

SPECIFICATIONS
AND
DOCUMENTS



TEXAS MUNICIPAL POWER AGENCY
BRYAN, TEXAS

SITE F LANDFILL
CONSTRUCTION - PHASE I
SPECIFICATION 15027.71.0200

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Issued: AUG 04 1989

THIS CONTRACT IS SUBJECT TO
ARBITRATION UNDER THE TEXAS
GENERAL ARBITRATION ACT.

I hereby certify that this specification was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Texas.

L. E. Brown

Date *8/4/89* Reg. No. *65676*

BLACK & VEATCH
Engineers-Architects
Kansas City, Missouri

TEXAS MUNICIPAL POWER AGENCY
BRYAN, TEXAS

SPECIFICATIONS AND DOCUMENTS

FOR

SITE F LANDFILL CONSTRUCTION - PHASE I

SPECIFICATION 15027.71.0200

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INSTRUCTIONS TO BIDDERS

B.1 GENERAL. Proposals are requested by Texas Municipal Power Agency, hereinafter referred to as the "Owner."

This proposal is for construction work which will be incorporated in the Owner's Gibbons Creek Steam Electric Station. Section 1A of the contract documents defines the scope of the work to be included in the proposal.

B.2 BIDDER QUALIFICATIONS. In order for their proposals to be considered, bidders must demonstrate that they are qualified to satisfactorily perform the specified work. The bidder shall submit written evidence of his qualifications to the Owner and the Engineer, in duplicate, with their Proposal Documents. Such evidence shall include all information necessary to certify that the bidder:

Maintains a permanent place of business;

Has available the construction plant and equipment to do the work;

Has technical knowledge and practical experience in work of the type specified;

Has available the organization and qualified manpower to do the work;

Has adequate financial status to meet the financial obligations incident to the work;

Has no just or proper claims pending against him or his work; and

Has constructed other facilities of similar type and of equal or greater size and complexity. The evidence shall consist of a listing of the facilities indicating the owner's name, location, approximate dollar value, type of facilities, and the date of completion.

B.3 PROPOSAL DOCUMENTS. Prospective bidders who intend to make a direct proposal to the Owner will be charged \$250 for one copy of the specifications and documents, and two complete set(s) of the drawings. Specifications and documents and drawings taken for submittal of proposals shall be returned to the Owner within 30 days after the date set for receiving proposals. The Owner will refund the \$250 when the drawings and specification are returned.

The bidder shall acknowledge receipt of all addenda issued for the specifications and documents in the space provided in the proposal form.

The bidder shall assemble all drawings, catalog data, and other supplementary information necessary to thoroughly describe materials and equipment covered by the proposal and shall attach such supplemental information to each copy of the bidding documents submitted.

B.4.2 Exceptions. Each bidder shall list in the space provided on the proposal form all exceptions or conflicts between his proposal and the specifications and documents. If more space is required for this listing, additional pages may be added. If the bidder takes no exceptions, he shall write "None" in the space provided. Proposals which do not comply with this requirement will be considered irregular and may be rejected at the discretion of the Owner. In case of conflicts not stated as directed, the requirements of the specifications and documents shall govern.

If the bidder takes exception, all such exceptions shall be specific in nature and carefully referenced to the applicable page number, article number, and article title of the specifications and documents. If the bidder proposes deletion of specification language and substitution of revised language, such deletion and substitution shall be carefully presented by typing complete paragraphs or articles of the original specification language and incorporating the substitute language. Proposed deletions shall be set off by brackets, thus: [delete this language], and proposed substitute language shall be indicated by underlining, thus: substitute this language. Exceptions which are general, which make reference to the bidder's standard terms and conditions, or which make reference to the bidder's descriptive information as a whole will not be acceptable. Proposals which do not comply with these requirements for the presentation of exceptions will not be acceptable and may be rejected.

If a proposal includes express or implied exceptions that are not listed as required, the requirements of the specifications and documents shall govern. The bidder shall not alter any part of the specifications and documents in any way, except by stating his exceptions.

B.4.3 Signatures. Each bidder shall sign the proposal with an authorized signature and shall give his full business address. The bidder's name stated on the proposal shall be the exact legal name of the firm. The names of all persons signing shall also be typed or printed below the signature.

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

All provisions of the bonds shall be complete. The bonds shall be executed on the forms provided with the proper corporate surety through a company licensed and qualified to operate in the state of Texas and acceptable to the Owner. The bonds shall be signed by an agent resident in the state of Texas, and the date of the bonds shall be the date of execution of the contract by the Owner.

If at any time during the continuance of the contract, the surety becomes irresponsible, the Owner shall have the right to require additional and sufficient sureties which the Contractor shall furnish to the satisfaction of the Owner within 10 days after notice to do so. In default thereof, the contract may be suspended and all payments on moneys due to the Contractor withheld.

The Performance Bond shall guarantee the faithful performance of all covenants, stipulations, and conditions of the contract. The Payment Bond shall guarantee the faithful payment of all obligations which may arise under the contract.

A Power of Attorney, certified to include the date of execution of the bond, evidencing the authority of the individual executing the bond on behalf of the surety shall accompany each bond.

B.10 PROPOSAL PRICING. Firm price proposals shall be submitted.

B.11 TAXES, PERMITS, AND LICENSES. The bidder's attention is directed to the General Conditions regarding taxes, permits, and licenses. Each bidder shall be responsible for determining the applicable taxes, permits, and licenses. If the bidder is in doubt as to whether or not a tax, permit, or license is applicable, he shall state in his proposal whether this item has been included in his bid price and the amount of the applicable tax, permit, or license in question.

B.12 TIME OF COMPLETION. The time of completion of the work is of the essence of the contract. The proposal shall be based upon completion of the work in accordance with the specified schedule. It will be necessary that the bidder satisfy the Owner of his ability to complete the work within the stipulated time.

In this connection, attention is called to the provisions of the General Conditions relative to delays and extensions of time.

B.13 SUBSURFACE CONDITIONS. Each bidder shall be responsible for determining the types of subsurface materials which will be found. Test pits and borings have been excavated on the site. The locations and logs of the test pits and borings are bound separately as an appendix to these specifications and documents.

Information on subsurface materials made available shall not be a part of the contract documents, and there is no expressed or implied guarantee of the data given nor of the interpretation thereof.

B.14 ACCEPTANCE AND REJECTION OF PROPOSALS. The Owner reserves the right to accept the proposal which, in its judgment, is the lowest and best responsive proposal; to reject or negotiate any and all proposals; and to waive irregularities and informalities in any proposal that is submitted.

Proposals received after specified time of closing will be returned unopened.

C.3 SUBCONTRACTORS. The undersigned proposes that he will perform the majority of the work at the project site with his own forces and that specific portions of the work not performed by the undersigned will be subcontracted by the following subcontractors.

| <u>Work Subcontracted</u> | <u>Name of Subcontractor</u> |
|---------------------------|------------------------------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

C.4 ADDENDA. The undersigned bidder acknowledges receipt of the following addenda, which have been considered in preparing this Proposal.

| | |
|--------------|-------------|
| Number _____ | Dated _____ |
| Number _____ | Dated _____ |
| Number _____ | Dated _____ |
| Number _____ | Dated _____ |

C.5 DECLARATIONS AND SIGNATURES. The undersigned declares that he has visited the site of the work and familiarized himself with the conditions affecting the work.

Enclosed herewith is the required proposal guarantee in the amount of 5 percent of the total of the lump sum price(s) bid,

_____ (\$ _____)
 (Amount in Words)

which the undersigned bidder agrees is to be forfeited to and become the property of Texas Municipal Power Agency, should this Proposal be accepted and a contract be awarded to him and should he fail to enter into a contract in the form prescribed and to furnish the required bonds, but otherwise the aforesaid proposal guarantee will be returned upon his signing the Contract Agreement and delivering the approved bonds.

The undersigned bidder further agrees that, in case of default in execution of such Contract Agreement with necessary bonds, the check or bond accompanying this Proposal and the money payable thereon (a) shall cover the costs associated with such default, (b) shall cover a portion of the costs associated with such default and the bidder shall be liable for the balance, or (c) the residual obligation of such surety, after deducting the costs associated with such default, shall be released to the bidder.

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

If this Proposal is accepted, the undersigned bidder agrees to submit drawings and engineering data in accordance with Sections 1A and 1C and to perform the work in accordance with the specified schedule. The undersigned fully understands that the time of completion of the work is vital to the completion of the project and is of the essence of the contract.

If written notice of the acceptance of this Proposal is delivered to the undersigned within 60 days after the time set for receipt of proposals, or any time thereafter before this Proposal is withdrawn by the bidder, the undersigned will, within 10 days after presentation of the document

ARTICLE II. That the Owner shall pay to the Contractor for the work and materials embraced in this Contract Agreement, and the Contractor will accept as full compensation therefor, the sum (subject to adjustments as provided by the contract) of _____

_____ (\$ _____) for all work covered by and included in the contract award, designated in the foregoing Article I; payment to be made in cash or its equivalent in the manner provided in the specifications attached hereto.

ARTICLE III. That time of completion is of the essence of the Contract Agreement, and that the Contractor shall proceed with the specified work and shall conform to the schedule specified herein and in Part 1 of the specifications attached hereto.

IN WITNESS WHEREOF, the parties hereto have executed this Contract Agreement as of the day and year first above written.

TEXAS MUNICIPAL POWER AGENCY
Party of the First Part

(SEAL)

By _____

Typed Name _____

Attest _____

(Contractor's Name)
Party of the Second Part

(SEAL)

By _____

Typed Name _____

Attest _____

Note: This Contract Agreement shall be executed in accordance with Article GC.4.

PERFORMANCE BOND

Bond No. _____

Amount _____

KNOW ALL MEN BY THESE PRESENTS that we, _____

_____ of _____, hereinafter referred to as "Contractor", and _____,

a corporation organized under the laws of the State of _____ and authorized to transact business in the State of Texas, as "Surety", are held and firmly bound unto the TEXAS MUNICIPAL POWER AGENCY hereinafter referred to as "Owner", in the penal sum of _____

dollars (\$ _____), for the payment of which sum, well and truly to be made to the Owner, we bind ourselves and our heirs, executors, administrators, successors, and assigns, jointly and severally, by these presents:

WHEREAS, on the ____ day of _____, 19__ , the Contractor entered into a written contract with the Owner for furnishing materials, supplies, and equipment not furnished by the Owner, construction tools, equipment, and plant, and the performance of all necessary labor, for and in connection with the construction of certain improvements described in the attached contract documents; and

WHEREAS, it was a condition of the contract award by the Owner that these presents be executed by the Contractor and Surety;

NOW, THEREFORE, if the Contractor shall, in all particulars, well, duly, and faithfully observe, perform, and abide by each and every covenant, condition, and part of the said contract, and the conditions, specifications, drawings, and other contract documents thereto attached or, by reference made a part thereof, according to the true intent and meaning in each case, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

THE UNDERSIGNED SURETY, for value received, hereby agrees that no extension of time, change in, addition to, or other modification of the terms of the contract or work to be performed thereunder, or of the specifications or other contract document, shall in any way affect its obligation on this bond, and the Surety does hereby waive notice of any such extension of time, change, addition, or modification.

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IN TESTIMONY WHEREOF, the Contractor has hereunto set his hand and the Surety has caused these presents to be executed in its name and its corporate seal to be affixed by its attorney-in-fact at

_____ on this the _____ day of _____, 19__.

(CONTRACTOR) (SEAL)

By _____

Typed Name _____

(SURETY COMPANY)

By _____ (SEAL)
(Attorney-in-fact)

Typed Name _____

By _____
(State Representative)

Typed Name _____

(Accompany this bond with attorney-in-fact's authority from the Surety Company certified to include the date of the bond.)

PAYMENT BOND

Bond No. _____ Amount _____

KNOW ALL MEN BY THESE PRESENTS, that we, _____

_____ (hereinafter called the "Principal"), and _____,

_____ (Address) _____, a corporation organized and existing

under the laws of the State of _____ and authorized to do business in the State of Texas, (hereinafter called the "Surety"), are held and firmly bound unto TEXAS MUNICIPAL POWER AGENCY, (hereinafter

called the "Obligee"), in the sum of _____

_____, 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 the Obligee, dated _____

_____ for the _____

_____ in accordance with the terms and conditions of said Contract, which is hereby referred to and made a part hereof as if fully set forth herein;

NOW, THEREFORE, if the Principal shall pay all lawful claims of subcontractors, materialmen, or laborers or any other person defined as a "claimant" by Article 5160, Revised Civil Statutes of Texas, for labor performed or materials furnished in the performance of said Contract, the Obligee, Surety and Principal agreeing that this bond shall be for the benefit of any subcontractor, materialman, laborer, or "claimant," having a just claim, then this obligation shall be void; otherwise to remain in full force and effect.

AND IT IS FURTHER AGREED that this bond is executed in compliance with Article 5160, Revised Civil Statutes of Texas, which statute is hereby made a part of this bond as if fully set forth herein,

PROVIDED FURTHER, that in consideration of the sums paid to Surety in exchange for Surety's agreement hereunder, Surety relieves Obligee and Principal of any obligation whatsoever to notify Surety (1) of any default, delay or other failure by Principal in complying with the terms of the Contract between Principal and Obligee, including, but not limited to, terms relating to the payment by Principal of all consideration owed to "claimants" supplying labor and materials for the performance of said Contract, or (2) of any change, modification, extension, or alteration whatsoever in the Contract between Obligee and Principal or the work to be done pursuant to said Contract. Surety understands that the Contract may be changed or modified from time to time, and agrees that no such change(s) or modification(s) shall release Surety from its obligation hereunder. Surety agrees that Surety shall be bound to take notice of and shall be held to have knowledge of all acts or omissions of Principal in relation to the Contract.

Sealed with our seals and dated this _____ day of _____, 19__.

(PRINCIPAL)

By _____

Typed Name _____

(SURETY)

By _____

Typed Name _____

And _____

Typed Name _____

(Accompany this Bond with attorney-in-fact's authority from the Surety Company certified to include the date of the bond).

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GENERAL CONDITIONS

GC.1 CONTRACT DOCUMENTS. It is understood and agreed that the Notice of Bids, Instructions to Bidders, Proposal, Proposal Data, Contract Agreement, Owner's Purchase Order, Bid Bond, Performance Bond, Payment Bond, General Conditions, Special Conditions, Specifications, Drawings, Addenda, and Change Orders issued by the Owner or the Engineer, and specifications and engineering data furnished by the Contractor and accepted by the Owner, are contract documents. Additionally, any other written instruments, correspondence, etc., bound in the volume of the contract documents at the time of execution by the Owner and Contractor shall be "contract documents" whether specifically designated as such or otherwise.

GC.2 DEFINITIONS. Words, phrases, or other expressions used in these contract documents shall have meanings as follows.

1. "Contract," "contract," or "contract documents" shall include the items enumerated above under CONTRACT DOCUMENTS.
2. "Owner," "Obligee," or "Agency" shall mean the Texas Municipal Power Agency, named and designated in the Contract Agreement as "Party of the First Part." All notices, letters, and other communication directed to the Owner, shall be addressed and delivered to:

Texas Municipal Power Agency
P.O. Box 7000
Bryan, Texas 77805

Attention: Mr. Jim Steinbacher
3. "Contractor" or "Principal" shall mean the corporation, company, partnership, firm, or individual named and designated in the Contract Agreement as the "Party of the Second Part," who has entered into this Contract for the performance of the work covered thereby, and its, his, or their duly authorized representatives or its successors to the contract.
4. "Subcontractor" shall mean and refer only to a corporation, partnership, or individual having a direct contract with the Contractor for performing work covered by these contract documents, or its successors to the contract.

the Contractor and the Contractor shall execute the Contract Agreement, insert executed copies of the required bonds and power of attorney, and submit all copies to the Owner. The Contract Agreement shall be signed by the President or Vice President of the Contractor's firm and attested by the Secretary of the firm.

The Contractor shall execute all copies, and insert on the bonds and power of attorney the same date of contract as included on the Contract Agreement. The Owner will then complete execution of all copies and distribute the signed copies to the Contractor, Surety, and Engineer.

GC.5 LEGAL ADDRESSES. All notices, letters, and other communication to the Contractor will be mailed or delivered to either the Contractor's business address listed in the Proposal or the Contractor's office in the vicinity of the work, with delivery to either of these addresses being deemed as delivery to the Contractor. The address of the Owner appearing in Article GC.2 is hereby designated as the place to which all notices, letters, and other communication to the Owner shall be mailed or delivered. Either party may change his address at any time by an instrument in writing delivered to the Engineer and to the other party.

GC.6 SCOPE AND INTENT OF CONTRACT DOCUMENTS. The specifications and drawings are intended to supplement but not necessarily duplicate each other. Any work exhibited in the one and not in the other shall be executed as if it had been set forth in both, so that the work will be constructed according to the complete design as determined by the Engineer.

Should anything necessary for a clear understanding of the work be omitted from the specifications and drawings, or should the requirements appear to be in conflict, the Contractor shall secure written instructions from the Owner or Construction Manager before proceeding with the work affected thereby. It is understood and agreed that the work shall be performed according to the true intent of the contract documents.

GC.7 INDEPENDENT CONTRACTOR. The relationship of the Contractor to the Owner shall be that of an independent contractor.

GC.8 ASSIGNMENT AND SUBCONTRACTING. The Contractor shall not assign or subcontract the work, or any part thereof, without the previous written consent of the Owner, nor shall he assign, by power of attorney or otherwise, any of the money payable under this Contract unless written consent of the Owner has been obtained. No right under this Contract, nor claim for any money due or to become due hereunder shall be asserted against the Owner, or persons acting for the Owner, by reason of any so-called assignment of this Contract or any part thereof, unless such assignment has been authorized by the written consent of the Owner. In case the

its employees, nor any action of the Owner or Engineer shall operate as a waiver of any provision of this Contract, or of any power herein reserved to the Owner or Engineer, or of any right to damages herein provided, nor shall any waiver of any breach in this Contract be held to be a waiver of any other or subsequent breach.

GC.14 AUTHORITY OF THE ENGINEER AND THE CONSTRUCTION MANAGER. The Engineer shall determine all technical design questions in relation to the work. The Construction Manager shall resolve all questions in relation to field administration of the work.

If in the opinion of the Contractor a decision made by the Engineer or Construction Manager is not in accordance with the meaning and intent of the contract, the Contractor may file with the party rendering the decision and the other party to the contract, within 14 days after receipt of the decision, a written objection to the decision. Failure to file an objection within the allotted time will be considered acceptance of the Engineer's or Construction Manager's decision and the decision shall become final and conclusive.

The Engineer's or Construction Manager's decision and the filing of the written objection thereto shall be a condition precedent to the right to start other action.

It is the intent of this agreement that there shall be no delay in the execution of the work and the decision of the Engineer or Construction Manager as rendered shall be promptly observed.

GC.15 ENGINEERING INSPECTION. The Owner may appoint (either directly or through the Engineer) such inspectors as the Owner deems proper to inspect the materials furnished and the work performed for compliance with the drawings and specifications. The Contractor shall furnish all reasonable assistance required by the inspectors for the proper inspection of the work. Should the Contractor object to any interpretation of the contract by inspector, the Contractor may make written appeal to the Owner for a decision.

Inspectors shall have the authority to reject work which is unsatisfactory, faulty, or defective or does not conform to the requirements of the drawings and specifications. Inspection shall not relieve the Contractor from any obligation to construct the work strictly in accordance with the drawings and specifications. Work not so constructed shall be removed and replaced by the Contractor at his own expense.

GC.16 RIGHT OF OWNER TO TERMINATE CONTRACT. If the work to be done under this Contract is abandoned by the Contractor; or if this Contract is assigned by him without the written consent of the Owner; or if the Contractor is adjudged bankrupt, or files for voluntary bankruptcy; or if

a general assignment of his assets is made for the benefit of his creditors; or if a receiver is appointed for the Contractor or any of his property; or if at any time the Construction Manager certifies in writing to the Owner that the performance of the work under this Contract is being unnecessarily delayed, that the Contractor is violating any of the conditions of this Contract, or that he is executing the same in bad faith or otherwise not in accordance with the terms of said contract; or if the work is not substantially completed within the time named for its completion or within the time to which such completion date may be extended; then the Owner may serve written notice upon the Contractor and his surety of the Owner's intention to terminate this Contract. Unless within 5 days after the serving of such notice, a satisfactory arrangement is made for continuance, this Contract shall terminate. In the event of such termination, the surety shall have the right to take over and complete the work, provided that if the surety does not commence performance within 30 days, the Owner may take over and prosecute the work to completion, by contract or otherwise. The Contractor and his surety shall be liable to the Owner for all excess cost sustained by the Owner by reason of such prosecution and completion. The Owner may take possession of, and utilize in completing the work, all materials, equipment, tools, and plant on the site of the work, including such materials, etc., as may have been placed on the site by or at the direction of the Contractor.

GC.17 BEGINNING, PROGRESS, AND COMPLETION OF THE WORK. The time of completion is of the essence of this Contract. Unless otherwise specified in these contract documents or advised by written order of the Owner the Contractor shall begin work on or before the date stated in the Contract Agreement. The work shall be prosecuted to completion in accordance with the specified schedule, subject to adjustment as provided in these contract documents.

A detailed construction schedule shall be prepared by the Contractor and submitted to the Owner or Construction Manager for review. The schedule shall contain the various activities required to perform the work and the dates the activities will be started and completed in order to complete the work in accordance with the specified schedule requirements. The Contractor is responsible for determining the sequence and time estimates of the detailed construction activities. However, the Owner and Construction Manager reserve the right to require the Contractor to modify any portion of the schedule the Owner or Construction Manager determines to be impracticable or unreasonable; as required to coordinate the Contractor's activities with those of other contractors, if any, engaged in work for the Owner on the site; to avoid undue interference with the Owner's operations; and to assure completion of the work by the date or dates stipulated. Upon acceptance by the Owner and Construction Manager of the Contractor's detailed construction schedule, the Contractor will be responsible for maintaining such schedule.

If at any time the Contractor's work is behind schedule, he shall immediately put into effect definite procedures for getting the work back on schedule. The procedures shall be subject to review and modification by the Owner and Construction Manager. The Contractor will not be allowed extra compensation for costs incurred by him because of accelerated operations required to maintain the schedule.

GC.18 HINDRANCES AND DELAYS. The Contractor expressly agrees that in undertaking to complete the work within the time specified, he has made allowances for all hindrances and delays. No claims shall be made by the Contractor for such hindrances and delays.

Contractor shall not be entitled to any damages or to any additional compensation if the work of Contractor is delayed from any cause, including, but not limited to, delay caused solely by the act of Owner, Engineer, Construction Manager, or those within the control of any of them. In the event of such delay, Contractor's sole recourse shall be to request from Owner an extension of the time for performance of the work.

GC.19 SUSPENSION OF WORK. The Owner reserves the right to suspend and reinstate execution of the whole or any part of the work without invalidating the provisions of the contract. Suspension or reinstatement of work will be by written notice from the Owner to the Contractor.

Suspension of work shall not automatically entitle the Contractor to additional compensation or a change in the contract time; however, the Contractor will be reimbursed for real and unavoidable direct costs incurred by him as a result of such suspension and/or the contract will be extended as required to compensate for any delay due to such suspension. Claims by the Contractor for change of contract time or an adjustment of the contract price, due to work suspensions ordered by the Owner shall be made in accordance with the requirements of Article GC.22, CHANGES TO THE CONTRACT. The Contractor shall use all reasonable means to minimize the consequences of such suspension.

GC.20 CANCELLATION OF WORK. The Owner reserves the right to cancel the unfinished portion of the work by giving written notice to the Contractor. In the event of cancellation, the Owner will pay the Contractor reasonable and proper cancellation costs.

Cancellation of the work shall not constitute the basis for a claim for damages or loss of anticipated profits.

The Contractor shall, after consultation with the Owner, take all reasonable steps to minimize the costs related to cancellation. The Contractor shall provide the Owner with an accounting of costs claimed, including adequate supporting information, and the Owner may, at its expense, audit the claimed costs and supporting information.

GC.21 MODIFICATIONS. The Contractor shall modify the work whenever so ordered by the Owner or Construction Manager and such modifications shall not affect the validity of the contract. Modifications may involve changes in the amount of the work to be performed or changes in the contract time for which appropriate changes to the contract will be made.

Contract changes due to modifications shall be made in accordance with the requirements of Article GC.22, CHANGES TO THE CONTRACT.

GC.22 CHANGES TO THE CONTRACT. The contract may be changed only by duly executed change orders issued by the Owner.

If, in the opinion of the Owner or the Contractor, any event or action by the other party justifies a change in the contract, either party shall initiate with the other party, within 5 days after such event or action, a request for a change to the contract. All documentation required to substantiate the proposed change shall be submitted within a minimum reasonable time after initiating the request for change. Upon the parties reaching agreement regarding the proposed change, the Owner will issue a written change order therefor.

Notwithstanding the foregoing provisions requiring duly authorized change orders, in the event agreement has been reached between authorized representatives of the parties regarding the change in the contract pending processing of such change order, the Contractor shall proceed with the work on the basis of written interim authorization from the Owner.

If the Contractor claims that any instructions, request, drawing, specifications, or other directive or action of the Owner or the Engineer constitutes a change in the contract, but has not been authorized as such by a change order in writing by the Owner, the Contractor shall immediately request a written interim authorization and proceed without delay to perform the work in accordance with such authorization. The Contractor shall provide written notice of the claim or dispute to the Construction Manager and the Owner within 5 days of the request for interim authorization. The Contractor's failure to give said written notice within the 5 day period shall constitute a waiver and relinquishment of any such claim or dispute. The Owner's written interim authorization shall not constitute approval of the claim for increased or decreased work, but shall be a condition precedent to the Contractor's right to receive payment for such work and to the Contractor's right to prosecute or maintain any proceeding to recover for such work.

GC.22.1 Contract Price Changes. The contract price may be changed due to modifications which involve extra work or decreased work; or due to work suspensions, hindrances, and delays over which the Contractor has no control. Claims for changes in the contract price shall conform to the requirements specified herein.

GC.22.1.1 Increased Price. If a change in the contract is required due to work suspensions or hindrances and delays, the contract price will be increased according to agreed lump sums, agreed acceleration costs, or other demonstrable costs submitted by the Contractor and substantiated to the satisfaction of the Owner.

If a change in the contract price is required due to a modification in the work to be done, and the modification increases the amount of the work, and the added work or any part thereof is of a type and character which can properly and fairly be classified under one or more unit price items of the contract, then the contract price will be increased according to the amount actually done and at the applicable unit price. Otherwise, such work shall be paid for as hereinafter provided.

Contract price changes for modifications involving extra work will be based on agreed lump sums or on agreed unit prices whenever the Owner and the Contractor agree upon such prices before the extra work is started; otherwise, payments for extra work will be based on actual direct cost plus the specified percentage allowance.

For the purpose of determining whether proposed extra work will be authorized, or for determining the payment method for extra work, the Contractor shall submit to the Construction Manager, upon request, a detailed cost estimate for proposed extra work. The estimate shall indicate itemized quantities and charges for all elements of direct cost. Charges for the Contractor's and subcontractor's extra profit, extra general superintendence, extra field office expense, and extra overheads shall be indicated as a percentage addition to the total estimated direct cost. Unless otherwise agreed upon by the Contractor and the Owner, such percentage additions shall be 15 percent for the extra work performed by the Contractor's own forces or 20 percent for extra work performed by a subcontractor.

When payment for extra work is based on actual direct cost, the Contractor will be paid the actual direct cost plus an allowance of 15 percent if the extra work is performed by the Contractor's own forces or 20 percent if the extra work is performed by a subcontractor. The allowance will be paid as full compensation for the Contractor's and subcontractor's extra profit, extra general superintendence, extra field office expense, extra overheads, and all other elements of extra cost not defined herein as actual direct cost.

The actual direct cost shall include only those extra costs for labor and material expended in direct performance of the extra work and may include the following.

- a. The actual payroll cost of all workmen such as laborers, mechanics, craftsmen, and foremen

- b. The Contractor's or subcontractor's net cost for materials and supplies
- c. The rental charge for vehicles and construction equipment
- d. The transportation charges for equipment
- e. The charges for extra power, fuel, lubricants, water, and special services
- f. The charges for extra payroll taxes, bond premiums, and insurance premiums

The form in which actual direct cost records are kept, the construction methods, and the type and quantity of equipment used shall be acceptable to the Construction Manager.

Construction equipment which the Contractor has on the jobsite and which is of a type and size suitable for use in performing the extra work shall be used. The hourly rental charges for equipment shall not exceed 1/2 percent of the latest applicable monthly rental rates as published by Dataquest Incorporated in its "Rental Rate Blue Book" and shall apply to only the actual time the equipment is used in performing the extra work.

When extra work requires the use of equipment which the Contractor does not have on the jobsite, the Contractor shall obtain the concurrence of the Construction Manager before renting or otherwise acquiring additional equipment. The rental charges for the additional equipment shall not exceed the latest applicable "Rental Rate Blue Book" published rental rates.

GC.22.1.2 Decreased Price. If a change in the contract price is required due to a modification in the work to be done, and the modification decreases the amount of work, such decrease shall not constitute the basis for a claim for damages or anticipated profits on work affected by such decrease. Where the value of omitted work is not covered by applicable unit prices, the Construction Manager shall determine on an equitable basis the amount of (a) credit due the Owner for contract work deleted as a result of an authorized change, (b) allowance to the Contractor for any actual loss incurred in connection with the purchase, delivery, and subsequent disposal of materials or equipment required for use on the work as planned and which could not be used in any part of the work as actually built, and (c) any other adjustment of the contract amount where the method to be used in making such adjustment is not clearly defined in the contract documents.

Unless otherwise agreed upon by the Owner and the Contractor, the credit due the Owner for reductions in the amount of work to be done shall be the estimated direct cost of the deleted work plus an overhead allowance of the following.

10 percent of the estimated direct cost if the work was to have been done by the Contractor's own forces, or

15 percent of the estimated direct cost if the work was to have been done by a subcontractor

Direct cost referred to above shall include the category of costs listed as actual direct costs, Items (a) to (f) inclusive of the article entitled Increased Price.

GC.22.2 Contract Time Changes. The contract time may be changed due to work modifications, hindrances and delays, and work suspensions over which the Contractor has no control.

Contract time will not be changed for delays caused by unfavorable weather or unsuitable ground conditions, inadequate construction force, failure to place timely orders for equipment and materials, or other causes within the control of the Contractor.

GC.23 ARBITRATION. Before bringing any action in court pertaining to a decision of the Construction Manager, or claim, dispute, or other matter in question between the Owner and Contractor arising out of, or relating to, the contract documents or the breach thereof, the objector (hereinafter referred to as Party A) to the decision shall first offer to arbitrate the question with the other party to the contract (hereinafter referred to as Party B) by notifying him in writing and setting forth in such notice the question to be arbitrated.

Party B can elect to arbitrate or not. If Party B agrees to arbitrate, he shall so advise Party A in writing within 10 days after receipt of Party A's notice. Notice by Party B that he does not wish to arbitrate or failure of Party B to notify Party A within the 10 day period will give Party A the right to start action in court.

If Party B agrees to arbitrate, the arbitration proceedings shall be governed by the Construction Industry Arbitration Rules of the American Arbitration Association. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction.

The Contractor shall not cause a delay of the work during any arbitration proceedings, except by agreement with the Owner. It is understood and agreed by the parties to the contract that no requirement or statement

All required tests in connection with acceptance of source of materials shall be made at the Contractor's expense by a properly equipped laboratory of established reputation whose work and testing facilities are acceptable to the Owner. Any change in origin or method of preparation or manufacture of a material being routinely tested will require new tests. Reports of all tests shall be furnished to the Construction Manager or Owner in as many copies as required.

GC.27 GUARANTEE. The Contractor shall guarantee the equipment, materials, and workmanship furnished under this Contract to be as specified and to be free from defects for a period of one year after the date of final payment. In addition, the equipment furnished by the Contractor shall be guaranteed to be free from defects in design.

Upon notification, the Contractor shall promptly make all adjustments, repairs, or replacements which, in the opinion of the Construction Manager or Owner, arose out of defects and became necessary during the guarantee period.

The cost of all materials, parts, labor, transportation, supervision, special tools, and supplies required for replacement or repair of parts and for correction of defects shall be paid by the Contractor or by the surety.

This guarantee shall be extended to cover all repairs and replacements furnished under the guarantee and the period of the guarantee for each such repair or replacement shall be one year after installation or completion.

If within 10 days after the Owner has notified the Contractor of a defect, failure, or abnormality in the work, the Contractor has not started to make the necessary repairs or adjustments, the Owner is hereby authorized to make the repairs or adjustments or to order the work to be done by a third party, the cost of the work to be paid by the Contractor.

In the event of an emergency where, in the judgment of the Owner, delay would cause serious loss or damage, repairs or adjustments may be made by the Owner, or a third party chosen by the Owner, without advance notice to the Contractor and the cost of the work shall be paid by the Contractor, or by the surety.

GC.28 INSURANCE. Except as otherwise specified in this Contract, the Contractor and his subcontractors of any tier will be required at their own expense to maintain in effect at all times during the performance of the work insurance coverages with limits not less than those set forth below with insurers and under forms of policies satisfactory to the Owner. It shall be the responsibility of the Contractor to maintain adequate insurance coverage and to assure that subcontractors are adequately insured at all times. Failure of the Contractor to maintain adequate

coverage shall not relieve him of any contractual responsibility or obligation.

The requirements specified herein as to types, limits, and Owner's approval of insurance coverage to be maintained by the Contractor and his subcontractors are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by the Contractor and his subcontractors under this Contract.

Any insurance carried by the Owner, Engineer, or Construction Manager which may be applicable shall be deemed to be excess insurance and the Contractor's insurance primary for all purposes despite any conflicting provision in the Contractor's policies to the contrary.

GC.28.1 Certificates of Insurance. At the time of execution of this Contract and each subcontract, but in any event prior to commencing work at the jobsite, and as a condition precedent to the Contractor's and his subcontractors' initiation of performance, the Contractor and his subcontractors shall furnish the Owner and the Engineer with certificates of insurance as evidence that policies providing the required coverages and limits of insurance are in full force and effect. The certificates shall provide that any company issuing an insurance policy for the work under this Contract shall provide not less than 15 days advance notice in writing to the Owner and the Engineer prior to cancellation, termination, or material change of any policy of insurance. In addition, the Contractor shall immediately provide written notice to the Owner and Engineer upon receipt of notice of cancellation of an insurance policy or a decision to terminate or alter an insurance policy. All certificates of insurance shall clearly state that all applicable requirements have been satisfied, including certification that the policies are of the "occurrence" type. Certificates of insurance for Contractor- and subcontractor-furnished insurance and notices of any cancellations, terminations, or alterations of such policies shall be mailed to the Owner and the Engineer at the addresses listed in Article GC.2.

Each certificate shall quote the insuring agreement and all exclusions and additions as they appear in the policy; or in lieu of certificates, copies of the complete policy may be submitted.

GC.28.2 Additional Insureds. All insurance coverages furnished under this Contract shall include the Owner, the Engineer, the Construction Manager, and their partners, directors, officers, agents, and employees as Additional Insureds with respect to the activities of the Contractor and his subcontractors.

These policies shall contain a "cross-liability" or "severability of interest" clause or endorsement. Notwithstanding any other provision of these policies, the insurance afforded shall apply separately to each

Insured, Named Insured, or Additional Insured with respect to any claim, suit, or judgment made or brought by or for any other Insured, Named Insured, or Additional Insured as though a separate policy had been issued to each, except the insurer's liability shall not be increased beyond the amount or amounts for which the insurer would have been liable had only one insured been named.

The Owner, Engineer, or Construction Manager shall not by reason of their inclusion under these policies incur liability to the insurance carrier for payment of premium for these policies.

GC.28.3 Waiver of Subrogation. The Contractor and his subcontractors shall require their insurance carriers, with respect to all insurance policies, to waive all rights of subrogation against the Owner, the Engineer, and the Construction Manager, their partners, directors, officers, agents, and employees and against other contractors and subcontractors.

GC.28.4 Workmen's Compensation and Employer's Liability. This insurance shall protect the Contractor and the Additional Insureds against all claims under applicable state workmen's compensation laws. The Insureds shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a workmen's compensation law. This policy shall include an "all states" endorsement.

The liability limits shall not be less than:

| | |
|------------------------|---------------------------|
| Workmen's compensation | Statutory |
| Employer's liability | \$500,000 each occurrence |

GC.28.5 Comprehensive Automobile Liability. This insurance shall be written in comprehensive form and shall protect the Contractor and the Additional Insureds against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles, and shall cover operation on or off the site of all motor vehicles licensed for highway use, whether they are owned, nonowned, or hired.

The liability limits shall not be less than:

| | |
|-----------------------------------|---|
| Bodily injury and property damage | \$500,000 combined single limit each occurrence |
|-----------------------------------|---|

GC.28.6 Comprehensive General Liability. This insurance shall be an "occurrence" type policy written in comprehensive form and shall protect the Contractor and the Additional Insureds against all claims arising from bodily injury, sickness, disease, or death of any person other than the Contractor's employees or damage to property of the Owner or others

arising out of any act or omission of the Contractor or his agents, employees, or subcontractors. This policy shall also include protection against claims insured by usual personal injury liability coverage, a "protective liability" endorsement to insure the contractual liability assumed by the Contractor under the article entitled INDEMNIFICATION, and "Completed Operations and Products Liability" coverage (to remain in force for 2 years after final payment).

If the Contractor's work, or work under his direction, requires blasting, explosive conditions, or underground operations, the comprehensive general liability coverage shall specifically include an XCU endorsement relative to blasting, explosion, collapse of structures, or damage to underground property.

The liability limits shall not be less than:

| | |
|-------------------------------------|---|
| Personal injury and property damage | \$500,000 combined single limit each occurrence and \$500,000 aggregate |
|-------------------------------------|---|

GC.28.7 Umbrella Liability Policy. This insurance shall protect the Contractor and the Additional Insureds against all claims in excess of the limits provided under the employer's liability, comprehensive automobile liability, and comprehensive general liability policies. The liability limits of the umbrella liability policy shall not be less than \$1,000,000. The policy shall be an "occurrence" type policy.

GC.28.8 Installation Floater/Builder's Risk. This insurance shall protect the Contractor and the Additional Insureds from all insurable risks of physical loss or damage to buildings and structures and to materials and equipment while at the site or in transit to the site, while in warehouses or storage areas, during installation, during testing, and after the work is completed. This insurance shall include coverages for flood and earthquake.

The amount of the installation floater/builder's risk insurance shall be not less than the insurable value of the work at completion and shall include the aggregate value of Owner-furnished equipment and materials to be erected or installed under this Contract. The aggregate value of Owner-furnished equipment and materials, if applicable, is stated in Section 1A.

Installation floater/builder's risk insurance shall provide for losses to be payable to the Contractor and the additional insureds as their interests may appear.

GC.29 INDEMNIFICATION. To the fullest extent permitted by laws and regulations, the Contractor shall defend, indemnify, and hold harmless the Owner, the Engineer, and the Construction Manager and their officers, directors, partners, consultants, agents, and employees from and against all claims, damages, losses, and expenses, direct, indirect, or consequential (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising out of or resulting from the performance of the work by the Contractor, any subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the work 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 or arises by or is imposed by law and regulations regardless of the negligence of any such party. The Contractor expressly agrees to indemnify, defend, and hold harmless the above indemnified parties even if the claim, loss, damage, or expense is caused by the negligence of the indemnified party.

In any and all claims against the Owner, the Engineer, the Construction Manager, or any of their officers, directors, partners, consultants, agents, or employees by any employee of the Contractor, any subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the work or anyone for whose acts any of them may be liable, this indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any such subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts, or other employee benefit acts, nor shall this indemnification obligation be limited in any way by any limitation on the amount or type of insurance coverage provided by the Owner, the Contractor, or any of his subcontractors.

GC.30 RELEASE OF LIABILITY. Acceptance by the Contractor of the last payment shall be a release to the Owner and every officer and agent thereof, from all claims and liability hereunder for anything done or furnished for, or relating to the work, or for any act or neglect of the Owner or of any person relating to or affecting the work.

GC.31 CLAIMS FOR LABOR AND MATERIALS. The Contractor shall indemnify and save harmless the Owner from all claims for labor and materials furnished under this Contract. When requested by the Owner, the Contractor shall submit satisfactory evidence that all persons, firms, or corporations who have done work or furnished materials under this Contract, for which the Owner may become legally liable, have been fully paid or satisfactorily secured. In case such evidence is not furnished or is not satisfactory, an amount will be retained from money due the Contractor which in addition to any other sums that may be retained will be sufficient, in the opinion of the Owner, to liquidate all such claims. Such sum will be retained until the claims as aforesaid are fully settled or satisfactorily secured.

Before final acceptance of the work by the Owner, the Contractor shall submit to the Engineer in duplicate a notarized affidavit stating that all subcontractors, vendors, persons, or firms who have furnished labor or materials for the work have been fully paid and that all taxes have been paid. If a performance bond has been executed, a statement from the surety shall also be submitted consenting to the making of the final payment.

GC.32 FINAL INSPECTION. When, in the opinion of the Contractor, the work has been completed, the Contractor shall make an inspection of the work and shall correct all deficiencies he finds in the work in order to make the work complete. The Contractor shall then notify the Owner in writing stating that he has inspected the work and that it is completed. At a time mutually agreeable to the Owner and Contractor, the Owner will make an inspection of the work to determine the acceptability and completeness of the work.

Should any portions of the work be found to be incomplete by the Owner during the inspection, the Contractor shall correct and complete those portions as directed by the Owner. The Owner will again inspect those portions of the work when notified in writing by the Contractor of their completion.

The Owner will not accept the work as being complete until all incomplete portions of the work have been inspected and accepted by the Owner.

The specified date of completion may be extended, at the Owner's option, by the number of calendar days between the date the Contractor gives the Owner written notice that the work is ready for inspection and the date of completion of the first inspection by the Owner.

GC.33 PAYMENTS. Payment will be based on the Construction Manager's payment certificate which the Construction Manager will prepare and submit to the Owner in accordance with the following schedules. The Construction Manager's payment certificate shall not constitute approval or acceptance of any part of the work, except as a basis for the Owner's official acceptance and shall not relieve the Contractor from any responsibility or liability essential to or related to the fulfillment of this Contract.

GC.33.1 Initial Payment. The Contractor shall submit the following documentation concurrently for review on or before the date specified in the Schedule of Activities, Section 1A. The acceptance of this documentation shall be a condition precedent to the submittal of any request for payment.

- Cost breakdown
- Cash flow projection
- Construction schedule

GC.37 CHANGE ORDER PAYMENTS. On or before the first day of each month the Contractor shall submit to the Owner for review and acceptance all authorized additions and deductions to the work completed during the preceding month. In this manner, additions and deductions shall be administered promptly after their incurrence and shall not be allowed to accumulate.

Upon completion of the work, a single change order will be issued by the Owner setting forth the net amount of the additions and deductions to the work.

PO: _____

**Texas Municipal Power Agency
EXEMPTION CERTIFICATE**

The undersigned hereby claims an exemption from payment of taxes under Chapter 20, Title 122A, for the purchase of the taxable items described below or on attached order or invoice which is made a part hereof and will be purchased from:

The reason that Texas Municipal Power Agency is claiming this exemption is because it is a **GOVERNMENTAL AGENCY.**

The purchaser will be liable for payment of the Limited Sales and Use Tax if he uses the items in some manner other than the reason listed above; he shall be liable for the tax based on the price paid for the taxable items. It is a misdemeanor to give an exemption certificate to the seller for taxable items which I know at the time of purchase will be used in a manner other than that expressed in this certificate, and upon conviction I may be fined not more than \$500 per offense.

Executed this the _____ day of _____, 19 _____.

Purchaser: _____

Buyer Signature

Agency Purchased For:

**Texas Municipal Power Agency
P.O. Box 7000
Bryan, Texas 77805**

SPECIAL CONDITIONS

SC.1 GENERAL. These Special Conditions are nontechnical in nature and shall supplement the General Conditions in the administration and regulation of field construction work performed under these specifications.

SC.2 ENGINEER'S DRAWINGS AND SPECIFICATIONS. The Contractor will be furnished 2 sets of all drawings including revisions thereto and 2 copies of the specifications without charge. Additional sets of drawings and revisions thereto and additional copies of specifications may be obtained by payment of printing, handling, and mailing costs. All drawings and specifications shall be returned to the Engineer upon completion of the work.

SC.3 PROJECT MANAGEMENT. The coordination of all field construction will be under the direction of the Construction Manager, who will be responsible for coordinating work between various contractors and for resolving any conflicts between contractors regarding scheduling or coordination.

A meeting of the Construction Manager, Owner, and all contractors at the site will be held each week at the time and place designated by the Construction Manager. The purpose of the weekly meeting will be for the scheduling and coordination of each contractor's work within the requirements of the overall project. In the event conflicts arise between contractors concerning scheduling or coordination, the Construction Manager will make the final decision resolving the conflict. The Contractor's superintendent shall attend each weekly meeting.

The time of completion is of the essence of this Contract and the Contractor shall be responsible for performing his work in accordance with the specified construction schedule. If at any time the Contractor's work is behind schedule, the Contractor shall increase his forces, work overtime, or otherwise accelerate his operations to comply with the schedule, and shall put into effect definite procedures for getting the work back on schedule. The proposed procedures shall be subject to the Construction Manager's acceptance or modification. The procedures adopted shall be put into effect immediately.

The Owner or Construction Manager will not be responsible for the assignment of personnel, or for obtaining materials or supplies, or for any other services to the Contractor except the coordination of work between contractors and as specifically set forth in the contract documents.

SC.4 CONTRACTOR'S OFFICE AT SITE OF WORK. During the performance of this Contract, the Contractor shall maintain a suitable office at the site of the work which shall be the headquarters of a representative authorized to receive drawings, instructions, or other communications or

articles. Any communication given to the said representative, or delivered at the Contractor's office at the site of the work in his absence, shall be deemed to have been delivered to the Contractor.

Copies of items listed under FIELD RECORDS shall be kept at the Contractor's office at the site of the work, available for use at all times.

SC.5 FIELD RECORDS. The Contractor shall maintain in his office at the project site an orderly and adequate file of up-to-date copies of all Engineer's drawings and specifications, manufacturer's prints and specifications, and other contract documents and supplementary data.

In addition, the Contractor shall maintain a continuous record of all field changes by means of a set of drawings marked to indicate current "as-built" conditions. This "as-built" set of drawings shall be available for check by the Engineer in order for him to ascertain that it is being kept current. At the conclusion of the work, the "as-built" drawings and other engineering data, accurately and neatly marked with field changes, shall be submitted to the Construction Manager in the required number of copies. The "as-built" drawings and data shall include all revisions to the work made under this Contract, including those made by subcontractors.

SC.6 CONTRACTOR'S SUPERVISION AT THE SITE. The Contractor shall furnish adequate management, supervisory, and technical personnel on the site to ensure expeditious and competent handling of the work.

A superintendent experienced in major construction of the type specified, and who is a permanent member of the Contractor's organization, shall be a resident at the project throughout the construction. The superintendent shall be fully authorized to act for the Contractor and to receive whatever orders or notices may be given for the proper prosecution of the work.

The Contractor's field organization shall include an experienced staff of qualified technical personnel to handle onsite engineering, planning, and direction of all field work.

The Contractor shall be responsible for complete supervision and control of his subcontractors as though they were his own forces. Notice to the Contractor shall be considered notice to any affected subcontractor.

SC.7 SUBCONTRACTS. The Contractor shall perform the majority of the work with his own forces and under the management of his own organization. Specific portions of the work may be subcontracted only to subcontractors who have been listed in the Proposal and who are accepted by the Owner. All subcontractors shall be directly responsible to the

Contractor and shall be under his general supervision. All work performed under subcontracts shall be subject to the same contract provisions as the work performed by the Contractor's own forces.

SC.8 RELATIONS WITH OTHER CONTRACTORS. The Contractor shall cooperate with all other contractors who may be performing work in behalf of the Owner, and with workmen who may be employed by the Owner in the vicinity of the work under this Contract, and he shall conduct his operations to minimize interference with the work of such contractors or workmen. The Contractor shall promptly make good, at his own expense, any injury or damage that may be sustained by other contractors or employees of the Owner due to activities associated with this Contract. Any difference or conflict which may arise between the Contractor and other contractors, or between the Contractor and workmen of the Owner, in regard to their work shall be resolved as determined by the Construction Manager.

SC.9 ACCEPTANCE OF WORK BY OTHERS. If any part of the Contractor's work is dependent upon the quality and completeness of work performed under another contract, the Contractor shall inspect the other contractor's work and promptly report defects therein which render such work unsuitable for the proper execution of the work under this Contract. Failure to report such defects to the Construction Manager shall constitute the Contractor's acceptance of such work as suitable to receive the Contractor's work; provided, however, that the Contractor shall not be responsible for defects which develop after his inspection and which could not have been reasonably detected or foreseen.

SC.10 METHODS OF FIELD OPERATION. The Contractor shall inform the Construction Manager in advance as to the Contractor's plans for carrying out each part of the field work. Review by the Engineer, Construction Manager, or Owner of any plan or method of work proposed by the Contractor shall not relieve the Contractor of any responsibility therefor, and such review shall not be considered as an assumption of any risk or liability by the Engineer, Construction Manager, or Owner or any officer, agent, or employee thereof. The Contractor shall have no claim because of the failure or inefficiency of any plan or method so reviewed.

Any method of work suggested by the Engineer, Construction Manager, or Owner, but not specified, shall be used at the risk and responsibility of the Contractor, and the Engineer, Construction Manager, or Owner shall have no responsibility therefor. The Contractor alone shall be responsible for the safety, adequacy, and efficiency of his construction plant, equipment, and methods.

The Contractor shall comply with all applicable requirements of federal, state, and local codes and of all other authorities having jurisdiction over this work, including the requirements of the Federal "Safety and Health Regulations for Construction."

The Contractor shall be solely and completely responsible for conditions related to his work including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours. Neither the Owner, Engineer, or Construction Manager shall be responsible for reviewing the adequacy of the Contractor's safety measures in, on, or near the construction site and the Contractor shall be solely responsible for the adequacy of such measures.

SC.11 SAFETY, HEALTH, AND ACCIDENT PREVENTION. The Contractor shall conduct all operations under this Contract in a manner to prevent bodily harm and damage to property. The Contractor shall continuously inspect all operations, work, materials, and equipment; shall conduct health surveys of all work areas; and shall be solely responsible for the discovery, determination, and correction of conditions which constitute a risk of bodily harm or property damage.

The Contractor shall implement and maintain a written Safety, Health, and Accident Prevention Program specifically applicable to the work. The Contractor's program shall meet the requirements of the codes and regulations of federal, state, local, and other authorities having jurisdiction over this work. The Contractor's Safety, Health, and Accident Prevention Program shall include disciplinary procedures and safety orientation training procedures applicable to Contractor and subcontractor personnel.

The Contractor's Safety, Health, and Accident Prevention Program shall include a collection plan in the event of an oil, gasoline, or other dangerous material spill.

The Contractor's Safety, Health, and Accident Prevention Program shall include equipment to be used, sampling strategy and calculations, methods of compliance, and personnel protective equipment. The calibration, sampling, and analytical laboratory procedures used shall be in conformance with OSHA's Industrial Hygiene Field Operations Manual.

The Construction Manager will resolve conflicts regarding safety and health measures and practices. The Construction Manager will monitor the Contractor's safety and health measures, and may require changes in the Contractor's Safety, Health, and Accident Prevention Program during the performance of the work.

The Contractor's Safety, Health, and Accident Prevention Program shall be submitted for review by the Construction Manager 30 days prior to the start of the work at the project site. This review will not relieve the Contractor of his responsibility for safety and health, nor shall such review be construed as limiting in any manner the Contractor's obligation to undertake any action which may be necessary or required to establish and maintain safe working conditions respecting his work at the project site. The Construction Manager reserves the right to require the Contractor to modify any portion of his Safety, Health, and Accident Prevention Program.

The Contractor shall immediately correct any unsafe conditions identified by the Construction Manager. In the event the Contractor fails to immediately correct such unsafe conditions, the Owner may either have the unsafe conditions corrected by others at the Contractor's expense, or direct that the work be stopped in the area of the unsafe condition; however, this right to stop the work shall not give rise to any duty on the part of the Owner or Construction Manager to exercise this right.

The Contractor shall appoint a qualified Safety and Health Representative. The Contractor's Safety and Health Representative shall have the authority to have unsafe conditions corrected and direct that the work be stopped in the area of the unsafe condition, if deemed necessary.

The Contractor shall maintain accurate accident and injury reports and shall furnish the Construction Manager a monthly summary of injuries and man-hours lost due to injuries.

The Contractor shall hold regular scheduled meetings to instruct his personnel and his subcontractors' personnel in safety and health practices. The Contractor shall furnish safety and health equipment and enforce the use of such equipment by his employees and the employees of his subcontractors.

The Contractor waives the right to bring claim for damages against the Owner, Engineer, or Construction Manager for any cause whatsoever because of any action taken or not taken including but not limited to the correction of unsafe conditions or work stoppages in connection with the the Contractor's Safety, Health, and Accident Prevention Program or such program of another contractor. If such a claim against the Owner, Engineer, or Construction Manager is brought by a third party, the Contractor shall indemnify and defend the Owner, Engineer, or Construction Manager against such claim in accordance with the General Conditions article entitled INDEMNIFICATION.

SC.12 LINES AND GRADES. All work shall be done to the lines, grades, and elevations indicated on the drawings. The Contractor shall provide suitable equipment and competent workmen who shall locate and lay out the work.

Measurements shall be made from permanent base lines and elevation reference datum previously established on the site.

The Contractor shall provide experienced instrument personnel, competent assistants, and such instruments, tools, stakes, and other materials required to complete survey, layout, and measurement work. In addition, the Contractor shall furnish, without charge, competent personnel from his force, and such tools, stakes, and other materials as the Owner or Construction Manager may require in establishing or designating control

points, in establishing construction easement boundaries, or in checking surveys, layouts, and measurements for work performed under this Contract.

The Contractor shall keep the Construction Manager informed, a reasonable time in advance, of the times and places at which he wishes to do work, so that horizontal and vertical control points may be established and any checking deemed necessary by the Construction Manager may be done with minimum inconvenience to the Construction Manager and minimum delay to the Contractor.

Any work done without being properly located may be ordered removed and replaced at the Contractor's expense.

SC.13 PRESERVATION OF MONUMENTS AND STAKES. The Contractor shall carefully preserve all monuments, bench marks, reference points, and stakes. The Contractor will be charged with the expense of replacement of any such items destroyed and shall be responsible for any mistake or loss of time that may be caused. Permanent monuments or bench marks which must be removed or disturbed shall be protected until they can be properly referenced for relocation. The Contractor shall furnish materials and assistance for the proper replacement of such monuments or bench marks.

SC.14 PROTECTION OF PROPERTY AND PUBLIC LIABILITY. The Contractor shall be accountable for any damages resulting from his operations. He shall be fully responsible for the protection of all persons including members of the public, employees of the Owner, employees of the Engineer and Construction Manager, and employees of other contractors or subcontractors, and all public and private property including structures, sewers, and utilities, above and below ground.

The Contractor shall furnish and maintain all necessary safety equipment, such as barriers, signs, warning lights, and guards, to provide adequate protection of persons and property.

The Contractor shall give reasonable notice to the owners of public or private property and utilities when such property and utilities are liable to injury or damage through the performance of the work and shall make all necessary arrangements with such owners relative to the removal and replacement or protection of such property or utilities.

SC.15 EMERGENCY PROTECTION. Whenever, in the opinion of the Owner, the Contractor has not taken sufficient precaution for the safety of the public or the protection of the work to be constructed under this Contract or of adjacent structures or property, and whenever, in the opinion of the Owner, an emergency has arisen and immediate action is considered necessary, then the Owner, with or without notice to the Contractor, may provide suitable protection by causing work to be done and material to be

furnished and placed. The cost of such work and material shall be borne by the Contractor, and if the same is not paid on presentation of the bills therefor, such costs may be deducted from any amounts due or to become due the Contractor. The performance of such emergency work shall not relieve the Contractor of responsibility for any damage which may occur.

SC.16 LOSSES FROM NATURAL CAUSES. All loss or damage arising out of the nature of the work, or from the action of the elements, or from floods or overflows, or from ground water, or from any unusual obstruction or difficulty, or any other natural or existing circumstance either known or unforeseen which may be encountered in the prosecution of the work, shall be sustained and borne by the Contractor at his own cost and expense.

SC.17 QUALIFICATIONS OF WORKMEN. The Contractor shall employ only workmen who are competent to perform the work assigned to them and, in the case of skilled labor, who are adequately trained and experienced in their respective trades and who do satisfactory work.

SC.18 SUNDAY, HOLIDAY, AND NIGHT WORK. Normal work hours shall be between 5:30 a.m. and 9:00 p.m. Work beyond these hours may be established by the Contractor as a regular procedure with permission of the Owner. Such permission, however, may be revoked at any time if the Contractor fails to maintain adequate equipment and supervision for the proper prosecution and control of the work at night.

SC.19 UNFAVORABLE CONSTRUCTION CONDITIONS. During periods of unfavorable weather, wet grounds, or other unsuitable construction conditions, the Contractor shall confine his operations to work which will not be adversely affected thereby. No portion of the work shall be constructed under conditions which would adversely affect the quality or efficiency thereof, unless special means or precautions are taken by the Contractor to perform the work in a proper and satisfactory manner.

SC.20 REJECTED WORK AND MATERIALS. The Contractor, upon written notice from the Construction Manager, shall remove from the premises all work and materials rejected as defective, unsound, improper, or in any way failing to conform to the requirements of the contract documents. The Contractor shall at his sole expense make good all work damaged by such removal and shall promptly replace materials damaged or improperly worked by him and re-execute his own work in accordance with the contract. This includes re-executing or replacing the work of any other contractor that is in any way affected by the removal of the defective work. The obligations of the Contractor under this article shall not extend to defective materials or equipment supplied by the Owner, if any.

If the Contractor does not remove his rejected work and materials within 10 days after written notice, the Owner may remove and replace such work and materials at the expense of the Contractor.

SC.21 PLACING WORK IN SERVICE. If desired by the Owner, portions of the work may be placed in service when completed and the Contractor shall provide proper access for this purpose. Such use and operation shall not constitute an acceptance of the work, and the Contractor shall be liable for defects due to faulty construction throughout the duration of this Contract and thereafter as provided under the "Guarantee" provisions of the General Conditions.

SC.22 CLEANLINESS. The Contractor shall give special attention to keeping the work site clean and free from trash and debris.

Trash, debris, and waste materials shall not be allowed to accumulate, but shall be removed from the site and disposed of by and at the Contractor's expense.

Promptly upon completion of the construction work, all Contractor-owned facilities, materials, and construction plant shall be removed from the site. All surfaces damaged by deposits of foreign materials such as oil, grease, weld spatter, and paint shall be restored to their original conditions.

SC.23 FIRE PROTECTION. Only work procedures which minimize fire hazards to the extent practicable shall be used. Combustible debris and waste materials shall be collected and removed from the site, as provided under CLEANLINESS. Fuels, solvents, and other volatile or flammable materials shall be stored away from the construction and storage areas in well marked, safe containers. Good housekeeping is essential to fire prevention and shall be practiced by the Contractor throughout the construction period. The Contractor shall follow the recommendations of the AGC "Manual of Accident Prevention in Construction" regarding fire hazards and prevention.

The Contractor alone shall be responsible for providing adequate fire protection. Failure of the Contractor to comply with, or the Owner or Construction Manager to enforce, the above requirements shall not relieve the Contractor from any responsibility or obligation under this Contract.

SC.24 SECURITY. The Contractor shall be responsible for all materials and equipment in his custody or placed in construction by him. Security methods shall be employed as required to ensure the protection of all materials, equipment, and construction work from theft, vandalism, fire, and all other damage and loss.

The Contractor shall cooperate with the Owner regarding all security measures instituted at the jobsite.

Each person employed on the construction site shall be issued an identification badge and shall be registered with the Owner's guard. The Contractor shall furnish badges for all his personnel which shall be coordinated with the identification system adopted for the project and shall be acceptable to the Construction Manager. In addition to personnel identification, all licensed construction vehicles shall be registered with the guard and shall be marked with a suitable identification sticker. Likewise, the licensed vehicles of construction personnel authorized to bring their vehicles on the site shall be registered with the guard and shall be marked with a suitable identification sticker.

All construction personnel and vehicular traffic shall enter and leave the construction site through the designated construction entrance gate. Unauthorized personnel will not be permitted on the site. Materials or equipment leaving the site shall be authorized by the Contractor and the Construction Manager. The guard on duty at the gatehouse will check the ingress and egress of construction personnel and traffic. When the guard is not on duty at the gatehouse, the gate will be locked and closed.

SC.25 ACCESS ROADS, PARKING LOTS, AND STORAGE AREAS. Construction access roads, parking lots, and storage areas will be assigned for the Contractor's use by the Construction Manager.

SC.26 FOOD SERVICES. The Owner's cafeteria onsite may be used by the Contractor.

SC.27 PROTECTION OF WORK. The Contractor shall be solely responsible for the protection of his work until its final acceptance by the Owner.

The Contractor shall have no claim against the Owner, the Construction Manager, or the Engineer because of any damage or loss to the Contractor's work and shall be responsible for the complete restoration of damaged work to its original condition complying with the contract documents.

In the event the Contractor's work is damaged by another party not under his supervision or control, the Contractor shall make his claim directly with the party involved. If a conflict or disagreement develops between the Contractor and one of the other contractors concerning the responsibility for damage or loss to the Contractor's work, the conflict shall be resolved as provided under RELATIONS WITH OTHER CONTRACTORS. Such conflict shall not be cause for delay in the restoration of the damaged

work. The Contractor shall restore the work immediately and the cost thereof will be assigned pending the resolution of the conflict.

SC.28 INDEPENDENT TESTING LABORATORY. Laboratory testing specified in the technical requirements shall be done by an independent testing laboratory acceptable to the Owner or the Construction Manager. The laboratory shall be retained by the Contractor and all costs for laboratory services shall be paid by the Contractor.

SC.29 EQUIVALENT MATERIALS AND EQUIPMENT. Whenever a material or article is specified or described by using the name of a proprietary product or the name of a particular manufacturer or vendor, the specific item mentioned shall be understood as establishing the type, function, and quality desired. Other manufacturers' products will be accepted provided sufficient information is submitted to allow the Engineer to determine that the products proposed are equivalent to those named.

Requests for review of equivalency will not be accepted from anyone except the Contractor and such requests will not be considered until after the contract has been awarded.

SC.30 FENCES. All existing fences which interfere with the construction operations shall be maintained by the Contractor until the completion of the work affected thereby, unless written permission is obtained from the owner of the fence to leave the fence dismantled for an agreed period of time. Where fences must be maintained across the construction easement, adequate gates shall be installed. Gates shall be kept closed and locked at all times when not in use.

On completion of the work across any tract of land, the Contractor shall restore all fences to their original or better condition.

SC.31 UNDERGROUND INSTALLATIONS. The Contractor shall conduct his operations on the basis that underground installations may exist which are not indicated on the Engineer's drawings.

The Contractor shall be solely responsible for locating and identifying all existing underground installations such as, but not limited to, power lines, oil, water, air, and gas lines; sewers and other drains; circulating water lines; oil separators; septic tanks; telephone lines; electrical duct banks and raceway; or buried structures within the construction limits of the work and elsewhere where any penetration such as, but not limited to, excavation, plowing, trenching, driving of wellpoints, or insertion of any tool or device below the surface is anticipated or required or where construction operations may subject underground installations to damage prior to the performance of such work. Surveying shall include contacting the owners of underground utilities. Locator services and detection devices provided by the utility owners shall be utilized when such are available. The Contractor shall hand excavate and positively

identify all underground installations. All information relative to the underground installations shall be recorded by the Contractor and incorporated into the records required by the article herein entitled FIELD RECORDS.

Existing underground installations within the construction limits of the work are indicated on the drawings only to the extent information on such installations has been made available to, or discovered by, the Engineer in the performance of the design work. The accuracy and completeness of this information is unknown and is presented solely to assist the Contractor in determination of underground installations. The Engineer and the Owner expressly disclaim all responsibility for the accuracy and completeness of the information so indicated.

The Contractor will be held responsible for any interruption in the service of underground facilities resulting from his operations, unless the Owner has given specific approval for the interruption in each case.

Except where the damaged parties desire to conduct their own repair and restoration work, the Contractor shall repair and fully restore any underground facility damaged during the construction period to a condition equal to or better than that which existed just prior to the time of damage. All repair and restoration work shall be done to the complete satisfaction of the facility owners and the Construction Manager.

The Contractor shall make his own arrangements with any jurisdictional authority requiring inspection of repaired or reconditioned utility facilities. All inspection fees applicable shall be paid by the Contractor.

Where the facility owners desire to conduct their own repair and restoration work, the Contractor shall render all assistance to facilitate this corrective work. The Contractor shall assume all just and reasonable expenses thus incurred by the facility owners.

Any delay, additional work, or extra cost to the Contractor caused by existing underground installations shall not constitute a claim for increased work, additional payment, or damages.

SC.32 DAMAGE TO EXISTING PROPERTY. The Contractor will be held responsible for any damage to existing structures, work, materials, or equipment because of his operations and shall repair or replace any damaged structures, work, materials, or equipment to the satisfaction of, and at no additional cost to, the Owner.

The Contractor shall be responsible for all damage to streets, roads, curbs, sidewalks, highways, shoulders, ditches, embankments, culverts, bridges, or other public or private property, which may be caused by

transporting equipment, materials, or personnel to or from work. The Contractor shall make satisfactory and acceptable arrangements with the agency having jurisdiction over the damaged property concerning its repair or replacement.

SC.33 CONSTRUCTION AREA LIMITS. The Construction Manager will designate the boundary limits of access roads, parking areas, storage areas, and construction areas, and the Contractor shall not trespass in or on areas not so designated. The Contractor shall be responsible for keeping all of his personnel out of areas not designated for the Contractor's use; except, in the case of isolated work located within such areas, the Construction Manager will issue permits to specific Contractor personnel to enter and do the work.

The Contractor's employees shall park their automobiles, trucks, and other vehicles in the assigned construction personnel parking area.

SC.34 SAFETY WORK RULES FOR CONTRACTORS. Included at the end of these Special Conditions are Safety Work Rules for Contractors, which the Owner has established for all construction work performed at the Gibbons Creek Steam Electric Station. The Contractor shall comply with these Safety Work Rules for Contractors in addition to whatever safety measures are established by the Contractor for the work under this Contract. This requirement shall not relieve the Contractor of the sole responsibility for the adequacy of the Contractor's safety measures.

SC.35 COOPERATION WITH OWNER. The performance of construction work which affects the operation of the Owner's system facilities shall be scheduled to be performed only at times acceptable to the Owner.

In the event that it is necessary to interrupt the Owner's operations or the power supply or to impose abnormal operating conditions on the Owner's utility system, such procedure must be acceptable to the Owner and a complete understanding and agreement must be reached by all parties concerned well in advance of the time scheduled for such operation, and such understanding shall be definite as to date, time of day, and length of time required. All work shall be scheduled to suit the Owner's convenience, taking into consideration the facilities and requirements at all times during construction.

TEXAS MUNICIPAL POWER AGENCY

SAFETY WORK RULES FOR CONTRACTORS

Personal Protective Equipment

Hard hats and safety glasses will be required throughout the plant site except in the following areas:

1. Administration Building, Grounds and Parking Lot
2. Warehouse Office
3. Maintenance Building Offices
4. Foot traffic between the Administration Building, Warehouse Office and Maintenance Building Offices
5. When riding in a vehicle with a roof and windshield
6. Main Control Room
7. Auxiliary Control Room Building except the Lab where safety glasses will be required
8. FGD Building Control Room

The performance of certain tasks will require additional personal protective equipment such as welding hoods, dust masks, gloves or protective clothing. It is the responsibility of both the employee and the supervisor to insure that all necessary protective equipment is available and used.

Certain areas on the plant site have a high noise level that could contribute to hearing loss. These areas will be designated and shall require hearing protection. Employees entering these areas must use ear plugs or other appropriate protection.

Housekeeping

All employees and their supervisors will be responsible for keeping their respective work areas in a clean and safe condition. Particular attention should be paid to the storage and handling of combustible or flammable material. No job will be considered completed until the necessary clean up action has been taken.

Horseplay

Horseplay (running, scuffling, misuse of equipment, etc.) will not be tolerated. Employees participating in horseplay will be subject to disciplinary action.

Alcohol and Drugs

The use of intoxicating liquor or drugs by an employee on TMPA property or during working hours is forbidden and any violations will be sufficient cause for dismissal. Any employee reporting for duty while under the influence of intoxicating liquor or drugs shall be detained or immediately escorted outside the security fence pending further action.

Restricted Areas

Certain areas on the plant site will have restrictions placed on them of a permanent or temporary nature. These restrictions will be denoted by warning signs, barrier tape, etc. All employees are to comply with these restrictions when entering such areas.

CONTRACTOR'S STATEMENT

I have read, understand and will comply with the TMPA Safety Work Rules.

Name

Title

Company

Date

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Section 1A - GENERAL DESCRIPTION AND SCOPE OF THE WORK

1A.1 GENERAL. This section covers the general description, scope of the work, and supplementary requirements for the construction work included under these specifications.

The work covered by these specifications will be incorporated in the Site F Landfill for the Gibbons Creek Steam Electric Station.

The Gibbons Creek Steam Electric Station is located approximately 2-1/2 miles north of Carlos, Texas on County Highway 244. A railroad siding will be available at the site for delivery of equipment and materials. Prior notice to the Owner will be required in order to use the rail siding.

1A.2 WORK INCLUDED UNDER THESE SPECIFICATIONS. The work under these specifications shall include furnishing all equipment and materials; providing all labor, supervision, administration, and management; and supplying all construction equipment, materials, and services necessary to perform the Landfill Construction complete in accordance with the specifications, drawings, and other contract documents, except as specifically excluded under WORK NOT INCLUDED UNDER THESE SPECIFICATIONS and WORK UNDER SEPARATE CONTRACTS.

Major components of the work under these specifications for Landfill Construction are as follows.

Construct dikes for landfill

Construct sedimentation ponds

Construct clay liner

The above explanations and listings are intended to give a general definition of the scope of the work under these specifications, and shall not be construed to be an itemized listing of each element of Work required. The Contractor shall be responsible for construction of complete facilities, conforming in all respects to the details and requirements of the specifications, drawings, and other contract documents.

1A.3 WORK NOT INCLUDED UNDER THESE SPECIFICATIONS. The following items of work will be furnished by the Owner.

Construction and miscellaneous services and materials specified as furnished by the Owner in Section 1E of these specifications

1A.4 WORK UNDER SEPARATE CONTRACTS. In addition to the work under this Contract, the Owner may award separate contracts for other work which will be associated with the work under this Contract.

Part of the work under separate contracts may be in progress concurrently with the work under this Contract. The Contractor shall coordinate his actions and cooperate with other contractors and the Owner and Construction Manager in the best interest of the project.

1A.5 CONSTRUCTION MANAGEMENT SYSTEM. The Contractor and his subcontractors shall participate in the Construction Management System established by the Construction Manager. Under this program, the Contractor and his subcontractors shall provide, to the Construction Manager, specific and accurate man-hours, quantity and schedule information, and other information as required by the Construction Manager. Such information shall be provided in the detail and format and at the frequency required by the Construction Manager. The information shall be submitted by the first of each month or more frequently as determined by the Construction Manager. The information will be used by the Construction Manager for schedule monitoring purposes, to ensure that schedule interfaces with other contractors are met, and to monitor overall project performance.

1A.5.1 Manpower and Man-Hour Reports. The Contractor shall submit projected manpower and man-hour reports. The Contractor shall report actual manpower and man-hours expended each week.

1A.6 CONSTRUCTION MANAGEMENT REQUIREMENTS. The Contractor and his subcontractors shall actively participate in and adhere to the Construction Manager's project management requirements, job rules and conduct, and all other procedures initiated by the Construction Manager for the purpose of maintaining jobsite administrative control. The Contractor and his subcontractors shall attend project management meetings or other meetings when deemed necessary by the Construction Manager.

1A.7 IDENTIFICATION. All correspondence, invoices, specifications, engineering data and other documents pertaining to the work performed under these specifications shall be identified by the Owner's name, the project name, the Engineer's project and specification numbers, and the Owner's contract and purchase order numbers.

1A.8 COORDINATION MEETING. Representatives of the Contractor shall attend a coordination meeting at a time and place selected by the Engineer, Construction Manager, or Owner to discuss matters relative to the execution of this Contract. The Contractor's representatives shall attend additional meetings as required by the Engineer, Construction Manager, or Owner thereafter to expedite the work.

