

**SPECIFICATIONS
AND
FORMS OF CONTRACT, BOND AND PROPOSAL
FOR
BENTSEN PALM DEVELOPMENT
SANITARY SEWER IMPROVEMENTS PHASE II
RFB: 19-285-09-25**

**CITY OF MISSION
HIDALGO COUNTY, TEXAS**

CITY OFFICIALS

**DR. ARMANDO O'CANA
NORIE GONZALEZ GARZA
JESSICA ORTEGA-OCHOA
RUBEN PLATA
RANDY PEREZ**

**MAYOR
MAYOR PRO-TEM
COMMISSIONER
COMMISSIONER
CITY MANAGER**

2019

**MELDEN AND HUNT, INC.
CONSULTING ENGINEERS
PROJECT NO. 18221.01
TBPE #F-1435**



M. H.
9-5-19

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ADVERTISEMENT FOR BIDS

CITY OF MISSION, TEXAS
OWNER

RFB: 19-285-09-25

Separate sealed bids for Bentsen Palm Development Sanitary Sewer Improvements, Phase II, City of Mission, Texas will be received by the City of Mission, Texas (hereinafter called owner) at the City Manager's Office, City Hall, Purchasing Department, 1201 E. 8th St., R101, Mission, Texas, 78572 until **2:00 PM, Wednesday, September 25, 2019** and then at said office publicly opened and read aloud.

The Instructions to Bidders, Form of Bid, Forms of Contract, Plans, Specifications and Forms of Bid Bond, Performance and Payment Bond, and other contract documents may be examined at the following:

Melden and Hunt, Inc., Consulting Engineers, Edinburg, Texas 78541 and/or
Electronically at City of Mission Website at: <https://www.missiontexas.us/bid-opportunities-2/>

Copies may be obtained at the office of Melden and Hunt, Inc. located at 115 West McIntyre, Edinburg, Texas 78541 upon payment of **\$50.00** per set with no refund.

The Owner reserves the right to waive any informalities or to reject any or all bids.

Each bidder must deposit with his bid, security in the amount form and subject to the conditions provided in the Instructions for Bidders.

A Pre-Bid Conference/General Contractors Meeting (Highly Recommended) has been scheduled for **Wednesday, September 18, 2019 at 10:00 am CST** at City of Mission, City Hall, 1201 E. 8th Street, Mission, TX 78572.

Attention of Bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

No bidder may withdraw his bid within 30 days after the actual date of the opening thereof.

INSTRUCTIONS TO BIDDERS

Bids will be submitted in sealed envelopes upon the blank form of proposal attached hereto, and marked in the lower left-hand corner with the name of Bidder and Title of Project.

The right is reserved, as the interest of the Owner may require, to reject any and all bids, and to waive any formality in bids received.

In case of ambiguity, or lack of clearness in stating the prices in the bids, the Owner reserves the right to consider the most advantageous construction thereof, or to reject the bid. Unreasonable (or unbalanced) prices will authorize the Owner to reject any bid.

Each bid must be accomplished by Bid Security made payable to the Owner in an amount of 5% of the Bidder's maximum bid price and in the form of a certified or bank check or a Bid Bond issued by a surety meeting the requirements of the General Conditions.

The Bid security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required contract security, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Agreement and furnish the required contract security within fifteen (15) days after the Notice of Award, Owner may annul the Notice of Award and the Bid Security of that Bidder will be forfeited. The Bid Security of others whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of the seventh day after the effective date of agreement or the forty-sixth day after the Bid opening, whereupon Bid security furnished by such Bidders will be returned. Bid security with Bids which are not competitive will be returned within seven days after the Bid opening.

The successful bidder must furnish performance and payment bond upon the forms which are attached hereto in the amount of 100% of the contract price from an approved surety company holding a permit from the State of Texas to act as surety and acceptable according to the latest list of companies holding certificates of authority from the Secretary of Treasury of the United States.

All bid securities will promptly be returned to the respective bidders except those which the Owner elects to hold until the successful bidder has executed the contract. Thereafter, all remaining securities, including the security of the successful bidder, will be returned.

Bidders shall carefully examine the specifications and other documents, visit the site of the work, and fully inform themselves as to all conditions and matters which can in any way effect the work or the costs thereof. Should the bidder find discrepancies in, or omissions from the specifications or other documents, or should he be in doubt as to their meaning, he should at once notify the Engineer and obtain clarification by addendum prior to submitting any bid.

Insurance Requirements:

(1) Insurance Requirements for Supply/Services and/or Construction

- (a) Required Coverage. The Contractor shall, at all times during the term of this contract and extended terms thereof, provide and maintain the following types of insurance protecting the interests of the City of Mission and the Contractor with limits of liability not less than those specified below.

Commercial General Liability insurance or its equivalent, **listing City of Mission as an additional insured**, providing limits of not less than \$500,000 for bodily injury and property damage per occurrence, consistent with potential exposure to City under the Texas Tort Claims Act. Coverage should include injury to or death of persons and property damage claims arising out of the services, construction, etc. provided with a general aggregate of \$1,000,000, and products and completed operations aggregate of \$1,000,000. Coverage should include: Damaged to rented premises at a minimum of \$100,000 per occurrence. There shall not be any policy exclusions or limitations for the following as well:

Contractual Liability covering Contractor's obligations herein
Personal Injury Advertising Liability
Medical Payments
Fire Damage Legal Liability
Broad Form Property Damage
Liability for Independent Contractors

- (b) Automobile liability insurance policy with combined single limit of an least Five Hundred Thousand Dollars (\$500,000.00) per occurrence, consistent with potential exposure to City under the Texas Tort Claims Act.
- (c) Uninsured/Underinsured motorist coverage in an amount equal to the bodily injury limits set forth immediately above:
- (d) A Five Hundred Thousand Dollar (\$500,000.00) Comprehensive General Liability insurance policy providing additional coverage to all underlying liabilities of City consistent with potential exposure of City under the Texas Tort Claims Act.
- (e) Workers' Compensation and Employers' Liability insurance is equivalent to State of Texas Workers' Compensation Statutory Limits, providing limits of not less than \$1,000,000 for each accident, each disease per employee \$1,000,000, and policy limit of not less than \$1,000,000. There shall not be any policy exclusions or limitations.
- (f) Certificates of Insurance. Before commencing execution of this contract, and within 7 calendar days from date of award of contract, the Contractor shall furnish Original proof

of insurance via Certificates of Insurance satisfactory to the City of Mission at the following addresses.

City of Mission
Crissy Cantu, Buyer
1201 E. 8th Street
Mission, TX 78572
Bid #19-285-09-25

Evidencing that insurance as required by paragraph (a) above is in force, stating policy number dates of expiration and limits of liability thereunder. All copies of policies and Certificates of Insurance submitted to the City shall be in a form and content acceptable to the City.

- (g) Approval of Forms and Companies. All coverage described in this contract shall be in a form and content satisfactory to the Purchasing Agent. No party subject to the provisions of this contract shall violate or knowingly permit to be violated any of the provisions of the policies of insurance described herein. All insurance should be provided by insurance companies with a Best's rating of A- or better. Please include proof of such rating with your coverage documents.
- (h) Additional Insured Endorsement. The policy or policies providing Commercial General Liability, and as otherwise required above, shall be endorsed to name City of Mission, their directors, officers, representatives, agents, and employees as Additional Insurers with respects to operations performed by or on behalf of the Contractor in the performance of this contract via ISO endorsements CG 2037 or its equivalent. The policy shall also be endorsed to name other interests as directed by City of Mission.
- (i) Notice of Cancellation or Material Changes. Policies and/or Certificates shall **specifically** provide that a thirty (30) day notice of cancellation, non-renewal, or material change be sent to the City.
- (j) Multiple Policies. The limits of liability as required above may be provided by a single policy of insurance or a combination of primary, excess, or umbrella liability policies. But in no event shall the total limit of liability of any one occurrence or accident be less than the amount shown.
- (k) Deductibles. Companies issuing the insurance policies and the Contractor shall have no recourse against the City for payment of any premiums or assessments for any deductibles, as all such premiums and deductibles are the sole responsibility and risk of the Contractor.
- (l) Subcontractors. If any part of the work is sublet, the Contractor shall require any and all subcontractors performing work under this contract to carry General Liability and

Products, and Construction Liability Insurance, with limits of liability that Contractor shall deem appropriate and adequate to protect the interests of the City. In the event a subcontractor is unable to furnish insurance in accordance to section (a) above, the Contractor shall endorse the subcontractor as an Additional Insured. Insurance certificates for subcontractors shall be furnished to the City of Mission upon request.

- (m) No Release. The carrying of the above-described coverage shall in no way be interpreted as relieving the Contractor of any other responsibility or liability under this agreement, or any applicable law, statute, regulation, or order.

SPECIAL PROVISIONS

Scope of Work

This project consists of sanitary sewer line improvements for Bentsen Palm Development, Phase II in the City of Mission, Texas.

All labor, materials, equipment, supervision and other services required for this construction will be furnished in accordance with plans and specifications as prepared by Melden and Hunt, Inc., Consulting Engineers of Edinburg, Texas.

Schedule and Sequence of Construction

The Contractor shall, prior to beginning work, prepare and submit a proposed schedule of work to the Engineer for his approval.

Traffic

The contractor shall place all barricades, warning signs, of other traffic control devices in conformance with the construction section of the 1980 edition of the Texas Manual of Uniform Traffic Control Devices.

Competency of Bidders

The Bidder must be capable of performing each of the various items of work bid upon. Upon request, the successful Bidder shall submit a complete statement of his financial resources and his experience in similar work. Work necessary for relocation of oil and gas pipeline will be coordinated with owner of the same.

Guarantee of Work

All workmanship, equipment and materials, furnished or installed by the Contractor shall be guaranteed for a period of at least one (1) year against faulty workmanship or defective materials. The warranty period shall begin on the date of acceptance of the project by the Owner and extend for a period of 365 days thereafter. The Owner may at his option, requires that the Contractor post a performance bond in the amount of ten (10) percent of final total cost of the project to provide surety for the guarantee.

Submittals

Any specified prior approved equal requires that the prospective bidders submit any information to the Engineer ten (10) days prior to the bid opening for approval to be used in the preparation of his bid for this project. Technical data on the proposed system shall be submitted as well as standard catalog information which gives surface preparation instructions and application instructions.

Final Clean up

Upon completion of the work and before acceptance and final payment will be made the Contractor shall clean and remove from the site of the work all brush, trash, surplus and discarded materials, temporary services, removed existing pipes and concrete structures and debris of every kind. The Contractor shall leave the site of the work in a neat and orderly condition equal to that which originally existed. Waste materials removed from the site shall be disposed of at locations satisfactory to the Engineer.

BID FOR UNIT PRICE CONTRACT

Place: Mission, Texas

Date: Sept 25, 2019

Proposal of _____ (hereinafter called "Bidder) * a corporation, organized and existing under the laws of the State of _____, * a partnership, or an individual doing business as _____.

To the **City of Mission** _____

_____ (hereinafter called "Owner")

Gentlemen:

The Bidder, in compliance with your invitation for bids for the Bentsen Palm Development Sanitary Sewer Improvements, Phase II, City of Mission, having examined the plans and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials, and supplies, and to construct the project in accordance with the contract documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in written " Notice to Proceed" of the Owner and to fully complete the project within 75 calendar days after receiving purchase order. Completion/Acceptance of the Installation of Sanitary Sewer Improvements for the Bentsen Palm Development Phase II should not exceed 75 calendar days. Exceeding the number of days shall result in rejection of bid.

Bidder further agrees to pay as liquidated damages, the sum of \$250.00 for each consecutive calendar day thereafter as hereinafter provided in Paragraph 41 of the General Conditions.

Bidder acknowledges receipt of the following addendum:

*Insert corporation, partnership or individual as applicable.

ENGINEER'S ESTIMATE OF QUANTITIES – APPROXIMATE ONLY

<u>No.</u>	<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Total Price</u>
1.	12" PVC SDR26 (24'-26' cut)	359	LF	_____	_____
2.	12" PVC SDR26 (22'-24' cut)	1,236	LF	_____	_____
3.	12" PVC SDR26 (20'-22' cut)	686	LF	_____	_____
4.	12" PVC SDR26 (18'-20' cut)	765	LF	_____	_____
5.	12" PVC SDR26 (18'-20' cut) To be bored & encased in 160 LF Of 3/8" steel casing	235	LF	_____	_____
6.	12" PVC SDR26 (16'-18' cut)	480	LF	_____	_____
7.	Manhole (24'-26' cut)	1	EA	_____	_____
8.	Manhole (22'-24' cut)	2	EA	_____	_____
9.	Manhole (20'-22' cut)	3	EA	_____	_____
10.	Manhole (18'-20' cut)	4	EA	_____	_____
11.	Single service connections-adjacent	1	EA	_____	_____
12.	Trench excavation protection	3,761	LF	_____	_____
Total Sanitary Sewer Improvements:				\$	_____

(Total In Words)

The above unit prices shall include all labor, materials, bailing, shoring, removal, 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.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of 30 calendar days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this bid, bidder will execute the formal contract attached within 10 days and deliver a Surety Bond or Bonds as required by Paragraph 46 of the General Conditions. The Bid security attached in the sum _____ is to become the property of the Owner in the event the contract and bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner cause thereby.

Respectfully submitted:

By: _____

(SEAL-if bid us by a corporation).

(Business Address & Zip Code)

BID BOND

KNOW ALL MEN BY THESE PRESENTS, That we, the undersigned
as Principal, and _____ as Surety, are hereby held
and firmly bound unto _____,
Owner, _____ in the penal sum of
_____ for the
payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our
heirs, executors, administrators, successors and assigns. Signed, the _____ day
of _____, 20_____.

The condition of the above obligation is such that whereas the Principal has submitted
to _____ a certain Bid, attached hereto and hereby made a
part hereof to enter into a contract in writing for the _____ -.

NOW, THEREFORE,

- (a) If said Bid shall be rejected, or in the alternate,
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, 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 affect; 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 any 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.

_____(L.S.)
Principal

Surety

SEAL

By: _____

•
•

SALES TAX STATEMENT

Project Name: Bentsen Palm Development Sanitary Sewer Improvements, Phase II

1. The undersigned Contractor is a holder of a valid sales tax permit. The taxpayer number is _____.

2. This contract is a "Separated Contract" and the undersigned contractor provides the City of Mission with the following information:

Total Materials Cost Based Upon
Estimated Quantities \$ _____

Total Services Cost Based Upon
Estimated Quantities \$ _____

Total Contract Price Based
Upon Estimated Quantities \$ _____

NOTE: The total materials cost based upon estimated quantities plus the total services cost based upon estimated quantities must equal the amount shown for the total contract price based upon estimated quantities.

The contract price does not include sales and excise tax by virtue of being a "Separated Contract".

Signature

Contractor

Address

STATE OF TEXAS

This instrument was acknowledged before me on this the ___ day of _____, 20___, by
_____ President of _____ (a corporation), (a partnership), or
(an individual) on behalf of said firm.

NOTARY PUBLIC FOR THE STATE
OF TEXAS

CITY OF MISSION

Secretary or Witness

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of Texas

County of _____

_____, being first duly sworn, deposes and says that:

(1) He is _____, of _____, the Bidder that has submitted the attached Bid;

(2) He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such bid;

(3) Such bid is genuine and is not a collusive or sham Bid;

(4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid as been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price of the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Owner or any person interested in the proposed Contract; and

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed) _____

(Title)

Subscribed and sworn to before me this
____ day of _____, 20__.

(Title)

My Commission expires _____

AGREEMENT

STATE OF TEXAS)

COUNTY OF HIDALGO)

THIS AGREEMENT, made and entered into this _____ of _____ A.D., 2019 by and between

The CITY OF MISSION of the County of Hidalgo

and State of Texas, acting through its representative hereunto duly authorized so to do,

hereinafter termed OWNER, and on behalf of _____ as a

_____, City of _____, County of Hidalgo, State Of Texas, hereinafter termed

CONTRACTOR.

WITNESSETH: That for and in consideration of the payments and agreements, hereinafter mentioned, to be made and performed by OWNER, and under the conditions expressed in the bond bearing even date herewith, CONTRACTOR hereby agrees with OWNER to commence and complete the construction of certain improvements described as follows:

PROJECT: BENTSEN PALM DEVELOPMENT SANITARY SEWER IMPROVEMENTS, PHASE II

BID DATE: _____ \$ _____

and all extra work in connection therewith, for the unit price shown in the attached proposal and incorporated herein by reference, (the "Proposal"), under the terms as stated in the General Conditions of the Agreement and Addendum; and at CONTRACTOR'S own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said construction in accordance with the conditions and prices stated in the Proposal and in accordance with the Plans, which includes all maps, plans, blueprints, and other drawings and printed or written explanatory matter thereof, and the Specifications therefore as prepared by Melden and Hunt, Inc., Consulting Engineers, herein entitled the ENGINEER, each of which has been identified by the endorsement of the CONTRACTOR and the ENGINEER thereon, together with the Payment and Performance Bonds hereto attached; all of which are made a part hereof and collectively evidence and constitute the entire contract.

The CONTRACTOR hereby agrees to commence work within ten (10) days after the date written notice to do so shall have been given to him, and to substantially complete the same within _____ calendar days after the date of the written notice to commence work.

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract in accordance with the Proposal submitted therefore, subject to additions and deductions, as provided in the General Conditions of the Agreement and to make payments on account thereof as provided therein, payment to be made in Mission, Hidalgo County, Texas.

IN WITNESS WHEREOF, the parties to these presents have executed this Agreement in the year and day first above written.

CITY OF MISSION, TEXAS

OWNER

ATTEST:

Secretary

CONTRACTOR

ATTEST:

Secretary

PERFORMANCE BOND

(To be used in Texas under Govt Code Ch 2253)

THE STATE OF _____

COUNTY OF _____

KNOW ALL MEN BY THESE PRESENTS: That we (1) _____
a (2) _____ of _____ hereinafter called Principal and
(3) _____ of _____, State of _____,
hereinafter called the Surety, are held and firmly bound into (4) _____
the Surety, are held and firmly bound unto (4) _____
of _____, hereinafter called Owner, in the penal sum of _____
_____ (\$ _____) Dollars in lawful money of the United
States, to be paid in (5) _____ for the payment of which sum well and truly to
be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and
severally, firmly by these presents:

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a
certain contract with (6) _____
the Owner, dated the _____ day of _____, A.D., 20_____, a copy of which is hereto
attached and made a part hereof for the construction :

These footnotes refer to the numbers in body of contract above:

Date of Bond must not be prior to date of Contract.

- (1) Correct Name of Contractor
- (2) A Corporation, Partnership or Individual, as case may be
- (3) Correct Name of Surety
- (4) Correct Name of Owner
- (5) County and State
- (6) Owner

(Performance Bond) 2

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform the work in accordance with the plans, specifications and contract documents during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety, 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 if any legal action be filed upon this bond, venue shall lie _____ County, State of Texas, and that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument is executed in six counterparts, each one of which shall be deemed an original, this the _____ day of _____, A.D., 20_____.

Principal

ATTEST:

(Principal) Secretary

BY _____

(SEAL)

Address

Witness as to Principal)

Address

ATTEST

(Surety) Secretary

BY _____

(SEAL)

Attorney-in-fact

Witness as to Surety

Address

PAYMENT BOND

(To be used in Texas under V.A.T.S. 5160)

THE STATE OF _____

COUNTY OF _____

KNOW ALL MEN BY THESE PRESENTS: That we (1) _____

_____ a (2) _____ of _____

hereinafter called Principal and (3) _____

of _____, State of _____, hereinafter called the Surety,

are held and firmly bound unto (4) _____

_____ of _____, hereinafter called Owner, and unto all person, firms, and corporations who may furnish materials for, or perform labor upon the building or improvements hereinafter referred to in the penal sum of _____ (\$ _____) Dollars in lawful money of the United States, to be paid in (5) _____, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a _____ certain _____ contract _____ with (6) _____

the Owner, dated the _____ day of _____, A.D., 20____, a copy of which is hereto attached and made a part hereof for the construction of:

These footnotes refer to the numbers in body of contract above:

Date of Bond must not be prior to date of Contract.

- (1) Correct name of Contractor
- (2) A Corporation, a Partnership or an Individual, as case may be
- (3) Correct Name of Surety
- (4) Correct Name of Owner
- (5) County and State
- (6) Owner

Payment-2

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to all claimants as defined in Article 5160 Revised Civil Statutes of Texas, 1925, as amended by House Bill 344, Acts 56th legislature, Regular Session, 1959, effective April 27, 1959, supplying labor and materials in the prosecution of the work provided for in said Contract, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

This bond is made and entered into solely for the protection of all claimants supplying labor and material in the prosecution of the work provided for in said Contract, and all such claimants shall have a direct right of action under the bond as provided in Article 5160, Revised Civil Statutes 1925, as amended by House Bill 344, Acts 56th Legislature, Regular Session, 1959.

PROVIDED FURTHER, that if any legal action be filed upon this bond, venue shall lie Hidalgo County, State of Texas, and that the said surety, for value received hereby stipulates and agrees that no change, to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such 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.

IN WITNESS WHEREOF, this instrument is executed in six counterparts, each one of which shall be deemed an original, this the _____ day of _____ A.D., 20 ____.

ATTEST:

(SEAL)

Principal

BY _____

Address

Witness as to Principal

Address

Payment-3

ATTEST:

Surety

(Surety) Secretary

BY _____

(SEAL)

Witness as to Surety

Address

NOTE: If Contractor is partnership, all partners should execute bond.

CERTIFICATE OF OWNER'S ATTORNEY

I, the undersigned, _____, the duly authorized and acting legal representative of _____, do hereby certify as follows:

I have examined the attached contract(s) and surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon. and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

Date: _____

GENERAL CONDITIONS OF THE AGREEMENT

1. OWNER. Whenever the word OWNER, or the expression, Party of the First Part, or First Party, is used in this contract, it shall be understood as referring to City of Mission.

2. CONTRACTOR. Whenever the work CONTRACTOR, or the expression, Party of the Second Part or Second Party, is used, it shall be understood to mean the person, persons, co-partnership or corporations, to-wit:

_____ who has agreed to perform the work embraced in this contract, or to his or their legal representatives.

3. ENGINEER. Whenever the word ENGINEER is used in this contract, it shall be understood as referring to Melden and Hunt, Inc., Consulting Engineers, ENGINEER of the OWNER, or such other ENGINEER, supervisor or inspector as may be authorized by said OWNER to act in any particular.

4. INTERPRETATION OF PHRASES. Whenever the words "Directed", "Required", "Permitted", "Designated", "Considered", "Necessary", "Prescribed", or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation or prescription of the ENGINEER is intended; and, similarly, the words "Approval", "Acceptable", "Satisfactory", or words of like import shall mean approved by or acceptable or satisfactory to the ENGINEER.

Whenever in the specifications or drawings accompanying this Agreement the terms or descriptions of various qualities relative to finish, workmanship, or other qualities of similar kind which cannot, from their nature, be specifically and clearly described and specified, but are necessarily described in general terms, the fulfillment of which must depend on individual judgment, then in all such cases, any question of the fulfillment of said specifications shall be decided by the ENGINEER, and said work shall be done in accordance with his interpretations of the meaning of the words, terms or clauses defining the character of the work.

5. EXHIBITS. All work shall be done and all materials furnished in strict conformity with the appended advertisement (Notice to Bidders), "Instruction to Bidder", "Proposal", "Specifications", and "Construction Plans", all of which are hereto attached (or considered as if attached and are hereby made a part of this contract.

6. KEEPING OF PLANS AND SPECIFICATIONS ACCESSIBLE. The CONTRACTOR shall be furnished with three (3) copies of all plans, profiles, and specifications without expense to him, and shall keep one copy of the same constantly accessible on the work.

7. RIGHT OF ENTRY. The OWNER reserves the right to enter the property or locations on which the works herein contracted for are to be constructed or installed, by such agent or agents as it may elect, for the purpose of supervising and inspecting the work, or for the purpose of constructing or installing such collateral work as said OWNER may desire.

8. QUANTITIES AND MEASUREMENTS. No extra or customary measurements of any kind will be allowed, but the actual length, area, solid contents, number and weight only shall be considered, unless otherwise specifically provided.

9. LINES AND GRADES. Base lines and grades shall be established by the ENGINEER. Whenever necessary, work shall be suspended to permit of this work, but such suspension will be as brief as practicable and the CONTRACTOR shall be allowed no extra compensation therefore. The CONTRACTOR shall give the ENGINEER ample notice of the time and place where lines and grades will be needed. All stakes, marks, etc., shall be carefully preserved by the CONTRACTOR, and in case of careless destruction or removal by him or his employees, such stakes, marks, etc., shall be replaced by the ENGINEER at the CONTRACTOR'S expense.

10. SUPERINTENDENCE AND INSPECTION. It is agreed by the CONTRACTOR that the OWNER shall be and is hereby authorized to appoint from time to time such ENGINEERS, supervisors, or inspectors as the said OWNER may deem proper, to inspect the material furnished and the work done under this Agreement, and to see that the said material is furnished, and said work is done in accordance with the specifications therefore. The CONTRACTOR shall furnish all reasonable aid and assistance required by the ENGINEER, supervisors and inspectors for the proper inspection and examination of the work and all parts of the same. The CONTRACTOR shall regard and obey the directions and instructions of any ENGINEERS, supervisors or inspectors so appointed, when the same are consistent with the obligations of this Agreement and the accompanying specifications, provided, however, should the CONTRACTOR object to any order by any subordinate engineer, supervisor or inspector, the CONTRACTOR may within six (6) days make written appeal to the ENGINEER for his decision.

11. DISCREPANCIES AND OMISSIONS. It is further agreed that it is the intent of this contract that all work must be done and all material must be furnished in accordance with the generally accepted practice, and in the event of any discrepancies between

the plans and specifications, or otherwise, or in the event of any doubt as to the meaning and intent of any portion of the contract, specifications or plans, the ENGINEER shall define which is intended to apply to the work.

12. COLLATERAL CONTRACTS. The OWNER agrees to provide by separate rate contract or otherwise all labor and material essential to the completion of the work that is not included in this contract, in such manner as not to delay its progress or damage said CONTRACTOR.

