade crushed limestone rock (surface topping rock) complying with the project's electric resistivity and size requirements, or Engineer approved equal, shall be separately supplied and installed by the substation Erection Contractor and is not within the scope of the Contractor.

- 1.3 A pre-construction topographic survey and geotechnical investigation/report for the project site will be provided by the Engineer and Owner. The survey and report will be provided to the Contractor prior to the project award.
- 1.4 All invoices shall be addressed and delivered to the Owner for processing and payment. A copy of all invoices shall be delivered to the Engineer for review and record purposes.

The Engineer (Ellett & Gaynor, LLC) is acting as an agent of the Owner and shall not be listed as the end user, client, responsible party, or Owner in any contracts, agreements, or invoices.

## 1.5 Construction activities shall begin as specified by the Owner or Engineer.

Owner:	Mr. Hugo Lopez – Purchasing Administrator Brownsville Public Utilities Board (BPUB) Phone: (956) 983-6375 Email: <u>hlopez@brownsville-pub.com</u>			
Engineer(s):	Ellett & Gaynor, LLC 5706 SW 45 <sup>th</sup> Avenue Amarillo, TX 79109-5284 PH: (806) 376-9678 FAX: (806) 376-1931	Mr. Michael Jaco, P.E. <u>MichaelJ@egpe.biz</u> Mr. Mike Gaynor, P.E. <u>MikeG@egpe.biz</u> Mr. Matt Shields, P.E. MattS@egpe.biz		

#### 2.0 MATERIALS

#### 2.1 Select Fill

2.1.1 All materials for select fill shall be imported, have low expansive potentials, and be comprised of natural soils (pit run), crushed stone, gravel aggregate, and./or aggregate base (AB) (or Engineer approved equal). Per the Geotechnical Engineering Report, the on-site, native soils are not suitable for direct reuse as select fill.

Select fill may also be referred to as Engineered fill and/or Structural fill.

Per the Geotechnical Engineering Report, materials used as select fill should preferably be crushed stone or gravel aggregate that meet the requirements of TXDOT's 2014 Standard Specification for Construction and Maintenance of Highways, Streets, and Bridges, Item 247, Flexible Base, Type A through Type E, Grades 1, 2, 3, and 5.

Alternatively, the following soils, as classified by the Unified Soil Classification System (USCS) may be used as select fill: SC (clayey sand), GC (clayey gravel), CL (lean clay), and combinations of these soils. In addition to the listed USCS classifications, alternative select fill materials shall meet the requirements in the following sections.

Soils classified as CH, MH, ML, SM, GM, OH, OL, and Pt are not considered suitable for use as fill materials at this site.

- 2.1.2 All materials for borrow, fill, embankment, and select fill shall have a maximum particle size of two and one-half inches (2-1/2") and shall be free from organic matter and all other deleterious materials.
- 2.1.3 All fill materials shall have a maximum liquid limit (LL) of forty percent (40%) and a plasticity index (PI) between seven and eighteen percent (7% to 18%), unless otherwise specified on the construction drawings or approved by the Engineer.
- 2.1.4 All select fill materials from off-site (imported) sources supplied by the Contractor shall meet the requirements of this specification, the Geotechnical Engineering Report, and shall be submitted for review and approval by the Engineer prior to use. The Contractor shall submit for review and approval pertinent laboratory test results, including but not limited to, Atterberg Limits (ASTM D4318), Sieve Analysis (ASTM C136), and a Proctor Analysis (ASTM D698) for any proposed select fill material at a minimum rate of one (1) test each per 5,000 cubic yards of material, or at a more frequent interval as requested by the Owner or Engineer.
- 2.1.5 Materials shall be homogeneous and free from organic matter and all other deleterious materials, including silt and clay balls.
- 2.1.6 Locally available materials may be modified to meet these specifications by blending with additional materials. Such materials shall be approved by the project Engineer or the Owner prior to use.

## 2.2 Crushed Limestone Base / Flexible Base (Final Lift & Flexible Pavement Areas)

2.2.1 The final six-inch (0'-6") layer of fill within the entire improved pad area shall consist of crushed limestone base (CLS) material.
Crushed limestone base (CLS) material shall meet the requirements of TXDOT's 2014 Standard Specification for Construction and Maintenance of Highways, Streets, and Bridges, Item 247, Flexible Base, Type A, Grade 1.

2.2.2 The final eight-inch (0'-8") layer of fill in vehicular traffic "pavement" areas (located north of the substation fence along Morrison Rd.) shall consist of flexible base material (FBM) above prepared subgrade (lime-treated or replaced with select fill) and select fill as shown on the project drawings and as required by the Geotechnical Engineering Report.

Flexible base material (FBM) shall meet the requirements of TXDOT's 2014 Standard Specification for Construction and Maintenance of Highways, Streets, and Bridges, Item 247, Flexible Base, Type A through Type E, Grades 1, 2, 3, and 5.

#### 3.0 CONSTRUCTION REQUIREMENTS

#### 3.1 Storm Water Pollution Prevention Plan, Permits, and Utility Locates

- 3.1.1 The Contractor is responsible for obtaining all utility locates and construction permits, necessary or required, as well as implementing any required erosion control measures prior to commencing any earthwork activities.
- 3.1.2 The Contractor shall be responsible for the creation, submittal, and management of the Storm Water Pollution Prevention Plan (SWPPP or SWP3), if required by the governing agencies. The SWP3 shall satisfy all applicable requirements of the Texas Commission on Environmental Quality's (TCEQ) Construction General Permit (TXR150000) as administered by the state of Texas, as well as any local requirements from Cameron County, the City of Brownsville, or other governing agencies.
- 3.1.3 The Contractor shall act as the Operator and shall ensure all appropriate notices, controls, and measures to reduce erosion, prevent damage to adjacent property, and prevent the discharge of pollutants into stormwater runoff are effective and in place throughout the construction duration.
- 3.1.4 The Operator shall obtain authorization (if required) by completing and posting a Site Notice, developing, implementing, and managing the SWP3, adhering to the requirements of the TCEQ, Construction General Permit, Cameron County, the City of Brownsville, and paying any permit application or annual permit fees, as required.
- 3.1.5 The SWP3 shall be developed and submitted to the appropriate offices in such a way that the SWP3 ownership may be transferred to the Owner or subsequent Erection Contractor prior to completion of construction (if so desired by the Owner or subsequent Erection Contractor).

- 3.1.6 Any supplemental information required for development of the SWP3 shall be coordinated with the Owner and Engineer.
- 3.1.7 The Contractor shall install and maintain a short-term rock construction exit that will prevent construction traffic and debris (including, but not limited to, removed topsoil, trees, roots, and spoils) from negatively impacting Morrison Road. The construction exit shall also prevent excessive rutting and erosion from occurring during construction and provide a stable drive surface with minimal slope for construction exit shall meet the requirements of TXDOT's 2014 Standard Specification for Construction and Maintenance of Highways, Streets, and Bridges, Item 506, Type 3 utilizing two-inch to four-inch (2" to 4") crushed aggregate that is clean, hard, durable, and free from organics and adherent coatings such as salt, alkali, dirt, clay, loam, shale, soft or flaky materials.

#### 3.2 **Clearing / Grubbing**

- 3.2.1 Prior to beginning excavation, grading, fill/embankment, and compaction operations in any area, all necessary clearing and grubbing in said area shall be fully executed to a minimum depth of eight inches (8").
- 3.2.2 Clearing shall include the removal of material such as trees, brush, roots, sod, residue of agriculture crops, sawdust, and organic matter (including topsoil) from the surface of the ground. The Contractor shall remove all clear and grub material from the project site.
- 3.2.3 All exposed surfaces should be free of roots, mounds, and depressions which could prevent uniform compaction.
- 3.2.4 All exposed areas to receive fill, once properly cleared, should be prepared as described in Section 3.4.

#### 3.3 **Cut / Excavation**

- 3.3.1 Cut sections shall be finished to a reasonably smooth and uniform surface, and to the typical section, lines, and grades as shown on the plans or as established by the Engineer.
- 3.3.2 Per the Geotechnical Engineering Report, during the soil investigation groundwater was encountered at depths ranging from about five feet (5') to seven feet (7') below the ground surface. However, there is a possibility that groundwater could be present at shallower depths than those encountered during the site investigation. Fluctuations in groundwater levels and groundwater seepage should be anticipated during construction and the Contractor should be prepared to intercept groundwater before negatively affecting excavations or subgrade stability.

3.3.3 The boring logs presented in the Geotechnical Engineering Report are not intended for use in determining construction means and methods and may be misleading if used for that purpose.

#### 3.4 **Subgrade Preparation**

- 3.4.1 Exposed subgrades shall be thoroughly proof-rolled in order to locate and densify any weak, compressible zones. A minimum of five (5) passes of a fully-loaded dump truck or similar piece of equipment should be used.
- 3.4.2 Weak or soft subgrade areas identified during proof-rolling shall be treated with hydrated lime or Portland cement to a depth of eight inches (8") or shall be removed and replaced with suitable, compacted select fill.
- 3.4.3 Following proof-rolling operations and prior to fill placement the exposed subgrade shall be moisture-conditioned by scarifying to a minimum depth of eight inches (8") and recompacted to a minimum of ninety-eight percent (98%) of laboratory density as determined by ASTM D698 (moisture-density relationship for subgrade is provided in the Geotechnical Engineering Report). The moisture content of the subgrade shall be maintained at approximately optimum moisture (-1% to +3%) until permanently covered.
- 3.4.4 Per the Geotechnical Engineering Report, site grading may potentially expose soft, wet, sensitive fine-grained soils that require a special grading approach to establish a stable subgrade. When these sensitive soils are encountered, the Geotechnical Engineer should be contacted to observe the exposed subgrade. The Geotechnical Engineer may then modify the proof-rolling and moisture conditioning requirements in order to maintain a stable subgrade. Overly soft or unstable subgrade may be improved by placing a layer of compacted, crushed rock and a geogrid on the subgrade or by pushing "bull rock" into the soft subgrade until subgrade yielding stops. Also, if construction is performed during wet weather conditions, the surficial soils may become saturated, soft, and unworkable. Therefore, it is recommended that construction activities occur during the dryer months. Reference the Geotechnical Engineering Report for more details.

### 3.5 **Fill / Embankment**

- 3.5.1 Clearing shall be performed as required prior to beginning fill/embankment construction.
- 3.5.2 Subgrade Preparation shall be performed as required prior to beginning fill/embankment construction.
- 3.5.3 Fill/embankment material shall be placed in horizontal layers (lifts) not exceeding eight inches (8") (loose measurement) and shall be compacted in

accordance with paragraph 3.6, *Moisture Density Control*. Spreading equipment shall be used on each layer to obtain reasonably uniform thickness prior to compaction effort. As the construction of each layer progresses, necessary manipulation shall be accomplished to assure uniformity of density. Construction equipment shall be routed uniformly over the entire area of each layer. Each layer of fill/embankment shall be properly compacted and tested before the next layer is placed.

- 3.5.4 When fill/embankment is to be placed and compacted on hillsides or adjacent to existing embankments, the slopes that are steeper than four (4) horizontal to one (1) vertical shall be continuously benched as the work is brought up in layers. Benching shall be of sufficient width to permit operation of placing and compacting equipment.
- 3.5.5 Employ a placement and compaction method that does not disturb or damage below grade utilities (existing or new).
- 3.5.6 Structure and equipment foundations which may be negatively impacted by the potential for expansive, soil-related movements (such as the control building, switchgear, and transformers) shall be backfilled in such a way as to limit problems associated with surface and subsurface drainage. A final, well-maintained, impervious clay, or similar material, shall be sloped downward away from the structures' footprint over the surrounding select fill material with a minimum gradient of six inches (0'-6") in five feet (5'-0"); unless noted otherwise. Final backfill operations around foundation excavations will be performed by the Erection and/or Concrete Contractor.
- 3.5.7 Make grade changes gradual. Blend slope into level areas.
- 3.5.8 Remove surplus backfill materials from the project site or store them in separate piles (organized by material type) in an approved area designated by the Owner or Engineer which does not disrupt the surrounding natural or improved surface drainage.
- 3.5.9 Lime-treated subgrade, geogrid base reinforcement, and/or select fill replacement may be required for flexible and rigid pavement areas to help reduce the occurrence of longitudinal cracking and to provide a stable base. Reference the Geotechnical Engineering Report for more details on the lime treatment of subgrade, flexible pavement designs, rigid pavement designs, and pavement material requirements.

#### 3.6 Moisture Density Control

3.6.1 Unless otherwise specified, natural ground to receive fill/embankment (subgrade) shall be scarified, moisture conditioned, and compacted to not less than ninety-eight percent (98%) of the laboratory density as determined by ASTM D698 (Standard Effort). The moisture content of the subgrade at the time of compaction shall not exceed the optimum moisture by more than

three percentage points (+3%) or be less than the optimum minus one percentage point (-1%).

- 3.6.2 Unless otherwise specified, select fill shall be moisture conditioned and compacted to not less than ninety-eight percent (98%) of the laboratory density as determined by ASTM D698 (Standard Effort). The moisture content of the select fill at the time of compaction shall not exceed the optimum moisture by more than two percentage points (+2%) or be less than the optimum minus two percentage points (-2%).
- 3.6.3 Crushed limestone base (CLS) used as surface-topping material and/or a final pavement surface, as described in Section 2.2, shall be moisture conditioned and compacted to not less than ninety-five percent (95%) of the laboratory density as determined by ASTM D1557 (Modified Effort). The moisture content of the CLS at the time of compaction shall be maintained within three percentage points of optimum (+/- 3%).
- 3.6.4 Flexible base course (FBM) used in pavement sections shall be moisture conditioned and compacted to not less than ninety-five percent (95%) of the laboratory density as determined by ASTM D1557 (Modified Effort). The moisture content of the flexible base course at the time of compaction shall be maintained within three percentage points of optimum (+/- 3%).
- 3.6.5 For all materials, if the moisture content at the time of compaction is not within the specified ranges the material shall be scarified, moistened or dried, and thoroughly mixed by reprocessing to the full depth of the lift before re-compaction. The moisture content of all soils shall be maintained within the specified ranges until the final lift of fill is permanently placed and compacted.

#### 4.0 CONSTRUCTION STAKING

- 4.1 Construction staking shall be the responsibility of, and paid for by, the Contractor. This shall include, but not be limited to, the execution (initial staking), coordination, scheduling, and maintenance. Any replacement staking shall be the responsibility of the Contractor.
- 4.2 If any construction staking is excluded from the Contractor's bid/proposal it shall be clearly stated and listed as an exclusion.
- 4.3 The construction staking scope shall include, but not be limited to, the following:
  - 4.3.1 The initial staking of the improved pad layout, offset staking, and intermediate grid stakes/hubs based on the Engineer's design drawings with markings that include a stake number/identifier and the cut/fill height required to reach the finished grade elevation.

- 4.3.2 Subsequent site visit(s) by the surveyor to "blue top" the finished grade surface, following successful compaction testing, for the final, fine tuning of the finished grade elevations and slopes.
- 4.3.3 If the Contractor chooses to self-perform the staking and/or "blue top" survey activities a third-party surveyor shall be hired by the Contractor to perform a final verification/check-out of the Contractor's finished grades and blue-tops. The third-party surveyor may be the surveyor who performed the initial boundary and topographic survey.

#### 5.0 CONSTRUCTION & MATERIALS TESTING

5.1 The Contractor shall be responsible for coordinating with their preferred materials testing lab to conduct and submit for consideration all required material tests and reports which represent the Contractor's proposed select fill and CLS/flexible base materials. The source(s) of the proposed materials shall be identified and the required material tests shall be completed prior to bid submittal. The resulting test reports shall be included in the Contractor's bid package.