1A.9 SCHEDULE. The time of completion of the work is of the essence of the Contract. This shall include the completion of various activities in accordance with the Schedule of Activities included at the end of this

article in addition to the timely completion of construction in accordance with the milestone time periods and dates listed in the Schedule of Activities. It is necessary that the Contractor perform the activities shown on or before the dates indicated to avoid delay of the entire project.

1A.9.1 Activity Periods and Dates. The time periods and dates listed in the Schedule of Activities indicate the latest dates by which the listed activities shall be completed. Data, drawings, and lists for planning, engineering, and documentation may be submitted earlier than the indicated dates at the Contractor's option.

1A.9.2 Construction Milestones. Construction milestone dates are specified in Section 1D. The dates indicated therein for completion of all work are the latest acceptable dates.

1A.9.3 Schedule of Activities.

| <u>Activity</u> | <u>Days After Date of Contract</u> |
|---|---|
| <u>Planning, Engineering, and Documentation</u> | |
| Contractor to deliver cost breakdown information to Owner and Construction Manager | 10 |
| Contractor to deliver cash flow projection information to Owner and Construction Manager | 10 |
| Contractor to deliver detailed construction schedule to Owner and Construction Manager | 10 |
| Contractor to deliver test and inspection reports not listed above to Construction Manager and Engineer | Within 2 weeks after completion of test or inspection |

Section 1B - GENERAL MATERIAL SPECIFICATIONS

1B.1 GENERAL. These General Material Specifications apply in general to all materials and equipment and are supplementary to the detailed specifications. If requirements specified herein are in conflict with requirements specified in the detailed specifications, the detailed specifications shall govern to the extent of such conflict.

The Proposal shall be based upon the use of materials and equipment complying fully with the requirements specified in this Section 1B. It is recognized that the Contractor may have standardized on the use of certain components, materials, processes, or procedures different than those specified herein. Alternates in addition to the base proposal on the basis of supplying the Contractor's standard components, materials, processes, or procedures will be considered. The alternate proposal shall clearly stipulate the alternate proposed, the specific exceptions to the specifications, and the price change applicable for supplying such alternate.

1B.2 REFERENCED STANDARDS. Reference to the standards of any technical society, organization, or association, or to the laws, ordinances, or codes of governmental authorities shall mean the latest standard, code, or specification adopted, published, and effective at the date of taking bids unless specifically stated otherwise in these specifications.

The specifications, codes, and standards referenced in these specifications (including addenda, amendments, and errata) shall govern in all cases where references thereto are made. In case of conflict between the referenced specifications, codes, or standards and these specifications, the latter shall govern to the extent of such difference.

1B.3 MATERIALS AND EQUIPMENT. Unless specifically provided otherwise in each case, all materials and equipment furnished for permanent installation in the work shall conform to applicable standard specifications and shall be new, unused, and undamaged.

Individual parts shall be manufactured to standard sizes and gauges so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable.

1B.4 IDENTIFICATION. All correspondence, shipping notices, specifications, engineering data, and other documents pertaining to the equipment and materials furnished under these specifications shall be identified as follows.

Texas Municipal Power Agency
Gibbons Creek Steam Electric Station
Site F Landfill
Contract 15027.71.0200

[TMPA 15027 LANDFILL CONST 71.0200]
[032789]
1B-1

1B.5 PRESHIPMENT INSPECTION. The Owner and Engineer reserve the right to inspect the materials and equipment prior to shipment.

The Contractor shall notify the Owner of all shipments not less than 14 days prior to the date of shipment to allow the Owner or Engineer to inspect the materials and equipment if so desired and to coordinate the specific location(s) for delivery of the material.

1B.6 SHIPMENTS. Shipments to the plant site shall be consigned to the following location.

Truck Shipments:

Texas Municipal Power Agency
Gibbons Creek Steam Electric Station
2-1/2 Miles North of Carlos on FM244
Carlos, Texas 77830

1B.7 SHIPPING NOTICE. The Contractor shall submit to the Owner duplicate copies of shipping notices describing each shipment of material or equipment. The shipping notices shall be mailed to arrive a minimum of 3 days ahead of the estimated shipment arrival. The addressee for each shipping notice will be determined later.

1B.8 MATERIALS LIST. The Contractor shall prepare and submit with the first shipping notice an itemized materials list covering all material and equipment furnished under these specifications along with a list identifying the items included in that shipment. All subsequent shipping notices shall contain an itemized materials list identifying the items included in that shipment. The materials lists shall be in sufficient detail to permit an accurate determination of the completion of shipment. Each shipping notice and material listing shall group and identify the material by structure or major segment thereof.

1B.9 CORRECTION OF ERRORS. Equipment and materials shall be complete in all respects within the limits herein outlined. All errors or omissions required to be corrected in the field shall be done by the manufacturer or his duly authorized representative at the Contractor's expense.

1B.10 QUALITY ASSURANCE. The Contractor shall maintain a quality assurance program that provides that equipment, materials, and services under these specifications whether manufactured or performed within the Contractor's plant or at any other source shall be controlled at all points necessary to assure conformance to contractual requirements. The program shall provide for the prevention and ready detection of discrepancies and for timely and positive corrective action. The Contractor shall make objective evidence of quality conformance readily available to the Owner and Engineer. Instructions and records for quality assurance shall be controlled.

Section 1C - DRAWING LIST

1C.1 GENERAL. This section lists the drawings which have been prepared for the work under this Contract.

1C.2 CONTRACT DRAWINGS. The following listed drawings shall be part of the contract documents.

| <u>Drawing No.</u> | <u>Rev No.</u> | <u>Title</u> |
|--------------------|----------------|----------------------|
| 15027-1STU-S1007 | 0 | OVERALL DEVELOPMENT |
| 15027-1STU-S1008 | 0 | SECTIONS AND DETAILS |

Section 1D - CONSTRUCTION SCHEDULE

1D.1 GENERAL. This section covers the schedule and scheduling requirements for performance and completion of the work included under this Contract.

1D.2 CONSTRUCTION SCHEDULE. The time of completion is of the essence of the Contract. The Contractor shall start the work immediately upon receipt of a purchase order from the Owner. The Purchase Order will be issued once both parties have signed the contract documents. The Contractor shall move onto the site as directed by the Owner and shall comply with the dates established in Article 1D.2.1, Milestone Dates.

It is understood and agreed that the dates shown herein are the latest feasible completion dates and that earlier dates may be attained as agreed to by the Construction Manager and the Contractor.

1D.2.1 Milestone Dates.

| <u>Item</u> | <u>Days After Date of Contract</u> |
|---|--|
| Mobilize | 5 |
| Begin Landfill and Complete Clearing and Grubbing Construction | 20 |
| Complete Dike Construction | 50 |
| Complete Sedimentation Pond Construction | 70 |
| Complete Clay Liner | 90 |
| Demobilize | 100 |

1D.3 CONTRACTOR'S DETAILED SCHEDULE. The Contractor shall submit a detailed construction schedule on the date specified in the Schedule of Activities in Section 1A. The detailed schedule shall be based upon the dates specified in Article 1D.2.1, Milestone Dates.

The detailed construction schedule shall be in bar chart form acceptable to the Construction Manager.

The detailed construction schedule shall contain all activities of the construction plan, including acquisition and installation of special equipment and materials. For all equipment and materials fabricated or supplied by the Contractor especially for this project, the schedule

shall include the sequence of activities including issuance of purchase orders and delivery. Each activity shall be identified on the schedule by a descriptive title and shall be assigned an estimated number of working days required and an expected completion date.

The Contractor is responsible for determining the sequence and time estimates of the detailed daily construction activities; however, the Construction Manager reserves the right to require the Contractor to modify any portion of the schedule the Construction Manager determines to be impractical, infeasible, or unreasonable, as required to coordinate the Contractor's activities with those of other contractors, to avoid undue interference with the Owner's operations, and to assure the completion of the work by the stipulated date.

Schedules returned to the Contractor for revision or correction shall be resubmitted for review within 10 calendar days. Upon acceptance by the Construction Manager of the detailed schedule of activities, the Contractor will be responsible for maintaining such schedule.

Every two weeks the Contractor shall submit a complete list of all deviations from the detailed construction schedule to reflect the actual progress of the work, together with his proposed actions to alleviate any delays caused by the deviations.

1D.4 COORDINATION. The Contractor shall coordinate his work with that of other contractors and shall cooperate fully with the Construction Manager in maintaining orderly progress towards completion of the work as scheduled. The Construction Manager's decision regarding priority between the Contractor's final work and the work of other contractors at the project site shall be final and shall not be cause for extra compensation or extension of time, except where extension of time is granted because of actual and unavoidable delay.

Section 1F - RECEIVING, HANDLING, AND STORAGE

1F.1 GENERAL. This section covers the requirements for receiving, handling, and storage of Contractor-furnished materials to be installed under these specifications and documents.

The Contractor shall receive from carriers, check, unload, handle, and store all materials which are to be incorporated in the work.

The Contractor shall provide all storage facilities if required. Storage areas on the site shall be limited to those areas so designated by the Construction Manager.

1F.2 RECEIVING. The Contractor shall receive all materials and equipment arriving at the project site for the work under this Contract and shall pay all demurrage. The Contractor shall maintain a current, accurate inventory and record of location for all equipment and materials in his custody.

1F.3 HANDLING. Materials shall be handled with due care to prevent damage or loss. The use of bare wire rope slings for unloading and handling materials is prohibited except with the specific permission of the Construction Manager.

1F.4 STORAGE. Stored materials shall be adequately supported and protected to prevent damage.

All enclosures, shoring, and weatherproof coverings for storage use shall remain the property of the Contractor and shall be removed upon completion of the work.

1F.4.1 Indoor Storage Facilities. Indoor storage facilities shall consist of construction trailers or portable enclosures, suitable for the material stored, and acceptable to the Construction Manager.

1F.4.2 Coverings. Weatherproof coverings for outdoor storage shall utilize a waterproof flame resistant type of paper base sheeting. The sheeting shall be carefully placed and tied down to prevent moisture from entering the laps and to prevent wind damage to the coverings.

1F.4.3 Storage Methods. Except as otherwise specified, the storage method to be used for various materials shall be determined as follows.

All small loose items which could be easily lost, stolen, broken, or misused shall be stored indoors.

All other materials shall be stored on open platforms or shoring.

All storage methods shall be acceptable to the Construction Manager.

DIVISION 2 - SITEWORK

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Section 2A - CLEARING AND GRUBBING

2A.1 GENERAL. This section covers clearing and grubbing for the access road and construction areas.

All excavations made by grubbing or removal of existing structures which are below indicated final grade shall be backfilled and compacted in accordance with the section titled EARTHWORK.

The Contractor shall obtain all applicable permits prior to the start of work.

Fugitive dust control shall be in accordance with the section titled EARTHWORK. Before clearing work is accepted, any regrowth of vegetation or tree shoots which have grown after initial cutting shall be cut and removed as specified hereinafter. Tree shoots shall be removed to the level specified for tree removal in that area. All regrowth of vegetation shall be mowed and raked. The cleared area at the time of final acceptance shall be completely cleared and grubbed as specified herein and as indicated on the drawings.

2A.2 CLEARING AND GRUBBING. Clearing shall include clearing and removing all trees and stumps within the construction area limits; the cutting and removal of all brush, shrubs, debris, and all vegetation to approximately flush with the ground surface; and the disposal of all cuttings and debris.

Grubbing shall include the removal and disposal of all stumps and roots larger than 2 inches in diameter, including matted roots regardless of size. Grubbing shall extend to a depth of 12 inches below the natural surrounding ground surface.

The Contractor shall not remove or damage trees outside the construction area limits specified to be cleared or grubbed. The Owner may wish to preserve certain trees or groups of trees within the limits of the work outside the clay liner and containment dike area. The Owner will designate the trees which are to be preserved within the clearing limits, and the Contractor shall mark such trees by clearly visible means which will not damage the tree.

Trees left standing shall be adequately protected from permanent damage by construction operations. Equipment utilized in the clearing and grubbing work shall be kept within the specified construction area limits.

2A.2.1 Limits of Work. The limits of the clearing and grubbing under this section shall include all areas of cut or fill within the limits of construction including, but not limited to, the following.

Clearing and grubbing of the areas to be occupied by road construction and combustion waste storage area development

2A.2.2 Site Preparation. All subgrades for permanent construction, including subgrades for fills and embankments, shall be stripped of surface vegetation, sod, debris, and organic topsoil. Surface vegetation shall be removed complete with roots to a depth of 12 inches below the ground surface. Suitable stripped material shall be stockpiled for later use as specified in the section titled EROSION CONTROL.

2A.2.3 Disposal of Waste. Logs, trees, stumps, roots, brush, tree trimmings, and other materials resulting from clearing and grubbing operations shall become the property of the Contractor and shall be entirely removed from the site and disposed of by and at the expense of the Contractor or disposed of in a location acceptable to the Owner. Upon completion of the disposal, the area shall be entirely void of all loose stumps, trimmings, brush, vegetation, and other debris. Open burning is not permitted at the site.

2A.3 EXISTING ROADS. Designated roads which are within the Owner's property limits shall be used as construction roads.

2A.4 EXISTING FENCES. All existing fences within the limit of new construction shall be removed. Removal shall include the complete removal of posts and wire. Metal and wood posts and wire shall be disposed of as specified in the article titled Disposal of Waste unless noted otherwise on the drawings. Post holes shall be filled with tamped earth.

All existing fences outside the limits of construction which are altered during construction shall be restored to their original alignment. Fences which are damaged shall be replaced.

Section 2B - EARTHWORK

2B.1 GENERAL. This section covers general earthwork and shall include the necessary preparation of the construction areas; removal and disposal of all debris; excavation and trenching as required; the handling, storage, transportation, and disposal of all excavated material; preparation of subgrades; pumping and dewatering as necessary or required; protection of adjacent construction; backfilling; pipe embedment; construction of fills and embankments; surfacing and grading; and other appurtenant work.

2B.2 REMOVAL OF WATER. The Contractor shall provide and maintain adequate dewatering equipment to remove and dispose of all surface water entering excavations and other parts of the work. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the construction to be provided therein is completed to the extent that no damage will result.

2B.3 CLASSIFICATION OF EXCAVATED MATERIALS. No classification of excavated materials will be made except for identification purposes. Excavation work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of the contract work, regardless of the type, character, composition, or condition thereof.

All rock which cannot be handled and compacted as earth shall be kept separate from other excavated materials and shall not be mixed with backfill, fill, or embankment materials except as specified or directed.

Soil identification shall be in accordance with Table 3 of the Unified Soil Classification System which is bound at the end of this section. Identification and classification shall be based upon visual examination and simple manual tests performed by qualified personnel furnished by the Contractor.

2B.4 FREEZING WEATHER RESTRICTIONS. Backfilling and construction of fills and embankments during freezing weather shall not be done except by permission of the Owner. No earth material shall be placed on frozen surfaces, nor shall frozen materials, snow, or ice be placed in any backfill, fill, or embankment.

2B.5 MAINTENANCE OF TRAFFIC. The Contractor shall conduct his work with as little interference as possible with the Owner's operations and the work of other contractors. Whenever it is necessary to cross, obstruct, or close roads, driveways, parking areas, and walks, the Contractor shall provide and maintain suitable and safe bridges, detours, or other temporary expedients at his own expense. In making open cut road crossings, the Contractor shall not block more than one half of the road at any time.

2B.6 PROTECTION OF UNDERGROUND CONSTRUCTION. The Contractor shall locate, protect, shore, brace, support, and maintain all existing underground pipes, conduits, drains, and other underground construction which may be uncovered or otherwise affected by the work.

2B.7 TESTING. All field and laboratory testing required to determine compliance with the requirements of this section shall be provided by the Contractor. All laboratory testing shall be done by an independent testing laboratory acceptable to the Owner and retained and paid by the Contractor. Field sampling shall be done by the testing laboratory or by a qualified employee of the Contractor.

At least one field density determination shall be performed for each 500 cubic yards of compacted material. Field samples shall be taken at locations selected by the Owner. If additional field control tests are necessary, in the opinion of the Owner, such tests shall be made. If the additional tests show the material does not meet the requirements of this specification, the tests shall be at the Contractor's expense. If the material does meet the requirements of this specification, the costs of the additional tests shall be paid by the Owner.

Maximum density for cohesive compacted materials shall be determined in accordance with ASTM D698. The terms "maximum density" and "optimum moisture content" shall be as defined in ASTM D698. If the material does not meet the requirements of this specification, the material shall be reworked, recompacted, and retested. All retests shall be at the Contractor's expense.

A copy of each test result shall be promptly furnished to the Construction Manager and the Engineer.

2B.8 BLASTING. Blasting or other use of explosives for excavation will not be permitted.

2B.9 FUGITIVE DUST CONTROL. The Contractor shall provide the Owner with the measures that shall be used to minimize the generation of fugitive dust during construction operations. This shall include, but not be limited to, the use of sufficient watering vehicles to maintain the surface of all construction roads and disturbed areas in a moist condition. Chemical dust palliatives may be used with the written approval of the Owner.

2B.10 SITE PREPARATION. Major clearing and grubbing work shall be performed as described in the section titled CLEARING AND GRUBBING. In addition, all subgrades for permanent construction, including subgrades for fills and embankments, shall be stripped of surface vegetation, sod, debris, and organic topsoil. Surface vegetation shall be removed complete with roots to a depth of 12 inches below the ground surface.

All combustible and other waste materials shall be removed from the construction areas and disposed of by and at the expense of the Contractor as specified in the section titled CLEARING AND GRUBBING. Fire regulations and other safety precautions shall be observed when waste materials are burned offsite. Open burning is not permitted at the site.

Organic topsoil which is free of trash, vegetation, rocks, and roots shall be stockpiled at locations selected by the Owner.

2B.11 FILLS AND EMBANKMENTS. Fills and embankments shall be constructed to lines and grades indicated on the drawings and as herein specified.

2B.11.1 Materials. To the maximum extent available, suitable earth materials obtained from excavation shall be used for the construction of fills and embankments. Additional material shall be obtained from borrow areas as required.

All material placed in fills and embankments shall be free from rocks or stones larger than 6 inches in their greatest dimension, brush, stumps, logs, roots, debris, and organic or other deleterious materials.

2B.11.2 Subgrade Preparation. After preparation of the fill or embankment site, the subgrade shall be leveled, rolled, and moisture conditioned so surface materials of the subgrade will be as compact and well bonded with the first layer of the fill or embankment as specified for subsequent layers. The top 12 inches of the subgrade shall be compacted to 95 percent of maximum density.

2B.11.3 Placement and Compaction. All fill and embankment materials shall be placed in approximately horizontal layers not to exceed 12 inches in uncompacted thickness. Material deposited in piles or windrows by excavating and hauling equipment shall be spread and leveled before compaction.

Each layer of material being compacted shall have the best practicable uniform moisture content to ensure satisfactory compaction. The Contractor shall add water and harrow, disk, blade, or otherwise work the material in each layer as required to ensure uniform moisture content and adequate compaction. Each layer shall be thoroughly compacted to 95 percent of maximum density at ± 3 percent of optimum moisture content unless otherwise specified. If the material fails to meet the density or moisture content specified, compaction methods shall be altered.

In locations where trenching through embankment will be required for the installation of piping the fill material will be placed and compacted to an elevation a minimum of two pipe diameters above the required trench bottom elevation before the commencement of trenching operations.

2B.11.4 Borrow Areas. Material necessary to complete fills and embankments shall be excavated from borrow areas and hauled to the fill or embankment site. Borrow material will be available on the Owner's property.

Borrow areas shall be shaped to conform with the natural drainage and not form areas to pond water. No borrow area in the landfill development shall exceed 2 feet in depth unless authorized by the Owner. The location, size, shape, depth, drainage, and surfacing of all borrow areas shall be acceptable to the Owner. Borrow areas shall be regular in shape, with finish graded surfaces when completed. Side slopes shall not be steeper than five horizontal to one vertical and shall be uniform for the entire length of any one side.

All areas disturbed by borrowing operations shall be seeded and maintained as indicated in the section titled EROSION CONTROL upon completion of the earthmoving in the area.

2B.12 CLAY LINER CONSTRUCTION. The liners include ditch clay liners and landfill clay slope and base liners. The operation of the clay borrow pit shall be in conformance with all local, state, and federal regulations. All necessary permits for operating the borrow pit shall be secured by the Contractor. The borrow pit shall be seeded and maintained as described in the section titled EROSION CONTROL, and as required by the appropriate agencies.

2B.12.1 Subgrade Preparation. Prior to placement of the clay liners, the subgrade, fill or natural ground, shall be thoroughly compacted and proof rolled. The subgrade shall be shaped to the lines, grades, and cross sections indicated on the drawings and compacted to a depth of at least 12 inches to 95 percent of maximum density. The subgrades shall not be higher than as indicated on the drawings. This operation shall include scarifying, reshaping, and wetting required to obtain proper compaction. After compaction, the area shall be proof rolled to test for uniformity and any loose soils detected shall be recompacted as specified.

No clay liner material shall be placed until the subgrade for that portion has been properly prepared and accepted by the Owner.

2B.12.2 Construction. The clay liners shall be constructed to the lines and grades indicated on the drawings. General requirements, the order of excavation, and the sources of materials shall be as specified herein.

2B.12.3 Materials. All materials placed in the clay liners shall be free from brush, stumps, logs, roots, rocks greater than 3 inches in maximum dimension, and other deleterious material. All material for the clay liner construction required shall be obtained from the clay borrow area.

The clay liner material shall be classified by the Contractor by testing and visual inspection and in accordance with Table 3 of the Unified Soil Classification System bound at the end of this section and the following additional requirements.

| | |
|-------------------------------|-----------------|
| Unified soil classification | SC, CL, CH, MH |
| Percent passing No. 200 sieve | Greater than 30 |
| Liquid limit | Greater than 30 |
| Plastic index | Greater than 15 |

The drawings indicate the detailed limitations for the placement of clay liner material.

2B.12.4 General Requirements. The suitability of each part of the subgrade for placing clay liner materials thereon and of all materials for use in clay liner construction shall be acceptable to the Owner.

Dimensions indicated on the drawings for thickness of clay liner material are minimum dimensions. No intermingling of materials will be permitted within these dimensions.

2B.12.5 Equipment. Maximum compaction of the natural ground or embankment slope as prepared, and of each layer or lift of the liners, shall be obtained through the use of equipment so operated that the finished liners shall be uniformly stable and compacted. Isolated operations shall be provided with sufficient equipment to permit the work to be carried to completion in a continuous and efficient manner. Prime movers used for pulling equipment shall have sufficient power to pull the equipment satisfactorily when fully loaded. The loading and operation of equipment shall be subject to adjustment as required to produce the specified compaction. Equipment movement over the liner shall not damage previously placed liner material.

2B.12.6 Placing and Compacting Liner Material. The Contractor will be required to break up the earthfill materials, either at the place of excavation or on the embankment, to such maximum size as is determined necessary by the Owner to secure specified density of the material. Equipment shall spread out and not track each other to such an extent as to make ruts. The compacted surface of each lift shall be roughened or loosened by scarifying to a minimum depth of 2 inches, before the succeeding layer is placed thereon, in order to provide the necessary bond between each lift.

Prior to and during the compacting operations, the material in each layer of the clay liners shall have the best practicable moisture content, and the moisture content shall be uniform throughout the layer. To obtain

the best practicable moisture content, the Contractor will be required to perform such operations as are necessary. Supplementary water, as required, shall be added to the materials on the earthfill. If the fill material in borrow areas or other excavations contains an excess of moisture prior to excavation, the Contractor will be required to excavate drainage channels or perform such work as may be necessary to reduce the moisture content of the material. Working of the material on the embankment may be required to produce the required uniformity of water content.

Water required to bring the material to the specified moisture content shall be evenly applied and it shall be the Contractor's responsibility to secure a uniform moisture content throughout the layer by such methods as may be necessary. Compaction shall commence immediately after the layer has been brought to the uniform moisture content required, and shall continue, with or without additional water, until each layer has been uniformly compacted to not less than the specified density. Moisture content and density tests will be made as necessary. If the material fails to meet the moisture content or density specified, the compaction methods shall be altered, if necessary, to obtain the specified moisture and density.

Joints between segments of the clay liners placed in the same lift shall be staggered such that no joint is continuous between lifts. Movement of equipment from the prepared subgrade directly onto the clay liner will not be permitted.

In restricted areas, successive passes of the compaction equipment need not overlap, but uniform compaction is required. Where new material abuts old material, the old materials shall be cut or broken by machine or hand methods until they show the characteristic color of undried materials. The compaction equipment shall then work on both materials, bonding them together.

2B.12.7 Compaction and Moisture Requirements. Compacted clay materials shall meet the following compaction and moisture requirements.

All parts of the clay liners shall be compacted to 95 percent of maximum density at the specified moisture content. During compaction, the moisture content of each of these materials shall be maintained above +3 percent of optimum. The clay liner materials shall be placed in layers not to exceed 12 inches in uncompacted thickness over the prepared subgrade.

2B.13 BOTTOM ASH FILLS. The bottom ash fills shall be constructed to the lines and grades indicated on the drawings.

2B.13.1 Materials. Materials for the bottom ash cover shall be excavated from the existing bottom ash stockpile adjacent to the site or from the GCSSES hydrobins.

Prior to transportation to the dike for placement, the bottom ash material from the hydrobins shall be stockpiled, drained, and blended within the confines of the existing bottom ash stockpile as required. The material shall be blended, as required, to achieve the specified density.

If the Owner determines that sufficient bottom ash material is not available, earth fill material may be substituted for the bottom ash material. The bottom ash or earth material shall be compacted in accordance with FILLS AND EMBANKMENTS.

2B.13.2 Placement and Compaction. All cover material shall be placed in approximately horizontal layers not to exceed 12 inches in uncompacted thickness, unless otherwise directed by the Owner based on the adequacy of the Contractor's equipment and obtaining passing test results. Material deposited in piles or windrows by excavating and hauling equipment shall be spread and leveled before compaction.

Each layer of material being compacted shall have the best practicable uniform moisture content to ensure satisfactory compaction. The Contractor shall add water, harrow, disk blade, or otherwise work the material in each layer to achieve satisfactory compaction to 95 percent of maximum density.

Density tests shall be made as necessary by the Contractor's testing laboratory. If the material fails to meet the specified density, the compaction methods shall be altered to obtain the specified density.

2B.14 GEOTEXTILE FABRIC. The geotextile fabric shall consist of a non-woven fabric consisting only of continuous chain polymeric filaments or yarns of polyester, or polypropylene formed into a stable network by needle punching.

The fabric shall be inert to commonly encountered chemicals and hydrocarbons. It shall also be resistant to mildew and rot, ultraviolet radiation, insects, and rodents. The engineering fabric shall conform to the properties in the following table. The average roll minimum value (weakest principle direction) for strength properties of any individual roll tested, from the manufacturing lot or lots of a particular shipment, shall be in excess of the average roll minimum value (weakest principle direction) stipulated below. The average roll minimum value is defined as the sampling average (weakest principal direction) of the physical properties for any individual roll tested within a lot designated first quality.

Physical Properties

Average Roll Minimum Value

Grab Tensile Strength*
ASTM D1682 (1b)

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maximum joint deflection used in connection therewith, shall be in conformity with requirements of the specification section covering installation of pipe.

2B.16.2 Limiting Trench Widths. Trenches shall be excavated to a width which will provide adequate working space and pipe clearance for proper pipe installation, jointing, and embedment. The width of trench below an elevation 12 inches above the top of the pipe shall not be more than 18 inches greater than the outside diameter of the pipe unless otherwise indicated on the drawings.

Where necessary to reduce earth load on trench banks to prevent sliding and caving, banks may be cut back on slopes which shall not extend lower than 1 foot above the top of the pipe.

2B.16.3 Unauthorized Trench Widths. Where, for any reason, the width of the lower portion of the excavated trench exceeds the maximum specified, pipe of adequate strength, special pipe embedment, or arch concrete encasement, as required by loading conditions and with the concurrence of the Engineer, shall be furnished and installed by and at the expense of the Contractor.

2B.16.4 Mechanical Excavation. The use of mechanical equipment will not be permitted in locations where its operation would cause damage to trees, buildings, culverts, or other existing property, utilities, or structures above or below ground. In all such locations, hand excavating methods shall be used.

2B.16.5 Trench Depth. Pipe trenches shall be excavated to the depth required for the installation of embedment pipe foundation material below the underside of the pipe as indicated on the drawing bound at the end of this section.

2B.16.6 Bell Holes. Bell holes shall provide adequate clearance for tools and methods used in installing pipe. No part of any bell or coupling shall be in contact with the trench bottom, trench walls, or embedment when the pipe is jointed.

2B.17 PIPE EMBEDMENT. Embedment materials both below and above the bottom of the pipe, classes of embedment to be used, and placement and compaction of embedment materials shall conform to the requirements indicated on the drawing included at the end of this section and to the following supplementary requirements.

2B.17.1 Embedment Classes. All pipe embedment shall be second class as indicated on the drawing included at the end of this section and as specified herein.

Sand embedment material shall be clean sand which shall have a gradation such that 95 percent of the material shall pass a No. 4 sieve and not more than 5 percent shall pass a No. 100 sieve.

2B.17.2 Placement and Compaction. Embedment material shall be spread on the trench bottom and the surface graded to provide a uniform and continuous support beneath the pipe at all points between pipe joints. The material shall be compacted with vibrating platform type compactors. Compactive effort and moisture content shall be adjusted to provide a firm but slightly yielding support for the pipe. It will be permissible to slightly disturb the finished subgrade surface by withdrawal of pipe slings or other lifting tackle.

After each pipe has been graded, aligned, and placed in final position on the bedding material, sufficient pipe embedment material shall be deposited and compacted under and around each side of the pipe and end thereof to hold the pipe in proper position and alignment during subsequent pipe jointing and embedment operations.

Embedment material shall be deposited and compacted uniformly and simultaneously on each side of the pipe to prevent lateral displacement. Embedment material shall be placed in layers of 8 inches or less and each layer shall be uniformly compacted to 90 percent of maximum density.

Embedment materials shall be placed in uniform layers and shall have a moisture content which will ensure that maximum density will be obtained with the compaction method used. Vibrating compactors shall be used to compact sand.

All tools used in the placement and compaction of the embedment of coated pipe shall be selected and used so the pipe coating will not be damaged.

2B.18 TRENCH BACKFILL. All trench backfill above pipe embedment shall conform to the following requirements.

Compacted backfill will be required for the full depth of the trench above the embedment.

Compacted backfill material shall meet the requirements specified hereinafter. Compacted backfill material shall be either suitable job excavated material or suitable material furnished by the Contractor from his own sources.

Compacted backfill material shall be finely divided and free from debris, organic material, and stones larger than 3 inches in greatest dimension. Compacted backfill material shall be placed in uniform layers not exceeding 8 inches in uncompacted thickness. Increased layer thickness may be permitted if the Contractor demonstrates to the satisfaction of the Owner

that the specified compacted density will be obtained. The method of compaction and the equipment used shall be appropriate for the material to be compacted and shall not transmit damaging shocks to the pipe. Trench backfill shall be compacted to not less than 90 percent of maximum density.

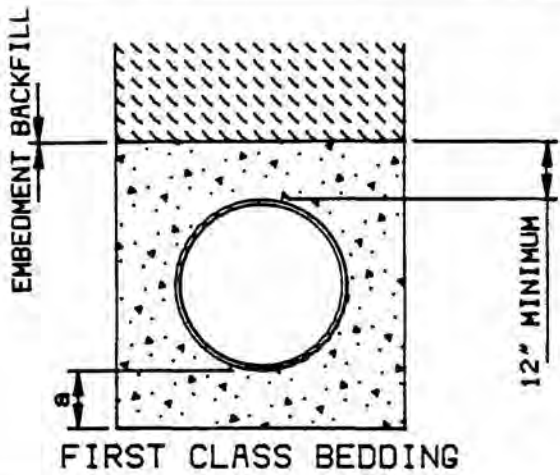
2B.19 MAINTENANCE AND RESTORATION OF FILLS, EMBANKMENTS, AND BACKFILLS. Fills, embankments, and backfills that settle or erode before final acceptance of the work, and pavement, structures, and other facilities damaged by such settlement or erosion, shall be repaired. The settled or eroded areas shall be refilled, compacted, and graded to conform to the elevation indicated on the drawings or to the elevation of the adjacent ground surface. Damaged facilities shall be repaired in a manner acceptable to the Owner.

2B.20 STRAW BALES/GEOTEXTILE SEDIMENTATION BARRIER. Rows of straw bales or geotextile sedimentation barriers shall be constructed across the sedimentation pond inlet channels as indicated on the drawings to control sedimentation from runoff. The straw bales shall be set into a shallow trench and anchored with wood posts. The geotextile sedimentation barrier shall be constructed with posts and a fabric filter media. The media shall be firmly attached to the posts and anchored into the soil. The Contractor shall install the straw bales or geotextile sedimentation barrier at the start of construction and maintain them until work is accepted by the Owner.

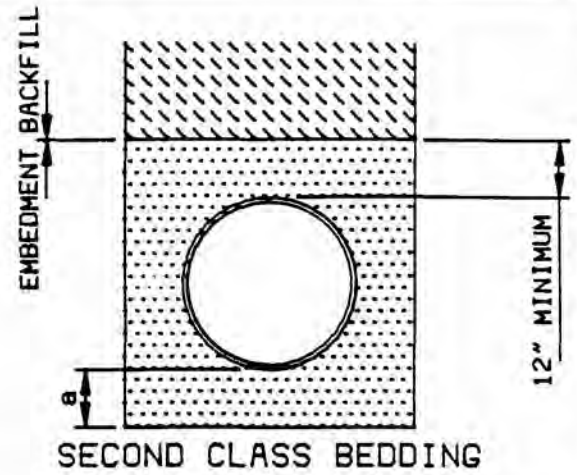
2B.21 FINAL GRADING. After all construction work has been completed, all ground surface areas disturbed by this construction or construction plant and operations shall be graded. The grading shall be finished to the contours and elevations indicated on the drawings or, if not indicated, to the matching contours and elevations of the original, undisturbed ground surface. The final grading shall provide smooth uniform surfacing and effective drainage of the ground areas.

2B.22 DISPOSITION OF MATERIALS. Excavated earth material shall be used to construct fills, embankments, and backfills to the extent required. Surplus earth, if any, and materials which are not suitable for fills, embankments, and backfills shall be spoiled on the site in a manner and location as directed by the Owner.

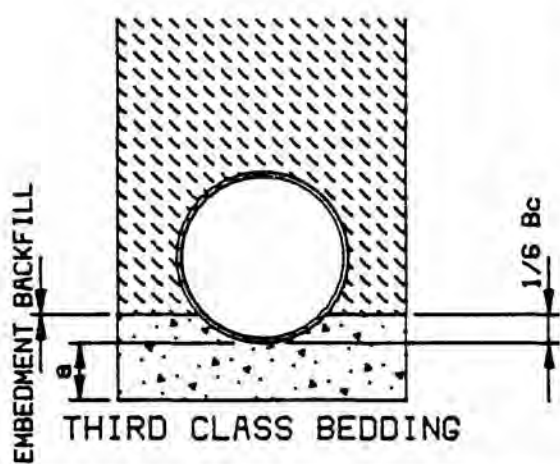
Materials shall be deposited in the disposal areas and leveled and compacted in 24 inch maximum layers. Compaction shall be by not less than three passes of a bulldozer.



FIRST CLASS BEDDING



SECOND CLASS BEDDING



THIRD CLASS BEDDING

LEGEND

- D NOMINAL PIPE SIZE
- Bc OUTSIDE DIAMETER OF PIPE
- H COVER ABOVE TOP OF PIPE
- a FOUNDATION DEPTH BELOW PIPE
SEE TABLE
- GRANULAR EMBEDMENT
- COMPACTED BACKFILL
- SAND EMBEDMENT

NOTES

FOR FIRST CLASS BEDDING BENEATH RAILROADS, ROADS, AND PARKING AREAS, EXTEND GRANULAR EMBEDMENT TO TOP OF SUBGRADE OR 5 FEET ABOVE TOP OF PIPE.

SEE SPECIFIED REQUIREMENTS FOR MATERIALS, COMPACTION, AND TRENCH WIDTHS.

| PIPE FOUNDATION DEPTH | | |
|-----------------------|-------------------|-------------------|
| D | a MIN. SOIL | a MIN. ROCK |
| 60" & SMALLER | 4" | 9" |
| 66" TO 90" | 6" | 12" |
| 96" & LARGER | 12" | 12" |

BLACK & VEATCH
ENGINEERS-ARCHITECTS

| | | | | | | | | | | |
|----------|-----|-------|----------|----|----------|-------------------------------|----|-----|-----|-----|
| ENGINEER | VHS | DRAWN | AGG | 1 | 10/01/87 | PROJECT NUMBER CHANGE | JC | DRN | VHS | |
| CHECKED | DRN | DATE | 10/06/82 | 0 | 10/06/82 | INITIAL ISSUE | JC | DRN | VHS | |
| | | | | NO | DATE | REVISIONS AND RECORD OF ISSUE | BY | CHK | APP | FLM |

| | | | | |
|----------------|--|----------------|--|-----|
| PROJECT | | DRAWING NUMBER | | REV |
| 81112-DS-0053 | | 81112-DS-0053 | | 1 |
| PIPE EMBEDMENT | | CODE | | |
| | | AREA | | |

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TABLE 3
Unified Soil Classification System

| Primary Divisions for Field and Laboratory Identification | | | Group Symbol | Typical Names | Laboratory Classification Criteria | | Supplementary Criteria For Visual Identification |
|---|---|---|--------------|---|---|---|--|
| Coarse-grained soils. (More than half of material finer than 3-inch sieve is larger than No. 200 sieve size.) | Gravel. (More than half of the coarse fraction is larger than No. 4 sieve size about 1/4 inch.) | Clean gravels. (Less than 5% of material smaller than No. 200 sieve size.) | GW | Well graded gravels, gravel-sand mixtures, little or no fines.* | $C_u = \frac{D_{60}}{D_{10}}$ greater than 4. $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3. | | Wide range in grain size and substantial amounts of all intermediate particle size. |
| | | | GP | Poorly graded gravels, gravel-sand mixtures, little or no fines.* | Not meeting both criteria for GW. | | Predominantly one size (uniformly graded) or a range of sizes with some intermediate sizes missing (gap graded). |
|do..... |do..... | Gravels with fines. (More than 12% of material smaller than No. 200 sieve size.)* | GM | Silty gravels, and gravel-sand-silt mixtures. | Atterberg limits below "A" line, or PI less than 4. | Atterberg limits above "A" line with PI between 4 & 7 is borderline case GM-GC | Nonplastic fines or fines of low plasticity. |
| | | | GC | Clayey gravels, and gravel-sand-clay mixtures. | Atterberg limits above "A" line, and PI greater than 7. | | Plastic fines. |
|do..... | Sands. (More than half of the coarse fraction is smaller than No. 4 sieve size.) | Clean sands. (Less than 5% of material smaller than No. 200 sieve size.) | SW | Well graded sands, gravelly sands, little or no fines.* | $C_u = \frac{D_{60}}{D_{10}}$ greater than 6. $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3. | | Wide range in grain sizes and substantial amounts of all intermediate particle sizes. |
| | | | SP | Poorly graded sands and gravelly sands, little or no fines.* | Not meeting both criteria for SW. | | Predominately one size (uniformly graded) or a range of sizes with some intermediate sizes missing (gap graded). |
|do..... |do..... | Sands with fines. (More than 12% of material smaller than No. 200 sieve size.)* | SM | Silty sands, sand-silt mixtures. | Atterberg limits below "A" line, or PI less than 4. | Atterberg limits above "A" line with PI between 4 and 7 is borderline case SM-SC. | Nonplastic fines or fines of low plasticity. |
| | | | SC | Clayey sands, sand-clay mixtures. | Atterberg limits above "A" line with PI greater than 7. | | Plastic fines. |

* Materials with 5 to 12 percent smaller than No. 200 sieve are borderline cases, designated: GM-GH, SW-SC, etc.

TABLE 3 (continued)
Unified Soil Classification System

| Primary Divisions for Field and Laboratory Identification | | Group Symbol | Typical Names | Laboratory Classification Criteria | | Supplementary Criteria For Visual Identification | | |
|---|--|--------------|--|--|--|--|---------------------|------------------------------|
| | | | | | | Dry Strength | Reaction to Shaking | Toughness Near Plastic Limit |
| Fine-grained soils. (More than half of material is smaller than No. 200 sieve size.) (Visual: more than half of particles are so fine that they cannot be seen by naked eye.) | Silts and clays. (Liquid limit less than 50.) | ML | Inorganic silts, very fine sands, rock flour, silty or clayey fine sands. | Atterberg limits below "A" line, or PI less than 4. | Atterberg limits above "A" line with PI between 4 and 7 is border-line case ML-CL. | None to slight | Quick to slow | None |
| |do..... | CL | Inorganic clays of low to medium plasticity; gravelly clays, silty clays, sandy clays, lean clays. | Atterberg limits above "A" line, with PI greater than 7. | | Medium to high | None to very slow | Medium |
| |do..... | OL | Organic silts and organic silt-clays of low plasticity. | Atterberg limits below "A" line. | | Slight to medium | Slow | Slight |
| Primary Divisions for Field and Laboratory Identification | | Group Symbol | Typical Names | Laboratory Classification Criteria | | Supplementary Criteria For Visual Identification | | |
| | | | | | | Dry Strength | Reaction to Shaking | Toughness Near Plastic Limit |
| ...do.... | Silts and clays. (Liquid limit greater than 50.) | MH | Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts. | Atterberg limits below "A" line. | | Slight to medium | Slow to none | Slight to medium |
| |do..... | CH | Inorganic clays of high plasticity, fat clays. | Atterberg limits above "A" line. | | High to very high | None | High |
| |do..... | OH | Organic clays of medium to high plasticity. | Atterberg limit below "A" line | | Medium to high | None to very slow | Slight to medium |
| ...do.... | Highly organic soils..... | Pt | Peat, muck and other highly organic soils. | High ignition loss, LL and PI decrease after drying. | | Organic color and odor, spongy feel, frequently fibrous texture. | | |

Section 2C - DRAINAGE PIPING

2C.1 GENERAL. This section covers materials, manufacture, and installation for containment dike drain piping.

Earthwork and trenching shall be as specified in the section titled EARTHWORK unless noted otherwise in this section.

2C.2 MATERIALS. Underdrain pipe shall conform to the following requirements.

Corrugated plastic tubing, designated Containment Dike Drain Pipe on the drawings:

| | |
|-------------------|--|
| Pipe and fittings | ADS heavy-duty slotted pipe with sock filter material as manufactured by Advanced Drainage Systems, Inc. conforming to ASTM D1248, ASTM F405, AASHTO M-252 or acceptable equal |
|-------------------|--|

Reinforced concrete pipe, designated RCP on the drawings:

| | |
|--|---|
| Fine aggregate | Clean natural sand, ASTM C33. Artificial or manufactured sand will not be acceptable. |
| Cement | ASTM C150 Type 5, containing not more than 5 percent tricalcium aluminate |
| Reinforced concrete pipe, fittings, and specials | ASTM C76 Class III as modified hereinafter. Wall thickness not less than Wall B. Minimum length 6 feet except fittings and closure pieces |
| Gaskets (O-ring) | ASTM C361, Section 6.9.1, except minimum tensile strength shall be 1,500 psi, hardness shall be 40 plus or minus 5, maximum water absorption shall be 10 percent. Polymer shall be neoprene or other synthetic rubber; natural rubber will not be acceptable. |

2C.3 HANDLING. Pipe, fittings, and accessories shall be handled in a manner that will ensure installation in sound, undamaged condition. Equipment, tools, and methods used in loading, unloading, reloading, and hauling pipe and fittings shall not damage the pipe and end sections. Hooks inserted in the ends of pipe shall have broad, well padded contact surfaces and shall not come in contact with joint surfaces. Damaged pipe shall be removed from the site.

Filter socks which have been damaged shall be replaced or repaired by the Contractor before installing the pipe.

Plastic pipe shall be shaded as required to prevent curvature and deterioration due to thermal expansion and exposure to sunlight.

2C.4 GENERAL INSTALLATION REQUIREMENTS. Drain piping shall be accurately installed in accordance with lines and grades indicated on the drawings or as required by connections to other piping. Pipe grades between designated invert elevations shall be uniform to ensure unrestricted flow and eliminate low spots or traps that would retain water. Pipe shall not be laid in water or in unsuitable weather or trench conditions. Unless otherwise accepted, pipe laying shall begin at the lowest point and pipe shall be laid so that the spigot ends point in the direction of flow. Pipe shall be laid in a manner to provide uniform support throughout its length.

Pipelines intended to be straight shall be laid straight.

2C.4.1 Cutting. Cutting shall be done in a neat manner, without damage to the pipe. Cuts shall be smooth, straight, and at right angles to the pipe axis. Pipe shall be cut with mechanical pipe cutters. Where the use of mechanical cutters would be difficult or impracticable, the proposed method of pipe cutting shall be acceptable to the Owner.

2C.4.2 Cleaning. Foreign matter shall be thoroughly cleaned from the interior of all pipe and fittings before installing. Pipe shall be kept clean until the work has been accepted. Surfaces shall be wire brushed, if necessary, and wiped clean, dry, and free from oil and grease before the joints are assembled. Joint contact surfaces shall be kept clean until the jointing is completed.

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being installed. No debris, tools, clothing, or other materials shall be placed in the pipe.

Whenever pipe laying is stopped, the open end of the pipe shall be closed with an end board closely fitting the end of the pipe to keep sand and earth out of the pipe. The end board shall have several small holes near the center to permit water to enter the pipe and prevent flotation in the event of flooding of the trench.

2C.4.3 Inspection. Pipe and fittings shall be carefully examined for cracks and other defects immediately before installation. Spigot ends shall be examined with particular care since they are vulnerable to damage from handling. Defective pipe and fittings shall be removed from the site of the work.

2C.5 ALIGNMENT. Piping shall be laid to the lines and grades indicated on the drawings. Substantial batter boards shall be erected at intervals of not more than 25 feet. Batter boards shall be used to determine and check pipe subgrades. Not less than three batter boards shall be maintained in proper position at all times when trench grading is in progress.

Other methods of maintaining alignment and grade, such as use of laser beam equipment or surveying instruments, will be considered, provided complete information describing the proposed method is submitted to the Owner for review before pipe laying is started.

2C.6 LAYING PIPE. Lateral displacement of the pipe shall be prevented during embedment operations. Pipe shall not be laid in water, nor under unsuitable weather or trench conditions.

Pipe laying shall begin at the lowest elevation with bell ends facing the direction of laying except when reverse laying is permitted by the Owner.

When jointed in the trench, the pipe shall form a true and smooth line. Pipe shall not be trimmed except for closures. Pipe not making a good fit shall be removed. Permissible defects shall be placed in the top of the line.

Trenches shall be graded to the required slopes. Trenches shall be shaped and tamped to receive and fit the lower part of the pipe. If rock is encountered in the excavation, it shall be removed and replaced with suitable earth or granular fill material to a minimum depth of 6 inches below the bottom of the pipe. Pipe shall be laid on the prepared bed starting at the outlet end with sections firmly joined. Outside laps of circumferential joints shall point upstream. Longitudinal seams of corrugated metal culverts shall be placed at the side of the trench.

2C.7 JOINTING. Joint preparation and jointing operations shall comply with the written instructions and recommendations of the pipe manufacturer.

2C.7.1 Corrugated Plastic Tubing. Joints and fittings shall be installed in accordance with the instructions furnished by the manufacturers and

ASTM F449. All coupling, joints, tees, elbows, and other fittings shall be wrapped with drain sock material. All drain ends of drain sock material shall be securely taped to plastic tubing or adjacent sock material prior to backfilling.

2C.7.2 Concrete Pipe Joints. Rubber gaskets for concrete pipe shall be installed in accordance with the pipe manufacturer's recommendations. Immediately before jointing the pipe, the outside of the spigot and gasket and the inside of the receiving bell shall be thoroughly cleaned and coated with a suitable lubricant. The position and condition of the rubber gasket shall be checked with a feeler gauge after the piping unit is installed.

2C.8 ACCEPTANCE TESTS. Each reach of buried drainage piping shall meet the requirements of the following acceptance tests. All defects shall be repaired to the satisfaction of the Owner.

Wherever both ends of a section of drainline are accessible, the section will be lamped by the Owner. The Contractor shall furnish all necessary equipment and suitable assistants to help the Owner.

Section 2D - MANHOLES

2D.1 GENERAL. This section covers materials and construction for drainage manholes. Manholes shall be constructed complete with fittings, trashrack, and other appurtenances, in accordance with the details indicated on the drawings.

Excavation and backfill shall be as specified in the section titled EARTHWORK.

Manholes which are so designated shall be reinforced concrete as detailed with no substitutions allowed. At the option of the Contractor, other manholes shall be constructed of cast-in-place concrete or precast concrete sections.

2D.2 MATERIALS. Materials shall be furnished in accordance with the following.

| | |
|------------------------|---|
| Concrete | Materials, placing, forming, finishing, curing, and other appurtenant work as specified in CAST-IN-PLACE CONCRETE section |
| Precast sections | Circular precast concrete, ASTM C76, except as modified |
| Minimum wall thickness | 5 inches |
| Openings | Circular or horseshoe shaped boxout for each connecting pipe, with surfaces grooved or roughened to improve mortar bond |
| Gaskets | |
| Mastic | Fed Spec SS-S-210; K. T. Snyder "Ram-Nek," Hamilton-Kent "Kent-Seal No. 2," or acceptable equal |
| Rubber | Neoprene or other synthetic, 40 plus or minus 5 hardness when measured by ASTM D2240, Type A durometer |

| | |
|----------------------|--|
| Concrete block | Solid, curved, segmental units, ASTM C139, except as modified |
| Compressive strength | 3,500 psi minimum |
| Curing | Steam cured for at least 8 hours |
| Minimum thickness | As indicated on the drawings |
| Nonshrinking grout | Master Builders "Masterflow 713 Grout," Sauereisen Cements "F-100 Level Fill Grout," Gifford Hill "Supreme Grout," or acceptable equal |

2D.3 CONSTRUCTION. A rubber or mastic gasket shall be provided to seal joints between precast sections. The space between connecting pipes and the wall of precast sections shall be completely filled with nonshrinking grout.

Reinforcing steel bars shall be grouted to the top of all manholes to form a trashrack, as specified on the drawings.

Section 2E - GROUT-FILLED SYNTHETIC FABRIC FORMS

2E.1 GENERAL. This section covers materials and procedures for the installation of grout-filled synthetic fabric forms.

Grout-filled synthetic fabric forms will be required at the locations indicated on the drawings. The work shall consist of installing unreinforced grout-filled synthetic fabric form, panels, and bags as indicated on the drawing. Forms shall be placed as indicated on the contract drawings by positioning a specially woven fabric envelope at locations indicated on the drawings and injecting the forms with grout.

The Contractor shall furnish evidence, satisfactory to the Owner, of successful performance in this type of work. The Contractor shall provide, throughout the progress of installation of the work of this section, one person who shall be thoroughly familiar with the specified requirements, completely trained and experienced in the necessary skills, and who shall be present at the site and shall direct all work performed under this section.

Material sources of the grout and the synthetic fabric forms shall be submitted with the proposal data and shall not be changed without prior approval of the Owner.

2E.2 MATERIALS.

2E.2.1 Grout. The grout shall be furnished by the Contractor and shall consist of a mixture of portland cement, fine aggregate, and water so proportioned and mixed as to provide a pumpable slurry. The mix shall obtain the required compressive strength of 2,000 psi at 28 days when made and tested in accordance with ASTM C-31 and C-39. Portland cement shall conform to ASTM C-150, Type II, Modified. Aggregate shall meet the requirements of ASTM C-33, except as to grading. Aggregate grading shall be consistent and shall be well graded from the maximum size which can be conveniently handled with available pumping equipment. Mixing water shall be clean, potable, and free from injurious amounts of foreign matter. Admixtures, if utilized, shall contribute to the nature of the specifications. Pozzolite, or an equal water reducer conforming to ASTM C-494, may be used to reduce segregation, increase workability and pumpability, improve strength, and increase watertightness. If an air entrainment agent is used, it shall improve resistance to freezing and thawing, and shall reduce both bleeding and permeability. Other admixtures shall not be used.

Small cuts shall be made in the fabric to allow for the insertion of the injection hose or nozzle. The sequence of injecting the panels shall ensure that no cold joint exists in any one panel and that the panels are filled to an adequate cross section.

Grout shall be injected in such a way that excessive pressure on the fabric formwork is avoided. Holes in the fabric left by the removal of the injection hose shall be temporarily closed by inserting a piece of burlap or similar material. The burlap shall be removed when the concrete is no longer fluid and the surface is firm to hand pressure. Foot pressure on the filled mat shall be restricted to an absolute minimum for 1 hour after pumping. Upon completion of the grouting operation, all the anchor trenches shall be backfilled.

Section 2F - EROSION CONTROL

2F.1 GENERAL. This section covers the furnishing of materials and equipment, and the performance of all operations in connection with establishing turf as indicated on the drawings or in these specifications.

Soil erosion control work shall include preparation of the soil surface, fertilizing, planting of seed, compacting, mulching, watering, and maintenance.

All soil erosion control work shall be performed by a contractor who is experienced and regularly engaged in the type of work specified and whose work is acceptable to the Owner.

The ground preparation, seeding, mulching, and other erosion control activities shall be in conformance with Item 164 of the Texas State Department of Highways and Public Transportation Standard Specifications for Construction of Highways, Streets, and Bridges (Texas SSCHSB).

The work shall be performed using acceptable equipment manufactured expressly for its intended purpose.

Mulch, seed, and fertilizer may be applied simultaneously with a hydraulic applicator manufactured specifically for this purpose, provided all other requirements of the specifications are met. The hydraulic applicator shall be capable of applying the mulch, seed, and fertilizer slurry in the proper proportions under its own power to slopes at least as steep as 2 feet horizontal to 1 foot vertical.

The Contractor shall not start erosion protection or preparatory work until excavation, backfill, embankments, rough grading, surfacing, and paving are completed in the vicinity of the erosion protection work.

2F.2 MATERIALS. Materials for soil erosion protection shall include topsoil, fertilizer, seed, and mulch.

2F.2.1 Topsoil. Topsoil for planting operations shall be fertile, friable, natural loam containing a liberal amount of humus and shall be capable of sustaining vigorous plant growth. Topsoil shall be free of subsoil and shall be reasonably free of stone, lumps, clods of hard earth, plants or their roots, stalks, and other extraneous matter.

2F.2.2 Commercial Fertilizer. Fertilizer shall be a commercial mixture in accordance with Item 166 of the Texas SSCHSB. Fertilizer shall contain the following percentages by weight.

- 10 percent nitrogen
- 20 percent phosphoric acid
- 20 percent potash

Fertilizer shall be uniform in composition, free flowing, and suitable for application with acceptable equipment. Fertilizer shall be delivered to the site in standard size bags indicating weight, analysis, and name of manufacturer. Fertilizer shall be stored in a weatherproof place in such a manner that it will be kept dry and its effectiveness will not be impaired.

2F.2.3 Seed. All seed shall meet the requirements of the seed laws of the State of Texas and the requirements of Item 164 of the Texas SSCHSB.

Seed shall be furnished in sealed, standard containers unless written exception is granted. Seed that is wet or moldy or that has been otherwise damaged in transit or storage will not be acceptable.

2F.2.4 Mulch. Mulching materials shall conform to Item 164 of the Texas SSCHSB and to the following requirements.

2F.2.4.1 Vegetative Mulch. Vegetative mulch shall consist of straw or hay free from rot or mold and shall be in a good state of preservation when used. Vegetative mulch shall be primarily long, heavy stemmed material delivered in dry bales and shall be kept dry until applied. Vegetative mulch shall be as free as practicable from weed seed and other deleterious substances.

2F.2.4.2 Wood Cellulose or Paper Fiber Mulch. Wood cellulose or paper fiber mulch, for use with the hydraulic application of grass seed and fertilizer, shall consist of specially prepared wood cellulose or paper fiber, processed to contain no germination prohibiting factors, and dyed an appropriate color to facilitate visual metering of application of the materials. The mulch materials shall be delivered in packages not to exceed 100 pounds in gross weight. Mulch shall contain not in excess of 10 per cent moisture, air dry weight basis. Mulch shall be manufactured so that after addition and agitation in slurry tanks with fertilizers, grass seeds, water, and any other acceptable additives, the fibers in the material will become uniformly suspended to form a homogenous slurry. Mulch shall be of such a consistency that when hydraulically sprayed on the ground, the material will form a blotter like ground cover impregnated uniformly with grass seed, which, after application, will allow the absorption of moisture and allow water to reach the underlying soil.

2F.3 PREPARATION AND APPLICATION. The preparation of the soil, the application of seed and mulch shall conform to the requirements of Item 164 of the Texas SSCHSB.

2F.3.1 Preparation of Soil. The area to be planted shall be thoroughly tilled to a depth of at least 4 inches by discing, harrowing, or other acceptable methods until the soil is well pulverized.

After completion of the tilling operation the surface shall be cleared of all stones, stumps, or other objects larger than 1-1/2 inches in thickness or diameter, and of roots, wire, grade stakes, and other objects that might be a hindrance to maintenance operations.

The spreading of topsoil shall be completed over the entire area indicated on the drawings before the beginning of soil preparation.

Any objectionable undulations or irregularities in the surface resulting from tillage or other operations shall be removed before planting operations are begun. Soil preparation shall be performed only during periods when satisfactory results are likely to be obtained. When results are not satisfactory because of drought, excessive moisture, or other causes, the work shall be stopped until such conditions have been corrected to the satisfaction of the Construction Manager.

2F.3.2 Fertilizing. Commercial fertilizer of the type specified shall be distributed uniformly over the entire planting area at the rate of 800 pounds per acre for areas to be seeded. The fertilizer shall be applied with a fertilizer drill before the beginning of the mulching operation as a part of the soil preparation or if a seed drill with a fertilizer attachment is used, fertilizer may be applied with the seeding operation following the mulching.

If seed is to be applied by hydraulic application, the fertilizer may be mixed with the seed and mulch and applied as a slurry as specified in the article titled Wood Cellulose or Paper Fiber Mulch.

2F.3.3 Seeding. Seed shall be applied uniformly at rates specified in Item 164 of the Texas SSCHSB.

On slopes too steep for the practical operation of power drawn equipment, grass seed shall be broadcast uniformly by hand methods and raked into the surface.

Seeding and fertilizing shall be performed between the dates specified in Item 164 of the Texas SSCHSB unless otherwise acceptable to the Owner. Seeding and fertilizing shall not be done during periods of such severe drought, high winds, or excessive moisture, as determined by the Owner, that satisfactory results are not likely to be obtained.

2F.3.4 Compacting. Immediately after the seeding operations have been completed, the entire area shall be compacted by means of a cultipacker, roller, or other acceptable equipment weighing 60 to 90 pounds per linear foot of roller. If the soil is of such type that a smooth or corrugated roller cannot be operated satisfactorily, a pneumatic roller (not wobble-wheel) shall be used. The pneumatic roller shall have tires of sufficient size so complete coverage of the soil surface is obtained. When a

cultipacker or similar equipment is used, the final rolling shall be at right angles to the existing slopes to prevent water erosion or at right angles to the prevailing wind to prevent wind erosion.

The areas that have been seeded by hand and areas where the use of mechanical equipment is impractical shall be compacted by hand immediately after seeding by using a commercial hand tamper, roller, or other method acceptable to the Owner.

2F.3.5 Mulching. Mulching shall be performed within 24 hours after seeding, but shall not be done during windy or rainy weather or when such weather is imminent. If the seedbed has become crusty, eroded, or disturbed by the Contractor's operations before mulching, the Contractor shall rework the soil and reseed in these areas. Mulching shall be started at the windward side of relatively flat areas or at the upper part of steep slopes and shall continue uniformly until each area is covered.

2F.3.5.1 Vegetative Mulch. Vegetative mulch shall be placed as specified in Item 164 of the TSDHPT specifications.

Vegetative mulch of straw or hay may be applied with an asphalt tack in a mixture of 1-1/2 to 2 tons of mulch per acre with 75 to 150 gallons of emulsified asphalt per ton of mulch.

The mulch and asphalt mixture shall be placed with conventional mechanical equipment which will distribute the mulch uniformly by blowing it onto the area.

Baled straw or hay shall be broken up and loosened sufficiently before being fed into the blower hopper to avoid the placing of matted or unbroken clumps. The use of wet straw or hay is prohibited.

The equipment shall be provided with jet nozzles spaced in the muzzle of the blower through which the asphalt is ejected simultaneously with the mulch, coating the mulch uniformly with a spray of asphalt. Small areas may be mulched by hand by spreading the mulch in a loose, fluffy condition and sprayed with emulsified asphalt over the surface of the mulch.

Vegetative mulching material without emulsified asphalt may also be used provided that it is disced or punched into the soil so it is partially covered. Several passes may be required, if a straight disc is used, in order to mix the mulching material with the topsoil sufficiently to ensure protection from erosion by either wind or water. The mulch tilling operation shall be performed parallel to the ground contours.

Under some circumstances, it may become desirable to apply straw or hay mulch and anchor it into the soil on steep slopes to prevent erosion as

soon as construction of the slopes is completed as determined by the Owner.

Even though it is not the proper season to plant grass seed, vegetative mulch may be applied first and the seed may then be drilled in on top of the mulch at the proper seeding time. By applying mulch immediately following construction, and anchoring it into the soil, the normal seed-bed preparation procedure may not be required, depending on the tilth of the soil, as determined by the Owner. In such cases, the fertilizer shall be applied at the time of seeding.

2F.3.5.2 Wood Cellulose or Paper Fiber Mulch. Wood cellulose or paper fiber mulch, for use with the hydraulic application of grass seed and fertilizer, shall be applied uniformly at the rate of 2,500 pounds per acre. The fiber mulch, fertilizer, and seed mixture shall be mixed with water to form a slurry to be applied under pressure. Hydraulic equipment used for the application of the slurry shall have a built-in agitation system. The slurry distribution lines shall be large enough to prevent stoppage and shall be equipped with a set of hydraulic spray nozzles that will provide even distribution of the slurry on the slopes to be mulched.

Wood cellulose or paper fiber mulch shall be placed as specified in Item 164 of the Texas SSCHSB.

2F.4 WATERING. Watering will be required to promote the establishment of healthy turf. Areas which have been seeded shall be watered such that water will penetrate 2 inches into the soil.

Additional applications of water will be required until the grass is well established after planting.

Water shall be supplied by the Contractor. All pipes, pumps, hoses, sprinklers, and other materials necessary to apply water shall be furnished by the Contractor.

2F.5 MAINTENANCE AND PROTECTION. The Contractor shall maintain and protect all planted areas until final acceptance of the work. Final acceptance will not be made until an acceptable uniform stand of grass is obtained, except portions of the seeding may be accepted at various times. Upon acceptance by the Owner of a planted area, the Owner will assume responsibility for maintenance of that portion.

Any portions of the areas of planting which fail to show a uniform stand of grass shall be replanted as before, except commercial fertilizer shall be applied at one-half the original rate. Planting shall be repeated until an acceptable stand of grass is provided.

Care shall be taken to avoid overwatering on the sloped areas to prevent erosion. Any areas which have become eroded shall be regraded and replanted. Topsoil shall be added if required.

The grass height shall be maintained between 1-1/2 inches and 2-1/2 inches. Maintenance shall include mowing until new grass areas are accepted by the Owner.

2F.6 GUARANTEE. The Contractor shall guarantee all work and materials for a period of one year after completion of the seeding work. During the guarantee period, turf which dies shall be replaced by and at the expense of the Contractor. Replacement made under the Contractor's guarantee shall be covered by a like guarantee for a period of one year after completion of the replacement.

Section 2G - CAST-IN-PLACE CONCRETE

2G.1 GENERAL. This section covers cast-in-place concrete and includes reinforcing steel, forms, finishing, curing, grouting, and other appurtenant work.

Cast-in-place concrete shall be in accordance with the latest applicable requirements of the Federal Specifications, ACI, ASTM, and CRSI, except as modified by these specifications.

2G.2 MATERIALS. Materials shall be in accordance with these requirements.

| | |
|--------------------------|---|
| Cement | ASTM C150, Type I, II, or III |
| Fine aggregate | Clean natural sand, ASTM C33 |
| Coarse aggregate | Crushed stone, washed gravel, or other acceptable inert granular material conforming to ASTM C33 |
| Water | Clean and free from deleterious substances |
| Air-entraining agent | ASTM C260 |
| Plasticizing retarder | ASTM C494, Type B or D |
| Plasticizer | ASTM C494, Type A |
| Reinforcing steel bars | ASTM A615-85 Grade 60 |
| Epoxy bonding compound | Sika Chemical "Sikadur Hi-Mod," U.S. Grout "Five Star Epoxy," or acceptable equal |
| Membrane curing compound | Styrene-acrylate or styrene-butadiene; minimum 18 percent solids, nonyellowing, unit moisture loss 0.039 g/sq cm maximum, Gifford-Hill "Sealco 800," ProSoCo "Kure and Seal," Protex "Acryseal," Sonneborn "Kure-N-Seal," or L&M "Dress & Seal" |

2G.3 PRELIMINARY REVIEW. The source and quality of concrete materials and the concrete proportions proposed for the work shall be submitted to the Engineer for review before the concrete work is started. Such review will be for general acceptability only; continued compliance with all contract provisions will be required.

2G.4 LIMITING REQUIREMENTS. The quantity of portland cement, expressed in pounds per cubic yard, shall be not less than that indicated in the following table. These minimum cement factors shall apply only to concrete containing either the specified plasticizer or plasticizing retarder. If, for any reason, both the plasticizer and plasticizing retarder are omitted, the cement factor shall be increased by 10 percent.

| Concrete slump | Coarse Aggregate Size | | |
|--|---|------|-----|
| | From No. 4 Sieve to 1/2" | 3/4" | 1" |
| 3 inches | 592 | 564 | 536 |
| 4 inches | 611 | 583 | 555 |
| 5 inches | 630 | 602 | 573 |
| Total water content | Not more than 6.4 gallons per 100 pounds of cement | | |
| Coarse aggregate size | One inch to No. 4 | | |
| Total air content | 5 percent plus or minus 1 per- cent | | |
| Consistency | Workable, without segregation, with slump not more than 4 inches when concrete is placed | | |
| Mixing | Thoroughly in a mechanical mixer for not less than 1-1/2 minutes | | |
| Compressive strength at age 28 days | Not less than 3,500 psi | | |

2G.5 BATCHING AND MIXING. Batching and mixing shall conform to ASTM C94, except as otherwise specified herein.

Truck mixers shall be revolving drum type and shall be equipped with a mixing water tank. Only the prescribed amount of mixing water shall be

placed in the tank for any one batch, unless the tank is equipped with a device by which the amount of water added to each batch can be readily verified by the Owner.

A delivery ticket shall be prepared for each load of ready-mixed concrete delivered and handed to the Owner by the truck operator at the time of delivery. Tickets shall show the number of yards delivered, the quantities of each material in the batch, the outdoor temperature in the shade, the time at which the cement was added, and the numerical sequence of the delivery.

When a truck mixer or agitator is used for transporting concrete, the concrete shall be delivered to the site of the work and discharge shall be completed within 1-1/2 hours, or before the drum has been revolved 300 revolutions, whichever comes first, after the introduction of the mixing water to the cement and aggregates, or the introduction of the cement to the aggregates, unless a longer time is specifically accepted by the Engineer. In hot weather, or under conditions contributing to quick stiffening of the concrete, a time less than 1-1/2 hours may be required by the Owner. When a truck mixer is used for the complete mixing of the concrete, the mixing operation shall begin within 30 minutes after the cement has been intermingled with the aggregates.

2G.6 REINFORCEMENT. Reinforcements shall be accurately formed and positioned and shall be maintained in proper position while the concrete is being placed and compacted. Details of fabrication shall conform to ACI 318-83.

2G.6.1 Splices. Unless otherwise required by the specifications or drawings, splices shall conform to ACI 318-83. Splices shall be Class C tension-lapped splices unless a different class is indicated on the drawings. Splices in horizontal reinforcement placed in vertical wall sections shall be detailed in accordance with the top reinforcement requirements of ACI 318-83.

2G.7 FORMS. Forms shall be designed to produce hardened concrete having the shape, lines, and dimensions indicated on the drawings. Forms shall be substantial and sufficiently tight to prevent leakage of mortar and shall be maintained in proper position and accurate alignment. Forms shall be thoroughly cleaned and oiled before concrete is placed and shall not be removed until the concrete has hardened sufficiently to support all loads without damage.

Vertical surfaces of footings extended above grade shall be formed.

Form ties shall be of the removable end, permanently embedded body type. Outer ends of the permanently embedded portions of form ties shall be at least 1 inch back from adjacent outer concrete faces.

Chamfer strips shall be placed in forms to bevel all salient edges and corners except where otherwise noted. Bevel dimensions shall be 3/4 by 3/4 inch unless otherwise indicated on the drawings.

2G.8 EMBEDMENTS. Materials that are to be embedded in the concrete shall be accurately positioned and securely anchored. Embedments shall be clean when they are installed. After installation, surfaces not in contact with concrete shall be cleaned of all concrete spatter and other foreign substances.

2G.9 PLACEMENT. Where concrete is placed against dry or porous surfaces, such surfaces shall be covered with polyethylene film to protect the concrete from loss of water. Joints in the film shall be sealed with waterproof sealing tape. Unless otherwise accepted by the Owner, all concrete in contact with earth or granular fill shall be placed against polyethylene film.

Concrete shall be conveyed to the point of final deposit and placed by methods which will prevent the separation or loss of the ingredients. During and immediately after depositing, all concrete shall be thoroughly compacted, worked around all reinforcements and embedments, and worked into the corners of the forms. Unless otherwise required, immersion type vibrators shall be used for compaction.

Concrete shall be placed within 1 hour and 30 minutes after introduction of the cement to the aggregates.

Concrete shall not be pumped through aluminum pipe or aluminum alloy pipe.

2G.9.1 Hot Weather Concreting. Except as modified herein, hot weather concreting shall comply with ACI 305. At air temperatures of 90 F or above, special procedures shall be adopted to keep the concrete as cool as possible during placement and curing. The temperature of the concrete when it is placed in the work shall not exceed 95 F.

Whenever the air temperature exceeds 95 F, membrane cured slabs shall be kept wet to promote cooling of the concrete during the curing period.

2G.9.2 Cold Weather Concreting. Except as modified herein, cold weather concreting shall comply with ACI 306. The temperature of concrete at the time of mixing shall be not less than that indicated in the following table for corresponding outdoor temperature (in shade) existing at the time of placement.

| <u>Outdoor Temperature</u> | <u>Concrete Temperature</u> |
|----------------------------|-----------------------------|
| Below 30 F | 70 F |
| Between 30 F and 45 F | 60 F |
| Above 45 F | 45 F |

forms have been removed. All concrete which is porous, honeycombed, and otherwise defective to a depth in excess of 1 inch shall be cut out and removed.

Concrete repair work shall be performed in a manner that will not interfere with thorough curing of surrounding concrete. Mortar and concrete used in repair work shall be adequately cured and shall be finished to match adjacent surfaces.

2G.14 LEAN CONCRETE. Where lean concrete is indicated on the drawings, it shall be composed of the same materials and meet the same requirements as the concrete hereinbefore specified, except that its 28 day compressive strength shall not be less than 2,000 psi and it shall not contain less than 375 pounds of cement per cubic yard.

SCANNED

MAR 11 2011

TMPA Document Control

**TEXAS MUNICIPAL POWER AGENCY
BRYAN, TEXAS**

**SITE F LANDFILL
CONSTRUCTION - PHASE I**

**SPECIFICATION 15027.71.0200
APPENDIX A**

Issued: AUG 04 1989

Appendix A is not part of the Contract Documents.