13. DAMAGES. In the event the CONTRACTOR is damaged in the course of the completion of the work by the neglect, omission, mistake or default of the OWNER, or of any other contractor employed by the OWNER upon the work, thereby causing loss to the CONTRACTOR, the OWNER agrees that he will reimburse the CONTRACTOR for such loss. In the event the OWNER is damaged in the course of the work by the act, negligence, omission, mistake or default of the CONTRACTOR, or work being done by others on the job, so as to cause loss for which the OWNER becomes liable, then the CONTRACTOR shall reimburse the OWNER for such loss.

14. LOSSES FROM NATURAL CAUSES. All losses or damage arising out of the nature of the work to be done, or from the action of the elements, or from any unforeseen circumstances in the prosecution of the same, or from unusual obstructions or difficulties which may be encountered in the prosecution of the work shall be sustained and borne by the CONTRACTOR at his own cost and expense.

15. ESTIMATED QUANTITIES. This Agreement, including the specifications, plans and estimate, is intended to show clearly all work to be done and material to be furnished hereunder. The estimated quantities of the various classes of work to be done and material to be furnished under this contract are approximate and are to be used only as a basis for estimating the probable cost of the work and for comparing the proposals offered for the work. It is understood and agreed that the actual amount of the work to be done and the material to be furnished under this contract may differ somewhat from these estimates, and that the basis for payment under this contract shall be the actual amount of such work done and the material furnished.

The CONTRACTOR agrees that he will make no claims for damages, anticipated profits or otherwise on account of any differences which may be found between the quantities of work actually done, the material actually furnished under this contract and the estimated quantities contemplated and contained in the proposal, provided, however, that in case the actual quantity of any item should become as much as 25% more than, or 25% less than, estimated or contemplated quantity for such items, then either party to this Agreement upon demand, shall be entitled to a

revised consideration upon the portion of the work above or below 25% of the estimated quantities; such revised consideration to be determined by agreement between the parties, otherwise by the terms of this Agreement, as provided under EXTRA WORK.

16. CHANGES AND ALTERATIONS. The CONTRACTOR further agrees that the OWNER may make such changes and alterations as the OWNER may see fit, in the line, grade, form, dimensions, plans or materials for the work herein contemplated, or any part thereof, either before or after the beginning of the construction, without affecting the validity of this contract and the accompanying bonds.

If such changes or alterations diminish the quantity of the work to be done, they shall not constitute the basis of a claim for damages, or anticipated profits on the work that may be dispensed with. If they increase the amount of work, and the increased work can fairly be classified under the specifications, such increase shall be paid for according to the quantity actually done and at the unit price established for such work under this contract; otherwise such additional work shall be paid for as provided under EXTRA WORK. In case the OWNER shall make such changes or alterations as shall make useless any work already done or material already furnished or used in said work, then the OWNER shall recompense the CONTRACTOR for any material or labor so used, and for any actual loss occasioned by such change, due to actual expenses incurred in preparation for the work as originally planned.

17. EXTRA WORK. The term "Extra Work" as used in this contract shall be understood to mean and include all work that may be required by the ENGINEER or OWNER to be done by the CONTRACTOR to accomplish any change, alteration or addition to the work shown upon the plans, or reasonably implied by the specifications, and not covered by the CONTRACTOR'S Proposal, except as provided under Changes and Alterations in Paragraph 16 herein above.

It is agreed that the CONTRACTOR shall perform all Extra Work under the direction of the ENGINEER when presented with a Written Work Order signed by the ENGINEER; subject, however, to the right of the CONTRACTOR to require a written confirmation of such Extra Work Order by the Owner. It is also agreed that the compensation to be paid the CONTRACTOR for performing said EXTRA WORK shall be determined by one or more of the following methods:

Method (A) - By agreed unit prices; or

Method (B) - By agreed lump sum; or

Method (C) - If neither Method (A) nor Method (B) be agreed upon before the Extra Work is commenced, then the CONTRACTOR shall be paid the "actual field cost" of the work plus fifteen (15%) percent.

In the event said Extra Work be performed and paid for under Method (C), then the provisions of this paragraph shall apply and the "actual field cost" is hereby defined to include the cost of all workmen, such as foremen, timekeepers, mechanics and laborers, and materials, supplies, teams, trucks, rentals on machinery and equipment, for the time actually employed or used on such Extra Work, plus actual transportation charges necessarily incurred, if the kind of equipment or machinery be not already on the job, together with all power, fuel, lubricants, water and similar operating expenses, also all necessary incidental expenses incurred directly on account of such Extra Work, including Social Security, Old Age Benefits and other payroll taxes, and a rateable proportion of premiums on Construction and Maintenance Bonds, Public Liability and Property Damage and Workmen's Compensation, and all other insurance as may be required by any law or ordinance, or directed by the ENGINEER or OWNER, or by them agreed to. The ENGINEER may direct the form in which accounts of the "actual field cost" shall be kept and may also specify in writing, before the work commences, the method of doing the work and the type and kind of machinery and equipment to be used, otherwise these matters shall be determined by the CONTRACTOR. Unless otherwise agreed upon, the prices for the use of machinery and equipment shall be determined by using 100 percentage of the latest schedule of Equipment Ownership Expense adopted by the Associated General Contractors of America. Where practicable the terms and prices for the use of machinery and equipment shall be incorporated in the Written Extra Work Order. The fifteen (15%) percent of the "actual field cost" to be paid the CONTRACTOR shall cover and compensate him for his profit, overhead, general superintendence and field office expense, and all other elements of cost and expense not embraced within the "actual field cost" as herein defined, save that where the CONTRACTOR'S Camp or Field Office must be maintained primarily on account of such Extra Work, then the cost to maintain and operate the same shall be included in the "actual field cost".

No claim for Extra Work of any kind will be allowed unless ordered in writing by the ENGINEER. In case any orders or instructions, either oral or written, appear to the CONTRACTOR to involve Extra Work for which he should receive compensation, he shall make written request to the ENGINEER for written order authorizing such Extra Work. Should a difference of opinion arise as to what does or does not constitute Extra Work, or as to the payment therefore, and the ENGINEER insists upon its performance, the CONTRACTOR shall proceed with the work after making written request for written order and shall keep an accurate account of the "actual field cost" thereof, as provided under Method (C). The CONTRACTOR will thereby preserve the right to submit the matter of payment to arbitration, as herein below provided.

18. PRELIMINARY APPROVAL. No ENGINEER, supervisor or inspector shall have any power to waive the obligations of this contract for the furnishing by the CONTRACTOR of good material, and of his performing good work as herein described, and in full accordance with the plans and specifications. No failure or omission of any ENGINEER, supervisor or inspector to condemn any defective work or material shall release the CONTRACTOR from the obligations to at once tear out, remove and properly replace the same at any time prior to final acceptance upon the discovery of said defective work, or material provided, however, that the ENGINEER, his assistant or inspector, shall, upon request of the CONTRACTOR, inspect and accept or reject any material furnished, and in event the material has been once accepted by the ENGINEER, his assistant or inspector, such acceptance shall be binding on the OWNER, unless it can be clearly shown that such material furnished does not meet the specifications for this work.

Any questioned work may be ordered taken up or removed for re-examination, by the ENGINEER, prior to final acceptance, and if found not in accordance with the specifications for said work, all expense of removing, re-examination, and replacement shall be borne by the CONTRACTOR; otherwise, the expense thus incurred shall be allowed as EXTRA WORK, and shall be paid for by the OWNER.

19. DEFECTS AND THEIR REMEDIES. It is further agreed that if the work or any part thereof, or any material brought on the ground for use in the work or selected for the same shall be deemed by the ENGINEER, as unsuitable or not in conformity with the specifications, the CONTRACTOR shall, after receipt of written notice thereof from the ENGINEER, forthwith remove such materials and rebuild or otherwise remedy such work so that it will be in full accordance with this contract.

20. TIME AND ORDER OF COMPLETION. It is the meaning and intent of this contract, unless otherwise herein specifically provided, that the CONTRACTOR shall be allowed to prosecute his work at such time and seasons, in such order of precedence, and in such manner as shall be most conducive to economy of construction; provided, however, that the order and time of prosecution shall be such that the work shall be substantially completed as a whole and in part, in accordance with this contract, plans and specifications and within the time of completion hereafter designated; provided, also, that when the OWNER is having other work done, either by contract or by his own force, the ENGINEER may direct the time and manner of constructing the work done under this contract, so that conflict will be avoided and the construction of the various works being done for the OWNER shall be harmonized.

The CONTRACTOR further agrees that he will commence work within ten (10) days after the date written notice to do so shall have been given to the CONTRACTOR, and will progress therewith so that the work shall be substantially completed in accordance with the terms of this Agreement.

A "working day" is defined as a calendar day, not including Sundays, or any legal holiday, in which weather or other conditions, not under the control of the CONTRACTOR, will permit construction of the principal units of the work for a continuous period of not less than seven (7) hours between 7:00 A.M. and 6:00 P.M.

By the term "substantially completed" is meant that the structure has been suitable for use or occupancy and is in condition to serve its intended purpose, but still may require minor miscellaneous work and adjustment.

21. EXTENSION OF TIME. Should the CONTRACTOR be delayed in the completion of the work by any act or neglect of the OWNER or ENGINEER, or of any employee of either or by other Contractors employed by the OWNER, or by changes ordered in the work, or by strikes, lockouts, fire, and unusual delays by common carriers, and unavoidable cause or causes beyond the CONTRACTOR'S control, or by any cause which the ENGINEER shall decide justifies the delay, then an extension of time shall be allowed for completing the work, sufficient to compensate for the delay, the amount of the extension to be determined by the ENGINEER; provided, however, that the CONTRACTOR shall give the ENGINEER prompt notice in writing of the cause of such delay.

22. HINDRANCES AND DELAYS. No charge shall be made by the CONTRACTOR for hindrances or delays from any cause (except where the work is stopped by order of the OWNER) during the progress of any portion of the work embraced in this contract. In case said work shall be stopped by the act of the OWNER, then such expense as in the judgment of the ENGINEER is caused by such stopping of said work shall be paid by the OWNER to the CONTRACTOR.

23. PRICE FOR WORK. In consideration of the furnishing of all the necessary labor, equipment and material, and the completion of all work by the CONTRACTOR, and on the completion of all work and the delivery of all material embraced in this contract in full conformity with the specifications and stipulations herein contained, the OWNER agrees to pay the CONTRACTOR the prices set forth in the PROPOSAL hereto attached, which has been made a part of this contract. And the CONTRACTOR hereby agrees to receive such prices in full for furnishing all material and all labor required for the aforesaid work, also for all expense incurred by him and for well and truly performing the same and the whole thereof in the manner and according to this Agreement, the attached specifications and requirements of the ENGINEER.

24. PARTIAL PAYMENTS. Once a month the CONTRACTOR shall prepare a statement showing as completely as practicable the total value of the work done by the CONTRACTOR up to and including the last day of the preceeding month; said statement shall also include the value of all sound materials delivered on the ground that are to be fabricated into the work. Statement shall be submitted to ENGINEER for his approval.

The OWNER shall then pay the CONTRACTOR within 15 days of the engineer's approval, the total amount of the statement as approved by the ENGINEER, less ten (10%) percent of the amount thereof, which ten (10%) percent shall be retained until final payment, and further less all previous payments, and further less all further sums that may be retained by the OWNER under the terms of this Agreement. It is understood, however, that in case the whole work is near to completion and some unexpected and unusual delay occurs due to no fault or neglect on the part of the CONTRACTOR, the OWNER may --- upon written recommendation of the ENGINEER---pay a reasonable and equitable portion of the retained percentage to the CONTRACTOR; or the CONTRACTOR at the OWNER'S option, may be relieved of the obligation to fully complete the work and, thereupon, the CONTRACTOR shall receive payment of the balance due him under the contract subject only to the conditions stated in paragraph 26 hereof.

25. FINAL COMPLETION AND ACCEPTANCE. Within ten (10) days after the CONTRACTOR has given the ENGINEER written notice that the work has been completed, or substantially completed, the ENGINEER and the OWNER shall inspect the work and within said time, if the work be found to be completed or substantially completed in accordance with the Plans and Specifications, the ENGINEER shall issue to the OWNER and the CONTRACTOR his Certificate of Completion, and thereupon it shall be the duty of the OWNER within said ten (10) days to issue a Certificate of Acceptance of the work to the CONTRACTOR.

26. FINAL PAYMENT. Upon the issuance of the Certificate of Completion, the ENGINEER shall proceed to make final measurements and prepare final statement of the value of all work performed and materials furnished under the terms of the Agreement and shall certify same to the OWNER, who shall pay to the CONTRACTOR on or before the 15th day after the date of the Certificate of Completion the balance due the CONTRACTOR under the terms of this Agreement, provided he has fully performed his contractual obligations under the terms of this contract; the said payment shall become due in any event upon said performance by the CONTRACTOR.

27. DELAYED PAYMENTS. Should the OWNER fail to make payment to the CONTRACTOR of the sum named in any partial or final statement, when payment is due, then the OWNER shall pay to the CONTRACTOR, in addition to the sum shown as due by such statement, interest thereon at the rate of six (6%) percent per annum from date due as provided in Paragraphs 24 and 26, until fully paid, which shall fully liquidate any injury to the CONTRACTOR growing out of such delay in payment, but the right is expressly reserved to the CONTRACTOR in the event payments be not promptly made, as provided in Paragraph 24, to at any time thereafter treat the contract as abandoned by the OWNER and recover compensation, as provided by Paragraph 45 of this contract.

28. ENGINEER'S AUTHORITY AND DUTY. It is mutually agreed between the parties of this Agreement that the ENGINEER shall supervise all work included herein. In order to prevent delays and disputes and to discourage litigation, it is further agreed by and between the parties of this contract, that if it cannot be otherwise agreed, the ENGINEER shall in all cases determine the amounts and quantities of the several kinds of work, which are to be paid for under this contract, and he shall determine all questions in relation to said work, and the construction thereof, and he shall in all cases decide every question which may arise relative to the execution of this contract on the part of said CONTRACTOR, that his estimates and findings shall be the conditions precedent to the right of the parties hereto to arbitration or to any action on the contract, and to any rights of the CONTRACTOR to receive any money under this contract; provided, however, that should the ENGINEER render any decision or give any direction, which in the opinion of either party hereto, is not in accordance with the meaning and intent of this contract, either party may file with said ENGINEER within thirty (30) days his written objection to the decision or direction so rendered, and by such action may reserve the right to submit the question so raised to arbitration as herein provided. It being the intent of this Agreement that there shall be no delay in the executing of the work, and the decision or directions of the ENGINEER as rendered, shall be promptly carried out, and any claim arising therefrom shall be thereafter adjusted by arbitration as hereinafter provided.

The ENGINEER shall, within a reasonable time, render and deliver to both the OWNER and the CONTRACTOR a written decision on all claims of the parties hereto and on all questions which may arise relative to the execution of the work or the interpretation of the contract, specifications and plans. Should the Engineer fail to make such decision within a reasonable time, an appeal to arbitration may be taken as if his decision has been rendered against the party appealing.

29. **CONTRACTOR'S DUTY.** The CONTRACTOR shall give personal attention to the faithful prosecution and completion of this work and shall be present either in person or by duty authorized representative on the site of the work continually during its progress. He shall maintain an office on or adjacent to the site of the work if so requested by the ENGINEER.

30. **CONTRACTOR'S AGENT.** The CONTRACTOR during his absence from the work shall keep a competent superintendent or foreman upon the work fully authorized to act for him in his absence, and to receive such orders as may be given for the proper continuance of the work. Notice to do any work, to alter work, to cease work which the CONTRACTOR is obligated to do; or concerning any imperfections in work or any material furnished when given to any foreman or agent of the CONTRACTOR in charge of any operation of the work in the absence of the CONTRACTOR shall be considered as notice to the CONTRACTOR, provided any notice given under this paragraph shall be in writing.

31. **CHARACTER OF WORKMEN.** The CONTRACTOR agrees to employ only orderly, competent and skillful men to do the work, and that whenever the ENGINEER shall inform him in writing that any man or men on the work are, in his opinion, incompetent, unfaithful or disorderly, such man or men shall be discharged from the work and shall not again be employed on the same without the ENGINEER'S written consent.

32. **CONSTRUCTION PLANT.** The CONTRACTOR shall provide all labor, tools, equipment, machinery and material necessary in the prosecution and completion of this contract where it is not otherwise specifically provided that the OWNER will furnish the same, and it is also understood that the OWNER shall not be held responsible for the care, preservation, conservation, or protection of any material, tools, or machinery or any part of the work until it is finally completed and accepted.

33. **RIGHT OF ENGINEER TO MODIFY METHODS AND EQUIPMENT.** If at any time the methods or equipment used by the CONTRACTOR are found to be inadequate to secure the quality of work or the rate of progress required under this contract, the ENGINEER may order the CONTRACTOR in writing to increase their safety or improve their character and efficiency, and the CONTRACTOR shall comply with such order.

If at any time the working force of the CONTRACTOR is inadequate for securing the progress herein specified, the CONTRACTOR shall, if so ordered in writing increase his force or equipment, or both, to such an extent as to give reasonable assurance of compliance with the schedule of progress.

34. SANITATION. Necessary sanitary conveniences for the use of laborers on the work, properly secluded from public observation, shall be constructed and maintained by the CONTRACTOR in such manner and at such points as shall be approved by the ENGINEER, and their use shall be strictly enforced.

35. CONTRACTOR'S BUILDINGS. The building of structures for housing men, or the erection of tents of other forms of protection, will be permitted only at such places as the ENGINEER shall direct, and the sanitary conditions of the grounds in or about such structures shall at all times be maintained in a manner satisfactory to the ENGINEER.

36. PROTECTION AGAINST ACCIDENT TO EMPLOYEES AND THE PUBLIC. The CONTRACTOR shall maintain such insurance as will protect the CONTRACTOR, the OWNER, and the ENGINEER from claims under Workmen's Compensation Acts, and any amendments thereof, and from any other claims for damages from personal injury, including death, which may arise from operations under this Agreement, whether such operations be by himself or by any subcontractor, or anyone directly or indirectly employed by either of them. Certificate of such insurance shall be filed with the OWNER, if so required, and shall be subject to his approval for adequacy of protection.

36a. PUBLIC LIABILITY AND PROPERTY DAMAGE. The CONTRACTOR shall maintain such insurance as will protect him and the OWNER against any and all claims and demands arising from injury to person or persons not in the employ of the CONTRACTOR, and against any and all claims and demands resulting from damage to any property due to any act or omission the CONTRACTOR or OWNER may be liable, in the operation of the work or the execution of this contract. Such insurance shall remain in effect on portions of the work which have been completed and which may or may not be occupied or utilized by the OWNER, if so required, and shall be subject to his approval for adequacy of protection.

37. PROTECTION OF ADJOINING PROPERTY. The said CONTRACTOR shall take proper means to protect the adjacent or adjoining property or properties in any way encountered, or which might be injured or seriously affected by any process of construction, to be undertaken under this Agreement, from any damage or injury be reason of said process of construction; and he shall be liable for any and all claims for such damage on account of his failure to fully protect all adjoining property.

38. PROTECTION AGAINST CLAIMS OR SUB-CONTRACTORS, LABORERS, MATERIALMEN AND FURNISHERS OF MACHINERY, EQUIPMENT AND SUPPLIES. The CONTRACTOR agrees that he will indemnify and save the OWNER harmless from all claims growing out of the lawful demands of

sub-contractors, laborers, workmen, mechanics, materialmen and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. When so desired by the OWNER, the CONTRACTOR shall furnish satisfactory evidence that all obligations of the nature here in above designated have been paid, discharged or waived. If the CONTRACTOR fails so to do, then the OWNER may at the option of the CONTRACTOR either pay unpaid bills, of which the OWNER has written notice, direct or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to liquidate any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payments to the CONTRACTOR shall be resumed in full, in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligation upon the OWNER by either the CONTRACTOR or his SURETY.

39. PROTECTION AGAINST ROYALTIES OR PATENTED INVENTION. The CONTRACTOR shall protect and save harmless the OWNER from all and every demand for damages, royalties or fees on any patented invention used by him in connection with the work done or material furnished under this contract; provided, however, that if any patented materials, machinery, appliance or invention is clearly specified in this contract, then, and in that event, the cost of procuring the rights of use and the legal release or indemnity shall be borne and paid by the OWNER direct, unless such cost is determined and directed to be included in the bid price at the time the proposal is submitted.

40. LAWS AND ORDINANCES. The CONTRACTOR shall at all times observe and comply with all Federal, State and local laws, ordinances and regulations, which in any manner affect the contract or the work, and shall indemnify and save harmless the OWNER against any claim arising from the violation of any such laws and ordinances, whether by the CONTRACTOR or his employees. In case the OWNER is a body politic and corporate, the law from which it derives its powers, insofar as the same regulates the objects for which, or the manner in which, or the conditions under which, the OWNER may enter into contract, shall be controlling, and shall be considered as part of this Contract, to the same effect as though embodied herein.

41. LIQUIDATED DAMAGES FOR DELAY. And the CONTRACTOR agrees that time is the essence of this contract, and that for each day of delay beyond the number of working days herein agreed upon for the completion of the work herein specified and contracted for (after due allowance for such extension of time as is provided

for under Extension of Time herein above the OWNER may withhold permanently from the CONTRACTOR'S total compensation, the sum of two hundred fifty dollars per day Dollars (\$ 250.00/day) as stipulated damages for such delay.

42. RECIPROCAL REWARD FOR DELAYED OR EARLY COMPLETION -----

DELETED

43. ASSIGNMENT AND SUBLETTING. The CONTRACTOR further agrees that he will retain personal control and will give his personal attention to the fulfillment of this contract and that he will not assign by Power of Attorney, or otherwise, nor sublet said contract without the written consent of the OWNER, and that no part or feature of the work will be sublet to anyone objectionable to the ENGINEER or the OWNER. The CONTRACTOR further agrees that the subletting of any portion or feature of the work, or materials required in the performance of this contract, shall not relieve the CONTRACTOR from his full obligations to the OWNER, as provided by this Agreement.

44. ABANDONMENT BY CONTRACTOR. In case the CONTRACTOR should abandon and fail or refuse to resume work within ten (10) days after written notification from the OWNER, or the ENGINEER, or if the CONTRACTOR fails to comply with the orders of the ENGINEER, when such orders are consistent with his contract, or with this Agreement or with the Specifications hereto attached, then, and in that case, the Surety of the bond shall be notified in writing and directed to complete the work, and a copy of said notice shall be delivered to the CONTRACTOR.

After receiving said notice of abandonment the CONTRACTOR shall not remove from the work any machinery, equipment, tools, materials or supplies then on the job, but the same, together with any materials and equipment under contract for the work, may be held for use on the work by the OWNER or the SURETY on the construction bond, or another contractor, in completion of the work; and the CONTRACTOR shall not receive any rental or credit therefore, (except when used in connection with Extra Work), where credit shall be allowed as provided for under Paragraph 17, Extra Work); it being understood that the use of such equipment and materials will ultimately reduce the cost to complete the work and be reflected in the final statement.

In case the Surety should fail to commence compliance with the notice for completion herein before provided for, within ten (10) days after service of such notice, then the OWNER may provide for completion of the work in either of the following election manners:

(a) The OWNER may thereupon employ such force of men and use such machinery, equipment, tools, materials, and supplies as said OWNER may deem necessary to complete the work and charge the expense of such labor, machinery, equipment, tools, materials and supplies to said CONTRACTOR, and the expense so charged shall be deducted and paid by the OWNER out of such monies as may be due, or that may thereafter at any time become due to the CONTRACTOR under and by virtue of this Agreement. In case such expense is less than the sum which would have been payable under this contract, if the same had been completed by the CONTRACTOR, then said CONTRACTOR shall receive the difference. In case such expense is greater than the sum which would have been payable under this contract, if the same had been completed by said CONTRACTOR, then the CONTRACTOR and/or his SURETY shall pay the amount of such excess to the OWNER; or

(b) The OWNER under sealed bids, after five (5) days notice published one or more times in a newspaper having a general circulation in the county of the location of the work, may let the contract for the completion of the work under substantially the same terms and conditions which are provided in this contract. In case of any increase in cost to the OWNER under the new contract as compared to what would have been the cost under this contract such increase shall be charged to the CONTRACTOR and the SURETY shall be and remain bound therefore. However, should the cost to complete any such new contract prove to be less than what would have been the cost to complete under this contract, the CONTRACTOR and/or his SURETY shall be credited therewith.

When the work shall have been substantially completed the CONTRACTOR and his SURETY shall be so notified and Certificates of Completion and Acceptance, as provided in Paragraph 25 hereinabove shall be issued. A complete itemized statement of

the contract accounts, certified to by the ENGINEER as being correct, shall then be prepared and delivered to the CONTRACTOR and his SURETY, whereupon the CONTRACTOR and/or his SURETY, or the OWNER as the case may be, shall pay the balance due as reflected by said statement, within fifteen (15) days after the date of such Certificate of Completion.

In the event the statement of accounts shows that the cost to complete the work is less than that which would have been the cost to the OWNER had the work been completed by the CONTRACTOR under the terms of this contract; or when the CONTRACTOR and/or his SURETY shall pay the balance shown to be due by them to the OWNER, then all machinery, equipment, tools, materials or supplies left on the site of the work shall be turned over to the CONTRACTOR and/or his SURETY. Should the cost to complete the work exceed the contract price, and the CONTRACTOR and/or his SURETY fail to pay the amount due the OWNER within the time designated hereinabove, and there remains any machinery, equipment, tools, materials or supplies on the site of the work, notice hereof, together with an itemized list of such equipment and materials shall be mailed to the CONTRACTOR and his SURETY at the respective addresses designated in this contract; provided, however, that actual written notice given in any manner will satisfy this condition. After mailing or other giving of such notice, such property shall be held at the risk of the CONTRACTOR and his SURETY subject only to the duty of the OWNER to exercise ordinary care to protect such property. After fifteen (15) days from the date of said notice the OWNER may sell such machinery, equipment, tools, materials or supplies and apply the net sum derived from such sale to the credit of the CONTRACTOR and his SURETY. Such sale may be made at either public or private sale, with or without notice, as the OWNER may elect. The OWNER shall release any machinery, equipment, tools, materials, or supplies, which remain on the work, and belong to persons other than the CONTRACTOR or his SURETY, to their proper owners.