The Contractor selected by the Owner to complete the project shall coordinate with the Owner's testing lab for all construction testing; including, but not limited to, inplace density tests (compaction tests) and subsequent material tests (sieve analysis, Atterberg Limits, Proctor analysis, etc.).

- 5.2 The minimum amount of construction and materials testing for earth work shall be:
  - 5.2.1 Sieve analysis per ASTM C136 (gradation), Atterberg Limits per ASTM D4318 (liquid limit, plastic limit, and plasticity index), and a Proctor analysis and compaction test per ASTM D698 (Standard Effort) or ASTM D1557 (Modified Effort) as required per Section 3.6.
    - 5.2.1.1 Minimum of one (1) materials test set of each analysis listed above per every 5,000 cubic yards of Contractor supplied material from off-site (imported) sources. Additional tests should be completed if changes in material are observed. These additional tests may also be required at the request of the Owner, Engineer, or Owner's testing lab.
    - 5.2.1.2 A moisture-density relationship (Proctor) analysis for the existing subgrade soil is provided in the Geotechnical Engineering Report.
  - 5.2.2 In-Place Density Tests (Compaction)
    - 5.2.2.1 Existing Subgrade to Receive Fill/Embankment Minimum of one (1) field density test per 3,500 square feet.

- 5.2.2.2 Select Fill/Embankment Minimum of one (1) field density test per 3,500 square feet per lift of material.
- 5.2.2.3 Crushed Limestone & Aggregate Base Minimum of one (1) field density test per 3,500 square feet per lift of material.
- 5.3 The Contractor, in coordination with their preferred testing lab (pre-bid) and with the Owner's testing lab (post-award), shall be responsible for providing a report to the Engineer and Owner (in electronic PDF format) of all tests performed including all results.
- 5.4 The Owner will be financially responsible for all passing tests and the Contractor shall pay for all failed tests following contract award. Failed tests may include material tests (sieve analyses, Atterberg Limits, Proctor analyses, etc.) and compaction tests which do not meet the requirements of the specification and the Geotechnical Engineering Report.
- 5.5 The Contractor shall coordinate all scheduling with the Owner's testing lab and provide sufficient notice of any testing required.
- 5.6 Any material installed without being tested, without being approved for use, or failing to satisfy the requirements of this specification and the Geotechnical Engineering Report, shall be removed and replaced at the Contractor's expense.

#### 6.0 DRAWING LIST

- E2-1 SITE LAYOUT
- E2-2 GENERAL ARRANGEMENT
- **E3-1** SUB GRADING PLAN CLEAR & GRUB
- E3-2 SUB GRADING PLAN PAD DEVELOPMENT
- **E3-3** SUB GRADING PLAN FINISH GRADE
- E3-4 DRIVEWAY GRADING PLAN CLEAR & GRUB
- E3-5 DRIVEWAY GRADING PLAN PAD DEVELOPMENT
- **E3-6** DRIVEWAY GRADING PLAN FINISH GRADE
- E3-7 DRIVEWAY GRADING PLAN DRIVEWAY DETAILS PAVEMENT LAYOUT

# SUB GRADING PLAN BID DRAWINGS (3)

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PLAN SEE NOTES #1, #2, & #3

ELLETT & GAYNOR, LLC PROFESSIONAL ENGINEERS TX #F-562 5706 S.W. 45TH AVE., AMARILLO, TX 79109-5284





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### **REFERENCE DRAWINGS:**

- E2-1: SITE LAYOUT 1.
- E2-2: GENERAL ARRANGEMENT
- E3-1: SUB GRADING PLAN CLEAR & GRUB
- E3-3: SUB GRADING PLAN FINISH GRADE
- SPECIFICATION FOR SITE PREPARATION RABA KISTNER: GEOTECHNICAL ENGINEERING STUDY
- PROJECT NO. ABA24-011-00 (REVISED)

### GENERAL NOTES:

- PRIOR TO FILL OPERATIONS, THE EXPOSED SUBGRADE SHALL BE THOROUGHLY PROOF-ROLLED IN ORDER TO LOCATE AND DENSIFY ANY WEAK, COMPRESSIBLE ZONES. WEAK OR SOFT SUBGRADE AREAS IDENTIFIED DURING PROOF-ROLLING SHALL BE TREATED WITH HYDRATED LIME OR PORTLAND CEMENT TO A DEPTH OF EIGHT INCHES (8") OR SHALL BE REMOVED AND REPLACED WITH SUITABLE, COMPACTED SELECT FILL.
- FOLLOWING PROOF-ROLLING AND PRIOR TO FILL PLACEMENT THE SUBGRADE SHALL BE MOISTURE-CONDITIONED BY SCARIFYING TO A MINIMUM DEPTH OF EIGHT INCHES (8") AND RECOMPACTED PER THE SPECIFICATION AND GEOTECHNICAL ENGINEERING STUDY. THE PAD IS DESIGNED WITH A ONE-HALF PERCENT (0.5%) SLOPE
- FROM EAST TO WEST AND A ONE-TENTH PERCENT (0.1%) SLOPE FROM NORTH TO SOUTH.
- GRAY DOTS REPRESENT THE EXTENTS OF THE DEVELOPED SUBSTATION PAD (12 PLACES).
- CONTOUR LINES SHOWN ARE ONE-QUARTER FOOT (0.25') CONTOURS. THE CONTRACTOR SUPPLIED MATERIAL FOR SELECT FILL FOR THE SUBSTATION PAD DEVELOPMENT SHALL MEET THE REQUIREMENTS OF SPECIFICATION SECTION 2.1. PER THE GEOTECHNICAL
- ENGINEERING STUDY, THE ON-SITE, NATIVE SOILS ARE NOT SUITABLE FOR DIRECT REUSE AS SELECT FILL. SELECT FILL SHALL BE PLACED, MOISTURE-CONDITIONED, AND COMPACTED PER THE REQUIREMENTS OF THE SPECIFICATION AND
- THE GEOTECHNICAL ENGINEERING STUDY. FEATHER/BLEND ALL SIDES OF THE IMPROVED PAD AREA TO THE
- EXISTING GRADE WITH A SLOPE NOT EXCEEDING 3:1 (H:V).

## FOR BID PURPOSES ONLY

## OCELOT SUBSTATION PAD DEVELOPMENT SUB GRADING PLAN

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DWG.NO.

E3-2

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### **REFERENCE DRAWINGS:**

- 1. E2-1: SITE LAYOUT
- 2. E2-2: GENERAL ARRANGEMENT
- E3-1: SUB GRADING PLAN CLEAR & GRUB
- E3-2: SUB GRADING PLAN PAD DEVELOPMENT 4
- SPECIFICATION FOR SITE PREPARATION RABA KISTNER: GEOTECHNICAL ENGINEERING STUDY
- PROJECT NO. ABA24-011-00 (REVISED)

GENERAL NOTES:

- 1. FINISH GRADE ELEVATIONS SHOWN ON THIS DRAWING DO NOT INCLUDE THE FOUR INCHES (4") OF SURFACE TOPPING ROCK (ASTM C33 NO. 4 OR NO. 5) TO BE SUPPLIED AND INSTALLED BY THE ERECTION CONTRACTOR.
- 2. GRAY DOTS REPRESENT THE EXTENTS OF THE DEVELOPED SUBSTATION PAD (12 PLACES).
- CONTOUR LINES SHOWN ARE ONE-QUARTER FOOT (0.25') CONTOURS. 3. 4. THE CONTRACTOR SUPPLIED MATERIAL FOR THE FINAL SIX-INCH (6") LIFT FOR THE SUBSTATION PAD SHALL MEET THE REQUIREMENTS OF
- SPECIFICATION SECTION 2.2.1. 5. FOLLOWING THE CONTROL HOUSE, SWITCHGEAR, AND TRANSFORMER FOUNDATION CONSTRUCTION THE ERECTION CONTRACTOR SHALL BUILD UP THE GRADE AROUND THE FOUNDATION PERIMETER TO ENSURE DRAINAGE AWAY FROM THE FOUNDATION. A FINAL, IMPERVIOUS CLAY LAYER SHALL BE SLOPED DOWNWARD AWAY FROM THE STRUCTURES' FOOTPRINT WITH A MINIMUM GRADIENT OF SIX INCHES (6") IN FIVE FEET (5'). THE MATERIAL FOR THIS "CLAY CAP" SHALL MEET THE REQUIREMENTS OF THE SPECIFICATION FOR SUBSTATION ERECTION SECTION 2.7.3.
- 6. THE FINISHED GRADE ALONG THE WEST SIDE OF THE IMPROVED PAD IS DESIGNED TO BE SLIGHTLY ABOVE THE ADJACENT, EXISTING GRADE TO PREVENT PONDING WITHIN THE BOUNDARY OF THE IMPROVED PAD.



OCELOT SUBSTATION FINISH GRADE SUB GRADING PLAN DWG.NO.

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## **REFERENCE DRAWINGS (2)**





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# GEOTECHNICAL ENGINEERING STUDY



## **GEOTECHNICAL ENGINEERING STUDY**

FOR

PROPOSED OCELOT ELECTRICAL SUBSTATION BROWNSVILLE, CAMERON COUNTY, TEXAS



Raba Kistner, Inc. 800 East Hackberry McAllen, TX 78501 www.rkci.com

> P 956.682.5332 F 956.682.5487 F-3257

Project No. ABA24-011-00 (Revised) October 28, 2024

Mr. Jesus Alfaro, SR/WA, R/W-NAC Real Estate Manager Brownsville Public Utilities Board (Brownsville PUB) 1425 Robinhood Drive Brownsville, Texas 78521

RE: Geotechnical Engineering Study Proposed Ocelot Electrical Substation Along the South Side of W. Morrison Road Approximately 0.15 Mile East of Its Intersection with Simmons Boulevard Brownsville, Cameron County, Texas

Dear Mr. Alfaro:

**RABA KISTNER, Inc. (RKI)** is pleased to submit the report of our Geotechnical Engineering Study for the above-referenced project. This study was performed in accordance with **RKI** Proposal No. PBA24-014-00 (Revised), dated April 26, 2024. Please note that the original of our proposal was revised in order to include a modification in our scope of work, based on the electronic-mail attachment received by our office from you on Thursday, April 28, 2024. Written authorization to proceed with this study was received by our office via electronic-mail attachment on Monday, June 17, 2024, by means of the Professional Engineering Services Contract between Brownsville PUB (CLIENT) and **RKI**, dated May 29, 2024. The purpose of this study was to drill borings within the subject site, to perform laboratory testing on selected samples to classify and characterize subsurface conditions, and to prepare an engineering report presenting foundation and pavement recommendations and construction guidelines for the proposed electrical substation.

The following report contains our foundation and pavement recommendations and considerations based on our current understanding of the design tolerances, and structural and pavement loads. If any of these parameters change, then there may be alternatives for value engineering of the foundation and pavement systems, and **RKI** recommends that a meeting be held with the Brownsville PUB and the design team to evaluate these alternatives.

We appreciate the opportunity to be of professional service to you on this project. Should you have any questions about the information presented in this report, please call. We look forward to assisting Brownsville PUB during the construction of the project by conducting the construction materials engineering and testing services (quality assurance program).

Very truly yours,

**RABA KISTNER, INC.** 

Saul Cruz, P.E. Graduate Engineer

Attachments

SC/KML

Copies Submitted: Above (1)

Katrin M. Leonard, P.E. Vice President

Oct. 28, 2024

#### **GEOTECHNICAL ENGINEERING STUDY**

For

#### PROPOSED OCELOT ELECTRICAL SUBSTATION ALONG THE SOUTH SIDE OF E. MORRISON ROAD APPROXIMATELY 0.15 MILE EAST OF ITS INTERSECTION WITH SIMMONS BOULEVARD BROWNSVILLE, CAMERON COUNTY, TEXAS

Prepared for

BROWNSVILLE PUBLIC UTILITIES BOARD Brownsville, Texas

Prepared by

RABA KISTNER, INC. McAllen, Texas

PROJECT NO. ABA24-011-00 (Revised)

October 28, 2024

#### RABAKISTNER

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Key to Terms and Symbols	Figure 8
Results of Soil Sample Analyses	Figure 9
Resistivity Data Sheet	Figure 10
Moisture-Density Relationship	Figure 11

Important Information About Your Geotechnical Engineering Report

#### INTRODUCTION

**RABA KISTNER, Inc. (RKI)** has completed the authorized subsurface exploration for the proposed Brownsville Public Utilities Board (Brownsville PUB) Ocelot electrical substation to be located along the south side of W. Morrison Road and approximately 0.15 mile east of its intersection with Simmons Boulevard in Brownsville, Cameron County, Texas. This report briefly describes the procedures utilized during this study and presents our findings along with our recommendations for site preparation, and foundation design and construction considerations, as well as pavement design and construction guidelines.

#### **PROJECT DESCRIPTION**

We understand that the proposed project consists of the design and construction of an electrical ground grid system, including the following structures:

- Transformer with Secondary Containment:
  - Transformer's weight is estimated to be about 100,000 lbs, and to be approximately 12-ft long by 6-ft wide.
- Concrete Masonry Unit (CMU) or Precast Concrete Control Building:
  - Control building is planned to be single-story and approximately 36-ft long by 30-ft wide.
- Transmission Terminal / H-frame Structures
- Miscellaneous Switch, Bus Support Structures, and Electrical Equipment (including light standards)

The subject site is located along the south side of W. Morrison Road and approximately 0.15 mile east of its intersection with Simmons Boulevard in Brownsville, Cameron County, Texas. The site can be described as an undeveloped, recently cleared tract of land. In general, the topography at the subject site is relatively flat, with an estimated vertical relief of less than 3 ft across the site. Surface drainage is visually estimated to be poor. The project site is bounded to the north by W. Morrison Road; to the east by an undeveloped tract of land; to the south by an existing unpaved, access road; and to the west by an existing asphalt-paved, trail.

Foundation loads for the proposed structures have not been provided at this time. The proposed structures are expected to create relatively light to moderate loads to be carried by the foundation systems, which are anticipated to consist of shallow and/or deep foundation systems. The pavement systems are anticipated to consist of a combination of both flexible (asphalt) and rigid (concrete) pavements.

For purposes of this geotechnical engineering report, the finished grade elevation (FGE) of the proposed structures were assumed to be about 12 inches (1 ft) above the ground surface elevation existing at the time of our study, since no site grading information was provided to us at the time of the preparation of this report.

#### **PREVIOUS STUDY**

**RKI** has previously performed a subsurface Reconnaissance Study within the subject site, which included a total of two borings located within the footprint area of the proposed electrical substation (**RKI** Project No. ABA22-013-00, dated June 20, 2022). The results of this study are on file in our office. Our previous data was utilized as supplementary information in the preparation of this report.

#### LIMITATIONS

This engineering report has been prepared in accordance with accepted Geotechnical Engineering practices in the region of South Texas for the use of Brownsville PUB (CLIENT) and their representatives for design purposes. This report may not contain sufficient information for the purposes of other parties or other uses and is not intended for use in determining construction means and methods.

The recommendations submitted in this report are based on the data obtained from six borings drilled at this site, our understanding of the project information provided to us by the CLIENT, and the assumption that site grading will result in only minor changes in the topography existing at the time of our study. If the project information described in this report is incorrect, is altered, or if new information is available, we should be retained to review and modify our recommendations.

This report may not reflect the actual variations of the subsurface conditions across the subject site. The nature and extent of variations across the subject site may not become evident until construction commences. The construction process itself may also alter subsurface conditions. If variations appear evident at the time of construction, it may be necessary to reevaluate our recommendations after performing on-site observations and tests to establish the engineering impact of the variations.