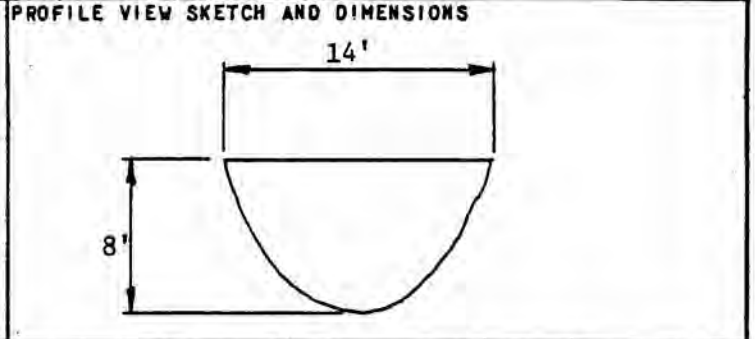
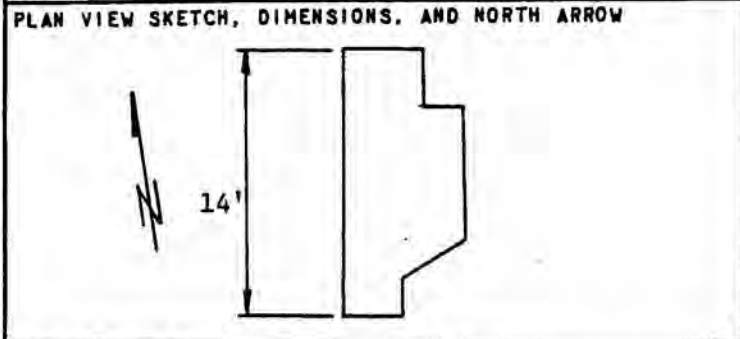
E & O TECHNICAL REFERENCE LIBRARY.

APPENDIX A

Logs of Test Pits and Boring,
and Laboratory Test Results



| | | | | |
|--|----------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek-SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N381950±E3339050± | ELEVATION (DATUM) - | TOTAL DEPTH 8.0' | DATE 2/27/89 |
| SURFACE CONDITIONS Grassy; level; moist | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



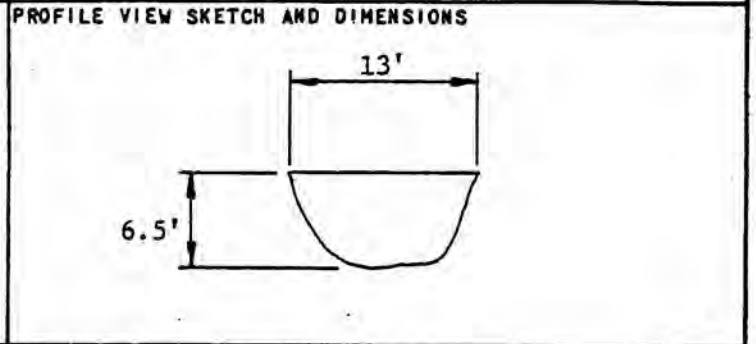
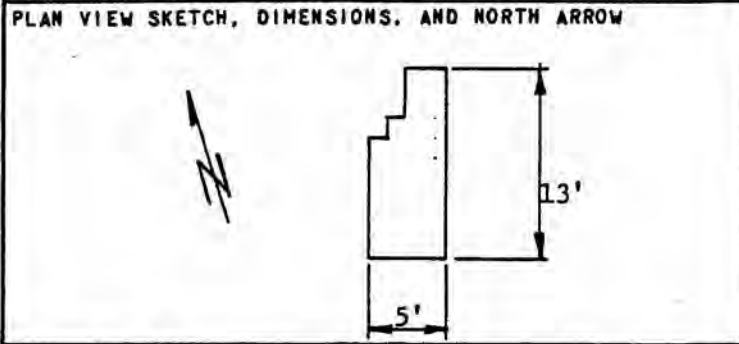
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|--|--|-------|
| | | STATION INTERVALS | | |
| | 1.0 | Silty SAND; tannish-gray; loose; poorly graded; fine grained; moist; with organics. | | |
| Bag 1 | 2.0 | Silty CLAY; reddish-brown; soft to firm; high plasticity; moist; with some organics. | | |
| Bag 3 | 2.0 | Grading to tannish-gray; moist to wet @ 1.5'. | | |
| | 3.0 | Grading to stiff to very stiff @ 2.5'; with trace sand; moist. | | |
| Bag 2 | 4.0 | With some sand lenses 1 mm to 1/8". | | |
| | 5.0 | | | |
| | 6.0 | | | |
| | 7.0 | Grading to Sandy CLAY. | | |
| | 8.0 | Bottom 8.0' | | |
| | 9.0 | | | |

REMARKS:

P-ST-026B



| | | | | |
|--|--|-----------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | | COORDINATES N381950± E3339550± | ELEVATION (DATUM) - | TOTAL DEPTH 6.5' |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



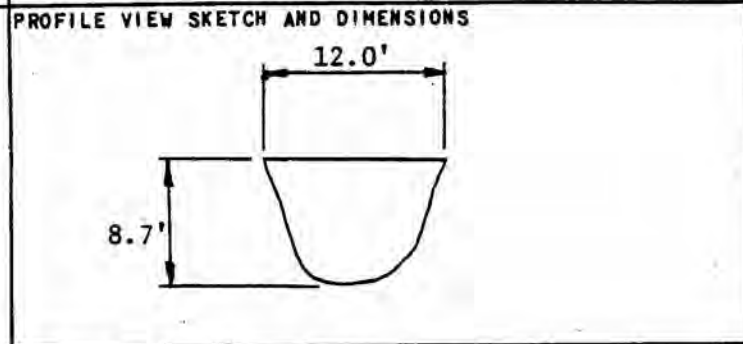
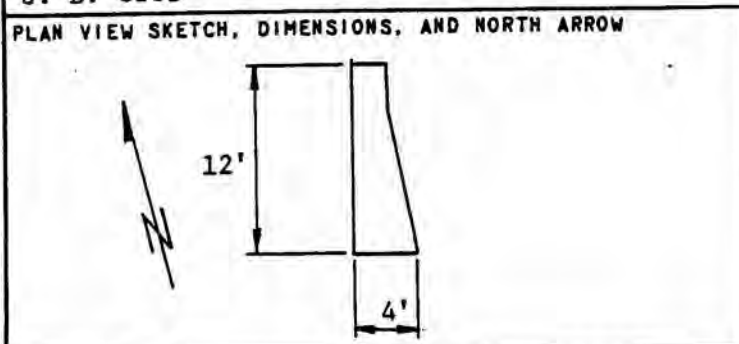
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|---|--|-------|
| | | STATION INTERVALS | | |
| Bag 1 | 1.0 | Silty SAND; tannish gray; loose; fine grained; moist; with organics. | | |
| | 2.0 | Silty CLAY; reddish brown to tannish gray; firm; high plasticity; moist to wet; with some organics; trace sand. | | |
| | 3.0 | Grading to Sandy CLAY; @ 1.5'; stiff; moist. | | |
| | 4.0 | Grading to v. stiff (claystone). | | |
| | 7.0 | Bottom 6.5' | | |

REMARKS:

P-ST-026B



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|---|-----------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N381950± E3340050± | ELEVATION (DATUM) - | TOTAL DEPTH 8.7' | DATE 2/27/89 |
| SURFACE CONDITIONS Grassy; gentle slope; moist, firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



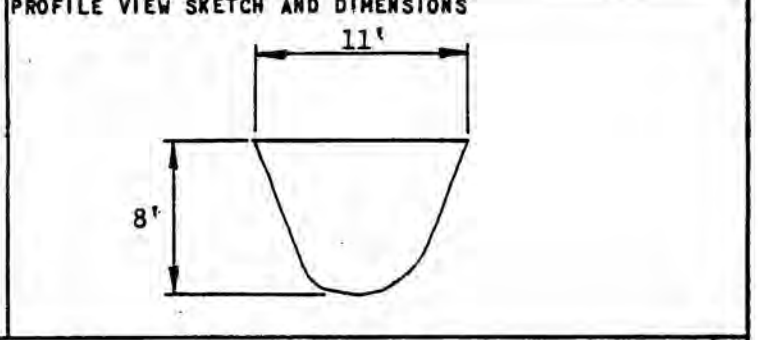
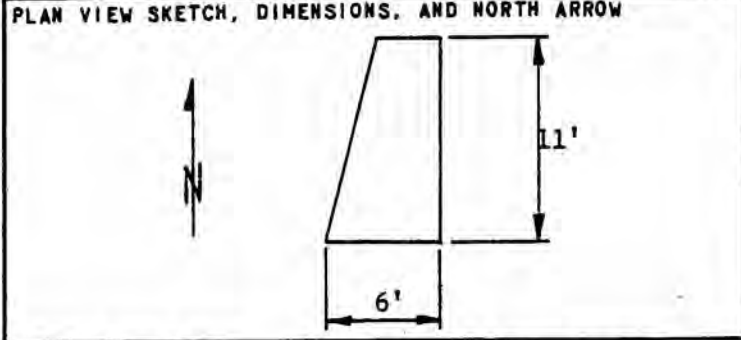
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Clayey <u>SAND</u> ; brownish-gray; loose; fine grained; moist; with organics. | |
| Bag 1 | 1.0 | Silty <u>CLAY</u> ; brownish-gray; soft to firm; high plasticity; moist to wet; with some organics. | |
| Bag 3 | 2.0 | | |
| | 3.0 | | |
| Bag 2 | 4.0 | Silty <u>CLAY</u> ; tannish-brown; stiff to very stiff; high plasticity; moist; with trace organics. | |
| | 5.0 | | |
| | 6.0 | Grading to <u>CLAY</u> ; with blocky structure; with slickensides. | |
| | 7.0 | | |
| | 8.0 | | |
| | 9.0 | Bottom 8.7' | |

REMARKS:

P-ST-026B



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|--|--|-----------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | | COORDINATES N381950± E3340550± | ELEVATION (DATUM) - | TOTAL DEPTH 8.0' |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



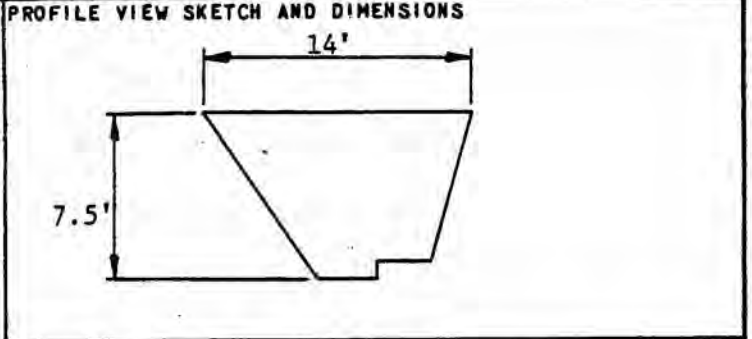
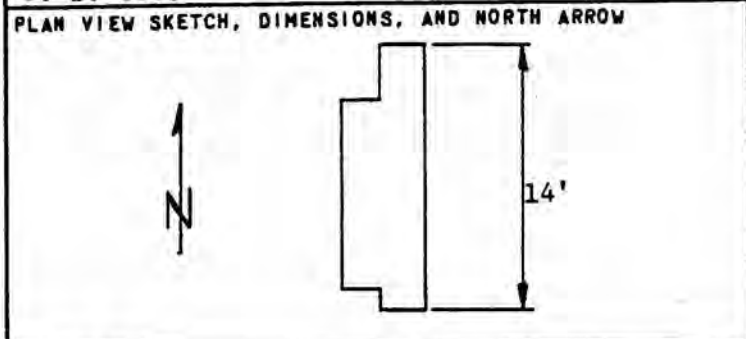
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Silty <u>SAND</u> ; brown; loose; fine grained; moist; with organics. | |
| Bag 1 | 1.0 | Silty <u>CLAY</u> ; brownish-gray; firm; high plasticity; moist; with some organics; trace sand. | |
| Bag 2 | 3.0 | Grading to Sandy <u>CLAY</u> ; tanish-gray; stiff; low plasticity; moist; some iron staining; some organics. | |
| | 5.0 | Clayey <u>SAND</u> ; dense to very dense; fine grained; poorly graded. | |
| | 8.0 | Bottom 8.0' | |

REMARKS:

P-ST-0268



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|--|-----------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382200± E3338800± | ELEVATION (DATUM) - | TOTAL DEPTH 7.5' | DATE 2/27/89 |
| SURFACE CONDITIONS Grassy; level; moist | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |

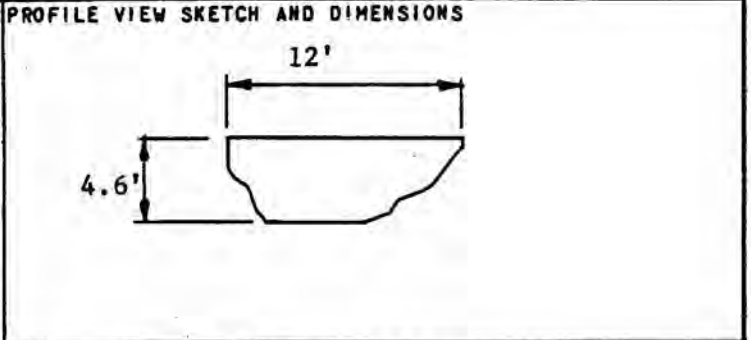
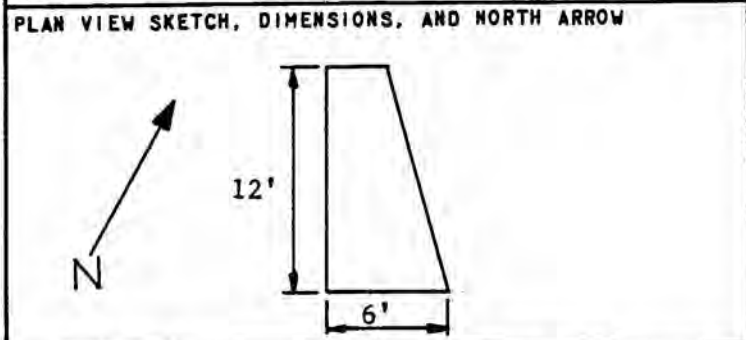


| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Silty SAND; grayish-tan; loose; fine grained; moist; trace clay; with organics | |
| | 1.0 | Silty CLAY; reddish-brown; low plasticity; firm; moist; with some organics; trace sand. | |
| Bag 1 | 2.0 | Clayey SAND; tannish-gray; dense; fine grained; moist to wet; with some organics; trace iron staining. | |
| | 3.0 | | |
| Bag 2 | 4.0 | CLAY; tannish gray with black mottling; high plasticity; very stiff; moist; with some iron staining; blocky structure; with small localized sand lense or pockets. | |
| Bag 3 | 5.0 | (Zone from 3.0' to 3.4' soft and wet) | |
| | 6.0 | | |
| | 7.0 | | |
| | 8.0 | Bottom 7.5' | |
| | 9.0 | | |
| | 10.0 | | |

REMARKS:



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|--|-----------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382200± E3339300± | ELEVATION (DATUM) | TOTAL DEPTH 4.6' | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; Level; firm; Moist | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe; Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



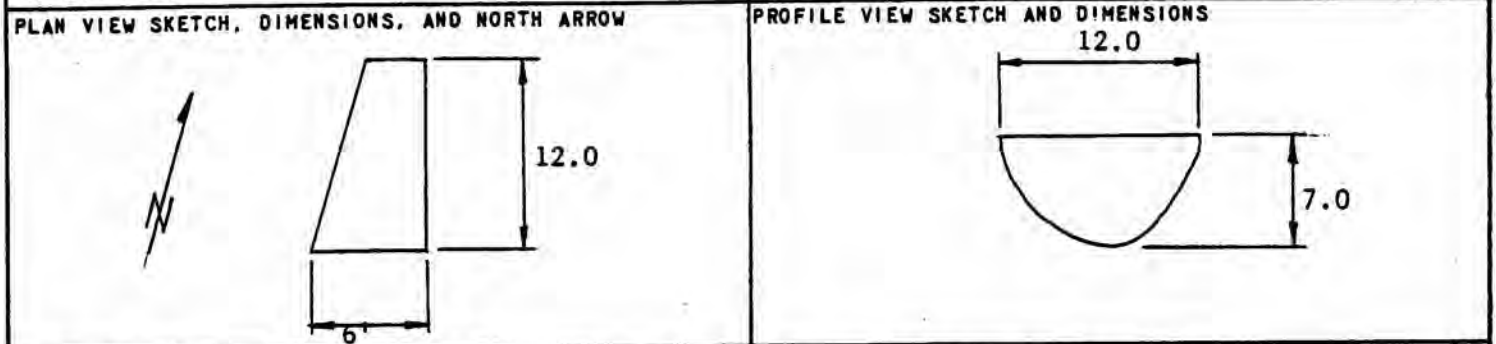
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0.0 - 1.0 | Silty SAND; grayish-brown; loose; fine grained; poorly graded; moist; organics. | |
| | 1.0 - 2.0 | Silty CLAY; reddish-brown to tannish-gray; soft to firm; high plasticity; moist with some organics. | |
| | 2.0 - 3.0 | Clayey SAND; gray-tan; dense; fine grained; poorly graded; moist; with trace organics. | |
| | 3.0 - 4.6 | SANDSTONE; grayish-tan; medium hard; slightly weathered; slightly fractured. | |
| | 4.6 - 5.0 | Bottom 4.6' | |

REMARKS:

P-ST-0268



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|--|------------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382200± E3339800 ± | ELEVATION (DATUM) | TOTAL DEPTH 7.0 |
| DATE 2/28/89 | | INSPECTOR J. D. Grob | |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | |
| METHOD OF EXCAVATION Backhoe; Cat 416 | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1.0 | Silty SAND; grayish brown; loose; fine grained; poorly graded; moist; some organics. | |
| | 2.0 | Sandy SILT; grayish brown; firm; low to medium plasticity; moist; some organics. | |
| | 3.0 | Clayey SAND; brown; very dense; fine grained; poorly graded; dry to moist; trace organics. | |
| | 4.0 | | |
| | 5.0 | | |
| | 6.0 | CLAY; tanish brown; stiff; high plasticity; moist; thin sand lenses; some iron staining; blocky structure and slickensides. | |
| | 7.0 | Bottom 7.0' | |
| | 8.0 | | |
| | 9.0 | | |

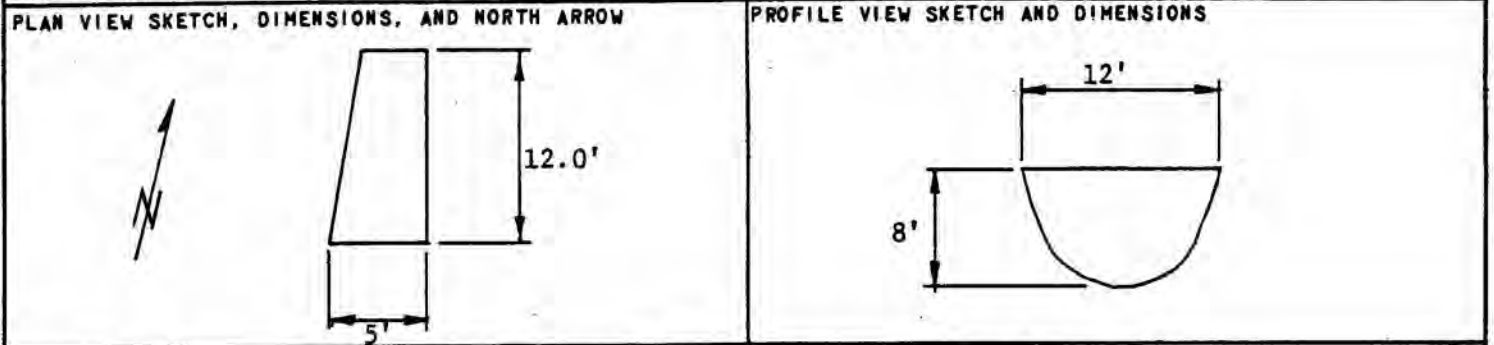
REMARKS:

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|--|-----------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382200± E3340300± | ELEVATION (DATUM) - | TOTAL DEPTH 8.0' | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |

| | |
|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
|--------------------------|------------------------------|



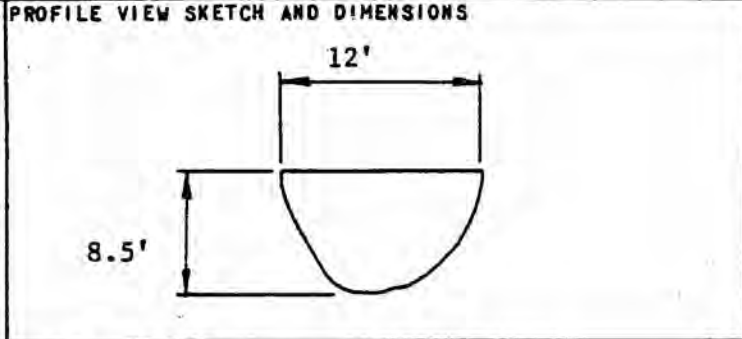
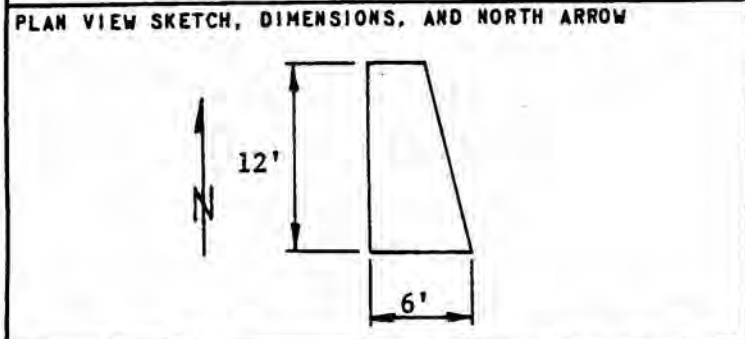
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | | Silty SAND; grayish-brown; loose; fine grained; poorly graded; moist; organics. | |
| | 1.0 | Silty <u>CLAY</u> ; reddish brown with gray mottling; firm; high plasticity; moist; with some organics; trace sand. | |
| Bag 1 | 2.0 | Grading to gray with yellow mottling; with some sand. | |
| | 3.0 | Grading to <u>CLAY</u> ; tannish-brown; stiff; high plasticity; moist with thin sand lenses. | |
| | 4.0 | | |
| | 5.0 | | |
| | 6.0 | | |
| | 7.0 | | |
| | 8.0 | Bottom 8.0' | |
| | 9.0 | | |
| | 10.0 | | |

REMARKS:

P-ST-026B



| | | | | |
|--|---|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382450 ⁺ E3339550 ⁺ | ELEVATION (DATUM) _____ | TOTAL DEPTH 8.5' | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; Level; Moist; Firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe; Cat 416 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | | |



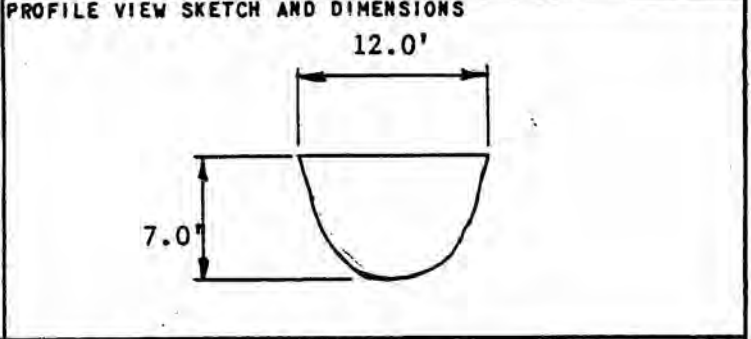
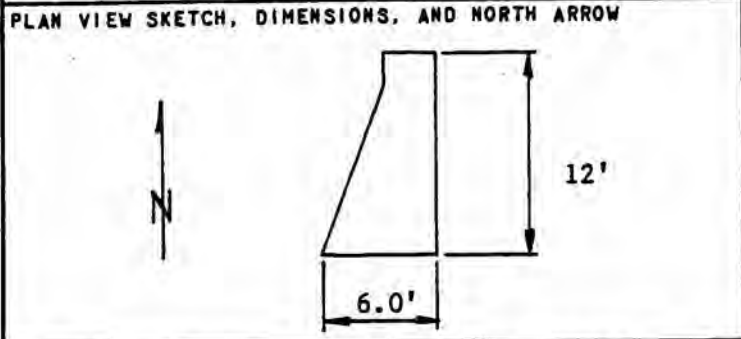
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|--|--|-------|
| | | STATION INTERVALS | | |
| | 1.0 | Silty SAND; grayish-brown; loose; fine grained; poorly graded; moist; with some organics. | | |
| Bag 1 | 2.0 | CLAY; greenish-gray with reddish mottling; firm; high plasticity; moist; with some organics; trace sand. | | |
| Bag 3 | 3.0 | Grading to tannish-brown. | | |
| Bag 2 | 4.0 | | | |
| | 5.0 | | | |
| | 6.0 | | | |
| | 7.0 | | | |
| | 8.0 | | | |
| | 9.0 | Bottom 8.5' | | |
| | 10.0 | | | |

REMARKS:

P-ST-026B



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|--|---|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382450 ⁻ E3340050 ⁺ | ELEVATION (DATUM) _____ | TOTAL DEPTH 7.0' | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; Level; Moist; Firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe; Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L.J. Almaleh | |

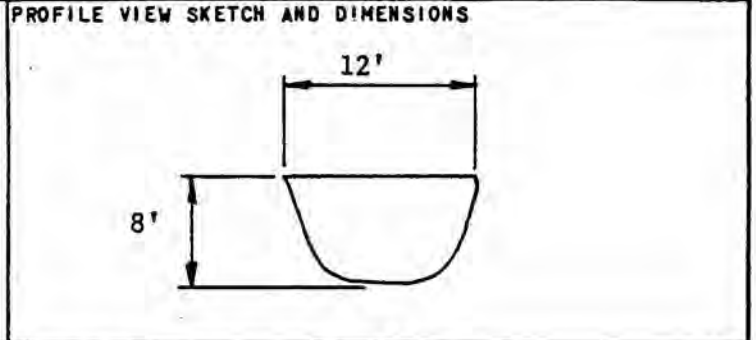
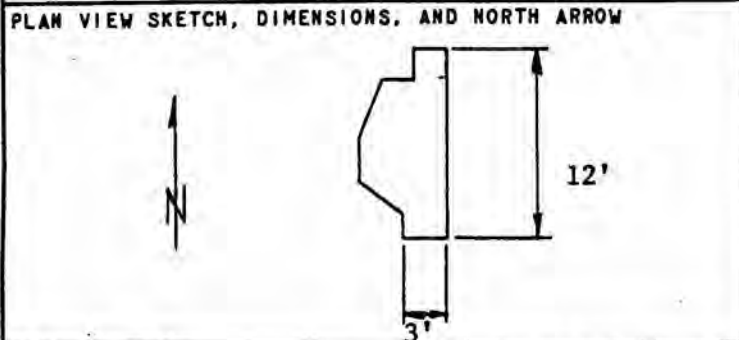


| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Silty <u>SAND</u> ; grayish brown; loose; fine grained; poorly graded; moist; organics. | |
| Bag 1 | 1.0 | Silty <u>CLAY</u> ; greenish-gray with reddish-brown mottling; soft to firm; high plasticity; moist; with trace organics; with trace sand. | |
| | 2.0 | | |
| | 3.0 | | |
| | 4.0 | <u>CLAY</u> ; tannish-brown; firm to stiff; with thin sand lenses (2 mm to 10 mm) on 10"-20" spacings. | |
| | 5.0 | | |
| | 6.0 | | |
| | 7.0 | | |
| | | Bottom 7.0' | |
| | 8.0 | | |
| | 9.0 | | |
| | 10.0 | | |

REMARKS:



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|--|-----------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382450- E3340550± | ELEVATION (DATUM) ----- | TOTAL DEPTH 8.0' |
| SURFACE CONDITIONS Grassy; Level; Moist; Firm | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe; Cat 416 | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | |



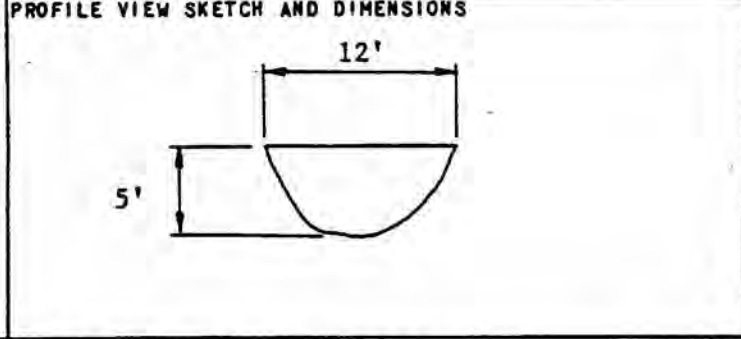
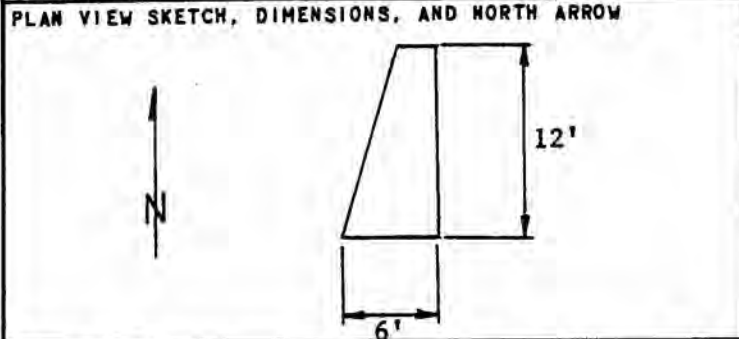
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|---|--|-------|
| | | STATION INTERVALS | | |
| Bag 1 | 0.0 - 1.0 | Silty <u>SAND</u> ; brownish-gray; loose; poorly graded; fine grained; moist; with organics. | | |
| | 1.0 - 2.0 | Silty <u>CLAY</u> ; reddish-brown; firm; high plasticity; moist; with some organics. | | |
| | 2.0 - 3.0 | Grading to Sandy <u>CLAY</u> ; tannish-gray; firm; medium to low plasticity; moist to wet; some organics. | | |
| | 3.0 - 8.0 | Clayey <u>SAND</u> ; tannish-gray; very dense; fine graded; weakly cemented. | | |
| | 8.0 | Bottom 8.0' | | |

REMARKS:



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|--|-----------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382700+ E3338800+ | ELEVATION (DATUM) — | TOTAL DEPTH 5.0 | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy, level, firm, moist | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |

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| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
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| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 0.0 | Silty <u>SAND</u> ; grayish brown; loose; fine grained; poorly graded; moist; some organics. | |
| | 1.0 | <u>CLAY</u> ; greenish-brown; firm; high plasticity; moist; some organics. | |
| | 2.0 | grading to silty <u>CLAY</u> at 1.5'; trace fine sand. | |
| | 3.0 | grading to Sandy <u>CLAY</u> at 2.5'. | |
| | 4.0 | Clayey <u>SAND</u> ; dense; fine grained; poorly graded; moist. | |
| | 5.0 | grading to very dense; weakly cemented. | |
| | 5.0 | Bottom 5.0' | |
| | 6.0 | | |
| | 7.0 | | |
| | 8.0 | | |
| | 9.0 | | |

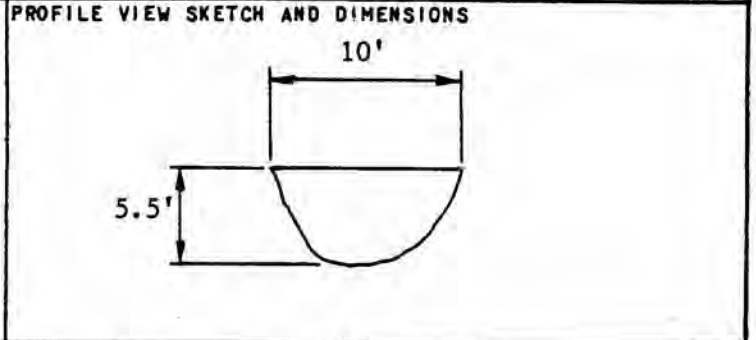
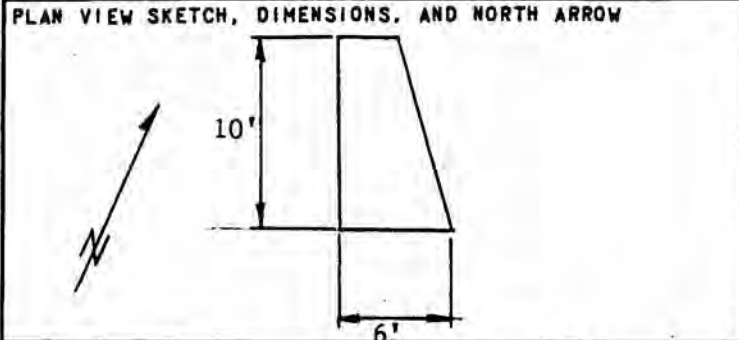
REMARKS:

P-ST-026B



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|--|-----------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382700+ E3339300+ | ELEVATION (DATUM) -- | TOTAL DEPTH 5.5 | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |

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| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
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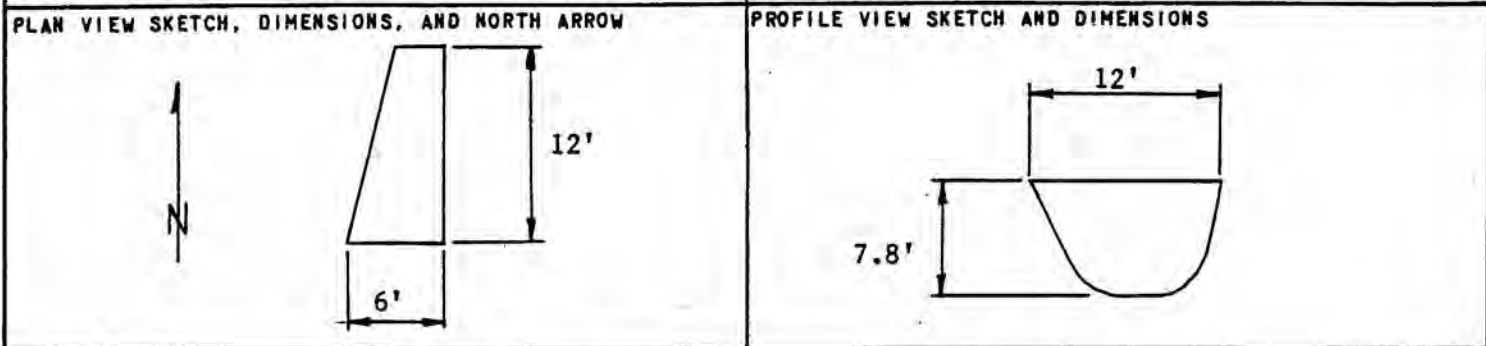
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0.0 - 1.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; some organics. | |
| | 1.0 - 2.0 | Silty CLAY; reddish-brown; firm; moist; some organics. | |
| | 2.0 - 3.0 | Grading to brown. | |
| | 3.0 - 4.0 | | |
| | 4.0 - 5.0 | Clayey SAND; tannish-brown; dense; fine grained; poorly graded; trace organics trace iron staining. | |
| | 5.0 - 6.0 | | |
| | 6.0 - 10.0 | Bottom 5.5' | |

REMARKS:

P-ST-0268



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|--|-----------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382700- E3339800+ | ELEVATION (DATUM) ----- | TOTAL DEPTH 7.8' | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; Level; Moist; Firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe; Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



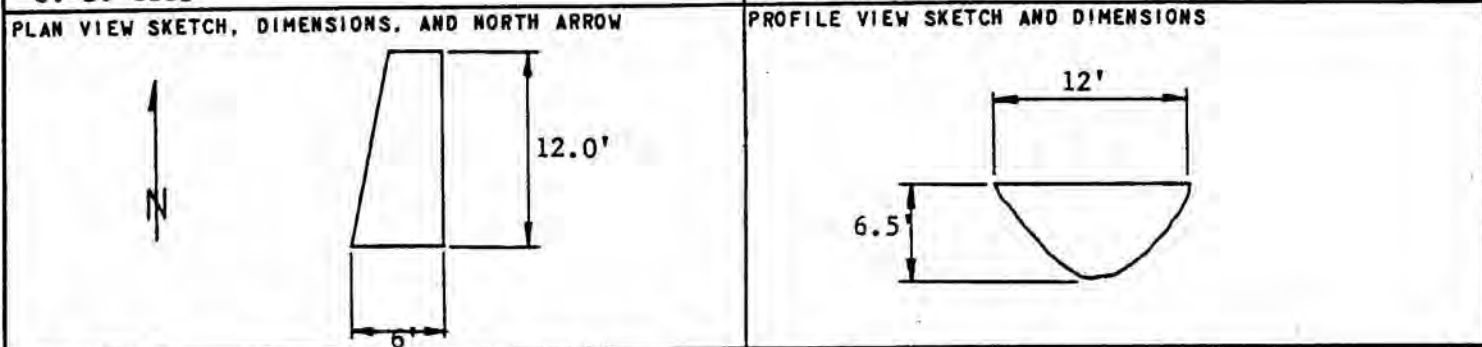
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|---|--|------------|
| | | STATION INTERVALS | | |
| Bag 1 | 0.0 - 1.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; with some organics | | 0.0 - 1.0 |
| | 1.0 - 2.0 | Silty CLAY; reddish-brown; firm; high plasticity; moist; with some organics; grading to CLAY; gray; trace silt; soft; moist to wet. | | 1.0 - 2.0 |
| | 2.0 - 7.8 | Grading to grayish-tan; stiff; moist; trace organics; with blocky structure and slickensides. | | 2.0 - 7.8 |
| | 7.8 - 8.0 | Bottom 7.8' | | 7.8 - 8.0 |
| | 8.0 - 9.0 | | | 8.0 - 9.0 |
| | 9.0 - 10.0 | | | 9.0 - 10.0 |

REMARKS:

P-ST-026B



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|--|-------------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382700 + E3340300 + | ELEVATION (DATUM) -- | TOTAL DEPTH 6.5 | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 0.0 - 1.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; some organics. | |
| | 1.0 - 2.0 | Silty CLAY; reddish-brown with gray mottling; soft to firm; high plasticity; moist; some organics; trace stone gravel. | |
| | 2.0 - 4.0 | Clayey SAND; gray; very dense; fine grained; poorly graded; moist; with clay laminations 0.1" to 2" thick on 0.5" to 3" spacings to bottom of pit. | |
| | 4.0 - 6.5 | With sand weakly cemented. | |
| | 6.5 - 7.0 | Bottom 6.5' | |
| | 7.0 - 8.0 | | |
| | 8.0 - 9.0 | | |
| | 9.0 - 10.0 | | |

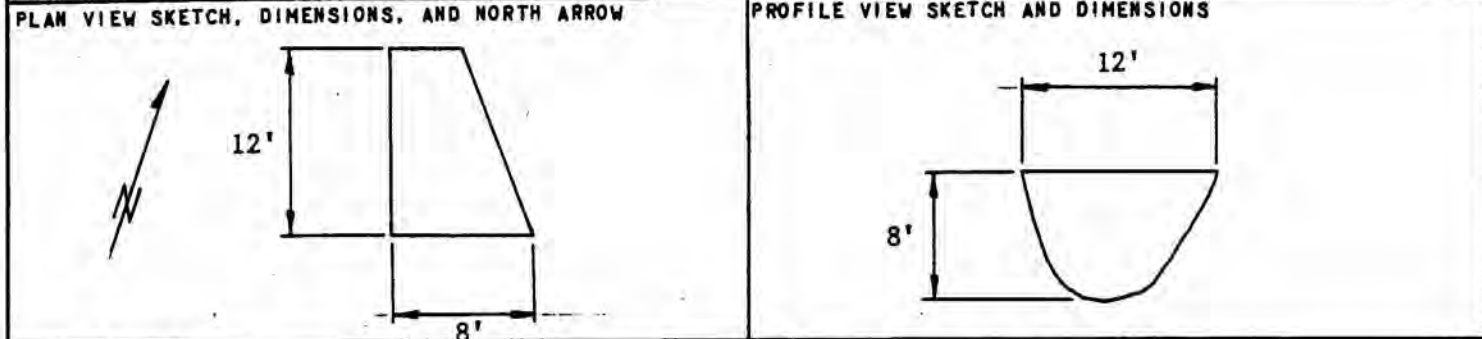
REMARKS:

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| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382950+ E3339550 | ELEVATION (DATUM) -- | TOTAL DEPTH 8.0 | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |

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|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
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| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| Bag 1 | 0.0 - 1.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; with organics. | |
| | 1.0 - 2.0 | Silty CLAY; greenish brown; firm; high plasticity; moist; with some organics. | |
| | 2.0 - 4.0 | | |
| | 4.0 - 5.0 | Grading to CLAY; tannish-brown; stiff; high plasticity; moist; with trace organics; with thin sand lenses @ 5.0'-6.0'; with trace iron staining. | |
| | 5.0 - 7.0 | With green mottling. | |
| | 8.0 | Bottom 8.0' | |
| | 9.0 | | |
| | 10.0 | | |

REMARKS:

P-ST-026B



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|--|-----------------------------------|------------------------------|--------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382950+ E3340050+ | ELEVATION (DATUM) — | TOTAL DEPTH 8.0 | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | INSPECTOR J. D. Grob | | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |

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| CHECKED BY J. D. Grob | APPROVED BY I. J. Almaleh |
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | PROFILE VIEW SKETCH AND DIMENSIONS |

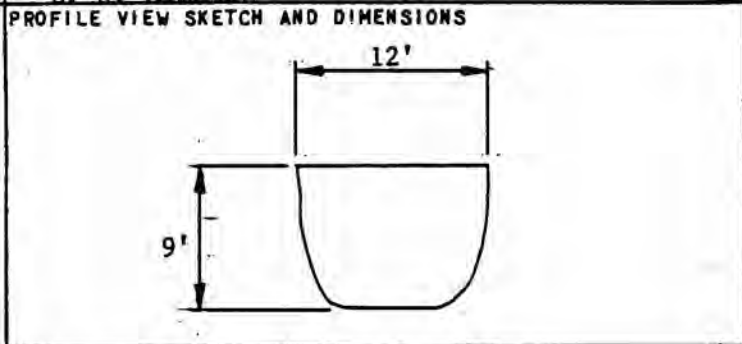
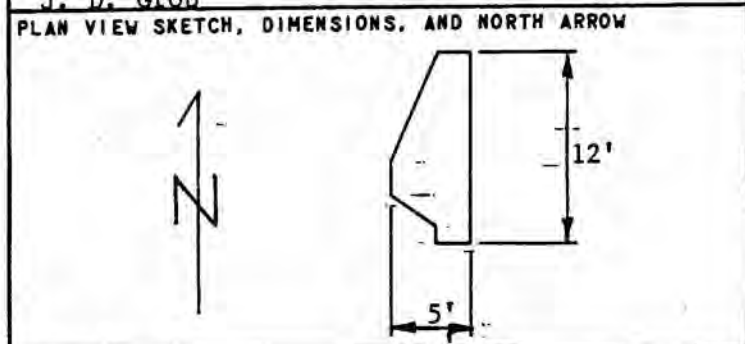
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| Bag 1 | 0.0 - 1.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; with organics. | |
| | 1.0 - 2.0 | Silty CLAY; reddish-brown; soft to firm; high plasticity; moist; with some organics. | |
| | 2.0 - 3.0 | | |
| | 3.0 - 4.0 | Grading to CLAY; tannish-brown; stiff; high plasticity; moist; with trace organics; trace iron staining; blocky structure and slickensides. | |
| | 4.0 - 5.0 | | |
| | 5.0 - 6.0 | | |
| | 6.0 - 7.0 | | |
| | 7.0 - 8.0 | With green mottling. | |
| | 8.0 - 10.0 | Bottom 8.0' | |

REMARKS:

P-ST-026B



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|--|-----------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382950+ E3340550+ | ELEVATION (DATUM) — | TOTAL DEPTH 9.0 | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0.0 - 1.0 | Silty SAND; grayish-brown; loose; fine grained; poorly graded; moist; organics. | |
| Bag 1 | 1.0 - 2.0 | Silty CLAY; reddish-brown to tannish-brown; firm; high plasticity; moist to wet; trace sand. | |
| Bag 3 | 2.0 - 3.0 | SAND; light gray; medium dense; fine grained; poorly graded; moist; trace organics. | |
| | 3.0 - 4.0 | CLAY; tannish-brown; very stiff; high plasticity; moist; blocky structure; slickensides; with thin sand lenses, 2mm to 10 mm thick on 2" to 12" spacings. | |
| Bag 2 | 4.0 - 9.0 | | |
| | 9.0 - 10.0 | Bottom 9.0' | |

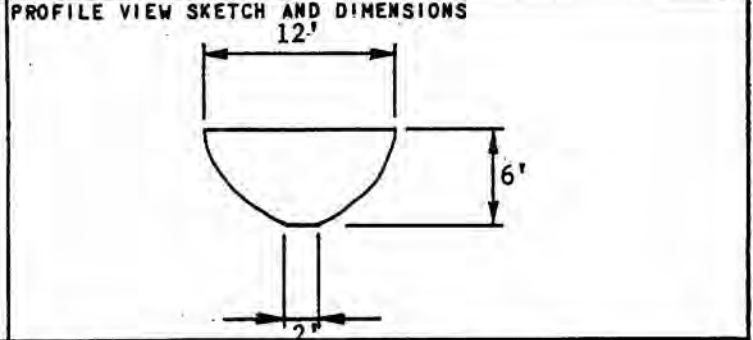
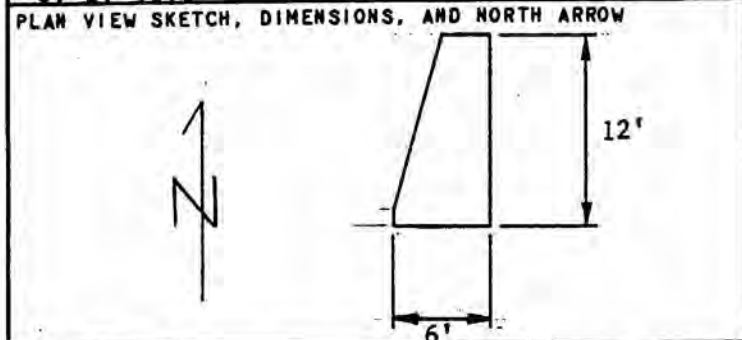
REMARKS:

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| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383200 + E3338800 + | ELEVATION (DATUM) — | TOTAL DEPTH 6.0' | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | INSPECTOR J. D. Grob | | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |

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| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
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| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Silty <u>SAND</u> ; grayish-brown; loose; fine grained; poorly graded; moist; with organics. | |
| | 1.0 | Sandy Silty <u>CLAY</u> ; grayish-brown; firm; medium plasticity; moist to wet; some organics. | |
| | 2.0 | | |
| | 3.0 | Grading to stiff at 3.8'. Grading to Sandy <u>CLAY</u> ; tannish-gray; very stiff; moist; with fine grained sand. | |
| | 4.0 | | |
| | 5.0 | | |
| | 6.0 | Bottom 6.0' | |
| | 7.0 | | |
| | 8.0 | | |
| | 9.0 | | |

REMARKS:

P-ST-0268



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| CLIENT Texas Municipal Power Agency | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
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|--|-----------------------------------|--------------------------|--------------------|----------------|
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383200+ E3339300+ | ELEVATION (DATUM) --- | TOTAL DEPTH 3.3 | DATE 3/1/89 |
|--|-----------------------------------|--------------------------|--------------------|----------------|

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| SURFACE CONDITIONS Grassy; level; moist; firm | INSPECTOR J. D. Grob |
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| METHOD OF EXCAVATION Backhoe, Cat 416 |
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| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
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| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | PROFILE VIEW SKETCH AND DIMENSIONS |
|---|------------------------------------|

| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0.0 - 1.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; with some organics. | |
| | 1.0 - 2.0 | Sandy CLAY; brown; firm; medium plasticity; moist; with some organics. | |
| | 2.0 - 3.0 | SANDSTONE; tannish-gray; highly fractured; highly weathered. | |
| | 3.0 - 3.3 | Bottom 3.3' | |

REMARKS:

P-ST-026B



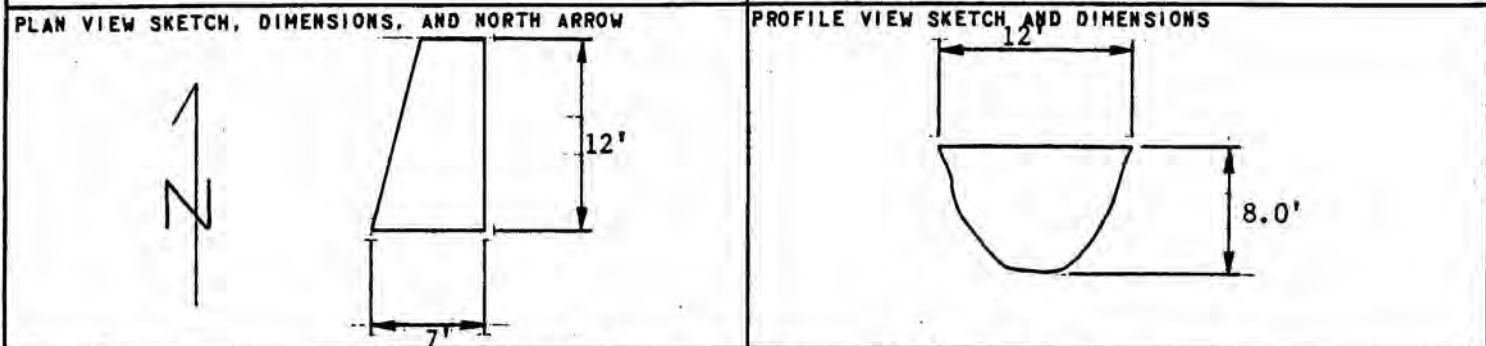
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| CLIENT Texas Municipal Power Agency | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
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|--|-----------------------------------|------------------------|--------------------|----------------|
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383200+ E3339800+ | ELEVATION (DATUM) — | TOTAL DEPTH 8.0 | DATE 3/1/89 |
|--|-----------------------------------|------------------------|--------------------|----------------|

| | |
|--|-------------------------|
| SURFACE CONDITIONS Grassy; level; moist; firm | INSPECTOR J. D. Grob |
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METHOD OF EXCAVATION
Backhoe, Cat 416

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|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
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| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Silty SAND; grayish-brown; loose; fine grained; poorly graded; moist; organics. | |
| | 1.0 | Silty CLAY; brown; firm; highly plasticity; moist; with some organics. | |
| Bag 1 | 2.0 | Grading to CLAY; blackish-brown; soft; moist to wet; with some organics; trace silt. | |
| | 3.0 | | |
| | 4.0 | | |
| | 5.0 | | |
| | 6.0 | | |
| | 7.0 | | |
| | 8.0 | | |
| | | Bottom 8.0' | |
| | 9.0 | | |
| | 10.0 | | |

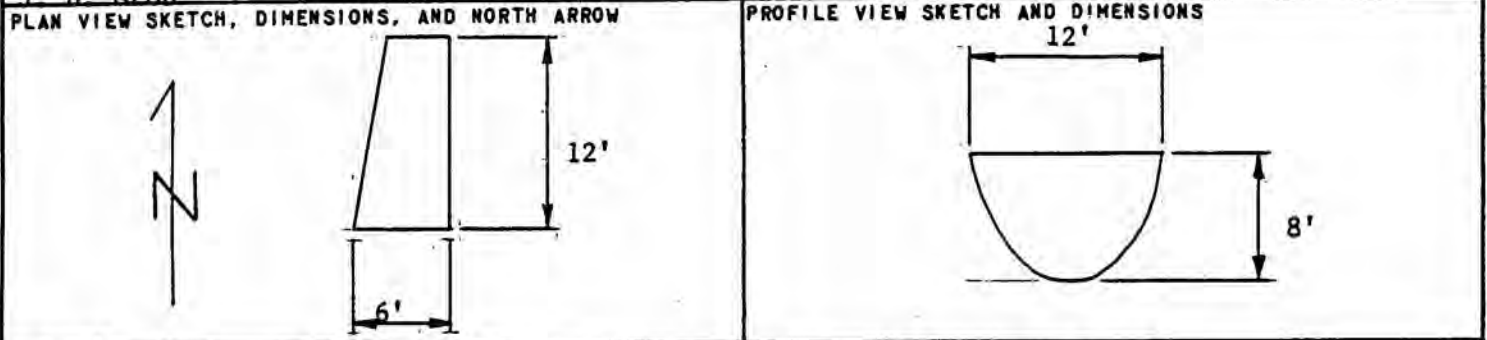
REMARKS:

P-ST-026B



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|--|---|------------------------------|---------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383200 ⁺ E3340300 ⁺ | ELEVATION (DATUM) | TOTAL DEPTH 8.0' | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy, Level, Moist, Firm | | INSPECTOR J. D. Grob | | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |

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| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
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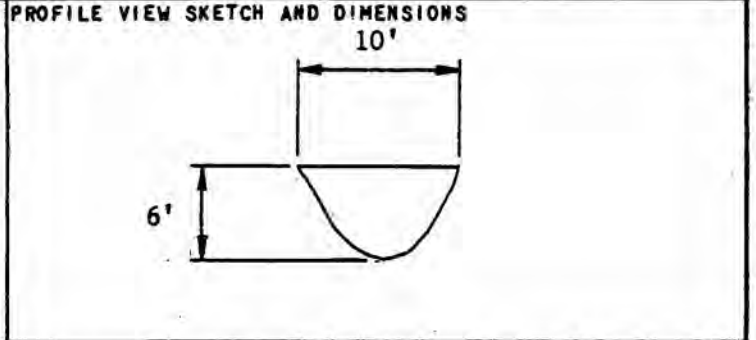
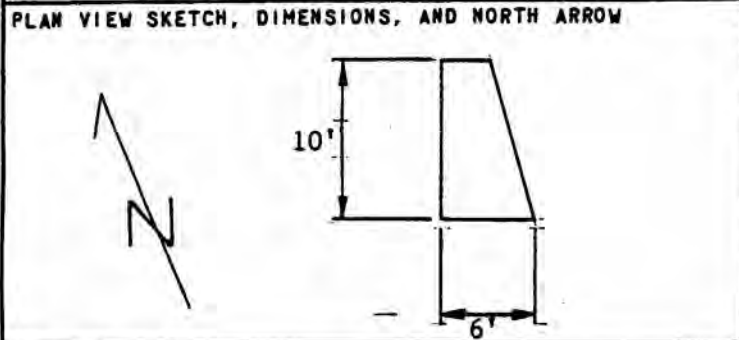


| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0.0 - 1.0 | Silty SAND; grayish-brown; loose; fine grained; poorly graded; moist; organics. | |
| | 1.0 - 2.0 | Silty CLAY; reddish-brown; soft to firm; high plasticity; moist to wet; with some organics. | |
| | 2.0 - 3.0 | Grading to grayish-brown. | |
| | 3.0 - 6.0 | CLAY; tannish-brown; stiff; high plasticity; moist; with blocky structure and slickensides; trace coarse sand; trace organics; trace iron staining. | |
| | 6.0 - 8.0 | With green mottling. | |
| | 8.0 - 9.0 | Bottom 8.0' | |

REMARKS:



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|--|-----------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383450 + E3339550 | ELEVATION (DATUM) — | TOTAL DEPTH 6.0' | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0.0 | Silty SAND: brown; loose; fine grained; poorly graded; moist; with some organics. | |
| | 1.0 | Silty CLAY: reddish-brown; firm; high plasticity; moist; with some organics. | |
| | 2.0 | Grading to gray; with trace sand. | |
| | 3.0 | Clayey SAND: dense; fine grained; poorly graded; moist. | |
| | 4.0 | Grading to weakly cemented. | |
| | 5.0 | | |
| | 6.0 | Bottom 6.0' | |
| | 7.0 | | |
| | 8.0 | | |
| | 9.0 | | |
| | 10.0 | | |

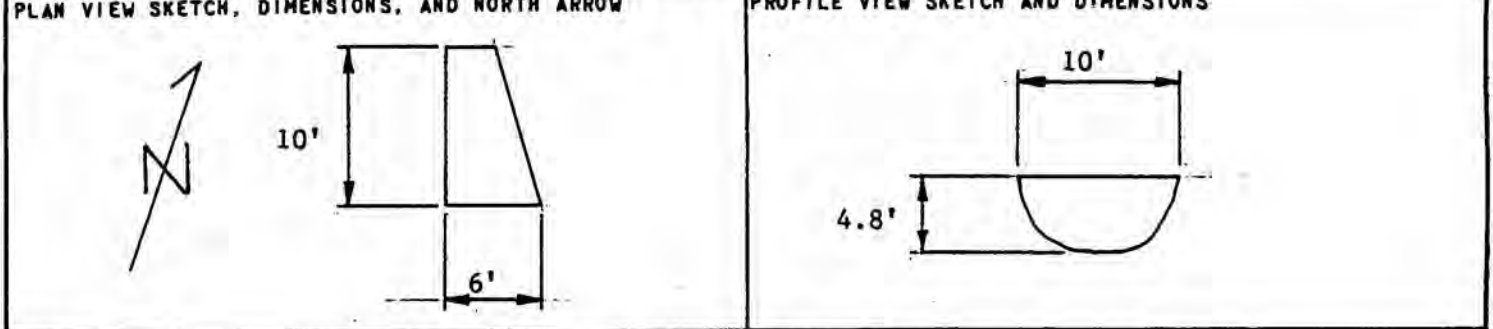
REMARKS:



| | | | | |
|--|---|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383450 ⁺ E3340050 ⁺ | ELEVATION (DATUM) | TOTAL DEPTH 4.8' | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; Level; Moist; Firm | | | INSPECTOR J. D. Grob | |

METHOD OF EXCAVATION
Backhoe; Cat 416

| | |
|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY I. J. Almalah |
|--------------------------|------------------------------|



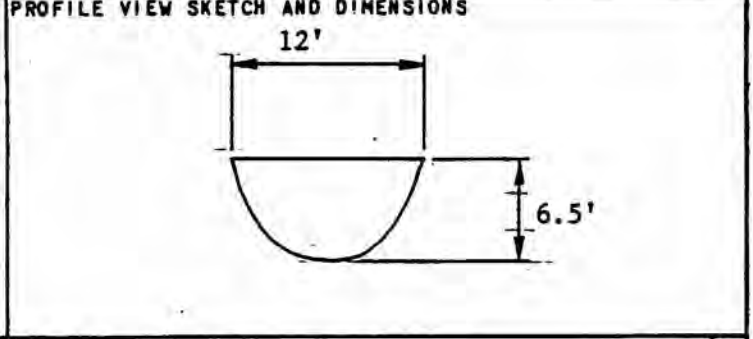
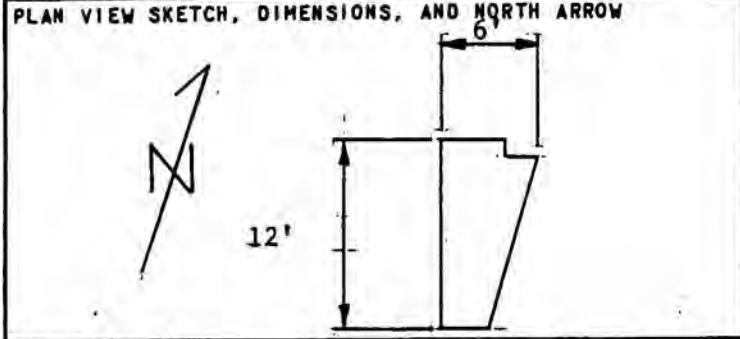
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| Bag 1 | 0.0 - 1.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; with some organics. | |
| | 1.0 - 2.0 | Silty CLAY; blackish-brown; firm; high plasticity; moist; with some organics. | |
| | 2.0 - 4.0 | Grading to very stiff. | |
| | 4.0 - 5.0 | Silty SAND; tannish-gray; very dense; fine grained; poorly graded; moist grading to weakly cemented. | |
| | 5.0 - 4.8 | Bottom 4.8' | |

REMARKS:

P-ST-0268



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|--|---|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383450 ⁺ E3340550 ⁺ | ELEVATION (DATUM) | TOTAL DEPTH 6.5 | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; Sloping; Moist; Firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe; Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |

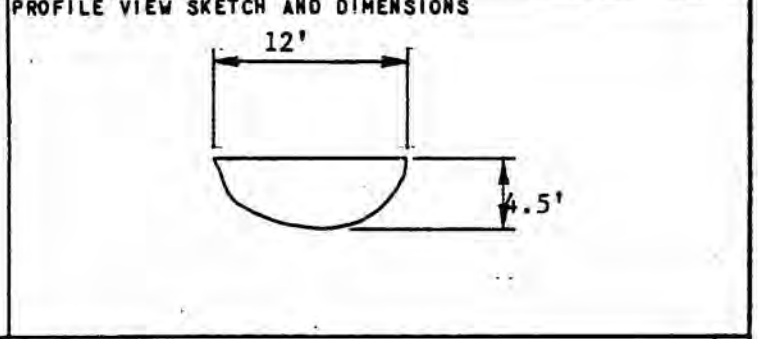
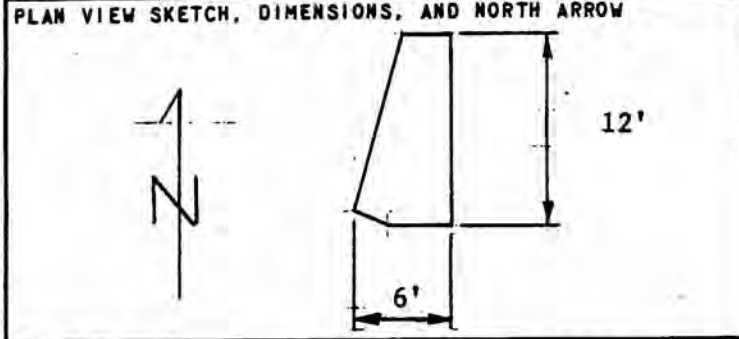


| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|---|--|-------|
| | | STATION INTERVALS | | |
| Bag 1 | 0.0 - 1.0 | Clayey SAND; grayish-brown; loose; fine grained; poorly graded; moist; organics. | | |
| | 1.0 - 2.0 | Silty CLAY; reddish-brown; firm to stiff; medium to high plasticity; moist; with some organics. | | |
| | 2.0 - 3.0 | Clayey SAND; brownish-gray; very dense; fine grained; moist; weakly cemented. | | |
| | 3.0 - 6.5 | Bottom 6.5' | | |
| | 6.5 - 7.0 | | | |
| | 7.0 - 8.0 | | | |
| | 8.0 - 9.0 | | | |
| | 9.0 - 10.0 | | | |

REMARKS:



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|--|-----------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383700- E3338800± | ELEVATION (DATUM) ----- | TOTAL DEPTH 4.5' | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; Level; Moist; Firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe; Cat 416 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | | |



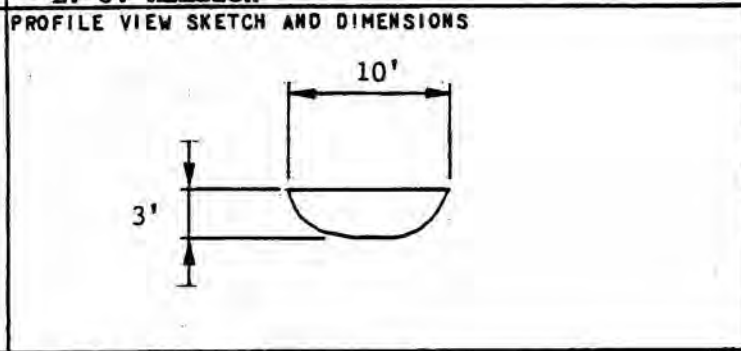
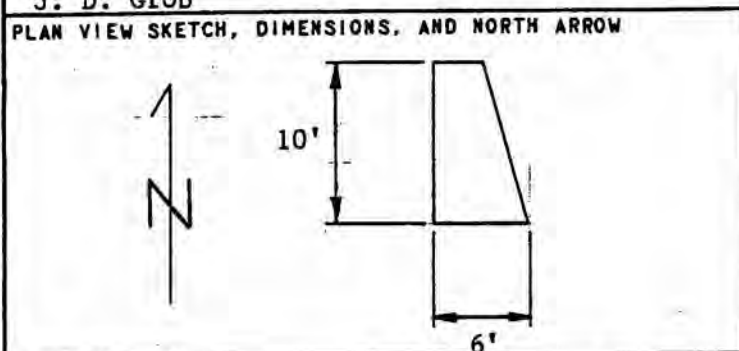
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| Bag 1 | 1.0 | Silty SAND; grayish-brown; loose; poorly graded; fine grained; moist; organics | |
| | 1.0 | CLAY; greenish-brown; soft to firm; high plasticity; moist; with some organics | |
| | 2.0 | Grading to Silty CLAY; tannish-brown. | |
| | 3.0 | Clayey SAND; tan; very dense; fine grained; moist; weakly cemented. | |
| | 4.0 | SANDSTONE; tan; moderately weathered; slightly fractured. | |
| | 5.0 | Bottom 4.5' | |

REMARKS:

P-ST-0268



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|--|-------------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383700 + E3339300 + | ELEVATION (DATUM) -- | TOTAL DEPTH 3.0' | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | | |



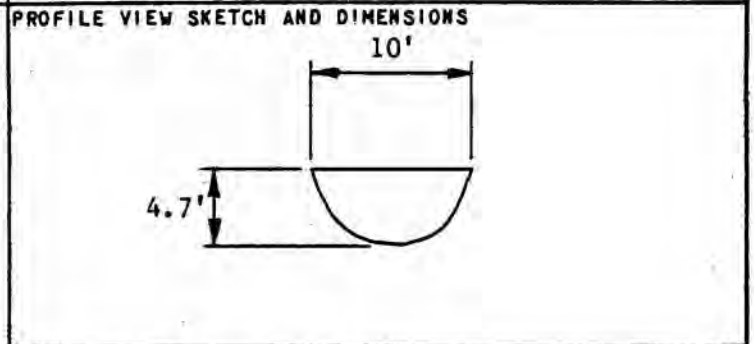
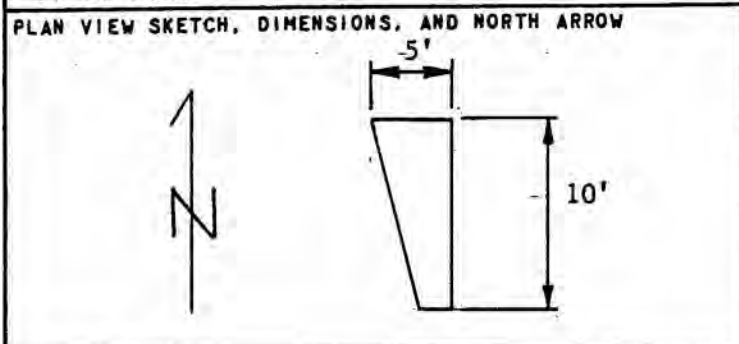
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1.0 | Silty <u>SAND</u> ; brown; loose; fine grained; poorly graded; moist; with some organics. | |
| | 2.0 | Silty <u>CLAY</u> ; brown; firm; high plasticity; moist; with some organics. | |
| | 3.0 | <u>SANDSTONE</u> ; tannish-gray; highly fracture; highly weathered; grading to slightly fractured at 2.5'. | |
| | 4.0 | Bottom 3.0' | |
| | 5.0 | | |
| | 6.0 | | |
| | 7.0 | | |

REMARKS:

P-ST-0268



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|--|-------------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383700 + E3339800 + | ELEVATION (DATUM) -- | TOTAL DEPTH 4.7 | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Car 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |

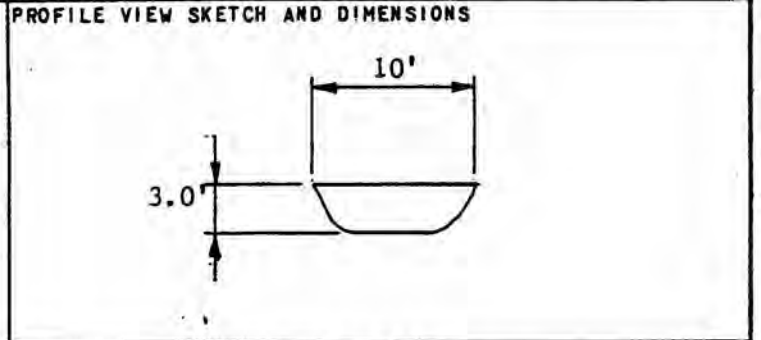
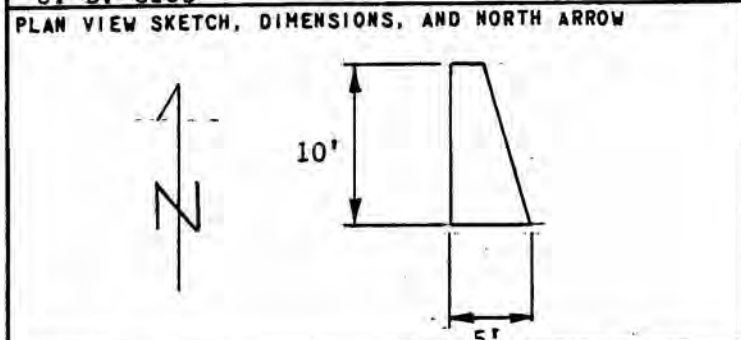


| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|---|--|-------|
| | | STATION INTERVALS | | |
| | 1.0 | Silty <u>SAND</u> : brownish-gray; loose; fine grained; poorly graded; moist; with some organics. | | |
| | 2.0 | Silty <u>CLAY</u> : brownish-gray; firm; high plasticity; moist; with trace sand; with some organics. | | |
| | 3.0 | Grading to sandy <u>CLAY</u> ; tannish-gray. | | |
| | 4.0 | Grading to reddish-brown. | | |
| | 5.0 | <u>SANDSTONE</u> : yellowish brown; highly weathered; highly fractured. | | |
| | 6.0 | Bottom 4.7' | | |

REMARKS:



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|--|-------------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383950 + E3339550 + | ELEVATION (DATUM) --- | TOTAL DEPTH 3.0 | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1.0 | Silty <u>SAND</u> : brown; loose; fined grained; poorly graded; moist; with some organics. | |
| | 2.0 | Grading to clayey <u>SAND</u> . | |
| | 3.0 | <u>SANDSTONE</u> ; tannish-gray; highly fractured; highly weathered; grading to slightly fractured; slightly weathered. | |
| | 4.0 | Bottom 3.0' | |

REMARKS:

P-ST-0268



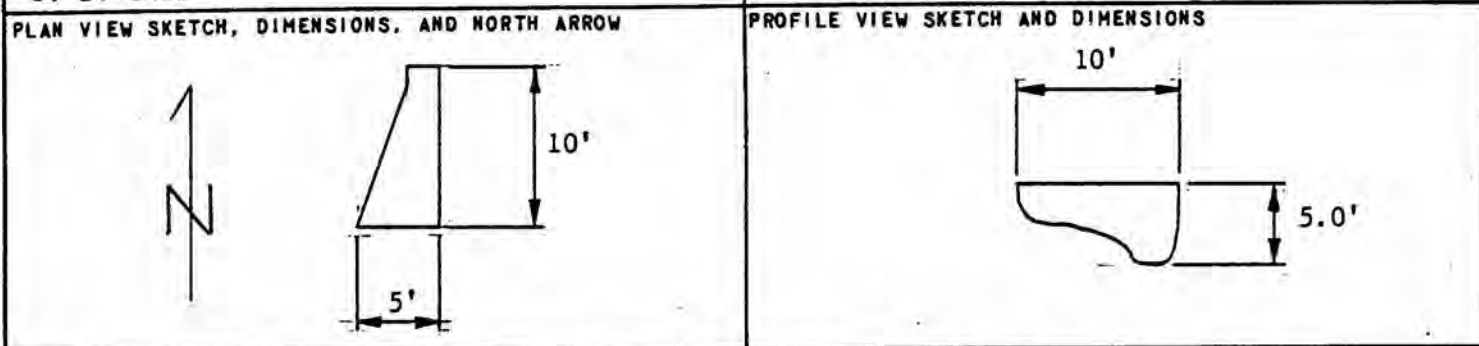
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| CLIENT Texas Municipal Power Agency | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
|--|------------------------------|----------------------|

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|--|-------------------------------------|------------------------|--------------------|-----------------|
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383950 ± E3340550 ± | ELEVATION (DATUM) — | TOTAL DEPTH 5.0 | DATE 2/28/89 |
|--|-------------------------------------|------------------------|--------------------|-----------------|

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|--|-------------------------|
| SURFACE CONDITIONS Grassy; level; moist; firm | INSPECTOR J. D. Grob |
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METHOD OF EXCAVATION
Backhoe, Cat 416

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|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
|--------------------------|------------------------------|



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1.0 | Clayey SAND; grayish-brown; loose; fine grained; poorly graded; moist to wet; with organics. | |
| | 2.0 | SANDSTONE; grayish-tan; hard; highly weathered; highly fractured; grading to slightly fractured. | |
| | 5.0 | Bottom 5.0' | |