45. ABANDONMENT BY OWNER. In case the OWNER shall fail to comply with the terms of this contract, and should fail or refuse to comply with said terms within ten (10) days after written notification by the CONTRACTOR, then the CONTRACTOR may suspend or wholly abandon the work, and may remove therefrom all machinery, tools and equipment, and all materials on the ground that have not been included in payments to the CONTRACTOR and have not been brought into the work. And thereupon the ENGINEER shall make an estimate of the total amount earned by the CONTRACTOR, which estimate shall include the value of all work actually completed by said CONTRACTOR at the prices stated in the attached proposal, the value of all partially completed work at a fair and equitable price, and the amount of all Extra Work performed at the prices agreed upon, or provided for by the terms

of this contract, and a reasonable sum to cover the cost of any provisions made by the CONTRACTOR to carry the whole work to completion and which cannot be utilized. The ENGINEER shall then make a final statement of the balance due the CONTRACTOR by deducting from the above estimate all previous payments by the OWNER and all other sums that may be retained by the OWNER who shall pay to the CONTRACTOR on or before thirty (30) days after the date of the notification by the CONTRACTOR the balance shown by said final statement as due the CONTRACTOR, under the terms of this Agreement.

46. BOND. IT is further agreed by the parties to this contract that the CONTRACTOR will execute a bond in an amount equal to one hundred (100%) percent of the contract price for the satisfactory performance of the work in accordance with this contract in the form provided for this purpose, and it is agreed that this contract shall not be in effect until such bond is furnished and approved by the OWNER.

47. TIME OF FILING CLAIMS. It is further agreed by both parties hereto that all questions of dispute or adjustment presented by the CONTRACTOR shall be in writing and filed with the ENGINEER within a reasonable time after the ENGINEER has given any directions, order or instruction to which the CONTRACTOR desires to take exception. The ENGINEER shall reply to such written exceptions by the CONTRACTOR and render his final decision, any demand for arbitration shall be filed with the ENGINEER and the OWNER in writing within ten (10) days after the date of the ENGINEER'S final decision. It is further agreed that final acceptance of the work by the OWNER and the acceptance by the CONTRACTOR of the final payment shall be a bar to any claims by either party, except as follows:

Contractor guarantees all workmanship, materials, and equipment, furnished under this contract, against defect or failure for a period of 12 months following date of final acceptance.

48. ADEQUACY OF DESIGN. It is understood that the OWNER has selected the ENGINEER named in this Agreement to prepare the plans and specifications, and all Supplements thereto; and agreed that the OWNER will be responsible for the adequacy of the design, sufficiency of the plans and specifications, and the safety of the structure, provided the CONTRACTOR has complied with said plans and specifications, all modifications thereof, and additions and alterations thereof, approved by the ENGINEER. The burden of proof shall be upon the CONTRACTOR to show that he has complied with this contract, said plans, specifications, and all modifications thereof, and all additions and alterations thereto.

49. ARBITRATION. All questions of dispute under this Agreement shall be submitted to arbitration at the request of either party to the dispute. The parties may agree upon one arbiter, otherwise, there shall be three; one named in writing by each party, and the third chosen by the two arbiters so selected; or if the arbiters fail to select a third within ten (10) days, he shall be chosen by the ENGINEER. Should the party demanding arbitration fail to name an arbiter within ten (10) days of the demand, his right to arbitrate shall lapse, and the decision of the ENGINEER shall be final and binding on him. Should the other party fail to choose an arbiter with ten (10) days, the ENGINEER shall appoint such arbiter. Should either party refuse or neglect to supply the arbiters with any papers or information demanded in writing, the arbiters are empowered by both parties to take ex-parte proceedings.

The arbiters shall act with promptness. The decision of any two shall be binding on both parties to the contract. THE DECISION OF THE ARBITERS UPON ANY QUESTION SUBMITTED TO ARBITRATION UNDER THIS CONTRACT WILL BE A CONDITION PRECEDENT TO ANY RIGHT OF LEGAL ACTION. The decision of the arbiter or arbiters may be filed in court to carry it into effect.

The arbiters, if they deem the case demands it, are authorized to award the party whose contention is sustained, such sums as they deem proper for the time, expense and trouble incident to the appeal, and if the appeal was taken without reasonable cause, they may award damages for any delay occasioned thereby. The arbiters shall fix their own compensation, unless otherwise provided by agreement, and shall assess the cost and charges of the arbitration upon either or both parties. The award of the arbiters must be made in writing, and shall not be open to objection on account of the form of proceedings or award.

49.INDEMNIFICATION. To the fullest extent permitted by law, the Contractor shall waive any right of contribution and shall indemnify and hold harmless the Owner and the Engineer and their agents and employees and consultants from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from or in connection with the performance of the Work, provided that any such claim, damage, loss or expense is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in the Agreement.

The Indemnity by the Contractor in favor of Owner and Engineer shall extend to (1) all attorneys fees and costs incurred in bringing an action to enforce the provisions of this indemnity or any other indemnity contained in the General Conditions; and (2) time expended by the party being indemnified and their employees, at their usual rates plus costs of travel, long distance telephone and reproduction of documents.

GENERAL PREVAILING WAGE LEGAL REQUIREMENTS

The Contractor's attention is called to Articles 5159A and 5160 of the Revised Civil Statutes of Texas, which Statutes must be complied with. These articles are as follows:

Article 5159A:

Section 1. Not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the work is performed, and not less than the general prevailing rate of per diem wages for legal holiday and overtime work, shall be paid to all laborers, workmen and mechanics employed by or on behalf of the State of Texas, or by or on behalf of any county, city and county, city, town, district, or other political subdivision of the State, engaged in the construction of public works, exclusive of maintenance work. Laborers, workmen, and mechanics employed by contractors or subcontractors in the execution of any contract or contracts for public works with the State, or any officer or public body thereof, or in the execution of any contract or contracts for public works, with any county, city and county, city, town, district or other political subdivision of this State, or any officer or public body thereof, shall be deemed to be employed upon public works.

Section 2. The public body awarding any contract for public work on behalf of the State, or on behalf of any county, city and county, city, town, district or other political subdivision thereof, or otherwise undertaking any public work, shall ascertain the general prevailing rate of per diem wages in the locality in which the work is to be performed for each craft or type of workman or mechanic needed to execute the contract, and shall specify in the call for bids for said contract, and in the contract itself, what the general prevailing rate of per diem wages in the said locality is for each craft or type of workman needed to execute the contract, also the prevailing rate of legal holiday and overtime work, and it shall be mandatory upon the contractor to whom the contract is awarded, and upon any subcontractor under him, to pay not less than the said specified rates to all laborers, workmen and mechanics employed by them in the execution of the contract. The contractor shall forfeit as a penalty to the state, county, city and county, city, town, district or other political subdivision on whose behalf the contract is made or awarded, Ten Dollars (\$10.00) for each laborer, workman or mechanic employed, for each calendar day, or portion thereof, such laborer, workman or mechanic is paid less than the said stipulated rates for any work done under said contract, by him,

or by any subcontractor under him, and the public body awarding the contract shall cause to be inserted in the contract a stipulation to this effect. It shall be the duty of such public body awarding the contract, and its agents and officers to take cognizance of complaints of all violations of the provisions of this Act committed in the course of the execution of the contract, and, when making payments to the contractor of monies becoming due under said contract, to withhold and retain therefrom all sums and amounts which shall have been forfeited pursuant to the herein said stipulation and the terms of this Act; provided, however, that no sum shall be so withheld, retained or forfeited, except from the final payment, without a full investigation by the awarding body. It shall be lawful for any contractor to withhold from any subcontractor under him sufficient sums to cover any penalties withheld, retained or forfeited, except from the final payment, without a full investigation by the awarding body. It shall be lawful for any contractor to withhold from any subcontractor under him sufficient sums to cover any penalties withheld from him by the awarding body on account of the said subcontractor's failure to comply with the terms of this Act, and if payment has already been made to him the contractor may recover from him the amount of the penalty or forfeiture in a suit at law.

Section 3. The contractor and each subcontractor shall keep, or cause to be kept, an accurate record showing the names of occupations of all laborers, workmen and mechanics employed by him, in connection with the said public work, and showing also the actual per diem wages paid to each of such workers, which record shall be open at all reasonable hours to the inspection of the public body awarding the contract, its officers and agents.

Section 4. Any construction or repair work done under contract, and paid for in whole or in part out of public funds, other than work done directly by any public utility company pursuant to order of the Railroad Commission or other public authority, whether or not done under public supervision or direction, or paid for wholly or in part out of the public funds, shall be held to the "public works" within the meaning of this Act. The terms "locality in which the work is performed" shall be held to mean the county, city and county, city, town, district or other political subdivision of this State in which the building, highway, road, excavation or other structure, project, development or improvement is situated in all cases in which the contract is awarded by the State, or any public body thereof, and shall be held to mean the limits of the county, city and county, city, town, district, or other political subdivision on whose behalf the contract is awarded in all other cases. The term "general prevailing rate of per diem wages" shall be the rate determined upon as such rate by the public body awarding the contract, or authorizing the work, whose decision in the matter shall be final. Nothing in this Act, however, shall be construed to prohibit the payment of any laborer, workman, or mechanic

employed on any public work as aforesaid of more than the said general prevailing rate of wages. Acts 1933, 43rd Leg., p. 91, ch. 45.

Section 5. Any officer, agent or representative of the State, or any political subdivision, district or municipality thereof, who willfully shall violate, or omit to comply with any of the provisions of this Act, and any contractor or subcontractor, or agent or representative thereof, doing public work as aforesaid, who shall neglect to keep, or cause to be kept, an accurate record of the name, occupation and actual wages paid to each laborer, workman and mechanic employed by him in connection with the said public work, or who shall refuse to allow access to same at any reasonable hour to any person authorized to inspect same under this Act, shall be guilty of a misdemeanor, and upon conviction, shall be punished by a fine not exceeding Five Hundred Dollars (\$500.00), or by imprisonment not exceeding six (6) months, or by both such fine and imprisonment, in the discretion of the Court.

Section 6. If any section, sentence, clause or part of this Act is for any reason held to be unconstitutional such decision shall not affect the remaining portions of this Act. The Legislature hereby declares that it would have passed this Act, and each section, sentence, clause or part thereof, irrespective of the fact that one or more section, sentences, clauses or parts thereof be declared unconstitutional.

Article 5160:

A. Any person or persons, firm or corporation, hereinafter referred to as "prime contractor", entering into a formal contract in excess of Twenty Five Thousand Dollars (\$25,000) with this State, any department, board or agency thereof; or any county of this state, department, board or agency thereof; or any municipality of this State, department, board or agency thereof; or any school district in this State, common or independent, or subdivision thereof; or any other governmental or quasi-governmental authority, whether specifically named herein or not, authorized under any law of this State, general or local, to enter into contractual agreements for the construction, alteration or repair of any public building or the prosecution or completion of any public work, shall be required before commencing such work to execute to the aforementioned governmental authority or authorities, as the case may be, the statutory bonds as hereinafter prescribed but no governmental authority may require a bond if the contract does not exceed the sum of \$25,000. Each such bond shall be executed by a corporate surety or corporate sureties duly authorized to do business in this state.

In the case of contracts of the State or a department, board, or agency thereof, the aforesaid bonds shall be payable to the State and shall be approved by the Attorney General as to form. In case of all other contracts subject to this Act, the bonds shall be payable to the governmental awarding authority concerned, and shall be approved by it as to form. Any bond furnished by any prime contractor in an attempted compliance with this Act shall be treated and construed as in conformance with the requirements of this Act as to rights created, limitations thereon, and remedies provided.

(a) A Performance Bond in the amount of the contract conditioned upon the faithful performance of the work in accordance with the plans, specifications and contract documents. Said bond shall be solely for the protection of the State or the governmental authority awarding the contract, as the case may be.

(b) A Payment Bond, in the amount of the contract, solely for the protection of all claimants supplying labor and material as hereinafter defined, in the prosecution of the work provided for in said contract, for the use of each such claimant.

B. Every claimant who has furnished labor or material in the prosecution of the work provided for in such contract in which a Payment Bond is furnished as required hereinabove, and who has not been paid in full therefore, shall have the right, if his claim remains unpaid after the expiration of sixty (60) days after the filing of the claim as herein required, to sue the principal and the surety or sureties on the Payment Bond jointly or severally for the amount due on the balance thereof unpaid at the time of filing the claim or of the institution of the suit; provided.

(a) Notices Required for Unpaid Bills, other than notices solely for Retainages as hereinafter described.

Such claimant shall have given within ninety (90) days after the 10th day of the month next following each month in which the labor was done or performed, in whole or in part, or material was delivered, in whole or in part, for which such claim is made, written notices of the claim by certified or registered mail, addressed to the prime contractor at his last known business address, or at his residence, and to the surety or sureties. Such notices shall be accompanied by a sworn statement of account stating in substance that the amount claimed is just and correct and that all just and lawful offsets, payments, and credits known to the affiant have been allowed. Such statement of account shall include therein the amount of any retainage or retainages applicable to the amount that have not become due by virtue of terms of the contract between the claimant and the prime contractor or between the claimant and a subcontractor. When the claim is based on a written agreement, the claimant shall have the option to enclose with the sworn statement of account, as such notice a true copy of such agreement and advising completion or value of partial completion of same.

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(1) When no written contract or written agreement exists between the claimant and the prime contractor or between the claimant and a subcontractor, except as provided in subparagraph B (a) (2) hereof, such notices shall state the name of the party for whom the labor was done or performed or to whom the material was delivered, and the approximate dates of performance and delivery, and describing the labor or materials or both and amount due therefore. The claimant shall generally itemize his claim and shall accompany same with true copies of documents, invoices or orders sufficient to reasonably identify the labor performed or material delivered for which claim is being made. Such documents and copies thereof shall have thereon a reasonable identification or description of the job and destination of delivery.

(2) When the claim is for multiple items of labor or material or both to be paid for on a lump sum basis such notice shall state the name of the party for whom the labor was done or performed or to whom the material was delivered, the amount of the contract and whether written or oral, the amount claimed and the approximate date or dates of performance or delivery or both and describing the labor or materials or both in such a manner so as to reasonably identify the said labor or materials.

(3) When a claimant who is a subcontractor or materialman to the prime contractor or to a subcontractor has written unit price agreement, completed or partially completed, such notices shall be sufficient if such claimant shall attach to his sworn statement of such units completed and of such units partially completed.

(b) Additional Notices Required of Claimants Who Do Have a Direct Contractual Relationship with the Prime Contractor.

Excepting an individual mechanic or laborer who is a claimant for wages, no right of action shall be legally enforceable, nor shall any suit be maintained under any provision of this Act by a claimant not having a direct contractual relationship with any prime contractor for material furnished or labor performed under the provisions of this Act unless such claimant has complied with those of the following additional requirements which are applicable to the claim.

(1) If any agreement exists between the claimant and any subcontractors by which payments are not to be made in full, therefore, in the month next following each month in which the labor was performed or the materials were delivered or both, such claimant shall have given written notice by certified or registered mail addressed to the prime contractor at his last known business address, or at his residence, within thirty-six (36) days after the 10th day of the month next following the commencement of the delivery of materials of the performance of

labor that there has been agreed upon between the claimant and such subcontractors such retention of funds. Such notice shall indicate generally the nature of such retainage.

(2) Such Claimant shall have given written notice by certified or registered mail as described in the preceding subparagraph B (b) (1), to the prime contractor within thirty-six (36) days after the 10th day of the month next following each month in which the labor was done or performed, in whole or in part, or material delivered, in whole or in part, that payment therefore has not been received. A copy of the statement sent to the subcontractor shall suffice as such notice.

(3) If the basis of the claim is an undelivered specially fabricated item or items as described in paragraph C (b) (2), such claimant shall have given written notice by certified or registered mail as described in the preceding subparagraph B (b) (1) to the prime contractor within forty-five (45) days after the receipt and acceptance of an order for hereinafter described specially fabricated material that such an order has been received and accepted.

(c) Notices of Unpaid Retainages Required. Retainage Defined.

Retainage as referred to in this Act is defined as any amount representing any part of the contract payments which are not required to be paid to the claimant within the month next following the month in which the labor was done or material furnished or both.

When a contract between the prime contractor and such claimant, or between a subcontractor and such claimant provided for retainage, such claimant shall have given, on or before ninety (90) days after the final completion of the contract between the prime contractor and the awarding authority, written notices of the claim for such retainage by certified or registered mail to the prime contractor at his last known business address, or at his home address, and to the surety or sureties. Such notices shall consist of a statement showing the amount of the contract, the amount paid, if any, and the balance outstanding. No claim for such retainage contained in such notices shall be valid to an extent greater than the amount specified in the contract between the prime contractor or the subcontractor and the claimant to be retained, and in no event greater than ten percent (10%) of such contract. However, such notices shall not be required if the amount claimed is part of a prior claim which has been made as heretofore described.

C. A claimant is defined as anyone having direct contractual relationship with the Prime Contractor, or with a subcontractor, to perform the work or a part of the work or to furnish labor or materials or both as a part of the work as follows

(a) Labor is to be construed to mean labor used in the direct prosecution of the work.

(b) Material is to be construed to mean any part or all of the following:

(1) Material incorporated in the work, or consumed in the direct prosecution of the work, or ordered and delivered for such incorporation or such consumption.

(2) Material specially fabricated on the order of the Prime Contractor or of a subcontractor for use as a component part of said public building, or other public work so as to be reasonably unsuitable for use elsewhere, even though such material has not been delivered or incorporated into the public building or public work, but in such extent only to the extent of its reasonable costs, less its fair salvage value, and only to the extent that such specially fabricated material is in conformity and compliance with the plans, specifications and contract documents for same.

(3) Rent at a reasonable rate and actual running repairs at a reasonable cost for construction equipment, used in the direct prosecution of the work at the project site, or reasonably required and delivered for such use.

(4) Power, water, fuel and lubricants, when such items have been consumed or ordered and delivered for consumption, in the direct prosecution of the work.

(c) A subcontractor is any person or persons, firm or corporation who has furnished labor or materials or both as defined above to fulfill an obligation to the prime contractor or to a subcontractor to perform and install all or part of the work required by the prime contractor.

A subcontractor shall have a claim, but such claim, including previous payments, however, shall not exceed that proportion of the subcontract price which the work done bears to the total of the work covered by the subcontract.

(d) When a claim is assigned to a third party then and in that event such third party shall stand in the same position as a claimant, provided the notices required in this Act are given.

D. Any person who shall willfully file a false and fraudulent claim hereunder shall be subject to the penalties for false swearing.

E. In the event any contractor, who shall have furnished the bonds provided in this Statute, shall abandon performance of his contract or the awarding authority shall lawfully terminate his right to proceed with performance thereof because of a default or defaults on his part, no further proceeds of the contract shall be payable to him unless and until all costs of completion of the work shall have been paid by him. Any balance remaining shall be payable to him or his surety as their interest may appear, as may be established by agreement or judgment of a court of competent jurisdiction.

F. The contracting authority is authorized and directed to furnish to any person making application therefore who submits an affidavit that he has supplied labor, rented equipment, or materials for such work, or that he has entered into a contract for specially fabricated material, and payment therefore has not been made, or that he is being sued on any such bond, a certified such payment bond and the contract for which it was given, which copy shall be prima facie evidence of the contents, execution and delivery of the original. Applicants shall pay for such certified copies such reasonable fees as the contracting authority may fix to cover the actual cost of preparation thereof.

G. All suits instituted under the provisions of this Act shall be brought in a court of competent jurisdiction in the county in which the project or work, or any part thereof, is situated. No suit shall be instituted on the performance bond after the expiration of one (1) year after the date of final completion of such contract. No suit shall be instituted by a claimant on the payment bond after the expiration of one (1) year after the date suit may be brought thereon under the provisions of Section 1.B. hereof. The State of Texas shall not be liable for the payment of any cost or the expenses of any suit instituted by any party or parties on the payment bond. Acts 1913, p. 185; Acts 1929, 41st Leg., p. 481, ch. 226(,) 1; Acts 1959, 56th Leg., p. 155, ch. 93.(,) 1.

TECHNICAL SPECIFICATIONS

GENERAL CONSTRUCTION AND SPECIFICATIONS

INTENT OF PLANS AND SPECIFICATIONS

The intent of the plans and specifications is to prescribe a complete work or improvements which the Contractor undertakes to do, in full compliance with the plans, specifications, special provisions, proposal and contract. The Contractor shall do all work as provided in the plans, specifications, special provisions, proposal and contract and shall do such additional extra work as may be considered necessary to complete the work in a satisfactory and acceptable manner. The Contractor shall furnish all labor, tools, materials, machinery, equipment and incidentals necessary to the prosecution of the work.

FINAL CLEAN-UP

Upon the completion of the work and before acceptance and final payment will be made, the Contractor shall clean and remove from the site of the work surplus and discarded materials, temporary structures and debris of every kind. He shall leave the site of the work in a neat and orderly condition equal to that which originally existed. Surplus and waste materials removed from the site of the work shall be disposed of at locations satisfactory to the Engineer. Grounds around any structures shall be dressed to final grade as shown on plans.

EXISTING STRUCTURES

The plans show the locations of all known surface and subsurface structures. However, the exact location of gas mains, water mains, conduits, sewers, etc., is unknown and the Owner assumes no responsibility for failure to show any of these structures on the plans or to show them in their exact location. It is mutually agreed such failure will not be considered sufficient basis for claims for additional compensation for extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as necessitates or requires the building of special work, provision for work is not made in the plans and proposal, in which case the provisions in these specifications for extra work shall apply.

COORDINATION OF PROJECT

The plans, specifications, the proposal, special provisions and all supplementary documents are intended to describe a complete work and are essential parts of the contract. A requirement occurring in any of them is binding. In case of discrepancies, figured dimensions shall govern over specifications; special provisions shall govern over both general and standard specifications; and plans and quantities shown on the plans shall govern over those shown in the proposal. The Contractor shall not take advantage of any apparent error or omission in the plans and specifications and the Engineer shall

be permitted to make such corrections or interpretations as may be deemed necessary for the fulfillment of the intent of the plans and specifications. In the event the Contractor discovers an apparent error or discrepancy, he shall immediately call this to the attention of the Engineer.

COOPERATION OF THE CONTRACTOR

The Contractor shall give to the work the consistent attention necessary to facilitate the progress thereof, and he shall cooperate with the Engineer, his inspectors, and with other contractors in every way possible.

WAGES

All employees directly employed on the work shall be paid the prevailing wage scale for work of a similar character in this locality. Minimum wage scale is also included in these specifications.

MATERIALS-GENERAL

The materials shall be the best procurable, as required by the plans, specifications and special provisions. The material shall be used only after approval has been given by the Engineer and only so long as the quality of said materials remains equal to the requirements of the specifications. The Contractor shall furnish approved materials from other sources, if for any reason the product from any source at any time before commencement or during the prosecution of the work proves unacceptable. After approval, any materials which has become mixed with or coated with dirt or any other foreign substances during its delivery and handling will not be permitted to be used in the work.

MATERIALS STORAGE

Any and all materials, such as cement, lime, mill work, or other materials or equipment subject to deterioration by exposure to weather or other factors, shall be stored in such a manner to protect them from deterioration or damage preceding the time they become a permanent part of final structures.

"OR EQUAL" CLAUSE

Whenever a material or article is required is specified or shown on the plans by using the name of the proprietary product, or of a particular manufacturer or vendor, any material or article which will perform adequately the duties imposed by the general design and

will be considered equal and satisfactory, provided the material or article so proposed is of equal substance and function, and only after written approval by the Engineer.

Except where otherwise specifically prescribed herein, all provisions except for Measurement and Payment of the following Texas State Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges, dated June 1, 2004, shall cover the work to be done under the specifications:

Item 100	Preparing ROW
Item 204	Sprinkling
Item 210	Rolling
Item 216	Proof Rolling
Item 247	Flexible Base
Item 251	Reworking Base Courses
Item 260	Lime Treatment (Road-Mixed)
Item 263	Lime Treatment (Plant-Mixed)
Item 300	Asphalts, Oils, & Emulsions
Item 310	Prime Coat
Item 340	Dense-Graded Hot Mix Asphalt (Method)
Item 341	Dense-Graded Hot Mix Asphalt (QC/QA)
Item 400	Excavation and Backfill for Structures
Item 404	Driving Pile
Item 409	Prestressed Concrete Piling
Item 420	Concrete Structures
Item 421	Hydraulic Cement Concrete
Item 425	Precast Prestressed Concrete Structural Members

Item 426	Prestressing
Item 428	Concrete Surface Treatment
Item 440	Reinforcing Steel
Item 450	Railing
Item 502	Barricades, Signs, and Traffic Handling
Item 506	Temporary Erosion, Sedimentation, and Environmental Controls
Item 529	Concrete Curb, Gutter, and Combined Curb and Gutter
Item 530	Intersections, Driveways, and Turnouts

GENERAL

This item shall govern the furnishing, installation, jointing of sanitary sewer pipe of size specified by the project plans, and their appurtenance. Whenever a designated reference is used, it shall be understood that the latest revisions of said reference will apply.

All sanitary sewer mains shall be constructed in accordance with specifications herein outlined and in conformity with the required lines, grades and details shown on the project plans and/or as directed by the Engineer.

MATERIALS FOR SANITARY SEWERS

- A) Polyvinyl Chloride and Fittings: Pipe and fittings shall be manufactured from resins made in accordance with ASTM D 1784. The pipe shall be SDR 35 solid wall pipe for depths up to 14 feet of cut and SDR 26 solid wall pipe for depths over 14 feet (unless otherwise specified on the plans or specifications) and shall be manufactured in accordance with ASTM D 3034. The joints shall be compression elastomeric gaskets complying in all respects with physical requirements specified in ASTM F 477 and the joints shall be D 3212.

PIPE HANDLING

- A) Pipe, fittings and other accessories shall be hauled to and distributed at the site of the project by the manufacturer or by the contractor. They shall at all times be handled with care in order to avoid damage. In loading and unloading, they shall be lifted by hoists, cranes, or any other suitable machine as in a manner which avoids sudden shock and free fall. Under no circumstances shall the pipe be dropped. Pipe shall be placed on the site of the project parallel with the trench alignment and with the bell ends facing the direction in which the work will proceed. The Contractor shall be responsible for the acceptability and storage of all material furnished by him and shall assume responsibility for the placement of all such material found damaged in shipping or on job site or defective in manufacture. This shall include the furnishing of all material and labor required for the replacement of installed material discovered to be defective prior to the final acceptance of work.

The interior, as well as all sealing surfaces of all pipe, fittings, and other accessories shall be kept free from dirt and foreign matter. Pipe bundles shall be stored on flat surfaces with uniform support. Keep rubber gaskets away from oil, grease, electric motors which produce ozone, excessive heat and the direct rays of the sun.