The scope of our Geotechnical Engineering Study does not include an environmental assessment of the air, soil, rock, or water conditions either on or adjacent to the site. No environmental opinions are presented in this report. **RKI**'s scope of work does not include the investigation, detection, or design related to the prevention of any biological pollutants. The term "biological pollutants" includes, but is not limited to, mold, fungi, spores, bacteria, and viruses, and the byproduct of any such biological organisms.

If final grade elevations are significantly different from the grades assumed in this report, our office should be informed about these changes. If needed and/or desired, we will reexamine our analyses and make supplemental recommendations.

#### **BORINGS AND LABORATORY TESTS**

Subsurface conditions at the subject site were evaluated by six borings drilled within the site, as shown in the following table.

Proposed Structure	Number of Borings	Depth, ft. *	Boring Identification
Ocolet Substation	2	50	B-1 and B-2
Ocelot Substation	2	70	B-3 and B-4
Pavement Areas	2	10	P-1 and P-2

\* below the ground surface elevation existing at the time of our study.

The borings (designated as "B-" and "P-") were drilled on August 15 through August 20, 2024, at the locations shown on the Boring Location Map, Figure 1. The boring locations are approximate and were located in the field by an **RKI** representative based on the aerial map provided to us by the CLIENT via electronic-mail attachment on Wednesday, July 31, 2024. The borings were drilled to the depths shown in the previous table, below the ground surface elevations existing at the time of our study using a truck-mounted, rotary-drilling rig. The borings were drilled utilizing straight flight augers in combination with mud rotary drilling techniques and were backfilled with the auger cuttings following completion of the drilling operations. During the drilling operations, Split-Spoon (with Standard Penetration Test, SPT) and Shelby-Tube (ST) samples were collected.

The SPT and ST samples were obtained in accordance with accepted standard practices and the penetration test results are presented as "blows per foot" on the boring logs. Representative portions of the samples were sealed in containers to reduce moisture loss, labeled, packaged, and transported to our laboratory for subsequent testing and classification.

In the laboratory, each sample was evaluated and visually classified by a member of our Geotechnical Engineering staff in general accordance with the Unified Soil Classification System (USCS). The geotechnical engineering properties of the strata were evaluated by the following laboratory tests: natural moisture content, Atterberg limits, unconfined compressive strength tests, dry unit weight determinations, a corrosivity test (including electrical resistivity, pH, chloride and sulfate content determinations), and percent passing a No. 200 sieve determinations.

With the exception of the corrosivity test and moisture-density relationship (Proctor) results, the results of the field and laboratory tests are presented in graphical or numerical form on the boring logs illustrated on Figures 2 through 7. A key to the classification of terms and symbols used on the logs is presented on Figure 8. The results of the laboratory and field testing are also tabulated on Figure 9 for ease of reference. Further, the result of the moisture-density relationship (Proctor) laboratory test of the subgrade soils is presented on Figure 11.

SPT results (N-values) are noted as "blows per ft" on the boring logs and on Figure 9, where "blows per ft" refers to the number of blows by a falling 140-lb (pound) hammer required for 1 ft of penetration into the subsurface materials.

Samples will be retained in our laboratory for 30 days after submittal of this report. Other arrangements may be provided at the written request of the CLIENT.

#### **GENERAL SITE CONDITIONS**

#### GEOLOGY

Based on a cursory review of the Geologic Atlas of Texas (McAllen-Brownsville Sheet, dated 1976), published by the Bureau of Economic Geology at the University of Texas at Austin, indicates that the subject site appears to be located within the Alluvium (floodplain) deposits consisting of clays, silts, sands, and gravel deposits of the Quaternary epoch (Holocene period).

According to the Soil Survey of Cameron County, Texas, published by the United States Department of Agriculture - Soil Conservation Service, in cooperation with the Texas Agricultural Experiment Station, the project site appears to be located within the Rio Grande-Matamoros association consisting of nearly level to gently sloping, well-drained and moderately well-drained, silt loams and silty clays. The corresponding soil symbols appear to be CF, Cameron silty clay, and CH, Chargo silty clay.

#### FROST DEPTH

Based on the geographic location of the site, the subsurface conditions encountered in our borings, and the severity and duration of cold weather in our region, it is our judgment that the potential for frost may be considered to be negligible at this site.

#### SEISMIC COEFFICIENTS

Based upon a review of Section 1613 *Earthquake Loads* of the 2015 International Building Code (IBC), the following information has been summarized for seismic considerations associated with this site.

- Site Class Definition (Chapter 20 of the American Society of Civil Engineers [ASCE] 7): Class
  D. Based on the soil borings conducted for this investigation and our experience in the area, the upper 100 feet of soil may be may be characterized as a stiff soil profile.
- Risk-Targeted Maximum Considered Earthquake Ground Motion Response Accelerations for the Conterminous United Stated of a 0.2-Second, Spectral Response Acceleration (5% of Critical Damping): **S**<sub>s</sub> = 0.036g.
- Risk-Targeted Maximum Considered Earthquake Ground Motion Response Accelerations for the Conterminous United States of a 1-Second, Spectral Response Acceleration (5% of Critical Damping):  $S_1 = 0.013g$ .
- Value of Site Coefficient: **F**<sub>a</sub> = **1.6**.
- Value of Site Coefficient:  $F_v = 2.4$ .

The Maximum Considered Earthquake Spectral Response Accelerations are as follows:

- 0.2 sec., adjusted S<sub>ms</sub> = 0.057g.
- 1 sec., adjusted S<sub>m1</sub> = 0.032g.

The Design Spectral Response Acceleration Parameters are as follows:

- 0.2 sec.: **S**<sub>DS</sub> = **0.038g**.
- 1 sec.: **S**<sub>D1</sub> = **0.021g**.

#### **STRATIGRAPHY**

On the basis of the borings drilled for this site, the subsurface stratigraphy can be described as intermixed layers of moderately plastic to plastic, fine-grained soils with various amount of sand; and visually marginally plastic, course-grained soils. Each stratum has been designated by grouping materials that possess similar physical and engineering characteristics. The boring logs should be consulted for more specific stratigraphic information. Unless noted on the boring logs, the lines designating the changes between various strata represent approximate boundaries. The transition between materials may be gradual or may occur between recovered samples. The stratification given on the boring logs, or described herein, is for use by **RKI** in its analyses and should not be used as the basis of design or construction cost estimates without realizing that there can be variation from that shown or described.

The boring logs and related information depict subsurface conditions only at the specific locations and times where sampling was conducted. The passage of time may result in changes in conditions, interpreted to exist, at or between the locations where sampling was conducted.

#### GROUNDWATER

Groundwater was encountered in Borings B-1 through B-4 at depths ranging from about 5 ft to 7 ft below the ground surface elevation existing at the time of our study. In Borings P-1 and P-2, groundwater was not observed during or immediately upon completion of the drilling operations. The groundwater level in the borings may not have stabilized, particularly in less permeable cohesive soil, prior to backfilling. Hence, there is a potential for groundwater to exist beneath this site at shallower depths on a transient basis following periods of precipitation. Fluctuations in groundwater levels occur due to variations in rainfall, surface water run-off, recharge, or other factors not evident at the time of exploration. In addition, groundwater may potentially occur as a perched condition at the planned fill and soil interface, or within permeable soils or backfill. The construction process itself may also cause variations in the groundwater level.

#### FOUNDATION RECOMMENDATIONS AND CONSIDERATIONS

Site grading plans can result in changes in almost all aspects of foundation recommendations. We have prepared the foundation recommendations based on the assumption that the FGE of the proposed structures will be about 12 inches (1 ft) above the ground surface elevation existing at the time of our study and the stratigraphic conditions encountered in the borings at the time of our study. If site grading plans differ from the assumed finished grades, we must be retained to review the site grading plans prior to bidding the project for construction. If needed and/or if desired, we will reexamine our analyses and make supplemental recommendations.

Site features that will influence the geotechnical approach to the proposed project include:

- Potential to encounter relatively shallow groundwater seepage during excavation and site grading operations;
- In-situ electrical resistivity testing;
- Corrosivity characteristics of the upper subsurface soils;
- Potential for sensitive soils that are easily disturbed to construction traffic;
- Presence of expansive soil and potential for soil-related movements;
- Depth of planned fill for site improvements and potential for soil-related movements; and
- Potential for light to moderate foundation loads.

The following foundation systems are available to support the proposed additions:

- Shallow foundation systems with a fill-supported concrete floor slab or mat foundations; and
- Deep foundation systems, consisting of drilled, straight shaft piers. (Due to the depth to groundwater, underrreamed piers will be difficult to construction and are not recommended).

Please note that the foundation capacities presented herein are based on the Allowable Stress Design methodology.

#### **GROUNDWATER SEEPAGE AND DEWATERING**

As discussed herein, groundwater was encountered at depths ranging from about 5 ft to 7 ft below the ground surface elevation during our fieldwork. However, there is a possibility for groundwater to exist at shallower depths than those encountered in our borings (see section titled *Groundwater*). Fluctuations in groundwater levels and groundwater seepage should be anticipated during construction. The contractor should be made aware and ready to handle/intercept potential water for anticipated excavations.

Where excavations extend into the underlying soil layers groundwater seepage should be anticipated. Raising the finished grade and performing the excavations during the drier season (such as summertime) will aid in reducing the potential for groundwater seepage, but will not eliminate the risk. For relatively shallow excavations, French drains or trench drains, which are discharged by gravity or sumps, may be required to intercept groundwater seepage so that the excavations are not submerged under water. For deep foundation excavations, this could include the use of slurry drilling and/or temporary casing (including overdrive techniques) to reduce groundwater seepage and sloughing of the soils.

The General Contractor should be prepared to control excess water encountered in the excavations due to perched water, seepage from natural or constructed interfaces (such as but not limited to fill and natural soil interface, utility backfills, other), and/or rainfall. Proper construction procedures and equipment will be critical for proper performance of the dewatered excavations. Additionally, protection of personnel

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entering the excavations and providing a dry, stable subgrade upon which to construct foundations will be crucial.

#### **IN-SITU ELECTRICAL RESISTIVITY TESTING**

In accordance with the approved work scope, in-situ electrical resistivity testing was performed by **RKI** on August 8, 2024, within the subject site. Testing of subsurface soils to a depth of approximately 20 feet below ground surface was conducted at one specified test station designated as "ERT-1" as depicted on the Boring Location Map, Figure 1. The following paragraphs provide a description of resistivity test methods and results.

#### **Description of Resistivity Test Methods**

Resistivity testing was conducted utilizing the Wenner Method, in general accordance with prescribed procedures set forth by the American Society for Testing and Materials (ASTM) in *Standard Guide for Using the Direct Current Resistivity Method for Subsurface Site Characterization, ASTM D6431-18 (ASTM 2018).* As the specified methodology set forth in this reference source is consistent with *Standard Test Method for Field Measurement of Soil Resistivity Utilizing the Wenner Four-Electrode Method, ASTM G57-20 (ASTM, 2020),* both reference sources were considered for the collection of the resistivity data as further described below.

In accordance with data collection requirements stipulated for the project, a series of resistivity measurements were obtained at station ERT-1. In order to evaluate potential anisotropy associated with ground resistivity measurements and to provide a check on the quality of data obtained, data was collected along orthogonal arrays at the test station oriented roughly north-to-south (N-S) and east-to-west (E-W). The resistivity arrays were located in areas that were not influenced by the presence of overhead transmission lines, underlying utilities/piping, significant ground disturbance, or other known influences that would negatively impact the results of the surveys.

Due to the fact that soil resistivity values can be affected by changes in moisture and temperature the weather conditions leading up to and during the survey were taken into account. The ambient temperature at the time the survey was conducted ranged from approximately 90° to 95° F. The weather conditions were clear and sunny. A review of published data available from the National Weather Service indicate that the West End Station (nearest weather station to the project area) did not receive rain within the 7 days preceding soil resistivity testing. Soil moisture conditions at the ground surface were observed to be slightly moist at the time testing was conducted.

Resistivity measurements were obtained according to the following procedure:

 Once the test station location was established, non-conducting tape measures were placed along the ground surface from the central point of the array and utilized to determine proper electrode placement. Before obtaining resistivity measurements, the instrument was set up and tested with a 19-ohm test resistor provided by the manufacturer, then tested again through the connecting wires to ensure proper conductivity to the electrodes.

- Four stainless steel electrodes were utilized for measurements and driven to depths of approximately 6 to 8 inches into the surface. Electrodes were configured along a straight line at the following spacings as set forth in the project specifications, which coincide roughly with the depth of measurement: 1.5, 5, 7.5, 10, 15, and 20 feet.
- Ground resistance measurements were obtained utilizing a portable field resistivity meter manufactured by L and R Instruments, Inc. (i.e., Super MiniRes Earth Resistivity and IP Instrument). The instrument utilizes rugged, solid-state components for all transmitter and receiver functions. A key characteristic of the instrument is the receiver architecture, which relies upon a "synchronous" detection method, allowing stable readings to be taken in relatively noisy environments. The Super MiniRes transmits at up to 10 milliamps.
- Utilizing the Super MiniRes, an electrical current (I) on the order of 10 milliamps peak amplitude was impressed between the two outer "current" electrodes and the potential (V) measured between the two inner "potential" electrodes. Soil resistance values (R) for each electrode configuration (A-spacing) were obtained by the internal calculation (V/I = R) provided directly by the Super MiniRes.

In accordance with ASTM G 57-20, apparent soil resistivity ( $\rho$ ) values were calculated as follows:

 $ho = 2\pi aR$ , which provides the resistivity of the soil at depth (a). As described above, the depth-of-measurement coincides with electrode spacing for the Wenner 4-Pin Method.

Apparent resistivity values calculated utilizing depth-of-measurement values are reported in units of ohm-cm. These values were subsequently calculated according to the following formula:  $\rho = 191.5(aR)$ .

#### **Discussion of Test Results**

Resistance values (ohms) measured directly in the field and calculated apparent resistivity values (ohmcm) for specified electrode-spacing configurations are presented on Figure 10. Based upon review of insitu electrical resistivity test data and comparison with the drilling logs for geotechnical borings B-1 to B-4, P-1, and P-2, **RKI** offers the following observations:

- Based on our interpretation of resistivity data, we can offer the following apparent correlations between recorded measurements and subsurface soil conditions at the site:
  - According to the geotechnical boring logs, the surface soils at the site (Stratum I) consist predominately of brown fat/lean clay a depth of 20.0 feet. At the designated test stations, moderately low resistivity values were obtained from brown clay soils at a depth of 1.5 feet. These values generally range from 174.4 to 189.3 ohm-m and are indicative of relatively unconsolidated moist surface soil conditions.

- At depths of 5.0 and 7.5 feet, resistivity values generally range from 120.6 to 136.4 ohmcm, indicative of the transition from the upper, relatively unconsolidated surface soils to the more moist and consolidated subsurface soils.
- At depths of 10.0 to 20.0 feet, resistivity values generally range from 99.6 to 118.7 ohmcm, indicative of saturated clay soils. This is consistent with the geotechnical boring logs, which reported shallow groundwater at the project site ranging from 5.0 to 7.0 feet below the ground surface.
- Based on in-situ resistivity testing, it is recommended that the project team considers the range of soil resistivity values for the upper 20-foot depth interval of 100 to 190 ohm-cm. These values fall within the published range of values generally associated with wet to moist, clay soils.
- Generally speaking, resistivity data obtained along the orthogonal array for test station ERT-1 compares favorably and indicates relatively consistent values for all A-spacing measurements to a maximum depth of 20 feet below ground surface. As greater variations are expected with deep measurements, which is inherent to the testing process, potential anisotropy in soil conditions should be considered as part of the electrical design process for the proposed Ocelot Electrical Substation project.