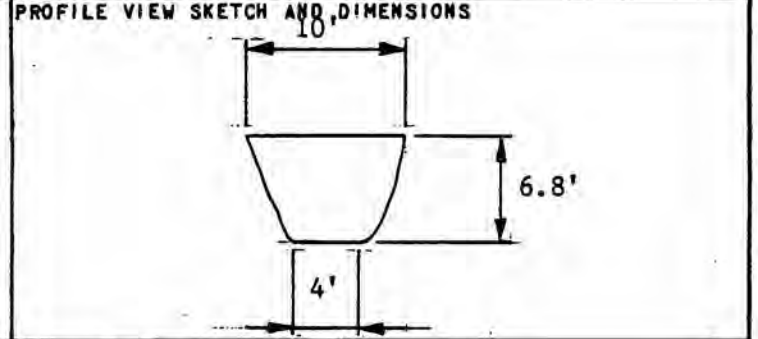
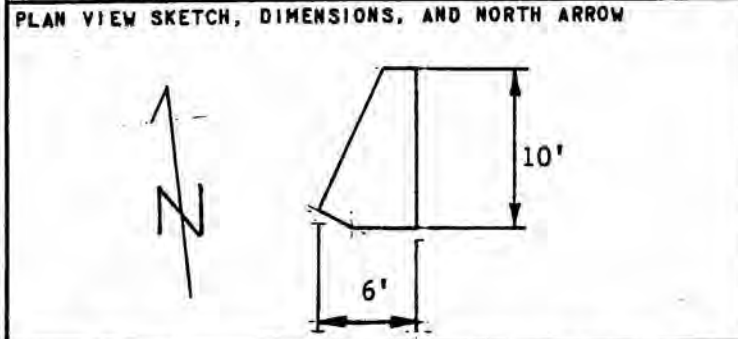
REMARKS:

P-ST-0268



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|--|-----------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N384200+ E3338800+ | ELEVATION (DATUM) -- | TOTAL DEPTH 6.8' | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe; Cat 416 | | | | |

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|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
|--------------------------|------------------------------|



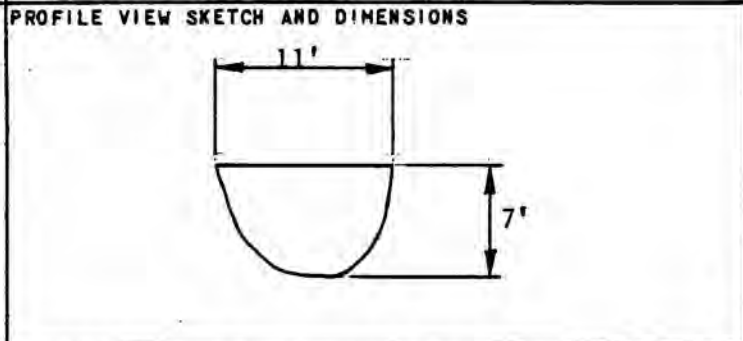
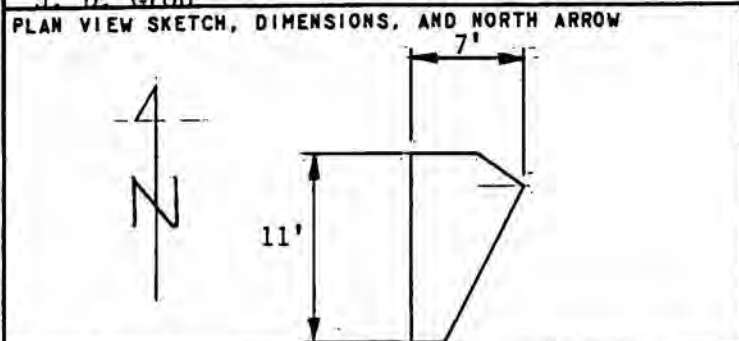
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Silty SAND; grayish-brown; loose; fine grained; poorly graded; moist | |
| | 1.0 | Silty CLAY; greenish-brown; firm; high plasticity; moist; with some organics; trace sand. | |
| | 2.0 | Grading to sandy CLAY; brownish-tan; very stiff; low plasticity; moist; trace organics; fine grained sand. | |
| | 3.0 | Grading to grayish tan. | |
| | 4.0 | | |
| | 5.0 | | |
| | 6.0 | | |
| | 7.0 | Bottom 6.8' | |
| | 8.0 | | |
| | 9.0 | | |

REMARKS:

P-ST-026B



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|--|-----------------------------------|------------------------------|--------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N384200+ E3339300+ | ELEVATION (DATUM) -- | TOTAL DEPTH 7.0 | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | INSPECTOR J. D. Grob | | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|---|--|-------|
| | | STATION INTERVALS | | |
| | | Silty SAND; grayish-brown; loose; fine grained; poorly graded; moist; organics. | | |
| Bag 1 | 1.0 | Silty <u>CLAY</u> ; reddish-gray; firm; high plasticity; moist; with some organics; trace sand. | | |
| | 2.0 | Grading to sandy <u>CLAY</u> ; grayish-tan; very stiff; medium plasticity; dry to moist; fine grained sand. | | |
| | 3.0 | | | |
| | 4.0 | | | |
| | 5.0 | | | |
| | 6.0 | | | |
| | 7.0 | Bottom 7.0' | | |
| | 8.0 | | | |
| | 9.0 | | | |
| | 10.0 | | | |

REMARKS:

P-ST-0268



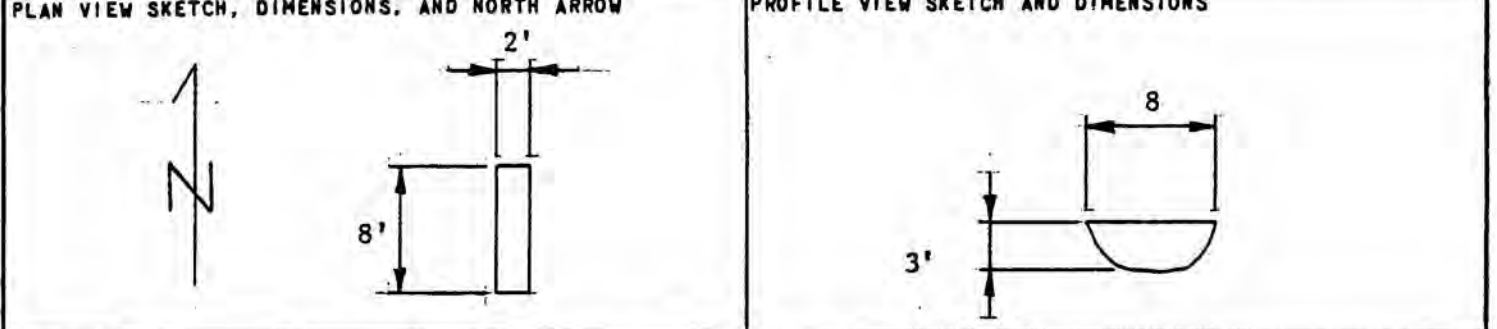
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|--|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
|--|------------------------------|----------------------|

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|--|---|----------------------------|---------------------|-----------------|
| PROJECT LOCATION Grimes County, Texas | COORDINATES N384200 ⁺ E3339800 ⁺ | ELEVATION (DATUM) _____ | TOTAL DEPTH 3.0' | DATE 2/28/89 |
|--|---|----------------------------|---------------------|-----------------|

| | |
|--|-------------------------|
| SURFACE CONDITIONS Grassy; Level; Moist; Firm | INSPECTOR J. D. Grob |
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|--|
| METHOD OF EXCAVATION Backhoe; Cat 416 |
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| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
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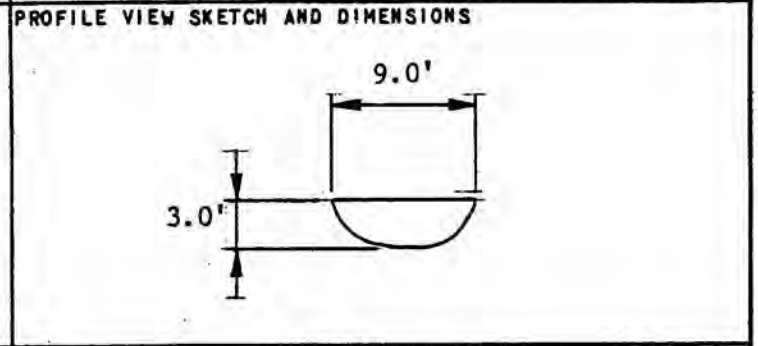
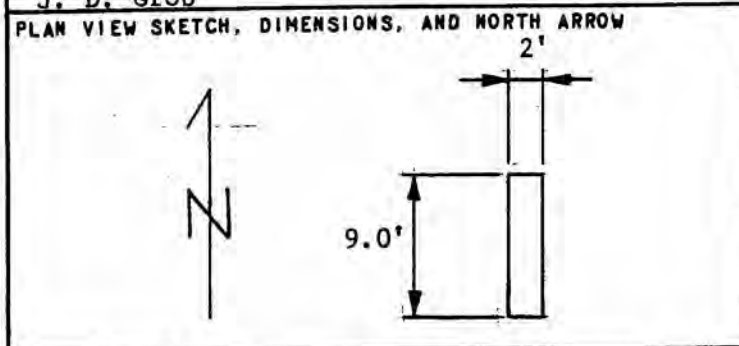
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| Bag 1 | 0.0 - 1.0 | Silty SAND; grayish-brown; loose; poorly graded; fine grained; moist; organics. | |
| | 1.0 - 2.0 | CLAY; greenish-brown; firm to soft; high plasticity; moist to wet; with some organics. | |
| | 2.0 - 2.5 | SANDSTONE; tan; highly weathered; highly fractured; grading to slightly fractured; moderately weathered @ 2.5'. | |
| | 2.5 - 3.0 | Bottom 3.0' | |

REMARKS:

P-ST-0268



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|--|-------------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N384200 + E3340300 + | ELEVATION (DATUM) — | TOTAL DEPTH 3.0 | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|--|--|-------|
| | | STATION INTERVALS | | |
| | 1.0 | Clayey SAND; grayish-brown; loose; poorly graded; fine grained; moist; trace organics. | | |
| | 2.0 | SANDSTONE; tan; highly weathered; highly fractured. | | |
| | 3.0 | Grading to moderately weathered; slightly fractured at 2.5'. | | |
| | 4.0 | Bottom 3.0' | | |

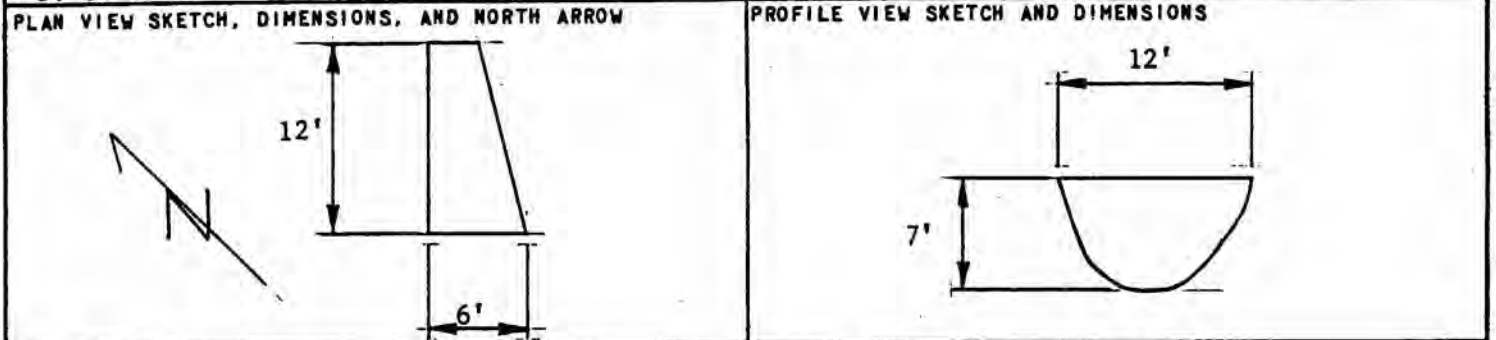
REMARKS:

P-ST-0268



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|--|-------------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N380950 + E3339950 + | ELEVATION (DATUM) — | TOTAL DEPTH 7.0 | DATE 3/1/89 |
| SURFACE CONDITIONS Slightly woody; grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |

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|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
|--------------------------|------------------------------|



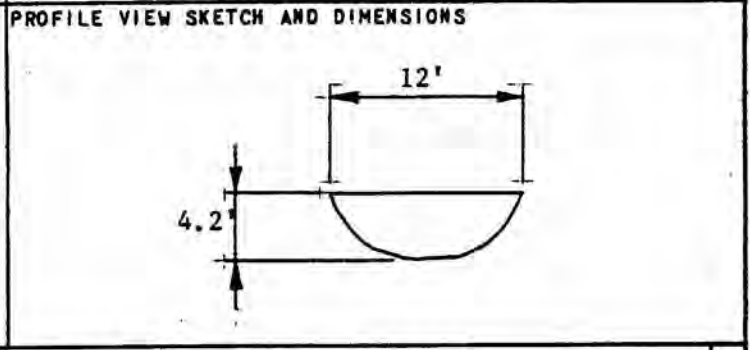
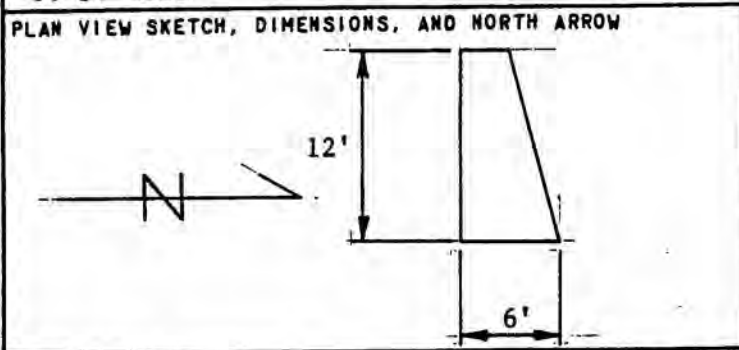
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; with some organics. Silty <u>CLAY</u> ; gray with reddish brown mottling; firm; high plasticity; moist with some organics. | |
| | 2.0 | With yellow brown mottling. | |
| | 3.0 | | |
| | 4.0 | Grading to <u>CLAY</u> ; tannish brown; stiff; high plasticity; moist; with trace blocky structure. | |
| | 5.0 | | |
| | 6.0 | | |
| | 7.0 | Bottom 7.0 | |
| | 8.0 | | |
| | 9.0 | | |
| | 10.0 | | |

REMARKS:

P-ST-026B



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|---|-------------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N380150 + E3341350 + | ELEVATION (DATUM) — | TOTAL DEPTH 4.2' | DATE 3/1/89 |
| SURFACE CONDITIONS Short grass; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0.0 - 1.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; with some organics. | |
| | 1.0 - 3.0 | Silty CLAY; reddish brown; firm; high plasticity; moist; with some organics. Grading to gray with red-brown mottling; trace to some sand. | |
| | 3.0 - 4.2 | Sandy CLAY; brown to yellow brown; very stiff; medium plasticity; moist to dry. | |
| | 4.2 - 4.2 | Bottom 4.2' | |

REMARKS:

P-ST-0268

**SITE AND CLAY BORROW AREA
SUBSURFACE INVESTIGATION**

| CLIENT | | | | | | | PROJECT | | | | PROJECT NO. | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|--|--------------------------------------|------------|---------------|--|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | | 14578 | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | | |
| Carlos, Texas | | | | N377583 E3341690 | | | 266.6' | | 50' | 2-24-88 | | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | | DATE FINISH | |
| Open pasture | | | | | | | K. M. Blevins-McCosh | | | | 2-24-88 | |
| SAMPLING | | | | | | | CHECKED BY | | | | APPROVED BY | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | | L. J. Almaleh | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE | CLASSIFICATION OF MATERIAL | | REMARKS | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | GRAPHICS LOG | | | | | |
| TW | 1 | | | | | 0.9 | 1 | Silty SAND; brown; poorly graded; fine grained; wet; with some clay and organics; roots (Top soil) | Advanced boring w/4 1/2" rotary wash | | | |
| SPT | 2 | 3 | 4 | 10 | 14 | 0.5 | 2 | Sandy CLAY; brown; stiff; high plasticity; moist; with some silt | | | | |
| TW | 3 | | | | | 1.2 | 3 | | | | | |
| | | | | | | | 4 | | | | | |
| TW | 3 | | | | | 1.2 | 5 | Silty CLAY; brown; hard; high plasticity; moist; with some sand; trace iron staining | | | | |
| | | | | | | | 6 | | | | | |
| | | | | | | | 7 | | | | | |
| SPT | 4 | 8 | 12 | 18 | 30 | 1 | 8 | Grading to tan below 7.5' | | | | |
| | | | | | | | 9 | | | | | |
| | | | | | | | 10 | | | | | |
| | | | | | | | 1 | | | | | |
| | | | | | | | 2 | | | | | |
| TW | 5 | | | | | 1.4 | 3 | | | | | |
| | | | | | | | 4 | Grading few silt seams and iron stained seams; sand grading out | | | | |
| | | | | | | | 15 | | | | | |
| | | | | | | | 6 | | | | | |
| | | | | | | | 7 | | | | | |
| | | | | | | | 8 | | | | | |
| SPT | 6 | 12 | 25 | 25/5 | 50 | 1.3 | 9 | Grading trace iron-staining, silt seams grading out | | | | |
| | | | | | | | 20 | | | | | |
| | | | | | | | 1 | | | | | |
| | | | | | | | 2 | | | | | |
| | | | | | | | 3 | | | | | |
| TW | 7 | | | | | 1.1 | 4 | Silt seams every 3-6", very iron stained | | | | |
| | | | | | | | 25 | | | | | |
| | | | | | | | 6 | | | | | |
| | | | | | | | 7 | | | | | |
| | | | | | | | 8 | | | | | |
| SPT | 8 | 23 | 40 | 32 | 72 | 1.7 | 9 | Grading with trace sand | | | | |
| | | | | | | | 30 | | | | | |

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|--|----------|----------|-----------------------|---------------------------------|--------|-----------|-----------------------------------|--|--|------------------------|--|
| CLIENT Texas Municipal Power Agency | | | | | | | PROJECT Gibbons Creek SES | | | PROJECT NO. 14578 | |
| PROJECT LOCATION Carlos, Texas | | | | COORDINATES N377583 E3341690 | | | ELEVATION (DATUM) 266.6' | | TOTAL DEPTH 50' | DATE START 2-24-88 | |
| SURFACE CONDITIONS Open pasture | | | | | | | INSPECTOR K. M. Blevins-McCosh | | | DATE FINISH 2-24-88 | |
| SAMPLING | | | | | | | CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | DEPTH IN FEET | | SAMPLE TYPE | REMARKS | |
| CORING | | | | | | | GRAPHICS LOG | | CLASSIFICATION OF MATERIAL | | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | | |
| TW | 9 | | | | | 0.7 | 1-35 | | Grading dark brown; lignitic below 33'; iron staining on joints | | |
| SPT | 10 | 30 | 100/4 50/3 50/1 | | 100+ | 1.2 | 35-40 | | Grading with some silt pockets | | |
| TW | 11 | | | | | 1.5 | 40-45 | | Grading to some sand; trace lignite | | |
| SPT | 12 | 44 | 65 | 77 | | 1.6 | 45-50 | | Grading laminated w/silt seams | | |
| | | | | | | | 50-55 | | Bottom of boring at 50'. Ground water level unknown. Filled hole with grout and concrete plug. | | |
| | | | | | | | 55-60 | | | | |

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| CLIENT | | | | | | | PROJECT | | | PROJECT NO. | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|--------------------------|--|---|---------|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | 14578 | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | |
| Carlos, Texas | | | | N377502 E3342439 | | | 252.3 | | 28.0' | 2-24-88 | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | DATE FINISH | |
| Open Pasture | | | | | | | K. M. Blevins-McCosh | | | 2-24-88 | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | L. J. Almaleh | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE GRAPHICS LOG | CLASSIFICATION OF MATERIAL | | REMARKS |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | | |
| TW | 1 | | | | | | 0.9 | 1 | Silty SAND; brown; poorly graded; fine; wet; with some clay; roots (Top soil) | Boring advanced using a 4 1/2" rotary wash | |
| SPT | 2 | 5 | 12 | 20 | 32 | | 0.8 | 2-4 | Clayey SAND; tan to brown; medium dense; poorly graded; moist; with some silt | | |
| TW | 3 | | | | | | 1.2 | 5-6 | Silty SAND; brown to grey; poorly graded; fine grain; moist; with some clay | | |
| SP | 4 | 16 | 24 | 26/4 | | | 0.8 | 7 | Sandy CLAY; dark brown; hard; high plasticity; moist with silt and sandstone stringer | | |
| SPT | 5 | 50 | | | | | 0.5 | 8-15 | Clayey SAND; tan to brown; poorly graded; fine; moist; with hard clay seams Clay seams grading out below 13.5 | | |
| SPT | 6 | 24 | 26/1 | | | | | 16-19 | Lignitic below 18.5' with lignite seams; sandstone in cuttings at about 19' | | |
| | | | 23' | | | | | 20-25 | SANDSTONE; lignitic greenish-grey; thin bedded; fine; highly weathered; with lignite seams; fractures horizontal w/.5-4" spacing | Bottom of boring at 28'. Ground water level unknown. Backfilled hole w/grout to surface; placed concrete plug. | |
| P S D | 3" | 1 | 5 | 1.3 | 0.3 | 26 | 6 | 25 | | | |
| | | | 28' | | | | | 26 | | | |
| | | | | | | | | 27-28 | | | |

| CLIENT | | | | | | | PROJECT | | | | PROJECT NO. | | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|--|--------------------------------------|---------------|-------------|--|--|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | | 14578 | | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | | | |
| Carlos, Texas | | | | N378329 E3339148 | | | 266.7' | | 50' | 2-26-88 | | | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | | DATE FINISH | | |
| Clearing in woods | | | | | | | K. M. Blevins-McCosh | | | | 2-26-88 | | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | | | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | L. J. Almaleh | | | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE GRAPHICS LOG | CLASSIFICATION OF MATERIAL | REMARKS | | | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | | | | |
| TW | 1 | | | | | 1.6 | 1 | Silty CLAY; reddish-brown; stiff; high plasticity; moist; organics; roots; iron staining (Top soil) | Advanced boring w/4 1/2" rotary wash | | | | |
| TW | 2 | | | | | 0.8 | 2 | | | | | | |
| | | | | | | | 3 | Grading brown w/some sand; trace gravel below 2' Grading w/some sandstone seams and some gravel w/trace roots below 4' | pp. 2.75 | | | | |
| TW | 3 | | | | | 1.1 | 4 | | | | | | |
| | | | | | | | 5 | Sandy CLAY; tan to buff; stiff; low plasticity; moist; iron stained; w/trace gravel and some silt | | | | | |
| TW | 4 | | | | | 1.2 | 6 | | | | | | |
| | | | | | | | 7 | Clayey SILT; tan to buff; hard; high plasticity; moist; some sand; iron staining especially on joints; joints spaced 2-6" horizontal | | | | | |
| TW | 5 | | | | | 1.4 | 8 | | | | | | |
| | | | | | | | 9 | Interbedded with silty sand below 10' | | | | | |
| TW | 6 | | | | | 1.2 | 10 | | | | | | |
| | | | | | | | 11 | Grading tan to brown with iron nodules and few cemented sand fragments; platy below 12' | | | | | |
| TW | 7 | | | | | 1.5 | 12 | | | | | | |
| | | | | | | | 13 | Blocky structure below 14' Cemented sand grades out below 14'; | | | | | |
| TW | 8 | | | | | 1.3 | 14 | | | | | | |
| | | | | | | | 15 | Cemented sand layer at 18' | | | | | |
| TW | 9 | | | | | 1.5 | 16 | | | | | | |
| | | | | | | | 17 | CLAY; greenish-grey; hard; high plasticity; moist w/silt filled joints and some silt; trace sand; trace lignite 22'-24' | | | | | |
| TW | 10 | | | | | 1.5 | 18 | | | | | | |
| | | | | | | | 19 | Grading greenish-grey and dark grey banded below 23' | | | | | |
| TW | 11 | | | | | 1.8 | 20 | | | | | | |
| | | | | | | | 21 | Slickensided below 26' | | | | | |
| TW | 12 | | | | | 1.9 | 22 | | | | | | |
| | | | | | | | 23 | | | | | | |
| TW | 13 | | | | | 1.9 | 24 | | | | | | |
| | | | | | | | 25 | | | | | | |
| TW | 14 | | | | | 1.7 | 26 | | | | | | |
| | | | | | | | 27 | | | | | | |
| TW | 15 | | | | | 2.0 | 28 | | | | | | |
| | | | | | | | 29 | | | | | | |
| TW | 15 | | | | | 2.0 | 30 | | | | | | |

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| CLIENT | | | | | | | PROJECT | | | PROJECT NO. | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|--------------|---|---------------|---|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | 14578 | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | |
| Carlos, Texas | | | | N378329 E3339148 | | | 266.7' | | 50' | 2-26-88 | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | DATE FINISH | |
| Clearing in woods | | | | | | | K. M. Blevins-McCosh | | | 2-26-88 | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | L. J. Almaleh | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE | CLASSIFICATION OF MATERIAL | | REMARKS |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | GRAPHICS LOG | | | |
| TW | 16 | | | | | 1.8 | 1 | | | | pp. 4+ |
| | | | | | | | 2 | | Trace pyrite below 32' | | |
| TW | 17 | | | | | 1.9 | 3 | | | | |
| | | | | | | | 4 | | Bands grading out below 34' | | |
| TW | 18 | | | | | 1.9 | 5 | | | | |
| | | | | | | | 6 | | | | |
| TW | 19 | | | | | 2.0 | 7 | | | | |
| | | | | | | | 8 | | | | |
| TW | 20 | | | | | 1.7 | 9 | | | | pp. 4+ |
| | | | | | | | 10 | | | | |
| TW | 21 | | | | | 1.9 | 11 | | Trace lignite below 41' | | |
| | | | | | | | 12 | | Grading dark grey below 42'; 1/2" silt seam at 42.3' | | |
| TW | 22 | | | | | 2.0 | 13 | | | | |
| | | | | | | | 14 | | | | |
| TW | 23 | | | | | 1.1 | 15 | | Silty CLAY; dark grey; hard; high plasticity; dry; some iron staining | | pp. 4+ |
| | | | | | | | 16 | | | | |
| TW | 24 | | | | | 0 | 17 | | | | TW 24 no sample cored w/2' core barrel |
| | | | | | | | 18 | | | | |
| 3" | 1 | 2 | 48' | 1.3 | 0.3 | 65 | 17 | | SANDSTONE; argillaceous; grey; fine grained; slightly weathered; w/trace lignite; horizontal joints | | Bottom of boring 49.8'. |
| | | | 50' | | | | 50 | | | | Groundwater level unknown. Reamed 0-3' w/6 7/8" bit Reamed 3-50' w/4 1/2" bit. Installed 2-20' sections of 2" PVC pipe; 1-7.2' section of 2" PVC and 1-5' screen. |
| | | | | | | | 1 | | | | |
| | | | | | | | 2 | | | | |
| | | | | | | | 3 | | | | |
| | | | | | | | 4 | | | | |
| | | | | | | | 55 | | | | |
| | | | | | | | 6 | | | | |
| | | | | | | | 7 | | | | |
| | | | | | | | 8 | | | | |
| | | | | | | | 9 | | | | |
| | | | | | | | 60 | | | | |

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| CLIENT | | | | | | | PROJECT | | | | PROJECT NO. | | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|--|--|---------------|-------------|--|--|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | | 14578 | | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | | | |
| Carlos, Texas | | | | N378225 E3340238 | | | 265.3' | | 50' | 2-29-88 | | | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | | DATE FINISH | | |
| Clearing in woods | | | | | | | K. M. Blevins-McCosh | | | | 2-29-88 | | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | | | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | L. J. Almaleh | | | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE GRAPHICS LOG | CLASSIFICATION OF MATERIAL | | REMARKS | | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | | | | |
| TW | 1 | | | | | 0.3 | 1 | Silty SAND; brown; poorly graded; fine grained; moist; trace clay; roots; iron staining; w/sandstone seam at 0.3' (Top soil) | Advanced boring using 4 1/2" rotary wash | | | | |
| TW | 2 | | | | | 1.4 | 2 | | | | | | |
| TW | 3 | | | | | 0.5 | 3 | | | | | | |
| | | | | | | | 4 | Clayey SAND; brown; poorly graded; fine grained; moist w/some silt and silty sand seams; sandstone nodules at 3.8' and 4.5'; iron staining | | | | | |
| | | | | | | | 5 | SANDSTONE; silty; buff; fine grained; joint spacing 1/2" - 3" horizontal; slightly weathered; iron staining | | | | | |
| 3" | 1 | 1.25 | 0.7 | 0 | | 0 | 6 | | | | | | |
| | | | 6' | | | | 7 | | | | | | |
| | | | 7' | | | | 8 | Silty SAND; yellowish-buff; poorly graded; fine grained; moist | | | | | |
| TW | 4 | | | | | 0.8 | 9 | Clayey SAND; brown; poorly graded; fine grained; moist w/some silt; trace limonite and iron staining | | | | | |
| | | | | | | | 10 | | | | | | |
| | | | | | | | 1 | | | | | | |
| | | | | | | | 2 | | | | | | |
| TW | 5 | | | | | 0.5 | 3 | | | | | | |
| | | | | | | | 4 | | | | | | |
| | | | | | | | 15 | | | | | | |
| | | | | | | | 6 | Silty SAND; tan; poorly graded; fine-grained; moist; iron stained; blocky structure | | | | | |
| | | | | | | | 7 | | | | | | |
| TW | 6 | | | | | 1.5 | 8 | Grading with interbedded clayey sand below 18.5' | | | | | |
| | | | | | | | 9 | | | | | | |
| | | | | | | | 20 | | | | | | |
| | | | | | | | 1 | | | | | | |
| | | | | | | | 2 | | | | | | |
| 3" | 2 | 2 | 23' | 0 | 50 | 0 | 3 | SANDSTONE; silty; buff; fine grained; weathered; iron stained | | | | | |
| | | | | | | | 4 | SANDSTONE; argillaceous; greenish-grey; fine grained; weathered; joint spacing 1/2-3" horizontal | | | | | |
| | | | 25' | | | | 25 | | | | | | |
| TW | 7 | | | | | 0.9 | 6 | Clayey SAND; dark grey; poorly graded; fine grained; moist w/some silt | | | | | |
| | | | | | | | 7 | | | | | | |
| | | | | | | | 8 | | | | | | |
| TW | 8 | | | | | 1.3 | 9 | Sandy CLAY; greenish-grey; low plasticity; moist w/some silt and silt filled joints; laminated | | | | | |
| | | | | | | | 30 | | | | | | |

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| CLIENT Texas Municipal Power Agency | | | | | | | PROJECT Gibbons Creek SES | | | PROJECT NO. 14578 | | |
| PROJECT LOCATION Carlos, Texas | | | | COORDINATES N378225 E3340238 | | | ELEVATION (DATUM) 265.3' | | TOTAL DEPTH 50' | DATE START 2-29-88 | | |
| SURFACE CONDITIONS Clearing in woods | | | | | | | INSPECTOR K. M. Blevins-McCosh | | | DATE FINISH 2-29-88 | | |
| SAMPLING | | | | | | | CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | DEPTH IN FEET | | SAMPLE TYPE | | REMARKS | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | GRAPHICS LOG | | CLASSIFICATION OF MATERIAL | | | |
| TW | 9 | | | | | 1.5 | 1 | | | | | |
| TW | 10 | | | | | 1.4 | 35 | | 40 | Silty CLAY; greenish-grey; high plasticity; dry to moist; silt filled joints w/trace sand; laminated; blocky structure; jointed | | |
| TW | 11 | | | | | 1.9 | 40 | | 45 | CLAY; greenish-grey; high plasticity; moist; some silt; silt filled joints; trace sand; slickensided | | |
| TW | 12 | | | | | 1.4 | 45 | | 50 | Grey and greenish-grey banded below 48' | | |
| | | | | | | | 50 | | 55 | | | |
| | | | | | | | 55 | | 60 | | | |
| | | | | | | | 60 | | 65 | | | |

Bottom of boring at 50'.
Groundwater level unknown. Backfill hole w/grout to surface.

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| CLIENT | | | | | | | PROJECT | | | PROJECT NO. | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|--------------------------|--|---------------|--|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | 14578 | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | |
| Carlos, Texas | | | | N378309 E3341132 | | | 267.7' | | 50.0' | 2-29-88 | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | DATE FINISH | |
| Open pasture | | | | | | | K. M. Blevins-McCosh | | | 2-29-88 | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | L. J. Almaleh | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE GRAPHICS LOG | CLASSIFICATION OF MATERIAL | | REMARKS |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | DEPTH IN FEET | SAMPLE TYPE GRAPHICS LOG | CLASSIFICATION OF MATERIAL | | REMARKS |
| TW | 1 | | | | | 1.0 | 1 | | Silty SAND; brown; poorly graded; fine grained; moist; w/some clay; organics and roots (Topsoil) | | Boring advanced using 4 1/2" rotary wash |
| TW | 2 | | | | | 1.5 | 2 | | CLAY; brown; med. dense; high plasticity; moist; w/some silt; trace iron staining; trace sand | | pp. 1.25 |
| TW | 3 | | | | | 1.1 | 4 | | Grading to silty clay below 4' | | |
| TW | 4 | | | | | 1.4 | 6 | | Lignitic below 6' | | |
| TW | 5 | | | | | 1.3 | 9 | | Gypsum crystals at 9.8' | | |
| TW | 6 | | | | | 1.2 | 3 | | Grading dark brown; lignitic w/gypsum crystals in joints; jointed; laminated; w/blocky structure | | |
| TW | 7 | | | | | 1.4 | 8 | | Grading dry | | |
| TW | 8 | | | | | 1.3 | 4 | | Grading medium brown w/some iron staining | | |
| TW | 9 | | | | | 0.6 | 25 | | Sandy CLAY; brown; low plasticity; moist w/some silt; some iron staining | | |
| TW | 9 | | | | | 0.6 | 9 | | Silty SAND; brown; poorly graded; fine grained; moist w/some clay | | |

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| CLIENT | | | | | | | PROJECT | | | PROJECT NO. | |
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| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | 14578 | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | |
| Carlos, Texas | | | | N378309 E3341132 | | | 267.7' | | 50.0' | 2-29-88 | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | DATE FINISH | |
| Open pasture | | | | | | | K. M. Blevins-McCosh | | | 2-29-88 | |
| SAMPLING | | | | | | | CHECKED BY | | APPROVED BY | | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | L. J. Almaleh | | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE | CLASSIFICATION OF MATERIAL | | REMARKS |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | GRAPHICS LOG | | | |
| TW | 10 | | | | | 0.5 | 1 | | Clayey SAND; greenish-grey; poorly graded; fine grained; some cemented seams; moist; w/some silt | | |
| TW | 11 | | | | | 0.9 | 8 | | Silty CLAY; dark grey; hard; high plasticity; moist | | |
| TW | 12 | | | | | 1.6 | 43.5 | | Grading greenish-grey w/silt filled joints 2-4" spacing; 4 1/2" sandy clay layer at 43.5'; slickensided | | |
| TW | 13 | | | | | 1.5 | 49 | | 2" silty sand layer at 49'; grading dark grey below 48.5' | | |
| | | | | | | | 50 | | Bottom of boring at 50'. Groundwater level unknown. Hole backfilled w/grout to surface. Placed concrete plug at top. | | |
| | | | | | | | 55 | | | | |
| | | | | | | | 60 | | | | |

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| CLIENT Texas Municipal Power Agency | | | PROJECT Gibbons Creek SES | | | PROJECT NO. 14578 | | | |
| PROJECT LOCATION Carlos, Texas | | | COORDINATES N378277 E3341774 | | | ELEVATION (DATUM) 266.4' | | TOTAL DEPTH 50.0' | DATE START 2-29-88 |
| SURFACE CONDITIONS Open pasture | | | | | | INSPECTOR K. M. Blevins-McCosh | | | DATE FINISH 2-29-88 |

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|-----------|----------|--------|--------|--------|-------|-----------|------------------------------|--|--|------------------------------|--|--|
| SAMPLING | | | | | | | CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | | | | | | |

| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE GRAPHICS LOG | CLASSIFICATION OF MATERIAL | REMARKS |
|-----------|---------|----------|----------|----------|--------|-----|---------------|--------------------------|---|--|
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | |
| TW | 1 | | | | | | 1.0 | 1 | Sandy <u>CLAY</u> ; brown; loose; low plasticity; moist; w/some silt; organics and roots (Topsoil) | Boring advanced using 4 1/2" rotary wash |
| TW | 2 | | | | | | 2.0 | 2 | 3 4 <u>CLAY</u> ; brown; soft to hard; high plasticity; wet to moist w/some silt | pp. 1.0 |
| TW | 3 | | | | | | 1.3 | 3 | | pp. .75 |
| TW | 4 | | | | | | 1.6 | 4 | 5 6 Trace organics below 6'; iron staining | pp. 4+ |
| TW | 5 | | | | | | 1.6 | 5 | | 7 |
| TW | 6 | | | | | | 1.2 | 6 | 8 9 1* sand seam at 9.9'; iron stained and limonitic | |
| | | | | | | | | 7 | | 10 |
| TW | 7 | | | | | | 1.3 | 8 | 11 12 13 14 15 16 17 18 19 20 Silty <u>CLAY</u> ; brown; hard; high plasticity; moist; w/trace sand; iron staining; jointed | |
| | | | | | | | | 9 | | 21 |
| TW | 8 | | | | | | 0.9 | 22 | 23 24 25 26 27 28 Silty <u>CLAY</u> ; dark grey; hard; high plasticity; moist; w/silt filled joints; trace cemented sand fragments | |
| | | | | | | | | 10 | | 29 |
| TW | 9 | | | | | | 0.9 | 29 | 30 Lignitic below 28' | |
| | | | | | | | | 30 | | |

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| CLIENT | | | | | | | PROJECT | | | PROJECT NO. | | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|--------------------------|---|-------------|--|--|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | 14578 | | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | | |
| Carlos, Texas | | | | N378277 E3341774 | | | 266.4' | | 50.0' | 2-29-88 | | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | DATE FINISH | | |
| Open pasture | | | | | | | K. M. Blevins-McCosh | | | 2-29-88 | | |
| SAMPLING | | | | | | | CHECKED BY | | APPROVED BY | | | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | L. J. Almaleh | | | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE GRAPHICS LOG | CLASSIFICATION OF MATERIAL | REMARKS | | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | | | |
| | | | | | | | 1 | | | | | |
| | | | | | | | 2 | | | | | |
| TW | 10 | | | | | 1.2 | 3 | | Clayey SAND; grey; poorly graded; fine grained; moist; some silt; grading from grey to dark brown; interbedded with clayey SAND; lignitic below 33.5' | | | |
| | | | | | | | 4 | | | | | |
| | | | | | | | 35 | | | | | |
| | | | | | | | 6 | | | | | |
| | | | | | | | 7 | | | | | |
| TW | 11 | | | | | 1.2 | 8 | | Sandy CLAY; dark brown; hard; high plasticity; moist; some silt; lignitic | | | |
| | | | | | | | 40 | | | | | |
| | | | | | | | 1 | | | | | |
| | | | | | | | 2 | | | | | |
| | | | | | | | 3 | | | | | |
| TW | 12 | | | | | 1.0 | 4 | | Sandy CLAY; dark brown; hard; high plasticity; moist; some silt; lignitic | | | |
| | | | | | | | 45 | | | | | |
| | | | | | | | 6 | | | | | |
| | | | | | | | 7 | | | | | |
| | | | | | | | 8 | | | | | |
| TW | 13 | | | | | 1.7 | 9 | | Bottom of boring at 50'. Groundwater level unknown. Filled hole w/grout to surface; inserted concrete plug near surface. | | | |
| | | | | | | | 50 | | | | | |
| | | | | | | | 1 | | | | | |
| | | | | | | | 2 | | | | | |
| | | | | | | | 3 | | | | | |
| | | | | | | | 4 | | | | | |
| | | | | | | | 55 | | | | | |
| | | | | | | | 6 | | | | | |
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|--|----------|----------|----------|---------------------------------|--------|-----------|-----------------------------------|--------------------------|--|------------------------------|------------------------|--|--|
| CLIENT Texas Municipal Power Agency | | | | | | | PROJECT Gibbons Creek SES | | | | PROJECT NO. 14578 | | |
| PROJECT LOCATION Carlos, Texas | | | | COORDINATES N378200 E3342496 | | | ELEVATION (DATUM) 261.5' | | TOTAL DEPTH 35.0' | DATE START 2-23-88 | | | |
| SURFACE CONDITIONS Open pasture | | | | | | | INSPECTOR K. M. Blevins-McCosh | | | | DATE FINISH 2-23-88 | | |
| SAMPLING | | | | | | | CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | | | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | DEPTH IN FEET | SAMPLE TYPE GRAPHICS LOG | CLASSIFICATION OF MATERIAL | | | REMARKS | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | | | | |
| TW | 1 | | | | | 1.2 | 1 | | Undifferentiated overburden | | | Advanced hole using 4 1/2" rotary wash | |
| TW | 2 | | | | | 0.8 | 2 | | Silty <u>CLAY</u> ; brown; medium dense; stiff to hard; low plasticity; moist; some sand Grading to more silt at 3'-3.5' | | | | |
| TW | 3 | | | | | 0.5 | 3 | | Sandy <u>CLAY</u> ; tan to brown; hard; low plasticity; moist; trace silt | | | | |
| TW | 4 | | | | | 0.8 | 4 | | | | | | |
| 3" | 1 | 2 | 10' | 0 | 0 | 0 | 5 | | Clayey <u>SAND</u> ; tan to brown; poorly graded; fine grained; some silt; iron staining | | | pp. 4+ | |
| 3" | 2 | 2 | 12' | 1.3 | 0 | 65 | 6 | | SANDSTONE; argillaceous; yellowish-tan; fine to medium grained; iron staining; highly weathered | | | | |
| 3" | 3 | 2 | 14' | 1.2 | 0 | 60 | 7 | | Argillaceous grading out below 14' | | | Sample recovery below 12' in 1-3" sections | |
| 3" | 4 | 2 | 16' | 0 | 0 | 0 | 8 | | Grading grey below 16' | | | | |
| 3" | 5 | 2 | 18' | 0 | 0 | 0 | 9 | | Iron staining on joints below 20' | | | | |
| 3" | 6 | 5 | 20' | | | | 10 | | Lignite partings starting at 21.7' | | | Missed sample at 18-20' rotary washed. Continued drilling with 3" diameter 5' core barrel below 20'. | |
| 3" | 7 | 5 | 25' | 0.33 | 90 | 7 | 11 | | Grading greenish-grey below 23' and slightly argillaceous | | | | |
| 3" | | | | | | | 12 | | Lignite partings grading out below 27.5' | | | | |
| 3" | | | | | | | 13 | | | | | | |
| | | | 30' | | | | 14 | | | | | | |

D I S T R I B U T I O N

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|--|-------------|-------------|-------------|---------------------------------|-----------|--------------|-----------------------------------|--|--|------------------------------|---------|
| CLIENT Texas Municipal Power Agency | | | | | | | PROJECT Gibbons Creek SES | | | PROJECT NO. 14578 | |
| PROJECT LOCATION Carlos, Texas | | | | COORDINATES N378200 E3342496 | | | ELEVATION (DATUM) 261.5' | | TOTAL DEPTH 35.0' | DATE START 2-23-88 | |
| SURFACE CONDITIONS Open pasture | | | | | | | INSPECTOR K. M. Blevins-McCosh | | | DATE FINISH 2-23-88 | |
| SAMPLING | | | | | | | CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | | | | | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE GRAPHICS LOG | CLASSIFICATION OF MATERIAL | | REMARKS |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | | |
| 3" | 8 | 5 | 30' 2.2 | 0 | 44 | 0 | 1 | Horizontal fractures spaced generally from 1-3" apart; numerous lignite partings below 30' | Bottom of boring 35'. Ground water level unknown. Reamed hole using 4 1/2" bit. Flush cuttings out of hole installed 1-20' section and 1-11' section of 2" PVC and 5' section of screen. | | |
| | | | 35' | | | | 2 | | | | |
| | | | | | | | 3 | | | | |
| | | | | | | | 4 | | | | |
| | | | | | | | 5 | | | | |
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P I S E D

| CLIENT | | | | | | | PROJECT | | | PROJECT NO. | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|---|---|--|---------|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | 14578 | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | |
| Carlos, Texas | | | | N379581 E3339416 | | | 261.7' | | 39.0' | 2-25-88 | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | DATE FINISH | |
| Clearing in woods | | | | | | | K. M. Blevins-McCosh | | | 2-25-88 | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | L. J. Almaleh | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE | CLASSIFICATION OF MATERIAL | | REMARKS |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | GRAPHICS LOG | | | | |
| TW | 1 | | | | | 0.7 | 1 | | Silty CLAY; dark brown; medium dense; high plasticity; moist; organics; roots (Top soil) | Boring advanced using 6 7/8" rotary wash | |
| TW | 2 | | | | | 1.5 | 2 | | CLAY; dark brown; stiff; high plasticity; moist; some silt | | |
| TW | 3 | | | | | 1.1 | 3 | | | pp. 1.25 | |
| TW | 4 | | | | | 1.8 | 4 | | Trace gravel and iron staining below 4' | pp. 1.5 | |
| TW | 5 | | | | | 1.7 | 5 | | | | |
| TW | 6 | | | | | 1.8 | 6 | | | pp. 2.0 | |
| TW | 7 | | | | | 1.5 | 7 | | Silty CLAY; brown; stiff; high plasticity; moist; iron staining; jointed | | |
| TW | 8 | | | | | 1.7 | 8 | | Gypsum seam at 7.5' and 9'; slickensided below 7' | | |
| TW | 9 | | | | | 1.7 | 9 | | | | |
| TW | 10 | | | | | 1.7 | 10 | | Horizontal and 45° to vertical joints below 10' filled w/gypsum crystals and iron staining | pp. 2.5 | |
| TW | 11 | | | | | 1.6 | 11 | | | pp. 2.75 | |
| TW | 12 | | | | | 1.3 | 12 | | Gypsum filled vertical joint at 14'- joint is 4" long; banded brown and dark brown below 14'. Gypsum filled joint spacing generally 8"-1.5' | pp. 2.75 pp. 3.5 | |
| TW | 13 | | | | | 1.3 | 13 | | | | |
| TW | 14 | | | | | 1.2 | 14 | | | pp. 3.0 | |
| TW | 15 | | | | | 0.4 | 15 | | CLAY; olive grey to dark grey; hard; high plasticity; moist; with silt seams on joints below 20'; trace iron staining; trace sand in joints; occasional silty sand pockets below 16'; thinly bedded | pp. 4+ | |
| | | | | | | | 16 | | pp. 4+ | | |
| | | | | | | | 17 | | pp. 4+ | | |
| | | | | | | | 18 | | pp. 4+ | | |
| | | | | | | | 19 | | pp. 4+ | | |
| | | | | | | | 20 | | | | |
| | | | | | | | 21 | | | | |
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| | | | | | | | 26 | | | | |
| | | | | | | | 27 | | | | |
| | | | | | | | 28 | | | | |
| | | | | | | | 29 | Lignitic below 29' - lignite seams up to 1" | | | |
| | | | | | | | 30 | | | | |

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| CLIENT Texas Municipal Power Agency | | | | | | | PROJECT Gibbons Creek SES | | | PROJECT NO. 14578 | |
| PROJECT LOCATION Carlos, Texas | | | | COORDINATES N379581 E3339416 | | | ELEVATION (DATUM) 261.7' | | TOTAL DEPTH 39.0' | DATE START 2-25-88 | |
| SURFACE CONDITIONS Clearing in woods | | | | | | | INSPECTOR K. M. Blevins-McCosh | | | DATE FINISH 2-25-88 | |
| SAMPLING | | | | | | | CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | DEPTH IN FEET | | SAMPLE TYPE | | REMARKS |
| CORING | | | | | | | GRAPHICS LOG | | CLASSIFICATION OF MATERIAL | | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | | |
| 3" | 1 | 1 | 0.2 31' | 0 | 20 | 0 | 1 | | SANDSTONE, argillaceous; greenish-grey; fine grained; weathered | | |
| TW | 16 | | | | | 0.5 | 2 | | Clayey SAND; greenish-grey; partially cemented; fine grained; poorly graded; some silt (maybe extremely weathered sandstone) | | |
| 3" | 2 | 5 | 34' 4 | 1.3 | 80 | 26 | 3 | | | | |
| | | | | | | | 4 | | | | |
| | | | | | | | 35 | | SANDSTONE, argillaceous; greenish-grey; fine grained; weathered; w/lignite seams; horizontal and vertical joints - weathering on joints | | |
| | | | | | | | 6 | | | | |
| | | | | | | | 7 | | | | |
| | | | | | | | 8 | | | | |
| | | | | | | | 9 | | | | |
| | | | 39' | | | | 40 | | | | Bottom of boring at 39'. Groundwater level unknown. Reamed hole w/6 7/8" bit. Installed 3-10' sections 4" PVC and 1-5.8' section 4" PVC; set 1-5' section .01" slot screen. |
| | | | | | | | 1 | | | | |
| | | | | | | | 2 | | | | |
| | | | | | | | 3 | | | | |
| | | | | | | | 4 | | | | |
| | | | | | | | 45 | | | | |
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| | | | | | | | 55 | | | | |
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D I S T R I B U T I O N

| CLIENT | | | | | | | PROJECT | | | | PROJECT NO. | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|--------------|--|------------------------------|-------------|--|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | | 14578 | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | | |
| Carlos, Texas | | | | N381083 E3340991 | | | 292.3' | | 50.0' | 2-17-88 | | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | | DATE FINISH | |
| Clearing in pasture | | | | | | | K. M. Blevins-McCosh | | | | 2-17-88 | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | L. J. Almaleh | | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE | | CLASSIFICATION OF MATERIAL | REMARKS | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | GRAPHICS LOG | | | | |
| TW | 1 | | | | | | 1 | | 10" Undifferentiated overburden | Advanced hole by rotary wash | | |
| | | | | | | 1.5 | 2 | | Silty CLAY; brown; stiff; med. plasticity; very moist; w/some roots | pp. 1.0 | | |
| TW | 2 | | | | | | 3 | | Roots grade out below 3' | | | |
| | | | | | | 1.2 | 4 | | Grading grey below 2.5 with trace sand | pp. 4+ | | |
| | | | | | | | 5 | | 1" sand layer at 4.25' | | | |
| TW | 3 | | | | | | 6 | | | pp. 4+ | | |
| | | | | | | 1.1 | 7 | | Clayey SILT; brown to tan; hard; poorly graded; moist; with sand; trace lignite below 11' | | | |
| TW | 4 | | | | | | 8 | | | | | |
| | | | | | | 0.9 | 9 | | | | | |
| TW | 5 | | | | | | 10 | | | | | |
| | | | | | | 1.2 | 1 | | | | | |
| TW | 6 | | | | | | 2 | | CLAY; tan; hard; high plasticity; moist with cemented sand stringers; platy in areas with iron staining at plate faces | pp. 4+ | | |
| | | | | | | 0.9 | 3 | | | | | |
| TW | 7 | | | | | | 4 | | | | | |
| | | | | | | 0.7 | 15 | | Grading silty with 2" sandy silt seam at approximately 15.7' | | | |
| TW | 8 | | | | | | 6 | | | | | |
| | | | | | | 1.3 | 7 | | Clayey SILT; tan to buff; hard; low plasticity; moist; with some sand and iron staining on plates | | | |
| TW | 9 | | | | | | 8 | | | | | |
| | | | | | | 1.5 | 9 | | Sandy SILT; tan to buff; poorly graded; moist with some clay; trace iron staining | | | |
| TW | 10 | | | | | | 20 | | | | | |
| | | | | | | 0.9 | 1 | | Silty CLAY; brown/tan mottled; hard; high plasticity; moist; with trace sand and iron staining; platy | | | |
| TW | 11 | | | | | | 2 | | | | | |
| | | | | | | 0.8 | 3 | | 3" sandy silt layer at 22.5'; grading brown below 23 | | | |
| TW | 12 | | | | | | 4 | | | | | |
| | | | | | | 1.2 | 25 | | CLAY; brown; hard; high plasticity; moist; iron staining on plates and joints; gypsum crystals at 25.8' | | | |
| TW | 13 | | | | | | 6 | | | | | |
| | | | | | | 1.8 | 7 | | Clayey SILT; brown; high plasticity; moist; iron staining | pp. 4+ | | |
| TW | 14 | | | | | | 8 | | | | | |
| | | | | | | 1.2 | 9 | | CLAY; greenish-grey; high plasticity; hard; moist; with trace silt; trace iron | | | |
| TW | 15 | | | | | | 30 | | | | | |
| | | | | | | 1.4 | | | | | | |

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| CLIENT Texas Municipal Power Agency | | | | | | | PROJECT Gibbons Creek SES | | | PROJECT NO. 14578 | |
| PROJECT LOCATION Carlos, Texas | | | | COORDINATES N381083 E3340991 | | | ELEVATION (DATUM) 292.3' | | TOTAL DEPTH 50.0' | DATE START 2-17-88 | |
| SURFACE CONDITIONS Clearing in pasture | | | | | | | INSPECTOR K. M. Blevins-McCosh | | | DATE FINISH 2-17-88 | |
| SAMPLING | | | | | | | CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | | | | | |
| CORING | | | | | | | DEPTH IN FEET | | SAMPLE TYPE | | REMARKS |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | GRAPHICS LOG | CLASSIFICATION OF MATERIAL | | | |
| TW | 16 | | | | | 2.0 | 1 | GRAPHICS LOG (Hatched area representing core log) | | | |
| TW | 17 | | | | | 1.8 | 2 | | | | |
| TW | 18 | | | | | 1.8 | 3 | | | | |
| TW | 19 | | | | | 1.7 | 4 | | | | |
| TW | 20 | | | | | 1.9 | 35 | | Grading to trace silt below 35' | | |
| TW | 21 | | | | | 1.9 | 6 | | | | |
| TW | 22 | | | | | 1.8 | 7 | | | | |
| TW | 23 | | | | | 2.0 | 8 | | Grading to laminated banded (greenish-grey and grey) below 38' with trace lignite at 39.8'; | | |
| TW | 24 | | | | | 1.8 | 9 | | | | |
| TW | 25 | | | | | 1.6 | 40 | | | | |
| | | | | | | | 1 | | | | |
| | | | | | | | 2 | | | | |
| | | | | | | | 3 | | | | |
| | | | | | | | 4 | | | | |
| | | | | | | | 45 | | Banding grading out below 44' | | |
| | | | | | | | 6 | | | | |
| | | | | | | | 7 | | Banded below 47' | | |
| | | | | | | | 8 | | | | |
| | | | | | | | 9 | | | | |
| | | | | | | | 50 | | | Bottom of boring at 50'. Groundwater level unknown. Hole reamed using 6 1/2" diameter auger bit. | |
| | | | | | | | 1 | | | | |
| | | | | | | | 2 | | | | |
| | | | | | | | 3 | | | | |
| | | | | | | | 4 | | | | |
| | | | | | | | 55 | | | Set 4-10' and 1-4.6' section of 4" diameter schedule 40 threaded flush-jointed PVC pipe, 5' screen. | |
| | | | | | | | 6 | | | | |
| | | | | | | | 7 | | | | |
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| CLIENT | | | | | | | PROJECT | | | PROJECT NO. | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|--------------|---|---------------|--|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | 14578 | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | |
| Carlos, Texas | | | | N381539 E3342922 | | | 269.1 | | 50.0' | 2-17-88 | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | DATE FINISH | |
| Clearing in pasture | | | | | | | K. M. Blevins-McCosh | | | 2-17-88 | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | L. J. Almaleh | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE | CLASSIFICATION OF MATERIAL | | REMARKS |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | GRAPHICS LOG | | | |
| | | | | | | | 1 | | Undifferentiated overburden | | Boring advanced using 4 1/2" rotary wash |
| | | | | | | | 2 | | | | |
| TW | 1 | | | | | 0.6 | 3 | | Sandy SILT; tan; poorly graded; moist; with cemented sand stringers; some clay; iron staining | | |
| | | | | | | | 4 | | | | |
| TW | 2 | | | | | 1.5 | 5 | | Clayey SILT; reddish-brown; hard; high plasticity; moist; trace sand; iron staining; grading some sand below 7' | | |
| | | | | | | | 6 | | | | |
| TW | 3 | | | | | 1.3 | 7 | | | | pp. 4+ |
| | | | | | | | 8 | | | | |
| TW | 4 | | | | | 1.7 | 9 | | Sandy SILT; reddish-brown; poorly graded; moist; with clay and iron staining; grading to silty clay; interbedding with lignitic clay below 10'; few gypsum crystals | | |
| | | | | | | | 10 | | | | |
| TW | 5 | | | | | 1.3 | 1 | | | | |
| | | | | | | | 2 | | | | |
| TW | 6 | | | | | 1.5 | 3 | | Silty CLAY; dark brown to black; hard; highly plastic; moist; lignitic; iron staining; with trace sand below 16' | | pp. 4+ |
| | | | | | | | 4 | | | | |
| TW | 7 | | | | | 0.9 | 15 | | | | |
| | | | | | | | 6 | | | | |
| TW | 8 | | | | | 0.9 | 7 | | | | pp. 4+ |
| | | | | | | | 8 | | | | |
| TW | 9 | | | | | 0.7 | 9 | | Silty SAND; tan; poorly graded; moist; trace clay; iron staining | | pp. 4+ |
| | | | | | | | 20 | | | | |
| TW | 10 | | | | | 1.4 | 1 | | Clayey SILT; greenish-grey; highly plastic; moist; with trace thin silty sand laminae; trace iron staining | | |
| | | | | | | | 2 | | | | |
| TW | 11 | | | | | 1.8 | 3 | | | | |
| | | | | | | | 4 | | | | |
| TW | 12 | | | | | 0.8 | 25 | | Sandy SILT; greenish-grey; poorly graded; moist; with trace to some clay | | |
| | | | | | | | 6 | | | | |
| TW | 13 | | | | | 1.2 | 7 | | Silty CLAY; greenish-grey; high plasticity; moist; with some sandy silt layers | | |
| | | | | | | | 8 | | | | |
| TW | 14 | | | | | 1.3 | 9 | | | | |
| | | | | | | | 30 | | | | |

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| CLIENT | | | | | | | PROJECT | | | PROJECT NO. | | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|--------------|--|----------------------------|---|---------|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | 14578 | | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | | |
| Carlos, Texas | | | | N381539 E3342922 | | | 269.1 | | 50.0' | 2-17-88 | | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | DATE FINISH | | |
| Clearing in pasture | | | | | | | K. M. Blevins-McCosh | | | 2-17-88 | | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | L. J. Almaleh | | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE | | CLASSIFICATION OF MATERIAL | | REMARKS |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | DEPT | GRAPHICS LOG | | | | |
| TW | 15 | | | | | 1.4 | 1 | LOG | | | | |
| TW | 16 | | | | | 1.4 | 2 | | 2" sandy silt seam at 32.5'; grading to low plasticity; sandy silt filled fractures spacing about 4" in sample | | | |
| TW | 17 | | | | | 1.5 | 3 | | | | | |
| TW | 18 | | | | | 0.9 | 4 | | Grading to interbedded green and greenish grey silty clay below 34'; trace cemented sand | | | |
| TW | 19 | | | | | 2.0 | 35 | | | | | |
| TW | 20 | | | | | 2.1 | 6 | | | | | |
| TW | 21 | | | | | 2.0 | 7 | | 2" sandy silt seam at 37.8' | | | |
| TW | 22 | | | | | 1.7 | 8 | | Grading greenish-grey below 38' | | | |
| TW | 23 | | | | | 1.9 | 9 | | | | | |
| TW | 24 | | | | | 1.6 | 40 | | Grading to high plasticity below 40'; sandy silt seam grading out; becoming greenish grey and grey banded clay | | | |
| | | | | | | | 1 | | | | | |
| | | | | | | | 2 | | | | | |
| | | | | | | | 3 | | | | | |
| | | | | | | | 4 | | | | | |
| | | | | | | | 45 | | Slickensides at 44.5' | | | |
| | | | | | | | 6 | | | | | |
| | | | | | | | 7 | | | | | |
| | | | | | | | 8 | | | | | |
| | | | | | | | 9 | | | | | |
| | | | | | | | 50 | | | | | |
| | | | | | | | 1 | | | | Bottom of boring at 50'. Groundwater level unknown. Reamed hole twice using 6 3/4" auger bit. Installed 4-10' and 1-5.5' section of 4" PVC, 1-5' section of screen. | |
| | | | | | | | 2 | | | | | |
| | | | | | | | 3 | | | | | |
| | | | | | | | 4 | | | | | |
| | | | | | | | 55 | | | | | |
| | | | | | | | 6 | | | | | |
| | | | | | | | 7 | | | | | |
| | | | | | | | 8 | | | | | |
| | | | | | | | 9 | | | | | |
| | | | | | | | 60 | | | | | |

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| CLIENT Texas Municipal Power Agency | | | | PROJECT Gibbons Creek SES | | | | PROJECT NO. 13290 | | | |
|---|---------------|------------|-------------|-------------------------------------|----------------|-----------------------------------|---------------|------------------------------|-----------------------------|---|---|
| PROJECT LOCATION Grimes County, Texas | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH 18.0' | DATE START 1-8-87 | | |
| SURFACE CONDITIONS Grassy road shoulder | | | | | | INSPECTOR L. J. Almaleh | | DATE FINISH 1-8-87 | | | |
| CHECKED BY L. J. Almaleh | | | | | | APPROVED BY P. R. Zaman | | | | | |
| SAMPLING | | CORING | | DEPTH IN FEET | | CLASSIFICATION OF MATERIAL | | REMARKS | | | |
| SAMPLE TYPE | SAMPLE NUMBER | SET 6" | 2ND 6" | 3RD 6" | N VALUE | SAMPLE RECOV. | DEPTH IN FEET | SAMPLE TYPE | GRAPHIC LOG | CLASSIFICATION OF MATERIAL | REMARKS |
| CORE SIZE | RUN NUMBER | RUN LENGTH | RUN RECOV. | RQD RECOV. | PERCENT RECOV. | RQD | | | | | |
| 3" | 1 | 9.0 | 5.2 | - | 58 | - | 0 | | | Silty CLAY; dark brown; low plasticity; wet; some sand & organics | Advanced boring w/3" ID double tube core barrel w/bentonite & water as drilling fluid |
| CS | 1 | | | | | | 5.0' | | | Sandy SILT; tan; low plasticity; moist; trace clay; iron-stained | |
| | | | | | | | 9.0' | | | 5.0' clay grades out | Used drag bit to remove blockage in boring 5.0' to 9.0' after Run 1 |
| | | | | | | | 10 | | | Sandy SILT; greenish-tan; low plasticity; moist; w/some clay | |
| CS | 2 | | | | | | 10 | | | | |
| 3" | 2 | 9.0 | 9.0 | - | 100 | - | 18.0' | | | SANDSTONE; greenish-tan; fine grained; silty; slightly weathered | |
| | | | | | | | 20 | | | | |
| | | | | | | | 30 | | | | Bottom of boring @ 18.0' Water level not recorded. Grouted w/bentonite slurry to 10.0' from grade. Concrete to 1.0' from grade. Soil last foot |



| CLIENT | | | | | | | PROJECT | | | | PROJECT NO. | |
|------------------------------|---------------|--------|--------|-------------|---------|---------------|-------------------|-------------|-------------|--|--|-----------|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | | 13290 | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | | |
| Grimes County, Texas | | | | | | | | | 19.0' | 1-8-87 | | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | DATE FINISH | | |
| Grassy road shoulder (ATV) | | | | | | | L. J. Almaleh | | | 1-8-87 | | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | | |
| | | | | | | | L. J. Almaleh | | | P. R. Zaman | | |
| SAMPLE TYPE | SAMPLE NUMBER | SET 6" | 2ND 6" | 3RD 6" | N VALUE | SAMPLE RECOV. | DEPTH IN FEET | SAMPLE TYPE | GRAPHIC LOG | CLASSIFICATION OF MATERIAL | REMARKS | |
| | | | | | | | | | | | | CORE SIZE |
| CS | 1 | | 9.0 | 9.0 | - | 100 | 0 | | | Silty CLAY; dark brown; wet; low plasticity; some organics (Topsoil) | Advanced boring w/3" ID double tube core barrel w/bentonite and water as drilling fluid. Losing circulation through cracks in soil @ grade | |
| CS | 1 | | | | | | 2.9 | | | Sandy CLAY; greenish-gray; moist; low plasticity; trace silt & organics | | |
| CS | 2 | | | | | | 3.1 | | | SANDSTONE; grayish-green; fine grained; silty; severely weathered | | |
| CS | 2 | | | | | | | | | CLAY; greenish-gray; dry high plasticity; some silt & sand; iron-stained & fractured 6.0' becoming brownish-gray | | |
| | | | 9.0 | | | | 10 | | | CLAY; greenish-gray; dry high plasticity; some silt & sand; iron-stained & fractured; trace organics | | |
| CS | 3 | | | | | | | | | | | |
| CS | 2 | | 10 | 10 | - | 100 | | | | 12.5' 45 degree iron-stained joint | | |
| CS | 4 | | | | | | | | | CLAY; grayish-brown; high plasticity; dry; w/some silt; iron-stained | | |
| | | | 19.0' | | | | 20 | | | | | |
| | | | | | | | 30 | | | | Bottom of boring @ 19.0' Water level not recorded Bentonite slurry grout to 10.0'. Concrete to 1.0' below grade capped w/soil | |



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|--|--|---------------|--|-------------|--|-------------------------------------|--|---|--|------------------------------|--|--|--|
| CLIENT Texas Municipal Power Agency | | | | | | PROJECT Gibbons Creek SXS | | | | PROJECT NO. 13290 | | | |
| PROJECT LOCATION Grimes County, Texas | | | | COORDINATES | | ELEVATION (DATUM) | | TOTAL DEPTH 19.0' | | DATE START 1-8-87 | | | |
| SURFACE CONDITIONS Grassy road shoulder; light brush (ATV) | | | | | | INSPECTOR L. J. Almaleh | | | | DATE FINISH 1-8-87 | | | |
| SAMPLE TYPE | | SAMPLE NUMBER | | SET | | 2ND | | 3RD | | N VALUE | | | |
| | | | | 6" | | 6" | | 6" | | SAMPLE RECOV. | | | |
| CORE SIZE | | RUN NUMBER | | RUN LENGTH | | RUN RECOV. | | RQD RECOV. | | PERCENT RECOV. | | | |
| | | | | | | | | | | | | | |
| 3" | | 1 | | 9.0 | | 7.5 | | - | | 83 | | | |
| CS | | 1 | | | | | | | | | | | |
| CS | | 2 | | 9.0' | | | | | | | | | |
| CS | | 3 | | | | | | | | | | | |
| 3" | | 2 | | 10 | | 10 | | - | | 100 | | | |
| CS | | 4 | | | | | | | | | | | |
| | | | | 19.0' | | | | | | | | | |
| CHECKED BY L. J. Almaleh | | | | | | APPROVED BY P. R. Zaman | | | | | | | |
| DEPTH IN FEET | | SAMPLE TYPE | | GRAPHIC LOG | | | | CLASSIFICATION OF MATERIAL | | | | REMARKS | |
| 3 | | | | | | | | Silty CLAY; dark brown; low plasticity; wet; w/some sand & organics (Topsoil) | | | | Advanced boring w/3" ID double tube core barrel w/bentonite & water as drill fluid | |
| 7.5 | | | | | | | | Sandy CLAY; brown; low plasticity; moist; w/some sandstone fragments | | | | Loss of circulation due to cracks in soil @ grade | |
| 9.0 | | | | | | | | Silty and Sandy CLAY; greenish-brown; low plasticity; dry to moist; fine grained sand | | | | | |
| 10 | | | | | | | | 7.5' 0.05' sandstone stringer 8.0' to 12.7' heavy iron-staining | | | | | |
| 18.0 | | | | | | | | Silty SAND; brown; fine grained; w/trace fine sandy clay seams | | | | | |
| 19.0 | | | | | | | | 18.0' - 19.0' iron-staining | | | | | |
| 20 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | Bottom of boring @ 29.0' Backfilled w/ bentonite slurry capped w/concrete & soil | |



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|---|---------------|-------------|-------------|-------------------------------------|----------------|-------------------|---|-----------------------------------|--|
| CLIENT Texas Municipal Power Agency | | | | PROJECT Gibbons Creek SES | | | | PROJECT NO. 13290 | |
| PROJECT LOCATION Grimes County, Texas | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH 18.5' | DATE START 1-9-87 |
| SURFACE CONDITIONS Road shoulder | | | | | (ATV) | | INSPECTOR L. J. Almaleh | | DATE FINISH 1-9-87 |
| SAMPLING | | | | CHECKED BY L. J. Almaleh | | | | APPROVED BY P. R. Zaman | |
| SAMPLE TYPE | SAMPLE NUMBER | SET | 6" | 2ND 6" | 3RD 6" | N VALUE | SAMPLE RECOV. | | |
| CORE SIZE | RUN NUMBER | RUN LENGTH | RUN RECOV. | ROD RECOV. | PERCENT RECOV. | RQD | | | |
| | | CORING | | | | | | | |
| DEPTH IN FEET | SAMPLE TYPE | GRAPHIC LOG | | CLASSIFICATION OF MATERIAL | | | | REMARKS | |
| 3" | 1 | 9.0 | 9.0 | - | 100 | - | Sandy CLAY; dark brown; low plasticity; wet; w/some silt | | Advanced boring w/3" ID double tube core barrel w/bentonite & water as drill fluid Lost circulation Run 1 through crack in soil @ grade Drilled very fast first 4.0' Run 2 |
| CS | 1 | | | | | | Silty SAND; greenish-gray; fine grained; poorly graded; dry; trace clay | | |
| CS | 2 | | | | | | Clayey SILT; greenish-brown; low plasticity; dry; w/some sand; iron-stained & fractured | | |
| CS | 3 | | | | | | 9.5' becoming wet & green | | |
| 3" | 2 | 9.5 | 7.3 | - | 77 | - | CLAY; grayish-green; high plasticity; dry; w/trace sand iron-stained & jointed 14.2' grading brown | | |
| CS | 4 | | | | | | | | |
| | | | | | | | | | Bottom of boring @ 18.5' Water level not recorded |

P-ST-036C



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|---|--|---------------|--|-------------------------------------|--|------------|--|-----------------------------------|--|------------------------------|--|-----------------------------|--|---|--|--|--|
| CLIENT Texas Municipal Power Agency | | | | PROJECT Gibbons Creek SES | | | | PROJECT NO. 13290 | | | | | | | | | |
| PROJECT LOCATION Grimes County, Texas | | | | COORDINATES | | | | ELEVATION (DATUM) | | TOTAL DEPTH 18.0' | | DATE START 1-9-87 | | | | | |
| SURFACE CONDITIONS Level pasture | | | | (ATV) | | | | INSPECTOR L. J. Almaleh | | DATE FINISH 1-9-87 | | | | | | | |
| SAMPLING | | | | CHECKED BY L. J. Almaleh | | | | APPROVED BY P. R. Zaman | | | | | | | | | |
| SAMPLE TYPE | | SAMPLE NUMBER | | SET 6" | | 2ND 6" | | 3RD 6" | | N VALUE | | SAMPLE RECOV. | | | | | |
| CORE SIZE | | RUN NUMBER | | RUN LENGTH | | RUN RECOV. | | ROD RECOV. | | PERCENT RECOV. | | ROD | | | | | |
| DEPTH IN FEET | | SAMPLE TYPE | | GRAPHIC LOG | | | | CLASSIFICATION OF MATERIAL | | | | REMARKS | | | | | |
| 0.6 | | 1 | | 9.0 | | 7.7 | | - | | 86 | | - | | Advanced boring w/3" ID double tube core barrel w/bentonite & water as drill fluid Water exiting @ grade through cracks in soil Run 1 | | | |
| 2.8 | | 1 | | - | | - | | - | | - | | - | | Sandy CLAY; brown; low plasticity; moist; trace silt & organics | | | |
| 6.2 | | 2 | | - | | - | | - | | - | | - | | Clayey SILT; green; low plasticity; dry; w/some sand; trace organics; iron-stained & fractured | | | |
| 9.0 | | - | | - | | - | | - | | - | | - | | Sandy SILT; green; low plasticity; wet; w/some clay | | | |
| 10 | | - | | - | | - | | - | | - | | - | | Recovered circulation @ 8.0' Reamed boring to 9.0' w/drag bit after Run 1 | | | |
| 11.8 | | 3 | | 9.0 | | 9.0 | | - | | 100 | | - | | Clayey SILT; green; low plasticity; moist; w/some sand | | | |
| 14.0 | | - | | - | | - | | - | | - | | - | | 14.0' iron-stained | | | |
| 16.0 | | - | | - | | - | | - | | - | | - | | 16.0' iron-stained & grading brown | | | |
| 18.0 | | - | | - | | - | | - | | - | | - | | Bottom of boring @ 18.0' Water level not recorded Grouted w/bentonite to 10.0' from grade concrete to 1.0' capped w/soil | | | |
| 20 | | - | | - | | - | | - | | - | | - | | | | | |
| 30 | | - | | - | | - | | - | | - | | - | | | | | |