SANITARY SEWER SYSTEM

- (B) PVC pipe stored outside and exposed to prolonged periods of sunlight (six months or more) should be covered with canvas or other opaque material. Clear plastic sheet shall not be used. Air circulation shall be provided under covering.

SANITARY SEWER ALIGNMENT

Unless otherwise indicated sanitary sewer pipe in trenches shall be laid to the grades shown on the approved construction plans. Each joint of pipe shall be laid on an even and uniform grade and in accordance with the elevation shown. The contractor shall establish the grade line in the trench or excavation from grade stakes established by the Engineer.

CONFLICTING OBSTRUCTIONS

Conflicting obstructions may be encountered when excavating sanitary sewer without deviations from the location established by the drawings. The Contractor shall be responsible for the conflicting surface and sub-surface structures, utilities and obstructions shown on the drawings. He shall bear all expense arising from obstructions encountered and shall perform all locating or causing to be located, protected, repair of damage, and necessary removal, adjustment and relocation if indicated on the drawings. When a conflicting publicly or privately owned utility is require to be relocated by its owner, the Contractor shall cooperate with the utility owner and shall locate, excavate, protect, and expose the utility at the Contractor's expense. If the original project plans have been changed from original contract, the Contractor shall be reimbursed for extra work performed. If conflicts or obstructions occur that are not shown on the drawings, the Contractor shall be reimbursed for extra work to make the adjustment required by the Engineer.

STOCKPILING EXCAVATED MATERIALS

All excavated material shall be stockpiled in a manner that will not endanger the work. Hydrants under pressure, water and gas valves, manhole covers, fire and police call boxes, or other utility controls shall be left unobstructed and accessible until the work is completed. Gutters shall be kept open or other satisfactory provisions made for street drainage; and natural watercourses shall not obstruct adjacent street, walks or driveways.

DISPOSAL OF DEBRIS REMOVED PAVEMENT AND WASTE EXCAVATION

No debris shall be disposed of in the trench backfill. Debris removed pavement, and excavation which is surplus or unsuitable for backfill shall be disposed of by the

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Contractor in a manner suitable to the Owner of the disposal location property and which is approved by the Engineer.

INSTALLATION

- A) Installation of PVC pipe shall follow the installation requirements of ASTM D 2321, Standard recommended practice.

EXCAVATION

The Contractor shall perform all excavation of every description and of whatever substances encountered, to the lines and grades shown on the plans or determined by the Engineer. During excavation, material suitable for backfilling shall be stockpiled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. All excavated materials not required or suitable for backfill shall be removed and wasted as indicated on the drawings or as directed by the Engineer. Such grading shall be done as may be necessary to prevent surface water from flowing into trenches or other excavation, and any water accumulating therein shall be removed by pumping or by other approved methods. The Contractor shall provide trench protection in accordance with the specified requirements in this contract. Backfilling and removal of trench support shall progress together from the bottom of the trench. Jacks or braces shall be released slowly and in unstable soils, ropes shall be used to pull out the jacks, braces and all other items of shoring from above. No lumber or other items of shoring shall be permitted to be left in the trench. Unless otherwise indicated excavation shall be by open cut except that short sections of a trench may be tunneled, if in the opinion of the Engineer, the pipe or structure can be safely and properly installed or constructed, and backfill can be properly tamped in such tunnel section.

Trenches may be excavated no more than two (200) feet ahead of laying pipe. All trenches shall be excavated essentially vertical with no slopes to sidewalls. No extra width cutting at the bottom or flaring at the top will not be permitted unless at the Engineer's direction. In special cases where trench flaring is permitted and directed by the Engineer, the trench walls shall remain vertical to a depth of at least one (1) foot above the top of the pipe. The bottom of the trench shall be squared or slightly curved to the shape of the trenching machine cutters. The bottom of the trenches shall be accurately graded to provide uniform bearing and support for each section of pipe on the undisturbed soil at every point along its entire length except for the portions of pipe sections where it is necessary to excavate for bell holes and for the proper sealing of pipe joints. Bell-bottom has been graded and in order that pipe rest upon the prepared bottom for as nearly its full length as practicable. Whenever over excavation occurs, the under cut trench shall be restored to grade, to the satisfaction

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of the Inspector, by replacement of excavated material compacted to the same density as the surrounding natural ground.

Such over excavation not specifically ordered by the Engineer shall be corrected to the proper grade at the Contractor's expense.

When ground water or wet suitable soil is encountered in the trench excavation, the Contractor shall proceed to lowering the ground water level to allow for the grading of the bottom of the trench and laying of the pipe. Dewatering and lowering of the water level in the excavation may be done by pumping water out through a system of well points. Unstable soil shall be removed to the depth determined by the Engineer and the trench backfilled to grade with pea gravel. Dewatering operations and pea gravel filler material are items not paid for directly but shall be included in the various costs for excavation.

The depth of cut indicated on cut sheets, as furnished by the Engineer, is from the offset or cut hub elevation to the invert of the pipe. The width of the trench shall be at least the outside diameter of the pipe plus six (6") inches on each side of the pipe for all pipe sizes.

The maximum working room for pipe twenty-four (24") inches and under shall be twelve (12") inches from each side of the pipe to the face of the trench walls. Where sheathing and bracing are used a maximum twelve (12") inches working space, measured from the pipe to the face of the sheathing will be allowed. If allowable trench widths are exceeded through caving of earth trenches, or over excavation, the Contractor shall employ corrective measures or alternate designs at his own expense. For pipe over twenty-four (24") inches in diameter, trench width shall be as shown on the plans.

It shall be understood that the depth of cut as indicated on the cut sheet may be more or less than the actual excavated depth due to ground conditions existing at the site. For this reason the Engineer shall determine the depth for pay purposes based on the surface elevation prior to the Contractor's operation and the invert of the sewer line. The Engineer's decisions shall be final.

Excavation shall not be backfilled until the construction structures or appurtenances as installed conform to the requirements specified. The excavation shall be carefully backfilled with the excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand and gravel, soft shale or other approved materials, free from large clods of earth, stones and organic matter.

BACKFILLING

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A) **Initial Backfill:** Initial backfill is defined as backfill from the bottom of the trench to a point one foot above the top of the pipe. Initial backfill shall consist of select materials taken from the excavation and shall be constructed in accordance with details shown on the plans and these specifications.

1) **Bedding Requirements:**

(a) **Polyvinyl chloride (PVC) pipe:** Bedding for PVC pipe shall conform to the requirements of ASTM D 2321. Embedment material shall be as required by ASTM 2321 Section 6.1.1 Class B and as shown on the Sanitary Sewer Standards detail sheet in the plans.

2) **For Sewer Line Less Than 24 Inches in Diameter:**

Initial backfill for sanitary sewer lines less than 24 inches in diameter shall be placed in two (2) lifts. The first backfill material shall be spread evenly alongside and under the shoulders of the pipe and thoroughly compacted by means of hand or mechanical tamps, to the satisfaction of the Inspector. The tamps shall have shoes of size and shape as to insure thorough ramming and compaction under the shoulders of the pipe. The first lift of initial backfill shall be inspected and approved prior to placement of the second lift. The second lift shall extend from the spring line of the pipe to a depth of one foot above the top of the pipe. The second lift shall be evenly spread to the specified depth and thoroughly compacted with hand and mechanical tamps to the satisfaction of the Inspector. (Use little or no tamping of the initial backfill directly over the top of the pipe to avoid disturbing the embedded pipe, since this area will contribute nothing to the pipe support).

3) **For Sanitary Sewer Lines 24 Inches in Diameter and Larger:**

Initial backfill for sanitary sewer lines 24 inches in diameter and larger, shall be placed alongside and over the pipe in 12 inches (loose measurement) lifts, and shall be compacted in the manner prescribed in paragraph (1) above.

4) **Optional Sand Initial Backfill:**

In lieu of compacted select material for the initial backfill as specified in paragraphs (1) and (2) above, the Contractor may use a saturated sand as initial backfill.

Sand shall be a clean, free flowing, pit run sand, 100% passing the ¼ inch sieve. The plasticity index shall be not more than six (6), when tested in accordance with Texas Highway Department Test Method Tex-106-E.

After the constructed sewer has been inspected and approved additional quantities of sand shall be evenly spread alongside, under the pipe shoulders and over the pipe until the trench is covered to a depth of one foot over the top of the pipe. The sand shall then be saturated by flooding with water, and if necessary, additional sand shall be added to maintain a one-foot cover over the top of the pipe. No mechanical or hand compaction will be required on an approved saturated sand initial backfill. Flooding is only allowed when the pipe is securely anchored to prevent floating.

- B) Secondary Backfill: Secondary backfill is defined as backfill from a point one (1) foot above the top of the pipe to the top of the trench. Secondary backfill shall consist of materials removed from the trench. Each composite layer of secondary backfill shall be introduced in five-foot lifts and compacted with water backfill method. The final lift of secondary backfill shall be compacted by use of the jetting or water backfill method in combination with the use of pneumatic or mechanical tampers or ditch tamping machine.

1) Jetting:

Water jetting shall be delivered under sufficient volume and pressure through an approved jetting hose and pipe nozzle. The jetting hose shall have a minimum inside dimension of two (2) inches. The jetting hose shall be connected to an approved minimum two-inch water pump capable of delivering water at the volume and pressure as required by the Engineer. The pipe nozzle shall be sufficient length to introduce the water at a depth of not less than one foot above the preceding lift. Points of trench jetting shall be staggered along the length of the trench and spaced at not more than one (1) foot above the preceding lift. Sufficient water shall be introduced into the backfill to cause complete subsidence of the backfill and develop freestanding water at the surface of each lift.

(a) Water backfill:

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Water backfill technique shall conform to as outlined in the Standard Specifications for construction of highways, streets, and bridges may be used.

2) **Compaction of Final Lift:**

The portion of secondary backfill within five feet of the surface of the trench shall be compacted with water by use of the jetting method in combination with ditch tamping machines.

After the final lift has been jetted as approved, twelve (12) hours shall be allowed for the reduction of the materials moisture content. When the backfill moisture content is acceptable for compaction, the surface shall be compacted to the satisfaction of the Engineer.

3) **Road Crossings:**

Secondary backfill of trenches across a roadway shall be done by mechanical tamping in layers not to exceed 8 inches (loose) for a length of trench equal to the width of the roadway plus 4 feet on each side. This backfill shall achieve a density of 90% Standard Proctor and shall be tested once at each crossing. On all road crossings where a permit is required by the State Department of Highways and Public Transportation (SDH&PT), the contractor shall meet or exceed the requirements of the SDH&PT.

SERVICE CONNECTIONS

All service connection installations shall consist of a four (4") inch diameter sanitary sewer. The sanitary sewer material shall be Polyvinyl Chloride (PVC) ASTM Designation D 3034 or ASTM 2680. All services shall be marked on the curb by "branding" the concrete with an "S" at the service location.

MANHOLE INSTALLATION

- 1) **PVC Sewer pipe-** Connections to manhole may be made by one of the following procedures:

Water stop in various forms (flex boot, sleeve, O-ring, or gasket) grouted or locked into manhole wall. Pipe inserts into water stop.

- 2) Manhole Inverts – Manholes shall have inverts in them in which flow channels to the spring line of the pipes are constructed as shown on the standard detail sheet. Where sewer lines enter the manhole at higher than 24 inches above the manhole invert, the invert shall be filleted to prevent solids deposition. A drop pipe (drop manhole) shall be provided for a sewer entering a manhole at over 24 inches above invert as shown on the standard detail sheet.

Fiberglass Manholes

A – Fiberglass Wetwell

- 1.0 General: Fiberglass reinforced polyester wetwells shall be manufactured from commercial grade polyester resin or other suitable polyester or vinyl ester resin, with fiberglass reinforcements.

- 2.0 Materials:

Resins: The resins used shall be a commercial grade unsaturated polyester resin.

- 2.1 Reinforcing Materials: The reinforcing materials shall be commercial Grade “E” type glass in the form of mat, continuous roving, chopped roving, roving fabric, or a combination of the above, having a coupling agent that will provide a suitable bond between the glass reinforcement and the resin.

- 2.2 Surfacing Materials: If reinforcing materials is used on the surface exposed to the contained substance, it shall be a commercial grade chemical-resistant glass that will provide a suitable bond with the resin and leave a resin rich surface.

- 2.3 Fillers and Additives: Fillers, when used, shall be inert to the environment and wetwell construction. Additives, such as thixotropic agents, catalysts, promoters, etc., may be added as required by the specific manufacturing process to be used. The resulting reinforced plastic material must meet the requirement of this specification.

- 3.0 Fabrication:

Exterior Surface: The exterior surface shall be relatively smooth with no sharp projections. Hand-work finish is acceptable if enough resin is present to

eliminate fiber show. The exterior surface shall be free of blisters larger than ½ inch in diameter, delamination and fiber show.

4.0 Interior Surface: The interior surface shall be resin rich with no exposed fibers. The surface shall be free of crazing, delamination, blisters larger than ½ inch in diameter, and wrinkles of 1/8 inch or greater in depth. Surface pits shall be permitted up to 6/square feet if they are less than ¾ inch in diameter and less than 1/16 inch deep.

5.0 Defects not Permitted:

- a. Exposed fibers: glass fibers not wet out with resin.
- b. Resin runs: Runs of resin and sand on the surface.
- c. Dry areas: Areas with glass not wet out with resin.
- d. Delamination: Separation in the laminate.
- e. Blisters: Light colored areas larger than ½ inch in diameter.
- f. Crazing: Cracks caused by sharp objects.
- g. Pits or Voids: Air pockets.
- h. Wrinkles: Smooth irregularities in the surface.
- i. Sharp Projection: Fiber or resin projections necessitating gloves for handling.

6.0 Physical Requirements:

Load Rating: The complete wetwell shall have a minimum dynamic-load rating of 16,000 ft-lbs when tested in accordance with Section 7.0. To establish this rating, the complete wetwell shall not leak, crack, or suffer other damage when load tested to 40,000 ft-lbs and shall not deflect vertically downward more than ¼ inch at the point of load application when loaded to 24,000 lbs.

6.1 Stiffness: The wetwell cylinder shall have a minimum pipe-stiffness values shown in Table 6.1 when tested in accordance with Section 7.0

Table 6.1 Stiffness Requirements

<u>Length, ft.</u>	<u>F/AY, psi</u>
10 to 20	2.01
21 to 30	3.02
31 to 40	5.24

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Physical Properties:

	<u>Hoop Direction</u>	<u>Axial Direction</u>
a. Tensile Strength (psi)	18,000	5,000
b. Tensile Modulus (psi)	0.8×10^6	0.7×10^6
c. Flexural Strength (psi)	26,000	4,500
d. Flexural Modulus (psi)		
(no ribs – 48", 60", 72")	1.4×10^6	0.7×10^6
(with ribs – 96", 144")	0.7×10^6	0.7×10^6

7.0 Test Methods: Test shall be performed as specified in ASTM D 3753 latest edition, Section 8.

8.0 Required Thicknesses for Buried Fiberglass Manholes
Fiberglass manholes shall meet the following thickness requirements:

<u>Diameter</u> (in)	<u>Wet Soil Depth (max)</u> (ft)	<u>Min. Thickness</u> (in)	<u>Min. Thickness Allowed</u> (in)
48	10	.25	.375
	20	.3125	.375
	30	.375	.375
60	10	.375	.375
	20	.4375	.4375
	30	.5	.5000

9.0 Installation:

Fiberglass manholes will be confined to installations behind the curb, or out of heavy traffic lanes only. Further, the fiberglass manhole shall not be used for depths greater than ten (10) feet.

The manholes shall be installed according to the manhole details shown in the plans.

After the manhole has been installed into the concrete base as shown, the excavated area will be backfilled with sand.

ACCEPTANCE

- 1) All sanitary sewers shall pass Air Test outlined as follows:

Leakage Test – After backfilling and removing debris from each section of sewer line, conduct a line acceptance test under observation of the Engineer. Test the sanitary sewer lines in strict accordance with the following leakage test using low-pressure air. If the test results indicate an unacceptable installation, locate the source of leakage, correct the defect, and retest until the installation is proven satisfactory.

A. Minimum Requirements for Equipment:

1. Control panel
2. Low-pressure air supply connected to control panel.
3. Pneumatic plugs of acceptable size for diameter of the pipe to be tested; capable of withstanding internal test pressure without leaking or requiring external bracing.
4. Air hose control panel to:
 - a. Air supply
 - b. Pneumatic plugs
 - c. Sealed line for pressurizing
 - d. Sealed line for monitoring internal pressure

B. Testing Pneumatic Plugs

Test plugs before using in actual test installation. Place one length of pipe on ground and seal at both ends with pneumatic plugs to be checked. Pressurized plugs to 25 psig; then pressure sealed pipe to 5 psig. The plugs are acceptable if they remain in place against the test pressure without external aids.

C. Compensating for Groundwater Pressure:

Where groundwater exists, install a capped pipe nipple at the same time the sewer line is placed. Use a ½ inch capped pipe nipple approximately 10 inches long. Make the installation through the manhole wall on top of the sewer line where the line enters the

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manhole. Immediately before performing the line acceptance test, remove the pipe cap, clean the pipe cap, clean the pipe nipple with air pressure, and connect a clear plastic tube to pipe nipple. Support the tube vertically and allow water to rise in the tube. After the water stops rising, measure the height in feet of water over the invert of the pipe. Divide this height by 2.3 feet/psi to determine the groundwater pressure to be used in line testing.

D. Line Testing:

After pneumatic plugs have been checked, place plugs in line at manholes and inflate plugs to 25 psig. Introduce low-pressure air into the sealed line until the internal air pressure reaches 4 psig greater than the groundwater pressure. Allow at least 2 minutes for air pressure to stabilize. If at least 3.5 psig over groundwater pressure is maintained disconnect the air hose from the control panel to the air supply and measure the time of the pressure drop between 3.5 and 2.5 psig above groundwater pressure. The installation is acceptable if the air loss rate does not exceed 0.003 cfm per square foot of internal pipe surface with an average test pressure of 3.0 psig than groundwater pressure.

The line between manholes is within acceptable limits if the time for the 1 psig pressure drop is not less than the time listed below for pipe sizes indicated.

<u>Pipe Diameter In Inches</u>	<u>Minute Pressure is Maintained</u> (per 100 ft. of pipe)
6	0.7
8	1.2
10	1.5
12	1.8
15	2.1
18	2.4
21	3.0
24	3.6
27	4.2

- 2) PVC Composite Wall and PVC Sanitary Sewers shall pass the Deflection Test Mandrel as outlined as follows:

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Mandrel Test PVC:

Perform deflection testing on each sewer line segment, using a mandrel pulled through the pipe section of sufficient size to determine that deflection of the pipe diameter does not exceed 5%.

Testing shall be performed no sooner than 30 days after installation of the pipe. Mandrel diameter shall be at least 95% of the pipe diameter and shall be pulled without the aid of mechanical devices.

- 3) The Air Test and Deflection Mandrel Test shall be paid for by the Contractor.

PAYMENT

- 1) Sanitary sewer pipe will be paid for at the contract bid price per linear foot complete in place at various depths for the type, size, and depth constructed. All sewer pipe will be measured from center of manhole to center of manhole or end of main. The measurement will be continuous through any fittings in the main.
- 2) Manholes shall be paid for at the contract bid price per each at various depths and will be measured from the top of the ground to the sanitary sewer invert. Said price shall be full compensation for furnishing all materials, backfilling, tamping, labor, tools, equipment, and other incidentals necessary to complete the work.
- 3) Sanitary sewer fitting shall not be paid for directly, but shall be included in the sanitary sewer pipe installation bid price. Said bid price shall be full compensation for all materials, labor, equipment, tools, excavation, over excavation, pumping, dewatering, pea gravel filler material, bedding requirements, replacing concrete curb and gutter, and all other incidentals necessary to complete the work.
- 4) Allowance will be made for materials on hand on estimates upon receipt of invoice for the Contractor.
- 5) All testing requirements will be paid for by the Contractor.

SANITARY SEWER LINE – WATER LINE SEPARATION

As shown on the plan sheets, where the proposed sanitary sewer line parallels a water main and the 9.0 foot separation cannot be achieved, the sanitary sewer shall be constructed of PVC pipe Class 160 (SDR 26) with pressure type joints. The water

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and sewer lines shall have a minimum proximity of 2.0 feet vertical and 4.0 feet horizontal measured between the nearest outside diameters of the pipes and the waterline shall be located above the sewer line.

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Concrete shall be composed of Portland Cement, sand and gravel thoroughly mixed to such proportions as will result in a dense concrete having a compressive strength of not less than three thousand (3000) pounds at twenty eight (28) days or greater if so designated on the plans or prescribed elsewhere in the specifications.

Cement for use in concrete shall be Normal Portland Cement conforming to the requirements of the current "Specifications for Portland Cement", A.S.T.M. Designation: C-150-44 ' Type I, or High Early Strength Portland Cement conforming to the requirements of the current "Specifications for High Early Strength Portland Cement", A.S.T.M. Designation: C-150-44 Type III. Only one brand or type of cement shall be used in any one structure unless authorized in writing by the Engineer.

Sand and gravel shall be clean, hard, dense, durable, uncoated inorganic rock fragments free from injurious amounts of clay, loam, silt, and other deleterious substances, and shall fall within the following limits of graduation:

Percent Passing by Weight

	Sieve Size	Min.	Max.
Sand	No. 4	75	100
	No. 8	60	90
	No. 16	45	80
	No. 30	30	60
	No. 50	6	20
	No. 100	0	3
Gravel	1-1/2"	95	100
	1"	45	85
	3/4"	25	70
	1/2"	10	40
	3/8"	5	18
	No. 4	0	5

Water used in mixing concrete or mortar shall be reasonably clean and free from injurious amounts of oil, alkali, organic matter or other deleterious substances. In general, water which is suitable for drinking or ordinary household use will be acceptable for use in mixing concrete or mortar.

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The Contractor shall have samples of all cement and aggregate to be used in various parts of the work tested by an independent laboratory in accordance with the methods recommended currently by the A.S.T.M. for testing such materials, and the results of these tests shall be furnished to the Engineer prior to the use of the materials.

After the materials have been tested, the proportions of cement, aggregate, and water to be used in mixing shall be determined so as to produce concrete and mortar of the strength prescribed for the various elements of the work, but in no case shall the mix contain less than five (5) sacks of cement per cubic yard of concrete. A maximum of six (6) gallons of water per sack of cement is to be used.

Admixes that will reduce shrinkage, increase workability, reduce absorption, or otherwise improve the quality of the concrete, may be used when so authorized in writing by the Engineer, and proportion of admix so used shall not exceed that designated by the Engineer. For this project, entrained air will be required in accordance with the requirements in the State Department of Highways and Public Transportation specification for Item 421, "Hydraulic Cement Concrete".

Forms to confine the concrete to the required shapes, line, grade and dimensions shall be used wherever necessary. All exposed concrete surfaces having slopes of one to one (1:1) or steeper shall be formed. All forms shall be of sufficient strength and rigidity, and shall be sufficiently anchored and braced to withstand deflection while cement is being poured and consolidated by tamping or vibrating. The surface of all forms in contact with concrete shall be smooth and sufficiently tight to prevent leakage of mortar, and shall be thoroughly coated with non-staining oil or covered with paper prior to pouring concrete.

Bridge slabs and other small structures may be precast or cast in place, but the methods of forming, finishing, and placing precast units shall be subject to approval by the Engineer.

The concrete shall be thoroughly mixed in a batch mixer of approved design. The mixing of each batch shall continue at least one and one-half (1-1/2) minutes after all materials, except the full charge of water, are in the mixer during which time the mixer shall rotate at the speed for which it was designed. Only those methods of transporting and placing that will deliver into the work concrete of the required consistency without segregation, and without objectionable porosity, will be permitted.

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Dropping the concrete a greater distance than five (5) feet, or depositing a larger quantity at any one point and flowing or working it along the forms, will not be permitted. Metal, rubber, or fabric drop chutes are approved for placing concrete in thin sections or in tall wall sections.

All surfaces exposed to view, that have been cast against forms, shall be finished by rubbing with a No. 16 carborundum stone until smooth. Exposed surfaces not cast against forms shall be brought to a uniform surface by working with a wooden float, or as otherwise directed by the Engineer.

All concrete shall be protected from the direct rays of the sun for a period of not less than seven (7) days after pouring and shall be cured by sprinkling or other methods acceptable to the Engineer for at least fourteen (14) days after pouring.

Concrete placement will not be permitted when impending weather conditions will impair the quality of the finished work. If conditions of wind, humidity and temperature are such that concrete cannot be placed without cracking, concrete placement shall be done in the early morning or at night.

The concrete shall be mixed in quantities required for immediate use. Any concrete which is not in place within the limits outlined below shall not be used.

The minimum temperature of all concrete at the time of time of placement shall be not less than 50 degrees F.

The maximum temperature of cast-in-place concrete in bridge slabs and top slab of direct traffic structures shall not exceed 85 degrees F when placed. Concrete diaphragms, parapets, concrete portions of railing, curbs and sidewalks, unless monolithically placed with the slab, will not be subject to the above maximum. Other portions of structures, when so noted on the plans, shall require the temperature control specified.

The maximum time interval between the addition of cement to the batch, and the placing of concrete in the forms shall not exceed the following:

Maximum Time
Air or Concrete Temperature (Addition of Water or Cement
Whichever is Higher _____ to Placing in Forms)

Non-Agitated Concrete

Over 80 F 15 minutes

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35 F to 79 F 30 minutes

Agitated Concrete

90 F or above	45 minutes
75 F to 89 F	60 minutes
35 F to 74 F	90 minutes

The use of an approved retarding agent in the concrete will permit the extension of each of the above temperature-time maximums by 30 minutes,, for bridge decks, top slabs of direct traffic culverts and cased drilled shafts, and one hour for all other concrete except that the maximum time shall not exceed 30 minutes for non-agitated concrete.

Concrete shall be deposited in all cases as nearly as practicable directly in its final position to avoid rehandling. Cold joints in a monolithic placement shall be avoided. The sequence of successive layers or adjacent portions of concrete shall be such that they can be vibrated into a homogeneous mass with the previously placed concrete. Not more than one hour shall elapse between adjacent or successive placements of concrete.

It will be the responsibility of the contractor to furnish the engineer with copies of all concrete tickets for all concrete used on this project.

The contractor shall give the Engineer ample advance notice (24 hours minimum) before starting to place concrete in any unit, to permit a thorough inspection of forms, reinforcing steel placement, and other preparatory work.