#### **CORROSIVITY POTENTIAL**

The measurable soil properties that indicate the corrosion potential for steel in contact with soil are soil pH, chloride and sulfate ion concentration, and soil electrical resistivity. Corrosion of steel is most likely to occur in environments that have chloride ions, even in low concentrations, very low or very high pH, and/or low resistivity. The following information is being provided for preliminary planning purposes.

The following table presents general guidelines concerning the corrosion potential of a soil as a function of chloride and sulfate ion concentration, pH, and electrical resistivity. Each of the columns on this table should be used independently of the others when evaluating corrosion potential. For instance, it is not necessary to have an electrical resistivity of less than 1,000 ohm-cm and a pH of less than 4.0 to indicate a *Very High* potential for corrosion.

Soil Corrosion Potential					
Electrical Resistivity (Ohm-cm) <sup>(1)</sup>	Chloride Ion Content (ppm)	рН <sup>(2)</sup>	<b>Corrosion Potential</b>		
< 1,000			Very High		
1,000 - 3,000	> 500	<4 or >10	High		
3,000 - 10,000	< 500		Moderate		
> 10,000		>4 or < 10	Mild		

<sup>(1)</sup>After Roberge, 2000 <sup>(2)</sup>After DOE-HDBK-1015/1-93

The potential corrosivity characteristics of the upper subsurface soils within the subject site were screened using a pH test, electrical resistivity test, sulfate and chloride content determination. These tests were

conducted on composite soil samples obtained from the structures' footprint area from an approximate depth of about 2 ft below the existing ground surface elevation. Results are summarized in the following table:

Sample Location	Approximate Depth, (ft)*	Electrical Resistivity (ohm-cm)	рН	Sulfate Content (ppm)	Chloride Content (mg/kg)
В-2	0 to 2	640	8.9	140	323

\*below the ground surface elevations existing at the time of our study

The result of the laboratory tests conducted on the composite soil sample indicate a very high potential for corrosion to buried metals. According to the American Concrete Institute (ACI) document titled "Guide to Durable Concrete" (ACI 201), concrete usually provides protection against rusting of adequately embedded steel because of the highly alkaline environment of the Portland cement paste. The adequacy of that protection is dependent upon the amount of the concrete cover, the quality of the concrete, the details of the construction, and the degree of exposure to chlorides from concrete-making components and external sources.

We recommend that no chloride-containing admixtures be utilized in the concrete mixes for this project. Consideration should also be given to implementing corrosion protection measures for buried metals in direct contact with the soil, such as coating metal structural elements, pipings, and/or fittings.

#### **DEGRADATION OF CONCRETE**

The degradation of concrete is caused by chemical agents in the soil or groundwater that react with concrete to either dissolve the cement paste or precipitate larger compounds which cause cracking and flaking. The concentration of water-soluble sulfates in the soils is a good indicator of the potential for chemical attack of concrete. Sulfate concentrations in soil can be used to evaluate the need for protection of concrete based on the general guidelines shown in the following table.

Sulfate Attack Potential				
Sulfate Ion Concentration, ppm or mg/kg	Aggressiveness <sup>(1)</sup>			
>20,000	Very Severe			
2,000 to 20,000	Severe			
1,000 to 2,000	Moderate			
< 1,000	Negligible			

<sup>(1)</sup>ACI 318-05/ACI 318R-05

Sulfate testing was completed on a sample taken from Boring B-2. The results showed a sulfate content of less than 1,000 ppm. The general guidelines from the above table indicate the soils have a "*Negligible*"

potential for attacking concrete. Based on testing of the measured soil sulfate concentration for the soils at the site, it is our opinion there are no restrictions on the cementitious materials types.

#### SOFT SENSITIVE SOILS

Site grading may potentially expose soft, wet, sensitive fine-grained soils that require a special grading approach to establish a stable subgrade. When these sensitive soils are encountered, the geotechnical engineer should be contacted to observe the exposed subgrade. Proof-rolling and moisture conditioning of exposed subgrades may be waived if, in the opinion of the geotechnical engineer, it could result in disturbance to an otherwise stable subgrade. When these sensitive soils are encountered, we recommend excavating the subgrade areas using a trackhoe equipped with a toothless bucket working above the proposed subgrade. **Grading/construction equipment or foot traffic should be prohibited from trafficking on the potentially sensitive subgrade.** If the exposed subgrade is found to be overly soft, the subgrade can be improved by placing an 18-inch thick layer of compacted, crushed rock to provide a stable working platform.

For the crushed rock working platform, the initial lift of backfill should consist of an 18-inch thick loose lift of 2-inch-minus crushed rock. This procedure may be further enhanced by placing a geogrid on the subgrade before placing the crushed rock, provided that the geogrid will not interfere with foundation or utility construction. The crushed rock should be pushed into the excavation with the equipment working on top of the rock platform. After this initial layer is placed, the crushed rock should be thoroughly surface-compacted with a self-propelled vibratory roller. Subsequent lifts of finer-gradation crushed rock or select structural fill can be placed conventionally. As an alternative, consideration can be given to pushing "bull rock" into the soft subgrade until subgrade yielding stops; however, this approach may be restricted in areas that will not interfere with foundation or utility construction. Furthermore, deep soil mixing or other ground improvements may be used to improve the exposed subgrades.

#### **EXPANSIVE, SOIL-RELATED MOVEMENTS**

The anticipated ground movements due to swelling of the underlying soils at this site were estimated for slab-on-grade construction using the empirical procedure, Texas Department of Transportation (TxDOT) Tex-124-E, Method for Determining the Potential Vertical Rise (PVR). PVR values on the order of 2 inches were estimated for the stratigraphic conditions encountered in the borings. The PVR values were estimated using a surcharge load of 1 pound per square inch (psi) for the concrete slab and dry moisture conditions within the regional zone of seasonal moisture variation (estimated active zone of 8 ft).

The TxDOT method of estimating expansive, soil-related movements is based on empirical correlations utilizing the measured plasticity indices and assuming typical seasonal fluctuations in moisture content. If desired, other methods of estimating expansive, soil-related movements are available, such as estimations based on swell tests and/or soil-suction analyses. However, the performance of these tests and the detailed analysis of expansive, soil-related movements were beyond the scope of the current study. It should also be noted that actual movements can exceed the estimated PVR values due to isolated changes in moisture content (such as due to leaks, landscape watering....) or if water seeps into the soils to greater depths than the assumed active zone depth due to deep trenching or excavations.

#### **PVR REDUCTION RECOMMENDATIONS**

As previously mentioned, for purposes of this geotechnical engineering report, the FGE of the proposed structures were assumed to be about 12 inches (1 ft) above the ground surface elevation existing at the time of our study, since no site grading information was provided to us at the time of the preparation of this report.

To reduce expansive, soil-related movements in at-grade construction beneath the structures' footprint areas to about 1 inch, we recommend to remove the upper 2 ft (24 inches) of the existing subgrade soils, and to replace them with properly-compacted, suitable, select fill materials within the proposed structures' footprint areas up to their FGE, which was assumed to be about 12 inches (1 ft) above the ground surface elevation existing at the time of our study (i.e. total of about 36 inches [3 ft] of select fill placement).

Further, if the foundation systems to support the proposed structures are planned to be founded at a lower or same elevation that the recommended overexcavation elevation, then the ground improvement to reduce expansive, soil-related movements in at-grade construction to about 1 inch may be omitted. Keep in mind that the estimated PVR values are computed based on the recommendations for the selection and placement of suitable, select fill materials which are addressed in the Foundation Construction Considerations section of the report.

#### **Drainage Considerations**

When overexcavation and select fill replacement is selected as a method to reduce the potential for expansive, soil-related movements at any site, considerations of surface and subsurface drainage may be crucial to construction and adequate foundation performance of the soil-supported structures. Filling excavations in relatively impervious clay soils with relatively pervious select fill material creates a "bathtub" beneath the structures, which can result in ponding or trapped water within the fill unless good surface and subsurface drainage is provided.

Water entering the fill surface during construction or entering the fill exposed beyond the building lines after construction may create problems with fill moisture control during compaction and increased access for moisture to the underlying expansive clays both during and after construction.

Several surface and subsurface drainage design features and construction precautions can be used to limit problems associated with fill moisture. These features and precautions may include, but are not limited to, the following:

- Installing berms or swales on the uphill side of the construction areas to divert surface runoff away from the excavation/fill areas during construction;
- Sloping of the top of the subgrade with a minimum downward slope of 1.5 percent out to the base of a dewatering trench located beyond the structures' perimeters;
- Sloping the surface of the fill during construction to promote runoff of rain water to drainage features until the final lift is placed;

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- Sloping of a final, well-maintained, impervious clay or pavement surface (downward away from the proposed structures) over the select fill material and any perimeter drain extending beyond the building lines, with a minimum gradient of 6 in. in 5 ft;
- Constructing final surface drainage patterns to prevent ponding and limit surface water infiltration at and around the structures' perimeters;
- Locating the water-bearing utilities, roof drainage outlets, and irrigation spray heads outside of the select fill and perimeter drain boundaries; and
- Raising the elevation of the ground level floor slabs.

Details relative to the extent and implementation of these considerations must be evaluated on a project-specific basis by all members of the project design team. Many variables that influence fill drainage considerations may depend on factors that are not fully developed in the early stages of design. For this reason, drainage of the fill should be given consideration at the earliest possible stages of the project.

#### SHALLOW FOUNDATION

The proposed structures may be founded on conventional spread and/or continuous footing foundations in conjunction with a fill-supported, interior concrete floor slab provided that the shallow foundation type can be designed to withstand the anticipated soil-related movements (see the *Expansive Soil-Related Movements* section of this report) and the estimated foundations loads without impairing either the structural or the operational performance of the proposed structures.

#### Allowable Soil-Bearing Capacity

Shallow foundations bearing on properly-compacted, suitable, select fill materials following the correct implementation of the ground improvement presented in the subsection titled *PVR Reduction Recommendations* presented in the *Expansive, Soil Related Movements* section of this report may be proportioned using the design parameters tabulated on the following table.

Minimum depth below FGE:	24 in.
Minimum beam width:	12 in.
Maximum allowable soil-bearing pressure for continuous footings – grade beams:	1,500 psf
Maximum allowable soil-bearing pressure for spread footings – widened beams:	1,800 psf
	=,= = = = = = = =

#### **Shallow Foundation Design Parameters**

Where psf = pounds per square feet

The maximum allowable soil-bearing pressures presented previously will provide a factor of safety of about 3 provided that the subgrade is prepared in accordance with the recommendations outlined in the *Site Preparation* subsection of the *Foundation Construction Considerations* section of this report, and that the ground improvement procedure included in the *PVR Reduction Recommendations* subsection of the

#### **R A B A** K I S T N E R

*Expansive Soil-Related Movements* section of this report is correctly implemented within the building footprint. Provided that the site improvement procedure recommended in this report is properly implemented, then it is anticipated that total settlements will be in the order of about 1 inch. Differential settlements typically are estimated to be about one-half the total estimated settlement for most subsurface conditions

Furthermore, the design parameters presented on the previous table are contingent upon the fill materials being selected and placed in accordance with the recommendations presented in the *Select Fill* subsection of the *Foundation Construction Considerations* section of this report. Should select fill selection and placement differ from the recommendations presented herein, **RKI** should be informed of the deviations in order to reevaluate our recommendations and design criteria.

#### Wire Reinforcement Institute (WRI) Criteria

Beam and slab-on-fill foundations are sometimes designed using criteria developed by the WRI. On the basis of the subsurface stratigraphy encountered, a general effective plasticity index for the proposed structures' foundations of 30 percent and a climatic rating ( $C_w$ ) of 15 should be utilized for the design of the proposed structures' foundations.

#### MAT FOUNDATIONS

On the basis of the subsurface conditions encountered at the time of our field drilling activities, our field and laboratory testing, and our engineering analyses, the recommended maximum allowable soil-bearing pressure for the proposed structures is as shown on the following table:

Structure	Approximate Bearing Depth *	Maximum Allowable Soil- Bearing Pressure, psf	
Electrical Grid Structures	2 ft	1,500	

\* below the ground surface elevations existing at the time of our study.

The maximum allowable soil-bearing pressure presented previously will provide a factor of safety of 3 with respect to the measured soil shear strength.

#### **Considerations for Shallow Foundation Excavations**

Shallow foundation excavations should be observed by the Geotechnical Engineer or their representative prior to placement of reinforcing steel and concrete. This is necessary to document that the bearing soils at the bottom of the excavations are similar to those encountered in the borings and that excessive soft materials and water are not present in the excavations. If soft or yielding soils are encountered in the foundation excavations, they should be removed and replaced with a compacted non-expansive fill material or lean concrete up to the design foundation bearing elevation.

Disturbance from foot traffic and from the accumulation of excess water can result in losses in bearing capacity and increased settlement. If inclement weather is anticipated at the time construction,
consideration should be given to protecting the bottoms of beam trenches by placing a thin mud mat (layer of flowable fill or lean concrete) at the bottom of trenches immediately following excavation. This will reduce disturbance from foot traffic and will impede the infiltration of surface water. All necessary precautions should be implemented to protect open excavations from the accumulation of surface water runoff and rain.

#### AREA FLATWORK

It should be noted that ground-supported flatwork such as walkways, driveways, courtyards, sidewalks, etc., will be subject to the same magnitude of potential soil-related movements as discussed previously (see *Expansive, Soil-Related Movements* subsection of the *Foundation Analyses* section of this report) for this site. Thus, where these types of elements abut rigid building foundations or isolated structures, differential movements should be anticipated. As a minimum, we recommend that flexible joints be provided where such elements abut the main structures to allow for differential movement at these locations. Where the potential for differential movement is objectionable, it may be beneficial to consider methods of reducing anticipated movements to match the adjacent structures' performance.

#### **DRILLED, STRAIGHT-SHAFT PIERS**

Drilled, straight-shaft piers may also be considered to support the proposed structures. We recommend extending the piers to a minimum depth of 12 ft below the ground surface elevation existing at the time of our study or below final grade, whichever is greater. The piers may be designed as both end bearing units and as friction units utilizing the maximum allowable end-bearing pressures and the allowable side shear resistance values tabulated in the following tables.

Approximate Depth Range (ft) *	Maximum Allowable End-Bearing Pressure (ksf)
12 to 29	1.50
30 to 49	4.50
50 to 60	6.25
*below the ground surface elevations existing a	t the time of our study.
Approximate Depth Range (ft) *	Allowable Side Shear Resistance (ksf)
0 to 10	Neglect
10 to 15	0.25
15 to 30	0.35
30 to 60	0.45

\*below the ground surface elevations existing at the time of our study.

The side shear resistance values presented above should be used for the portion of the shaft extending below a depth of 10 ft. To proportion the drilled piers for axial compression, the side shear resistance

should be neglected along the portion of the shaft located one shaft diameter from the bottom of the pier. The allowable values for end bearing and side shear resistance were evaluated using factors of safety of 3 and 2, respectively. Based on the 70-ft maximum depth of exploration, pier depths should not exceed a depth of 60 ft below the ground surface elevations existing at the time of our study.

Due to the presence of groundwater, the use of slurry drilling techniques and/or temporary casing should be anticipated for the construction of the drilled piers. Consequently, slightly deeper piers may be required to accommodate for the casing procedures.

#### **Expansive Soil Uplift on Pier Shafts**

The pier shafts will be subjected to potential uplift forces if the surrounding expansive soils within the active zone are subjected to alternate drying and wetting conditions. The maximum potential uplift force acting on the shafts may be estimated by:

Where:  $F_u$  = uplift force in kips; and D = diameter of the shaft in feet.

It is recommended that the pier shafts be a minimum of 24 inches in diameter to facilitate reinforcing steel placement and shaft observation prior to placing concrete.