P-ST-036C



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|--|--|-------------------------------------|-----------------------------------|-------------------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 13290 |
| PROJECT LOCATION Grimes County, Texas | | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 9.2' |
| SURFACE CONDITIONS Level area, light brush (ATV) | | | INSPECTOR L. J. Almaleh | DATE START 4-21-87 |
| | | | APPROVED BY P. R. Zaman | DATE FINISH 4-21-87 |

| SAMPLING | | | | | | | CHECKED BY L. J. Almaleh | | APPROVED BY P. R. Zaman | | DEPTH IN FEET | SAMPLE TYPE | GRAPHIC LOG | CLASSIFICATION OF MATERIAL | REMARKS |
|-------------|---------------|------------|------------|------------|----------------|---------------|------------------------------------|--|-----------------------------------|--|---------------|-------------|-------------|---|--|
| SAMPLE TYPE | SAMPLE NUMBER | SET 6" | 2ND 6" | 3RD 6" | N VALUE | SAMPLE RECOV. | | | | | | | | | |
| CORE SIZE | RUN NUMBER | RUN LENGTH | RUN RECOV. | ROD RECOV. | PERCENT RECOV. | ROD | | | | | | | | | |
| 3" | 1 | 9.2 | 7.2 | - | 78 | - | | | | | 2.8 | | | Sandy CLAY; dark brown; low plasticity; w/some silt & organics (topsoil) SANDSTONE; light brown; thin bedded; fine grained; severely weathered 4.4' becoming moderately weathered | Boring advanced w/3" ID double tube 10.0' long core barrel w/water |
| | | | | | | | | | | | 10 | | | | |
| | | | | | | | | | | | 20 | | | | Bottom of boring @ 9.2' Water level not recorded Backfilled w/core to 5'; concreted to grade |
| | | | | | | | | | | | 30 | | | | |

P-ST-0360



| CLIENT Texas Municipal Power Agency | | | | | PROJECT Gibbons Creek SES | | | | | PROJECT NO. 13290 | |
|--|---------------|------------|-------------|------------|------------------------------|-------------------|----------------------------|--------------------|---|---|---------|
| PROJECT LOCATION Grimes County, Texas | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH 9.3 | DATE START 4-21-87 | | |
| SURFACE CONDITIONS Level grassy pasture (ATV) | | | | | | | INSPECTOR L. J. Almaleh | | | DATE FINISH 4-21-87 | |
| CHECKED BY L. J. Almaleh | | | | | APPROVED BY P. R. Zaman | | | | | | |
| SAMPLE TYPE | SAMPLE NUMBER | SAMPLING | | | M VALUE | SAMPLE RECOV. | DEPTH IN FEET | SAMPLE TYPE | GRAPHIC LOG | CLASSIFICATION OF MATERIAL | REMARKS |
| | | SET 6" | 2ND 6" | 3RD 6" | | | | | | | |
| CORE SIZE | RUN NUMBER | RUN LENGTH | RUN RECOV. | RQD RECOV. | PERCENT RECOV. | RQD | | | | | |
| 3" | 1 | 9.3 | 6.8 | - | 73 | - | 3.2 | | Silty CLAY; dark brown; low plasticity; moist; w/some sand & trace organics (Topsoil) | Boring advanced w/3" ID double tube 10.0' long core barrel w/water | |
| | | | | | | | 10 | | SANDSTONE; olive; thin bedded; fine grained; severely weathered; iron-stained 4.7' becoming moderately weathered | Lost circulation Run 1 through animal burrows | |
| | | | | | | | 20 | | | | |
| | | | | | | | 30 | | | | |
| | | | | | | | | | | Bottom of boring @ 9.3' Water level not recorded Backfilled w/core to 5.0' concreted to grade | |

ST-036C



| CLIENT | | | | | | | PROJECT | | | | PROJECT NO. | |
|------------------------------|---------------|--------|-------------|--------|-------------------|---------------|-------------------|-------------|-------------|--|--|---------|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | | 13290 | |
| PROJECT LOCATION | | | COORDINATES | | ELEVATION (DATUM) | | TOTAL DEPTH | | DATE START | | | |
| Grimes County, Texas | | | | | | | 18.9' | | 4-21-87 | | | |
| SURFACE CONDITIONS | | | | | | INSPECTOR | | | DATE FINISH | | | |
| Level, light brush (ATV) | | | | | | L. J. Almaleh | | | 4-21-87 | | | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | | |
| | | | | | | | L. J. Almaleh | | | P. R. Zaman | | |
| SAMPLE TYPE | SAMPLE NUMBER | SET 6" | 2ND 6" | 3RD 6" | N VALUE | SAMPLE RECOV. | DEPTH IN FEET | SAMPLE TYPE | GRAPHIC LOG | CLASSIFICATION OF MATERIAL | | REMARKS |
| | | | | | | | | | | CORE SIZE | RUN NUMBER | |
| 3" | 1 | 9.7 | 6.5 | - | 67 | - | 0 | | | Silty CLAY; dark brown; high plasticity; moist; w/trace sand & organics (topsoil) | Boring advanced w/3" ID double tube 10.0' core barrel w/water | |
| | | | | | | | 5.1 | | | CLAY; olive; low plasticity; dry; w/some silt; trace fine sand | | |
| | | | 9.7' | | | | 10 | | | Sandy SILT; olive; moist; fine grained; w/some clay 6.8' 0.5' thick sandstone layer | Losing partial circulation Runs 1 & 2 | |
| 3" | 2 | 9.2 | 9.2 | - | 100 | - | | | | CLAY; olive; high plasticity; dry; w/some silt; trace fine sand | | |
| | | | | | | | | | | 15.7' grading light brown 15.7' sand grade out | | |
| | | | 18.9' | | | | 20 | | | | | |
| | | | | | | | 30 | | | | | |
| | | | | | | | | | | | Bottom of boring @ 18.9' Water level not recorded. Boring back-filled to 10.0' w/core concreted to grade | |



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|---|--|-------------------------------------|-----------------------------------|-------------------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 13290 |
| PROJECT LOCATION Grimes County, Texas | | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 9.0' |
| SURFACE CONDITIONS Gently sloping pasture (ATV) | | | INSPECTOR L. J. Almaleh | DATE START 4-21-87 |
| | | | APPROVED BY P. R. Zaman | DATE FINISH 4-21-87 |

| SAMPLE TYPE | SAMPLE NUMBER | SAMPLING | | | N VALUE | SAMPLE RECOV. | DEPTH IN FEET | SAMPLE TYPE | GRAPHIC LOG | CLASSIFICATION OF MATERIAL | REMARKS |
|-------------|---------------|------------|------------|------------|----------------|---------------|---------------|-------------|-------------|--|--|
| | | SET 6" | 2ND 6" | 3RD 6" | | | | | | | |
| CORE SIZE | RUN NUMBER | RUN LENGTH | RUN RECOV. | RQD RECOV. | PERCENT RECOV. | RQD | | | | | |
| 4" | 1 | 9.0 | 8.5 | - | 100 | - | 0 | | | Silty CLAY; dark brown; low plasticity; moist; w/trace sand & organics (Topsoil) | Boring advanced w/3" ID double tube 10.0' core barrel w/bentonite water |
| | | | | | | | 8.5 | | | SANDSTONE; olive; thin bedded; severely to moderately weathered | Losing circulation Run 1 through crack @ ground surface 0-2' |
| | | | 9.0' | | | | 10 | | | 8.5' gypsum crystals | |
| | | | | | | | 20 | | | | |
| | | | | | | | 30 | | | | Bottom of boring @ 9.0' Water level not recorded. Concreted to grade |



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|--|--|-------------------------------------|-----------------------------------|-------------------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SFS | | PROJECT NO. 13290 |
| PROJECT LOCATION Grimes County, Texas | | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 18.4' |
| SURFACE CONDITIONS Pasture adjacent to forested area (ATV) | | | INSPECTOR L. J. Almaleh | DATE START 4-21-87 |
| | | | APPROVED BY P. R. Zaman | DATE FINISH 4-21-87 |

| SAMPLING | | CORING | | N VALUE | SAMPLE RECOV. | DEPTH IN FEET | SAMPLE TYPE | GRAPHIC LOG | CLASSIFICATION OF MATERIAL | REMARKS |
|-------------|---------------|------------|------------|------------|----------------|---------------|-------------|-------------|---|--|
| SAMPLE TYPE | SAMPLE NUMBER | SET | 2ND | | | | | | | |
| CORE SIZE | RUN NUMBER | RUN LENGTH | RUN RECOV. | RQD RECOV. | PERCENT RECOV. | RQD | | | | |
| 3" | 1 | 9.2 | 5.8 | - | 63 | - | | | Sandy CLAY; dark brown; low plasticity; moist; w/some silt & trace organics (Topsoil) | Boring advanced w/3" ID double tube 10.0' core barrel w/water |
| | | | | | | | | | Clayey SILT; brown; low plasticity; moist; w/trace fine 4.9' becoming olive & dry | |
| | | | | | | | | | Clayey SAND; olive; moist; fine grained; w/some silt | |
| | | 9.2' | | | | | | | CLAY; olive; medium plasticity; moist w/some silt & fine sand | |
| 3" | 2 | 9.2 | 8.6 | - | 93 | - | | | Clayey SILT; olive; low plasticity; dry; w/some fine sand; ironstained | |
| | | | | | | | | | | |
| | | 18.4' | | | | | | | | |
| | | | | | | | | | | Bottom of boring @ 18.4' Water level not recorded. Backfilled w/core to 10' concreted to grade |

11-ST-036C

| CLIENT | | | | | | | PROJECT | | | | PROJECT NO. | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|-------------|--|--|-------------|--------------|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | | 14578 | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | | |
| Carlos, Texas | | | | N386388 E3336793 | | | 295.4' | | 20' | 2-16-88 | | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | | DATE FINISH | |
| Clearing in pasture | | | | | | | K. M. Blevins-McCosh | | | | 2-16-88 | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | L. J. Almaleh | | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE | CLASSIFICATION OF MATERIAL | REMARKS | | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | | | GRAPHICS LOG |
| TW | 1 | | | | | | 0.9 | 1 | Undifferentiated Overburden | Boring advanced with 3" continuous flight auger | | |
| | | | | | | | | 2 | Silty <u>CLAY</u> ; dark brown; hard; high plasticity; moist with roots | | | |
| TW | 2 | | | | | | 1.4 | 3 | Roots grading out | pp. 4+ | | |
| | | | | | | | | 4 | Grading hard with trace sand and iron staining | | | |
| | | | | | | | | 5 | Grading grey below 2 1/2' | | | |
| | | | | | | | | 6 | Grading with sand stringers below 4' | | | |
| TW | 3 | | | | | | 1.0 | 7 | Trace organics at 7.8'; 1" silt seam | pp. 4+ | | |
| | | | | | | | | 8 | | | | |
| TW | 4 | | | | | | 1.8 | 9 | Sandy <u>SILT</u> ; tan to light brown; hard; low plasticity; moist; iron staining | pp. 4+ | | |
| | | | | | | | | 10 | Clayey <u>SILT</u> ; tan to light brown; hard; low plasticity; moist; iron staining | | | |
| TW | 6 | | | | | | 1.4 | 1 | 3" sandy silt at 11.2' | pp. 4+ | | |
| | | | | | | | | 2 | Silty <u>CLAY</u> ; tan to light brown; hard; high plasticity; moist; iron staining; with sand stringers | | | |
| TW | 7 | | | | | | 1.7 | 3 | | | | |
| | | | | | | | | 4 | Sandy <u>SILT</u> ; tan to light brown; poorly graded; moist with some clay; iron staining | | | |
| TW | 8 | | | | | | 1.9 | 15 | | pp. 4+ | | |
| | | | | | | | | 6 | Silty <u>CLAY</u> ; tan to light brown; hard; low plasticity; moist; iron staining; trace sand | | | |
| TW | 9 | | | | | | 1.4 | 7 | | Bottom of boring at 20'. Groundwater level unknown. Hole backfilled with cuttings and 2' concrete plug. | | |
| | | | | | | | | 8 | | | | |
| | | | | | | | | 9 | Grading to dark brown below 16' | | | |
| | | | | | | | | 9 | Mottled below 18' | | | |
| TW | 10 | | | | | | 1.8 | 20 | | | | |
| | | | | | | | | 1 | | | | |
| | | | | | | | | 2 | | | | |
| | | | | | | | | 3 | | | | |
| | | | | | | | | 4 | | | | |
| | | | | | | | | 25 | | | | |
| | | | | | | | | 6 | | | | |
| | | | | | | | | 7 | | | | |
| | | | | | | | | 8 | | | | |
| | | | | | | | | 9 | | | | |
| | | | | | | | | 30 | | | | |

P
S
6
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| CLIENT | | | | | | | PROJECT | | | PROJECT NO. | |
|------------------------------|----------|----------|----------|------------------|--------|-----------|----------------------|--|----------------------------|---------------|---|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | 14578 | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | |
| Carlos, Texas | | | | N386433 E3337896 | | | 307.6' | | 20.0' | 2-16-88 | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | DATE FINISH | |
| Pasture | | | | | | | K. M. Blevins-McCosh | | | 2-16-88 | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | L. J. Almaleh | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE | CLASSIFICATION OF MATERIAL | | REMARKS |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | GRAPHICS LOG | | | |
| TW | 1 | | | | | 1.3 | 1 | 10 1/2" Undifferentiated overburden | | | Boring advanced using 3" continuous flight auger |
| | | | | | | | 2 | Silty SAND; brown; grey; poorly graded; fine; moist; with roots and some clay | | | |
| TW | 2 | | | | | 1.4 | 3 | Silty CLAY; dark brown; hard; high plasticity; moist; with some sand pockets below 3.5' | | | pp. 1.20 |
| | | | | | | | 4 | | | | pp. 1.25 |
| TW | 3 | | | | | 1.2 | 5 | Grading to grey with little sand | | | |
| | | | | | | | 6 | Sandy CLAY; med. brown to grey; hard; high plasticity; moist | | | pp. 4+ |
| TW | 4 | | | | | 1.1 | 7 | Silty CLAY; grey to brown; hard; high plasticity; moist; with some sand | | | pp. 4+ |
| | | | | | | | 8 | | | | |
| TW | 5 | | | | | 1.5 | 9 | Grading to tan | | | |
| | | | | | | | 10 | | | | pp. 4+ |
| TW | 6 | | | | | 1.2 | 1 | Silty CLAY or clayey SILT; light brown to tan; hard; low plasticity; moist; with some sand; some iron staining below 14' | | | pp. 3.5 |
| | | | | | | | 2 | | | | |
| TW | 7 | | | | | 1.6 | 3 | | | | |
| | | | | | | | 4 | | | | |
| TW | 8 | | | | | 1.3 | 15 | | | | |
| | | | | | | | 6 | Grading to grey below 16' | | | pp. 4+ |
| TW | 9 | | | | | 1.8 | 7 | | | | |
| | | | | | | | 8 | Grading to sandy below 18'; laminated in areas | | | |
| TW | 10 | | | | | 0.8 | 9 | | | | |
| | | | | | | | 20 | Sandy CLAY; tan; hard; low plasticity; dry; with cemented sand layers (weathered rock stringers) | | | pp. 4+ |
| | | | | | | | 1 | | | | End of boring at 20'. Groundwater level unknown. Backfill with cuttings and 2' concrete plug. |
| | | | | | | | 2 | | | | |
| | | | | | | | 3 | | | | |
| | | | | | | | 4 | | | | |
| | | | | | | | 25 | | | | |
| | | | | | | | 6 | | | | |
| | | | | | | | 7 | | | | |
| | | | | | | | 8 | | | | |
| | | | | | | | 9 | | | | |
| | | | | | | | 30 | | | | |

EXPLANATION

BORING LOG TERMINOLOGY

GENERAL

- | | |
|---------|--|
| PP | - Compressive strength as determined by penetrometer |
| TV | - Compressive strength as determined by torvane |
| Gravel | - From 1/4 inch to 3 inches in diameter |
| Cobble | - From 3 to 12 inches in diameter |
| Boulder | - Greater than 12 inches in diameter |
| 60° | - Represents 60 degrees measured from a plane perpendicular to the longitudinal axis of the core |
| Trace | - Represents 0 to 10 per cent by volume |
| Some | - Represents 10 to 25 per cent by volume |
| N Value | - Indicates the number of blows required to drive a standard split spoon sampler 12 inches with a 140-pound weight falling 30 inches |
| REC | - Recovery indicates total amount of core recovered for each run. Expressed as a percentage of the total length of the core run |
| RQD | - A modified core recovery in which all pieces of sound core over 4 inches in length are counted as recovery. The modified sum of core recovered is then expressed as a percentage of the total length of the core run |
| --- | - Dashed line in classification column indicates approximate or gradational change |





WEATHERING

- | | |
|----------------------|--|
| Fresh | - The rock shows no discoloration, loss of strength, or any other effect due to weathering (unweathered rock) |
| Slightly Weathered | - Rock is slightly discolored with a slightly lower strength than unweathered rock |
| Moderately Weathered | - Rock is considerably discolored with a significantly lower strength than unweathered rock |
| Highly Weathered | - Rock is discolored and weakened so intensely that 2-inch diameter rock cores can be broken readily by hand. Wet strength is usually much lower than dry strength |

BEDDING

- | | |
|---------------|---|
| Laminated | - Less than 0.001 foot to 0.01 foot (.1 inch) |
| Thin Bedded | - 0.01 foot to 0.1 foot (.1 to 1.2 inches) |
| Medium Bedded | - 0.1 foot to 1.0 foot (1.2 to 12 inches) |
| Thick Bedded | - Greater than 1.0 foot |
| Massive | - Denotes no discernible internal bedding structure |

SAMPLE SYMBOLS

- | | | | | | |
|---|---|---|--|---|---|
| Bag or Grab Sample | California | Piston | Pitcher | Split Barrel | Thin Wall |
|  |  |  |  |  |  |



| | | | | | | | | | | | |
|---|---------------|------------|------------|-------------------------------------|----------------|-----------------------------------|---------------|-----------------------------------|-----------------------------|---|--|
| CLIENT Texas Municipal Power Agency | | | | PROJECT Gibbons Creek SES | | | | PROJECT NO. 13290 | | | |
| PROJECT LOCATION Grimes County, Texas | | | | COORDINATES | | ELEVATION DATUM | | TOTAL DEPTH 14.5' | DATE START 1-6-87 | | |
| SURFACE CONDITIONS Grass & light brush gently sloping southwest (ATV) | | | | | | INSPECTOR L. J. Almaleh | | DATE FINISH 1-6-87 | | | |
| SAMPLING | | | | CHECKED BY L. J. Almaleh | | | | APPROVED BY P. R. Zaman | | | |
| SAMPLE TYPE | SAMPLE NUMBER | SET 6" | 2ND 6" | 3RD 6" | N VALUE | SAMPLE RECOV. | DEPTH IN FEET | SAMPLE TYPE | GRAPHIC LOG | CLASSIFICATION OF MATERIAL | REMARKS |
| CORE SIZE | RUN NUMBER | RUN LENGTH | RUN RECOV. | RQD RECOV. | PERCENT RECOV. | RQD | | | | | |
| 3" | 1 | 8.5 | 8.0 | - | 94 | - | 0 | | | Silty CLAY; brown; low plasticity; moist; w/organics (Topsoil) | Advanced boring w/3" I.D. double tube 10.0' long core barrel w/water |
| CS | 1 | | | | | | | | | CLAY; brown; high plasticity; moist; blocky 2.2 grading light brown | |
| CS | 2 | | | | | | | | | 5.5' 0.05' sand seam w/trace sand below 5.5' | |
| CS | 3 | | | | | | | | | 7.0' 0.05' sand seam w/some sand below 7.0' | Added bentonite to drill fluid @ 8.5' Losing circulation through crack in soil @ grade |
| | | | 8.5' | | | | | | | 8.5' 0.1' sandstone layer 9.0' 0.1' sandstone layer | |
| 3" | 2 | 6.0 | 5.0 | - | 83 | - | 10 | | | CLAY; yellowish-brown; high plasticity; moist; w/trace sand & weathered sandstone fragments; iron-stained | Bottom of boring @ 14.5' Water level not recorded Boring back-filled to 3.0' w/bentonite slurry concreted to grade |
| CS | 4 | | | | | | 12.4 | | | SANDSTONE; brown; fine grained; slightly weathered; laminated | |
| | | | 14.5' | | | | | | | | |



| CLIENT | | | | | | PROJECT | | | | PROJECT NO. | | |
|------------------------------|---------------|-----|--------------------|--------------------|--------------------|-------------------|---------------|---------------|-------------|-------------|---|---|
| Texas Municipal Power Agency | | | | | | Gibbons Creek SES | | | | 13290 | | |
| PROJECT LOCATION | | | COORDINATES | | | ELEVATION DATUM | | TOTAL DEPTH | DATE START | | | |
| Grimes County, Texas | | | | | | | | 29.0' | 1-7-87 | | | |
| SURFACE CONDITIONS | | | | | | INSPECTOR | | DATE FINISH | | | | |
| Level pasture (ATV) | | | | | | L. J. Almaleh | | 1-7-87 | | | | |
| SAMPLING | | | | | | CHECKED BY | | APPROVED BY | | | | |
| | | | | | | L. J. Almaleh | | P. R. Zanan | | | | |
| SAMPLE TYPE | SAMPLE NUMBER | SET | 1 ST 6" | 2 ND 6" | 3 RD 6" | N VALUE | SAMPLE RECOV. | DEPTH IN FEET | SAMPLE TYPE | GRAPHIC LOG | CLASSIFICATION OF MATERIAL | REMARKS |
| | | | | | | | | | | | | |
| 3" | 1 | 9.0 | 6.7 | - | - | 74 | - | 0.0 | | | Silty CLAY; dark brown; low plasticity; moist; w/some fine sand and organics (Topsoil) | Advanced boring w/3" ID double tube core barrel w/bentonite & revert w/water. Losing circulation through cracks in soil @ grade |
| CS | 1 | | | | | | | 3.4 | | | Sandy SILT; tan; low plastic; dry; w/some clay; iron-stained & fractured | |
| CS | 2 | | | | | | | 5.2 | | | Silty CLAY; dark brown; low plasticity; moist; trace fine sand | |
| CS | 3 | | | | | | | 9.4 | | | Sandy SILT; tan; low plasticity; dry; w/some clay; trace organics; 0.01' yellow sand seams | |
| CS | 4 | | | | | | | 10.0 | | | Silty CLAY; tan; low plasticity; w/some fine grained | |
| CS | 5 | | | | | | | 10.0 | | | Silty CLAY; light brown; low plasticity; moist; trace fine sand; iron-stained | |
| 3" | 2 | 10 | 10 | - | - | 100 | - | 19.0 | | | Sandy SILT; dark brown; non-plastic; w/sandstone fragments (weathered sandstone) | |
| CS | 6 | | | | | | | 19.0 | | | Clayey SILT; dark grayish-brown; low plasticity; w/interbedded less than 0.01' thick gray fine sand seams (weathered sandstone) | |
| 3" | 3 | 10 | 10 | - | - | 100 | - | 28.8 | | | SANDSTONE; dark brown; laminated; fine grained; clayey; severely to completely weathered | Bottom of boring @ 29.0' Water level not recorded. Grouted to 10.0' w/ bentonite concreted to 1.0' below grade capped w/ soil |
| CS | 7 | | | | | | | 29.0 | | | Sandy CLAY; dark gray; fine grained sand (weathered sandstone) | |

P-ST-0360



| CLIENT | | | | | | | PROJECT | | | | PROJECT NO. | |
|------------------------------|---------------|------------|------------|-------------|----------------|-------------------|-------------------|-------------|-------------|--|--|--|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | | 13290 | |
| PROJECT LOCATION | | | | COORDINATES | | ELEVATION (DATUM) | | TOTAL DEPTH | | DATE START | | |
| Grimes County, Texas | | | | | | | | 29.5 | | 1-8-87 | | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | DATE FINISH | | |
| Pasture sloping east (ATV) | | | | | | | L. J. Almaleh | | | 1-8-87 | | |
| SAMPLING | | | | | | | CHECKED BY | | | APPROVED BY | | |
| | | | | | | | L. J. Almaleh | | | P. R. Zaman | | |
| SAMPLE TYPE | SAMPLE NUMBER | SET 6" | 2ND 6" | 3RD 6" | N VALUE | SAMPLE RECOV. | DEPTH IN FEET | SAMPLE TYPE | GRAPHIC LOG | CLASSIFICATION OF MATERIAL | REMARKS | |
| CORE SIZE | RUN NUMBER | RUN LENGTH | RUN RECOV. | RQD RECOV. | PERCENT RECOV. | RQD | | | | | | |
| 3" | 1 | 9.5 | 4.7 | - | 50 | - | | | | Silty SAND; light brown; fine to medium grained; trace organics | Advanced boring w/3" ID double tube core barrel w/bentonite & revert w/water | |
| CS | 1 | | | | | | | | | | | |
| 3" | 2 | | | | | | | | | Clayey SAND; light brown; moist; fine to medium grained; some silt; trace organics; iron-stained | | |
| | | | 9.5' | | | | | | | | | |
| | | | | | | | 10 | | | | | |
| | | | | | | | 10.6 | | | SANDSTONE; tan to brown; severely weathered; laminated; fine grained | | |
| 3" | 2 | 10 | 9.1 | - | 91 | - | | | | Clayey SILT; tan; low plasticity; moist; trace fine sand; iron-stained; fractured | | |
| CS | 3 | | | | | | | | | | | |
| CS | 4 | | | | | | | | | | | |
| | | | | | | | 14.6 | | | | | |
| | | | | | | | | | | Sandy CLAY; brown; high plasticity; moist; fine grained sand; trace silt; iron-stained (weathered sandstone) | | |
| CS | 5 | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | 19.5' | | | | | | | | | |
| | | | | | | | 20 | | | | | |
| | | | | | | | 21.1 | | | | | |
| | | | | | | | | | | SANDSTONE; dark gray; laminated; fine grained; silty; severely to moderately weathered above 22.0' 22.0' fresh | | |
| 3" | 3 | 10 | 3.7 | - | 37 | - | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | 29.5' | | | | | | | | | |
| | | | | | | | 30 | | | | | |

Bottom of boring @ 29.5'
Water level not recorded.
Grouted w/bentonite to 10.0'
Concrete to 1.0' below grade; capped w/soil



| | | | | | | | | | | |
|--|---------------|------------|-------------|-------------------------------------|-------------------|---------------|-----------------------------------|-----------------------------------|---|---|
| CLIENT Texas Municipal Power Agency | | | | PROJECT Gibbons Creek SES | | | | PROJECT NO. 13290 | | |
| PROJECT LOCATION Grimes County, Texas | | | COORDINATES | | ELEVATION (DATUM) | | TOTAL DEPTH 27.5' | DATE START 1-6-87 | | |
| SURFACE CONDITIONS Small clearing in heavy brush | | | | | (ATV) | | INSPECTOR L. J. Almaleh | | DATE FINISH 1-6-87 | |
| SAMPLING | | | | CHECKED BY L. J. Almaleh | | | | APPROVED BY P. R. Zaman | | |
| SAMPLE TYPE | SAMPLE NUMBER | SET 6" | 2ND 6" | 3RD 6" | N VALUE | SAMPLE RECOV. | DEPTH IN FEET | SAMPLE TYPE GRAPHIC LOG | CLASSIFICATION OF MATERIAL | REMARKS |
| CORE SIZE | RUN NUMBER | RUN LENGTH | RUN RECOV. | RQD RECOV. | PERCENT RECOV. | RQD | | | | |
| 3" | 1 | 9.0 | 7.5 | - | 83 | - | 0.8 | | (Topsoil) | Advanced boring w/3" ID double tube core barrel w/water |
| CS | 1 | | | | | | 2.2 | | Sandy CLAY; light brown; low plasticity; moist; trace organics | |
| CS | 2 | | | | | | 4.1 | | Clayey SAND; light brown; fine to medium grained; trace organics | |
| CS | 3 | | | | | | 5.2 | | Silty SAND; grayish-brown; fine to medium grained; moist; w/some clay; trace organics | |
| CS | 4 | | | | | | 5.9 | | Clayey SAND; light brown; fine to medium grained; moist | |
| | | | 9.0' | | | | | | Sandy CLAY; light brown; low plasticity; moist | |
| | | | | | | | 10 | | Silty SAND; gray to light brown; fine to medium grained; subangular; moist | |
| 3" | 2 | 9.0 | 2.0 | - | 22 | - | | | | |
| CS | 5 | | | | | | | | 16.0' cemented (weathered sandstone) | |
| | | | 18.0' | | | | | | 17.5' - 17.8' iron-stained | |
| CS | 6 | | | | | | 20 | | SANDSTONE; grayish-brown; fine grained; slightly weathered | |
| 3" | 3 | 9.5 | 7.3 | - | 77 | - | | | 21.5' - 22.0' moderately weathered | |
| CS | 7 | | | | | | | | 22.0' grading to dark gray & fresh, clayey | |
| | | | 27.5' | | | | | | | |
| | | | | | | | 30 | | | Bottom of boring @ 27.5' Water level not recorded Grouted w/ bentonite to 5.0' Concreted to surface |



| CLIENT | | | | | | PROJECT | | | | PROJECT NO. | | | |
|------------------------------|---------------|------------|-------------|------------|-------------------|-------------------|---------------|--|---------------|-------------|-------------|--|--|
| Texas Municipal Power Agency | | | | | | Gibbons Creek SES | | | | 13290 | | | |
| PROJECT LOCATION | | | COORDINATES | | ELEVATION (DATUM) | | TOTAL DEPTH | | DATE START | | | | |
| Grimes County, Texas | | | | | | | 29.0' | | 1-7-87 | | | | |
| SURFACE CONDITIONS | | | | | | INSPECTOR | | | | DATE FINISH | | | |
| Level pasture | | | | | | L. J. Almaleh | | | | 1-7-87 | | | |
| SAMPLING | | | | | | CHECKED BY | | | | APPROVED BY | | | |
| | | | | | | L. J. Almaleh | | | | P. R. Zaman | | | |
| SAMPLE TYPE | SAMPLE NUMBER | SET | 1ST 6" | 2ND 6" | 3RD 6" | N VALUE | SAMPLE RECOV. | | DEPTH IN FEET | SAMPLE TYPE | GRAPHIC LOG | CLASSIFICATION OF MATERIAL | REMARKS |
| CORE SIZE | RUN NUMBER | RUN LENGTH | RUN RECOV. | RQD RECOV. | PERCENT RECOV. | RQD | | | | | | | |
| 3" | 1 | 9.5 | 8.0 | - | 84 | - | | | | | | Silty CLAY; dark brown; low plasticity; wet; w/some sand & organics (topsoil) | Advanced boring w/3" ID double tube core barrel w/bentonite & water |
| CS | 1 | | | | | | | | | | | Sandy CLAY; brown; low plasticity; moist; w/trace silt | |
| CS | 2 | | | | | | | | 3.9 | | | Clayey SILT; light brown; low plasticity; some fine to medium grained sand; moist; trace organics | Losing circulation through cracks in soil @ grade |
| CS | 3 | | | | | | | | 5.6 | | | SILT; light gray; non-plastic; moist; trace fine grained sand & organics; fractured | |
| CS | 4 | | | | | | | | | | | CLAY; brown; high plasticity; moist; w/some fine grained sand & silt; trace organics 6.5' iron-stained | |
| CS | 5 | | 9.5' | | | | | | 10 | | | Sandy SILT; light gray; low plasticity; moist; fine grained; sand; fractured & iron-stained 9.5' grading light gray to brown; laminated w/fine yellow sand seams | |
| 3" | 2 | 9.5 | 9.5 | - | 100 | - | | | | | | SANDSTONE; dark brown; fine grained; severely weathered | |
| CS | 7 | | | | | | | | 16.4 | | | Sandy CLAY; brown; high plasticity; moist; w/weathered sandstone fragments | |
| CS | 7 | | | | | | | | 18.7 | | | 18.5' gypsum crystals 0.05' | |
| CS | 8 | | | | | | | | 20 | | | Clayey SAND; dark gray; fine grained; poorly graded; moist trace clay (weathered sandstone) | |
| CS | 8 | | | | | | | | | | | SANDSTONE; dark gray; laminated; fine grained; silty & clayey slightly weathered fresh below 20.0' | |
| 3" | 3 | 10 | 10 | - | 100 | - | | | | | | below 25.2' dark brown; clay grades out | |
| | | | 29.0' | | | | | | | | | | |
| | | | | | | | | | 30 | | | | Bottom of boring @ 29.0' Water level not recorded Grouted w/ bentonite to 5.0' Concreted to surface |

| | | | | | | | | | | | |
|--|----------|----------|----------|---------------------------------|--------|-----------|-----------------------------------|--|----------------------|------------------------------|--|
| CLIENT Texas Municipal Power Agency | | | | | | | PROJECT Gibbons Creek SES | | | PROJECT NO. 14578 | |
| PROJECT LOCATION Carlos, Texas | | | | COORDINATES N377453 E3339384 | | | ELEVATION (DATUM) 263.6 | | TOTAL DEPTH 50.0' | DATE START 2-26-88 | |
| SURFACE CONDITIONS Dirt road in woods | | | | | | | INSPECTOR K. M. Blevins-McCosh | | | DATE FINISH 2-26-88 | |
| SAMPLING | | | | | | | CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | DEPTH IN FEET | | SAMPLE TYPE | REMARKS | |
| CORING | | | | | | | GRAPHICS LOG | CLASSIFICATION OF MATERIAL | | | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | | |
| TW | 1 | | | | | 1.0 | 1 | Silty SAND; brown; poorly graded; fine grained; moist; trace clay; organics & roots | | | Advanced boring using 4 1/2" rotary wash |
| TW | 2 | | | | | 1.0 | 2 | Silty CLAY; reddish-brown; low plasticity; moist; w/some sand; very iron stained; grading to high plasticity below 4.5' | | | TW 3 pp. 4+ |
| TW | 3 | | | | | 1.3 | 3 | | | | |
| TW | 4 | | | | | 1.2 | 4 | Silty CLAY; brownish-grey; high plasticity; moist; w/some sand; iron staining; 15" silty sand layer at 7.8' | | | |
| TW | 5 | | | | | 0.9 | 5 | | | | |
| | | | | | | | 6 | Sandy CLAY; tan; low plasticity; moist; w/some silt; iron staining; w/cemented sand nodules | | | |
| | | | | | | | 7 | | | | |
| TW | 6 | | | | | 1.2 | 8 | Clayey SAND; tan; low plasticity; moist w/some sandy clay seams; iron staining w/sandstone fragments and inclusions SANDSTONE seam at 17.75' | | | |
| | | | | | | | 9 | | | | |
| | | | | | | | 10 | 8" silty sand seam at 22' | | | |
| | | | | | | | 11 | | | | |
| TW | 7 | | | | | 1.5 | 12 | | | | |
| | | | | | | | 13 | | | | |
| | | | | | | | 14 | Silty CLAY; dark grey; high plasticity; moist; w/trace sand | | | |
| | | | | | | | 15 | | | | |
| TW | 8 | | | | | 0.9 | 16 | | | | |
| | | | | | | | 17 | | | | |
| | | | | | | | 18 | | | | |
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| CLIENT | | | | | | | PROJECT | | | | PROJECT NO. | |
|---|----------|----------|----------|------------------|--------|-----------|----------------------|--------------|---|------------|---------------|--|
| Texas Municipal Power Agency | | | | | | | Gibbons Creek SES | | | | 14578 | |
| PROJECT LOCATION | | | | COORDINATES | | | ELEVATION (DATUM) | | TOTAL DEPTH | DATE START | | |
| Carlos, Texas | | | | N377160 E3340264 | | | 252.2' | | 50.0' | 2-24-88 | | |
| SURFACE CONDITIONS | | | | | | | INSPECTOR | | | | DATE FINISH | |
| Clearing in woods near cooling lake canal | | | | | | | K. M. Blevins-McCosh | | | | 2-25-88 | |
| SAMPLING | | | | | | | CHECKED BY | | | | APPROVED BY | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | M. C. Schluter | | | | L. J. Almaleh | |
| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE | CLASSIFICATION OF MATERIAL | | | REMARKS |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | GRAPHICS LOG | | | | |
| TW | 1 | | | | | 0.8 | 1 | | Silty SAND; brown; poorly graded; fine grained; moist; some organics; roots (top soil) | | | Boring advanced using 4 1/2" rotary wash |
| TW | 2 | | | | | 1.3 | 2 | | Silty SAND; brown; poorly graded; moist; iron stained with gravel | | | |
| TW | 3 | | | | | 1.4 | 3 | | Silty CLAY; brown; hard; low plasticity; moist with some sand Sandy CLAY; seam at 7.5' | | | |
| TW | 4 | | | | | 2.0 | 4 | | | | | |
| TW | 5 | | | | | 1.1 | 5 | | | | | |
| 3" | 1 | 5 | 10' | 0.7' | 0 | 0 | 10 | | GRAVEL; tan to brown; poorly graded with some clay .5" - 2" diameter | | | Started coring at 10' - hit gravel |
| TW | 6 | | 15' | | | 1.8 | 1 | | Silty SAND; grey; poorly graded; fine grained; moist; iron staining; with trace clay; 1" clay layer at 15' | | | |
| TW | 7 | | | | | 0.8 | 6 | | Few SANDSTONE nodules below 19' | | | |
| TW | 8 | | | | | 0.9 | 7 | | | | | |
| TW | 9 | | | | | 1.0 | 8 | | Sandy CLAY; tan; hard; low plasticity; moist; w/clayey sand seams; iron stained | | | |
| TW | 10 | | | | | 0.7 | 9 | | 4" sand seam at 22.5' 1" SANDSTONE at 24' 4" SAND seam at 24.2' | | | |
| SPT | 11 | 32/5 | | | | 0.2 | 20 | | Silty CLAY; greenish-grey; hard; low plasticity; moist; w/some sand Grading to silty SAND w/clay below 26.5' | | | |
| 3" | 2 | 2' | 27' | 1' | 0 | 0.5 | 0 | | SANDSTONE; argillaceous; greenish-grey; thin bedded; fine grained; clay partings; fractures every 1/2 - 2"; weathered | | | Started coring at 27' SPT bouncing in hole |
| 3" | 3 | 1' | 30' | 1' | 0 | 100 | 0 | | | | | |

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| CLIENT Texas Municipal Power Agency | | | | | | PROJECT Gibbons Creek GES | | | | PROJECT NO. 14578 | |
| PROJECT LOCATION Carlos, Texas | | | COORDINATES N377160 E3340264 | | | ELEVATION (DATUM) 252.2' | | TOTAL DEPTH 50.0' | | DATE START 2-24-88 | |
| SURFACE CONDITIONS Clearing in woods near cooling lake canal | | | | | | INSPECTOR K. M. Blevins-McCosh | | | | DATE FINISH 2-25-88 | |
| SAMPLING | | | | | | CHECKED BY M. C. Schluter | | | | APPROVED BY L. J. Almaleh | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | DEPTH IN FEET | | SAMPLE TYPE | | REMARKS |
| CORING | | | | | | | GRAPHICS LOG | | CLASSIFICATION OF MATERIAL | | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | | |
| TW | 12 | | | | | 0.9 | 1 | Silty CLAY; greenish-grey; very hard; low plasticity; moist; with sandstone layers | | | |
| TW | 13 | | | | | 0.8 | 2 | Sandy SILT; greenish-grey; poorly graded; fine grained; moist; with some clay | | | |
| TW | 14 | | | | | 0.8 | 3 | Silty CLAY; greenish-grey; very hard; high plasticity; moist; some sand; iron stained on joints | | | |
| TW | 15 | | | | | 0.3 | 4 | | | | |
| TW | 16 | | | | | 0.8 | 35 | Cemented sand seams below 37' to 38' | | | |
| TW | 17 | | | | | 2.0 | 6 | Silty SAND filled joints below 38' | | | |
| TW | 18 | | | | | 1.4 | 7 | Sandy CLAY; greenish-grey; hard; high plasticity; moist; with silt and sand filled joints | | | |
| TW | 19 | | | | | 1.4 | 8 | | | | |
| TW | 20 | | | | | 1.4 | 40 | Silty CLAY; greenish-grey; very hard; high plasticity; moist with little sand and sand filled seams; laminated | | | |
| TW | 21 | | | | | 1.1 | 45 | Cemented sand seam 45.7' | | | |
| | | | | | | | 50 | Silty SAND seams at 49.0' | | | |
| | | | | | | | 55 | | | Bottom of boring at 50'. Groundwater level unknown. Reamed hole to 50.5' w/4 1/2" bit first 3' of hole reamed w/6 3/4" bit. Washed cuttings from hole. Installed 2-20' sections 2" PVC pipe and 1-6.7' section 2" PVC pipe and 5' screen. | |
| | | | | | | | 56 | | | | |
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| CLIENT Texas Municipal Power Agency | | | | | | | PROJECT Gibbons Creek SES | | | PROJECT NO. 14578 | |
| PROJECT LOCATION Carlos, Texas | | | | COORDINATES N377624 E3340903 | | | ELEVATION (DATUM) 272.5' | | TOTAL DEPTH 10' | DATE START 2-24-88 | |
| SURFACE CONDITIONS Clearing in woods | | | | | | | INSPECTOR K. M. Blevins-McCosh | | | DATE FINISH 2-24-88 | |
| SAMPLING | | | | | | | CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | DEPTH IN FEET | | SAMPLE TYPE | CLASSIFICATION OF MATERIAL | REMARKS |
| CORING | | | | | | | GRAPHICS LOG | | | | |
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | | |
| TW | 1 | | | | | 1.8 | 1 | | Sandy <u>SILT</u> ; brown; poorly graded; moist; w/some clay; iron staining; trace organics; roots; (Top soil) | | Boring advanced using 4 1/2" rotary wash |
| SPT | 2 | 50 | 30/2 50/1.5 | | | 1.2 | 2 | | Clayey <u>SAND</u> ; tan; poorly graded; moist w/iron staining and sandstone fragments; lignitic below 3' (extremely weathered sandstone) | | |
| 3" | 1 | 5 | 5' 2.8 | 0.75 | 56 | 15 | 3 | | | | Rock fragments showing up in cuttings at 5' |
| | | | | | | | 4 | | | | |
| | | | | | | | 5 | | | | |
| | | | | | | | 6 | | <u>SANDSTONE</u> ; thin bedded; fine grained; fracture spacing .5-4"; iron staining on fracture surface; some sand seams; highly weathered. | | |
| | | | | | | | 7 | | | | |
| | | | | | | | 8 | | | | |
| | | | | | | | 9 | | | | |
| | | | 10' | | | | 10 | | | | Bottom of boring at 10'. Groundwater level unknown. Backfilled hole w/grout to surface inserted concrete plug. |
| | | | | | | | 1 | | | | |
| | | | | | | | 2 | | | | |
| | | | | | | | 3 | | | | |
| | | | | | | | 4 | | | | |
| | | | | | | | 15 | | | | |
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| | | | | | | | 1 | | | | |
| | | | | | | | 2 | | | | |
| | | | | | | | 3 | | | | |
| | | | | | | | 4 | | | | |
| | | | | | | | 25 | | | | |
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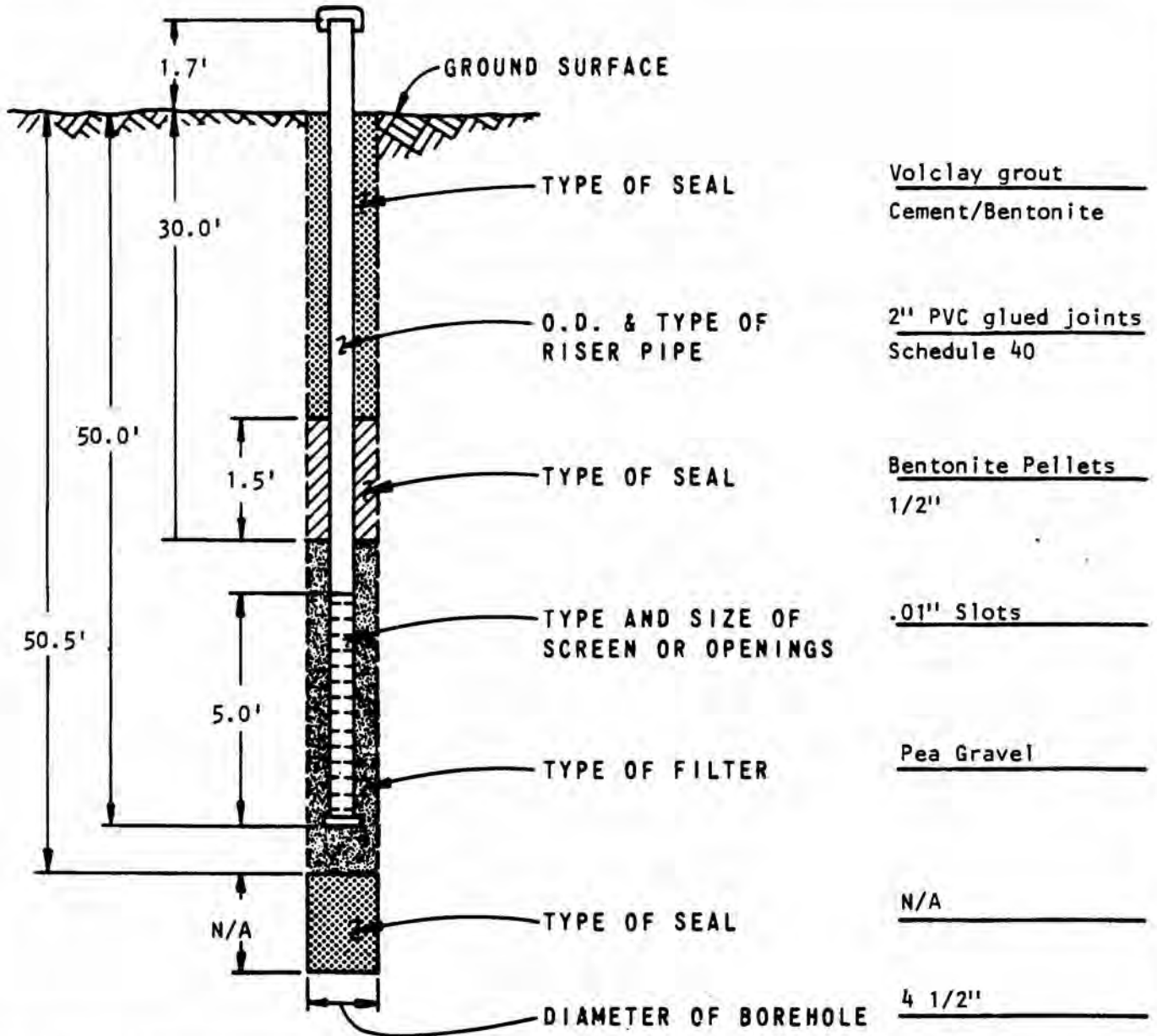
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|---|--|-----------------------------------|-----------------------------|------------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | | COORDINATES N384180 E3337723 | ELEVATION (DATUM) 283.5' | TOTAL DEPTH 20.0' |
| SURFACE CONDITIONS Clearing in pasture | | INSPECTOR K. M. Blevins-McCosh | | DATE START 2-16-88 |
| | | | | DATE FINISH 2-16-88 |

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|-----------|----------|--------|--------|--------|-------|-----------|------------------------------|------------------------------|--|--|
| SAMPLING | | | | | | | CHECKED BY M. C. Schluter | APPROVED BY L. J. Almaleh | | |
| SAMP TYPE | SAMP NO. | SET 6" | 2ND 6" | 3RD 6" | N VAL | SAMP RECV | | | | |

| CORING | | | | | | | DEPTH IN FEET | SAMPLE TYPE GRAPHICS LOG | CLASSIFICATION OF MATERIAL | REMARKS |
|-----------|---------|----------|----------|----------|--------|-----|---------------|---|--|---------|
| CORE SIZE | RUN NO. | RUN LENG | RUN RECV | RQD RECV | % RECV | RQD | | | | |
| TW | 1 | | | | | 1.1 | 1 | Undifferentiated overburden | Advanced boring with 3" continuous flight auger | |
| TW | 2 | | | | | 1.1 | 2 | Silty CLAY; brownish-grey; moist; high plasticity; hard; trace roots | pp. 1.25 | |
| TW | 3 | | | | | 1.1 | 3 | | | |
| TW | 4 | | | | | 1.3 | 4 | Grading trace sand w/gypsum | pp. 4 at 4' | |
| TW | 5 | | | | | 1.5 | 5 | | pp. 4+ at 6' | |
| TW | 6 | | | | | 1.7 | 6 | | | |
| TW | 7 | | | | | 1.8 | 7 | Grading silty and medium plastic at 7' | pp. 3.5 | |
| TW | 8 | | | | | 1.5 | 8 | Clayey SILT; light brown; moist; high plasticity; very stiff; w/some sand; and iron staining | pp. 4+ | |
| TW | 9 | | | | | 1.8 | 9 | | | |
| TW | 10 | | | | | 1.4 | 10 | Sandy SILT; light brown; moist; hard; low plasticity; some clay; iron staining; with thin stringers of sand | pp. 4+ | |
| | | | | | | | 1 | | | |
| | | | | | | | 2 | Silty CLAY; dark brown; moist; hard; plastic; iron staining; trace limonite | pp. 4+ | |
| | | | | | | | 3 | | | |
| | | | | | | | 4 | Fine sand seams below 14' | pp. 3.5 | |
| | | | | | | | 15 | | | |
| | | | | | | | 6 | | pp. 4+ | |
| | | | | | | | 7 | | | |
| | | | | | | | 8 | Silty SAND; light brown; moist; fine grained; poorly graded; trace clay | | |
| | | | | | | | 9 | | | |
| | | | | | | | 20 | Silty CLAY; dark brown; moist; hard; plastic; iron staining with sand seams | Bottom of boring at 20'. Groundwater level unknown. | |
| | | | | | | | 1 | | | |
| | | | | | | | 2 | | | |
| | | | | | | | 3 | | Backfill with cuttings, concrete plug placed to 2'. | |
| | | | | | | | 4 | | | |
| | | | | | | | 25 | | | |
| | | | | | | | 6 | | | |
| | | | | | | | 7 | | | |
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| | | | | | | | 9 | | | |
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| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek | PROJECT NO 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES N377160 E3340264 | GROUND ELEVATION 252.2' | DATE 2-25-88 |
| STRATUM MONITORED Sandstone, Silty Clay, Sandy Silt | | INSPECTOR K. M. Blevins-McCosh | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | |



METHOD OF INSTALLATION: Boring drilled to completion; set riser pipe and screen; placed filter and seal; grouted to surface; poured surface pad.

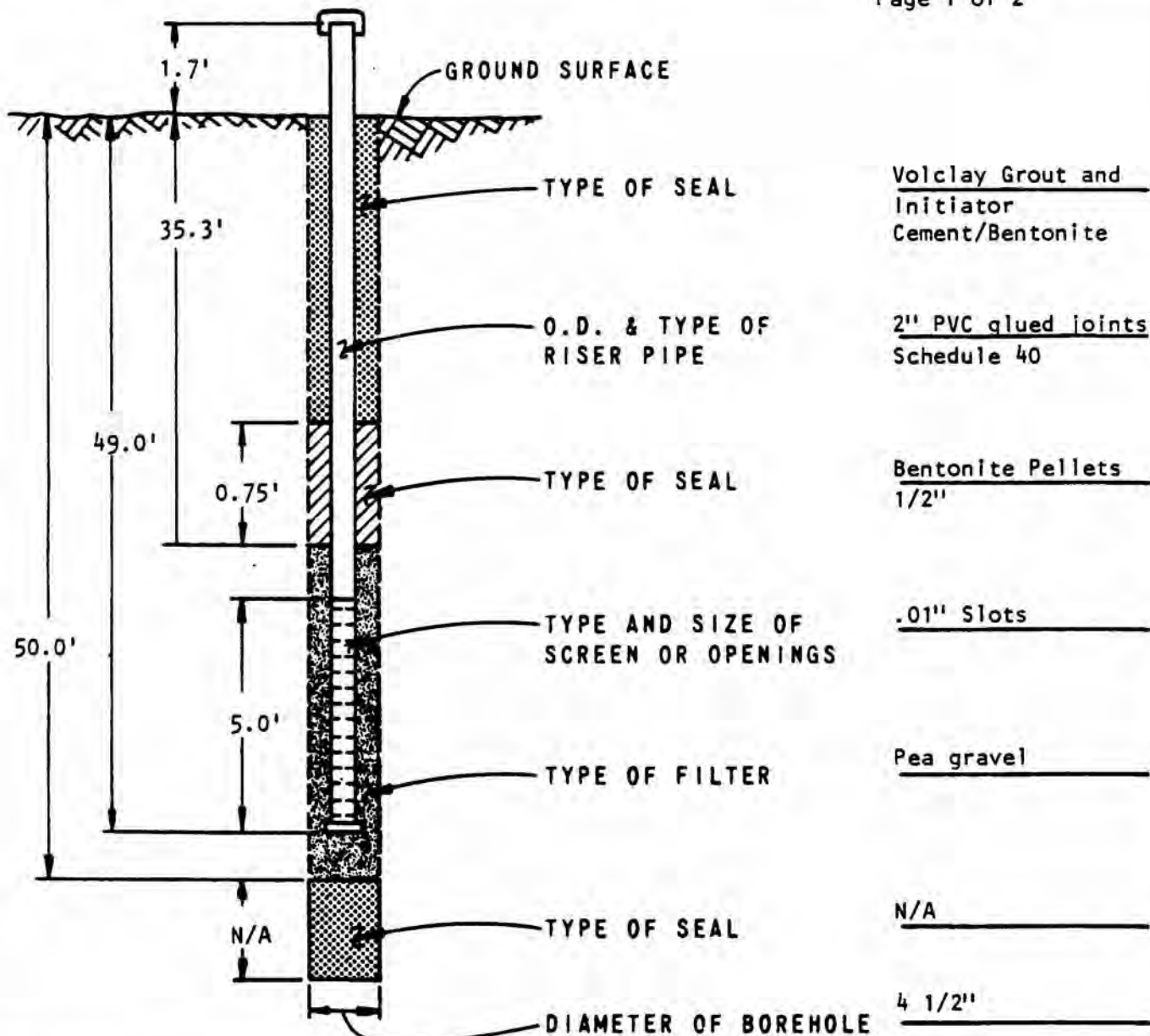
REMARKS: Installed piezometer in fluid-filled hole; developed well by flushing w/clean water for 8 minutes on 2-27-88; blew out water w/compressed air; water level recorded at 37.25' from TOC

P-ST-021



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| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek | PROJECT NO 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES N378330 E3339148 | GROUND ELEVATION 266.8' | DATE 2-26-88 |
| STRATUM MONITORED Sandstone and clay | | INSPECTOR K. M. Blevins-McCosh | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | |

Page 1 of 2



METHOD OF INSTALLATION: Boring drilled to completion; set riser pipe and screen; placed filter and seal; grouted to surface; poured surface pad

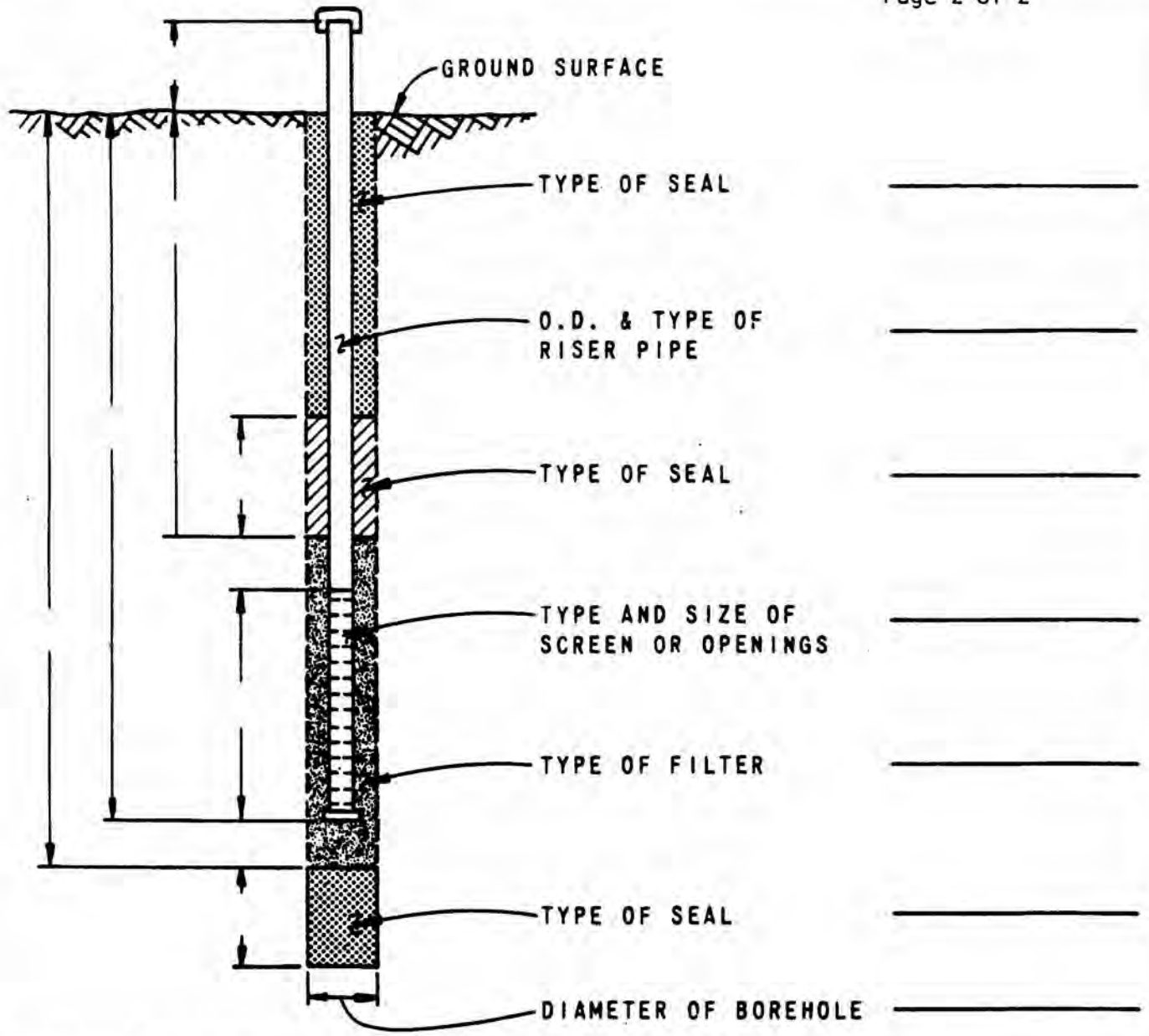
REMARKS: Installed piezometer in fluid-filled hole; added approximately 2 gallons of bentonite pellets for seal but only 9" arrived at 35'- rest hung up- didn't have any more bentonite developed well on 2-27-88 by flushing w/clean water for 3 minutes and blowing it out w/air

P-ST-021



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| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek | PROJECT NO 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES N378330 E3339148 | GROUND ELEVATION 266.8 | DATE 2-26-88 |
| STRATUM MONITORED Sandstone and clay | | INSPECTOR K. M. Blevins-McCosh | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | |

Page 2 of 2



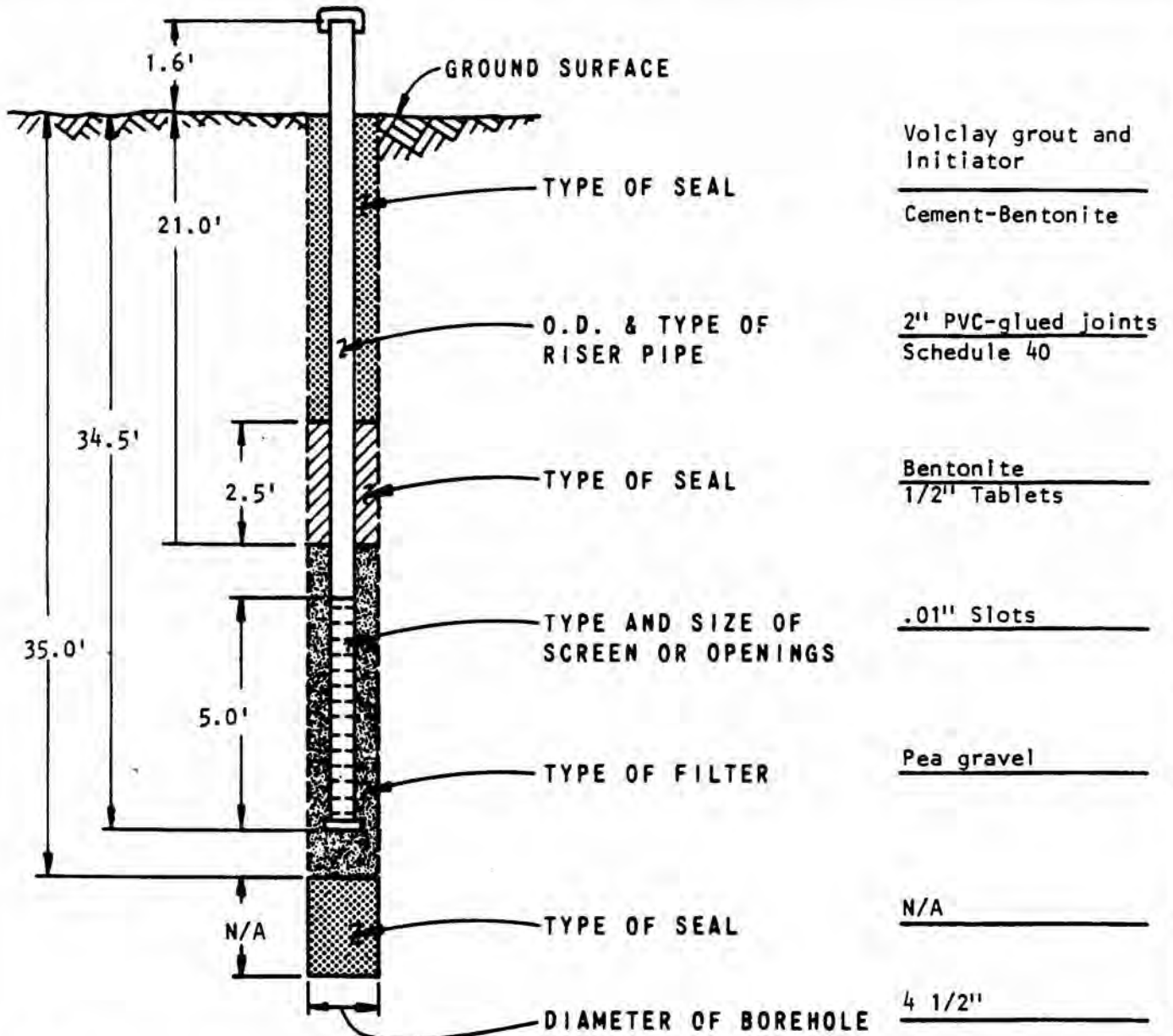
METHOD OF INSTALLATION:

REMARKS: Pump gave out after 3 min. so continued flushing well by pouring clean water in hole and blowing out repeatedly, decided wasn't working very well, quit - finished developing by flushing w/clean water for 10 min. and blowing out w/air on 2-29-88, water level recorded at 34'

P-ST-021B



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| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek | PROJECT NO 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES N378200 E3342496 | GROUND ELEVATION 261.5' | DATE 2-23-88 |
| STRATUM MONITORED Sandstone | | INSPECTOR K. M. Blevins-McCosh | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | |



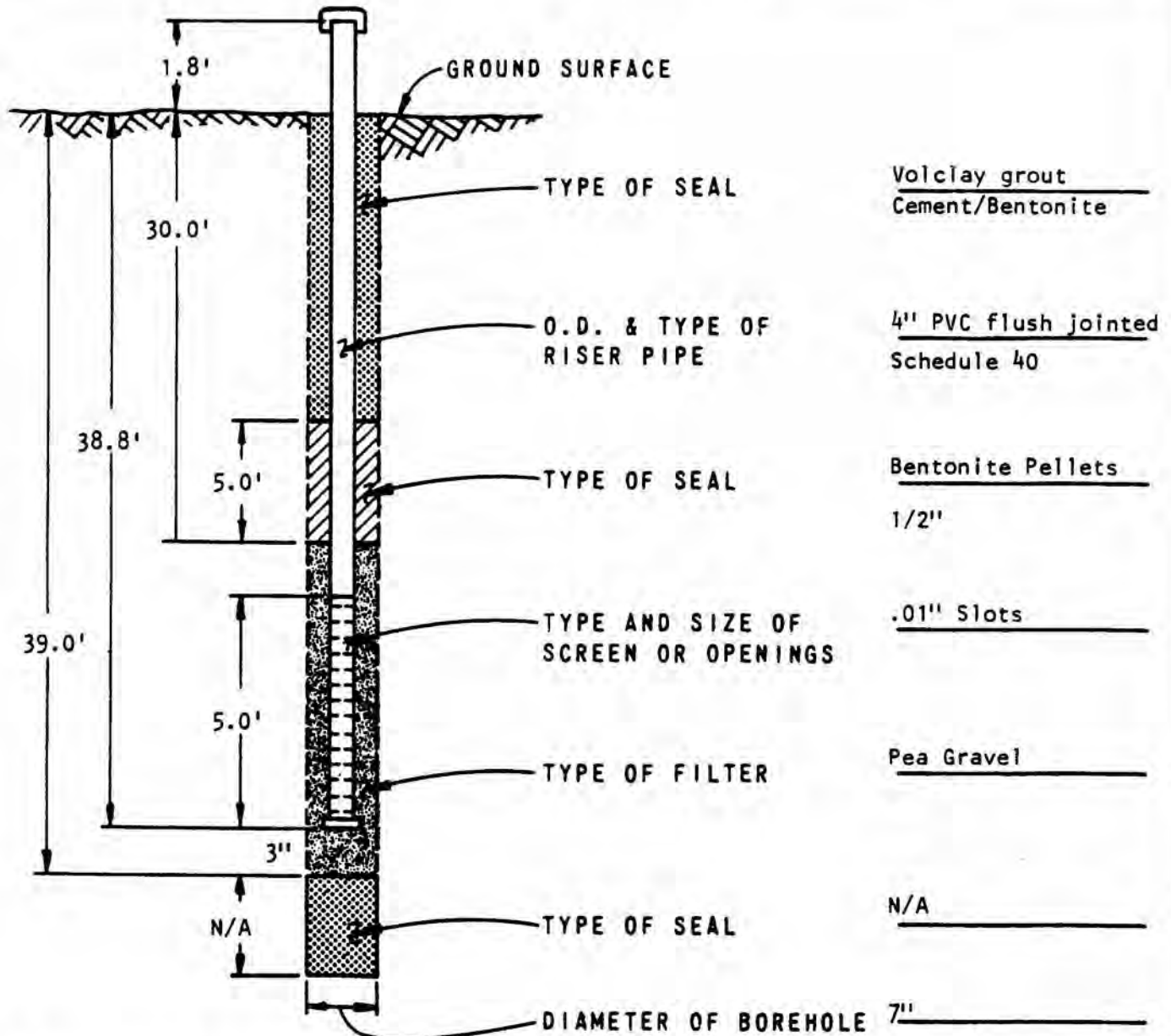
METHOD OF INSTALLATION: Boring drilled to completion; set riser pipe and screen; placed filter and seal; grouted to surface; poured surface pad.

REMARKS: Flushed cuttings from hole; hole remained fluid filled during installation. Developed well on 2-27-88 by flushing well with clean water for 6 min. blew out water from well with air compressor water level recorded at 23'-10" from TOC

P-ST-021



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| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek | | PROJECT NO 14578 |
| PROJECT LOCATION Carlos, Texas | | COORDINATES N379581 E3339416 | GROUND ELEVATION 261.7' | DATE 2-25-88 |
| STRATUM MONITORED Sandstone | | | INSPECTOR K. M. Blevins-McCosh | |
| CHECKED BY M. C. Schluter | | APPROVED BY I. J. Almaleh | | |



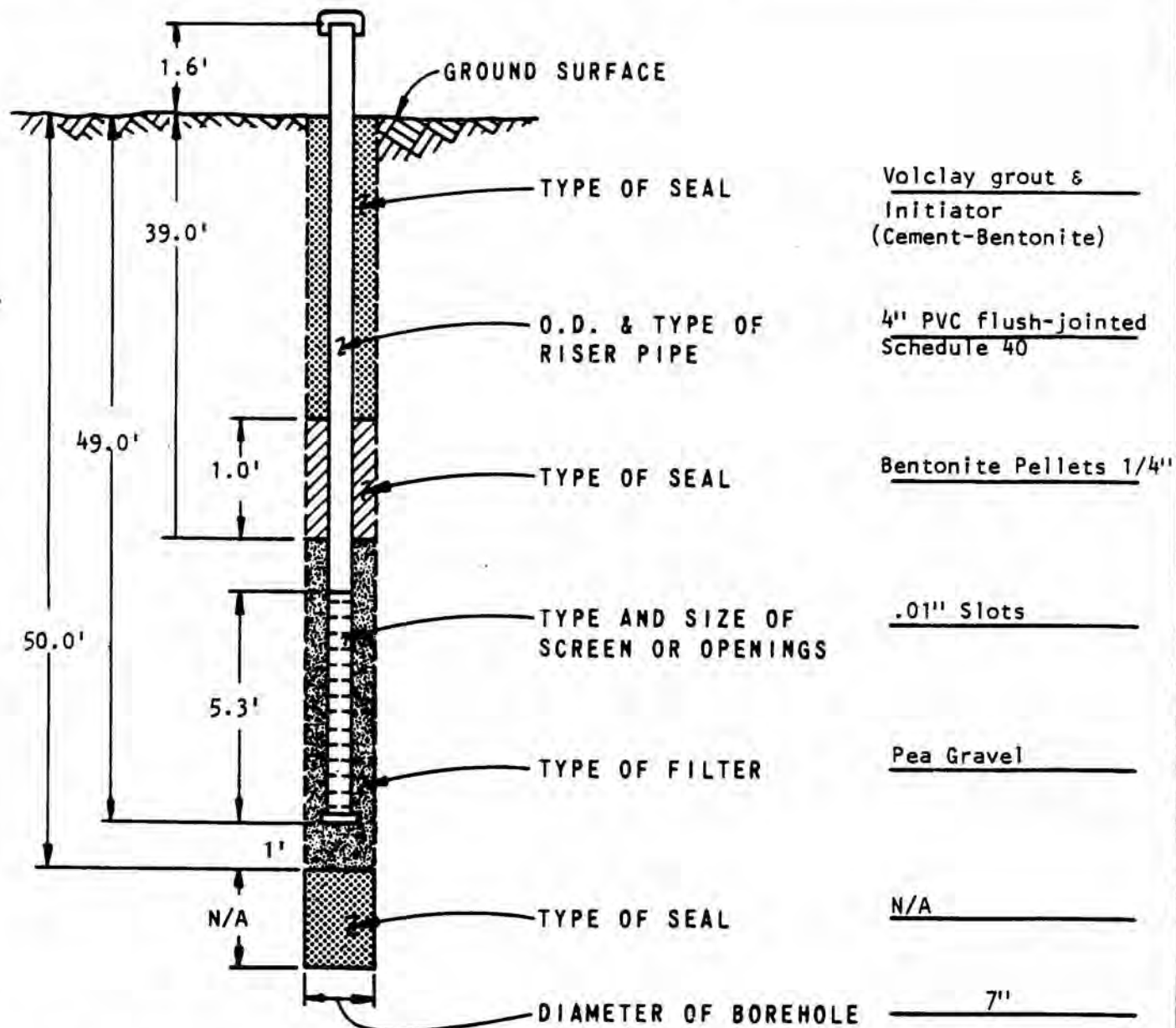
METHOD OF INSTALLATION: Boring drilled to completion; set riser pipe and screen; placed filter and seal; grouted to surface; poured surface pad

REMARKS: Cuttings washed from hole; piezometer installed in fluid-filled hole; well developed on 2-27-88 by flushing hole w/clean water for 8 min. and pumping until dry. Water level recorded at 38.2' from TOC.