At the beginning of the project the Engineer may require six (6) or more test cylinders per each 50 cubic yards of concrete placed. As quality of concrete is established by laboratory breaks of test cylinders a minimum of two (2) per each 50 cubic yards of concrete placed. Independent testing laboratory will be selected by Engineer, and cost of laboratory tests is to be paid by Owner.

Removal of Forms and Falsework

Weight supporting forms and falsework for all structures shall remain in place a minimum of four curing days after which they may be removed upon approval of the Engineer and after the concrete has attained a compressive strength of 2800 psi, as evidenced by strength tests

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provided to the Engineer using specimens made from the same concrete and cured under the same conditions as the portion of the structure involved.

Non-supporting forms for structures may be removed upon approval of the Engineer after the concrete has aged not less than one day (24 hours), and after the concrete has attained a compressive strength of not less than 2000 psi; as evidenced by strength tests provided to the Engineer using specimens made from the same concrete and cured under the same conditions as the portion of the structure involved, provided an overhead support system, approved by the Engineer, is used to transfer the weight of the top slab to the walls of the structure before the support provided by the forms is removed.

For the purpose of form removal prior to the standard 14 days curing time, additional test cylinders shall be cast at the Contractors expense in order to determine acquired stress for form removal. Copies of the test results must be supplied to the Engineer.

If all cylinders made by the Contractor for the purpose of form removal have been broken without attaining the required strength, forms shall remain in place for a total of 14 curing days.

The above provisions relative to form removal shall apply only to forms or parts thereof which are constructed to permit removal without disturbing forms or falsework required to be left in place for a longer period on other portions of the structure.

Forms for inside curb faces may be removed in approximately three hours provided it can be done without damage to the curb. Concrete guard railing for bridges will be classified as a non-supporting structure in these specifications: Thus; forms must remain in place not less than one day (24 HRS) as previously indicated.

Backfill on Structures

No backfill may be placed on pipe or culvert structures until the design strength of the structure has been attained.

For the purpose of placing backfill material above the structure, additional test cylinders shall be cast at the Contractors expense in order to determine acquired strength. Copies of the test results must be supplied to the Engineer.

Payment

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Payment for the work prescribed in this item shall be in accordance with the unit price bid as stated in the proposal. The price shall be full compensation for all material, labor, equipment, and incidentals necessary to complete the work.

SPECIFICATION FOR PAVEMENT REPAIR ON UTILITY TRENCHES

This specification shall provide for the repair of certain areas of existing roadway or driveways that are disturbed due to the proposed construction.

The areas to be repaired shall be excavated to a uniform depth of 12 inches from the top of the existing pavement.

The excavation shall be backfilled with caliche in two lifts of 4 inches each. Each lift is to be thoroughly compacted to 95% density with tampers. The caliche shall contain a moisture content which will provide maximum density.

After the two lifts of caliche have been placed and compacted to the Engineer's satisfaction, the area shall be primed with 0.20 gallons per square yard with RC-2 then surfaced with two inches (compacted) of Hot-Mix ACP, Type D flush with the top of the existing asphalt and to the existing roadway section.

Where required and/or shown on the plans within Texas Department of Transportation ROW, the contractor shall repair pavement in accordance with TxDOT specifications and/or permits. Additional payment will not be made for such repairs other than as specified in the following paragraph.

Payment

Payment for the work prescribed in this item shall be in accordance with the at unit price bid as stated in the proposal. The price shall be full compensation for all materials, equipment, labor and incidentals necessary to complete the work.

MEG SOIL BORING LOGS

PROPOSED
SANITARY SEWER LINE PHASE 2

MISSION, HIDALGO COUNTY, TEXAS



Geotechnical Engineering • Construction Materials Engineering & Testing
Environmental • Consulting • Forensics

**MEG SOIL BORING LOGS
PROPOSED SANITARY SEWER LINE PHASE 2
MISSION, HIDALGO COUNTY, TEXAS**

**Prepared For
Mr. Mario A. Reyna P.E.
Melden & Hunt, Inc.**

MEG Report No. 01-19-29170

August 1, 2019



**MILLENNIUM ENGINEERS GROUP, INC.
TBPE FIRM NO. F-3913
5804 N. GUMWOOD AVENUE
PHARR, TEXAS 78577
TEL:956-702-8500
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August 1, 2019

Mr. Mario A. Reyna, P.E.
Melden & Hunt, Inc.
115 West McIntyre Street
Edinburg, Texas 78541
(956) 381-0981
mario@meldenandhunt.com

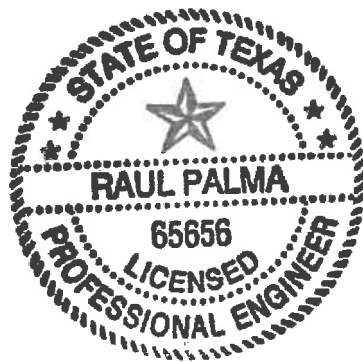
**Subject: MEG Soil Borings Logs
MEG Report No. 01-19-29170
Proposed Sanitary Sewer Line Phase 2
Mission, Hidalgo County, Texas**

Dear Mr. Reyna:

Millennium Engineers Group, Inc. is pleased to submit the enclosed boring log data along with water table elevations report that was prepared for the above subject project. This report addresses the findings of our engineering study.

We look forward to continuing our involvement in the project by providing construction monitoring during construction.

Thank you for the opportunity to be of service to you in this phase of the project and we would like the opportunity to assist you in the upcoming phases of the project. If you have any questions, please contact our office at the address, telephone, fax or electronic address listed below.



Cordially,
Millennium Engineers Group, Inc.
TBPE Firm No. F-3913

Raul Palma, P.E.
President

The seal appearing on this document was authorized by Raul Palma, P.E. 65656 on August 1, 2019. Alteration of a sealed document without proper notification to the responsible engineer is an offence under the Texas Engineering Practice Act

Cc: 1 Original and PDF Document

Millennium Engineers Group, Inc.
5804 N. Gumwood Avenue
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www.megengineers.com Tel:956-702-8500 Fax:956-702-8140

MEG Project No.: 01-19-29170

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1.0 SOIL STRATIGRAPHY AT BOREHOLE B-1 TO B-5

The analyses presented in this study are applicable specifically to the proposed project canal pipeline areas. The data gathered from both the field and laboratory testing programs on soil samples obtained from the borings was utilized to establish geotechnical engineering parameters for the proposed project.

Moisture Content Testing

The moisture content of a soil is defined as the ratio of the weight of the water in the sample to the dry weight of the soil sample expressed as a percentage. The moisture contents for the samples obtained as part of our geotechnical study were performed in accordance with ASTM D2216. The results varied from six (6) percent to twenty-eight (28) percent. The borings and corresponding soil samples exhibited dry to wet field moisture conditions. A list of all the moisture contents by corresponding depth can be found on the boring log.

Plasticity Index Testing

The Plasticity Index (PI) is known as the difference between the liquid limit and the plastic limit of a soil. These limits are commonly referred to as the Atterberg limits, which describe the consistency of soils with respect to their varying moisture contents. The liquid limit is defined as the moisture content at which soil begins to transition from a plastic to a liquid state, and begins to behave as a liquid material. The plastic limit refers to the water content of a soil at the point of transition from a semisolid to a plastic state where soil starts to exhibit plastic behavior. The plasticity index testing performed in accordance with ASTM D4318 shows the range in which a soil acts in a plastic state. Plasticity Index values for the soil's samples performed for this study were found to be from eight (8) percent to forty-one (41) percent, with low to high plasticity index.

Particle Size Analysis Testing (Determination of Fines Content)

Standard grain size analysis is used to determine the relative proportions of different grain sizes as they are distributed along a range of different sized sieves. The minus 200 sieve analysis is used commonly as a tool for soil classification and identification using the Unified Soil Classification System. Results for this test are reported as a percentage of soil passing the No. 200 sieve, which has openings 0.075mm wide. This test is also used to determine the suitability of soil for construction purposes and to estimate probable seepage through soils. Generally, a %- 200 greater than 50% indicates a fine-grained cohesive soil with large amounts of fines in the soil composition. Sieve analysis testing was performed in accordance with ASTM D1140. The % -200 soil values for the samples collected ranged from 20% (coarse grained to fine grained materials such as clayey sands) to 99% (cohesive fine-grained materials such as clays)



Table 1.1. Minus 200 Test Range at Borehole B-1 to B-5

Sieve Size	Minus 200, %
No. 200	20 – 99

2.0 PROJECT REVIEW AND QUALITY CONTROL

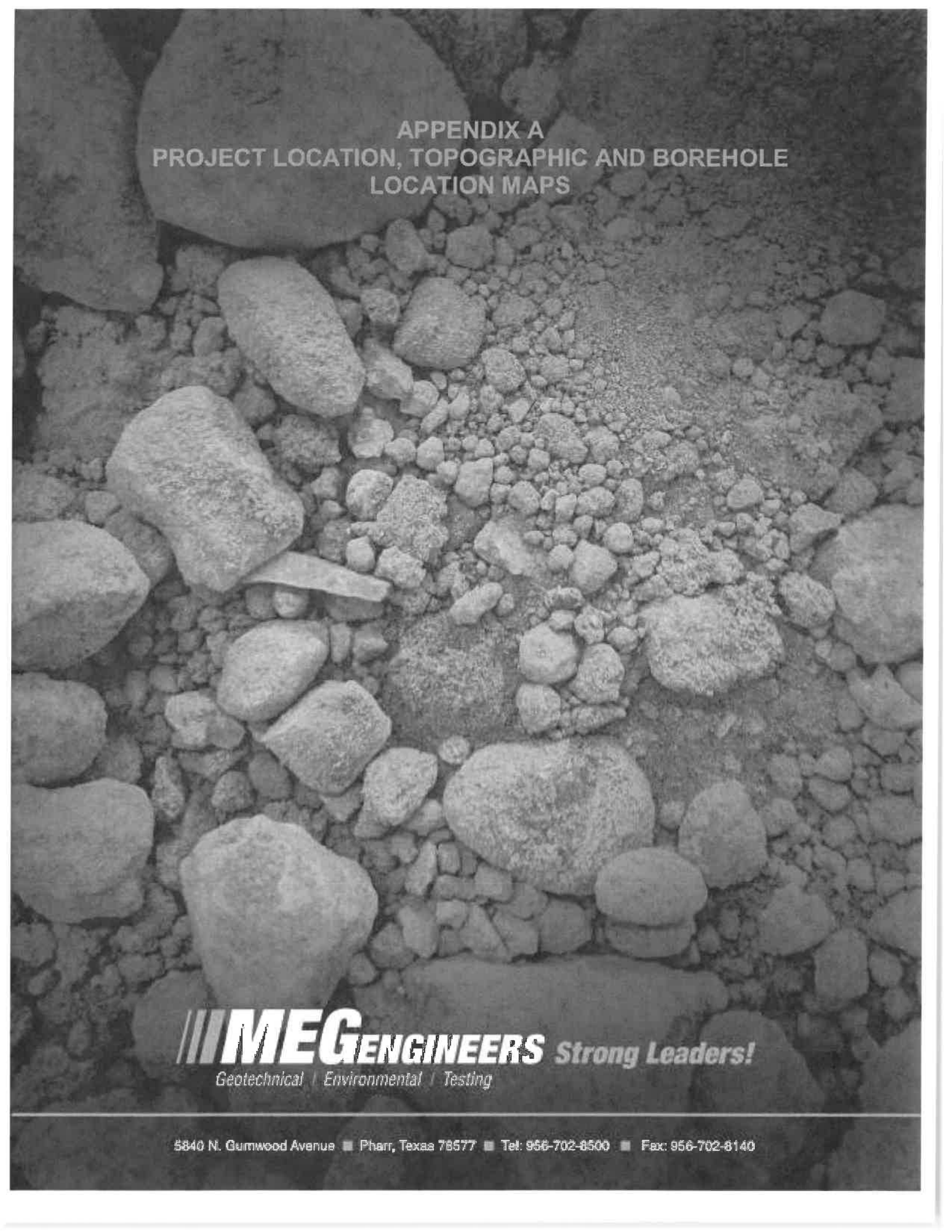
Each project site is unique and it is important that the appropriate design data, construction drawings, specifications, change orders and related documents be reviewed by the respective design and construction professionals participating in this project. The performance of foundations, construction building pads and/or parking areas for this project will depend on correct interpretation of our geotechnical engineering report and proper compliance of and adherence to our geotechnical recommendations and to the construction drawings and specifications.

It is important that **MEG** be provided the opportunity to review the final design and construction documents to check that our geotechnical recommendations are properly interpreted and incorporated in the design and construction documents. We cannot be responsible for misinterpretations of our geotechnical recommendations if we have not had the opportunity to review these documents. This review is an additional service and not part of our project scope.

MEG should be retained to provide construction materials testing and observation services during all phases of the construction process of this project. As the Geotechnical Engineer of Record, it is important to let our technical personnel provide these services to make certain that our recommendations are interpreted properly and to ensure that actual field conditions are those described in our geotechnical report. Since our personnel are familiar with this project, **MEG's** participation during the construction phase of this project would help mitigate any problems resulting from variations or anomalies in subsurface conditions, which are among the most prevalent on construction projects and often lead to delays, changes, costs overruns, and disputes. If the client does not follow all of our recommendations presented in this report and/or addendums to this report, the client assumes the responsibility and liability of such actions and will hold our firm harmless and without responsibility and liability for client's actions.

A construction testing frequency plan and budget needs to be developed for the required construction materials engineering and testing services for this project. Before construction, we recommend that **MEG**, the project design team members and the project general contractor meet and jointly develop the testing plan and budget, as well as review the testing specifications as it pertains to this project. **A failure to implement a complete testing plan will negate the recommendations provided in this report.**

MEG looks forward to the opportunity to provide continued support on this project.



APPENDIX A
PROJECT LOCATION, TOPOGRAPHIC AND BOREHOLE
LOCATION MAPS

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5840 N. Gumwood Avenue ■ Pharr, Texas 78577 ■ Tel: 956-702-8500 ■ Fax: 956-702-8140



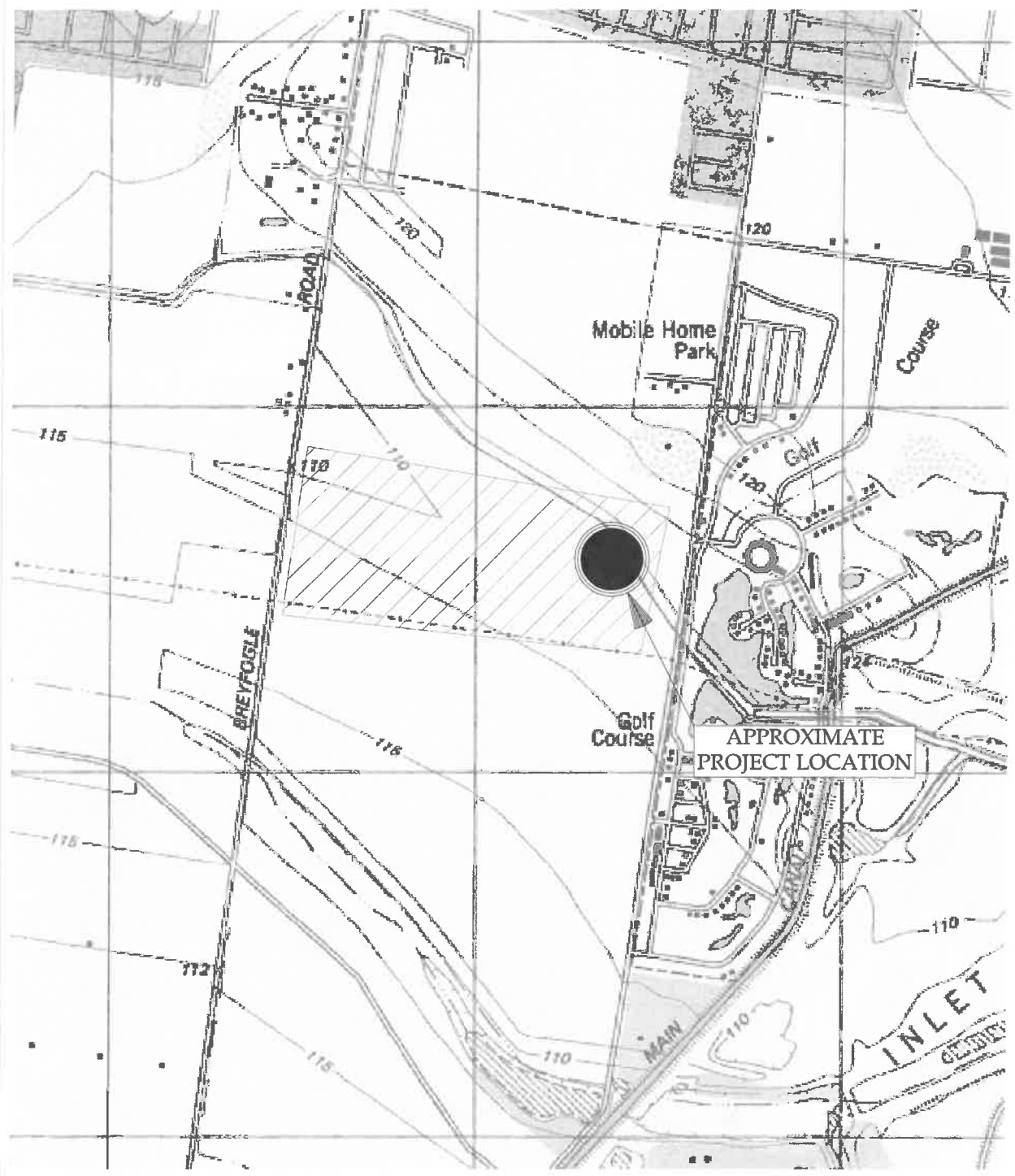
APPROXIMATE
PROJECT LOCATION

PROJECT SITE LOCATION MAP

PROPOSED
SANITARY SEWER LINE PHASE 2
MISSION, HIDALGO COUNTY, TEXAS



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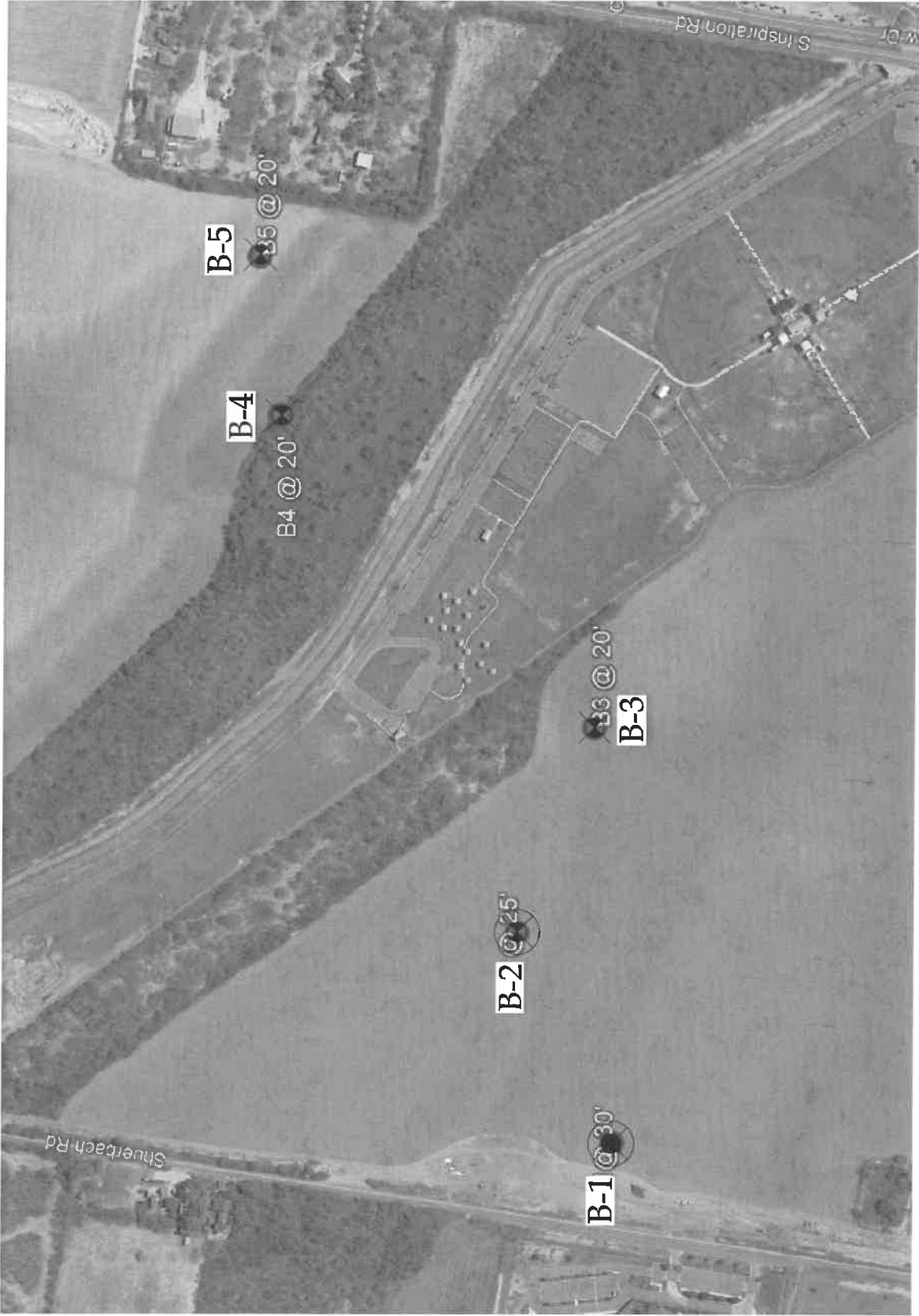
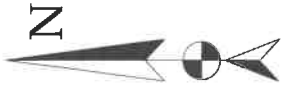


MEG PROJECT: 04-19-20170 / DATE: 7/31/2019 / APPROVED BY: A. PALMA / DRAWN BY: J. BORJON

PROJECT TOPOGRAPHY MAP
PROPOSED
SANITARY SEWER LINE PHASE 2
MISSION, HIDALGO COUNTY, TEXAS



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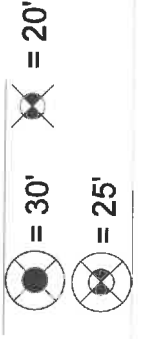


PROJECT BOREHOLE LOCATION MAP

PROPOSED
 SANITARY SEWER LINE PHASE 2
 MISSION, HIDALGO COUNTY, TEXAS



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APPENDIX B
PROJECT BORING LOGS AND PROFILE

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Project: **Proposed Sanitary Sewer Line Phase 2**
 Project Location: **Mission, Hidalgo County, Texas**
 Project Number: **01-19-29170**

Log of Boring B-1
Sheet 1 of 2



Date(s) Drilled: 7-25-19	Logged By: D. Juarez	Checked By: Raul Palma
Drilling Method: Straight Flight	Drill Bit Size/Type: 4" soil bit	Total Depth of Borehole: 30 feet bgs
Drill Rig Type: CME 45	Drilling Contractor: MEG	Approximate Surface Elevation: 115 feet Natural Ground (assumed)
Groundwater Level and Date Measured: 15 feet @24 Hr.	Sampling Method(s): SPT	Hammer Data: 140 lb., 30 in. drop, auto trip
Borehole Backfill: Subgrade Cuttings	Location: See Boring Location Map	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	LL, %	PI, %	Percent Fines	REMARKS AND OTHER TESTS
115	0				CL		lean CLAY, light brown to brown, dry to wet, very stiff to stiff					
			1	18				8	46	25		
			2	20				8				
110	5		3	12				15			96	
			4	15				20	39	16		
			5	17				20				
105	10											
			6	10				28	37	16		▽ @ 24 Hr.
100	15											▽ Cave In @ 24 Hr.
			7	6	SC		clayey SAND, light brown to brown, wet to moist, soft to med. dense	20			46	
95	20											
			8	13				19	25	8		
90	25											



Project: **Proposed Sanitary Sewer Line Phase 2**
 Project Location: **Mission, Hidalgo County, Texas**
 Project Number: **01-19-29170**

Log of Boring B-1
Sheet 2 of 2

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	LL, %	PI, %	Percent Fines	REMARKS AND OTHER TESTS
85	30		9	30	SC		clayey SAND, light brown to brown, wet to moist, soft to med. dense	17			30	
							Bottom of Boring					



Project: **Proposed Sanitary Sewer Line Phase 2**
 Project Location: **Mission, Hidalgo County, Texas**
 Project Number: **01-19-29170**

Log of Boring B-2
Sheet 1 of 1

Date(s) Drilled: 7-25-19	Logged By: D. Juarez	Checked By: Raul Palma
Drilling Method: Straight Flight	Drill Bit Size/Type: 4" soil bit	Total Depth of Borehole: 25 feet bgs
Drill Rig Type: CME 45	Drilling Contractor: MEG	Approximate Surface Elevation: 115 feet Natural Ground (assumed)
Groundwater Level and Date Measured: None	Sampling Method(s): SPT	Hammer Data: 140 lb., 30 in. drop, auto trip
Borehole Backfill: Subgrade Cuttings	Location: See Boring Location Map	


Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	LL, %	PI, %	Percent Fines	REMARKS AND OTHER TESTS
115	0				CL		lean CLAY, brown to dk. brown, moist, stiff to very stiff	12	48	25		
			1	14								
			2	15				15			99	
110	5		3	19				16				
			4	16	CH		fat CLAY, dk. brown to brown, moist to wet, stiff to very stiff	16	56	31		
			5	18				20			96	
105	10											
			6	18	CL		lean CLAY, dk. brown to brown, wet to moist, very stiff	20	47	32		
100	15											▼ Cave In @ 24 Hr.
			7	21				17			93	
95	20											
			8	13	CH		fat CLAY, brown, wet, stiff	21	65	41		
90	25						Bottom of Boring					



Project: **Proposed Sanitary Sewer Line Phase 2**
 Project Location: **Mission, Hidalgo County, Texas**
 Project Number: **01-19-29170**