#### Allowable Uplift Resistance

Resistance to uplift forces exerted on the drilled piers will be provided by the sustained compressive axial force (dead load) plus the allowable uplift resistance provided by the soil. The resistance provided by the soil depends on the bearing capacity of the soils located above the pier shaft and below the active zone. The allowable uplift resistance values provided by the soils at this site are tabulated on the following table. These values were evaluated using a factor of safety of 2.

Approximate Depth Range (ft) *	Allowable Uplift Resistance (ksf)
0 to 10	Neglect
10 to 15	0.15
15 to 30	0.20
30 to 60	0.30

\*below the ground surface elevations existing at the time of our study.

Reinforcing steel will be required in each pier shaft to withstand a net force equal to the uplift force minus the uplift resistive force and the sustained compressive load carried by the pier. We recommend that each

pier be reinforced to withstand this net force or an amount equal to 1 percent of the cross-sectional area of the shaft, whichever is greater. Splices in vertical reinforcement should be staggered.

#### PIER SPACING

Where possible, we recommend that the drilled, straight-shaft piers be spaced at a distance of at least one shaft diameters on-center. Such spacing will not require a reduction in the load carrying capacity of the individual piers.

If design and/or construction restraints require that piers be spaced closer than the above recommended spacing, **RKI** must be retained to re-evaluate the allowable bearing capacity presented above for the individual piers. Reductions in load-carrying capacities may be required depending upon individual loading and spacing conditions.

#### LATERAL RESISTANCE

Resistance to lateral loads and the expected pier behavior under the applied loading conditions will depend not only on subsurface conditions, but also on loading conditions, the pier size, and the engineering properties of the pier. The pier should be analyzed to determine the resulting lateral deflections, maximum bending moments, and ultimate bending moments. This type of analysis is typically performed utilizing a computer analysis program and usually requires a trial and error procedure to appropriately size the pier and meet project tolerances.

To assist the structural engineer in this procedure, we are providing the following subsurface parameters for use in analysis. These parameters are in accordance with the input requirements of one of the more commonly used computer programs for laterally-loaded piles, the "L-Pile Plus" program. If a different program is used for analysis, different parameters may be required and different limitations may be required than what was assumed in selecting the parameters given in the following table. Thus, if a program other than "L-Pile Plus" is used, **RKI** must be notified of the analysis method and the required soil parameters, so that we can review and revise our recommendations, if required. The soil-related parameters required for input into the "L-Pile Plus" program are summarized in the following table:

Soil Type	Approximate Depth Range (ft) *	c, tsf	φ (°)	ε <sub>50</sub>	k <sub>s</sub> , (pci)	k <sub>c</sub> , (pci)	γ, (pcf)
Clay Soils (Above the Groundwater Table)	0 to 5	0.3	-	0.010	100		100
Clay Soils (Below the Groundwater Table)	5 to 15	0.5	-	0.007	100	-	47
Clay Soils (Below the Groundwater Table)	15 to 30	0.8	-	0.005	500	200	52
Clay Soils (Below the Groundwater Table)	30 to 60	0.9	-	0.005	500	200	52

\* Below the ground surface elevation existing at the time of our study.

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Where:

c = undrained shear strength  $\phi$  = angle of internal friction  $\epsilon_{50}$ = strain at 50 percent  $k_s$  = horizontal modulus of subgrade reaction (static)  $k_c$  = horizontal modulus of subgrade reaction (cyclic)  $\gamma$  = density (effective unit weight)

The values presented in the previous tables for subgrade modulus and the strain at 50% are based on recommended values for the "L-Pile Plus" computer program for the strength of the subsurface conditions encountered in the borings, and are not necessarily based on laboratory test results.

The parameters presented in the previous tables <u>do not</u> include factors of safety. Consequently, it is recommended that a factor of safety of at least 2 be introduced to the analysis by doubling the applied lateral loads and moments.

#### **CONSIDERATIONS FOR DRILLED PIERS**

Drilled pier excavations must be examined by an **RKI** representative who is familiar with the geotechnical aspects of the subsurface stratigraphy, the structural configuration, foundation design details, and assumptions prior to placing concrete. This is to observe that:

- The shaft has been excavated to the specified dimensions at the correct depth established by the previously mentioned criteria;
- The shaft has been drilled plumb within specified tolerances along its total length; and
- Excessive cuttings, buildup and soft, compressible materials have been removed from the bottom of the excavation.

Drilled pier excavation observations should be scheduled with the Geotechnical Engineer a minimum of 48 hours prior to pier drilling. Failure to do so will be the responsibility of the General Contractor.

#### **REINFORCEMENT AND CONCRETE PLACEMENT**

Reinforcing steel should be checked for size and placement prior to concrete placement. Placement of concrete should be accomplished as soon as possible after excavation to reduce changes in the moisture content or the state of stress of the foundation materials. Concrete should not be placed in the pier excavations without the approval of the Engineer. No foundation element should be left open overnight without concreting.

#### **TEMPORARY CASING**

Groundwater was observed in Borings B-1 through B-6 at depths of about 5 ft to 7 ft below the ground surface elevations existing at the time of our study. Groundwater seepage and/or side sloughing will be

encountered at the time of construction, depending on climatic conditions prevalent at the time of construction. Therefore, we recommend that the bid documents require the foundation contractor to specify unit costs for different lengths of casing and/or slurry drilling techniques which will be required.

#### **GRADE BEAMS**

For the structures being considered, we recommend that the grade beams interconnecting the piers be ground-supported on properly-compacted, suitable select fill materials, but designed to span the piers.

#### **FLOOR SLABS**

For the structures being considered, the floor slabs may be ground supported on properly-compacted, suitable, select fill materials, provided that the anticipated movements discussed under the *Expansive Soil-Related Movements* section of this report will not impair the performance of the floor, frame, or roof systems.

#### FOUNDATION CONSTRUCTION CONSIDERATIONS

#### SITE DRAINAGE

Drainage is an important key to the successful performance of any foundation. Good surface drainage should be established prior to and maintained after construction to help prevent water from ponding within or adjacent to the structures' foundations and to facilitate rapid drainage away from the structures' foundations. Failure to provide positive drainage away from the structures can result in localized differential vertical movements in soil the supported foundation and floor slabs.

Current ordinances, in compliance with the Americans with Disabilities Act (ADA), may dictate maximum slopes for walks and drives around and into new building. These slope requirements can result in drainage problems for the ground-supported building. We recommend that, on all sides of the proposed structures foundation, the maximum permissible slope be provided away from the proposed structures. Also to help control drainage in the vicinity of the structures, we recommend that roof/gutter downspouts and landscaping irrigation systems not be located adjacent to the structures' foundations. Where a select fill overbuild is provided outside of the floor slab/foundation footprints, the surface should be sealed with an impermeable layer (pavement or clay cap) to reduce infiltration of both irrigation and surface waters.

Materials used as fill material for the construction of the clay cap should consist of clay soils. All material used in the clay cap must be free of roots, vegetation, and other organic or degradable materials. The following soils, as classified according to the USCS, are preferred for use as clay cap: CL and CH. In addition to the USCS classification, clay cap soils shall have a minimum liquid limit of 30 percent, with plasticity indices ranging from 20 to 35 percent, and a minimum amount passing a No. 200 sieve of 85 percent.

Careful consideration should also be given to the location of water bearing utilities, as well as to provisions for drainage in the event of leaks in water bearing utilities. All leaks should be immediately repaired.

Other drainage and subsurface drainage issues are discussed in the *Expansive Soil-Related Movements* section of this report.

#### **SITE PREPARATION**

The structures' areas and all areas to support select fill should be stripped of all vegetation and/or organic topsoil (down to a minimum depth of 8 inches), and extending a minimum of 5 ft beyond the structure's footprint area. Further, we recommend that the ground improvement procedure presented in the *PVR Reduction Recommendations* section of this report be implemented in order to reduce expansive, soil-related movements in at-grade construction to about 1 inch.

Exposed subgrades should be thoroughly proofrolled in order to locate and densify any weak, compressible zones. A minimum of 5 passes of a fully-loaded dump truck or a similar heavily-loaded piece of construction equipment should be used for planning purposes. Proofrolling operations should be observed by the Geotechnical Engineer or their representative to document subgrade conditions and preparation. Weak or soft areas identified during proofrolling activities should be treated with hydrated lime or Portland cement or removed and replaced with suitable, compacted select fill in accordance with the recommendations presented under the *Select Fill* subsection of this section of the report. If the treatment option is selected, the weak or soft areas may be mixed with hydrated lime or Portland cement down to a minimum depth of 8 inches in order to aid in drying the soils and develop a firm working surface. Proofrolling operations and any excavation/backfill activities should be observed by **RKI** representatives to document subgrade preparation.

Upon completion of the proofrolling operations and just prior to fill placement, the exposed subgrades should be moisture-conditioned by scarifying to a minimum depth of 8 in. and recompacting to a minimum of 98 percent of the maximum dry density as determined from the American Society for Testing and Materials (ASTM) D698, Compaction Test. The moisture content of the subgrades should be maintained within the optimum moisture content to three percentage points above the optimum moisture content until permanently covered.

#### SELECT FILL

Materials used as select fill for final site grading preferably should be crushed stone or gravel aggregate. We recommend that materials specified for use as select fill meet the TxDOT 2014 Standard Specification for Construction and Maintenance of Highways, Streets, and Bridges, Item 247, Flexible Base, Type A through Type E, Grades 1, 2, 3, and 5.

Alternatively, the following soils, as classified according to the USCS, may be considered satisfactory for use as select fill materials at this site: SC, GC, CL, and combinations of these soils. In addition to the USCS classification, alternative select fill materials shall have a maximum liquid limit of 40 percent, a plasticity index between 7 and 18 percent, and a maximum particle size not exceeding 4 inches or one-half the loose

lift thickness, whichever is smaller. In addition, if these materials are utilized, grain size analyses and Atterberg Limits must be performed during placement at a minimum rate of one test each per 5,000 cubic yards of material due to the high degree of variability associated with pit-run materials.

Soils classified as CH, MH, ML, SM, GM, OH, OL, and Pt under the USCS and not meeting the alternative select fill material requirements, are **not** considered suitable for use as select fill materials at this site.

Select fill should be placed in loose lifts **not** exceeding 8 in. in thickness and compacted to at least 98 percent of the maximum dry density as determined by ASTM D698. The moisture content of the fill should be maintained within the range of two percentage points below the optimum moisture content to two percentage points above the optimum moisture content until the final lift of fill is permanently covered.

The select fill should be properly compacted in accordance with these recommendations and tested by **RKI** personnel for compaction as specified.

#### **GENERAL FILL**

Areas requiring fill that do not have requirements for reducing the expansive, soil-related movements, such as green spaces and general areas, can utilize on-site soils. These materials should have maximum particle sizes of 4 inches and placed in loose lifts not exceeding 8 inches in thickness and compacted to at least 95 percent of maximum density as determined by ASTM D698. The moisture content of the fill should be maintained within the range of 2 percentage points below to 2 percentage points above the optimum moisture content until final compaction.

#### **EXCAVATION SLOPING AND BENCHING**

Excavations that extend to or below a depth of 5 ft below construction grade shall require the General Contractor to develop a trench safety plan to protect personnel entering the trench or trench vicinity. The collection of specific geotechnical data and the development of such a plan, which could include designs for sloping and benching or various types of temporary shoring, is beyond the scope of the current study. Any such designs and safety plans shall be developed in accordance with current Occupational Safety and Health Administration (OSHA) guidelines and other applicable industry standards.

#### **EXCAVATION EQUIPMENT**

The boring logs are not intended for use in determining construction means and methods and may therefore be misleading if used for that purpose. We recommend that earthwork and utility contractors interested in bidding on the work perform their own tests in the form of test pits and/or test piers determine the quantities of the different materials to be excavated, as well as the preferred excavation methods and equipment for this site.

#### WET WEATHER CONDITIONS

Earthwork contractors should be made aware of the moisture sensitivity of the near surface soils and potential compaction difficulties. If construction is undertaken during wet weather conditions, the surficial soils may become saturated, soft, and unworkable. Drainage trenches within the soils to be excavated, reworked and/or recompacted may be required. Additionally, subgrade stabilization techniques, such as chemical (cement, flyash or hydrated lime) treatment, may be required to provide a more weather-resistant working surface during pad construction. Therefore, we recommend that consideration be given to construction during the dryer months. Alternatively, the contractor should protect all exposed areas once topsoil has been stripped, as well as provide positive drainage during earthwork operations.

#### **UTILITIES**

Utilities which project through slab-on-grade, slab-on-fill, "floating" floor slabs, or any other rigid unit should be designed with either some degree of flexibility or with sleeves. Such design features will help reduce the risk of damage to the utility lines as vertical movements occur.

Our experience indicates that significant settlement of backfill can occur in utility trenches, particularly when trenches are deep, when backfill materials are placed in thick lifts with insufficient compaction, and when water can access and infiltrate the trench backfill materials. The potential for water to access the backfill is increased where water can infiltrate flexible base materials due to insufficient penetration of curbs, and at sites where geological features can influence water migration into utility trenches. It is our belief that another factor which can significantly impact settlement is the migration of fines within the backfill into the open voids in the underlying free-draining bedding material.

To reduce the potential for settlement in utility trenches, we recommend that consideration be given to the following:

- Backfill materials should be placed and compacted in controlled lifts appropriate for the type of backfill and the type of compaction equipment being utilized and backfilling procedures should be tested and documented.
- Consideration should be given to wrapping free-draining bedding gravels with a geotextile fabric (similar to Mirafi 140N or CONTECH C-Drain Geocomposite) to reduce the infiltration and loss of fines from backfill material into the interstitial voids in bedding materials.
- Locating the water-bearing utilities, roof drainage outlets and irrigation spray heads outside of the select fill and perimeter drain boundaries.

#### PAVEMENT RECOMMENDATIONS

Recommendations for both flexible and rigid pavements for a 20-year design period are presented in this report. The CLIENT may select either pavement type depending on the performance criteria established for the proposed project. In general, flexible pavement systems have a lower initial construction cost as compared to rigid pavements. However, maintenance requirements over the life of the pavement are typically much greater for flexible pavements. This typically requires regularly

scheduled observation and repair, as well as overlays and/or other pavement rehabilitation at approximately one-half to two-thirds of the design life. Rigid pavements are generally more "forgiving", and therefore tend to be more durable and require less maintenance after construction.

For either pavement type, drainage conditions will have a significant impact on long-term performance, particularly where permeable base materials are utilized in the pavement section. Drainage considerations are discussed in more detail in a subsequent section of this report.

#### **SWELL/HEAVE POTENTIAL**

It should be understood that pavement sections in expansive soil environments can develop longitudinal cracking along unprotected pavement edges. In the semi-arid climate of the project site, this condition typically occurs along the unprotected edges of pavements where the adjoining grounds are not developed.

The longitudinal cracking generally occurs between 2 to 4 feet inside of and parallel to the unprotected edges of the pavement. The occurrence of these cracks can be more prevalent in the absence of lateral restraint and embankments. Differential drying and shrinkage of the highly expansive soil subgrade between the exposed pavement edge and that beneath the pavement section commonly causes the cracking. This problem can best be addressed by providing either a horizontal or vertical moisture barrier at the unprotected pavement edge.

A horizontal barrier is commonly in the form of a paved shoulder extending 8 feet or greater beyond the edge of the pavement. Other methods of shoulder treatment, such as using geofabrics beyond the edge of the roadway, are sometimes used in an effort to help reduce longitudinal cracking. Although this alternative does not eliminate the longitudinal cracking phenomenon, the location of the cracking is transferred to the shoulder rather than within the traffic lane.