P-ST-021



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| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek | PROJECT NO 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES N381087 E3340991 | GROUND ELEVATION 292.3' | DATE 2-17-88 |
| STRATUM MONITORED Clay | | INSPECTOR K. M. Blevins-McCosh | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | |



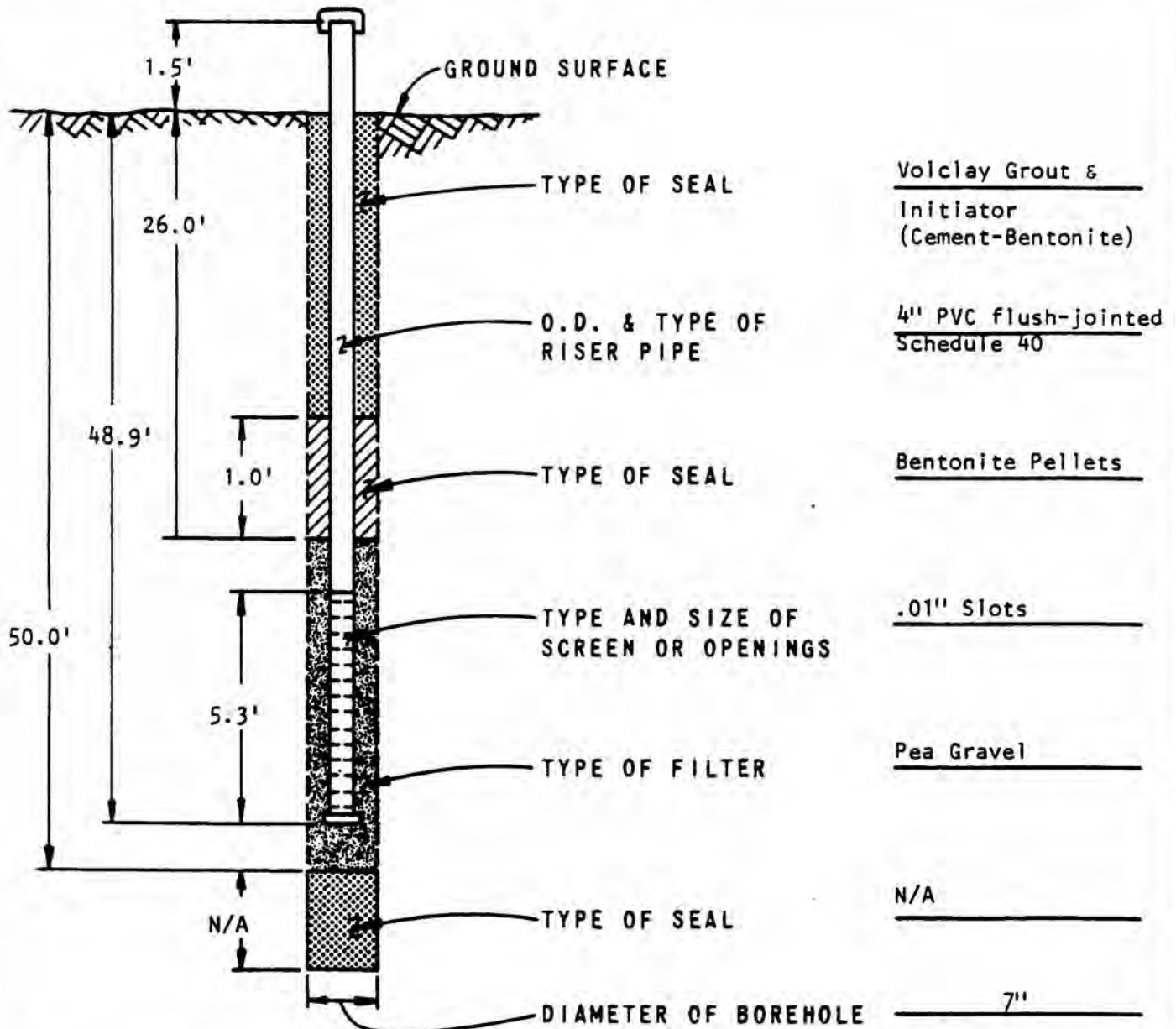
METHOD OF INSTALLATION: Boring drilled to completion; set riser pipe and screen; placed filter and seal; grouted to within 5' of ground surface filled remaining 5' with dry grout and cuttings

REMARKS: Developed well on 2-27-88 by flushing w/clean water for 7 min.; pumped well dry; water level recorded at 48.5' from TOC.

P-ST-02



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|--|--|---------------------------------|-----------------------------------|---------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek | | PROJECT NO 14578 |
| PROJECT LOCATION Carlos, Texas | | COORDINATES N381539 E3342922 | GROUND ELEVATION 269.1' | DATE 2-18-88 |
| STRATUM MONITORED Clay | | | INSPECTOR K. M. Blevins-McCosh | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |



METHOD OF INSTALLATION:

Boring drilled to completion; set riser pipe and screen; placed filter and seal; grouted to surface; poured surface pad.

REMARKS:

Riser pipe started to rise so had to fill with water during installations; well developed on 2-27-88 by flushing w/clean water for 7 min., and then pumping well dry. Water level 50' from TOC.

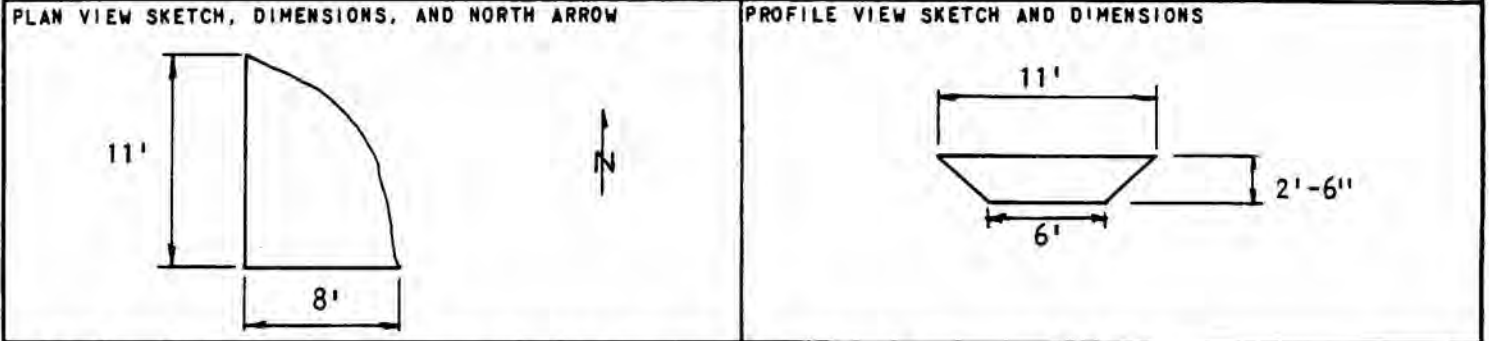
P-ST-021

TEST PIT LOGS



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|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 2.5' | DATE 2-16-88 |
| SURFACE CONDITIONS Grassy, Flat Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |

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| CHECKED BY M. C. Schluter | APPROVED BY L. J. Almaleh |
|------------------------------|------------------------------|



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | | | | | | | | DEPTH |
|------------------------|---------------|--|---|---|---|---|---|---|---|---|-------|
| | | STATION INTERVALS | | | | | | | | | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| | 0.0 - 0.5 | Silty SAND; light brown; loose; fine grain; moist; some organics and roots; (TOPSOIL) | | | | | | | | | |
| | 0.5 - 1.0 | Silty SAND; brown; medium dense; fine grain; wet; trace clay; trace organics and roots | | | | | | | | | |
| | 1.0 - 2.0 | Silty CLAY; grey; stiff; high plasticity; moist; trace sand and roots | | | | | | | | | |
| | 2.0 - 3.0 | SANDSTONE; hard; slightly weathered; fractured | | | | | | | | | |

REMARKS:
Backhoe refusal at 2.5 feet

P-ST-026B



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|---|-------------|--------------------------|------------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 5.0' | DATE 2-16-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | | | PROFILE VIEW SKETCH AND DIMENSIONS | |
| | | | | |

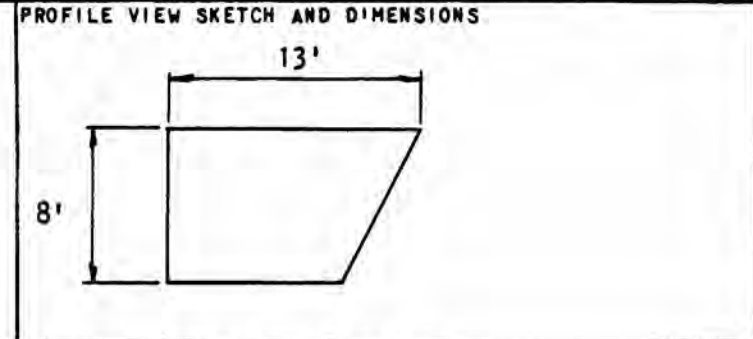
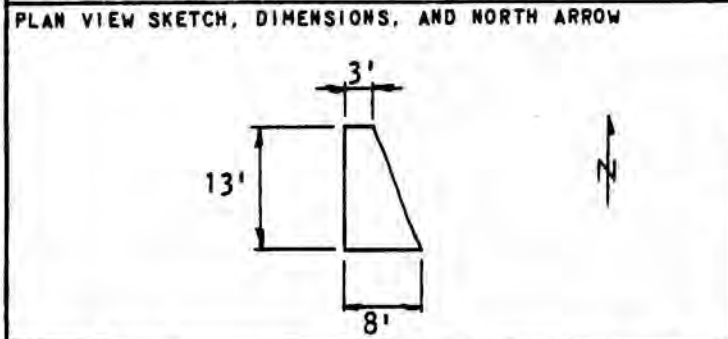
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| | 2 | Silty CLAY; brown; stiff; high plasticity; some roots and organics; trace sand | |
| | 3 | | |
| | 4 | Silty CLAY; or Clayey Silt; light brown; extremely stiff; trace sand; trace clay; trace weathered sandstone | |
| | 5 | ----- | |
| | 6 | | |

REMARKS: Backhoe refusal at 5.0 feet

P-ST-0268



| | | | |
|--|-------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 8.0' |
| SURFACE CONDITIONS Flat, grassy pasture | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | |



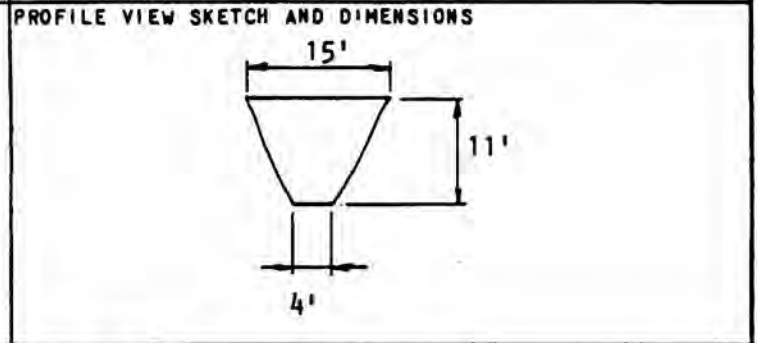
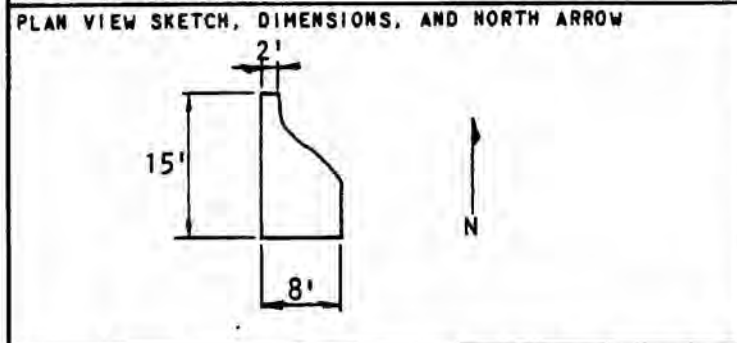
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | SAND; light brown; loose; fine grain; moist; some organics and roots; trace silt and gravel (TOPSOIL) | |
| | 2 | Silty SAND; light brown w/iron mottling; fine grain; wet; some roots and organics; trace gravel | |
| | 3 | Silty CLAY; reddish-brown (iron mottling); stiff; moist trace sand | |
| Bag | 4 | Silty CLAY; grey; stiff; highly plastic; moist; trace sand | |
| | 5 | | |
| | 6 | Silty CLAY or clayey SILT; reddish-grey; very stiff; moist; some gravel and weathered rock | |
| | 7 | | |
| | 8 | | |

REMARKS: Clay continues below 8 feet. Composite sample taken from 2.0 feet to 8.0 feet.

P-ST-026B



| | | | | |
|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 11.0' | DATE 2-16-88 |
| SURFACE CONDITIONS Flat, grassy pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |



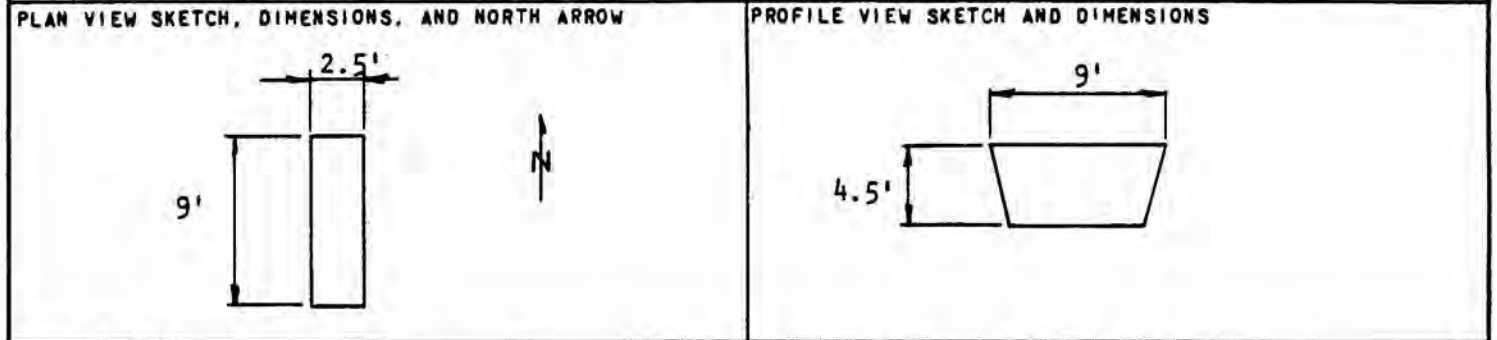
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | | Silty SAND; lt. brown; loose; moist; roots and organics (TOPSOIL) | |
| | 1 | Silty CLAY; brownish-grey; medium stiff; low plastic; moist; some roots and organics; trace sand and gravel | |
| | 2 | | |
| | 3 | Silty CLAY; brownish-grey; stiff; high plastic; moist trace sand and gravel and weathered rock | |
| Bag | 4 | | |
| | 5 | | |
| | 6 | Silty CLAY or Clayey SILT; stiff; high plastic; moist; trace sand and weathered rock | |
| | 7 | | |
| | 8 | | |
| | 9 | | |
| | 10 | | |

REMARKS: Silty CLAY to 11' and beyond. Composite sample taken from 0.5 to 10.5 feet.

P-ST-0268



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|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 4.5' | DATE 2-17-88 |
| SURFACE CONDITIONS Flat, grassy pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |

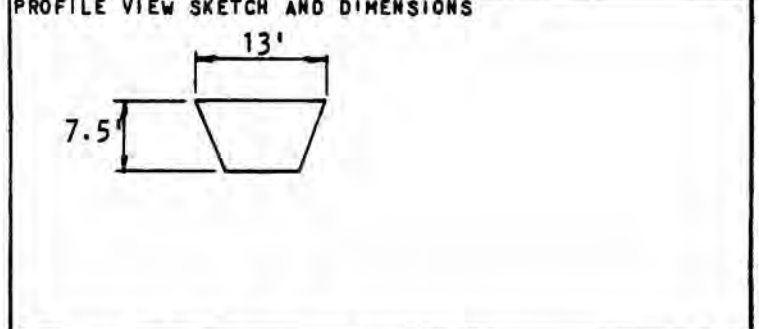
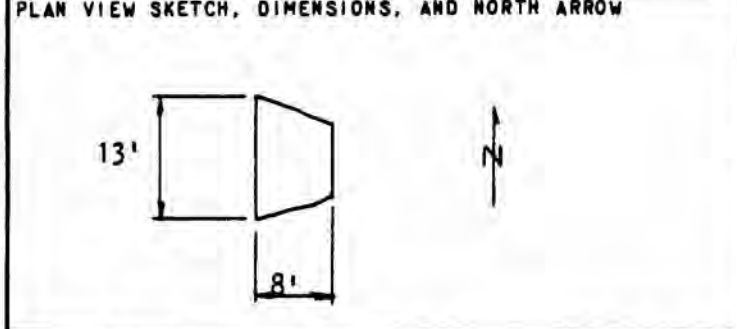


| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0 | Silty SAND; lt. brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| | 1 | Silty CLAY; dark brown w/iron staining; stiff; moist; high plasticity; trace roots; trace sand | |
| | 2 | | |
| | 3 | Clayey SILT or silty CLAY; lt. brown; stiff; moderate plasticity; moist; trace sand and weathered sandstone | |
| | 4 | Grading to very stiff | |
| | 5 | | |

REMARKS: Backhoe refusal at 4.5'



| | | | | |
|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 7.5' | DATE 2-17-88 |
| SURFACE CONDITIONS Flat, grassy pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe J. D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |



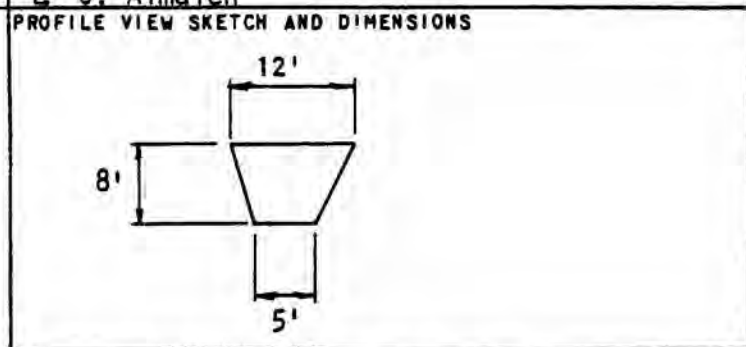
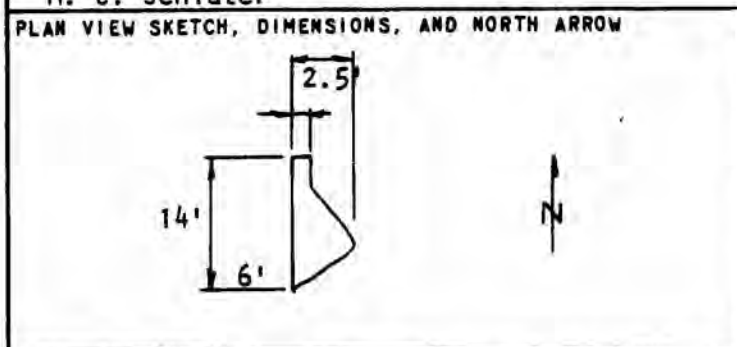
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; lt. brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| | 2 | Silty CLAY; dark brown w/iron staining; stiff; high plasticity; moist; some roots & organics; trace sand | |
| | 3 | Silty CLAY; greyish-brown; dense; moist; medium plasticity with vertical sand lenses (1) | |
| Jar 1 | 4 | Silty CLAY or clayey SILT; brownish-grey w/iron staining; stiff; high plasticity; moist | |
| Bag | 5 | | |
| | 6 | | |
| | 7 | Grading to weathered sandstone | |
| | 8 | | |

REMARKS: Backhoe refusal at 7.5 feet. Composite sample taken from 0.75 to 5.75 feet.

P-ST-026B



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 8.0' | DATE 2-17-88 |
| SURFACE CONDITIONS Flat, grassy pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



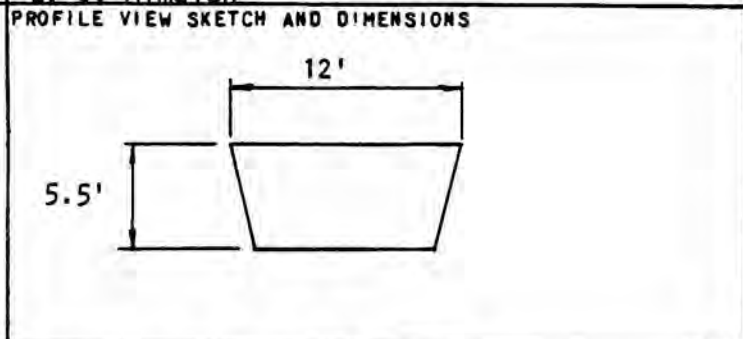
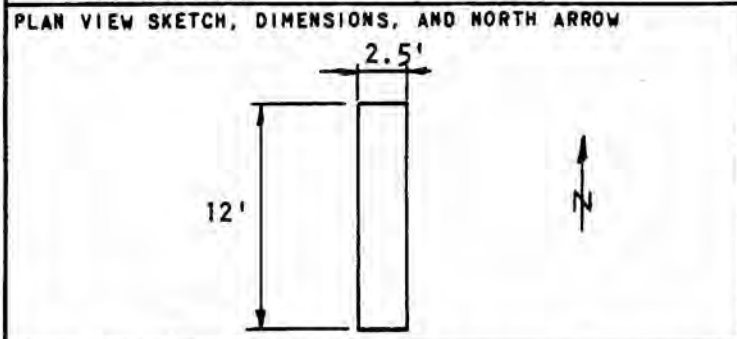
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | | Silty SAND; lt. brown; loose; fine grain; moist; roots & organics (TOPSOIL) | |
| | 1 | Silty CLAY; brown; medium stiff; high plasticity; moist; some roots and organics; trace sand | |
| | 2 | Silty CLAY; dark brown; stiff; high plasticity; trace roots; trace gravel | |
| Bag | 3 | Clayey SILT; lt. brown; dense; high plasticity; trace sand | |
| | 4 | | |
| Jar. 1 | 5 | Clayey SILT or Silty CLAY; brown w/iron staining; ① stiff; high plasticity; moist; trace sand | |
| | 6 | | |
| | 7 | | |
| | 8 | Grading to weathered sandstone | |
| | 9 | | |

REMARKS: Backhoe refusal at 8.0 feet. Composite sample taken from 0.5 to 7.0 feet.

P-ST-0268



| | | | | |
|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 5.5' | DATE 2-16-88 |
| SURFACE CONDITIONS Flat, grassy pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |



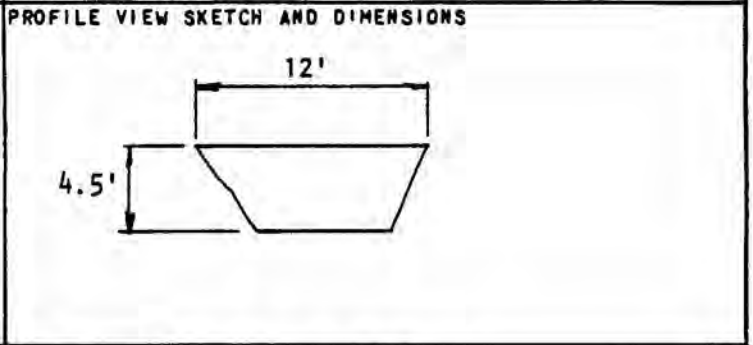
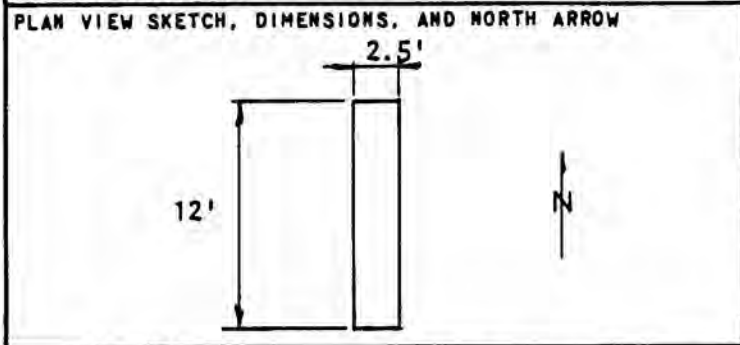
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | Silty <u>SAND</u> ; lt. brown; loose; fine grain; moist; organics and roots (TOPSOIL) | |
| Jar 1 | 2 | Silty <u>CLAY</u> ; brown; stiff; high plasticity; moist; trace sand some roots ① | |
| Jar 2 | 3 | Silty <u>CLAY</u> or clayey <u>SILT</u> ; lt. brown with iron streaks; dense; moist; trace sand ② | |
| | 4 | Grading to highly weathered sandstone | |
| | 5 | | |
| | 6 | <u>SANDSTONE</u> ; lt. brown; soft; highly weathered | |
| | 7 | | |
| | 8 | | |

REMARKS: Backhoe refusal at 5.5 feet.

P-ST-026B



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 4.5' | DATE 2-17-88 |
| SURFACE CONDITIONS Flat, grassy pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



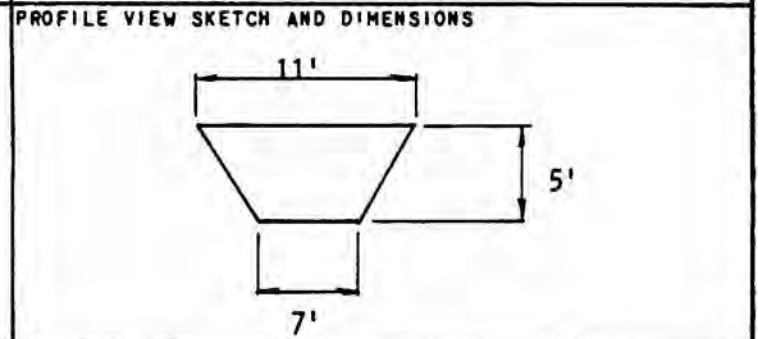
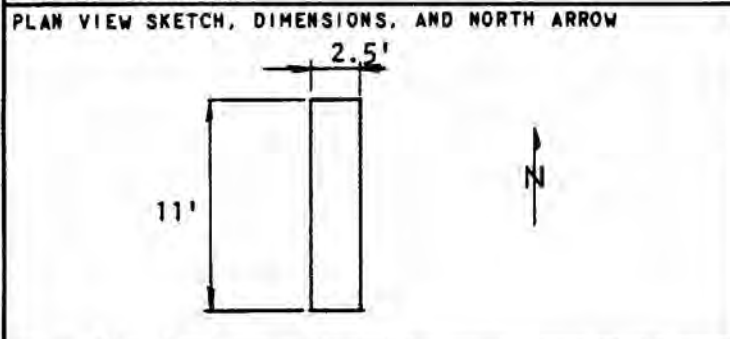
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | | Silty <u>SAND</u> ; lt. brown; loose; fine grain; moist; roots & organics (TOPSOIL) | |
| 1 | | Silty <u>CLAY</u> ; brown; stiff; high plastic; moist; trace sand & gravel | |
| 2 | | Sandy <u>SILT</u> ; dark brown; dense; fine grain; moist | |
| 3 | | Clayey <u>SILT</u> ; lt. brown; dense; moist; trace sand | |
| 4 | | | |
| 5 | | <u>SANDSTONE</u> ; soft; highly weathered & fractured | |
| 6 | | | |

REMARKS: Backhoe refusal at 4.5 feet

P-ST-0268



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|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 5.0' | DATE 2-17-88 |
| SURFACE CONDITIONS Flat, grassy pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe J. D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



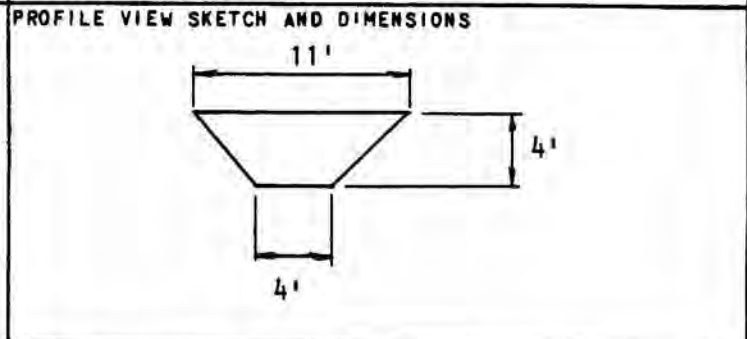
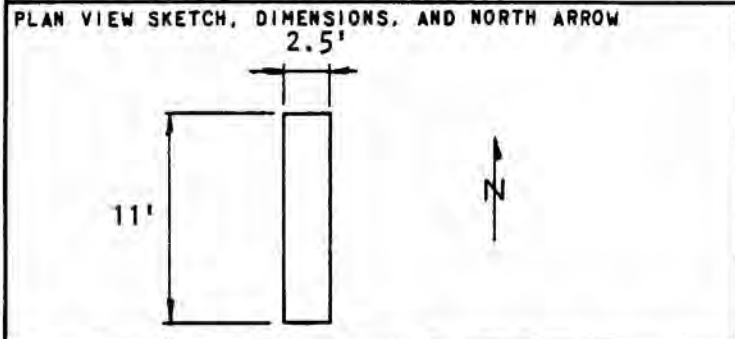
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 0 | Silty <u>SAND</u> ; lt. brown; loose; fine grain; moist; root & organics; (TOPSOIL) | |
| 1 | 1 | Silty <u>CLAY</u> ; dark brown; stiff; high plasticity; moist; some roots and organics; trace sand | |
| 2 | 2 | | |
| 3 | 3 | <u>SANDSTONE</u> ; lt. brown; highly weathered and fractured; silt and clay lenses .01' thick | |
| 4 | 4 | Clayey <u>SILT</u> ; brownish grey; dense; roots; moist; trace sand; some weathered sandstone | |
| 5 | 5 | <u>SANDSTONE</u> ; lt. brown; highly weathered; silt and clay lenses | |
| | 6 | | |
| | 7 | | |

REMARKS: Backhoe refusal at 5.0'

P-ST-026B



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|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 4.0' | DATE 2-17-88 |
| SURFACE CONDITIONS Flat, grassy pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



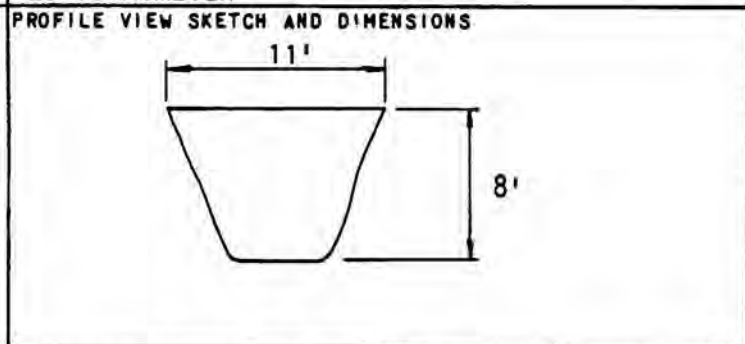
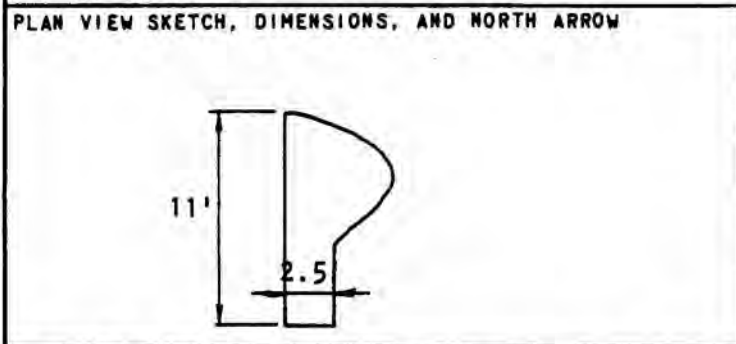
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0 | Silty <u>SAND</u> ; lt. brown; loose; moist; organics & roots (TOPSOIL) | |
| | 1 | Silty <u>CLAY</u> ; brown; stiff; high plasticity; moist; trace sand & gravel | |
| | 2 | | |
| | 3 | Sandy <u>SILT</u> ; reddish-brown; dense; moist | |
| | 4 | <u>SANDSTONE</u> ; grey; cemented; highly weathered | |
| | 5 | | |

REMARKS: Backhoe refusal at 4.0 feet

P-ST-0268



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|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 8.0' | DATE 2-23-88 |
| SURFACE CONDITIONS Flat, grassy pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |



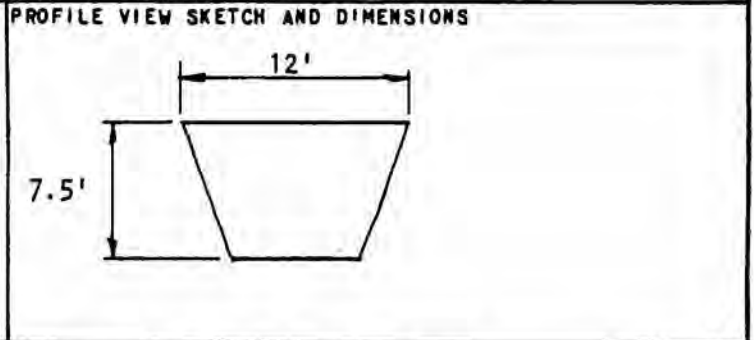
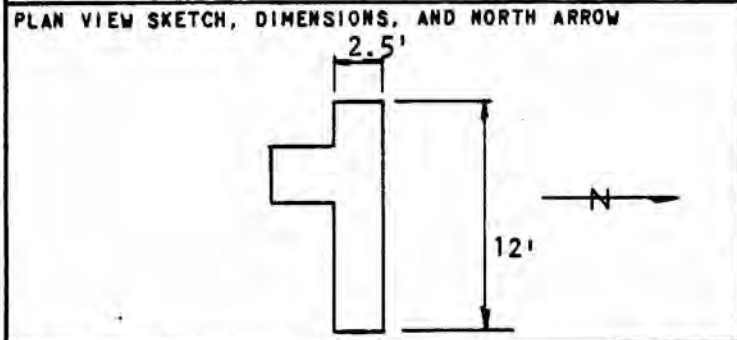
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; brown; loose; fine grain; wet; roots and organics; (TOPSOIL) | |
| | 2 | Silty CLAY; dark brown; firm; high plasticity; moist; some roots; trace sand | |
| | 3 | | |
| | 4 | Silty CLAY; greenish-brown; stiff; moist; medium plasticity; trace sand | |
| | 5 | (0.1' layer of weathered sandstone at 3.75') | |
| Jar 1 | 6 | Clayey SILT; greenish-grey; dense; low plastic; moist; trace sand ① | |
| | 7 | | |
| | 8 | | |

REMARKS: Backhoe refusal at 8.0 feet.

P-ST-026B



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 7.5' | DATE 2-23-88 |
| SURFACE CONDITIONS Flat, grassy pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



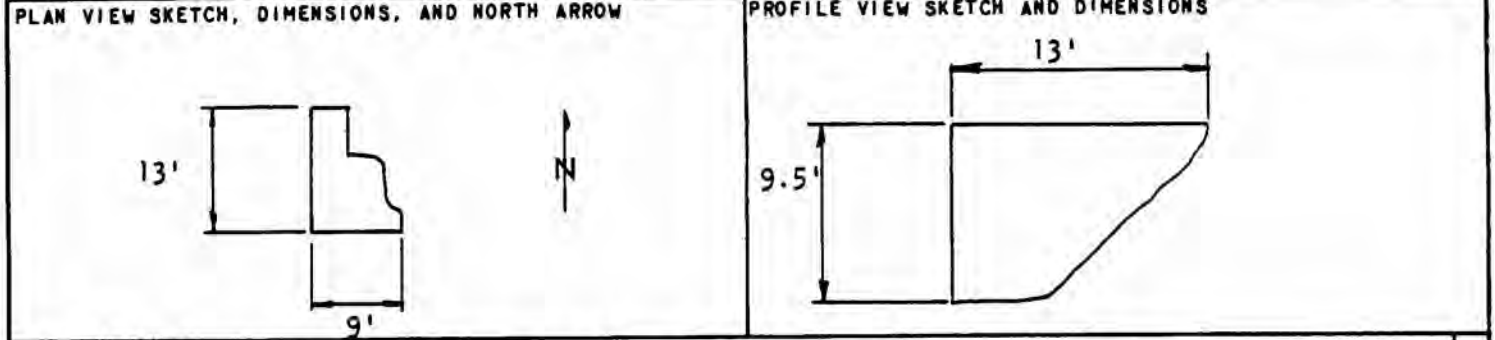
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | | Silty SAND; brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| 1 | | Silty CLAY; dark brown; firm; high plasticity; moist; some roots; trace sand | |
| 2 | | | |
| Bag | | | |
| 3 | | Silty CLAY; lt. brown w/white calcium deposits; stiff; medium plastic; moist | |
| Jar 1 | | ① | |
| 4 | | | |
| Jar 2 | | Clay SILT; greenish-brown; ② medium dense; low plastic; moist; blocky structure; trace sand | |
| 5 | | | |
| 6 | | | |
| 7 | | SILT; greyish-green; medium dense; low plastic; moist; trace clay | |
| 8 | | | |
| 9 | | | |
| 10 | | | |

REMARKS: Composite sample taken from 1.0 to 5.5 feet.

P-ST-0268



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|--|-------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 9.5' |
| SURFACE CONDITIONS Flat, Grassy Pasture | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | |



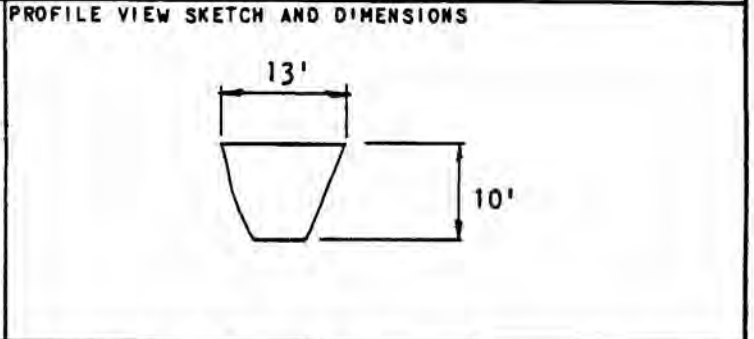
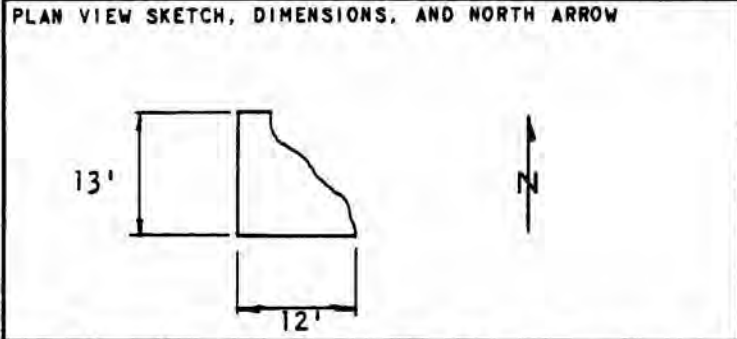
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | | Silty SAND; light brown; loose; fine grain; moist; roots and organics; TOPSOIL | |
| Bag | 1 | Silty CLAY; dark brown; stiff; high plasticity; moist trace sand; some thin vertical sand lenses; trace roots and organics | |
| | 2 | | |
| | 3 | Sandy SILT; brownish grey; dense; slightly blocky structure; trace clay | |
| Jar 1 | 4 | ① | |
| | 5 | Silty CLAY or Clayey SILT; brownish grey with iron staining; very dense; moist; with slicken slides and very blocky structure; trace sand | |
| Jar 2 | 6 | ② | |
| | 7 | | |
| | 8 | Silty CLAY or Clayey SILT; greenish gray; soft; moist; trace sand | |
| Jar 3 | 9 | ③ | |
| | 10 | | |

REMARKS: Composite sample taken from 0.5 to 7.0 feet

P-ST-026B



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|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 10.0' | DATE 2-17-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



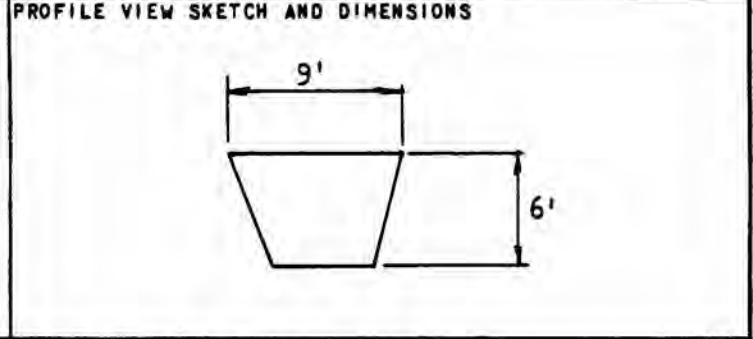
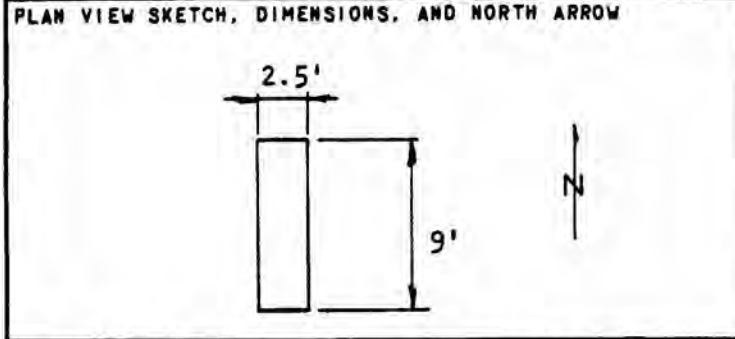
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|--|---|-------|
| | | STATION INTERVALS | | |
| | 0 | | Silty SAND; brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| Jar 1 | 1 | | Silty CLAY; dark brown; stiff; very high plasticity; wet; trace sand; trace ① roots | |
| Bag | 2 | | | |
| | 3 | | Silty CLAY - Clayey SILT; brownish gray w/ iron staining; very dense; moist; many slickensides and blocky structure; trace sand | |
| | 4 | | | |
| Jar 2 | 5 | | | |
| | 6 | | | |
| | 7 | | | |
| | 8 | | | |
| | 9 | | Silty CLAY; brown; stiff, high plasticity; moist | |
| | 10 | | | |

REMARKS: Composite sample taken from 4.0 to 5.0 feet.

P-ST-0268



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 6.0' | DATE 2-17-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



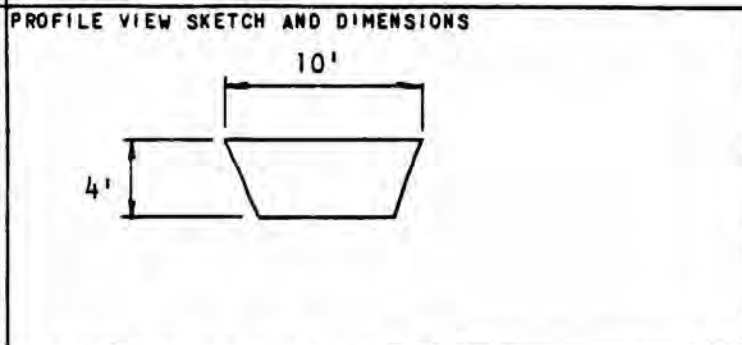
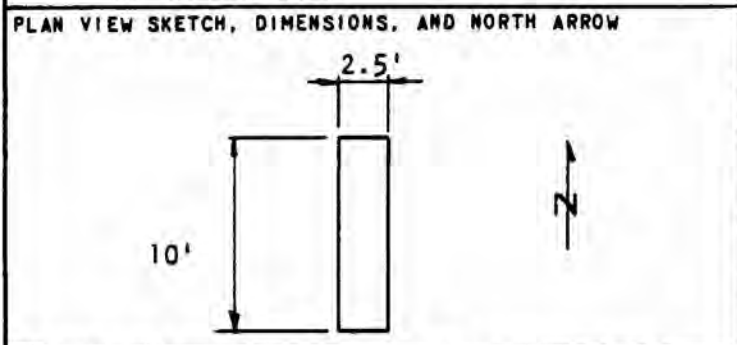
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0 | | |
| | 1 | Silty <u>SAND</u> ; light brown; loose; fine grain; moist; roots and organics | |
| | 2 | Silty <u>CLAY</u> ; dark brown; stiff; high plasticity; moist; some roots; trace sand | |
| | 3 | | |
| | 4 | Sandy <u>SILT</u> ; grey; dense; moist; some clay; trace gravel and weathered sandstone | |
| | 5 | | |
| | 6 | Grading to highly weathered sandstone | |
| | 7 | | |

REMARKS: Backhoe refusal at 6.0 feet.

P-ST-026B



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 4.0' | DATE 2-17-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



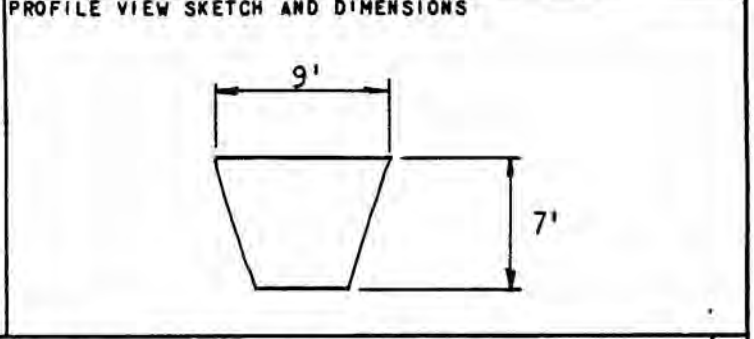
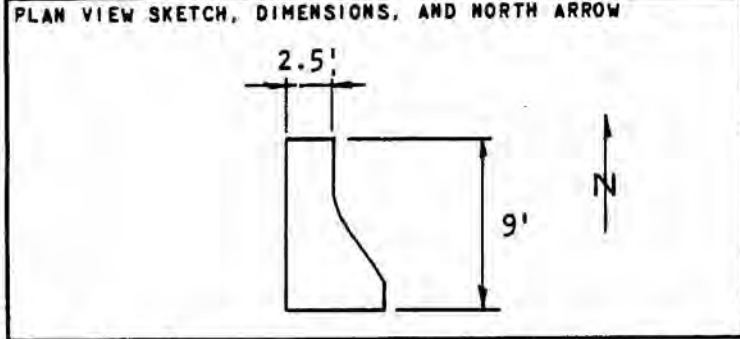
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|--|--|-------|
| | | STATION INTERVALS | | |
| Jar 1 | 1 | Silty SAND; light brown; loose; fine grain; moist; organics & roots (TOPSOIL) | | |
| | 2 | Silty CLAY; brown; stiff, high plasticity; moist trace roots and trace sand ① | | |
| | 3 | Clayey SILT; grey w/ iron streaks; dense; medium plasticity; moist; trace sand | | |
| | 4 | SANDSTONE; hard; slightly weathered | | |
| | 5 | | | |

REMARKS: Backhoe refusal at 4.0 feet.

P-ST-0268



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 7.0' | DATE 2-17-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



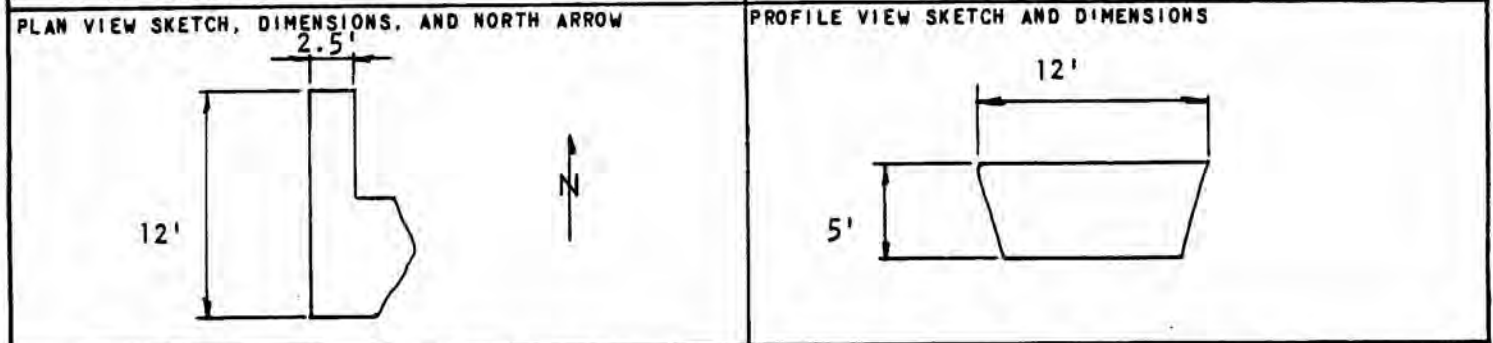
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Sandy SILT; light brown; loose; fine grain; moist; roots & organics (TOPSOIL) | |
| | 1 | Silty CLAY; dark brown; stiff; moist; high plasticity; some roots and organics; trace sand | |
| | 2 | | |
| | 3 | Silty CLAY; dark brown; very stiff; moist; md plasticity; trace roots; trace ① sand | |
| Jar 1 Bag | 4 | Silty CLAY; light brown w/ iron staining; high plasticity; moist; trace sand and weathered sandstone | |
| | 5 | | |
| | 6 | SANDSTONE; very soft; very weathered | |
| | 7 | | |
| | 8 | | |

REMARKS: Backhoe refusal at 7.0 feet.
Composite sample taken from 0.5 to 5.0 feet.

P-ST-0268



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 5.0 | DATE 2-17-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



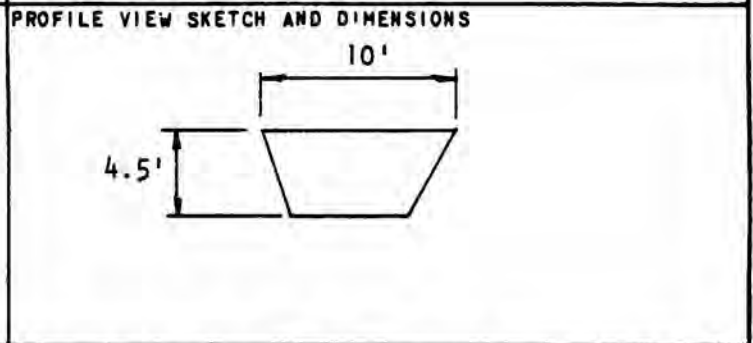
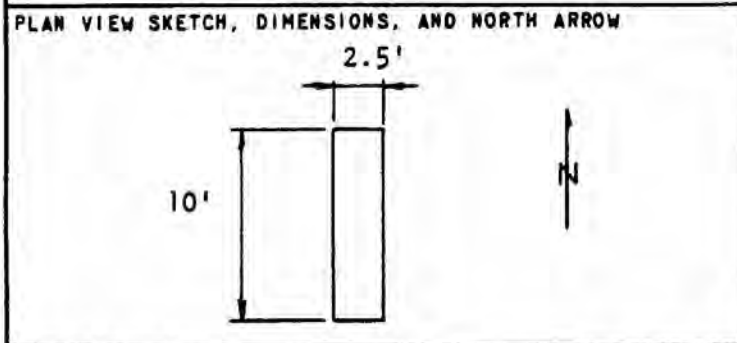
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | | Silty <u>SAND</u> ; brown; loose; fine grain; moist; roots & organics; (Top soil) | |
| 1 | | Silty <u>CLAY</u> ; dark brown; stiff; high plasticity; moist; trace sand; trace roots and organics | |
| 2 | | Silty <u>CLAY</u> ; or Clayey <u>SILT</u> ; light brown w/ iron streaks; very stiff; slicken slides and very blocky structure | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | <u>SANDSTONE</u> ; soft; highly weathered | |

REMARKS: Backhoe refusal at 5.0 feet.

P-ST-0268



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 4.5' | DATE 2-17-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|---|--|-------|
| | | STATION INTERVALS | | |
| | 1 | Silty <u>SAND</u> ; brown, loose; fine grain; moist; roots and organics; (TOPSOIL) | | |
| | 2 | Silty <u>CLAY</u> ; dark brown; stiff; high plasticity; moist; trace sand; trace roots | | |
| | 3 | Silty <u>CLAY</u> or clayey <u>SILT</u> ; brownish grey; very stiff; moist; some sand and sand lenses | | |
| | 4 | | | |
| | 5 | <u>SANDSTONE</u> : soft; highly weathered | | |

REMARKS: Backhoe refusal at 4.5 feet.

P-ST-026B



| | | | | |
|---|-------------|------------------------------------|---------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 4.5' | DATE 2-23-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | INSPECTOR M. C. Schluter | | |
| METHOD OF EXCAVATION Backhoe J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Alamleh | | |
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | | PROFILE VIEW SKETCH AND DIMENSIONS | | |
| | | | | |

| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|---------------------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; brown; loose; fine grain; moist, roots and organics (TOPSOIL) | |
| | 2 | Silty CLAY; dark brown; firm; high plasticity; moist; trace roots; trace sand | |
| | 3 | Silty CLAY; light brown; stiff; medium plasticity; moist; slight blocky structure; trace sand | |
| | 4 | Clayey SILT; greenish grey; very dense; moist; low plasticity; trace sand | |
| | 5 | | |
| REMARKS: Backhoe refusal at 4.5 feet. | | | |

P-ST-026B



| | | | | |
|---|-------------|------------------------------|------------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 9.5' | DATE 2-23-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY I. J. Almaiah | |
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | | | PROFILE VIEW SKETCH AND DIMENSIONS | |
| | | | | |

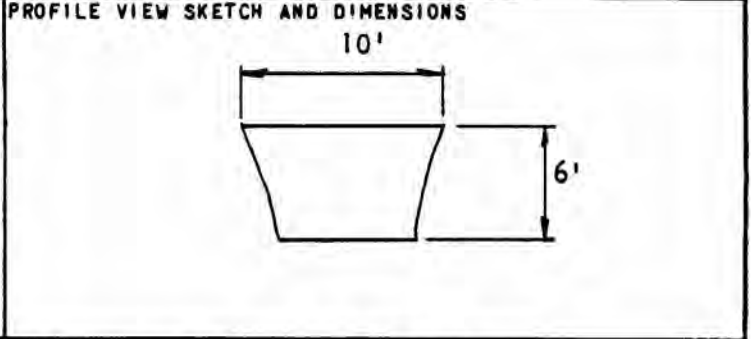
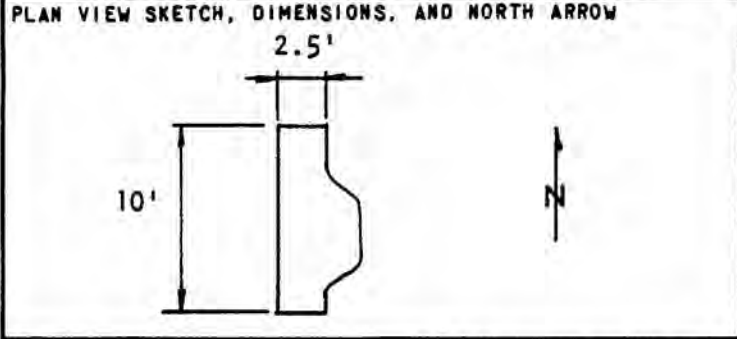
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; Brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| Jar 1 | 2 | Silty CLAY; dark brown; firm; high plasticity; moist; trace sand; ① trace roots and organics | |
| Bag | 3 | | |
| | 4 | Silty CLAY; light brown; stiff; moist; medium plasticity; slightly block structure; some slickenslides; some weathered sandstone; trace sand | |
| | 5 | | |
| Jar 2 | 6 | ② | |
| | 7 | | |
| | 8 | Silty CLAY or Clayey SILT; greenish grey; dense; low plasticity; moist; trace sand | |
| Jar 3 | 9 | ③ | |
| | 10 | | |

REMARKS: Excavation terminated at 9.5 feet.
Composite sample taken from 7.0 to 9.0 feet.

P-ST-026B



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|--|-------------|------------------------------|-------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 6.0' | DATE 2-23-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Alamaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | | Silty SAND; brown; loose; fine grain; moist; roots and organics | |
| 1 | | Silty CLAY; reddish brown with iron staining; stiff; medium plasticity; moist; trace roots and organics; trace sand | |
| 2 | | | |
| 3 | | | |
| 4 | | Clayey SILT; greenish grey; very stiff; moist; low plasticity; slightly blocky; trace weathered sandstone; trace sand | |
| 5 | | | |
| 6 | | | |
| 7 | | | |

REMARKS: Backhoe refusal at 6.0 feet.

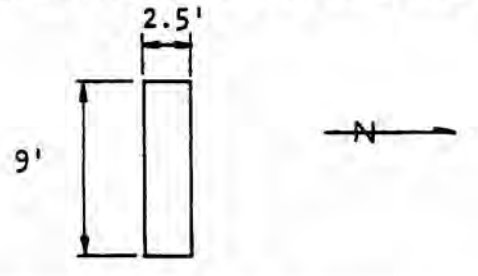
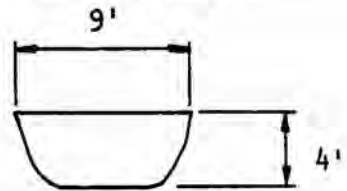
P-ST-026B



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|--|-------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 4.0' |
| SURFACE CONDITIONS Flat, Grassy Pasture | | INSPECTOR M. C. Schluter | |

METHOD OF EXCAVATION
Backhoe, J.D. 410

| | |
|------------------------------|------------------------------|
| CHECKED BY M. C. Schluter | APPROVED BY I. J. Almaleh |
|------------------------------|------------------------------|

| | |
|--|---|
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW  | PROFILE VIEW SKETCH AND DIMENSIONS  |
|--|---|

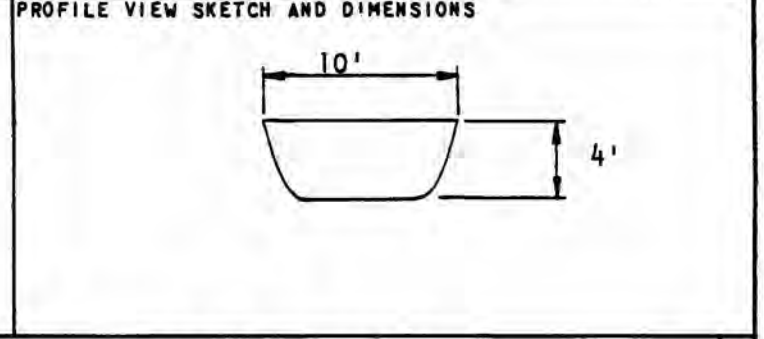
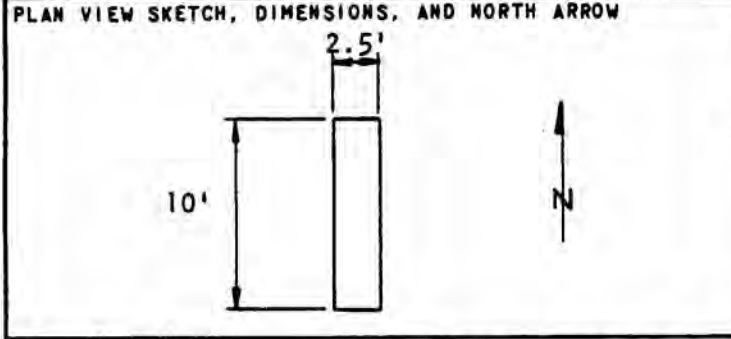
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Silty SAND; brown; loose; fine grain; wet; roots and organics (TOPSOIL) | |
| 1 | | Silty CLAY; dark brown; firm; moist; high plasticity; trace sand and gravel; some roots and organics | |
| 2 | | | |
| 3 | | Silty CLAY or Clayey SILT; greenish brown; very stiff; moist; blocky structure with slickensides; low plasticity | |
| 4 | | | |
| 5 | | | |
| 6 | | | |

REMARKS: Backhoe refusal at 4 feet.

P-ST-026B



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|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 4.0' | DATE 2-23-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |



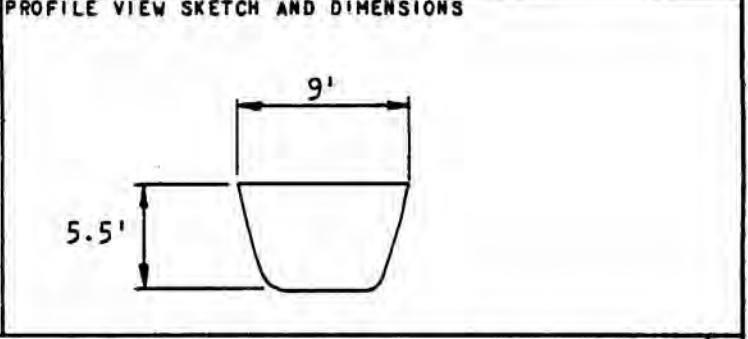
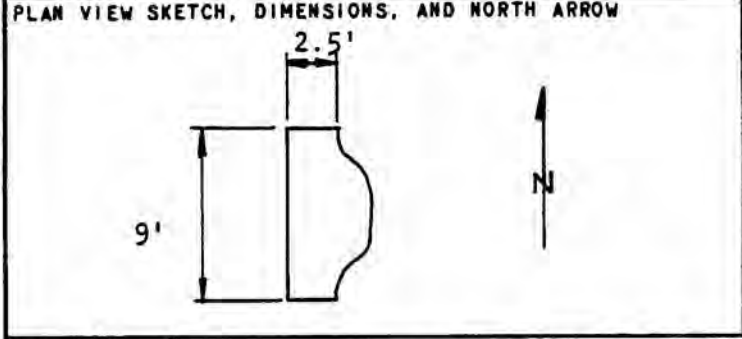
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | | Silty <u>SAND</u> ; brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| 1 | | Silty <u>CLAY</u> ; dark brown; firm; high plasticity; moist; trace roots; trace sand | |
| 2 | | Clayey <u>SILT</u> ; greenish brown; dense; low plasticity; moist; trace sand | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

REMARKS: Back hoe refusal at 4.0 feet.

P-ST-0268



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|--|-------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 5.5' |
| SURFACE CONDITIONS Flat, Grassy Pasture | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | |



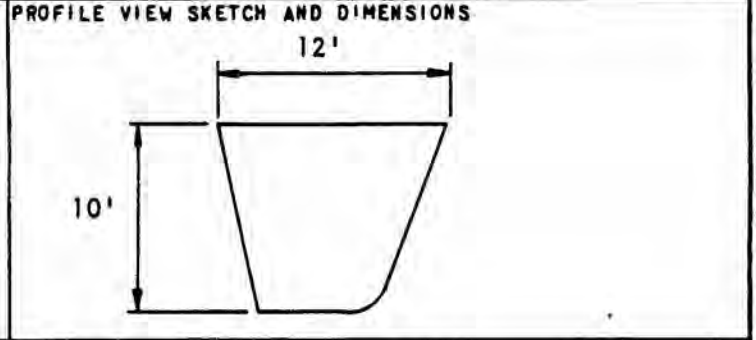
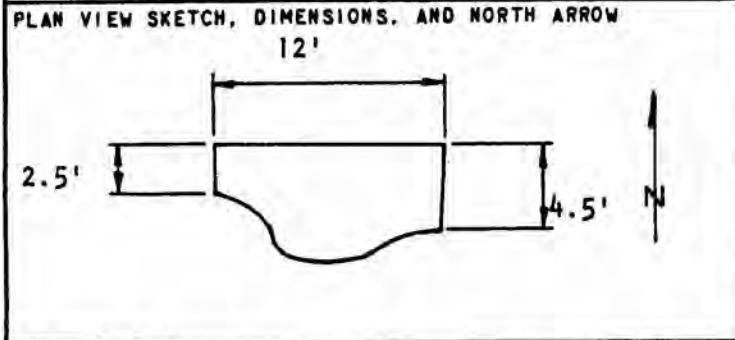
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Silty SAND; brown; loose; fine grain; wet; roots and organics (TOPSOIL) | |
| | 1 | Silty CLAY; dark brown; firm; high plasticity; moist; some roots; trace sand | |
| | 2 | | |
| | 3 | Silty CLAY or Clayey SILT; greenish brown; very dense; moist low plasticity; block structure with slickensides; some weathered sandstone; trace sand | |
| | 4 | | |
| Jar 1 | 5 | ① | |
| | 6 | | |
| | 7 | | |

REMARKS: Stopped at 5.5'; not refusal.

P-ST-026B



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|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 10' | DATE 2-23-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |

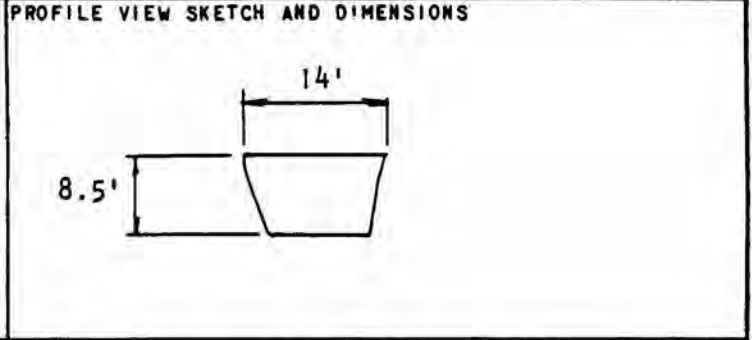
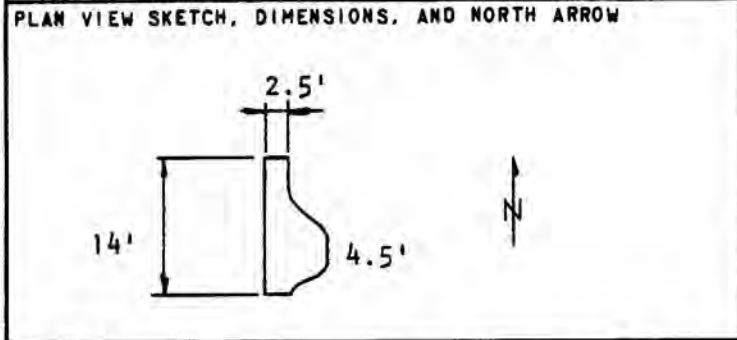


| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; brown; loose; fine grain; moist; some roots and organics; trace clay (TOPSOIL) | |
| Jar 1 | 2 | Silty CLAY; dark brown, firm; high plasticity; moist; trace sand ① | |
| Jar 2 | 4 | Clayey SILT or Silty CLAY; greenish brown; stiff; medium plasticity; moist; slightly blocky; some slickensides; some sand ② | |
| Jar 3 | 7 | Clayey SILT; greenish gray; dense; low plasticity; moist; some iron staining; trace sand ③ | |

REMARKS: Excavation terminated at 10' due to unstable surface conditions.



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 8.5' | DATE 2-23-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|--|--|-------|
| | | STATION INTERVALS | | |
| | | | Silty SAND; brown; loose; wet; fine grain; roots and organics (TOPSOIL) | |
| | 1 | | Silty CLAY; dark brown; firm; high plasticity; moist; trace roots; trace sand | |
| | 2 | | | |
| | 3 | | | |
| Jan 1 | 4 | | Silty CLAY; brown; stiff; moist; md. plasticity; some (1) sand and gravel; some sand lenses | |
| Bag | 5 | | Silty CLAY or Clayey SILT; greenish grey; dense; moist; slightly blocky structure; some slickensides; trace sand; some weathered sandstone | |
| | 6 | | | |
| Jan 2 | 7 | | (2) | |
| | 8 | | | |
| | 9 | | | |

REMARKS:
Backhoe refusal at 8.5 feet.
Composite sample taken from 1.0 to 8.5 feet.

P-ST-0268

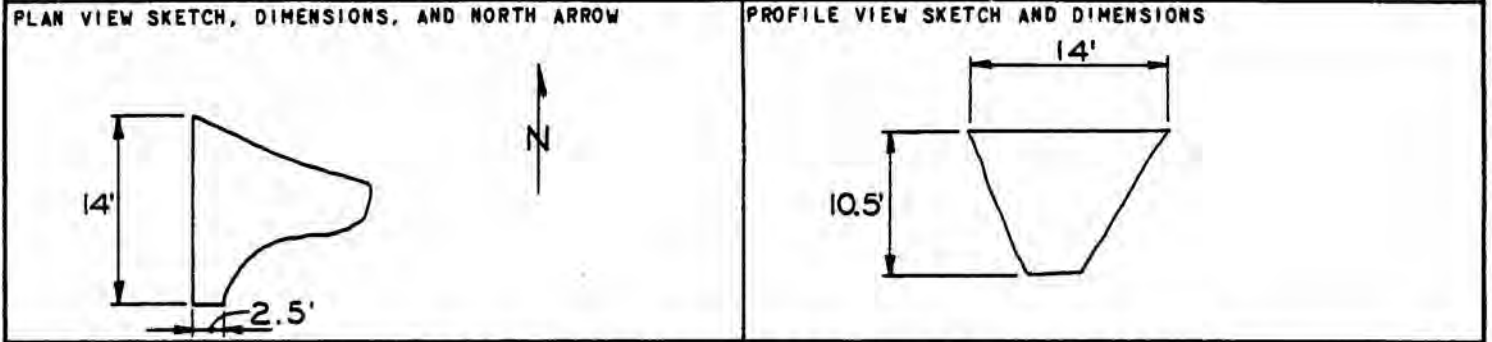


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|--|-------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 10.5' |
| DATE 2-24-88 | | | |

| | |
|--|-----------------------------|
| SURFACE CONDITIONS Flat, Grassy Pasture | INSPECTOR M. C. Schluter |
|--|-----------------------------|

METHOD OF EXCAVATION
Backhoe, I.D. 410

| | |
|------------------------------|------------------------------|
| CHECKED BY M. C. Schluter | APPROVED BY L. J. Almaleh |
|------------------------------|------------------------------|



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | Silty <u>SAND</u> ; brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| Jar 1 | 2 | Silty <u>CLAY</u> ; dark brown; firm; high plasticity; moist; roots and organics; ① trace sand | |
| Jar 2 | 3 | Clayey <u>SILT</u> ; greenish ② brown; dense; low plasticity; moist | |
| | 4 | | |
| | 5 | Silty <u>CLAY</u> ; light brown with iron staining; very stiff; blocky structure; slickenslides; trace sand | |
| Jar 3 | 6 | Silty <u>CLAY</u> or Clayey <u>SILT</u> ; greenish brown; dense; low plasticity; moist | |
| | 7 | ③ | |
| | 8 | | |
| | 9 | | |
| | 10 | | |

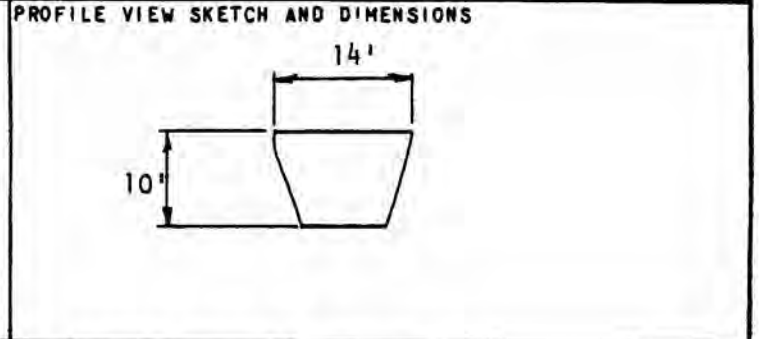
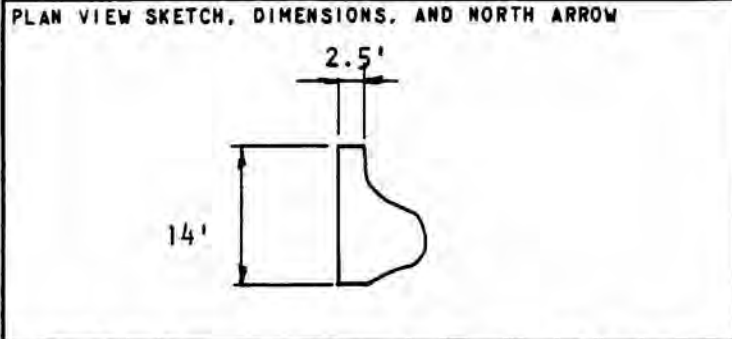
REMARKS: Bottom of excavation at 10.5'

P-ST-0268



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|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 10.0' | DATE 2-24-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |

| | |
|------------------------------|-------------------------------|
| CHECKED BY M. C. Schluter | APPROVED BY L. J. Alamaleh |
|------------------------------|-------------------------------|



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| Jar 1 | 2 | Silty CLAY; dark brown with iron staining; high plasticity; firm; moist; some roots; trace sand ① | |
| Bag | 4 | Silty CLAY; light brown; stiff; medium plasticity; moist; trace sand; trace weathered limestone ② | |
| Jar 2 | 5 | | |
| | 6 | | |
| | 7 | Silty CLAY or Clayey SILT; greenish brown; dense; low plasticity; moist; trace sand ③ | |
| Jar 3 | 8 | | |
| | 9 | | |
| | 10 | | |

REMARKS: Excavated to maximum depth of backhoe.
Composite sample taken from 1.0 to 10.0 feet.