Log of Boring B-3
Sheet 1 of 1

Date(s) Drilled: 7-25-19	Logged By: D. Juarez	Checked By: Raul Palma
Drilling Method: Straight Flight	Drill Bit Size/Type: 4" soil bit	Total Depth of Borehole: 20 feet bgs
Drill Rig Type: CME 45	Drilling Contractor: MEG	Approximate Surface Elevation: 113 feet Natural Ground (assumed)
Groundwater Level and Date Measured: None	Sampling Method(s): SPT	Hammer Data: 140 lb., 30 in. drop, auto trip
Borehole Backfill: Subgrade Cuttings	Location: See Boring Location Map	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	LL, %	PI, %	Percent Fines	REMARKS AND OTHER TESTS
113	0				CH		fat CLAY, light brown to brown, moist to wet, very stiff					
			1	18				12			98	
			2	18				11	51	29		
108	5		3	20				12				
			4	15				16			98	
			5	19				18	53	31		
103	10											▼ Cave In @ 24 Hr.
			6	28				18			98	
98	15											
			7	31				20	63	38		
93	20						Bottom of Boring					
88	25											



Project: **Proposed Sanitary Sewer Line Phase 2**
 Project Location: **Mission, Hidalgo County, Texas**
 Project Number: **01-19-29170**

Log of Boring B-4
Sheet 1 of 1

Date(s) Drilled 7-25-19	Logged By D. Juarez	Checked By Raul Palma
Drilling Method Straight Flight	Drill Bit Size/Type 4" soil bit	Total Depth of Borehole 20 feet bgs
Drill Rig Type CME 45	Drilling Contractor MEG	Approximate Surface Elevation 115 feet Natural Ground (assumed)
Groundwater Level and Date Measured 11 feet @24 Hr.	Sampling Method(s) SPT	Hammer Data 140 lb., 30 in. drop, auto trip
Borehole Backfill Subgrade Cuttings	Location See Boring Location Map	

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	LL, %	PI, %	Percent Fines	REMARKS AND OTHER TESTS
115	0				CH		fat CLAY to sandy fat CLAY, dk. brown to brown, moist, very stiff to stiff	12	50	30		
			1	18								
			2	18				13				
110	5		3	20				13				
			4	15				13			61	
			5	19	CL		lean CLAY, brown, moist, very stiff	12	35	21		
105	10											▽ @ 24 Hr.
												▽ Cave In @ 24 Hr.
			6	28	SC		clayey SAND, brown, wet, med. dense to dense	20			23	
100	15											
			7	31				24			46	
95	20						Bottom of Boring					
90	25											



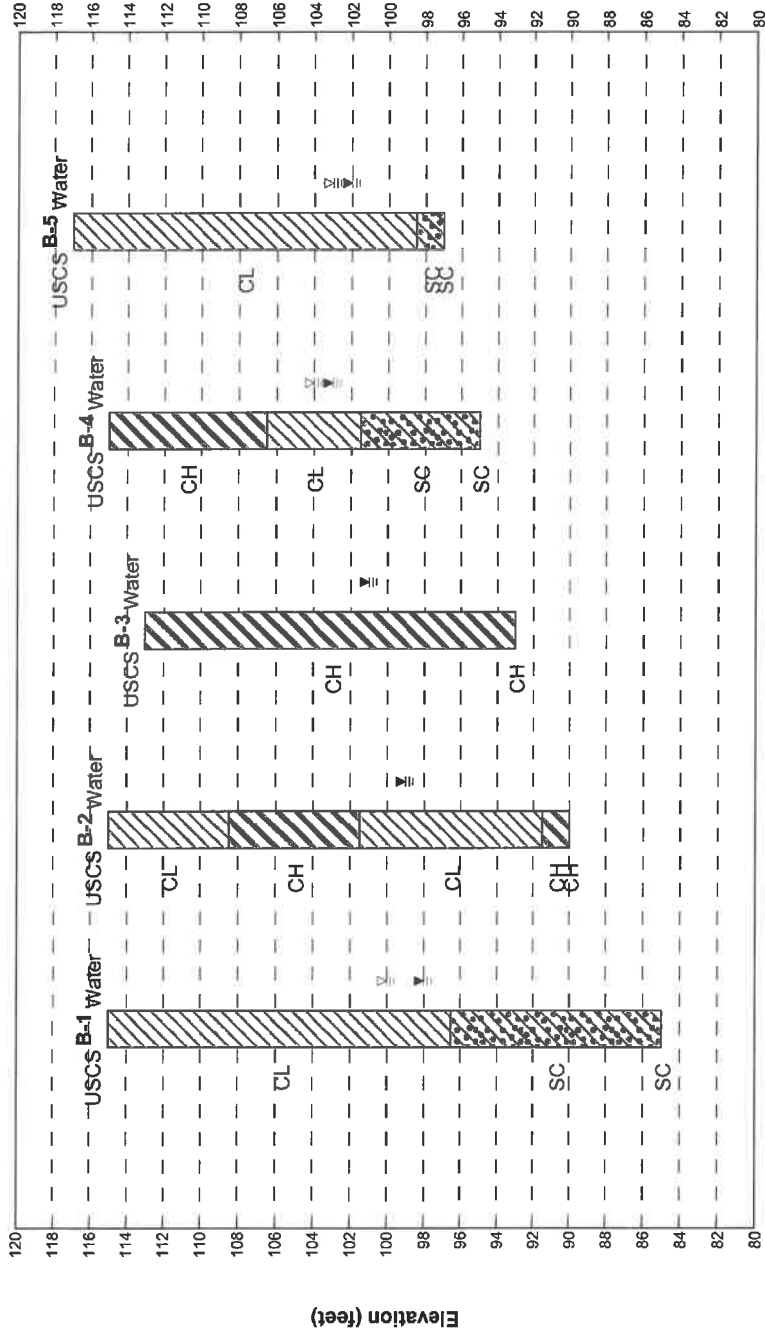
Project: **Proposed Sanitary Sewer Line Phase 2**
 Project Location: **Mission, Hidalgo County, Texas**
 Project Number: **01-19-29170**

Log of Boring B-5
Sheet 1 of 1


Date(s) Drilled 7-25-19	Logged By D. Juarez	Checked By Raul Palma
Drilling Method Straight Flight	Drill Bit Size/Type 4" soil bit	Total Depth of Borehole 20 feet bgs
Drill Rig Type CME 45	Drilling Contractor MEG	Approximate Surface Elevation 117 feet Natural Ground (assumed)
Groundwater Level and Date Measured 14 feet @24 Hr.	Sampling Method(s) SPT	Hammer Data 140 lb., 30 in. drop, auto trip
Borehole Backfill Subgrade Cuttings	Location See Boring Location Map	


Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	LL, %	PI, %	Percent Fines	REMARKS AND OTHER TESTS
117	0				CL		lean CLAY to sandy lean CLAY, brown to tan, dry to moist, stiff	6				
			1	9								
			2	14				10				
112	5		3	10				12			53	
			4	14				13	25	15		
			5	7				11			50	
107	10											
			6	9				14	23	10		
102	15											▽ @ 24 Hr. ▽ Cave In @ 24 Hr.
			7	7	SC		clayey SAND, brown, wet, soft	21			20	
97	20						Bottom of Boring					
92	25											






MATERIAL GRAPHIC SYMBOLS

 Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)

 Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)

 Clayey SAND (SC)

**Millennium Engineers Group,
Inc.**

Proposed Sanitary Sewer Line Phase 2

Project No.

01-19-29170

Figure No.

C-1

Project: **Proposed Sanitary Sewer Line Phase 2**
 Project Location: **Mission, Hidalgo County, Texas**
 Project Number: **01-19-29170**

Key to Log of Boring
Sheet 1 of 1

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	LL, %	PI, %	Percent Fines	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10	11	12	13

COLUMN DESCRIPTIONS


- | | |
|---|---|
| <p>1 Elevation (feet): Elevation (MSL, feet).</p> <p>2 Depth (feet): Depth in feet below the ground surface.</p> <p>3 Sample Type: Type of soil sample collected at the depth interval shown.</p> <p>4 Sample Number: Sample identification number.</p> <p>5 Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.</p> <p>6 Material Type: Type of material encountered.</p> <p>7 Graphic Log: Graphic depiction of the subsurface material encountered.</p> <p>8 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.</p> | <p>9 Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.</p> <p>10 LL, %: Liquid Limit, expressed as a water content.</p> <p>11 PI, %: Plasticity Index, expressed as a water content.</p> <p>12 Percent Fines: The percent fines (soil passing the No. 200 Sieve) in the sample. WA indicates a Wash Sieve, SA indicates a Sieve Analysis.</p> <p>13 REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.</p> |
|---|---|

FIELD AND LABORATORY TEST ABBREVIATIONS


CHEM: Chemical tests to assess corrosivity
 COMP: Compaction test
 CONS: One-dimensional consolidation test
 LL: Liquid Limit, percent

PI: Plasticity Index, percent
 SA: Sieve analysis (percent passing No. 200 Sieve)
 UC: Unconfined compressive strength test, Qu, in ksf
 WA: Wash sieve (percent passing No. 200 Sieve)


MATERIAL GRAPHIC SYMBOLS

 Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)

 Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)

 Clayey SAND (SC)

TYPICAL SAMPLER GRAPHIC SYMBOLS


 Auger sampler

 CME Sampler


 Pitcher Sample


 Bulk Sample

 Grab Sample

 2-inch-OD unlined split spoon (SPT)

 3-inch-OD California w/ brass rings


 2.5-inch-OD Modified California w/ brass liners


 Shelby Tube (Thin-walled, fixed head)

OTHER GRAPHIC SYMBOLS

 Water level (at time of drilling, ATD)

 Water level (after waiting)

 Minor change in material properties within a stratum

 Inferred/gradational contact between strata

 Queried contact between strata

GENERAL NOTES

- Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.



Figure B-1



APPENDIX C
SUMMARY OF SOIL SAMPLE ANALYSIS

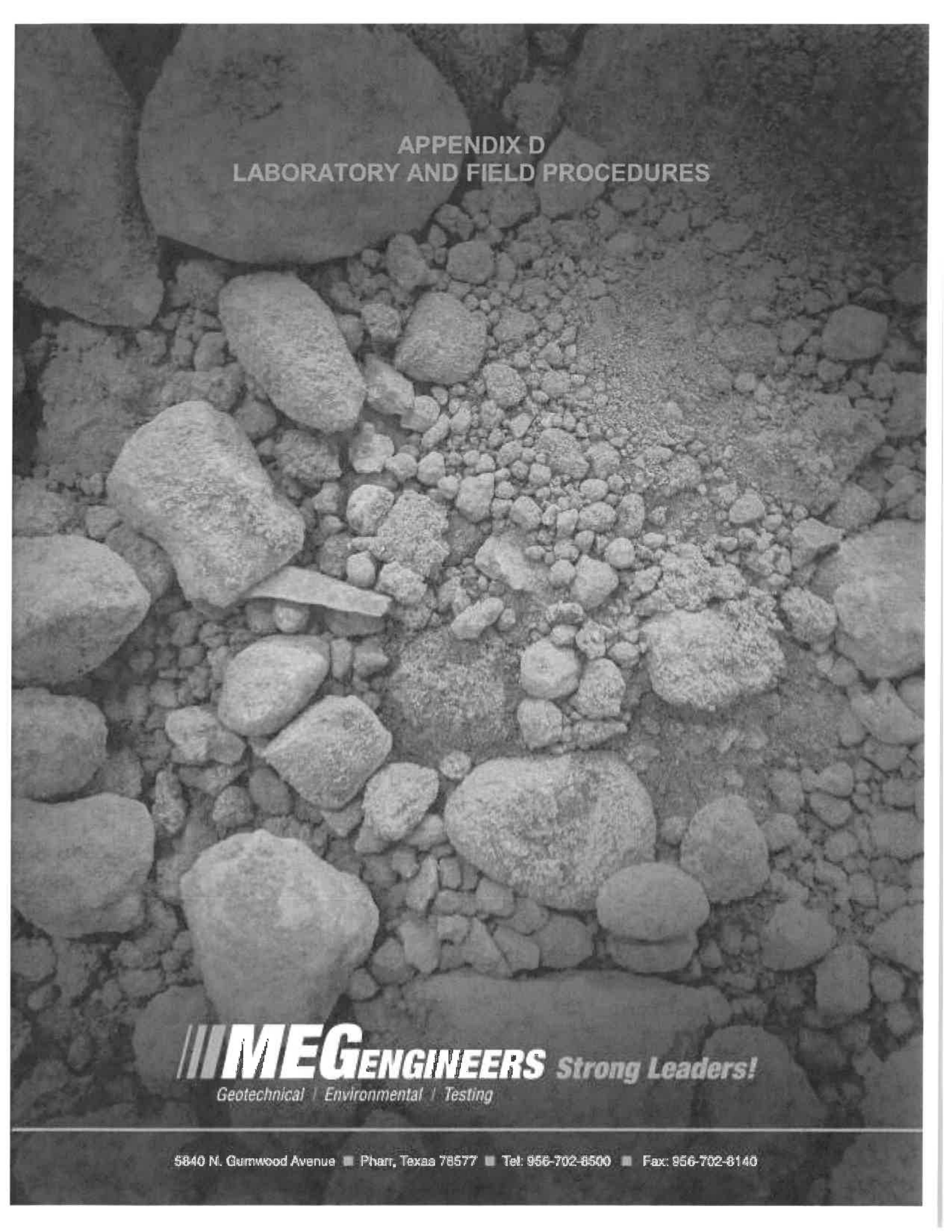
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Summary of Soil Sample Analyses

Project Name: Proposed Sanitary Sewer Line Phase 2

Boring No.	Sample Depth (ft)	Blows Per (ft)	Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index	-200% Sieve	Shear Strength (tsf)	Dry Unit Weight (pcf)	USCS
B-1	.5 - 2	18	8	46	21	25				CL
	2.5 - 4	20	8							
	4.5 - 6	12	15				96			
	6.5 - 8	15	20	39	23	16				CL
	8.5 - 10	17	20							
	13.5 - 15	10	28	37	21	16				CL
	18.5 - 20	6	20				46			
	23.5 - 25	13	19	25	17	8				CL
28.5 - 30	30	17				30				
B-2	.5 - 2	14	12	48	23	25				CL
	2.5 - 4	18	15				99			
	4.5 - 6	19	16							
	6.5 - 8	16	16	56	25	31				CH
	8.5 - 10	18	20				96			
	13.5 - 15	18	20	47	15	32				CL
	18.5 - 20	21	17				93			
	23.5 - 25	13	21	65	24	41				CH
B-3	.5 - 2	18	12				98			
	2.5 - 4	18	11	51	22	29				CH
	4.5 - 6	20	12							
	6.5 - 8	15	16				98			
	8.5 - 10	19	18	53	22	31				CH
	13.5 - 15	28	18				98			
	18.5 - 20	31	20	63	25	38				CH
B-4	.5 - 2	18	12	50	20	30				CH
	2.5 - 4	18	13							
	4.5 - 6	20	13							
	6.5 - 8	15	13				61			
	8.5 - 10	19	12	35	14	21				CL
	13.5 - 15	28	20				23			
	18.5 - 20	31	24				46			
B-5	.5 - 2	9	6							
	2.5 - 4	14	10							
	4.5 - 6	10	12				53			
	6.5 - 8	14	13	25	10	15				CL
	8.5 - 10	7	11				50			
	13.5 - 15	9	14	23	13	10				CL
	18.5 - 20	7	21				20			



APPENDIX D
LABORATORY AND FIELD PROCEDURES

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Laboratory and Field Test Procedures

Soil Classification Per ASTM D2487-93:

This soil-testing standard was used for classifying soils according to the Unified Soil Classification System. The soil classifications of the earth materials encountered are as noted in the attached boring logs.

Soil Water Content Per ASTM D2216-92:

This test determines the water content of soil or rock expressed as a percentage of the solid mass of the soil. The test results are listed under **MC** in the attached boring logs.

Soil Liquid Limit Per ASTM D4318-93:

The soil Liquid Limit identifies the upper limit soil water content at which the soil changes from a moldable (plastic) physical state to a liquid state. The Liquid Limit water content is expressed as a percentage of the solid mass of the soil. The test results are listed under **LL** in the attached boring logs.

Soil Plastic Limit Per ASTM D4318-93:

The soil Plastic Limit identifies lower limit soil water content at which the soil changes from a moldable (plastic) physical state to a non-moldable (semi-solid) physical state. The Plastic Limit water content is expressed as a percentage of the solid mass of the soil. The test results are listed under **PL** in the attached boring logs.

Plasticity Index Per ASTM D4318-93:

This is the numeric difference between the Liquid Limit and Plastic Limit. This index also defines the range of water content over which the soil-water system acts as a moldable (plastic) material. Higher Plasticity Index (PI) values indicate that the soil has a greater ability to change in soil volume or shrink and swell with lower or higher water contents, respectively. The test results are listed under **PI** in the attached boring logs.

Standard Penetration Test (SPT) and Split Spoon Sampler (SS) per ASTM D 1586:

This is the standard test method for both the penetration test and split-barrel (spoon) sampling of soils. This sampling method is used for soils or rock too hard for sampling using Shelby Tubes. The method involves penetration of a split spoon sampler into the soil or rock through successive blows of a 140-pound hammer in a prescribed manner.

Blow Counts (N) per ASTM D 1586:

This is the number of blows required to drive a Split Spoon Sampler by means of a 140 pound hammer for a distance of 12 inches in accordance with the variables stated in the test procedures.

Shelby Tube (ST) per ASTM D 1587:

This procedure is for using a thin-walled metal tube to recover relatively undisturbed soil samples suitable for laboratory tests of physical properties.

Dry Density (DD) per ASTM D 2937:

This procedure is for the determination of in-place density of soil. The test results are measured in pounds per cubic foot, pcf.

Unconfined Compression Test (Uc) per ASTM D 2166:

This test method covers the determination of the unconfined compressive strength of cohesive soil in the undisturbed, remolded, or compacted condition, using strain-controlled application of the axial load.

Minus No. 200 Sieve per ASTM D 1140:

This test method covers determination of the amount of material finer than a Number 200 sieve by washing. The results are stated as a percent of the total dry weight of the sample.

Pocket Penetrometer (PP):

This test method is an accepted modification of ASTM D 1558 test method for establishing the moisture-penetration resistance relationships of fine-grained soils. The test results are measured in tons per square foot, tsf. The strength values provided by this method should be considered qualitatively.

Rock Quality Designation (RQD):

The measure of the quality of a rock mass defined by adding intact rock core pieces greater than four inches in length by the total length of core advance.

Recovery Ratio (REC):

The Recovery Ratio is equal to the total length of core recovered divided by the total length of core advance.

Boring Logs:

This is a summary of the above-described information at each boring location.

**CITY OF MISSION
PLANS and SPECIFICATIONS**

BID NAME/NO.:

**Bentsen Palm Development Sanitary Sewer
Improvements Project Phase II /
RFB: 19-285-09-25**



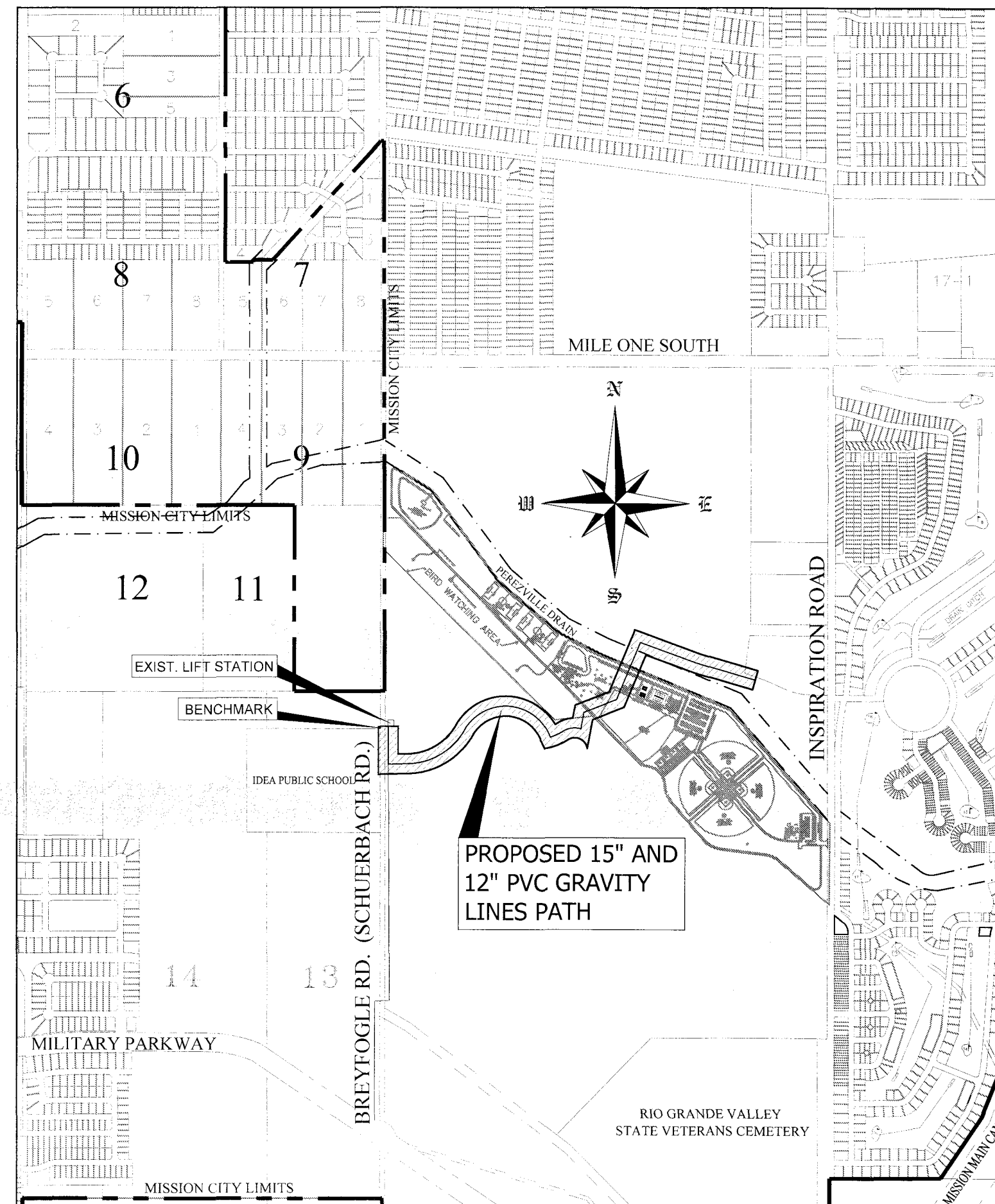
CITY OF MISSION

HIDALGO COUNTY, TEXAS
PUBLIC WORKS DEPARTMENT

BENTSEN PALM DEVELOPMENT SANITARY SEWER IMPROVEMENTS PROJECT PHASE II

GENERAL CONSTRUCTION NOTES

1. THE INFORMATION SHOWN ON THESE DRAWINGS INDICATING TYPE AND LOCATION OF UNDERGROUND UTILITIES AND ELECTRICAL UTILITIES IS NOT GUARANTEED TO BE EXACT OR COMPLETE. THE LOCATIONS AND SIZES HAVE BEEN TAKEN FROM FIELD WORK AND EXISTING RECORDS AND THE BEST AS-BUILT INFORMATION AVAILABLE. HOWEVER, IT IS EXPECTED THAT THERE MAY BE SOME DISCREPANCIES IN THE LOCATIONS, QUALITIES AND SIZES SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT TYPE, SIZE AND LOCATION OF ALL UTILITIES AFFECTED BY THE CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE TO NOTIFY THE ONE-CALL SYSTEM FOR UTILITY LOCATION IDENTIFICATION PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ARRANGE FOR THE REPAIR AND RESTORATION OF CONTRACTOR DAMAGED UTILITIES. THE COST OF ANY REPAIR OR REPLACEMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE CURRENT LINE SPOTTING TOLL FREE NUMBER AND COORDINATE WITH ALL THE UTILITY COMPANIES FOR ACTUAL LOCATING AND UNCOVERING OF EXISTING LINES PRIOR TO EXCAVATION OPERATIONS.
2. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT ENGINEER OF ANY UNREPORTED OBSTACLES THAT MAY IMPEDE OR PREVENT THE PROPER CONSTRUCTION OF THIS PROJECT.
3. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE APPLICABLE STATE STATUTES AND THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS (OSHA). COPIES OF THE O.S.H.A. STANDARDS MAY BE PURCHASED FROM THE U.S. GOVERNMENT PRINTING OFFICE. INFORMATION AND RELATED REFERENCE MATERIALS MAY BE OBTAINED FROM O.S.H.A. AT 611 EAST 6TH STREET, ROOM 303, AUSTIN, TEXAS.
4. THE CONTRACTOR SHALL MAINTAIN THE JOB SITE IN A SAFE, NEAT AND WORKMAN LIKE MANNER AT ALL TIMES. JOB SAFETY SHALL NOT BE COMPROMISED. ANY UNSAFE OR UNATTRACTIVE NUISANCE SHALL BE REMOVED OR OTHERWISE TAKEN CARE OF BY THE CONTRACTOR WHEN DIRECTED BY THE OWNER OR PROJECT ENGINEER.
5. EXCAVATIONS, TRENCHES AND OTHER HAZARDOUS AREAS SHALL BE ADEQUATELY PROTECTED BY BARRICADES, FENCING, LIGHTS AND/OR OTHER PROTECTIVE DEVICES AT ALL TIMES.
6. CONSTRUCTION OF THIS PROJECT WILL BE SUBJECT TO INSPECTIONS AND TESTING AS DEEMED NECESSARY OR APPROPRIATE BY THE ENGINEER AND/OR THE CITY OF MISSION. THE CONTRACTOR SHALL FURNISH INCIDENTAL LABOR AND EQUIPMENT TO ALLOW THE TESTING PERSONAL ACCESS TO THE WORK AND WILL COOPERATE FULLY WITH THE PERSONS CONDUCTING THE TESTING AND INSPECTION PROGRAM.
7. A PART OF THE WORK THAT IS NECESSARY OR REQUIRED TO MAKE EACH SYSTEM OR INSTALLATION SATISFACTORY AND OPERABLE FOR ITS INTENDED PURPOSE EVEN THOUGH IT IS NOT SPECIFICALLY INCLUDED IN THE SPECIFICATIONS OR DRAWINGS, SHALL BE PERFORMED AS INCIDENTAL WORK AS IF IT WERE DESCRIBED IN THE SPECIFICATIONS AND SHOWN ON THE DRAWINGS.
8. THE DRAWINGS DO NOT ALWAYS INDICATE ALL VERTICAL BENDS AND TRANSITIONS. WHEN NECESSARY, MAKE VERTICAL TRANSITIONS BY A DEFLECTION AT THE JOINTS OR THE INSTALLATION OF FITTINGS. DO NOT DEFLECT PIPE JOINTS MORE THAN 80% OF THE MANUFACTURERS RECOMMENDATION.
9. ALL PIPING MUST BE INSTALLED WITH A MINIMUM OF 36-INCHES OF COVER UNLESS OTHERWISE NOTED ON THE PLANS.
10. ALL EXCAVATION FOR THIS PROJECT SHALL BE UNCLASSIFIED.
11. ALL UTILITIES WHICH ARE TO REMAIN AND WHICH ARE DAMAGED OR REMOVED WILL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
12. PIPE SHALL BE BACKFILLED WITH JOINTS EXPOSED FOR TESTING. BEFORE NEW JOINTS ARE COVERED, PRESSURE LINES ARE TO BE HYDROSTATICALLY TESTED AT NOT LESS THAN 150 PSIG FOR A PERIOD OF TWO HOURS. THE OWNER SHALL OBSERVE AND APPROVE OR REJECT THE TEST. REPAIRS, IF REQUIRED, SHALL BE MADE AND THE LINE SHALL BE RE-TESTED UNTIL APPROVED. TEST SHALL NOT BEGIN UNTIL THRUST BLOCKS HAVE AGED A MINIMUM OF 24 HOURS.
13. AS SOON AS PRACTICAL, ALL PORTIONS OF EXCAVATIONS NOT OCCUPIED BY THE PERMANENT STRUCTURE SHALL BE BACKFILLED.
14. WHERE WATER LINE INTERSECTS SANITARY SEWER SYSTEM MAINS AT LESS THAN 9.0 FEET SEPARATION, THE CONTRACTOR SHALL INSTALL A 20 FOOT SECTION OF C-900 PVC PRESSURE PIPE CENTERED ON THE POINT OF INTERSECTION.
15. CONTRACTOR SHALL REMOVE AND REINSTALL ALL SIGNS, MAILBOXES, FENCES, CULVERTS AND OTHER ITEMS IN WAY OF THE WORK.
16. CONTRACTOR SHALL REPAIR ALL OPEN CUTS OF PAVED AREAS BACK TO BETTER THAN "AS-IS" CONDITION WITH LIKE MATERIALS.
17. PROVIDE INTERIM DRAINAGE DURING CONSTRUCTION AS REQUIRED. USE PUMPS, TEMPORARY DITCHES, ETC. TO MAINTAIN A WELL DRAINED SITE FREE OF STANDING WATER AND WATER SOFTENED SOILS.
18. ANCHOR ALL UNDERGROUND PRESSURE PIPING AS NECESSARY TO PREVENT MOVEMENT UNDER PRESSURE TEST AND SERVICES.
19. ALL REINFORCING STEEL SHALL CONFORM TO ASTM SPECIFICATION A-165, GRADE 60 ALL BARS SHALL CONFORM TO ASTM SPECIFICATION A-305.
20. ALL CONCRETE AND FORM WORK SHALL CONFORM TO CURRENT ACI CODE REQUIREMENTS.
21. THE CONTRACTOR SHALL EXERCISE EXTRA CARE TO PREVENT DAMAGE TO ALL OTHER STRUCTURES IN THE AREA INCLUDING BUILDINGS, FENCES, ROADS, PIPELINES, UTILITIES, ETC., WHETHER PUBLICLY OR PRIVATELY OWNED.
22. UNTIL ACCEPTANCE BY THE ENGINEER OF ANY OR ALL OF THE CONSTRUCTION, AS PROVIDED FOR IN THE PLANS AND SPECIFICATIONS, AND ACCEPTANCE BY THE PROPER UTILITY PROVIDER, IT SHALL BE UNDER THE CHARGE AND CARE OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE EVERY NECESSARY PRECAUTION AGAINST TO ANY PART OF THE WORK. THE CONTRACTOR SHALL REBUILD, REPAIR, RESTORE AND MAKE GOOD, AT HIS OWN EXPENSE, OF ALL THE DAMAGE TO ANY PORTION OF THE WORK BEFORE ITS ACCEPTANCE.
23. NO OPEN TRENCHES OR EXCAVATION SHALL BE LEFT OPEN OVERNIGHT.
24. ALL WATERLINE TAPS AND WATER METERS SHALL BE INSTALLED BY CONTRACTOR. COORDINATE WITH THE CITY OF MISSION BEFORE COMMENCING ANY UTILITY WORK.
25. COORDINATE ALL UTILITY WORK WITH THE PLUMBING PLANS BEFORE COMMENCING ANY UTILITY WORK. REFER TO PLUMBING PLANS FOR CONTINUATION.
26. COORDINATE WITH GRADING PLANS FOR WATER LINE, STORM AND SANITARY SEWER LINES INSTALLATION.
27. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND PAY ALL APPLICABLE PERMIT FEES. CONTRACTOR SHALL PROVIDE PROOF TO THE ENGINEER THAT SAID PERMITS HAVE BEEN OBTAINED, INCLUDING THOSE FROM THE CITY OF MISSION, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
28. THE TOP ELEVATIONS OF MANHOLES AND CLEANOUTS CONSTRUCTED IN PAVED AREAS SHALL MATCH FINISHED PAVEMENT GRADE. CLEANOUTS' TOPS (LIDS) IN PAVED AREAS SHALL BE LOCKING TRAFFIC-RATED TYPE. THE TOP ELEVATIONS OF MANHOLES AND CLEANOUTS CONSTRUCTED IN GRASSY AREAS SHALL BE SIX INCHES ABOVE FINISHED GRADE (UNLESS OTHERWISE NOTED ON PLANS).
29. CONTRACTOR SHALL VISIT SITE PRIOR TO BIDDING TO VERIFY EXISTING CONDITIONS.
30. REFER TO GEOTECH REPORT BEFORE INSTALLATION OF DRIVES AND PARKING AREAS.
31. BOTH SITE AND BUILDING CONTRACTORS TO VERIFY EXISTING SITE ELEVATIONS PRIOR TO POURING CONCRETE TO VERIFY ACCESSIBILITY.
32. PERMIT NEEDED FROM CITY OF MISSION BUILDING DEPARTMENT AND PRE-CONSTRUCTION CONFERENCE NEEDED WITH CITY OF MISSION.
33. CONTRACTOR TO LEAVE OPENINGS IN CURB AT SIDEWALK RAMP LOCATIONS.
34. CONSULT WITH PROPERTY OWNER BEFORE RELOCATING EXISTING FENCES THAT MIGHT BE IN THE WAY OF THE CONSTRUCTION AREA AND/OR CONSTRUCTION PLANS.
35. TEXAS ACCESSIBILITY STANDARDS SPECIFICATIONS SHALL PREVAIL WHEN PERTAINING TO HANDICAP PARKING SPACES, TEXTURED FINISHES, RAMPS, ACCESS LANES, ETC. CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE COMPLIANCE WITH APPLICABLE AMERICAN WITH DISABILITIES ACT REGULATIONS. CONTRACTOR SHALL PRESENT ANY CONFLICTS BETWEEN THE CIVIL PLANS AND THE TDLR/ADA REQUIREMENTS TO THE ENGINEER PRIOR TO CONSTRUCTION.
36. WHEN NECESSARY, CONTRACTOR SHALL EMPLOY TRAFFIC CONTROL MEASURES FOR CONSTRUCTION. CONTRACTOR SHALL PRESENT THE ENGINEER COPIES OF THE TRAFFIC CONTROL PLANS PRIOR TO CONSTRUCTION. ANY TRAFFIC CONTROL MEASURES SHALL COMPLY WITH CURRENT MUTCD (MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES) AND TxDOT REGULATIONS, WHERE APPLICABLE.
37. THE CONTRACTOR SHALL STRICTLY ADHERE TO TCEQ RULES AND REGULATIONS FOR THE INSTALLATION AND TESTING OF DOMESTIC WATER AND WASTEWATER SYSTEMS AS DETAILED IN 30 TAC, CHAPTER 317.1 OF THE TNRC/TCEQ RULES. ALL MINIMUM SEPARATION DISTANCES AND CROSSINGS REQUIREMENTS ARE TO BE STRICTLY ADHERED TO. IT IS THE CONTRACTOR'S RESPONSIBILITY FOR THE ADHERENCE TO THESE REQUIREMENTS.

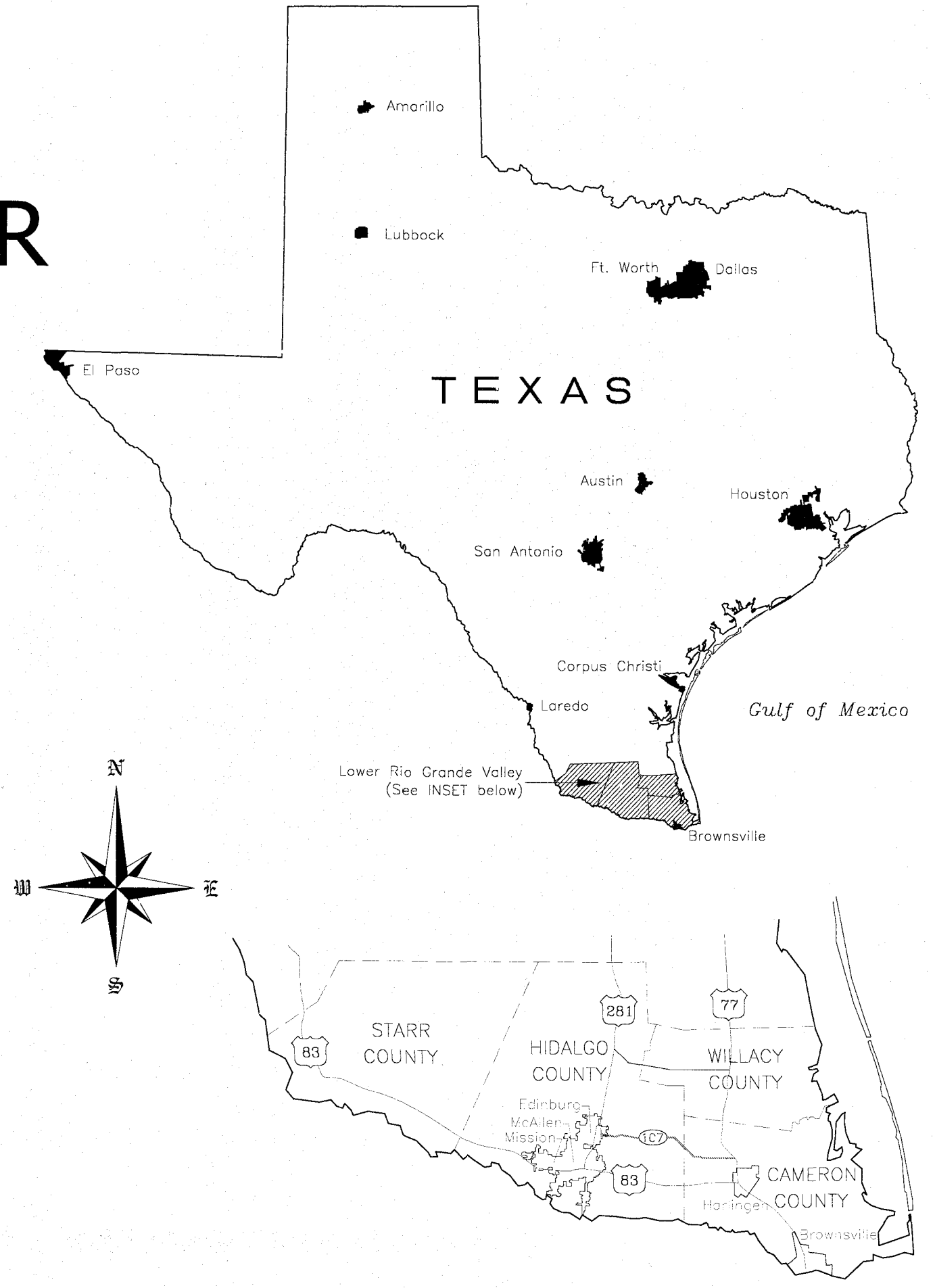


LOCATION MAP

SCALE: 1"=1000'



2019



INDEX:

- C1 COVER SHEET
- C2 15" & 12" PVC SAN. SEWER LINES (STATION 0+00.00 TO 27+81.00)
- C3 12" PVC SAN. SEWER LINES (STATION 27+81.00 TO 37+61.00)
- C4 SANITARY SEWER TYPICAL DETAILS

BENCH MARK:
CENTER OF SQUARE CUT ON TOP OF CURB LOCATED ON THE WEST SIDE OF BREYFOGLE ROAD (SCHUERBACH ROAD).
N=16597196.178
E=1028619.792
ELEV.=114.51

BID # RFB: 19-285-09-25

PLANS APPROVED: CITY OF MISSION

J. P. TERRAZAS, CITY ENGINEER

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Texas811

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Call before you dig.

PARTICIPANTS REQUEST 48 HOURS NOTICE BEFORE YOU DIG, DRILL, OR BLAST - STOP AND CALL CONSTRUCTION 811

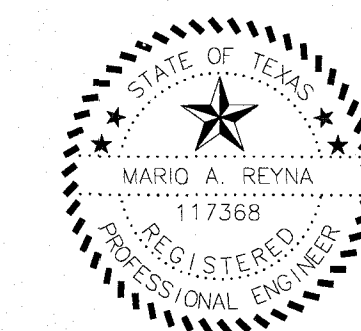
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AT 1-800-669-8344

M MELDEN & HUNT INC.
CONSULTANTS • ENGINEERS • SURVEYORS

115 W. MCINTYRE
EDINBURG, TX 78541
PH: (956) 381-0981
FAX: (956) 381-1839
ESTABLISHED 1947
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CITY OFFICIALS

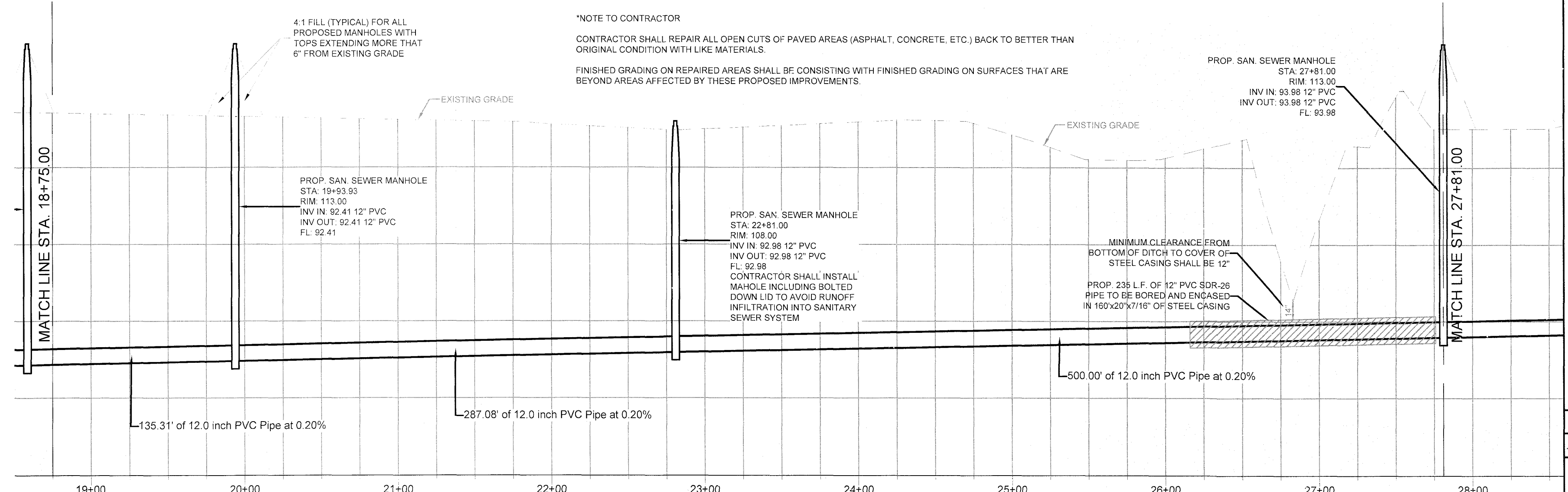
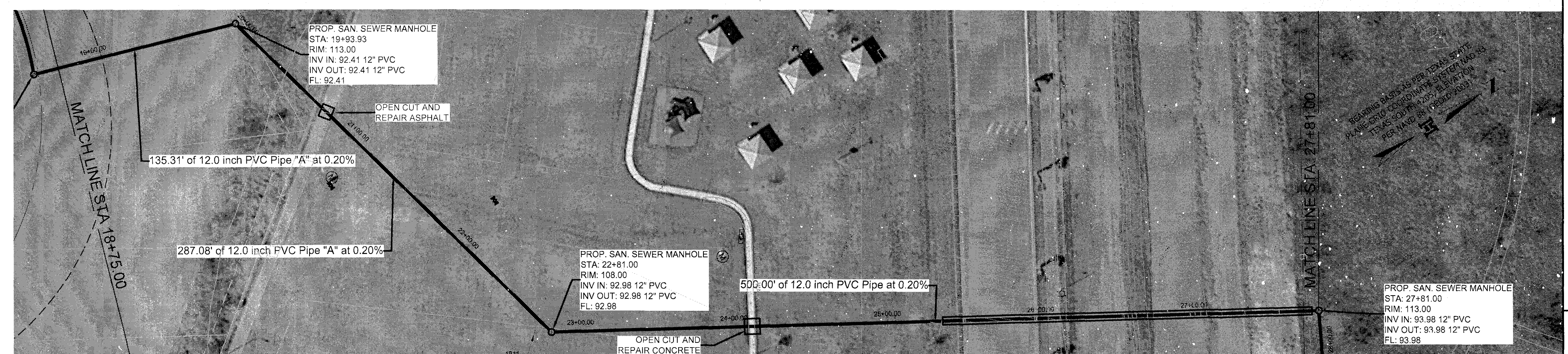
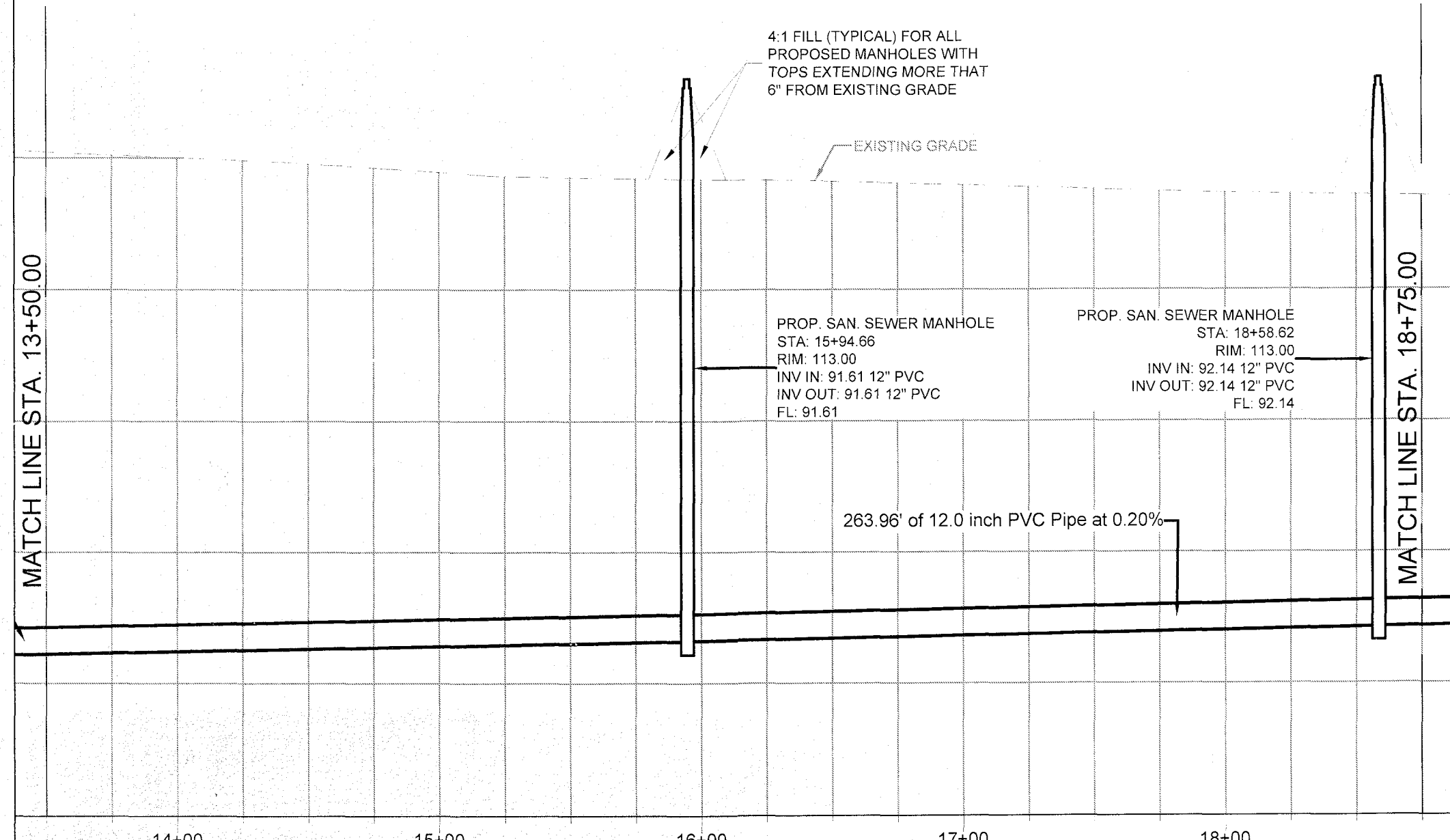
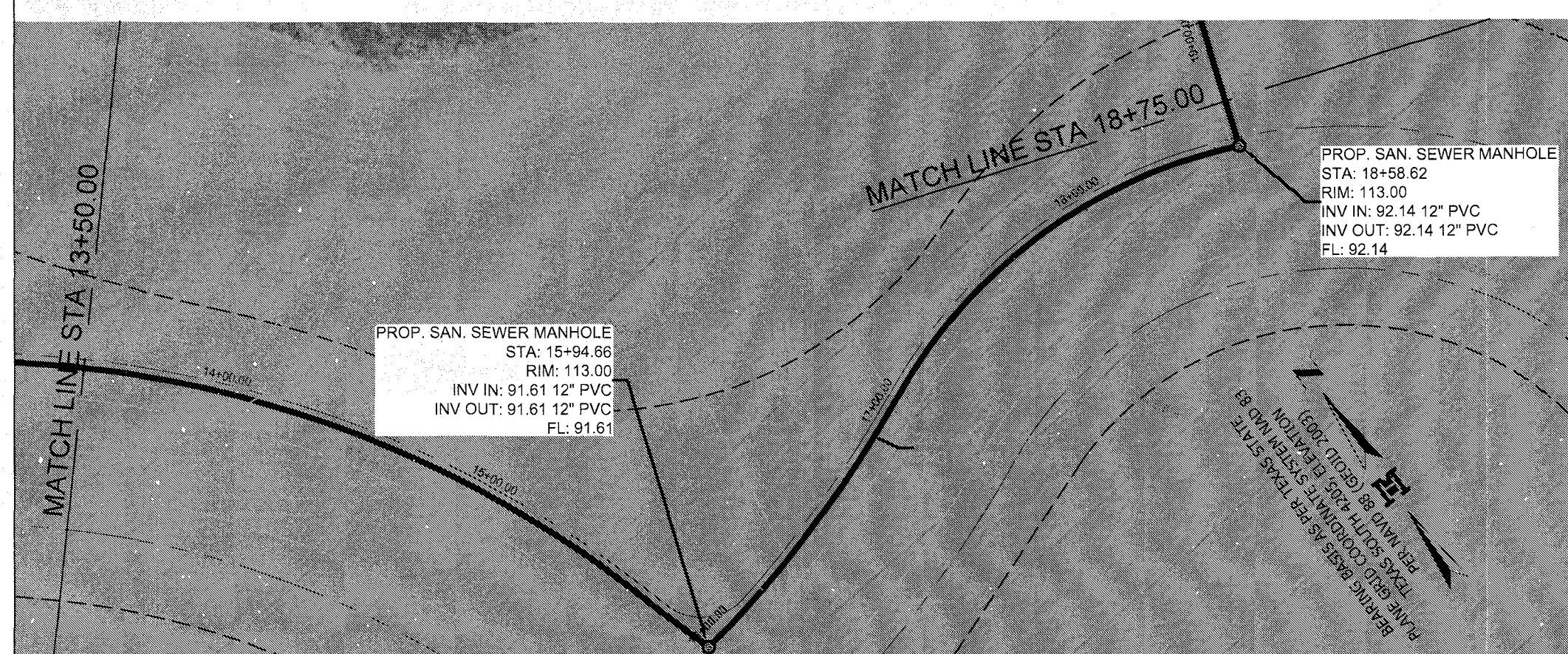
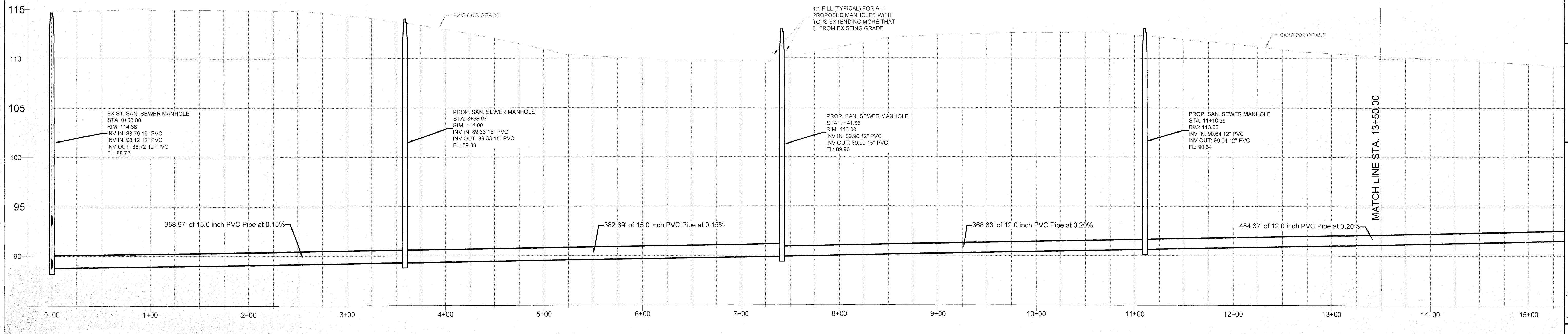
Dr. Armando O'Caña Mayor
Ms. Norie Gonzalez Garza Mayor Pro-Tem
Ms. Jessica Ortega-Ochoa Councilmember
Mr. Ruben Plata Councilmember
Mr. Randy Perez City Manager