Vertical barriers installed along the unprotected edges of pavements are also effective in preventing nonuniform drying and shrinkage of the subgrade soils. These barriers are typically in the form of a vertical moisture barrier/membrane extending a minimum of 6 feet below the top of the subgrade at the pavement edge. Both types of barriers must be sealed at the edge of the pavement to prevent a crack that would facilitate the drying of the subgrade soils.

A more economical alternative, which will not limit the shrinkage of the underlying subgrade soils but may help reduce the occurrence of longitudinal cracking, is the use of a geogrid base reinforcement in the pavement section. Geogrid gives the pavement section a tensile strength component that is not otherwise inherent in a typical flexible base pavement section. Another consideration is to treat the subgrade soil with lime.

#### **SUBGRADE CONDITIONS**

A single generalized subgrade condition has been assumed for this site. The predominant subgrade soils used in developing the pavement sections for this project are the plastic, clay soils. On the basis of our past experience with similar subsurface conditions in this area, a design California Bearing Ratio (CBR)

value of 2 was assigned to evaluate the pavement components. This design CBR value assumes that the subgrade soils will be prepared in accordance with the recommendations stated in the *Subgrade Preparation* subsection of the *Pavement Construction Guidelines* section of this report.

#### LIME TREATMENT OF SUBGRADE

In general, the subgrade soils at this site are plastic in nature and can be difficult to work with, particularly during periods of inclement weather. The performance of the subgrade soils may be improved by treating the upper 8 inches with hydrated lime. A sufficient quantity of hydrated lime should be mixed with the subgrade soils to decrease the plasticity index of the soil-lime mixture to 18 percent or less and to increase the pH of the soil-lime mixture to at least 12.4. For estimating purposes, we recommend that a minimum of 3 percent lime by weight be considered for lime treatment. For construction purposes, we recommend that the percent of hydrated lime treatment be determined by appropriate laboratory testing at the time of construction.

Based on a recently reported adverse reaction to lime addition in certain sulfate-containing soils, it is strongly recommended to perform additional laboratory testing to determine the concentration of soluble sulfates in the subgrade soils. The adverse reaction, referred to as sulfate-induced heave, has been known to cause cohesive subgrade soils to swell in short periods of time, resulting in pavement heaving and possible failure.

#### **DESIGN INFORMATION**

The following recommendations for the pavement sections are based on our past experience with similar subgrade soils; assumed traffic loadings; an assumed CBR value for the subgrade soils; and design procedures by the American Association of State Highway and Transportation Officials (AASHTO). The pavement design and analyses performed are based directly on the 1993 and 1997 editions of the "Guide for the Design of Pavement Structure" by AASHTO.

The pavement systems for the proposed electrical substation can be divided into two general areas, each with different loading conditions and performance criteria. These areas are:

- Automobile drives and parking lots (light vehicular traffic); and
- Truck driveways and drive-in lanes (heavy vehicular traffic).

For a 20-year design period, Equivalent Single Axle Loads (ESAL's) were estimated for an assumed traffic loading of 1 tractor-trailer truck per day for the light duty traffic areas. This corresponds to about 17,500 ESAL's. For the heavy duty traffic areas, ESAL's were assumed to be a traffic loading of 5 tractor-trailer trucks per day. This corresponds to about 87,000 ESAL's. It is recommended that the project Civil Engineer review the above mentioned assumed level of traffic and design period to ensure that they are appropriate for the intended use of the proposed electrical substation.

#### **FLEXIBLE PAVEMENTS**

The following flexible pavement sections are available for this site, and other sections may be considered upon request:

Pavement Area	Option	LTS (in.)	FBM (in.)	CLS (in.)	HMAC (in.)
Light Vehicular Traffic Areas	I	8	8		2
	I	12	10		2
Heavy Vehicular Traffic Areas	Ш	12		14	

Where:

LTS = Lime-Treated Subgrade FBM = Flexible Base Material

CLS = Crushed Limestone Base Material

HMAC = Hot-Mix Asphaltic Concrete Surface Course

#### **RIGID PAVEMENTS**

The following rigid pavement section is available for this site:

Pavement Area	Lime-Treated Subgrade (in.)	Reinforced Concrete (in.)
Light Vehicular Traffic Areas	8	5-1/2
Heavy Vehicular Traffic Areas	12	6

It is recommended that the concrete pavements be reinforced with reinforcing steel bars. As a minimum, the reinforcing bars should be No. 3 reinforcing bars spaced at about 15 in. on center in both directions (depending upon slab dimensions). The concrete reinforcing should be placed approximately 1/3 the slab thickness below the surface, but not less than 2 in. The reinforcing steel should not extend across construction or expansion joints.

Joints in concrete pavements aid in the construction and control the location and magnitude of cracks. Where practical, lay out the construction, expansion, control, and sawed joints to form square panels, but not to exceed American Concrete Institute (ACI) 302.69 Code recommendations. The ratio of slab length-to-width should not exceed 1.25. Recommended joint spacings are 15 ft longitudinal and 15 ft transverse.

All control joints should be formed or sawed to a depth of at least 1/4 the thickness of the concrete slab. Sawing of control joints should begin as soon as the concrete will not ravel, generally the day after placement. Control joints may be hand formed or formed by using a premolded fill. We recommend that all longitudinal and transverse construction joints be dowelled to promote load transfer.

#### RABAKISTNER

If possible, the pavement should develop a minimum slope of 0.015 ft/ft to provide surface drainage. Reinforced concrete pavement should cure a minimum of 7 days before allowing any traffic.

#### PAVEMENT CONSTRUCTION CONSIDERATIONS

#### SUBGRADE PREPARATION

Areas to support pavements should be stripped of all vegetation and/or organic topsoil down to a minimum depth of 8 inches and extend a minimum of 2 ft beyond the pavement perimeters. Upon completion of site stripping activities, the exposed subgrade should be thoroughly proofrolled in accordance with the *Site Preparation* subsection recommendations provided in the *Foundation Construction Considerations* section of this report. Likewise, upon completion of the proofrolling activities and just prior to select fill placement, the exposed subgrade should be scarified and recompacted as recommended in such subsection.

#### PAVEMENT DRAINAGE CONSIDERATIONS

As with any soil-supported structure, the satisfactory performance of a pavement system is contingent on the provision of adequate surface and subsurface drainage. Insufficient drainage which allows saturation of the pavement subgrade and/or the supporting granular pavement materials will greatly reduce the performance and service life of the pavement systems.

Surface and subsurface drainage considerations crucial to the performance of pavements at this site include (but are not limited to) the following:

- 1) Any known natural or man-made subsurface seepage at the site which may occur at sufficiently shallow depths as to influence moisture contents within the subgrade should be intercepted by drainage ditches or below grade French drains.
- 2) Final site grading should eliminate isolated depressions adjacent to curbs which may allow surface water to pond and infiltrate into the underlying soils. Curbs should completely penetrate flexible base materials and should be installed to sufficient depth to reduce infiltration of water beneath the curbs.
- 3) Pavement surfaces should be maintained to help reduce surface ponding and to provide rapid sealing of any developing cracks. These measures will help reduce infiltration of surface water downward through the pavement section.

#### **ON-SITE SOILS**

The pavement recommendations presented in this report were prepared assuming that on-site soils will be used for site grading in the proposed pavement areas. If used, we recommend that on-site soils be placed in loose lifts not exceeding 8 in. in thickness and compacted to a minimum of 98 percent of the maximum dry density as determined from ASTM D698. The moisture content of the subgrade should be maintained within the range of two percentage points below the optimum moisture content to two percentage points above the optimum moisture content until permanently covered. We recommend that on-site sand fill

materials be free of roots, vegetation, and/or other organic or degradable material. We also recommend that the maximum particle size not exceed 4 in. or one half the lift thickness, whichever is smaller.

#### SELECT FILL

If implemented, select fill materials utilized for achieving finished subgrade elevations in pavement areas should be in accordance with the *Select Fill* subsection recommendations provided in the *Foundation Construction Considerations* section of this report.

#### LIME TREATMENT OF SUBGRADE

Lime treatment of the subgrade soils should be in accordance with the TxDOT 2014 Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, Item 260, Lime Treatment (Road Mixed). Lime-treated subgrade soils should be compacted to a minimum of 95 percent of the maximum dry density at a moisture content within the range of optimum moisture content to three percentage points above the optimum moisture content as determined by ASTM D1557.

#### FLEXIBLE BASE COURSE

The flexible base course should consist of material conforming to TxDOT 2014 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, Item 247, Flexible Base, Type A through Type E, Grades 1, 2, 3, and 5.

The flexible base course should be placed in lifts with a maximum compacted thickness of 8 in. and compacted to a minimum of 95 percent of the maximum dry density as determined by ASTM D1557. The moisture content of the base course materials should be maintained within the range of three percentage points below the optimum moisture content to three percentage points above the optimum moisture content until permanently covered.

#### **CRUSHED LIMESTONE BASE COURSE**

The crushed limestone base course should consist of material conforming to TxDOT 2014 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, Item 247, Flexible Base, Type A, Grade 1.

The crushed limestone base course should be placed in lifts with a maximum compacted thickness of 8 in. and compacted to a minimum of 95 percent of the maximum dry density as determined by ASTM D1557. The moisture content of the crushed limestone base course materials should be maintained within the range of three percentage points below the optimum moisture content to three percentage points above the optimum moisture content until permanently covered.

#### ASPHALTIC CONCRETE SURFACE COURSE

The asphaltic concrete surface course should conform to TxDOT 2014 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, Item 341, Dense-Graded Hot-Mix

Asphalt, Type D. The asphaltic concrete should be compacted to a minimum of 92 percent of the maximum theoretical specific gravity (Rice) of the mixture determined according to Test Method Tex-227-F. Pavement specimens, which shall be either cores or sections of asphaltic pavement, will be tested according to Test Method Tex-207-F. The nuclear-density gauge or other methods which correlate satisfactorily with results obtained from project roadway specimens may be used when approved by the Engineer. Unless otherwise shown on the plans, the Contractor shall be responsible for obtaining the required roadway specimens at their expense and in a manner and at locations selected by the Engineer.

#### PORTLAND CEMENT CONCRETE

The Portland cement concrete pavement should be air entrained to result in a 4 percent plus/minus 1 percent air, should have a maximum slump of 5 inches, and should have a minimum 28-day compressive strength of 3,500 psi. A liquid membrane-forming curing compound should be applied as soon as practical after broom finishing the concrete surface. The curing compound will help reduce the loss of water from the concrete. The reduction in the rapid loss in water will help reduce shrinkage cracking of the concrete.

#### **MISCELLANEOUS PAVEMENT RELATED CONSIDERATIONS**

#### Longitudinal Cracking

It should be understood that asphalt pavement sections in expansive soil environments, such as those encountered at this site, can develop longitudinal cracking along unprotected pavement edges. These cracks can develop within a very short period of time (as short as three to four weeks after construction). In the semi-arid climate of south Texas this condition typically occurs along the unprotected edges of pavements where moisture fluctuation is allowed to occur over the lifetime of the pavements.

Pavements that do not have a vertical and/or horizontal protective barrier to reduce moisture fluctuation of the highly expansive clay subgrade between the exposed pavement edge and that beneath the pavement section tend to develop longitudinal cracks 1 to 4 ft from the edge of the pavement. Once these cracks develop, further degradation and weakening of the underlying granular base may occur due to water seepage through the cracks. The occurrence of these cracks can be more prevalent in the absence of lateral restraint and embankments. This problem can best be addressed by providing either a horizontal or vertical moisture barrier at the unprotected pavement edge.

# At a minimum, we recommend that the curbs are constructed such that the depth of the curb extends through the entire depth of the granular base material and into the subgrade to act as a protective barrier against the infiltration of water into the granular base.

In most cases, a longitudinal crack does not immediately compromise the structural integrity of the pavement system. However, if left unattended, infiltration of surface water runoff into the crack will result in isolated saturation of the underlying base. This will result in pumping of the flexible base, which could lead to rutting, cracking, and pot-holes. For this reason, we recommend that the owner of the facility immediately seal the cracks and develop a periodic sealing program.

#### **Pavement Maintenance**

Regular pavement maintenance is critical in maintaining pavement performance over a period of several years. All cracks that develop in asphalt pavements should be regularly sealed. Areas of moderate to severe fatigue cracking (also known as alligator cracking) should be sawcut and removed. The underlying base should be checked for contamination or loss of support and any insufficiencies fixed or removed and the entire area patched.

All cracks that develop in concrete pavements should be routed and sealed regularly. Joints in concrete pavements should be maintained to reduce the influx of incompressible materials that restrain joint movement and cause spalling and/or cracking. Other typical facility maintenance techniques should be followed as required.

#### **Construction Traffic**

Construction traffic on prepared subgrade or granular base should be restricted as much as possible until the protective asphalt surface pavement is applied. Significant damage to the underlying layers resulting in weakening may occur if heavily loaded vehicles are allowed to use these areas prior to the complete construction of the pavement section. Heavy traffic loads should not be allowed on light duty traffic areas either before or after completion of the pavement section.

#### CONSTRUCTION RELATED SERVICES

#### **CONSTRUCTION MATERIALS ENGINEERING AND TESTING SERVICES**

As presented in the attachment to this report, *Important Information About Your Geotechnical Engineering Report*, subsurface conditions can vary across a project site. The conditions described in this report are based on interpolations derived from a limited number of data points. Variations will be encountered during construction, and only the geotechnical design engineer will be able to determine if these conditions are different than those assumed for design.

Construction problems resulting from variations or anomalies in subsurface conditions are among the most prevalent on construction projects and often lead to delays, changes, cost overruns, and disputes. These variations and anomalies can best be addressed if the geotechnical engineer of record, **RABA KISTNER, Inc.**, is retained to perform the construction materials engineering and testing services during the construction of the project. This is because:

- **RKI** has an intimate understanding of the geotechnical engineering report's findings and recommendations. **RKI** understands how the report should be interpreted and can provide such interpretations on site, on the CLIENT's behalf.
- RKI knows what subsurface conditions are anticipated at this site.
- **RKI** is familiar with the goals of the CLIENT and the project's design professionals, having worked with them in the development of the project geotechnical workscope. This enables **RKI** to suggest remedial measures (when needed) which help meet others' requirements.

- **RKI** has a vested interest in client satisfaction, and thus assigns qualified personnel whose principal concern is client satisfaction. This concern is exhibited by the manner in which contractors' work is tested, evaluated and reported, and in selection of alternative approaches when such may become necessary.
- **RKI** cannot be held accountable for problems which result due to misinterpretation of our findings or recommendations when we are not on hand to provide the interpretation which is required.

#### **BUDGETING FOR CONSTRUCTION TESTING**

Appropriate budgets need to be developed for the required construction materials engineering and testing services. At the appropriate time before construction, we advise that **RKI** and the project designers meet and jointly develop the testing budgets, as well as review the testing specifications as it pertains to this project.

Once the construction testing budget and scope of work are finalized, we encourage a preconstruction meeting with the selected General Contractor to review the scope of work to make sure it is consistent with the construction means and methods proposed by the contractor. **RKI** looks forward to the opportunity to provide continued support on this project, and would welcome the opportunity to meet with the Project Team to develop both a scope and budget for these services.