P-ST-026B



| | | | | |
|---|-------------|------------------------------|------------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 4.0; | DATE 2-24-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | | | PROFILE VIEW SKETCH AND DIMENSIONS | |
| | | | | |

| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| Jar 1 | 0 - 1 | Silty SAND; brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| | 1 - 2 | Silty CLAY; dark brown; firm; high plasticity; moist; some roots; trace sand | |
| | 2 - 4 | Silty CLAY or Clayey SILT; greenish grey; very dense; moist; trace sand; low plasticity | |
| | 4 - 5 | | |

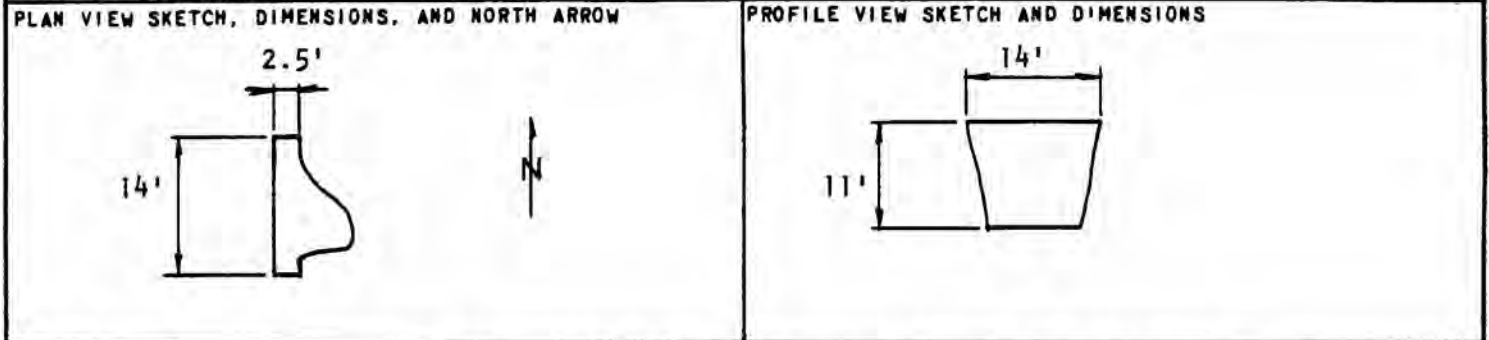
REMARKS: Backhoe refusal at 4.0 feet.

P-ST-026B



| | | | | |
|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 11.0' | DATE 2-24-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |

| | |
|------------------------------|------------------------------|
| CHECKED BY M. C. Schluter | APPROVED BY L. J. Almaleh |
|------------------------------|------------------------------|



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 0 | | |
| | 1 | Silty <u>SAND</u> ; brown; loose; fine grain; wet; roots and organics; (TOPSOIL) | |
| | 2 | Silty <u>CLAY</u> ; dark brown; firm; high plasticity; moist; some roots; trace sand | |
| | 3 | Clayey <u>SILT</u> ; light brown; medium dense; medium plasticity; moist; trace sand; some weathered sandstone; some iron staining | |
| Jar 1 | 4 | ① | |
| Bag | 5 | Clayey <u>SILT</u> ; greenish grey; dense; low plasticity; moist; trace sand ② | |
| Jar 2 | 6 | | |
| | 7 | | |
| | 8 | | |
| | 9 | | |
| | 10 | <u>SILT</u> ; greenish brown; dense; low plasticity; moist; trace sand | |

REMARKS: Excavated to maximum backhoe reach, 11 feet.
Composite sample taken from 5.0 to 7.0 feet.

P-ST-026B

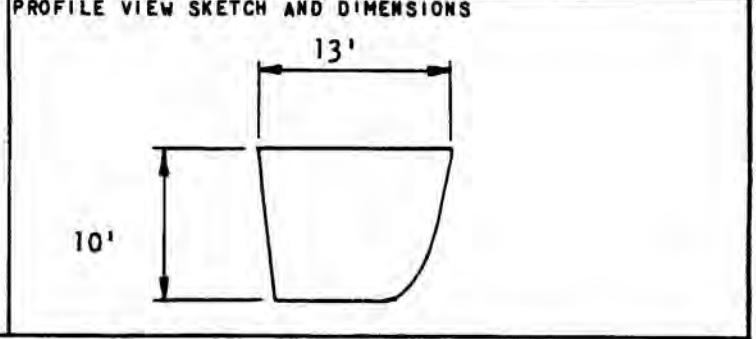
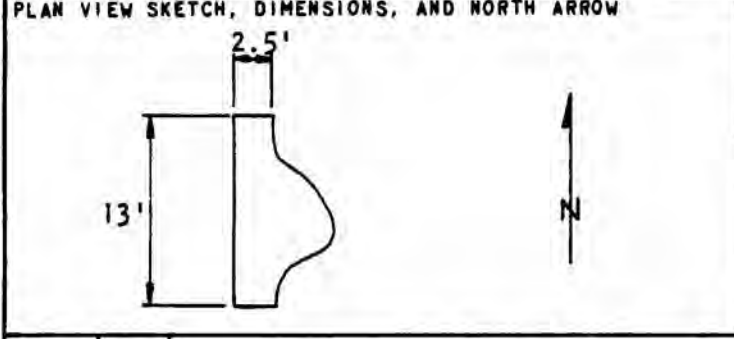


| | | | | |
|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 10' | DATE 2/24-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |

METHOD OF EXCAVATION
Backhoe, J.D. 410

CHECKED BY
M. C. Schluter

APPROVED BY
L. J. Almaleh



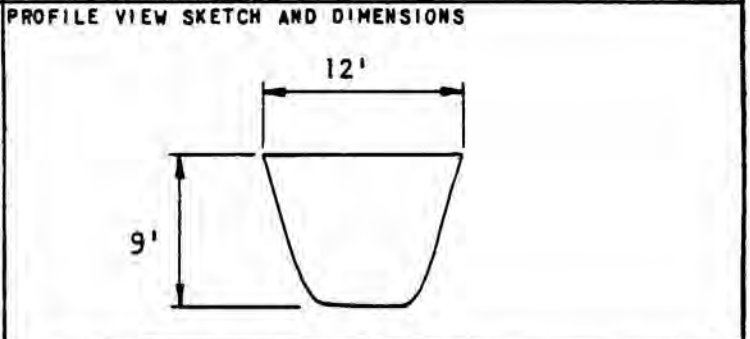
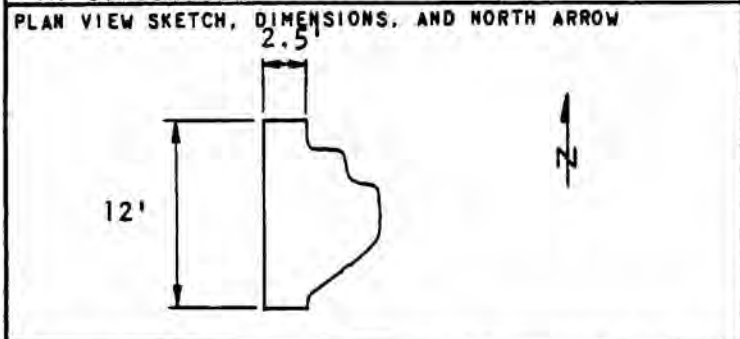
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; brown; loose; fine grain; wet; roots and organics (TOPSOIL) | |
| Jar 1 | 2 | Silty CLAY; dark brown; firm; high plasticity; moist; trace roots; trace sand (1) | |
| Bag | 4 | Clayey SILT; greenish brown; stiff; medium plasticity; moist; blocky structure; slickensides; trace sand and gravel (2) | |
| Jar 2 | 5 | | |
| | 6 | | |
| | 7 | | |
| Jar 3 | 8 | Silty CLAY or Clayey SILT; greenish grey; medium dense; moist; low plasticity; trace sand (3) | |
| | 9 | | |
| | 10 | | |

REMARKS: Excavation limited to 10 feet due to backhoe reach.
Composite sample taken from 0.75 to 10.0 feet.

P-ST-0268



| | | | | |
|--|-------------|------------------------------|---------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 9.0' | DATE 1-24-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | INSPECTOR M. C. Schluter | | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 0 | Silty SAND; brown; loose; fine grain; wet; roots and organics (TOPSOIL) | |
| | 1 | Silty CLAY; brownish black; very stiff; high plasticity; moist; trace roots; trace sand | |
| Jar 1 | 3 | ① | |
| Jar 2 | 4 | Clayey SILT or Silty CLAY; light brown; ② stiff; medium plasticity; slightly blocky; few slickenslides; trace sand | |
| | 5 | | |
| | 6 | | |
| | 7 | | |
| | 8 | | |
| | 9 | Clayey SILT; greenish brown; dense; moist; low plasticity; trace sand | |
| | 10 | | |

REMARKS: Excavation terminated at 9.0 feet.

P-ST-0268



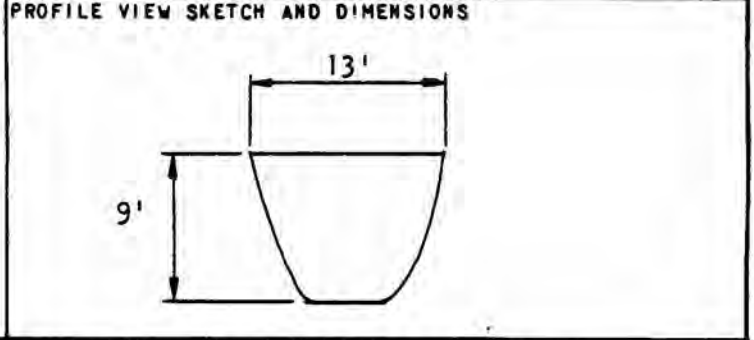
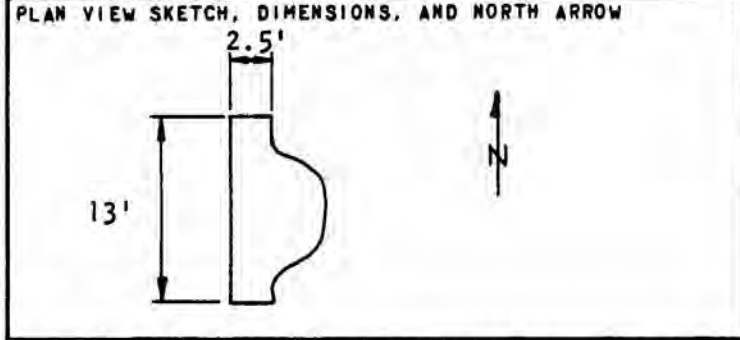
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|---|-------------|------------------------------|------------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 3.5' | DATE 2-25-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | | | PROFILE VIEW SKETCH AND DIMENSIONS | |
| | | | | |

| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| Jar 1 | 0 - 1 | Silty SAND; brown; loose; fine grain; wet; roots and organics | |
| | 1 - 2 | Silty CLAY; dark brown; firm; high plasticity; moist; roots and organics | |
| | 2 - 3 | Clayey SILT or Silty CLAY; light brown; stiff; moderate plasticity; moist; some weathered (1) sandstone; trace sand | |
| | 3 - 4 | SANDSTONE; greenish brown; hard; slightly fractured; moderately weathered | |
| | 4 - 5 | | |
| | 5 - 6 | | |

REMARKS: Backhoe refusal at 3.5 feet.



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 9.0' | DATE 2-25-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



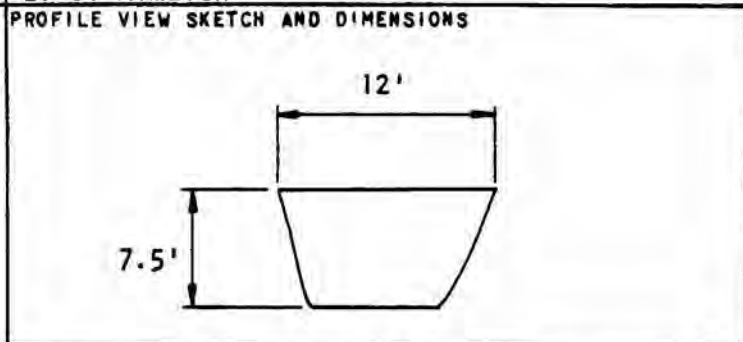
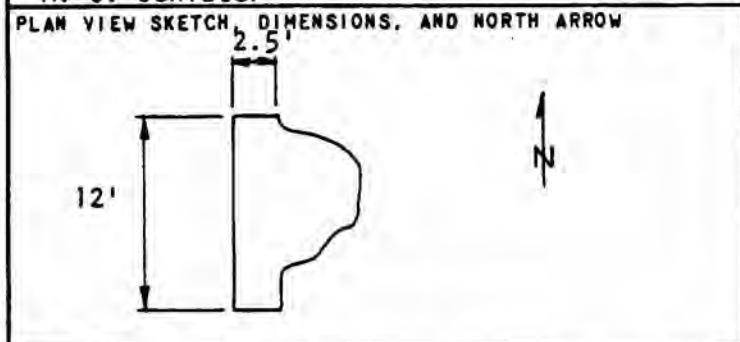
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 0 | | |
| | 1 | Silty <u>SAND</u> ; brown; loose; fine grain; wet; roots and organics (TOPSOIL) | |
| Jar 1 | 2 | Silty <u>CLAY</u> ; dark brown; firm; high plasticity; moist; some roots; trace sand and ① gravel | |
| Bag | 4 | Clayey <u>SILT</u> or Silty <u>CLAY</u> ; light brown with iron staining; stiff; moist; medium plasticity; trace sand; trace weathered sandstone | |
| Jar 2 | 5 | ② | |
| | 6 | | |
| | 7 | | |
| Jar 3 | 8 | ③ | |
| | 9 | | |
| | 10 | | |

REMARKS: Composite sample taken from 0.75' to 9.0 feet.

P-ST-0268



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 7.5' | DATE 2-25-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|---|--|-------|
| | | STATION INTERVALS | | |
| | | Silty <u>SAND</u> ; brown; loose; fine grain; wet; roots and organics (TOPSOIL) | | |
| 1 | 1 | Silty <u>CLAY</u> ; dark brown; firm; high plasticity; moist; some roots and organics; trace sand and gravel | | |
| 2 | 2 | | | |
| 3 | 3 | Clayey <u>SILT</u> or Silty <u>CLAY</u> ; light brown with iron staining; stiff; medium plasticity; moist; very blocky structure with slickenslides; trace sand | | |
| 4 | 4 | | | |
| 5 | 5 | | | |
| 6 | 6 | | | |
| 7 | 7 | | | |
| 8 | 8 | | | |
| 9 | 9 | | | |
| 10 | 10 | | | |

REMARKS: Excavated to maximum backhoe reach, due to wet conditions.

P-ST-026B



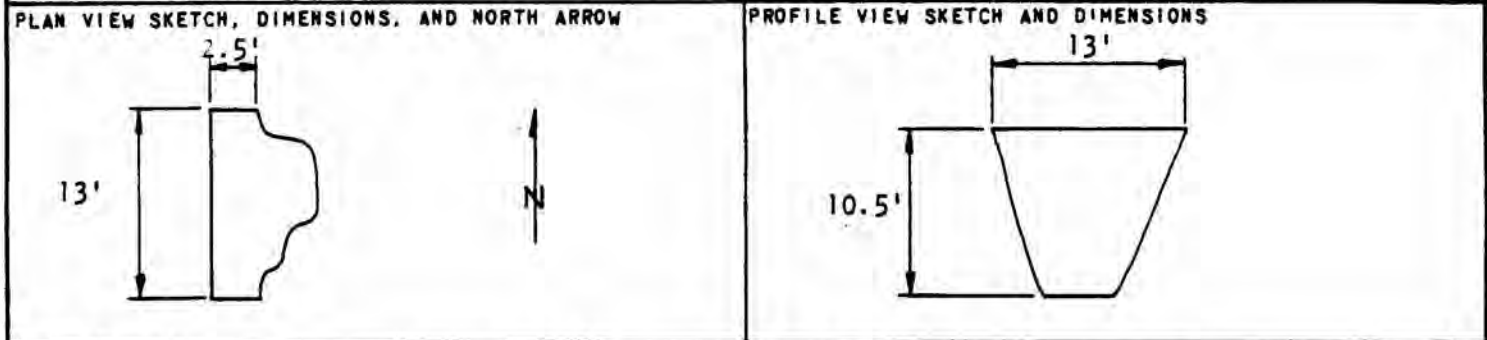
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| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
|--|--|------------------------------|----------------------|

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|-----------------------------------|-------------|-------------------|----------------------|-----------------|
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 10.5' | DATE 2-25-88 |
|-----------------------------------|-------------|-------------------|----------------------|-----------------|

| | |
|--|-----------------------------|
| SURFACE CONDITIONS Flat, Grassy Pasture | INSPECTOR M. C. Schluter |
|--|-----------------------------|

METHOD OF EXCAVATION
Backhoe, J.D. 410

| | |
|------------------------------|------------------------------|
| CHECKED BY M. C. Schluter | APPROVED BY L. J. Almaleh |
|------------------------------|------------------------------|



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| Jar 1 | 1 | Silty <u>SAND</u> ; brown; loose; fine grain; wet; roots and organics (TOPSOIL) | |
| | 2 | Silty <u>CLAY</u> ; dark brown; firm; high plasticity; moist; some roots and organics; trace sand and gravel | |
| | 3 | Clayey <u>SILT</u> or Silty <u>CLAY</u> ; light brown with trace iron staining; stiff; medium plasticity; some blocky structure; trace sand and gravel; trace weathered sandstone | |
| Jar 2 | 5 | | |
| | 6 | | |
| Jar 3 | 8 | Clayey <u>SILT</u> ; greenish brown; dense; low plasticity; moist trace sand | |
| | 9 | | |
| | 10 | | |

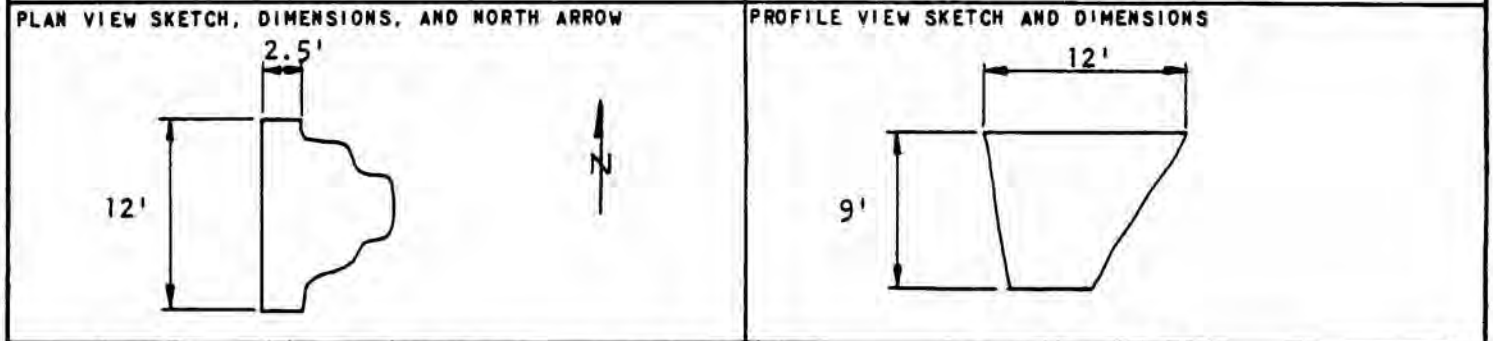
REMARKS: Excavated to maximum backhoe reach, 10.5 feet.

P-ST-0268



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|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 9.0' | DATE 2-25-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |

| | |
|---|------------------------------|
| METHOD OF EXCAVATION Backhoe, J.D. 410 | |
| CHECKED BY M. C. Schluter | APPROVED BY L. J. Almaleh |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | Silty <u>SAND</u> ; brown; loose; wet; fine grain; roots and organics; (TOPSOIL) | |
| Jar 1 | 3 | Silty <u>CLAY</u> ; greenish (1) grey with iron staining; firm; high plasticity; moist; trace roots; trace sand and gravel | |
| Jar 2 | 6 | Silty <u>CLAY</u> ; greenish grey; very stiff; moist; medium plasticity; trace roots; some sand; trace gravel (2) | |
| Jar 3 | 9 | Clayey <u>SILT</u> or Silty <u>CLAY</u> ; light brown with iron staining; stiff; medium plasticity; moist; some blocky structure; trace sand (3) | |

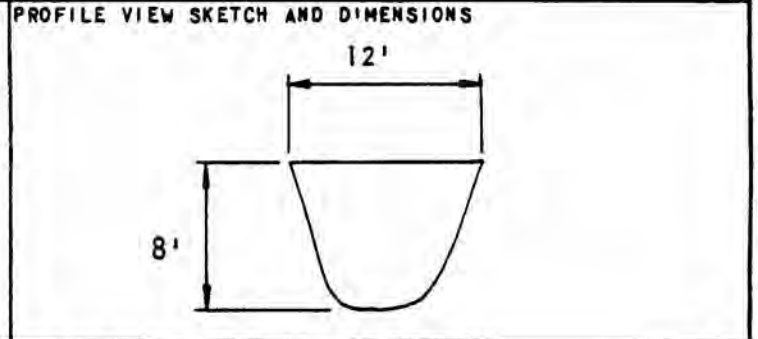
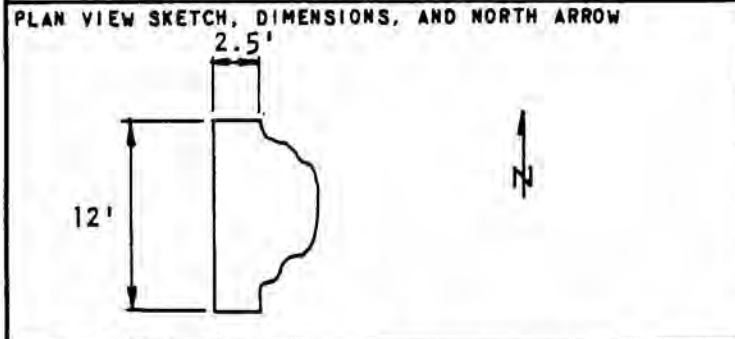
REMARKS: Ground water perched on top of silty clay layer at bottom of silty sand.
Sand sloughing into the trench.



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|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 8.0' | DATE 2-25-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |

METHOD OF EXCAVATION
Backhoe, J.E. 410

| | |
|------------------------------|------------------------------|
| CHECKED BY M. C. Schluter | APPROVED BY L. J. Aimalah |
|------------------------------|------------------------------|



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; brown; loose; fine grain; wet; roots and organics; (TOPSOIL) | |
| | 2 | | |
| | 3 | Clayey SILT or Silty CLAY; greenish brown with some iron staining; stiff; moderate plasticity; moist; trace sand; trace weathered sandstone | |
| | 4 | | |
| Jar 1 | 5 | ① | |
| | 6 | | |
| | 7 | Grading to highly weathered sandstone | |
| | 8 | | |
| | 9 | | |
| | 10 | | |

REMARKS: Backhoe refusal at 8.0 feet.

P-ST-0266



| | | | | |
|---|-------------|------------------------------------|---------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 8.0' | DATE 2-25-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | INSPECTOR M. C. Schluter | | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | | PROFILE VIEW SKETCH AND DIMENSIONS | | |
| | | | | |

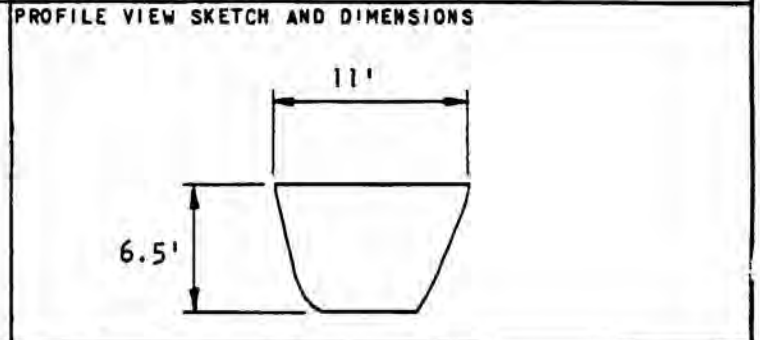
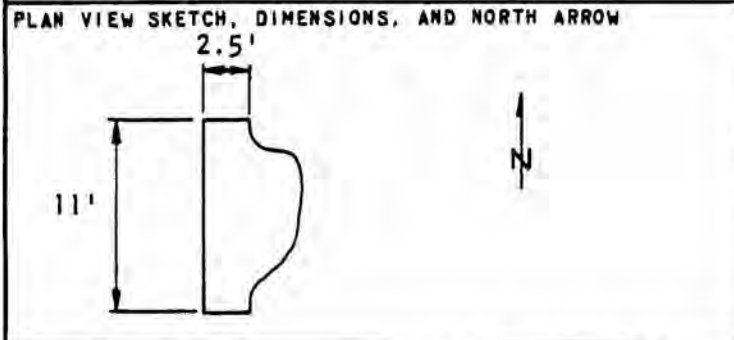
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; brown; loose; wet; fine grain; roots and organics; (TOPSOIL) | |
| Jar 1 | 3 | Silty CLAY; dark brown; ① firm; high plasticity; moist; some roots; trace sand and gravel | |
| Jar 2 | 5 | Silty CLAY; brown; very stiff; medium plasticity; some blocky structure; some sand; trace gravel ② | |
| | 9 | SANDSTONE; greenish brown; fractured; moderately weathered | |

REMARKS: Backhoe refusal at 8.0 feet. Water seeping into pit from Silty SAND-Silty CLAY interface.

P-ST-0268



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|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 6.5' | DATE 2-25-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; brown; loose; fine grain; wet; roots and organics; (TOPSOIL) | |
| | 2 | Silty CLAY; dark brown; firm; high plasticity; moist; some roots; trace sand and gravel | |
| Jar 1 | 3 | ① Grading to slightly blocky structure and some sand | |
| Jar 2 | 4 | ② Clayey SILT or Silty CLAY; light brown with iron staining; medium plasticity; moist; blocky structure with slickensides; trace sand and gravel | |
| | 5 | | |
| | 6 | Clayey SILT; greenish brown with some iron staining; dense; medium plasticity; moist | |
| | 7 | | |
| | 8 | | |
| | 9 | | |

REMARKS: Backhoe refusal at 6.5 feet.

P-ST-0268

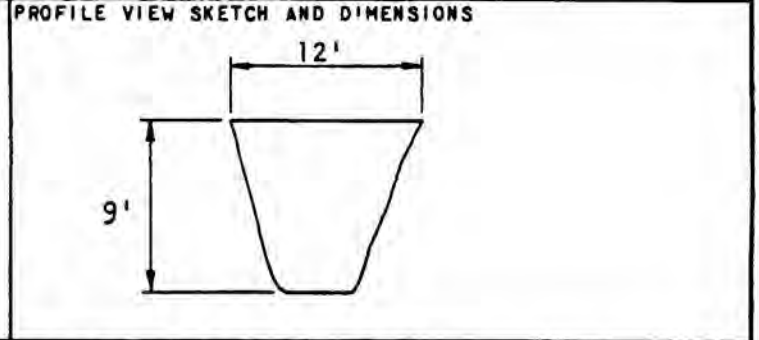
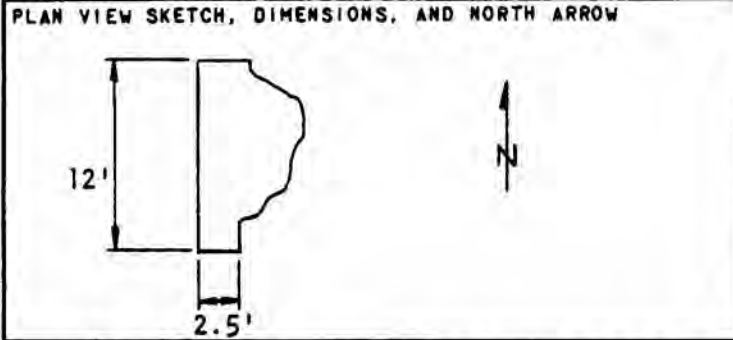


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|--|-------------|------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 9.0' | DATE 2-25-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |

METHOD OF EXCAVATION
Backhoe, J.D. 410

CHECKED BY
M. C. Schluter

APPROVED BY
I. J. Almaleh



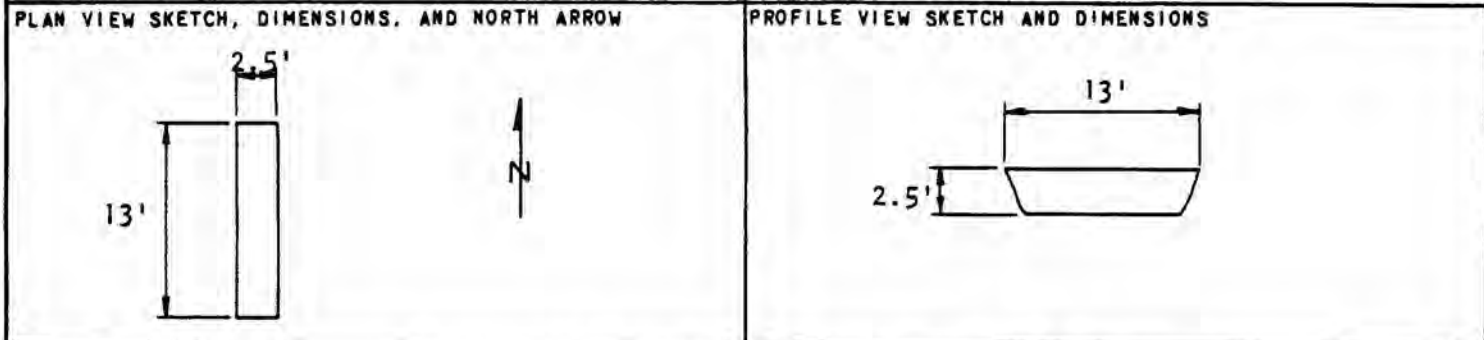
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; brown; loose; fine grain; wet; roots and organics; (TOPSOIL) | |
| Jar 1 | 2 | ① Silty CLAY; dark brown; firm; high plasticity; moist; roots and organics; trace sand and gravel | |
| | 3 | | |
| | 4 | Silty CLAY; light brown; very stiff; moderate plasticity; moist; some blocky structure; trace sand and gravel | |
| Jar 2 | 5 | ② | |
| | 6 | | |
| | 7 | | |
| Jar 3 | 8 | ③ Grading to some iron staining | |
| | 9 | | |
| | 10 | | |

REMARKS: Excavated to maximum reach due to wet conditions.

P-ST-026



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 2.5' | DATE 2-26-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



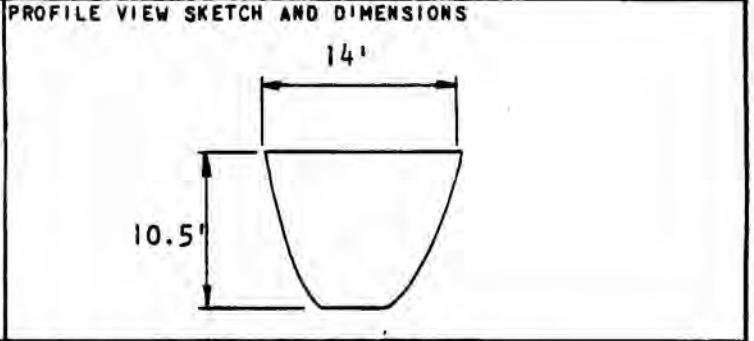
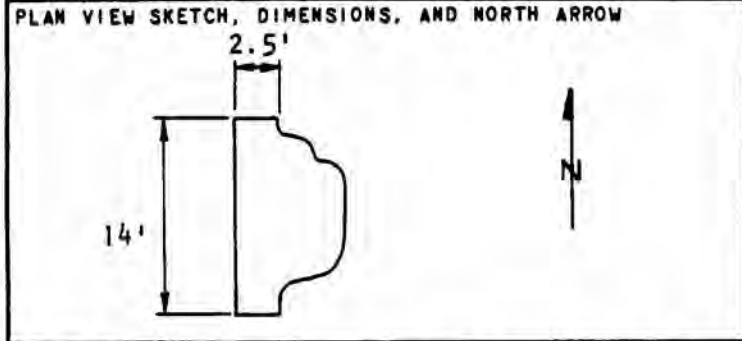
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 0 | Silty <u>SAND</u> ; brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| | 1 | Silty <u>CLAY</u> ; dark brown; firm; high plasticity; moist; trace sand and gravel; trace weathered sandstone | |
| | 2 | | |
| | 3 | <u>SANDSTONE</u> ; greenish brown; hard; slightly fractured; slightly weathered | |
| | 4 | | |

REMARKS: Backhoe refusal at 2.5 feet.

P-ST-0268



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 10.5' | DATE 2-25-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



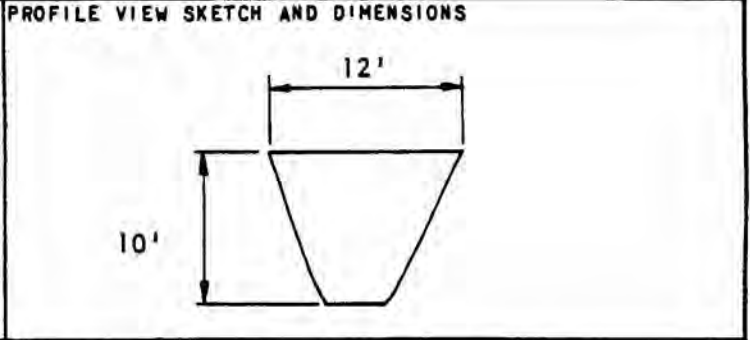
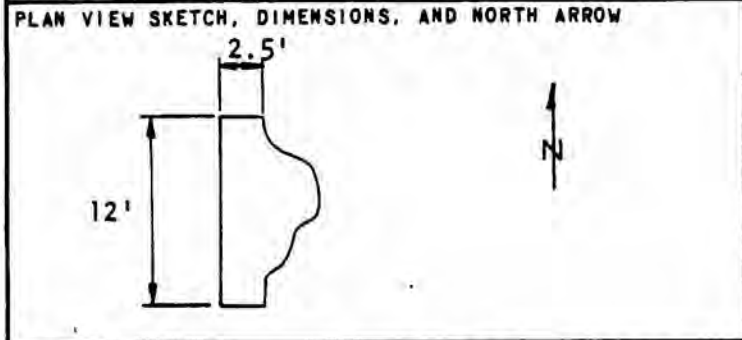
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | Silty SAND; brown; medium dense; fine grain; roots and organics (TOPSOIL) | |
| Jar 1 | 2 | Silty CLAY; reddish brown w/ trace iron staining; firm; high plasticity; moist; trace ① sand and gravel | |
| Bag | 4 | Silty CLAY; reddish brown w/ trace iron staining; stiff; high plasticity; moist; blocky structure; very fine layering; trace sand and gravel (Marine deposit) | |
| Jar 2 | 5 | ② | |
| | 8 | Grading to very blocky structure | |
| Jar 3 | 9 | ③ | |

REMARKS: Excavated to maximum backhoe reach; 10.5 feet.
Composite sample taken from 1.0 to 10.0 feet.

P-ST-026B



| | | | | |
|--|-------------|------------------------------|----------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 10.0' | DATE 2-26-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | INSPECTOR M. C. Schluter | | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1 | Silty <u>SAND</u> ; reddish brown; fine grain; moist; trace clay; roots and organics; (TOPSOIL) | |
| | 2 | Silty <u>CLAY</u> ; grey with some iron staining; firm; high plasticity; moist; roots | |
| | 3 | Silty <u>SAND</u> ; brownish grey; fine grain; moist; trace clay; roots | |
| | 4 | Silty <u>SAND</u> and Silty <u>CLAY</u> ; alternating layers, 2" to 4" thick; some weathered sandstone; some gravel | |
| | 5 | Silty <u>CLAY</u> ; grey; stiff; high plasticity; moist; slightly blocky structure; trace sand | |
| | 6 | | |
| | 7 | Silty <u>SAND</u> ; grey; medium dense; loose; fine grain; moist; trace weathered sandstone | |
| | 8 | Silty <u>CLAY</u> ; greenish brown w/ iron staining; stiff; moderate plasticity; moist; slightly blocky structure; trace sand | |
| | 9 | | |
| | 10 | | |

REMARKS:

P-ST-0268



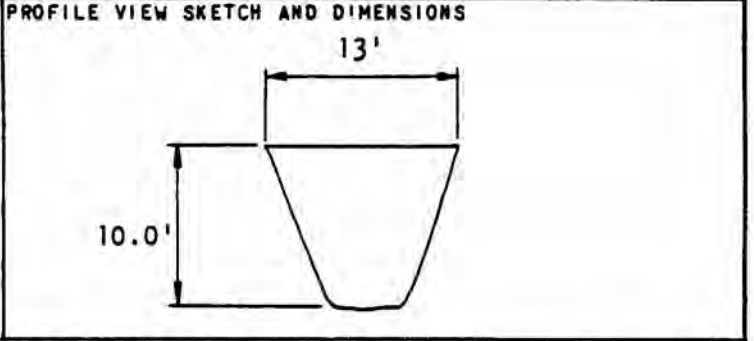
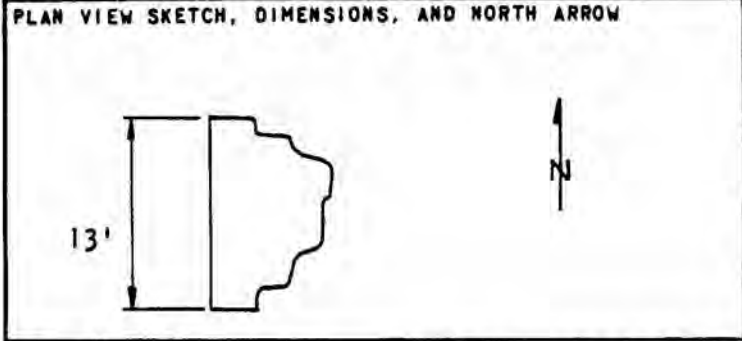
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|---|-------------|------------------------------|------------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 7.0' | DATE 2-26-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | | | PROFILE VIEW SKETCH AND DIMENSIONS | |
| | | | | |

| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| 1 | 1 | Silty SAND; brown; loose; fine grain; moist roots and organics (TOPSOIL) | 1 |
| 2 | 2 | Silty CLAY; reddish brown with iron staining; firm; high plasticity; moist; trace sand and gravel | 2 |
| 3 | 3 | Silty SAND; grey with some iron staining; very fine grain; moist; trace gravel; with 2" to 4" layers of silty CLAY; grey; firm; moderate plasticity; moist | 3 |
| 4 | 4 | | 4 |
| 5 | 5 | | 5 |
| 6 | 6 | | 6 |
| 7 | 7 | | 7 |
| 8 | 8 | | 8 |
| 9 | 9 | | 9 |
| 10 | 10 | | 10 |

REMARKS: Backhoe refusal at 7.0 feet.



| | | | | |
|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 10.0' | DATE 2-26-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|--|---|-------|
| | | STATION INTERVALS | | |
| | | | Silty SAND; brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| | 1 | | Silty CLAY; reddish brown with iron staining; firm; high plasticity; moist; trace sand; some roots | |
| Jar 1 | 2 | ① | Silty CLAY; brown; stiff; high plasticity; moist; slight blocky structure; very finely; layered; trace sand | |
| | 3 | | | |
| | 4 | | | |
| Jar 2 | 5 | ② | | |
| | 6 | | | |
| | 7 | | | |
| | 8 | | Grading to very blocky structure | |
| Jar 3 | 9 | ③ | | |
| | 10 | | | |

REMARKS: Excavated to maximum backhoe reach, 10.0 feet.

P-ST-0268

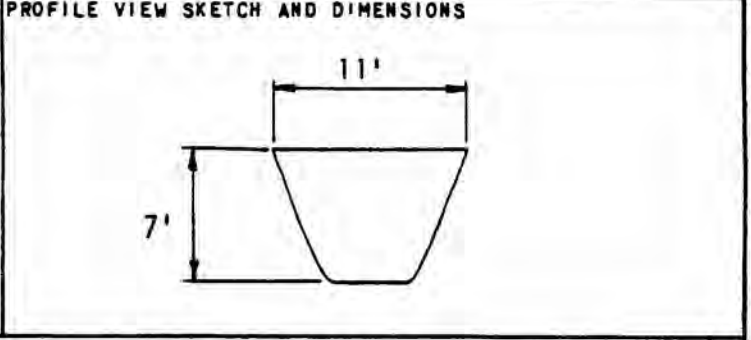
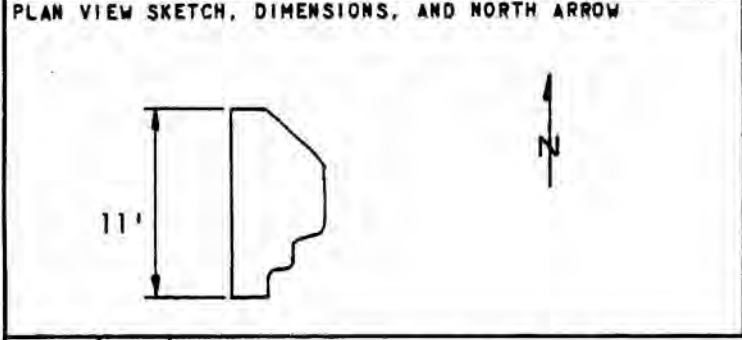


| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | PROJECT NO. 14578 | |
|---|---------------|---|----------------------|-------|
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 10.0' | |
| SURFACE CONDITIONS Flat, Grassy Pasture | | INSPECTOR M. C. Schluter | | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | | PROFILE VIEW SKETCH AND DIMENSIONS | | |
| | | | | |
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
| | | STATION INTERVALS | | |
| | 1 | Silty SAND; brown; loose; fine grain; moist; roots and organics (TOPSOIL) | | |
| | 2 | Silty CLAY; reddish brown with iron staining; firm; high plasticity; moist; roots; trace sand and gravel | | |
| Jar 1 | 3 | ① Silty CLAY; brownish black; very stiff; high plasticity; moist; trace sand and gravel | | |
| | 4 | | | |
| Jar 2 | 5 | ② Silty CLAY; brown with some iron staining; stiff; moderate plasticity; moist; slightly blocky structure; trace sand | | |
| | 6 | | | |
| Bag | 7 | | | |
| | 8 | Silty CLAY; greyish brown; stiff; moderate plasticity; moist; very blocky structure; very fine layering; trace sand | | |
| Jar 3 | 9 | | | |
| | 10 | ③ | | |
| REMARKS: Excavated to maximum backhoe reach, 10.0 feet. Composite sample taken from 1.0 to 10.0 feet. | | | | |

P-ST-026B



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|--|-------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 7.0' | DATE 2-26-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 0 | | |
| | 1 | Silty SAND; brown; loose; fine grain; moist; roots and organics | |
| | 1 | Silty CLAY; brownish red; firm; high plasticity; moist; roots and organics | |
| Jar 1 | 2 | Silty CLAY; brown with trace iron staining; firm; high plasticity; moist; trace sand ① | |
| | 3 | | |
| | 4 | Silty CLAY; light brown with iron staining; stiff; moderate plasticity; moist; trace sand and gravel | |
| | 5 | | |
| Jar 2 | 6 | Grading to very stiff ② | |
| | 7 | | |
| | 8 | SANDSTONE; greenish brown; fractured; slightly weathered | |
| | 9 | | |

REMARKS: Backhoe refusal at 7.0 feet.

P-ST-026



| | | | | |
|---|-------------|------------------------------------|-----------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 5.5' | DATE 2-26-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY I. I. Almaleh | | |
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | | PROFILE VIEW SKETCH AND DIMENSIONS | | |
| | | | | |

| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|--|---|-------|
| | | STATION INTERVALS | | |
| | | | Silty <u>SAND</u> ; brown; loose; fine grain; moist; roots and organics | |
| 1 | | | Silty <u>CLAY</u> ; reddish brown; firm; high plasticity; moist roots and organics; trace sand and gravel | |
| 2 | | | Silty <u>CLAY</u> ; gray; firm; moderate plasticity; moist; trace sand | |
| 3 | | | Silty <u>SAND</u> ; grey; dense; fine grain; poorly graded; moist; trace clay | |
| 4 | | | | |
| 5 | | | Grading to very dense | |
| 6 | | | <u>SANDSTONE</u> ; grey; highly weathered; fractured | |
| 7 | | | | |

REMARKS: Backhoe refusal at 5.5 feet.

P-ST-0268



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|---|-------------|------------------------------|------------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Carlos, Texas | COORDINATES | ELEVATION (DATUM) | TOTAL DEPTH 4.5' | DATE 2-26-88 |
| SURFACE CONDITIONS Flat, Grassy Pasture | | | INSPECTOR M. C. Schluter | |
| METHOD OF EXCAVATION Backhoe, J.D. 410 | | | | |
| CHECKED BY M. C. Schluter | | APPROVED BY L. J. Almaleh | | |
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | | | PROFILE VIEW SKETCH AND DIMENSIONS | |
| | | | | |

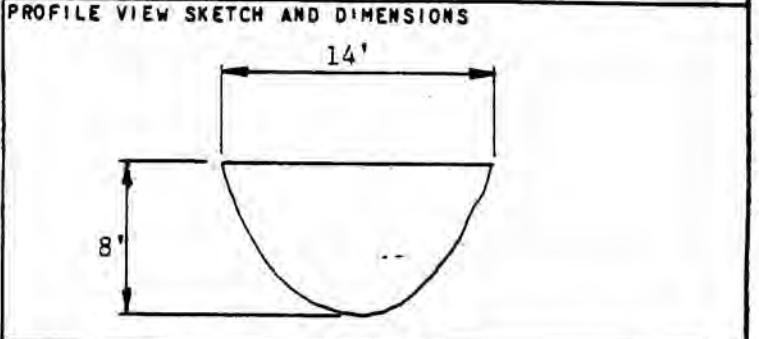
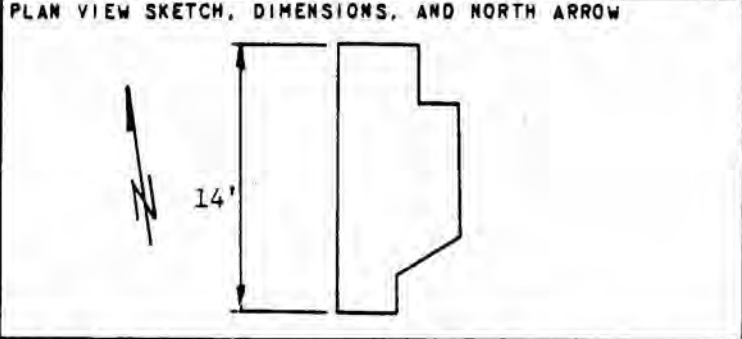
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|--|--|-------|
| | | STATION INTERVALS | | |
| | | | Silty <u>SAND</u> ; brown; loose; fine grain; moist; roots and organics (TOPSOIL) | |
| 1 | | | Silty <u>CLAY</u> ; reddish brown; stiff; medium plasticity; moist; trace sand | |
| 2 | | | | |
| 3 | | | Silty <u>SAND</u> ; grey; dense; very fine grain; moist; trace weathered sandstone | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |

REMARKS: Backhoe refusal at 4.5 feet.

P-ST-0268



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|--|----------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N381950±E3339050± | ELEVATION (DATUM) - | TOTAL DEPTH 8.0' | DATE 2/27/89 |
| SURFACE CONDITIONS Grassy; level; moist | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | | |



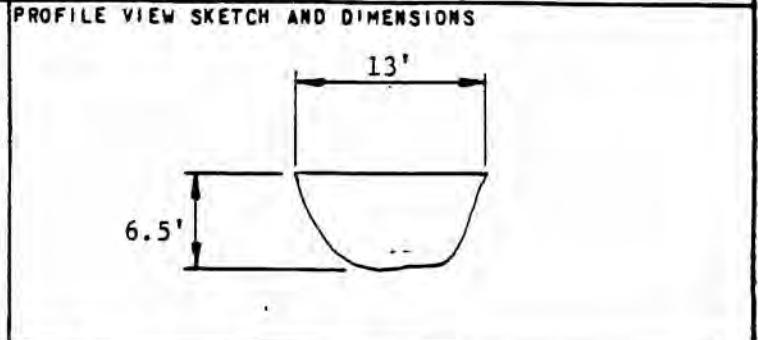
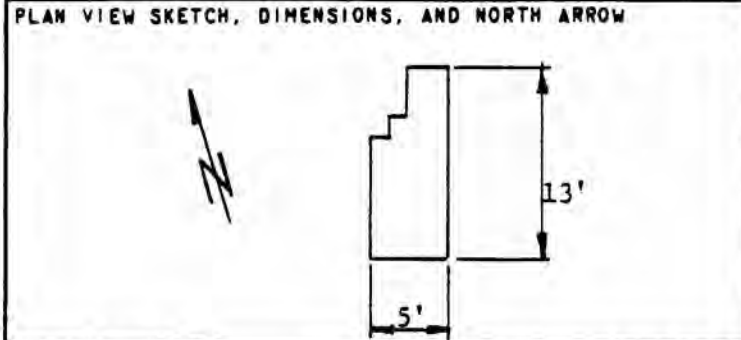
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1.0 | Silty SAND; tannish-gray; loose; poorly graded; fine grained; moist; with organics. | |
| Bag 1 | 2.0 | Silty CLAY; reddish-brown; soft to firm; high plasticity; moist; with some organics. | |
| Bag 3 | 3.0 | Grading to tannish-gray; moist to wet @ 1.5'. | |
| | 4.0 | Grading to stiff to very stiff @ 2.5'; with trace sand; moist. | |
| Bag 2 | 5.0 | With some sand lenses 1 mm to 1/8". | |
| | 6.0 | | |
| | 7.0 | Grading to Sandy CLAY. | |
| | 8.0 | | |
| | 9.0 | Bottom 8.0' | |

REMARKS:

P-ST-0268



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|--|-----------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Trimes County, Texas | COORDINATES N381950± E3339550± | ELEVATION (DATUM) - | TOTAL DEPTH 6.5' | DATE 2/27/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



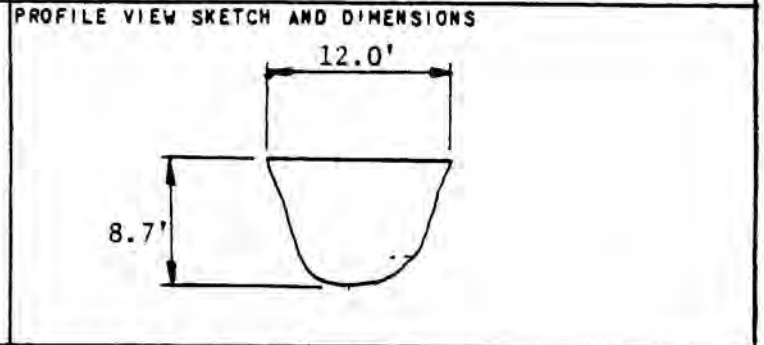
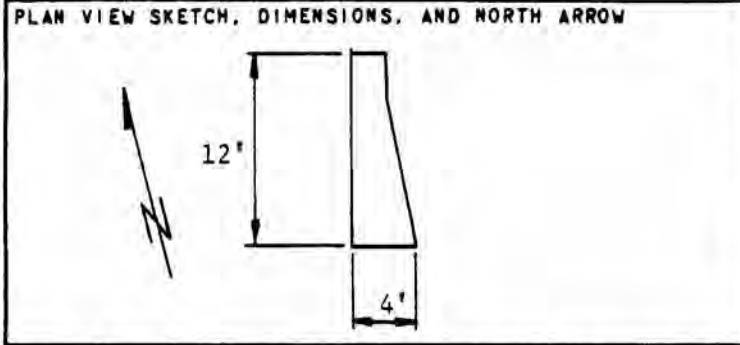
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| Bag 1 | 1.0 | Silty SAND; tannish gray; loose; fine grained; moist; with organics. | |
| | 2.0 | Silty CLAY; reddish brown to tannish gray; firm; high plasticity; moist to wet; with some organics; trace sand. Grading to Sandy CLAY; @ 1.5'; stiff; moist. | |
| | 4.0 | Grading to v. stiff (claystone). | |
| | 7.0 | Bottom 6.5' | |

REMARKS:

P-ST-026B



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|---|-----------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N381950± E3340050± | ELEVATION (DATUM) - | TOTAL DEPTH 8.7' | DATE 2/27/89 |
| SURFACE CONDITIONS Grassy; gentle slope; moist, firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, J. D. 410 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | | |



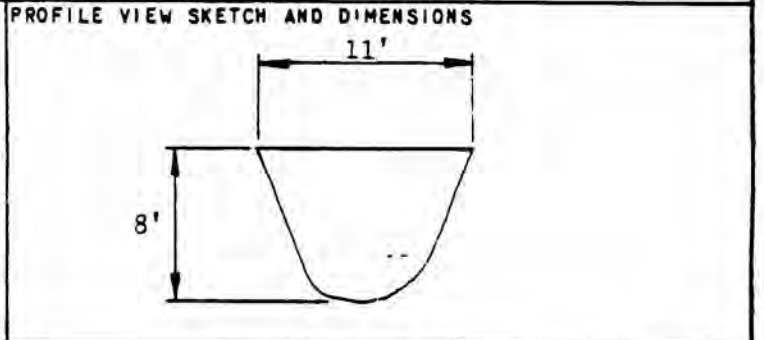
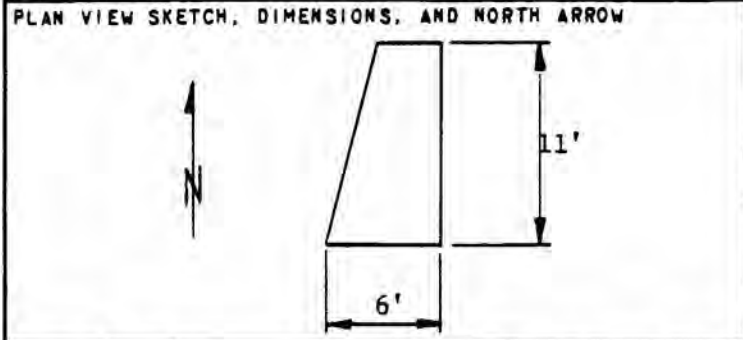
| SAMPLE AND TYPE NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1.0 | Clayey <u>SAND</u> ; brownish-gray; loose; fine grained; moist; with organics. | |
| Bag 1 | 2.0 | Silty <u>CLAY</u> ; brownish-gray; soft to firm; high plasticity; moist to wet; with some organics. | |
| Bag 3 | 3.0 | | |
| | 4.0 | Silty <u>CLAY</u> ; tannish-brown; stiff to very stiff; high plasticity; moist; with trace organics. | |
| Bag 2 | 5.0 | | |
| | 6.0 | Grading to <u>CLAY</u> ; with blocky structure; with slickensides. | |
| | 7.0 | | |
| | 8.0 | | |
| | 9.0 | Bottom 8.7' | |

REMARKS:

P-ST-0268



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|--|-----------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N381950± E3340550± | ELEVATION (DATUM) - | TOTAL DEPTH 8.0' | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | | |



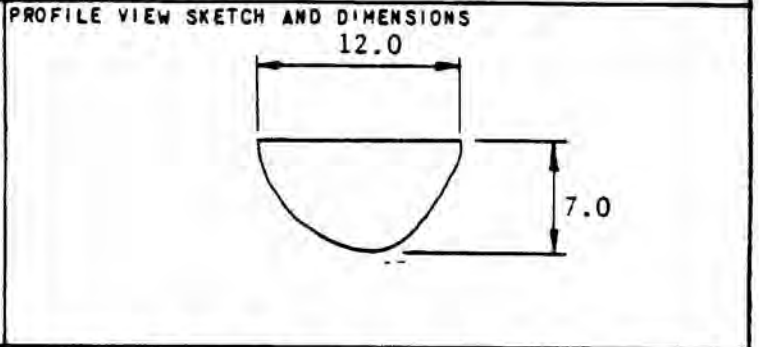
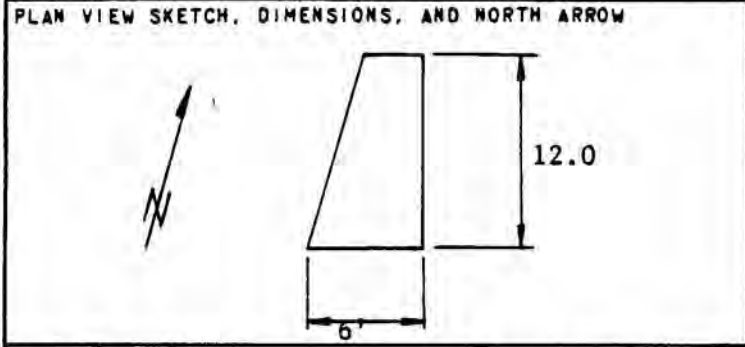
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Silty <u>SAND</u> ; brown; loose; fine grained; moist; with organics. | |
| Bag 1 | 1.0 | Silty <u>CLAY</u> ; brownish-gray; firm; high plasticity; moist; with some organics; trace sand. | |
| Bag 2 | 3.0 | Grading to Sandy <u>CLAY</u> ; tanish-gray; stiff; low plasticity; moist; some iron staining; some organics. | |
| | 5.0 | Clayey <u>SAND</u> ; dense to very dense; fine grained; poorly graded. | |
| | 8.0 | Bottom 8.0' | |

REMARKS:

P-ST-0268



| | | | | |
|--|------------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382200± E3339800 ± | ELEVATION (DATUM) ---- | TOTAL DEPTH 7.0 | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe; Cat 416 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1.0 | Silty SAND; grayish brown; loose; fine grained; poorly graded; moist; some organics. | |
| | 2.0 | Sandy SILT; grayish brown; firm; low to medium plasticity; moist; some organics. | |
| | 3.0 | Clayey SAND; brown; very dense; fine grained; poorly graded; dry to moist; trace organics. | |
| | 4.0 | | |
| | 5.0 | | |
| | 6.0 | CLAY; tanish brown; stiff; high plasticity; moist; thin sand lenses; some iron staining; blocky structure and slickensides. | |
| | 7.0 | Bottom 7.0' | |
| | 8.0 | | |
| | 9.0 | | |

REMARKS:

P-SI-0268



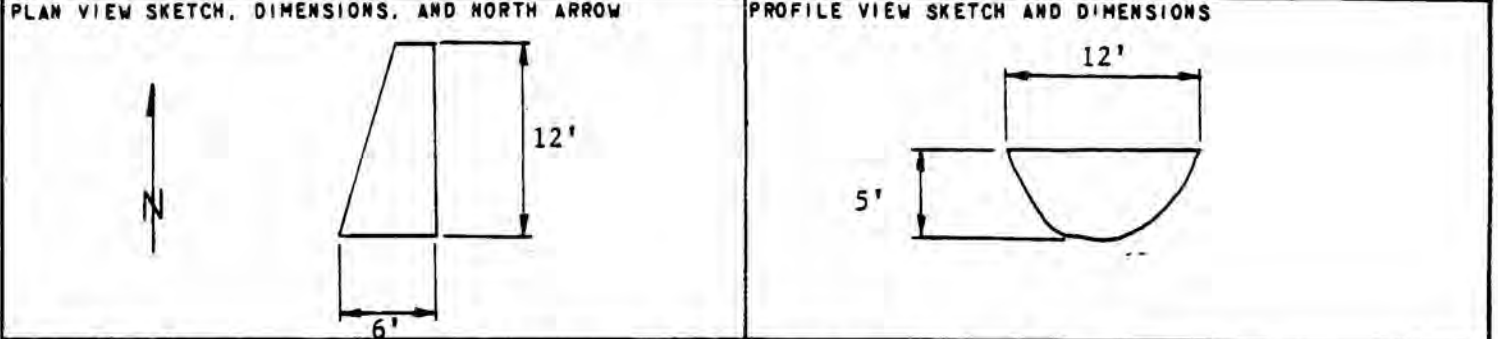
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| CLIENT Texas Municipal Power Agency | PROJECT Gibbons Creek SES | PROJECT NO. 14578 |
|--|------------------------------|----------------------|

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|--|-----------------------------------|----------------------------|--------------------|-----------------|
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382700+ E3338800+ | ELEVATION (DATUM) ----- | TOTAL DEPTH 5.0 | DATE 2/28/89 |
|--|-----------------------------------|----------------------------|--------------------|-----------------|

| | |
|--|-------------------------|
| SURFACE CONDITIONS Grassy, level, firm, moist | INSPECTOR J. D. Grob |
|--|-------------------------|

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|--|
| METHOD OF EXCAVATION Backhoe, Cat 416 |
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|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
|--------------------------|------------------------------|



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1.0 | Silty <u>SAND</u> ; grayish brown; loose; fine grained; poorly graded; moist; some organics. | |
| | 2.0 | <u>CLAY</u> ; greenish-brown; firm; high plasticity; moist; some organics. grading to silty <u>CLAY</u> at 1.5'; trace fine sand. grading to Sandy <u>CLAY</u> at 2.5'. | |
| | 3.0 | Clayey <u>SAND</u> ; dense; fine grained; poorly graded; moist. | |
| | 4.0 | grading to very dense; weakly cemented. | |
| | 5.0 | Bottom 5.0' | |
| | 6.0 | | |
| | 7.0 | | |
| | 8.0 | | |
| | 9.0 | | |

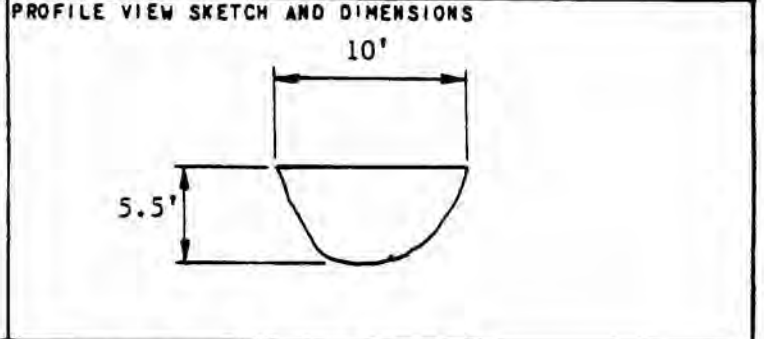
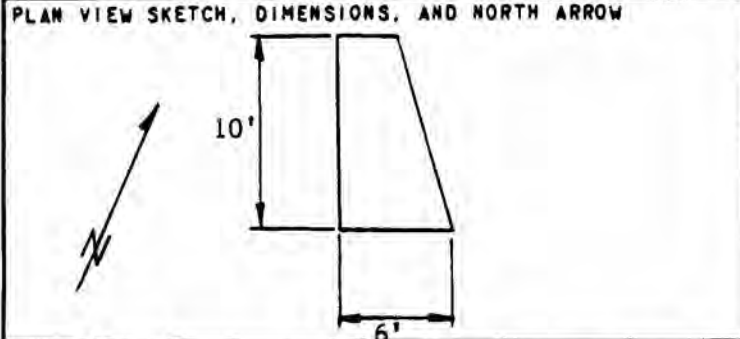
REMARKS:

P-ST-0268



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|--|-----------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382700+ E3339300+ | ELEVATION (DATUM) -- | TOTAL DEPTH 5.5 | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |

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|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
|--------------------------|------------------------------|



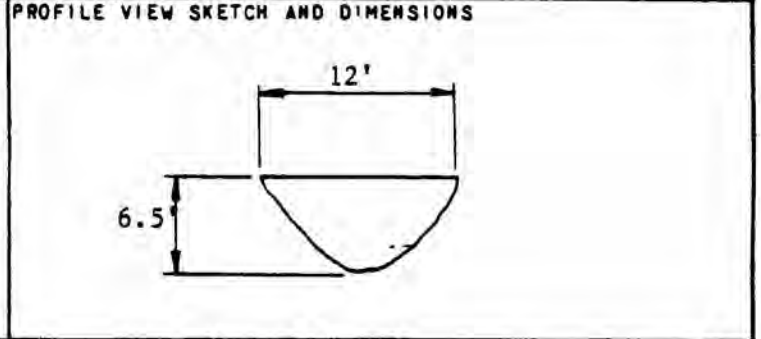
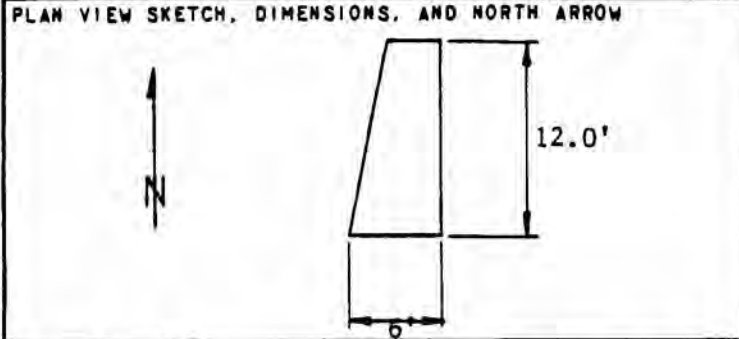
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0.0 - 1.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; some organics. | |
| | 1.0 - 2.0 | Silty CLAY: reddish-brown; firm; moist; some organics. | |
| | 2.0 - 3.0 | Grading to brown. | |
| | 3.0 - 4.0 | | |
| | 4.0 - 5.5 | Clayey SAND: tannish-brown; dense; fine grained; poorly graded; trace organics trace iron staining. | |
| | 5.5 - 6.0 | Bottom 5.5' | |
| | 6.0 - 7.0 | | |
| | 7.0 - 8.0 | | |
| | 8.0 - 9.0 | | |
| | 9.0 - 10.0 | | |

REMARKS:

P-ST-026B



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|--|-------------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N382700 + E3340300 + | ELEVATION (DATUM) -- | TOTAL DEPTH 6.5 | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 0.0 - 1.0 | Silty <u>SAND</u> ; brown; loose; fine grained; poorly graded; moist; some organics. | |
| | 1.0 - 2.0 | Silty <u>CLAY</u> ; reddish-brown with gray mottling; soft to firm; high plasticity; moist; some organics; trace stone gravel. | |
| | 2.0 - 3.0 | Clayey <u>SAND</u> ; gray; very dense; fine grained; poorly graded; moist; with clay laminations 0.1" to 2" thick on 0.5" to 3" spacings to bottom of pit. | |
| | 3.0 - 4.0 | With sand weakly cemented. | |
| | 4.0 - 5.0 | | |
| | 5.0 - 6.0 | | |
| | 6.0 - 7.0 | Bottom 6.5' | |
| | 7.0 - 8.0 | | |
| | 8.0 - 9.0 | | |
| | 9.0 - 10.0 | | |

REMARKS:

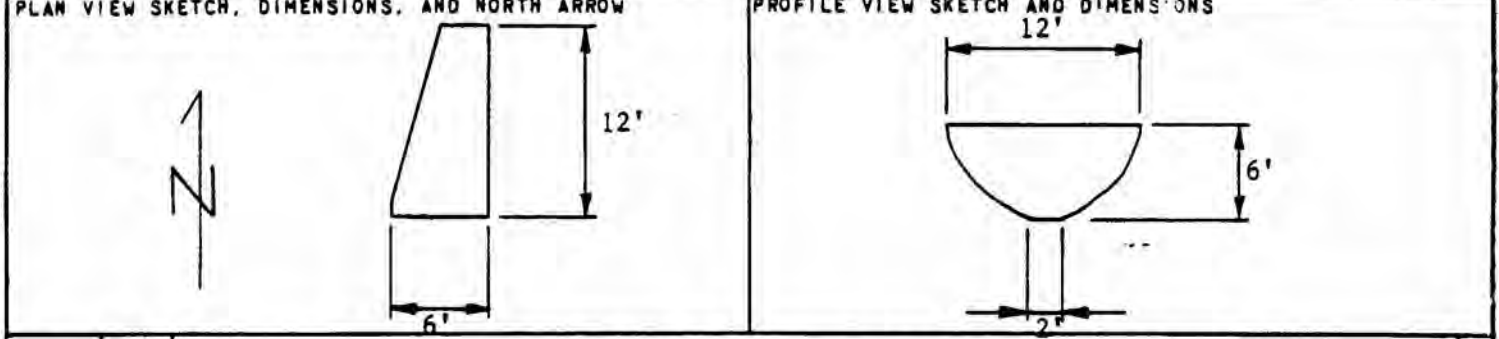
P-ST-0268



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|--|-------------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383200 + E3338800 + | ELEVATION (DATUM) -- | TOTAL DEPTH 6.0' | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |

METHOD OF EXCAVATION
Backhoe, Cat 416

| | |
|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
|--------------------------|------------------------------|



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Silty <u>SAND</u> ; grayish-brown; loose; fine grained; poorly graded; moist; with organics. | |
| | 1.0 | Sandy Silty <u>CLAY</u> ; grayish-brown; firm; medium plasticity; moist to wet; some organics. | |
| | 2.0 | | |
| | 3.0 | Grading to stiff at 3.8'. Grading to Sandy <u>CLAY</u> ; tannish-gray; very stiff; moist; with fine grained sand. | |
| | 4.0 | | |
| | 5.0 | | |
| | 6.0 | Bottom 6.0' | |
| | 7.0 | | |
| | 8.0 | | |
| | 9.0 | | |

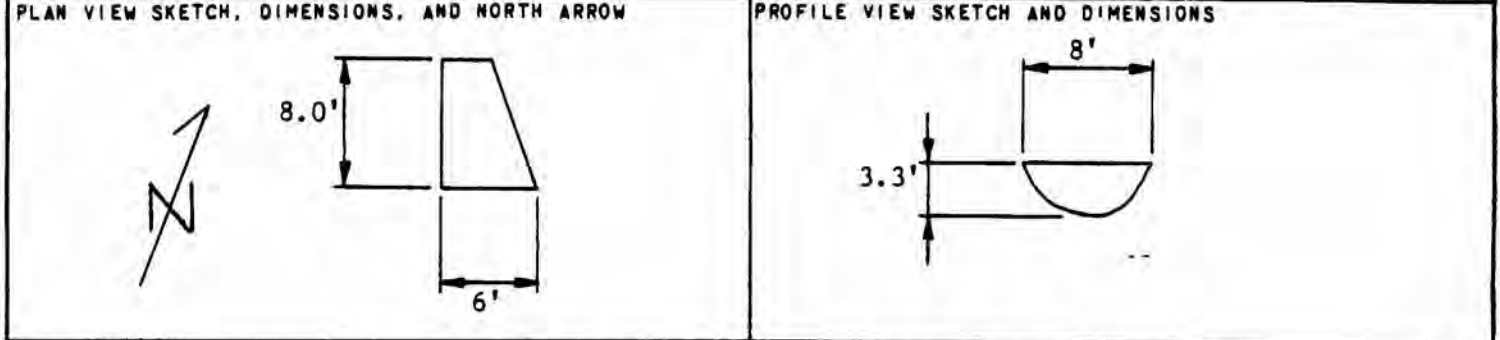
REMARKS:

P-ST-026B



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|--|-----------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383200+ E3339300+ | ELEVATION (DATUM) -- | TOTAL DEPTH 3.3 | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |

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|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY I. J. Almaleh |
|--------------------------|------------------------------|