MARIO A. REYNA, P.E.
DATE 9-10-18

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JOB No. 18221.01

BY: MELDEN & HUNT, INC.
DATE: 06-25-2019
PROJECT ENGINEER: M.A.R.
CONSULTANTS • ENGINEERS • SURVEYORS
115 W. MCINTYRE
FLORENCE, MISSISSIPPI 39201
TEL: (662) 381-1899
FAX: (662) 381-1899
WWW.MELDENANDHUNT.COM

ENGINEERING TECH. J. & Z.
PROJECT ENGINEER: M.A.R.
BOOK: 1002, PG. 17-23
1. RELEASE DATE: 06-25-2019
2. RELEASE DATE:
3. RELEASE DATE:
SCALE: PLAN: 1" = 50'
PROFILE: 1" = 5'

MELDEN & HUNT, INC.
TEXAS REGISTRATION F-1435

STATE OF TEXAS
MARIO A. REYNA
117368
LICENSED PROFESSIONAL ENGINEER

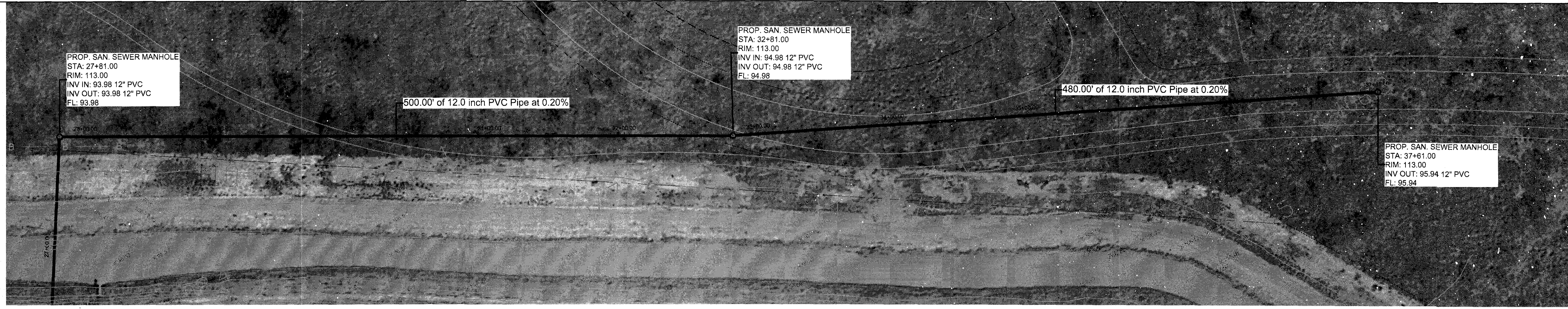
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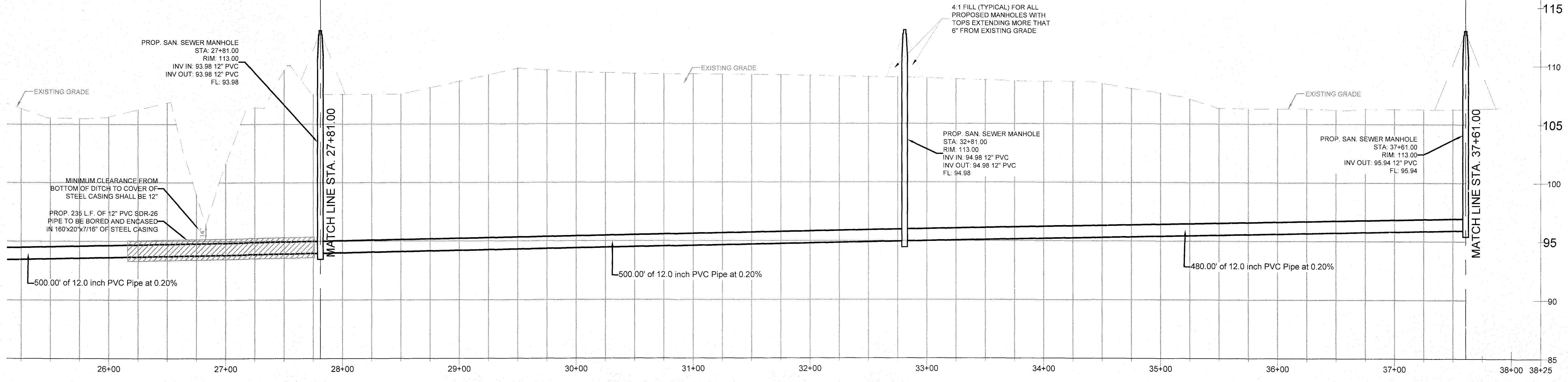
BENTSEN PALM DEVELOPMENT
SANITARY SEWER IMPROVEMENTS
PROJECT PHASE II
MISSION, TEXAS

15" & 12" PVC SAN. SEWER LINES
(STATION 0+00.00 TO 27+81.00)

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File Name: 18221_Los Amigos del Valle_REV I.dwg
SHEET 2 OF 4



BEARING: 85° 55' 30" E
 DISTANCE: 15.5' ±
 BEARING: 100° 00' 00" E
 DISTANCE: 100.0' ±
 BEARING: 100° 00' 00" E
 DISTANCE: 100.0' ±



JOB No. 18221.01	
BY MELDEN & HUNT, INC.	DATE
REVISION	DATE
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ENGINEERING TECH. J. Z.	PROJECT ENGINEER M.A.R.
T-BOOK 1002 PGS. 17-22	1. RELEASE DATE: 06-25-2019
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	3. RELEASE DATE
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12" PVC SAN. SEWER LINES (STATION 27+81.00 TO 37+61.00)	
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SHEET 3	OF 4

BY DATE
 REVISION
MELDEN & HUNT, INC.
 CONSULTANTS IN CIVIL ENGINEERING
 EDINBURG, TX 78541
 P.O. BOX 18221
 FAX: (959) 381-1839
 ESTABLISHED 1947

ENGINEERING TECH. 1, 0, 2
 PROJECT ENGINEER M.A.R.
 1. BOOK: 1002, PG. 172Z
 2. RELEASE DATE: 08-26-2019
 3. RELEASE DATE:
 SCALE: AS INDICATED

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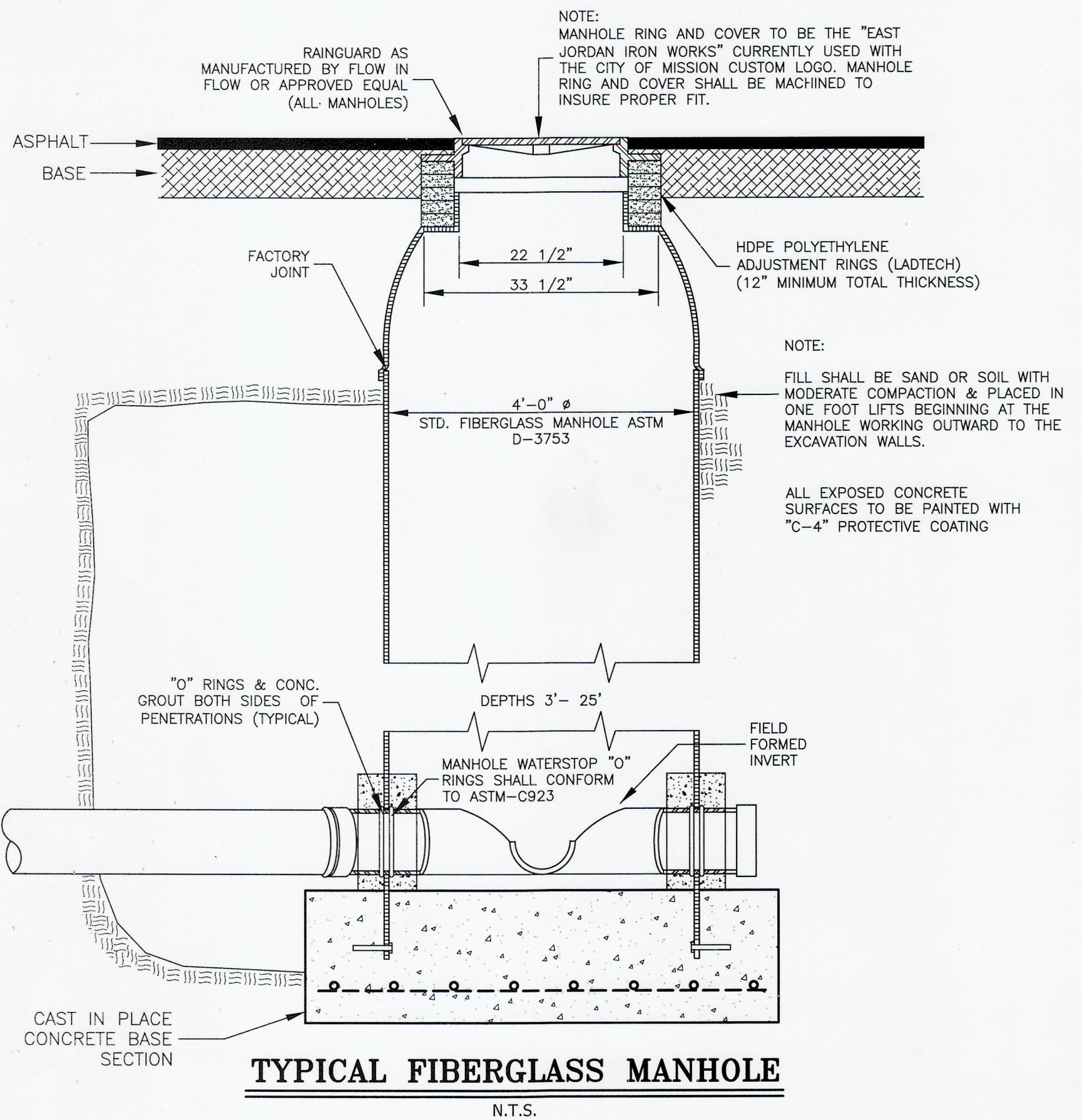
STATE OF TEXAS
 MARIO A. REYNA
 117368
 LICENSED PROFESSIONAL ENGINEER

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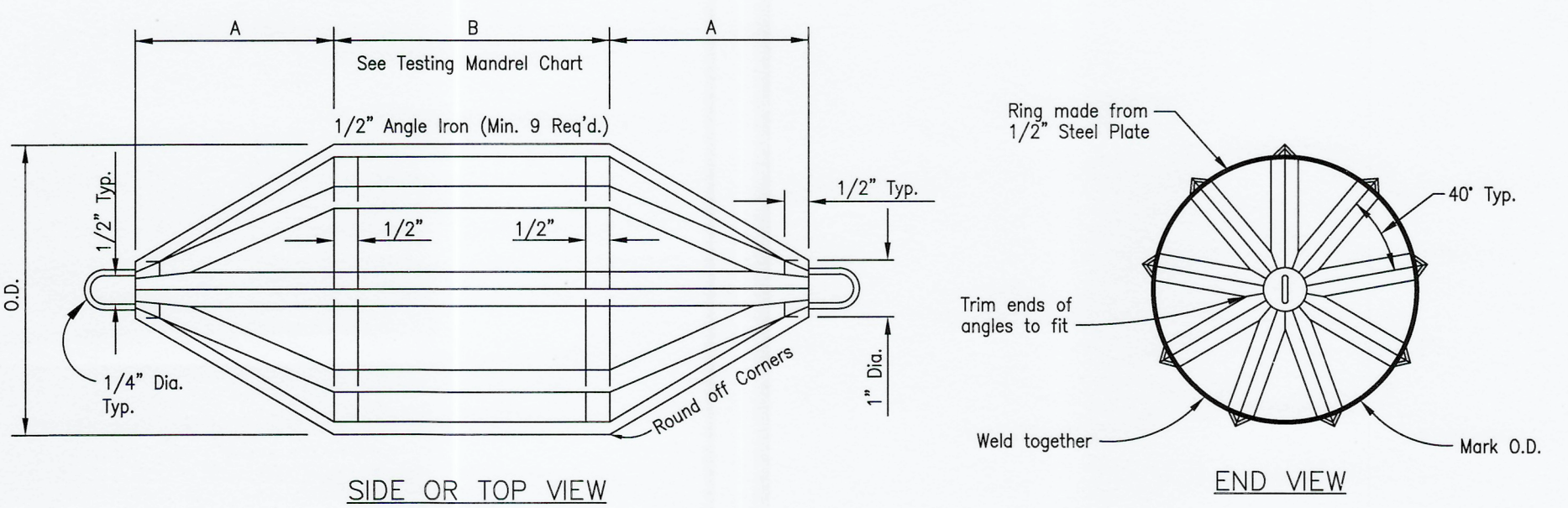
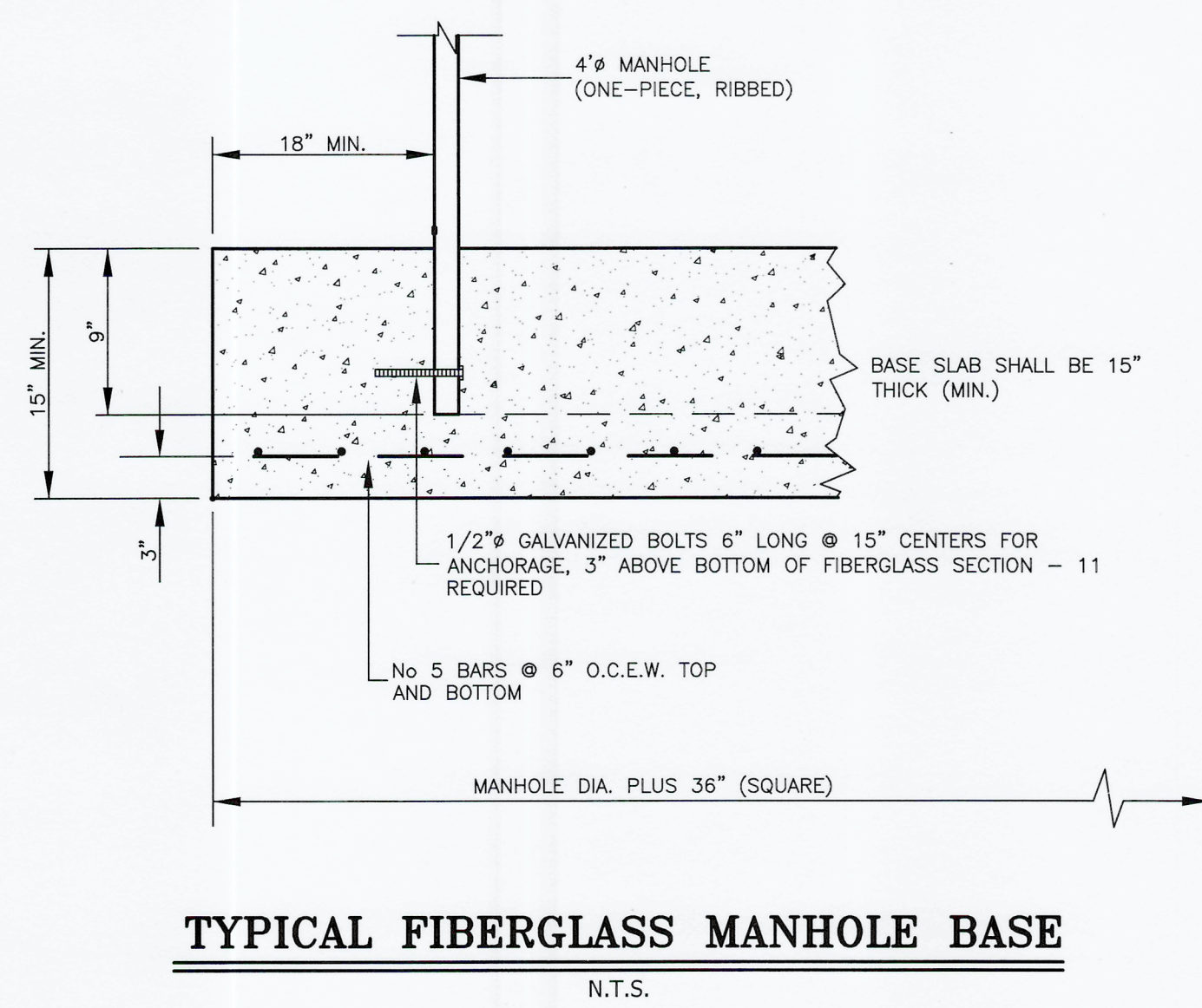
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BENTSEN PALM DEVELOPMENT
 SANITARY SEWER IMPROVEMENTS
 PROJECT PHASE II
 MISSION, TEXAS

SANITARY SEWER TYPICAL DETAILS



NOTE: WHERE A MANHOLE FALLS WITHIN AN EXISTING BAR DITCH, THE TOP OF THE PROPOSED MANHOLE SHALL BE PLACED A MINIMUM OF 6" ABOVE THE FLOWLINE OF THE DITCH. THE CONTRACTOR SHALL POUR A 6" THICK, 10" DIAMETER CONCRETE CONE AROUND THE MANHOLE WITH THE OUTSIDE EDGE OF THE CONE MATCHING EXISTING GROUND.

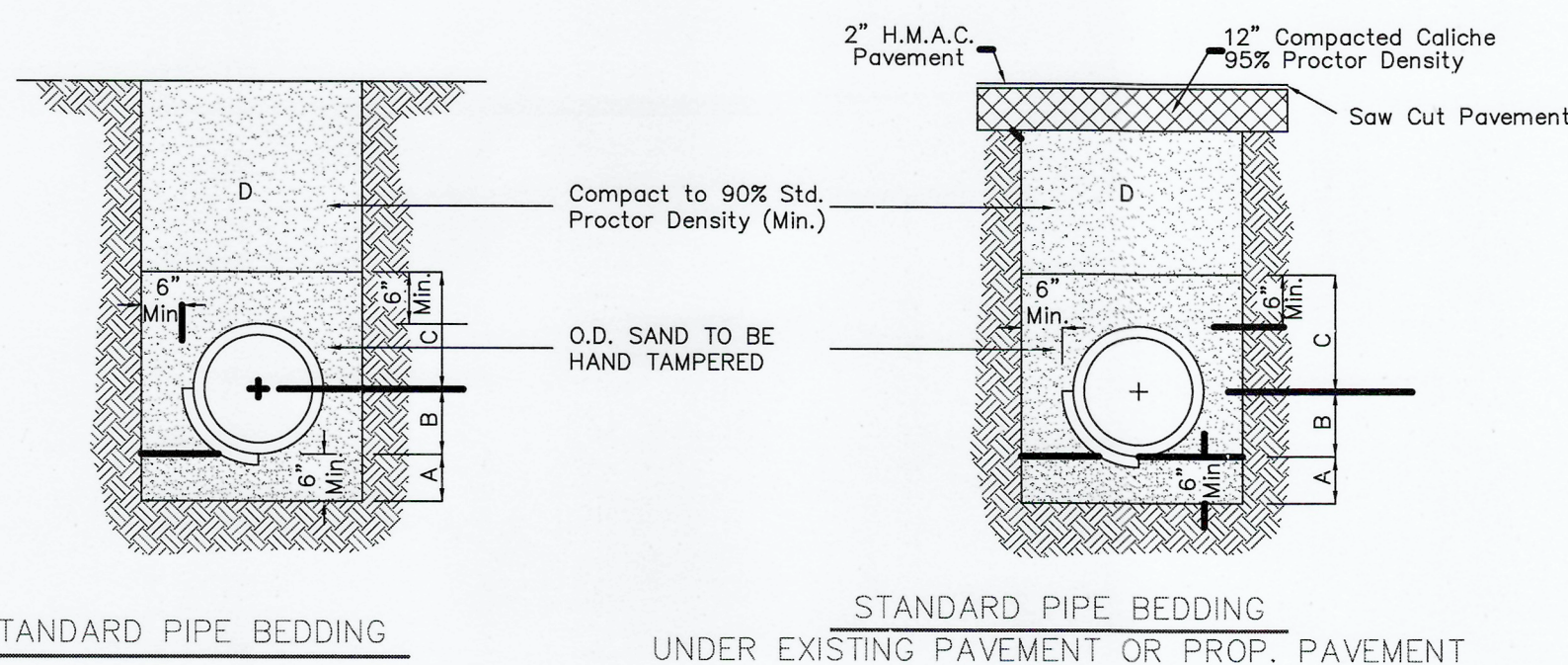
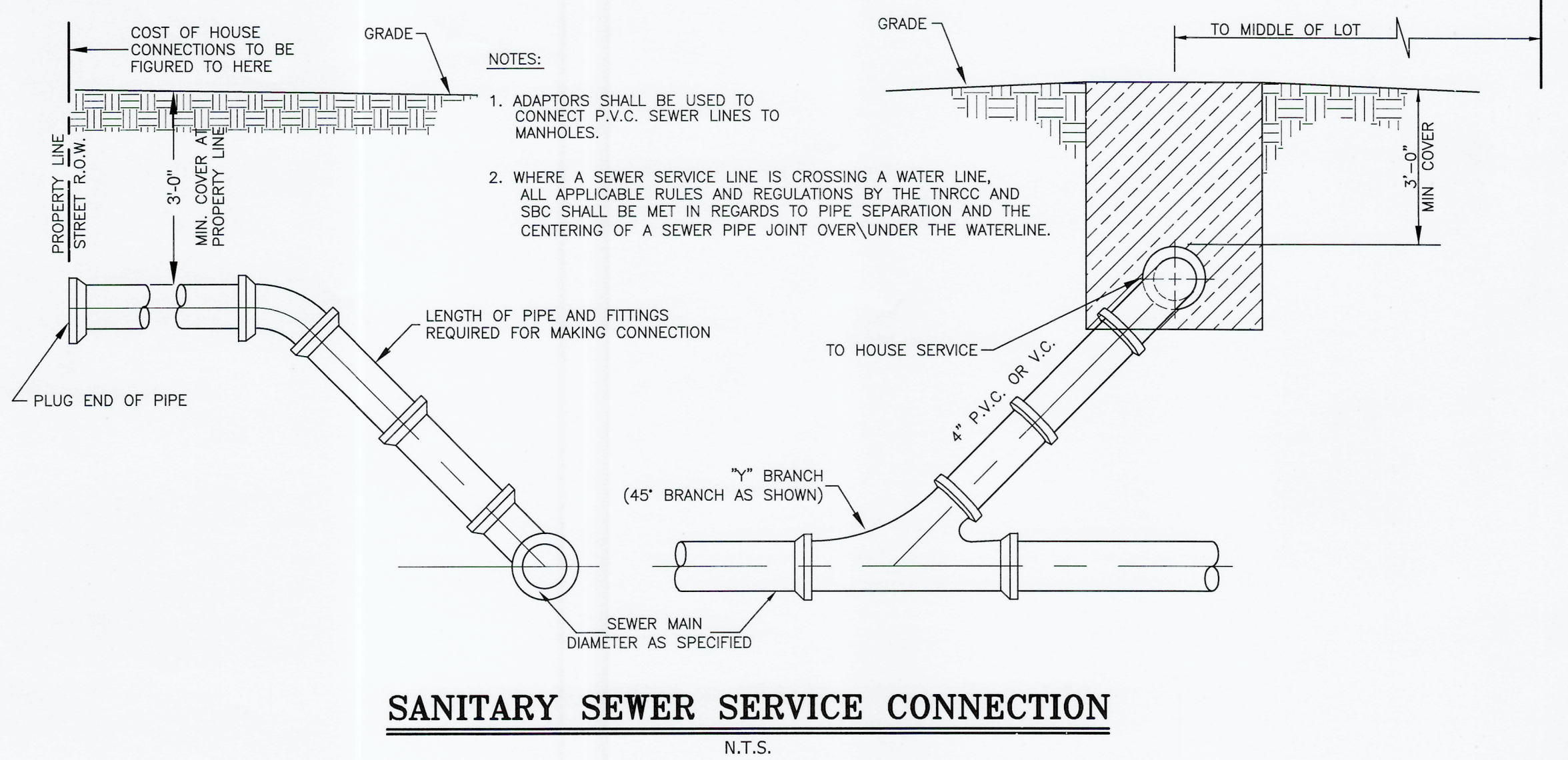


SIZE	MANDREL O.D.		PVC (SDR-35)		PVC (SDR-26)		PVC (SDR-35)		PVC (SDR-26)	
	A	B*	PVC (SDR-35)	PVC (SDR-26)	PVC (SDR-35)	PVC (SDR-26)	PVC (SDR-35)	PVC (SDR-26)	PVC (SDR-35)	PVC (SDR-26)
6"	4.0"	4.5"	5.62	5.50	4.91	4.79				
8"	5.5"	6.0"	7.52	7.37	6.81	6.66				
10"	7.0"	7.5"	9.41	9.21	8.70	8.50				

* Minimum Length

Notes:
 PVC pipes and fittings six inches (6") to fifteen inches (15") in diameter shall conform to ASTM D-3034. PVC pipes and fittings eighteen inches (18") to twenty-seven inches (27") in diameter shall conform to ASTM F-679.
 This information is provided as a reference. All deflection testing shall be done in accordance with TNRC Chapter 317.

GO, NO-GO DEFLECTION TESTING MANDREL
 N.T.S.



STANDARD PIPE BEDDING
 UNDER EXISTING PAVEMENT OR PROP. PAVEMENT

FOUNDATION PREPARATION (WELLPOINTS, GRAVEL OR CEMENT STABILIZATION, OR APPROVED SUBSTITUTE) SHALL BE REQUIRED WHEN TRENCH BOTTOM IS UNSTABLE.

BACKFILLING AT STRUCTURES SHALL BE PLACED IN UNIFORM LAYERS, MOISTENED AS REQUIRED TO APPROXIMATE OPTIMUM MOISTURE CONTENTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY. THE THICKNESS OF EACH LOOSE LAYER SHALL BE SAND, APPROVED SITE SOIL OR OTHER APPROVED SUBSTITUTE.

SANITARY SEWER BEDDING DETAIL
 N.T.S.

SAND TO BE RIVER SAND W/ PI <15

PIPE CASING SIZE	CARRIER PIPE SIZE
12" 0.375 WALL	4"-6"
18" 0.375 WALL	8"
18" 0.375 WALL	10"
20" 0.375 WALL	12"
24" 0.375 WALL	14"
26" 0.375 WALL	16"
32" 0.375 WALL	18"
36" 0.375 WALL	20"
40" 0.375 WALL	24"