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## ATTACHMENTS



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	S	S	SUPEACE ELEVATION: Existing	Grado ft	BLO	N.					т — — — -			7	
			CLAYEY SAND (SC) medium dense, brown to lig	ht brown	13		<u>1</u> -		•	40 5	0 60	<u>    /0     </u>	-		
       			LEAN CLAY (CL) stiff to very stiff, brown to lig	ght brown	13		-		•						
45  					18		-		•						
-50-					1/										
    			Boring terminated at a depth	of about 50 ft.		6 ft	-							1.00	
DATE		D:	8/15/2024	DATE MEASURED	\. :	8/15/	2024			FIGU	PROJ. No.:         ABA24-011-00           FIGURE:         3b				

LOG OF BORING NO. B-3       Proposed Ocelot Electrical Substation         Along the South Side of W. Morrison Road       TBPE Firm Registration No. F-32         DRILLING       Brownsville, Cameron County, Texas         METHOD:       Straight Flight Auger											<b>E R</b> 3257						
DRILL	ING IOD:	Stra	aight Flight Auger		unic		LO		N:	See Figi	ure 1						
									SHEAF	STREN	NGTH,	, TON	S/FT <sup>2</sup>				
РТН, ЕТ	MBOL	MPLES	DESCRIPTION OF M	ATERIAL	VS PER FT	IIT DRY GHT, pcf	0	.5 1	.0 1.		-⊗	<u>A</u> 5 3.0	0 3.!	5 4.0	)	STICITY NDEX	-200
DE	S	SA		Crada ft	BLOV	MEN								MIT <del> </del>		а =	*
	V. 7.7.,	$\frac{1}{1}$	SORFACE ELEVATION: Existing	Grade, ft			1	.0 2	0 30	<u> </u>	50	<u>) 60</u>	) 70	<u>) 80</u>	)		
			firm , brown, with roots ext to a depth of about 2 feet	ending down	7		-	• >	€	+>	×				-	24	
		$\mathbb{H}$			6		-								-		52
		А			U		-								-		52
- 5			FAT CLAY with SAND (CH) firm to soft to stiff, brown During the drilling operations was encountered at a dept	, groundwater n of about 7 ft.	5		-		<b>&gt;</b>			×				31	
			Upon completion of the dri operations, groundwater w a depth of about 5 ft.	lling as measured at		97	-	⊗	۲						-		
10		X			3		-								_		
							-								-		
							-	•	0						-		
							-								-		
- 20-		X	SILTY CLAY (CL-ML) firm to very soft, brown		6		-	>	←●<							7	
							-								-		
25 		X			2		-		•						-		87
							-								-		
DEPTH DATE	I DRILI DRILLE	ED:	70.0 ft 8/17/2024	DEPTH TO WATER DATE MEASURED	R: ):	5 ft 8/17/	2024		· · · · · ·		PROJ FIGU	I. No.: RE:	:	ABA 4a	24-01	1-00	

			Ald	LOG OF E Proposed Ocel ong the South S	<b>BOR</b> ot El Side	ING ectri of W	NO cal Si	. B-3 ubstat rrison	tion NRoad	ł		TBF	PE Firm F	RAB KIS <sup>®</sup> Registration	A T N n No. F-3	<b>E R</b> 3257
		Stra	aight Flight Auger	Brownsville, C	ame	10110		CATIO	λας Ν· ζε	ορ Figu	ıro 1					
								S	HEAR S	STREN	GTH,	TONS	/FT <sup>2</sup>			
F	ы	S			RFI	₽cf		- <del>0</del> -	$\diamond$		⊗— <u>·</u>			4.0	È,	
РТН,	MBC	MPLI	DESCRIPTION OF M	1ATERIAL	VS PE	E H	0		J 1.5	2.0		3.0	3.5	4.0	STIC	-200
DEI	SΥ	SA			ROM	MEI		LIMIT	Г	CON	NTENT		LIQUIL	,	PLA	%
			SURFACE ELEVATION: Existing	g Grade, ft			1	0 20	) 30	40	50	60	- — X— 70	80		
		М	LEAN CLAY with SAND (CL)		17											
		Μ	very still to firm, brown		1/		-							-		
							_							_		
							-							-		
							_									
-35-		$\overline{\langle}$					-									
		XI			18		-							-		
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-40-							_									
		Х			7				•					_		96
		$\square$														
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							_									
							-									
-45								<b>├</b>					_+_			
		XI	very stiff to firm, brown to	light brown	16				•							
		$\square$		0			_							_		
							-							-		
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							-									
-50-							_									
		V			15											
		$\square$			15		-									
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		$\overline{\mathbb{N}}$			-											
+		$\wedge$			<sup>/</sup>		-							-		
							L							-		
							F							-		
╞╶┤							L							-		
DEPTH	DRILL	ED:	70.0 ft	DEPTH TO WATE	R:	5 ft	•		I		PROJ.	No.:	,	ABA24-0	11-00	
DATE	DRILLEI	D:	8/17/2024	DATE MEASURED	):	8/17/	2024				FIGUR	E:		4b		

			P Alo	LOG OF B Proposed Ocelo ng the South S Brownsville, C	OR ot El Side	ING ectric of W ron (	NO cal Su . Mo	<b>. B-3</b> ubstati rrison	on Road as		ТВ	PE Firm Reg	ABA ISTI istration No	<b>NER</b> . F-3257
DRILL	ING IOD:	Stra	aight Flight Auger	,,			LO		: See	e Figure 1	L			
	<u> </u>							SH	IEAR S	TRENGTH	I, TONS	/FT <sup>2</sup>		
<b>DEPTH, FT</b>	SYMBOL	SAMPLES	DESCRIPTION OF M	ATERIAL	LOWS PER FI	UNIT DRY WEIGHT, pcf	0	5 1.0 PLASTIC LIMIT	☆ 1.5	2.0 2. WATER CONTEN	— <u> </u>		0.	INDEX % -200
			SURFACE ELEVATION: Existing	Grade, ft	8	_	1	0 <u>20</u>	30	40 5	0 60	−−×− 70 8	30	
		X	CLAYEY SAND (SC) medium dense, brown FAT CLAY with SAND (CH) firm to soft to stiff, brown		27		-		•				-	
65  		X			24		 _ _		•				-	
		X			25		-		•					
			Boring terminated at a depth of	of about 70 ft.										
DEPTH	   Drill	ED:	70.0 ft	DEPTH TO WATER	k:	5 ft				PRO	J. No.:	AR	A24-011-	00
DATE	DRILLE	D:	8/17/2024	DATE MEASURED	:	8/17/2	2024			FIG	JRE:	4c		

			Pr	LOG OF E oposed Ocel	<b>BOR</b> ot El	ING ectri	NO. cal Si	<b>. B-4</b> Jbsta	<b>l</b> Ition				R	RAE	3 A T N	FR
			Alon	ig the South S	outh Side of W. Morrison Road TBPE Firm Registration No ille Cameron County Texas									on No. F-	3257	
DRILL METH	ing Iod:	Stra	ם aight Flight Auger & Mud Rotary	i ownsvine, c	ame	10110	LOUII	CATIO	N:	See Fi	gure 1					
<b>DEPTH, FT</b>	SYMBOL	SAMPLES	DESCRIPTION OF MA	TERIAL	LOWS PER FT	UNIT DRY WEIGHT, pcf	0	-0 5 1 PLAS LIM	SHEAI	R STRI -☆ .5 2	.0 2. WATER	5 3.(	S/FT <sup>2</sup> 	- 4.0	PLASTICITY INDEX	% -200
			SURFACE ELEVATION: Existing G	irade, ft	8		1	0 <u>2</u>	0 3	0 4	0 5	<u> </u>	$\times$	80		
		X	SANDY FAT CLAY (CH) soft to stiff, brown, with roots down to a depth of about 2 fe	s extending eet	4		-	•							-	69
 		X			9		-	•	×			*			31	
			SILT (ML) stiff to soft to stiff, brown to l	ight brown		2	-		0							94
		X	During the drilling operations, g was encountered at a depth of ft. Upon completion of the dr operations, groundwater was a depth of about 7 ft.	groundwater of about 13 filling s measured at	9		-		•						- NP	
						97	- & - & -		۲					-	-	
							-							-	-	
							-		•						-	
-20-							_							-	_	
					15		-	•							-	
CLAYEY SAND (SC) Very loose to medium dense, brown Driller's Note: Converted to mud rotary drilling method at a depth of about 25 ft  DEPTH DRILLED: 70.0 ft DEPTH TO WA				brown Id rotary about 25 ft	3				★•						35	
DEPTH	i drill Drille	ED: D:	70.0 ft DI 8/17/2024 D/	EPTH TO WATER	ER: 7 ft D: 8/17/2024					PROJ. No.:         ABA24-011-00           FIGURE:         5a						

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				LOG OF E Proposed Ocel	SOR ot El	ING ectri	NO cal Si	<b>. B-4</b> ubstat	tion			K R	AB IS1	A ſN	ER		
	ING		AI	ong the South S	wnsville, Cameron County, Texas							TBPE Firm Registration No. F-3257					
METH	IOD:	Stra	aight Flight Auger & Mud Rota	ry		r	LO		N: SE	e Figure	1 H TON	TONS/FT <sup>2</sup>					
<b>DEPTH, FT</b>	SYMBOL	SAMPLES	DESCRIPTION OF N	1ATERIAL	OWS PER FT	UNIT DRY VEIGHT, pcf	0	.5 1.( PLAST	$ \diamond$ 0 1.5	2.0 2 WATEL	$\frac{1}{2.5}  \frac{1}{3.0}$	) 3.5 4	4.0	PLASTICITY INDEX	% -200		
			SURFACE ELEVATION: Existin	g Grade, ft	BL		1	0 20	) 30	40	50 60	·×- ) 70	80	_			
		X	CLAYEY SAND (SC) very loose to medium den: (continued)	se, brown	21		-		•				-				
							-						-				
35 		X			19		-		•								
							-						-				
40 		X	LEAN CLAY (CL) firm to very stiff, brown to	light brown	6		_		•				-				
							-						-				
- 43 -		X			20		-		•				-		100		
  50		$\nabla$					-						-				
		Å			19		-		•				-				
 55		V	LEAN CLAY (CL)		10						+						
  	EPTH DRILLED: 70.0 ft						-						-				
DEPTH DATE	DEPTH DRILLED: 70.0 ft DEPTH TO WAY DATE DRILLED: 8/17/2024 DATE MEASUR						ATER:         7 ft         PROJ. No.:         A           IRED:         8/17/2024         FIGURE:         5							.BA24-011-00 b			

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Intermined of UK Morrison Road Brownsville, Cameron County, Texas       DESCRIPTION OF MATERIAL       is an intermined at a depth of about 70 ft.       is an interminated at a depth of about 70 ft.					LOG OF E	SOR	ING		<b>). B-4</b>	<b>l</b>				R	R			
Bruinse METHOD:         Superior Straight Flight Auger & Mud Rotary         Superior Straight Auger & Mud Rotary </td <td></td> <td></td> <td></td> <td>Alc</td> <td>ong the South</td> <td>Side</td> <td>of W</td> <td>. Mo</td> <td>orriso</td> <td>n Roa</td> <td>ad</td> <td></td> <td>1</td> <td>BPE Firr</td> <td>n Regi</td> <td>stration</td> <td>No. F-3</td> <td><b>E R</b> 3257</td>				Alc	ong the South	Side	of W	. Mo	orriso	n Roa	ad		1	BPE Firr	n Regi	stration	No. F-3	<b>E R</b> 3257
Image: Indication of the second se			Stra	aight Elight Auger & Mud Rotar	Brownsville, C	ame	ron	Cour	nty, Te	exas	Saa Fi	guro 1						
Line					y	F				SHEAI	R STRE	ENGTH	I, TON	S/FT <sup>2</sup>				
as       b       s       c       User of the second se	H, FI	BOL	PLES			PER F	DRY T, pcf	(	- <b>e</b> ).5 1	.0 1	↔ .5 2.	_⊗ .0 2.	— — <u>/</u> 5 3.	 0 3.5	 5 4	.0	EX	500
SURFACE ELEVATION: Existing Grade, ft         5         10         20         30         40         50         60         70         80           Image: Surface of the server stiff, brown (continued)         27         Image: Surface of the server stiff, brown (continued)         27         Image: Surface of the server stiff, brown (continued)         27         Image: Surface of the server stiff, brown (continued)         27         Image: Surface of the server stiff, brown (continued)         27         Image: Surface of the server stiff, brown (continued)         Image: Surface of the server stiff, brown (continued)         27         Image: Surface of the server stiff, brown (continued)         Image: Surface of	DEPT	SYM	SAMI	DESCRIPTION OF M	IATERIAL	LOWS			PLAS LIM	TIC IT	c	WATER CONTEN	r.	LIQ	UID /IIT		PLAST	~ %
Ican CLAY (CL)       27       •       •         stiff to very stiff, brown (continued)       27       •       •         -65-       27       •       •         -65-       27       •       •         -70-       8       •       •         Boring terminated at a depth of about 70 ft.       •       •         -70-       8       •       •         -70-       8       •       •         -70-       8       •       •         -70-       8       •       •         -70-       8       •       •         -70-       8       •       •         -70-       9       •       •         -70-       9       •       •         -70-       9       •       •         -70-       9       •       •         -70-       9       •       •         -70-       9       •       •         -70-       9       •       •         -70-       9       •       •         -70-       9       •       •         -70-       10       • <td< td=""><td></td><td></td><td></td><td>SURFACE ELEVATION: Existing</td><td>Grade, ft</td><td>8</td><td></td><td></td><td><u>-×</u> 10 2</td><td>0 3</td><td>04</td><td>0 5</td><td>0 6</td><td>&gt;</td><td>← ) 8</td><td>0</td><td></td><td></td></td<>				SURFACE ELEVATION: Existing	Grade, ft	8			<u>-×</u> 10 2	0 3	04	0 5	0 6	>	← ) 8	0		
27	L _		M	LEAN CLAY (CL) stiff to very stiff, brown (col	ntinued)	27				•								
			$\square$															
-65       27       -       •       -         26       -       •       -       -         70       Boring terminated at a depth of about 70 ft.       -       -       -         -70       Boring terminated at a depth of about 70 ft.       -       -       -         -70       Boring terminated at a depth of about 70 ft.       -       -       -         -71       -       -       -       -       -         -75       -       -       -       -       -         -75       -       -       -       -       -         -75       -       -       -       -       -         -75       -       -       -       -       -         -75       -       -       -       -       -         -75       -       -       -       -       -         -75       -       -       -       -       -       -         -75       -       -       -       -       -       -         -80       -       -       -       -       -       -         -80       -       -       -       -								-								_		
-65       -70       Boring terminated at a depth of about 70 ft.       -								-								-		
-65       27       -								-								-		
27       -       •       -       -         26       -       •       -       -         26       -       •       -       -         70       Boring terminated at a depth of about 70 ft.       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -       -         -       -       -       -       -       -       -         -       -       -       -       -       -       -         -       -       -       -       -       -       -         -       - <t< td=""><td>-65-</td><td></td><td></td><td></td><td></td><td></td><td></td><td>_</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	-65-							_										
26       26       4			Х			27		-								_		
26       -								_								_		
26       -       •       -       -         -70       Boring terminated at a depth of about 70 ft.       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -         -       -       -       -       -       -       -         -       -       -       -       -       -       -       -         -       -       -       -       -       -       -       -       -         -       -       -       -       -       -	L _							_								_		
26     ●     ■     ■     ■     ■       80ring terminated at a depth of about 70 ft.     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       -     ■     ■     ■     ■     ■       - <td>L _</td> <td></td>	L _																	
Boring terminated at a depth of about 70 ft.       -         -	70		М			26												
	-70-	-70 Boring terminated at a depth of about 70 ft																
								-								-		
		-						-								-		
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	-75-																	
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	-85-															_		
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	L -							L										
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DEPTH DRILLED:         70.0 ft         DEPTH TO WATER:         7 ft         PROJ. No.:         ABA24-011-00           DATE DRILLED:         8/17/2024         DATE MEASURED:         8/17/2024         FIGURE:         5c	DEPTH DRILLED: 70.0 ft DEPTH TO WATE					R:	7 ft 8/17/	/2024		1		PRO FIGI	J. No. JRE:	:	AB 5c	A24-0	11-00	

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			Al	LOG OF E Proposed Ocel ong the South S Brownsville, C	<b>SOR</b> ot El Side	ectric of W	TBPE Firm	TBPE Firm Registration No. F-3257						
DRILL   METH	ING IOD:	Str	aight Flight Auger	, _			LOCATION: See Figu	ire 1						
							SHEAR STREN	GTH, TONS/FT <sup>2</sup>						
<b>DEPTH, FT</b>	SYMBOL	SAMPLES	DESCRIPTION OF N	1ATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	0.5 1.0 1.5 2.0 PLASTIC WA LIMIT CON	⊗——— <u> </u>	}_ 4.0 JID 1IT ←		% -200			
	////		SURFACE ELEVATION: Existing	g Grade, ft			10 20 30 40	<u>50 60 70</u>	80					
  - 5     			LEAN CLAY (CL) firm, brown, with calcareou	us nodules	5 8 8					26	96			
			Boring terminated at a depth NOTES: Upon completion of the drill the boring was observed	n of about 10 ft. ing operations, dry.					-					
DEPTH DATE	DEPTH DRILLED: 10.0 ft DEPTH TO WAY DATE DRILLED: 8/20/2024 DATE MEASUR						2024 F	PROJ. No.: FIGURE:	<b>OJ. No.:</b> ABA24-011-00 <b>GURE:</b> 6					

			Ali	LOG OF I Proposed Ocel	<b>BOR</b> ot El Side	ING ectri of W	NO cal Su . Mo	<b>. P-2</b> ubstat rrison	tion 1 Roa	ad			TBPE Fire	R A K I m Regis	A B IS 1 stration	A No. F-3	<b>E R</b> 3257
DRILL	ING			Brownsville, C	ame	ron (	Coun	ty, Tex	xas	-							
METH	IOD:	Stra	aight Flight Auger				LO			See Fi	igure 1		IC /ET2				
<b>DEPTH, FT</b>	SYMBOL	SAMPLES	DESCRIPTION OF M	1ATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	0	.5 1.0 PLASTI LIMIT	) 1.		-⊗- .0 2 WATER CONTEN		[ .0 3.! LIQ 	]- 5 4. ∪ID ₩IT ★	0	PLASTICITY INDEX	% -200
			SURFACE ELEVATION: Existing	g Grade, ft			1	<u>0 20</u>	) 3(	04	05	06	0 70	) 8(	0		
			SURFACE ELEVATION: Existing FAT CLAY with SAND (CH) firm, brown, with roots ext a depth of about 2 feet Boring terminated at a depth NOTES: Upon completion of the drilli the boring was observed of	g Grade, ft ending down to n of about 10 ft. ing operations, dry.	Gamma       6       7       7       7							×				30	84
—25— 	-25						_										
							-								-		
DEPTH DATE	DEPTH DRILLED: 10.0 ft DEPTH TO WAT DATE DRILLED: 8/20/2024 DATE MEASUR						I         I         I         I           ER:         DRY         PROJ.           D:         8/20/2024         FIGU!					PROJ. No.:         ABA24-011-00           FIGURE:         7					



FIGURE 8a

## **KEY TO TERMS AND SYMBOLS (CONT'D)**

#### TERMINOLOGY

Terms used in this report to describe soils with regard to their consistency or conditions are in general accordance with the discussion presented in Article 45 of SOILS MECHANICS IN ENGINEERING PRACTICE, Terzaghi and Peck, John Wiley & Sons, Inc., 1967, using the most reliable information available from the field and laboratory investigations. Terms used for describing soils according to their texture or grain size distribution are in accordance with the UNIFIED SOIL CLASSIFICATION SYSTEM, as described in American Society for Testing and Materials D2487-06 and D2488-00, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics; 2005.

The depths shown on the boring logs are not exact, and have been estimated to the nearest half-foot. Depth measurements may be presented in a manner that implies greater precision in depth measurement, i.e 6.71 meters. The reader should understand and interpret this information only within the stated half-foot tolerance on depth measurements.

#### **RELATIVE DENSITY COHESIVE STRENGTH** PLASTICITY Penetration Resistance Relative Resistance Cohesion Plasticity Degree of Blows per ft Density Blows per ft **Consistency** Index Plasticity <u>TSF</u> 0 - 2 0 - 0.125 0 - 5 0 - 4 Very Loose Very Soft None 2 - 4 4 - 10 Soft 0.125 - 0.25 5 - 10 Loose Low 10 - 30 Medium Dense 4 - 8 Firm 0.25 - 0.5 10 - 20 Moderate 0.5 - 1.0 20 - 40 Plastic 30 - 50 Dense 8 - 15 Stiff > 50 Very Dense 15 - 30 Very Stiff 1.0 - 2.0 > 40 **Highly Plastic** > 30 Hard > 2.0

#### **ABBREVIATIONS**

В	=	Benzene	Qam, Qas, Qal 😑	Quaternary Alluvium	Kef =	Eagle Ford Shale
т	=	Toluene	Qat =	Low Terrace Deposits	Kbu =	Buda Limestone
E	=	Ethylbenzene	Qbc =	Beaumont Formation	Kdr =	Del Rio Clay
х	=	Total Xylenes	Qt =	Fluviatile Terrace Dep	osits Kft =	Fort Terrett Member
втех	=	Total BTEX	Qao =	Seymour Formation	Kgt =	Georgetown Formation
ТРН	=	Total Petroleum Hydrocarbon	G Qle =	Leona Formation	Kep =	Person Formation
ND	=	Not Detected	Q-Tu =	Uvalde Gravel	Kek =	Kainer Formation
NA	=	Not Analyzed	Ewi =	Wilcox Formation	Kes =	Escondido Formation
NR	=	Not Recorded/No Recovery	Emi =	Midway Group	Kew =	Walnut Formation
OVA	=	Organic Vapor Analyzer	Mc =	Catahoula Formation	Kgr =	Glen Rose Formation
ppm	=	Parts Per Million	EI =	Laredo Formation	Kgru =	Upper Glen Rose Formation
			Kknm =	Navarro Group and M	arlbrook Kgrl =	Lower Glen Rose Formation
			Kng -	Record Con Chalk	Kh =	Hensell Sand
			rb8 =	recall Gap Cliaik		
			Kau =	Austin Chalk		

PROJECT NO. ABA24-011-00

## **KEY TO TERMS AND SYMBOLS (CONT'D)**

## TERMINOLOGY

### SOIL STRUCTURE

Slickensided Fissured Pocket Parting Seam Layer Laminated Interlayered Intermixed Calcareous Carbonate	<ul> <li>Having planes of weakness that appear slick and glossy.</li> <li>Containing shrinkage or relief cracks, often filled with fine sand or silt; usually more or less vertical.</li> <li>Inclusion of material of different texture that is smaller than the diameter of the sample.</li> <li>Inclusion less than 1/8 inch thick extending through the sample.</li> <li>Inclusion greater than 3 inches thick extending through the sample.</li> <li>Soil sample composed of alternating partings or seams of different soil type.</li> <li>Soil sample composed of pockets of different soil type and layered or laminated structure is not evident.</li> <li>Having appreciable quantities of carbonate.</li> <li>Having more than 50% carbonate content.</li> </ul>
	SAMPLING METHODS
	RELATIVELY UNDISTURBED SAMPLING
Cohesive soil sau for Thin-Walled samplers in gene D1586). Cohesi integrity and mo	nples are to be collected using three-inch thin-walled tubes in general accordance with the Standard Practice Tube Sampling of Soils (ASTM D1587) and granular soil samples are to be collected using two-inch split-barrel eral accordance with the Standard Method for Penetration Test and Split-Barrel Sampling of Soils (ASTM ve soil samples may be extruded on-site when appropriate handling and storage techniques maintain sample isture content.
	STANDARD PENETRATION TEST (SPT)
A 2-inOD, 1-3/3 After the sample Standard Penetr	B-inID split spoon sampler is driven 1.5 ft into undisturbed soil with a 140-pound hammer free falling 30 in. er is seated 6 in. into undisturbed soil, the number of blows required to drive the sampler the last 12 in. is the ation Resistance or "N" value, which is recorded as blows per foot as described below.
Blows Per Foo	t
25 ···· 50/7" ···· Ref/3" ····	<ul> <li>25 blows drove sampler 12 inches, after initial 6 inches of seating.</li> <li>50 blows drove sampler 7 inches, after initial 6 inches of seating.</li> <li>50 blows drove sampler 3 inches during initial 6-inch seating interval</li> </ul>
<u>NOTE:</u>	To avoid damage to sampling tools, driving is limited to 50 blows during or after seating interval.

PROJECT NO. ABA24-011-00

## **RESULTS OF SOIL SAMPLE ANALYSES**

PROJECT NAME:

Proposed Ocelot Electrical Substation Along the South Side of W. Morrison Road Brownsville, Cameron County, Texas

## 

FILE NAME: ABA24-011-00.GPJ 9/10/2024												
Boring No.	Sample Depth (ft)	Blows per ft	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	USCS	Dry Unit Weight (pcf)	% -200 Sieve	Shear Strength (tsf)	Strength Test	
B-1	0.0 to 1.5	7	17	58	22	36	СН					
	2.5 to 4.0	6	28						98			
	5.0 to 7.0		20					104		1.01	UC	
	7.5 to 9.0	8	26	42	23	19	CL					
	10.0 to 12.0		23							1.30	PP	
	15.0 to 16.5	15	18						89			
	20.0 to 22.0		21	37	19	18	CL			1.10	PP	
	25.0 to 26.5	7	30									
	30.0 to 31.5	10	28									
	35.0 to 36.5	14	24									
	40.0 to 41.5	11	25									
	45.0 to 46.5	16	29									
	48.5 to 50.0	19	25									
B-2	0.0 to 1.5	6	16						79			
	2.5 to 4.0	6	26	45	21	24	CL					
	5.0 to 6.5	9	30									
	7.0 to 9.0		26	49	24	25	CL			1.10	PP	
	10.0 to 11.5	12	16									
	15.0 to 17.0		17					116	84	2.02	UC	
	20.0 to 21.5	9	19									
	25.0 to 26.5	9	27	28	21	7	CL-ML					
	30.0 to 31.5	13	23									
	35.0 to 36.5	13	26									
	40.0 to 41.5	15	27									
	45.0 to 46.5	18	24									
	48.5 to 50.0	17	23									
B-3	0.0 to 1.5	7	14	43	19	24	CL					
	2.5 to 4.0	6	13						52			
	5.0 to 6.5	5	28	58	27	31	CL					
	7.0 to 9.0		28					97		0.57	UC	
	10.0 to 11.5	3	30									
	15.0 to 17.0		16							1.40	PP	
	20.0 to 21.5	6	25	27	20	7	CL-ML					
	25.0 to 26.5	2	26						87			
	30.0 to 31.5	17	22									
	35.0 to 36.5	18	22									
	40.0 to 41.5	7	24						96			
	45.0 to 46.5	16	28									
	50.0 to 51.5	15	27									
PP = Pocł	ket Penetrome	ter TV =	Torvane	UC = Unco	onfined Com	pression	FV = Field	d Vane UU =	Unconsolid	ated Undrai	ned Triaxial	
CU = Consolidated Undrained Triaxial CNBD = Cound Not Be Determined NP = Non-Plastic PROJECT NO. ABA24-011-00												

## **RESULTS OF SOIL SAMPLE ANALYSES**

PROJECT NAME:

Proposed Ocelot Electrical Substation Along the South Side of W. Morrison Road Brownsville, Cameron County, Texas

## 

FILE N	FILE NAME: ABA24-011-00.GPJ 9/10/2024														
Boring No.	Sample Depth (ft)	Blows per ft	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	USCS	Dry Unit Weight (pcf)	% -200 Sieve	Shear Strength (tsf)	Strength Test				
B-3	55.0 to 56.5	7	28												
	60.0 to 61.5	27	25												
	65.0 to 66.5	24	26												
	68.5 to 70.0	25	26												
B-4	0.0 to 1.5	4	14						69						
	2.5 to 4.0	9	19	53	22	31	СН								
	5.0 to 7.0		29						94	1.30	PP				
	7.5 to 9.0	9	25	CNBD	CNBD	NP	ML								
	10.0 to 12.0		28					97		0.36	UC				
	15.0 to 16.5	13	22												
	20.0 to 21.5	15	18												
	25.0 to 26.5	3	27	57	22	35	SC								
	30.0 to 31.5     21     25       35.0 to 36.5     19     27														
	35.0 to 36.5     19     27       40.0 to 41.5     6     28														
	40.0 to 41.5     6     28       45.0 to 46.5     20     27														
	40.0 to 41.5     6     28       45.0 to 46.5     20     27       100     100														
	45.0 to 46.5       20       27       100         50.0 to 51.5       19       26       100														
	55.0 to 56.5	10	29												
	60.0 to 61.5	27	26												
	65.0 to 66.5	27	25												
	68.5 to 70.0	26	25												
P-1	0.0 to 1.5	5	19	48	22	26	CL								
	2.5 to 4.0	8	27						96						
	5.0 to 6.5	8	19												
	8.5 to 10.0	8	25												
P-2	0.0 to 1.5	6	18						84						
	2.5 to 4.0	7	17	51	21	30	СН								
	5.0 to 6.5	7	28												
	8.5 to 10.0	7	24												
PP = Pocl	= Pocket Penetrometer TV = Torvane UC = Unconfined Compression FV = Field Vane UU = Unconsolidated Undrained Triaxial														
CU = Con	solidated Undr	ained Triaxi	al CNE	3D = Cound		ermined	NP = Non	-Plastic F	PROJECT	NO. ABA2	4-011-00				

#### **RESISTIVITY SOUNDING DATA SHEET**

#### Wenner Array, Method ASTM G-57

Proposed Ocelot Electrical Substation Project

South of Morrison Road

Brownsville, Cameron County, Texas

RKI Project Number: ABA24-011-00 Date: 8/8/2024 Meter: Super MiniRes Weather Conditions: Clear, hot

Time: 9:00am Units: Ohms Observer(s): Anthony Krupa

SOUNDING No.: ERT-1

Location Description: South-central, proposed building pad area

	Electrode Spac	ing	Factor	Meter	Reading	Apparent Resistivity						
	(Feet)		Factor	(Oh	ims)	(Ohm	-Feet)	(Ohm-Centimeters)				
Α	A/2	3A/2	( 2 * PI * A)	N-S	E-W	N-S	E-W	N-S	E-W			
1.5	0.8	2.3	9.42	0.659	0.607	6.2	5.7	189.3	174.4			
5	2.5	7.5	31.40	0.131	0.126	4.1	4.0	125.4	120.6			
7.5	3.8	11.3	47.10	0.095	0.087	4.5	4.1	136.4	125.0			
10	5.0	15.0	62.80	0.058	0.055	3.6	3.5	111.1	105.3			
15	7.5	22.5	94.20	0.041	0.039	3.9	3.7	117.8	112.0			
20	10.0	30.0	125.60	0.031	0.026	3.9	3.3	118.7	99.6			






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### **MOISTURE-DENSITY RELATIONSHIP**

Proposed Ocelot Electrical Substation Along the South Side of W. Morrison Road Brownsville, Cameron County, Texas

# Important Information about This Geotechnical-Engineering Report

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

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

# Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one* — *not even you* — should apply this report for any purpose or project except the one originally contemplated.

### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

# Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a lightindustrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot* accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.

### Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

# Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

### A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmationdependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.* 

# A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.* 

# Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, but preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/ or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Environmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnicalengineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.* 

## Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

### Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.



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