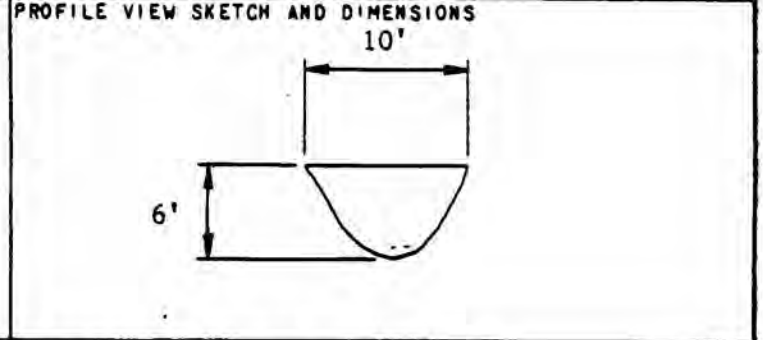
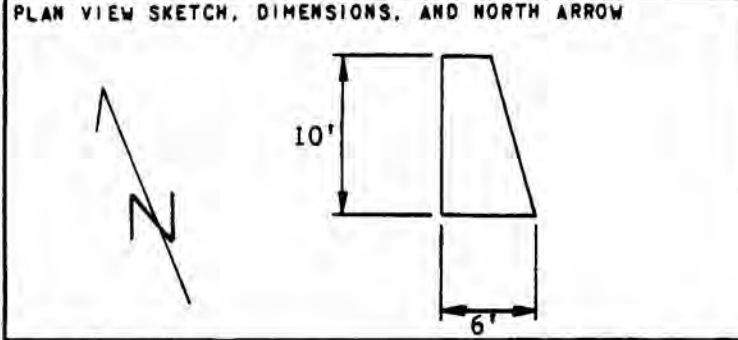
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0.0 - 1.0 | Silty <u>SAND</u> ; brown; loose; fine grained; poorly graded; moist; with some organics. | |
| | 1.0 - 2.0 | Sandy <u>CLAY</u> ; brown; firm; medium plasticity; moist; with some organics. | |
| | 2.0 - 3.0 | <u>SANDSTONE</u> ; tannish-gray; highly fractured; highly weathered. | |
| | 3.0 - 3.3 | Bottom 3.3' | |

REMARKS:

P-ST-0268



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|--|-----------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383450 + E3339550 | ELEVATION (DATUM) -- | TOTAL DEPTH 6.0' | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



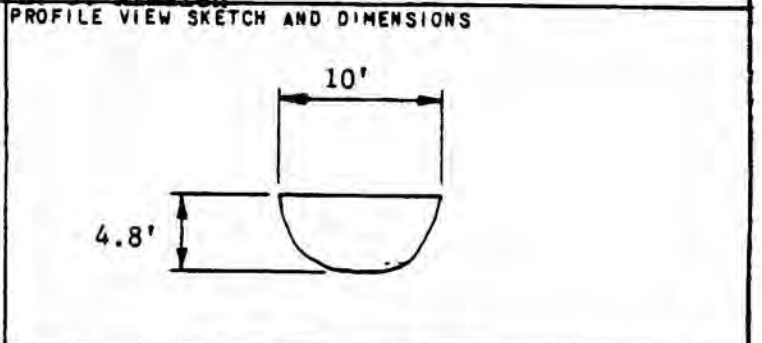
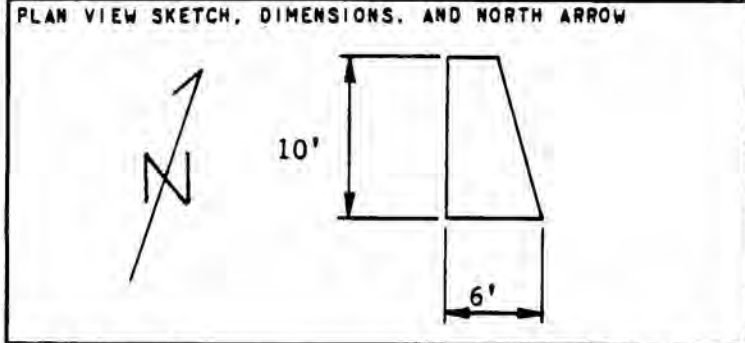
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|---|--|-------|
| | | STATION INTERVALS | | |
| | 0.0 - 1.0 | Silty SAND: brown; loose; fine grained; poorly graded; moist; with some organics. | | |
| | 1.0 - 2.0 | Silty CLAY: reddish-brown; firm; high plasticity; moist; with some organics. | | |
| | 2.0 - 3.0 | Grading to gray; with trace sand. | | |
| | 3.0 - 4.0 | Clayey SAND: dense; fine grained; poorly graded; moist. | | |
| | 4.0 - 6.0 | Grading to weakly cemented. | | |
| | 6.0 | Bottom 6.0' | | |
| | 7.0 | | | |
| | 8.0 | | | |
| | 9.0 | | | |
| | 10.0 | | | |

REMARKS:

P-ST-0268



| | | | | |
|---|--|-------------------------------------|--------------------------------|-----------------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383450± E3340050± | ELEVATION (DATUM) ----- | TOTAL DEPTH 4.8' | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; Level; Moist; Firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe; Cat 416 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY I. I. Almaleh | | |



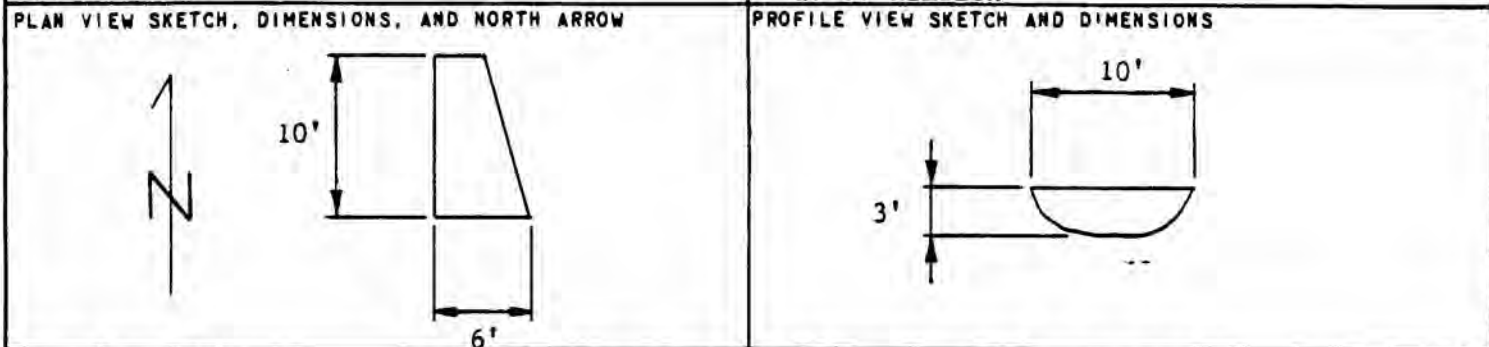
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | | DEPTH |
|------------------------|---------------|--|--|-------|
| | | STATION INTERVALS | | |
| Bag 1 | 1.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; with some organics. | | |
| | 2.0 | Silty CLAY; blackish-brown; firm; high plasticity; moist; with some organics. | | |
| | 3.0 | Grading to very stiff. | | |
| | 4.0 | Silty SAND; tannish-gray; very dense; fine grained; poorly graded; moist grading to weakly cemented. | | |
| | 5.0 | Bottom 4.8' | | |
| | 6.0 | | | |
| | 7.0 | | | |
| | 8.0 | | | |
| | 9.0 | | | |
| | 10.0 | | | |

REMARKS:

P-SI-026B



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|--|-------------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383700 + E3339300 + | ELEVATION (DATUM) -- | TOTAL DEPTH 3.0' | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1.0 | Silty <u>SAND</u> ; brown; loose; fine grained; poorly graded; moist; with some organics. | |
| | 2.0 | Silty <u>CLAY</u> ; brown; firm; high plasticity; moist; with some organics. | |
| | 3.0 | <u>SANDSTONE</u> ; tannish-gray; highly fracture; highly weathered; grading to slightly fractured at 2.5'. | |
| | 4.0 | Bottom 3.0' | |
| | 5.0 | | |
| | 6.0 | | |
| | 7.0 | | |

REMARKS:

P-ST-0268



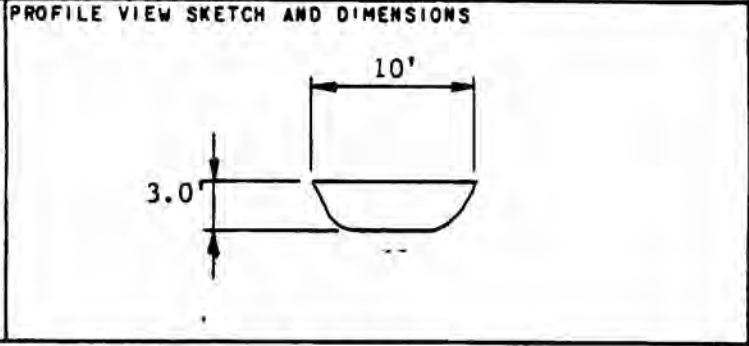
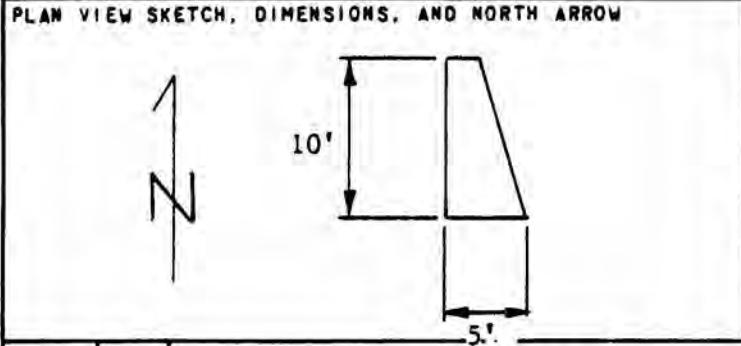
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|--|-------------------------------------|------------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383700 + E3339800 + | ELEVATION (DATUM) -- | TOTAL DEPTH 4.7 | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | | |
| PLAN VIEW SKETCH, DIMENSIONS, AND NORTH ARROW | | PROFILE VIEW SKETCH AND DIMENSIONS | | |
| | | | | |

| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1.0 | Silty SAND: brownish-gray; loose; fine grained; poorly graded; moist; with some organics. | |
| | 2.0 | Silty CLAY: brownish-gray; firm; high plasticity; moist; with trace sand; with some organics. | |
| | 3.0 | Grading to sandy CLAY; tannish-gray. | |
| | 4.0 | Grading to reddish-brown. | |
| | 5.0 | SANDSTONE: yellowish brown; highly weathered; highly fractured. | |
| | 6.0 | Bottom 4.7' | |

REMARKS:



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|--|-------------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383950 + E3339550 + | ELEVATION (DATUM) -- | TOTAL DEPTH 3.0 | DATE 3/1/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



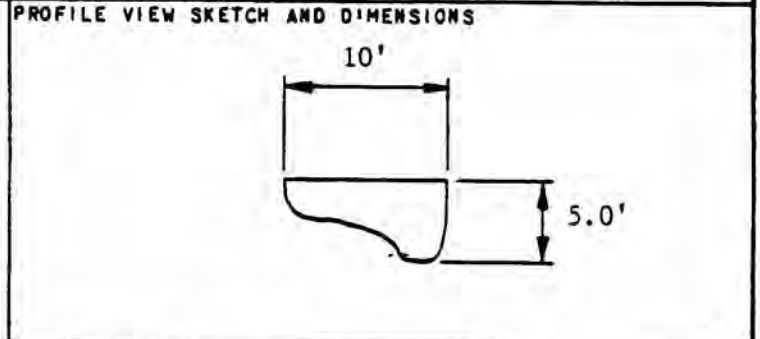
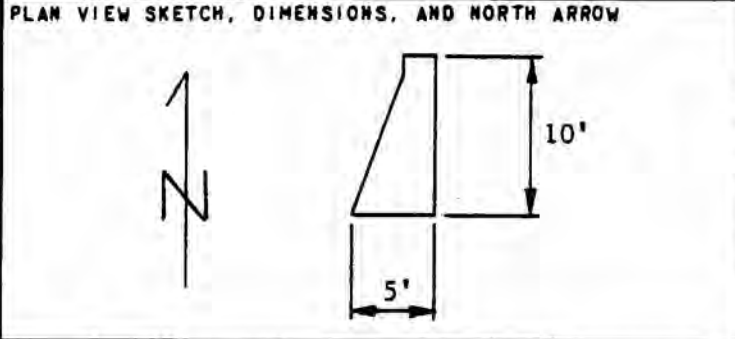
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 1.0 | Silty <u>SAND</u> ; brown; loose; fined grained; poorly graded; moist; with some organics. | |
| | 2.0 | Grading to clayey <u>SAND</u> . | |
| | 3.0 | <u>SANDSTONE</u> ; tannish-gray; highly fractured; highly weathered; grading to slightly fractured; slightly weathered. | |
| | 4.0 | Bottom 3.0' | |

REMARKS:

P-ST-026B



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|--|-------------------------------------|------------------------------|------------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N383950 ± E3340550 ± | ELEVATION (DATUM) -- | TOTAL DEPTH 5.0 | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | | APPROVED BY L. J. Almaleh | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1.0 | Clayey SAND; grayish-brown; loose; fine grained; poorly graded; moist to wet; with organics. | |
| | 2.0 | SANDSTONE; grayish-tan; hard; highly weathered; highly fractured; grading to slightly fractured. | |
| | 5.0 | Bottom 5.0' | |

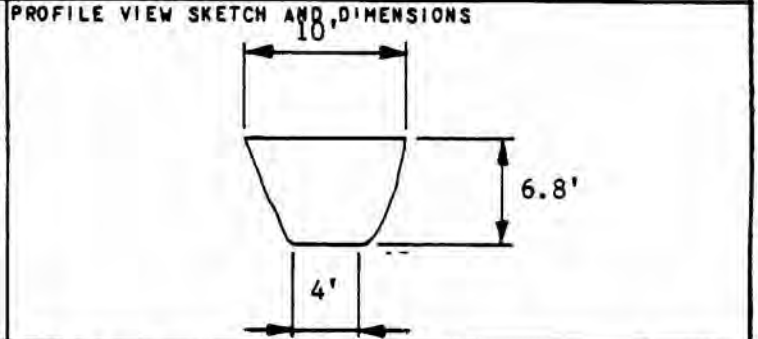
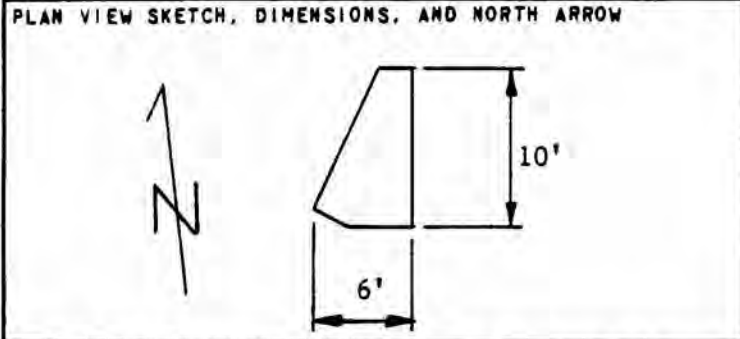
REMARKS:

P-ST-0268



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|--|-----------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N384200+ E3338800+ | ELEVATION (DATUM) -- | TOTAL DEPTH 6.8' | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe; Cat 416 | | | | |

| | |
|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
|--------------------------|------------------------------|



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | | Silty SAND; grayish-brown; loose; fine grained; poorly graded; moist | |
| | 1.0 | Silty CLAY; greenish-brown; firm; high plasticity; moist; with some organics; trace sand. | |
| | 2.0 | Grading to sandy CLAY; brownish-tan; very stiff; low plasticity; moist; trace organics; fine grained sand. | |
| | 3.0 | Grading to grayish tan. | |
| | 4.0 | | |
| | 5.0 | | |
| | 6.0 | | |
| | 7.0 | Bottom 6.8' | |
| | 8.0 | | |
| | 9.0 | | |

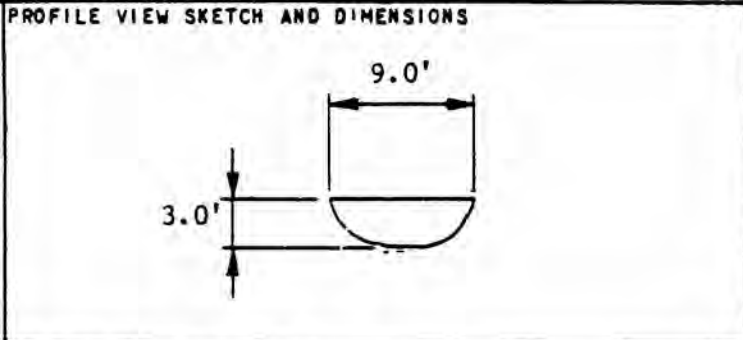
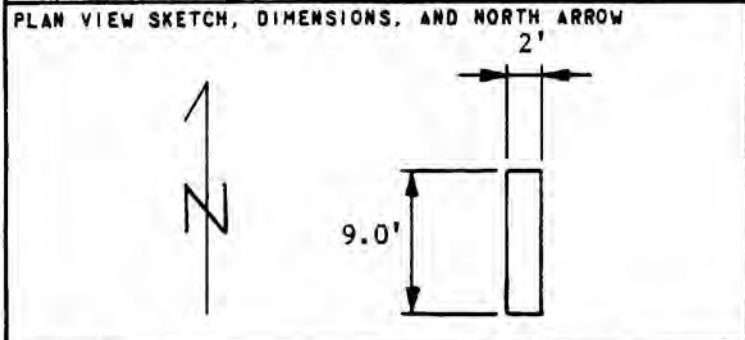
REMARKS:

P-ST-0268



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|--|-------------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N384200 + E3340300 + | ELEVATION (DATUM) -- | TOTAL DEPTH 3.0 | DATE 2/28/89 |
| SURFACE CONDITIONS Grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |

| | |
|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
|--------------------------|------------------------------|



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 1.0 | Clayey SAND; grayish-brown; loose; poorly graded; fine grained; moist; trace organics. | |
| | 2.0 | SANDSTONE; tan; highly weathered; highly fractured. | |
| | 3.0 | Grading to moderately weathered; slightly fractured at 2.5'. | |
| | 4.0 | Bottom 3.0' | |

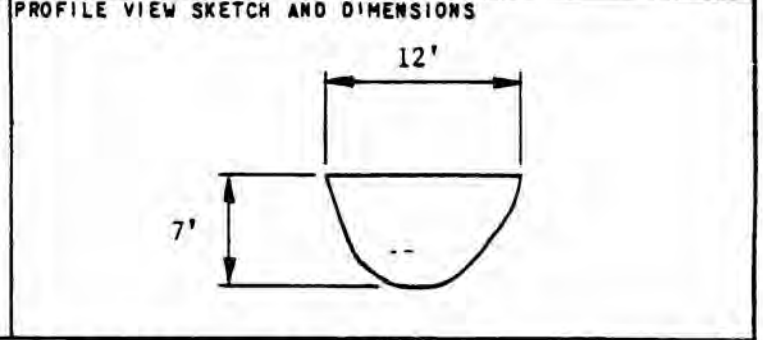
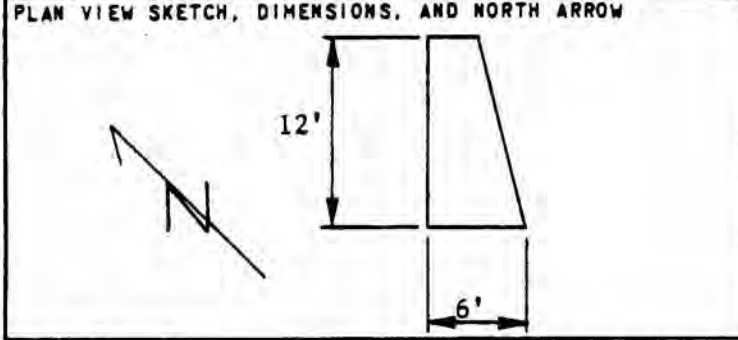
REMARKS:

P-ST-026B



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|--|-------------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N380950 + E3339950 + | ELEVATION (DATUM) — | TOTAL DEPTH 7.0 | DATE 3/1/89 |
| SURFACE CONDITIONS Slightly woody; grassy; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |

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|--------------------------|------------------------------|
| CHECKED BY J. D. Grob | APPROVED BY L. J. Almaleh |
|--------------------------|------------------------------|



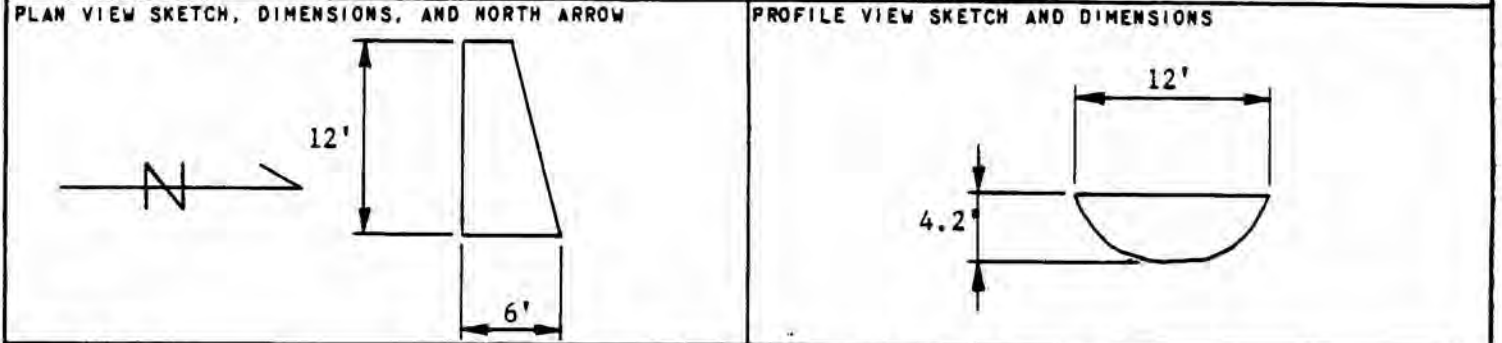
| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|--|-------|
| | | STATION INTERVALS | |
| | 0.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; with some organics. | |
| | 1.0 | Silty <u>CLAY</u> ; gray with reddish brown mottling; firm; high plasticity; moist with some organics. | |
| | 2.0 | With yellow brown mottling. | |
| | 3.0 | | |
| | 4.0 | Grading to <u>CLAY</u> ; tannish brown; stiff; high plasticity; moist; with trace blocky structure. | |
| | 5.0 | | |
| | 6.0 | | |
| | 7.0 | Bottom 7.0 | |
| | 8.0 | | |
| | 9.0 | | |
| | 10.0 | | |

REMARKS:

P-ST-026B



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|---|-------------------------------------|------------------------------|-------------------------|----------------------|
| CLIENT Texas Municipal Power Agency | | PROJECT Gibbons Creek SES | | PROJECT NO. 14578 |
| PROJECT LOCATION Grimes County, Texas | COORDINATES N380150 + E3341350 + | ELEVATION (DATUM) -- | TOTAL DEPTH 4.2' | DATE 3/1/89 |
| SURFACE CONDITIONS Short grass; level; moist; firm | | | INSPECTOR J. D. Grob | |
| METHOD OF EXCAVATION Backhoe, Cat 416 | | | | |
| CHECKED BY J. D. Grob | | APPROVED BY L. J. Almaleh | | |



| SAMPLE TYPE AND NUMBER | DEPTH IN FEET | CLASSIFICATION AND DESCRIPTION OF MATERIAL | DEPTH |
|------------------------|---------------|---|-------|
| | | STATION INTERVALS | |
| | 0.0 | Silty SAND; brown; loose; fine grained; poorly graded; moist; with some organics. | |
| | 1.0 | Silty CLAY; reddish brown; firm; high plasticity; moist; with some organics. Grading to gray with red-brown mottling; trace to some sand. | |
| | 2.0 | | |
| | 3.0 | Sandy CLAY; brown to yellow brown; very stiff; medium plasticity; moist to dry. | |
| | 4.0 | | |
| | 5.0 | Bottom 4.2' | |
| | 6.0 | | |
| | 7.0 | | |
| | 8.0 | | |
| | 9.0 | | |
| | 10.0 | | |

REMARKS:

P-ST-0268

| SUMMARY OF LABORATORY TEST DATA | | | | | | | | | COMPRESSION TEST | | | | OTHER TESTS |
|---|---------------|------------|---|--------------------|-----------------|-----------------|----|----|--------------------|-------------|-------------------------|--------------|-------------------------------|
| PROJECT: TEXAS MUNICIPAL POWER AGENCY Site F Landfill, Gibbons Creek S.E.S. PROJECT NO: 880252 DATE: March 7, 1988 | | | | | | | | | COMPRESSION 1st | STRAIN % | LATERAL PRESSURE psi | TYPE FAILURE | |
| BORING NO. | DEPTH IN FEET | SAMPLE NO. | TYPE OF MATERIAL | MOISTURE CONTENT % | DRY DENSITY pcf | ATTERBERG LMNTS | | | | | | | |
| | | | | | | LL | PL | PI | | | | | |
| B-6 | 4-6 | 231 | Tan, brown and gray clay (CH) | 16 | | 52 | 20 | 32 | | | | | Sieve and Hydrometer Analysis |
| | 8-10 | 233 | Gray sandy clay with cemented sand nodules (CL) | 16 | | 40 | 19 | 21 | | | | | Sieve Analysis |
| | 22-22.5 | 235 | Gray clayey sand with iron stain (SC) | 24 | | 37 | 16 | 21 | | | | | Sieve Analysis |
| | 34-35 | 237 | Dark gray clay with sand seams (CH) | 26 | | 69 | 35 | 34 | | | | | Sieve and Hydrometer Analysis |
| | | | | | | | | | | | | | |
| B-7 | 4-6 | 169 | Tan clay with sand seams and iron stain seams (CH) | 32 | | 64 | 31 | 33 | | | | | |
| | 16-17 | 172 | Gray silt with sand (ML) | 26 | | 30 | 27 | 3 | | | | | Sieve Analysis |
| | 23-24 | 175 | Tan and gray silty sand with tan clay seams (SC) | 27 | | 38 | 21 | 17 | | | | | Sieve Analysis |
| | 25-26 | 176 | Dark gray clayey sand | 29 | | 36 | 23 | 13 | | | | | Sieve and Hydrometer Analysis |
| | 31-32 | 178 | Dark gray silt with sand (ML) | 28 | | 31 | 22 | 9 | | | | | Sieve Analysis |
| | 45-46 | 185 | Dark gray clay with sand seams and cemented sand pockets (CH) | 28 | | 73 | 30 | 43 | | | | | Sieve and Hydrometer Analysis |
| | | | | | | | | | | | | | |
| B-8 | 2.5-3.5 | 166 | Tan clayey sand with sandstone seams (SC) | 22 | | 32 | 23 | 9 | | | | | Sieve Analysis |
| | | | | | | | | | | | | | |

SUMMARY OF LABORATORY TEST DATA

PROJECT: TEXAS MUNICIPAL POWER AGENCY
Site F Landfill, Gibbons Creek S.E.S.

PROJECT NO: 880252

DATE: March 7, 1988

| BORING NO. | DEPTH IN FEET | SAMPLE NO. | TYPE OF MATERIAL | MOISTURE CONTENT % | DRY DENSITY pcf | ATTERBERG LIMITS | | | COMPRESSION 1st | STRAIN % | LATERAL PRESSURE psi | TEST TYPE FAILURE | OTHER TESTS |
|------------|---------------|------------|---|--------------------|-----------------|------------------|-------|-----|-----------------|----------|----------------------|-------------------|-------------------------------|
| | | | | | | LL | PL | PI | | | | | |
| | | | | | | B-9 | 2.5-4 | 154 | | | | | |
| | 5-7 | 155 | Tan clay, jointed | 33 | 85 | | | | 1.90 | 3.1 | 8 | Vertical Split | |
| | 7.5-9 | 156 | Tan clay (CH-MH) | 19 | | 95 | 41 | 54 | | | | | |
| | 13-15 | 157 | Tan clay with silt seams and iron stain seams | 39 | 80 | | | | 2.32 | 1.4 | 16 | 45° Shear | |
| | 23-25 | 159 | Tan to brown clay with iron stain seams (CH) | 39 | | 99 | 40 | 59 | | | | | Sieve and Hydrometer Analysis |
| | 43-45 | 163 | Gray sandy clay with sand seams (CL) | 27 | | 47 | 28 | 19 | | | | | |
| B-10 | 2.5-4 | 148 | Gray clayey sand (SC) | 18 | | 50 | 21 | 29 | | | | | Sieve Analysis |
| | 13.5-15 | 151 | Gray clayey sand with iron stain (SC) | 27 | | 32 | 19 | 13 | | | | | Sieve Analysis |
| | | | | | | | | | | | | | |
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| SUMMARY OF LABORATORY TEST DATA | | | | | | | | | COMPRESSION TEST | | | | OTHER TESTS |
|---|------------------|---------------|---|--------------------------|-----------------------|------------------|----|----|--------------------|-------------|-------------------------|----------------|---------------------------------------|
| TEXAS MUNICIPAL POWER AGENCY PROJECT: Site F Landfill, Gibbons Creek S.E.S. PROJECT NO: 880252 DATE: March 7, 1988 | | | | | | | | | COMPRESSION 1st | STRAIN % | LATERAL PRESSURE psi | TYPE FAILURE | |
| BORING NO. | DEPTH IN FEET | SAMPLE NO. | TYPE OF MATERIAL | MOISTURE CONTENT % | DRY DENSITY pcf | ATTERBERG LIMITS | | | | | | | |
| | | | | | | | LL | PL | PI | | | | |
| B-11 | 4-6 | 207 | Gray clay with sandstone seams and iron stain (MH) | 23 | | 73 | 38 | 35 | | | | | |
| | 10-12 | 210 | Tan clay & gray sandy clay with sand seams, iron stain seams & gray silty fine sand layer | 31 | 89 | | | | 1.80 | 1.7 | 8 | Vertical Split | |
| | 12-14 | 211 | Tan clay and gray sandy clay with trace of gypsum | 31 | 84 | | | | 1.11 | 6.1 | 16 | Bulge | |
| | 14-16 | 212 | Tan clay with sand and iron stain seams | 35 | 85 | | | | | | | | Consolidation Specific Gravity= 2.645 |
| | 16-18 | 213 | Tan clay with sand seams (MH) | 40 | | 96 | 43 | 53 | | | | | Sieve and Hydrometer Analysis |
| | 30-32 | 220 | Olive gray clay with silt seams (CH) | 34 | | 94 | 32 | 62 | | | | | Sieve and Hydrometer Analysis |
| | 44-46 | 227 | Dark gray clay with sand seams (CH) | 32 | | 91 | 30 | 61 | | | | | |
| B-12 | 2-4 | 242 | Tan sandy clay-clayey sand with sandstone nodules, clay layer and sand seams (SC) | 29 | | 56 | 23 | 33 | | | | | Sieve Analysis |
| | 18-20 | 246 | Gray clay with sand seams (CH) | 27 | | 57 | 23 | 34 | | | | | Sieve Analysis |
| | 28-30 | 248 | Dark gray clay with sand seams, laminated (MH) | 27 | | 70 | 35 | 35 | | | | | Sieve and Hydrometer Analysis |
| | 38-40 | 250 | Dark gray and olive gray clay with sand seams (CH) | 33 | | 85 | 32 | 53 | | | | | Sieve and Hydrometer Analysis |
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| SUMMARY OF LABORATORY TEST DATA | | | | | | | | | COMPRESSION TEST | | | | OTHER TESTS |
|---|---------------|------------|--|--------------------|-----------------|-----------------|----|----|--------------------|-------------|-------------------------|----------------|--------------------------------------|
| PROJECT: TEXAS MUNICIPAL POWER AGENCY Site F Landfill, Gibbons Creek S.E.S. PROJECT NO: 880252 DATE: March 7, 1988 | | | | | | | | | COMPRESSION 1st | STRAIN % | LATERAL PRESSURE psi | TYPE FAILURE | |
| BORING NO. | DEPTH IN FEET | SAMPLE NO. | TYPE OF MATERIAL | MOISTURE CONTENT % | DRY DENSITY pcf | ATTERBERG LMITS | | | | | | | |
| | | | | | | LL | PL | PI | | | | | |
| B-13 | 4-6 | 255 | Tan clay with sand seams and iron stain seams, jointed | 33 | 85 | | | | 4.16 | 3.1 | 8 | Vertical Split | |
| | 6-8 | 256 | Tan clay with brown lignitic clay and sand seams | 44 | 74 | | | | 1.27 | 2.4 | 16 | Vertical Split | |
| | 8-10 | 257 | Tan clay with sand seams and iron stains (CH) | 28 | | 60 | 26 | 34 | | | | | |
| | 13-15 | 258 | Brown sandy clay | 23 | 92 | | | | | | | | Consolidation Specific Gravity=2.672 |
| | 43-45 | 264 | Dark gray clay with sand seams (CH) | 33 | | 64 | 26 | 38 | | | | | |
| B-14 | 13-15 | 271 | Gray silty fine sand (SM) | 25 | | 26 | 23 | 3 | | | | | Sieve Analysis |
| | 43-45 | 277 | Brown clay with sand seams (CH) | 30 | | 57 | 25 | 32 | | | | | Sieve Analysis |
| B-15 | 3-4 | 137 | Gray sandy clay (CH) | 14 | | 50 | 18 | 32 | | | | | Sieve and Hydrometer Analysis |
| B-16 | 10-12 | 193 | Tan clay with iron stain seams and gypsum seams (CH) | 35 | | 96 | 38 | 58 | | | | | |
| | 24-26 | 200 | Dark gray clay with sand seams (CH) | 33 | | 62 | 27 | 35 | | | | | |
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SUMMARY OF LABORATORY TEST DATA

PROJECT: TEXAS MUNICIPAL POWER AGENCY
 Site F Landfill, Gibbons Creek S.E.S.
PROJECT NO: 880252 **DATE:** March 7, 1988

COMPRESSION TEST

OTHER TESTS

| BORING NO. | DEPTH IN FEET | SAMPLE NO. | TYPE OF MATERIAL | MOISTURE CONTENT % | DRY DENSITY pcf | ATTERBERG LIMITS | | | COMPRESSION 1st | STRAIN % | LATERAL PRESSURE psi | TEST TYPE FAILURE | OTHER TESTS |
|------------|---------------|------------|--|--------------------|-----------------|------------------|----|----|-----------------|----------|----------------------|-------------------|-------------------------------|
| | | | | | | LL | PL | PI | | | | | |
| B-17 | 4-6 | 88 | Gray sandy clay (CL) | 17 | | 46 | 19 | 27 | | | | | Sieve Analysis |
| | 10-12 | 91 | Tan & gray clay with clayey silt & sandy silt layers and trace of lignite (CH) | 17 | | 50 | 25 | 25 | | | | | Sieve Analysis |
| B-18 | 6-8 | 114 | Brown clay with sandy silt layer (MH) | 33 | | 60 | 35 | 25 | | | | | Sieve Analysis |
| | 20-22 | 121 | Dark gray clay with sand seams (MH) | 28 | | 50 | 29 | 21 | | | | | Sieve and Hydrometer Analysis |
| | 30-32 | 126 | Olive gray clay with silt seams (MH) | 24 | | 67 | 34 | 33 | | | | | |
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| SUMMARY OF LABORATORY TEST DATA | | | | | | | | | COMPRESSION TEST | | | | OTHER TESTS |
|--|---------------|------------|---|--------------------|-----------------|------------------|----|----|--------------------|-------------|-------------------------|-------------------------------|-------------|
| PROJECT: TEXAS MUNICIPAL POWER AGENCY Site F Landfill, Gibbons Creek S.E.S. | | | | | | | | | COMPRESSION 1st | STRAIN % | LATERAL PRESSURE psi | TYPE FAILURE | |
| PROJECT NO: 880252 DATE: March 7, 1988 | | | | | | | | | | | | | |
| BORING NO. | DEPTH IN FEET | SAMPLE NO. | TYPE OF MATERIAL | MOISTURE CONTENT % | DRY DENSITY pcf | ATTERBERG LIMITS | | | | | | | |
| | | | | | | LL | PL | PI | | | | | |
| CB-12 | 4-6 | 78 | Gray clay with sand seams and iron stain (CH) | 30 | | 85 | 30 | 55 | | | | | |
| | 15-16 | 83 | Tan clay with sand seams (CH) | 33 | | 52 | 28 | 24 | | | | Sieve Analysis | |
| CB-13 | 12-14 | 72 | Gray clay (CH) | 32 | | 79 | 31 | 48 | | | | Sieve and Hydrometer Analysis | |
| | 18-20 | 75 | Tan clay (CH) | 26 | | 71 | 32 | 39 | | | | Sieve Analysis | |
| CB-14 | 3-4 | 57 | Gray sandy clay (CL) | 12 | | 46 | 18 | 28 | | | | Sieve Analysis | |
| | 11-12 | 61 | Gray silty fine sand with clay seam (ML) | 14 | | 31 | 25 | 6 | | | | Sieve Analysis | |
| CB-15 | 10-12 | 51 | Gray clay with sand seams and iron stains (CH) | 34 | | 66 | 32 | 34 | | | | Sieve Analysis | |
| | 14-16 | 53 | Gray clay with brown clay layer, sand seams and pockets (CH-MH) | 30 | | 61 | 31 | 30 | | | | Sieve and Hydrometer Analysis | |
| | | | | | | | | | | | | | |
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| SUMMARY OF LABORATORY TEST DATA | | | | | | | | | COMPRESSION TEST | | | | OTHER TESTS |
|--|---------------|------------|---|--------------------|-----------------|------|---------|-----|--|-----------------|-------------------------|--------------|-------------|
| TEXAS MUNICIPAL POWER AGENCY | | | | | | | | | COMPRESSION pcf | STRAIN % | LATERAL PRESSURE psi | TYPE FAILURE | |
| PROJECT: Site F Landfill, Gibbons Creek S.E.S. | | | | | | | | | | | | | |
| PROJECT NO: 880252 DATE: March 4, 1988 | | | | | | | | | ATTERBERG LIMITS | | | | |
| BORING NO. | DEPTH IN FEET | SAMPLE NO. | TYPE OF MATERIAL | MOISTURE CONTENT % | DRY DENSITY pcf | LL | PL | PI | | | | | |
| | | | | | | TP-3 | 1.5-8.0 | Bag | Tan sandy clay (Composite sample) | Optimum 19.6 | Max. 102.6 | | |
| TP-8 | 2.5 | Jar 1 | Gray silty clay (CL) | 14 | | 37 | 17 | 20 | | | | | |
| TP-9 | 5.0 | Jar 1 | Tan clay (CH) | 34 | | 104 | 31 | 73 | Sieve and Hydrometer Analysis | | | | |
| TP-10 | 1.5 | Jar 1 | Gray clay (CH) | 42 | | 105 | 35 | 70. | | | | | |
| TP-10 | 4.0 | Jar 2 | Gray clay (CH-MH) | 32 | | 79 | 35 | 44 | Sieve and Hydrometer Analysis | | | | |
| TP-17 | 6.0 | Jar 1 | Tan elastic silt (MH) | 40 | | 72 | 40 | 32 | | | | | |
| TP-19 | 3.5 | Jar 1 | Brown elastic silt (MH) | 42 | | 77 | 38 | 39 | | | | | |
| TP-19 | 4.5 | Jar 2 | Tan and gray elastic silt (MH) | 39 | | 76 | 40 | 36 | | | | | |
| TP-19 | 1.0-5.5 | Bag | Brownish gray clay (CH) | Optimum 30.0 | Max. 82.6 | 76 | 34 | 42 | ASTM D 698 | | | | |
| | | | Brownish gray clay (CH) | | | | | | Specific Gravity= 2.668 | | | | |
| | | | Brownish gray clay (Remolded sample) (CH) | 30.4 | 78.3 | | | | Permeability $k=1.98 \times 10^{-8}$ cm/sec | | | | |
| | | | Brownish gray clay (Remolded sample) (CH) | 32.6 | 78.8 | | | | Permeability $k=1.40 \times 10^{-8}$ cm/sec | | | | |
| TP-21 | 3.5 | Jar 1 | Gray clay (CH) | 22 | | 93 | 27 | 66 | | | | | |
| TP-21 | 6.0 | Jar 2 | Tan clay (CH) | 36 | | 93 | 37 | 56 | Sieve and Hydrometer Analysis | | | | |
| TP-21 | 8.5 | Jar 3 | Gray silty clay (CL-ML) | 25 | | 49 | 30 | 19 | | | | | |

| SUMMARY OF LABORATORY TEST DATA | | | | | | | | | COMPRESSION | | | TEST | OTHER TESTS |
|---|---------------|------------|---|--------------------|-----------------|-----------------|----|----|--------------------|-------------|-------------------------|----------------|---|
| TEXAS MUNICIPAL POWER AGENCY PROJECT: Site F Landfill, Gibbons Creek S.E.S. PROJECT NO: 880252 DATE: March 4, 1988 | | | | | | | | | COMPRESSION 1st | STRAIN % | LATERAL PRESSURE psi | TYPE FAILURE | |
| BORING NO. | DEPTH IN FEET | SAMPLE NO. | TYPE OF MATERIAL | MOISTURE CONTENT % | DRY DENSITY pcf | ATTERBERG LMITS | | | | | | | |
| | | | | | | LL | PL | PI | | | | | |
| TP-23 | 2.0 | Jar 1 | Dark gray clay (CH) | 40 | | 96 | 26 | 70 | | | | | |
| TP-23 | 5.0 | Jar 2 | Gray clay with iron stains (CH) | 37 | | 102 | 41 | 61 | | | | | Sieve and Hydrometer Analysis |
| TP-23 | 4.0-5.0 | Bag | Light gray clay (CH) | Optimum 35.6 | Max. 77.3 | | | | | | | | ASTM D 698 |
| TP-31 | 0.5-5.0 | Bag | Brownish gray sandy clay (CL) | Optimum 19.3 | Max. 101.4 | 48 | 18 | 30 | | | | | ASTM D 698 |
| | | | Brownish gray sandy clay (CL) | | | | | | | | | | Specific Gravity = 2.655 |
| | | | Brownish gray sandy clay (Remolded sample) (CL) | 19.4 | 96.3 | | | | | | | | Permeability $k=1.06 \times 10^{-8} \frac{\text{cm}}{\text{sec}}$ |
| | | | Brownish gray sandy clay (Remolded sample) (CL) | 22.0 | 96.5 | | | | | | | | Permeability $k=8.65 \times 10^{-9} \frac{\text{cm}}{\text{sec}}$ |
| | | | Brownish gray sandy clay (Remolded sample) (CL) | 18.8 | 96.3 | | | | 2.52 | 2.4 | 8 | Bulge | |
| | | | Brownish gray sandy clay (Remolded sample) (CL) | 18.8 | 96.3 | | | | 3.42 | 3.8 | 16 | Bulge | |
| | | | Brownish gray sandy clay (Remolded sample) (CL) | 21.8 | 96.9 | | | | 2.08 | 3.9 | 8 | Vertical Split | |
| TP-31 | 3.5 | Jar 1 | Dark gray silty clay (CL) | 13 | | 48 | 18 | 30 | | | | | |
| TP-39 | 7.0-9.0 | Bag | Light gray clay (CH) | Optimum 29.2 | Max. 84.3 | 76 | 33 | 43 | | | | | ASTM D 698 |
| | | | Light gray clay (Remolded sample) (CH) | 29.6 | 80.0 | | | | | | | | Permeability $k=6.53 \times 10^{-8} \frac{\text{cm}}{\text{sec}}$ |
| | | | Light gray clay (Remolded sample) (CH) | 32.5 | 80.1 | | | | | | | | Permeability $k=8.98 \times 10^{-9} \frac{\text{cm}}{\text{sec}}$ |
| | | | Light gray clay (Remolded sample) (CH) | 31.8 | 80.0 | | | | 1.62 | 1.8 | 8 | Vertical Split | |

| SUMMARY OF LABORATORY TEST DATA | | | | | | | | | COMPRESSION TEST | | | | OTHER TESTS |
|--|------------------|---------------|---|--------------------------|-----------------------|-----------------|----|----|--------------------|-------------|-------------------------|-------------------|--|
| PROJECT: TEXAS MUNICIPAL POWER AGENCY Site F Landfill, Gibbons Creek S.E.S. | | | | | | | | | COMPRESSION 1st | STRAIN % | LATERAL PRESSURE psi | FAILURE TYPE | |
| PROJECT NO: 880252 DATE: March 4, 1988 | | | | | | | | | | | | | |
| BORING NO. | DEPTH IN FEET | SAMPLE NO. | TYPE OF MATERIAL | MOISTURE CONTENT % | DRY DENSITY pcf | ATTERBERG LMNTS | | | | | | | |
| | | | | | | LL | PL | PI | | | | | |
| TP-39 | 7.0-9.0 | Bag | Light gray clay (Remolded sample) (CH) | 29.4 | 79.7 | | | | 1.44 | 2.1 | 8 | Bulge | |
| | | | Light gray clay (Remolded sample) (CH) | 29.4 | 79.7 | | | | 1.53 | 2.1 | 16 | Bulge | |
| TP-43 | 4.75 | Jar 1 | Tan clay (CH) | 29 | | 61 | 30 | 31 | | | | | Sieve and Hydrometer Analysis |
| TP-44 | 2.5 | Jar 1 | Gray clay (CH) | 23 | | 53 | 20 | 33 | | | | | Organic Content= 5.1% |
| TP-44 | 4.5 | Jar 2 | Tan elastic silt (MH) | 32 | | 80 | 41 | 39 | | | | | |
| TP-44 | 8.5 | Jar 3 | Tan elastic silt (MH) | 43 | | 66 | 41 | 25 | | | | | |
| TP-45 | 7.0 | Jar 2 | Tan clay (CH-MH) | 43 | | 93 | 40 | 53 | | | | | |
| TP-47 | 1.5 | Jar 1 | Dark brown clay (CH) | 32 | | 51 | 27 | 24 | | | | | Organic Content= 3.1% |
| TP-49 | 1.0-10.0 | Bag | Brown and gray clay (CH) | Optimum 25.4 | Max. 89.0 | 88 | 31 | 57 | | | | | ASTM D 698 |
| | | | Brown and gray clay (CH) | | | | | | | | | | Specific Gravity= 2.689 |
| | | | Brown and gray clay (Remolded sample) (CH) | 25.2 | 84.9 | | | | | | | | Permeability $k=1.36 \times 10^{-8} \frac{\text{cm}}{\text{sec}}$ |
| | | | Brown and gray clay (Remolded sample) (CH) | 28.4 | 84.6 | | | | | | | | Permeability $k=1.58 \times 10^{-8} \frac{\text{cm}}{\text{sec}}$ |
| | | | Brown and gray clay (Remolded sample) (CH) | 25.5 | 84.5 | | | | 4.08 | 2.4 | 8 | Bulge | |
| | | | Brown and gray clay (Remolded sample) (CH) | 25.5 | 84.5 | | | | 4.89 | 2.4 | 16 | Bulge | |
| | | | Brown and gray clay (Remolded sample) (CH) | 27.8 | 85.3 | | | | 2.93 | 2.8 | 8 | Vertical Split | |

| SUMMARY OF LABORATORY TEST DATA | | | | | | | | | COMPRESSION TEST | | | | OTHER TESTS |
|---|---------------|------------|---------------------------|--------------------|-----------------|-----------------|----|----|--------------------|-------------|-------------------------|--------------|---|
| PROJECT: TEXAS MUNICIPAL POWER AGENCY Site F Landfill, Gibbons Creek S.E.S. PROJECT NO: 880252 DATE: March 4, 1988 | | | | | | | | | COMPRESSION 1st | STRAIN % | LATERAL PRESSURE psi | TYPE FAILURE | |
| BORING NO. | DEPTH IN FEET | SAMPLE NO. | TYPE OF MATERIAL | MOISTURE CONTENT % | DRY DENSITY pcf | ATTERBERG LMITS | | | | | | | |
| | | | | | | LL | PL | PI | | | | | |
| TP-49 | 2.5 | Jar 1 | Brown clay | | | | | | | | | | Emerson Crumb Test: Reaction 4 (Strong) |
| TP-49 | 5.0 | Jar 2 | Tan and gray jointed clay | | | | | | | | | | Emerson Crumb Test: Reaction 1 (no reaction) |
| TP-49 | 8.5 | Jar 3 | Tan slightly silty clay | | | | | | | | | | Emerson Crumb Test: Reaction 3 (Moderate) |
| TP-51 | 4.0 | Jar 1 | Tan clay (CH) | 27 | | 77 | 34 | 43 | | | | | Sieve and Hydrometer Analysis |
| TP-52 | 4.0 | Jar 1 | Tan elastic silt (MH) | 49 | | 90 | 51 | 39 | | | | | |
| TP-52 | 6.0 | Jar 2 | Tan elastic silt (MH) | 35 | | 61 | 37 | 24 | | | | | |
| TP-55 | 3.0 | Jar 1 | Dark gray clay (CH) | 20 | | 65 | 27 | 38 | | | | | |
| TP-55 | 4.5 | Jar 2 | Gray elastic silt (MH) | 33 | | 80 | 40 | 40 | | | | | |
| TP-57 | .75-9.0 | Bag | Brownish gray clay (CH) | Optimum 22.8 | Max. 95.8 | 69 | 27 | 42 | | | | | ASTM D 698 |
| | | | Brownish gray clay (CH) | 22.8 | 91.5 | | | | | | | | Permeability $k=3.61 \times 10^{-8}$ cm/sec |
| | | | Brownish gray clay (CH) | 25.5 | 91.2 | | | | | | | | Permeability $k=4.61 \times 10^{-9}$ cm/sec |
| TP-59 | 2.5 | Jar 1 | Brown clay (CH) | 29 | | 57 | 25 | 32 | | | | | |
| TP-59 | 6.0 | Jar 2 | Tan elastic silt (MH) | 45 | | 90 | 42 | 48 | | | | | |
| TP-59 | 9.0 | Jar 3 | Tan clay (CH) | 39 | | 77 | 30 | 47 | | | | | |
| TP-62 | 5.0 | Jar 2 | Light tan sandy clay (CL) | 14 | | 41 | 16 | 25 | | | | | |

| SUMMARY OF LABORATORY TEST DATA | | | | | | | | | COMPRESSION TEST | | | | OTHER TESTS |
|--|---------------|------------|-----------------------------------|--------------------|-----------------|------------------|----|----|--------------------|-------------|-------------------------|--|-------------|
| TEXAS MUNICIPAL POWER AGENCY | | | | | | | | | COMPRESSION tsf | STRAIN % | LATERAL PRESSURE psf | TYPE FAILURE | |
| PROJECT: Site F Landfill, Gibbons Creek S.E.S. | | | | | | | | | | | | | |
| PROJECT NO: 880252 DATE: March 4, 1988 | | | | | | | | | | | | | |
| BORING NO. | DEPTH IN FEET | SAMPLE NO. | TYPE OF MATERIAL | MOISTURE CONTENT % | DRY DENSITY pcf | ATTERBERG LIMITS | | | | | | | |
| | | | | | | LL | PL | PI | | | | | |
| TP-64 | 2.0 | Jar 1 | Light gray sandy clay (CL) | 20 | | 47 | 18 | 29 | | | | | |
| TP-64 | 5.0 | Jar 2 | Light brown sandy clay (CL) | 14 | | 43 | 19 | 24 | | | | | |
| TP-64 | 8.0 | Jar 3 | Tan clay (CH-MH) | 27 | | 66 | 33 | 33 | | | | | |
| TP-71 | 2.0 | Jar 1 | Brown clay (CH) | 38 | | 73 | 31 | 42 | | | | Organic Content= 7.2% | |
| TP-71 | 5.5 | Jar 2 | Brown clay (CH) | 38 | | 108 | 37 | 71 | | | | | |
| TP-71 | 9.5 | Jar 3 | Brown clay (CH) | 36 | | 92 | 35 | 57 | | | | Sieve and Hydrometer Analysis | |
| TP-71 | 1.0-10.0 | Bag | Brown clay (CH) | Optimum 28.5 | Max. 85.4 | 93 | 35 | 58 | | | | ASTM D 698 | |
| | | | Brown clay (CH) | | | | | | | | | Specific Gravity= 2.677 | |
| | | | Brown clay (Remolded sample) (CH) | 29.1 | 80.9 | | | | | | | Permeability $k=7.94 \times 10^{-9} \frac{\text{cm}}{\text{sec}}$ | |
| | | | Brown clay (Remolded sample) (CH) | 31.1 | 81.4 | | | | | | | Permeability $k=1.16 \times 10^{-8} \frac{\text{cm}}{\text{sec}}$ | |
| | | | Brown clay (Remolded sample) (CH) | 28.4 | 80.9 | | | | 2.29 | 1.7 | 8 | Bulge | |
| | | | Brown clay (Remolded sample) (CH) | 28.4 | 80.9 | | | | 2.95 | 1.7 | 16 | Bulge | |
| TP-74 | 2.0 | Jar 1 | Brown clay (CH) | 32 | | 74 | 24 | 50 | | | | | |
| TP-74 | 5.0 | Jar 2 | Brown clay (CH) | 38 | | 93 | 33 | 60 | | | | | |
| TP-75 | 1.0-10.0 | Bag | Brownish gray clay (CH) | Optimum 24.5 | Max. 93.0 | 69 | 22 | 47 | | | | ASTM D 698 | |



Professional Service Industries, Inc.
 Shilstone Engineering Testing Laboratory Division

TESTED FOR: Texas Municipal Power Agency

PROJECT: Various Water Control Structures
 of the Rock Lake Creek Channel
 System for Gibbons Creek Lignite
 Mine

DATE: 1-22-37

OUR REPORT NO.: 201-60080-372

REMARKS: At the request of S. K. Choudhury of TMPA, tests were performed on borings from the proposed landfill site. The samples tested and tests performed were selected by L. J. Almaleh of Black and Veatch Consulting Engineers. The tests were performed in accordance with ASTM D1140 and ASTM D4288. The results are as follows:

| <u>BORING</u> | <u>SAMPLE #</u> | <u>LL</u> | <u>PL</u> | <u>PI</u> | <u>PERCENT PASSING A #200 SIEVE</u> |
|---------------|-----------------|-----------|-----------|-----------|---|
| R-1 | S-1 | 61 | 19 | 42 | N.R. |
| | S-2 | 85 | 32 | 53 | N.R. |
| | S-3 | 82 | 37 | 45 | N.R. |
| | S-4 | 84 | 32 | 52 | 81.9% |
| B-2 | S-1 | 61 | 25 | 36 | N.R. |
| | S-2 | 32 | -- | N.P. | N.R. |
| | S-3 | 35 | 32 | 3 | N.R. |
| | S-4 | N.R. | N.R. | N.R. | 52.8% |
| B-3 | S-1 | 75 | 36 | 39 | 75.4% |
| | S-2 | 60 | 32 | 28 | 81.5% |
| | S-3 | 59 | 29 | 30 | 67.6% |
| | S-4 | 81 | 34 | 47 | N.R. |
| | S-5 | 31 | -- | N.P. | N.R. |
| | S-6 | 75 | 37 | 38 | N.R. |
| B-4 | S-1 | 21 | -- | N.P. | 12.4% |
| | S-2 | 35 | 23 | 12 | 26.6% |
| | S-3 | 72 | 40 | 32 | N.R. |
| | S-4 | 58 | 31 | 27 | 61.4% |
| B-5 | S-1 | 50 | 28 | 22 | 58.3% |
| | S-2 | 36 | 25 | 11 | 15.8% |
| | S-3 | 32 | -- | N.P. | 20.3% |
| | S-4 | 47 | 34 | 13 | 30.6% |

NOTE: N.R. - Test not requested
 N.P. - Non-Plastic



Professional Service Industries, Inc.
Shilstone Engineering Testing Laboratory Division

| <u>BORING</u> | <u>SAMPLE #</u> | <u>LL</u> | <u>PL</u> | <u>PI</u> | <u>PERCENT PASSING A #200 SIEVE</u> |
|---------------|-----------------|-----------|-----------|-----------|---|
| B-6 | S-1 | 62 | 34 | 28 | 69.1% |
| | S-2 | 74 | 43 | 31 | 93.7% |
| | S-3 | 66 | 32 | 34 | N.R. |
| | S-4 | 64 | 32 | 32 | 77.1% |
| | S-5 | N.R. | N.R. | N.R. | 51.0% |
| | S-6 | 67 | 31 | 36 | 91.2% |
| | S-7 | 57 | 24 | 33 | 90.0% |
| CB-1 | S-1 | 59 | 45 | 14 | 55.2% |
| | S-2 | 53 | 39 | 14 | 70.0% |
| CB-2 | S-1 | 49 | 39 | 10 | 41.9% |
| CB-3 | S-1 | 53 | 28 | 25 | 74.0% |
| | S-2 | 76 | 41 | 35 | N.R. |
| | S-3 | 72 | 35 | 37 | 85.6% |
| | S-4 | 79 | 24 | 55 | N.R. |
| CB-4 | S-1 | 68 | 29 | 39 | N.R. |
| | S-2 | 51 | 30 | 21 | 82.1% |
| | S-3 | 40 | 21 | 19 | N.R. |
| | S-4 | 42 | 30 | 12 | 33.5% |
| CB-5 | S-1 | 50 | 34 | 16 | 29.9% |
| | S-2 | 63 | 35 | 28 | 86.1% |
| | S-3 | 71 | 46 | 25 | N.R. |
| | S-4 | 76 | 33 | 43 | N.R. |
| CB-6 | S-1 | 75 | 45 | 30 | N.R. |
| | S-2 | 51 | 33 | 18 | 54.7% |
| | S-3 | 56 | 36 | 20 | 80.0% |

NOTE: N.R. - Test not requested
N.P. - Non-plastic

Respectfully submitted,

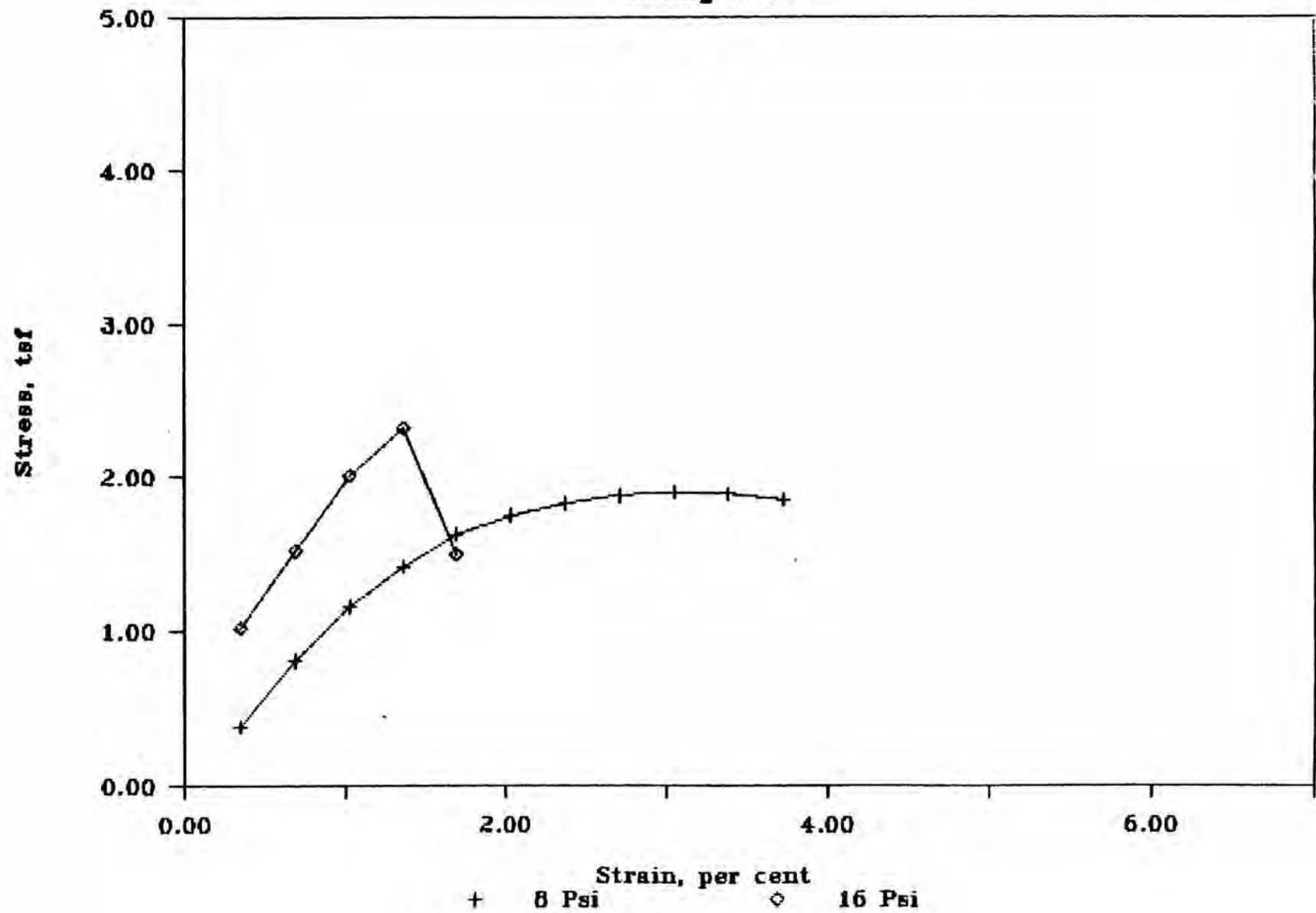
Professional Services Industries

Unconsolidated-Undrained (UU) Triaxial Test Results
 T'MPA Gibbons Creek SES
 Combustion Waste Landfill Facility

| Boring No. | Depth (Ft.) | Confining Pressure (Psi) | Moisture Content (%) | Dry Density (Pcf) | Stress (Tsf) | Strain (%) |
|------------|-------------|--------------------------|------------------------|-------------------|--------------|--------------|
| B-9 | 5-7 | 8 | 33 | 85 | 0.38 | 0.34 |
| | | | | | 0.81 | 0.68 |
| | | | | | 1.16 | 1.02 |
| | | | | | 1.42 | 1.36 |
| | | | | | 1.63 | 1.69 |
| | | | | | 1.75 | 2.03 |
| | | | | | 1.83 | 2.37 |
| | | | | | 1.88 | 2.71 |
| | | | | | 1.90 | 3.05 |
| | | | | | 1.89 | 3.39 |
| | | 1.85 | 3.73 | | | |
| B-9 | 13-15 | 16 | 39 | 80 | 1.02 | 0.34 |
| | | | | | 1.52 | 0.68 |
| | | | | | 2.01 | 1.02 |
| | | | | | 2.32 | 1.36 |
| | | | | | 1.50 | 1.69 |

UU Triaxial Test

Boring B-9

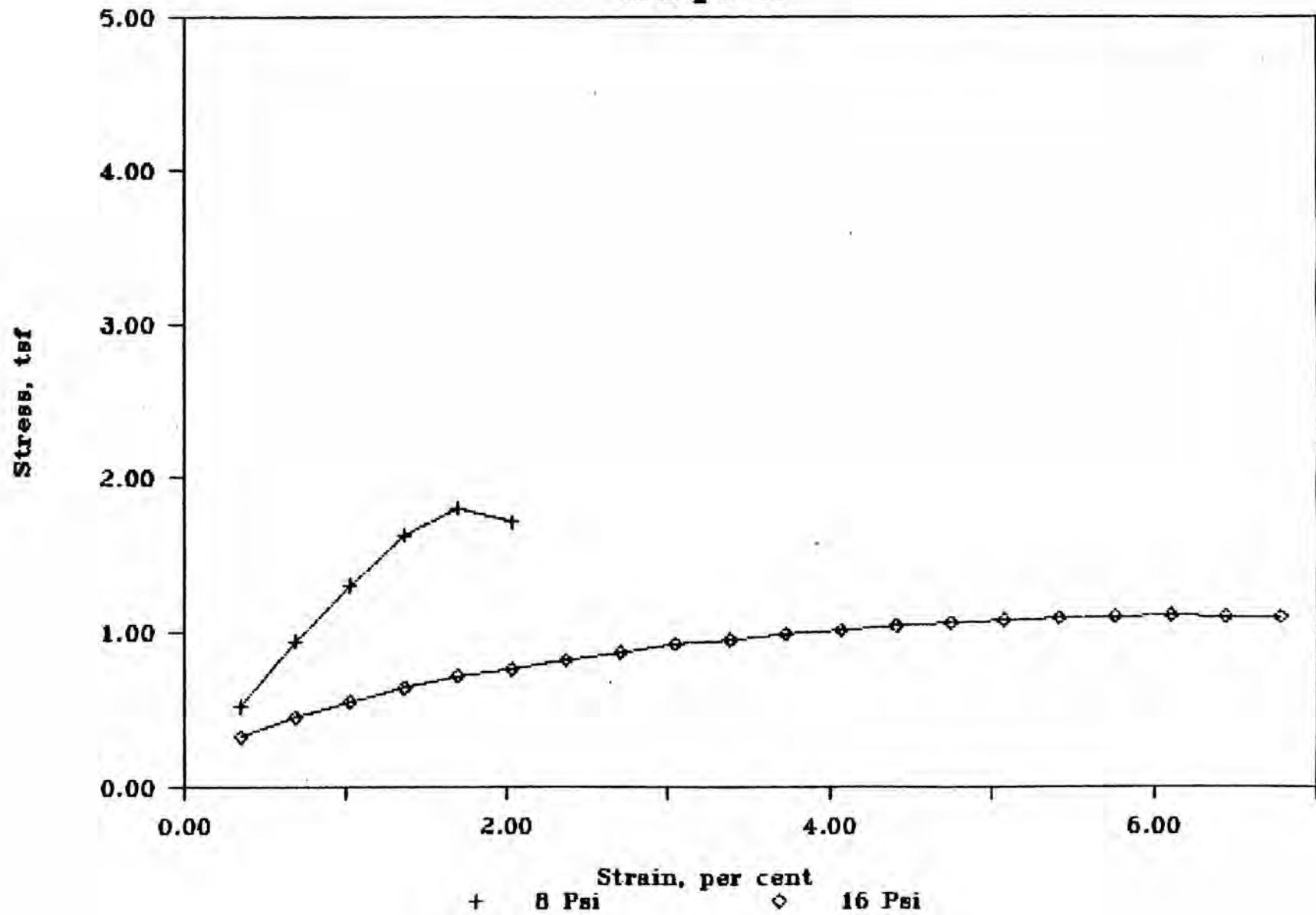


Unconsolidated-Undrained (UU) Triaxial Test Results
 TMPA Gibbons Creek SES
 Combustion Waste Landfill Facility

| Boring No. | Depth (Ft.) | Confining Pressure (Psi) | Moisture Content (%) | Dry Density (Pcf) | Stress (Tsf) | Strain (%) |
|------------|-------------|--------------------------|------------------------|-------------------|--------------|--------------|
| B-11 | 10-12 | 8 | 31 | 89 | 0.52 | 0.34 |
| | | | | | 0.94 | 0.68 |
| | | | | | 1.30 | 1.02 |
| | | | | | 1.63 | 1.36 |
| | | | | | 1.80 | 1.69 |
| | | | | | 1.71 | 2.03 |
| B-11 | 12-14 | 16 | 31 | 84 | 0.32 | 0.34 |
| | | | | | 0.45 | 0.68 |
| | | | | | 0.55 | 1.02 |
| | | | | | 0.64 | 1.36 |
| | | | | | 0.72 | 1.69 |
| | | | | | 0.76 | 2.03 |
| | | | | | 0.82 | 2.37 |
| | | | | | 0.87 | 2.71 |
| | | | | | 0.92 | 3.05 |
| | | | | | 0.95 | 3.39 |
| | | | | | 0.99 | 3.73 |
| | | | | | 1.01 | 4.07 |
| | | | | | 1.04 | 4.41 |
| | | | | | 1.06 | 4.75 |
| | | | | | 1.08 | 5.08 |
| 1.09 | 5.42 | | | | | |
| 1.10 | 5.76 | | | | | |
| 1.11 | 6.10 | | | | | |
| 1.10 | 6.44 | | | | | |
| 1.10 | 6.78 | | | | | |

UU Triaxial Test

Boring B-11

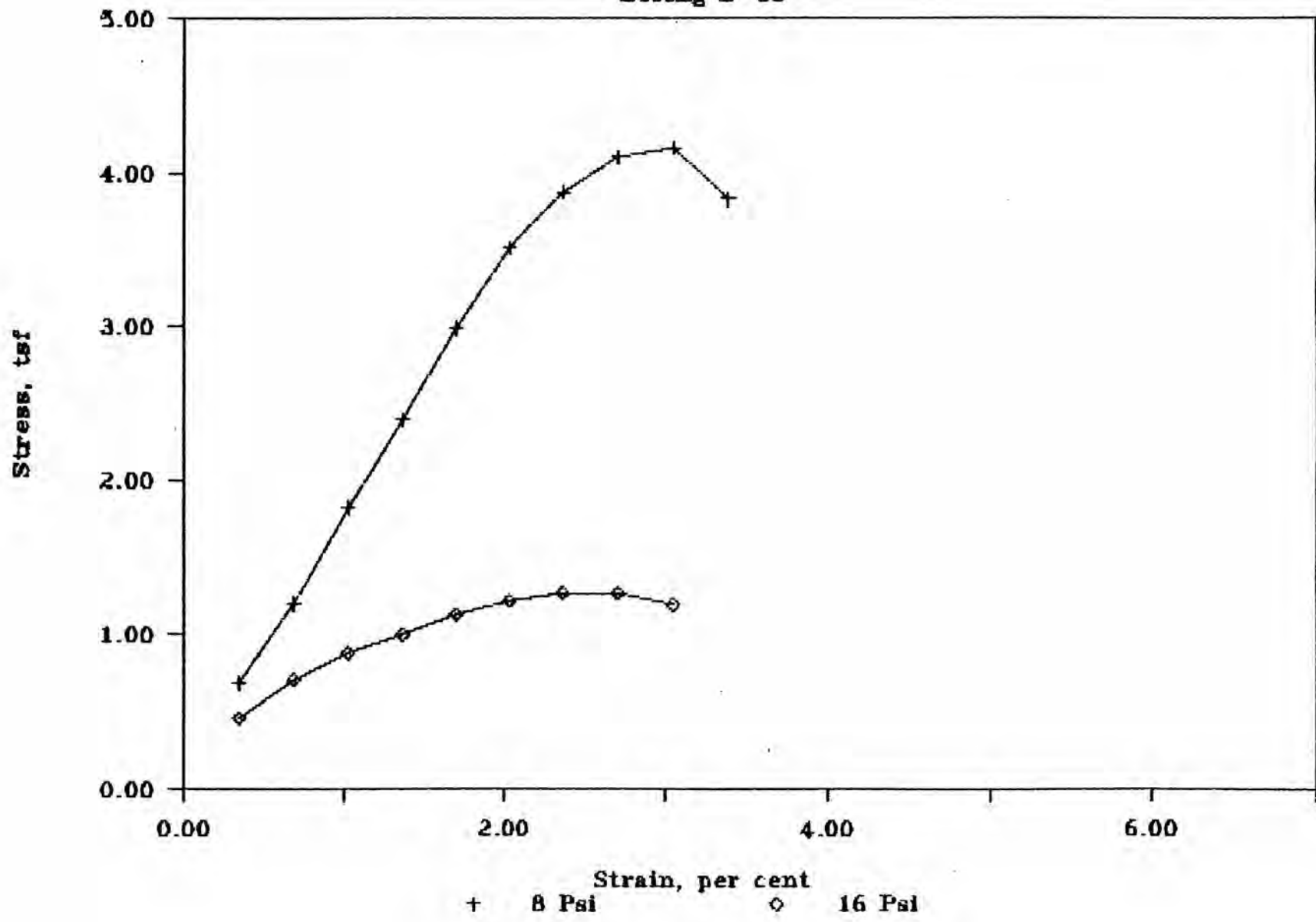


Unconsolidated-Undrained (UU) Triaxial Test Results
 TMPA Gibbons Creek SES
 Combustion Waste Landfill Facility

| Boring No. | Depth (Ft.) | Confining Pressure (Psi) | Moisture Content (%) | Dry Density (Pcf) | Stress (Tsf) | Strain (%) |
|------------|-------------|--------------------------|------------------------|-------------------|--------------|--------------|
| B-13 | 4-6 | 8 | 33 | 85 | 0.69 | 0.34 |
| | | | | | 1.20 | 0.68 |
| | | | | | 1.82 | 1.02 |
| | | | | | 2.39 | 1.36 |
| | | | | | 2.99 | 1.69 |
| | | | | | 3.51 | 2.03 |
| | | | | | 3.87 | 2.37 |
| | | | | | 4.10 | 2.71 |
| | | | | | 4.16 | 3.05 |
| B-13 | 6-8 | 16 | 44 | 74 | 3.83 | 3.39 |
| | | | | | 0.46 | 0.34 |
| | | | | | 0.71 | 0.68 |
| | | | | | 0.88 | 1.02 |
| | | | | | 1.00 | 1.36 |
| | | | | | 1.13 | 1.69 |
| | | | | | 1.22 | 2.03 |
| | | | | | 1.27 | 2.37 |
| | | | | | 1.27 | 2.71 |
| 1.19 | 3.05 | | | | | |

UU Triaxial Test

Boring B-13

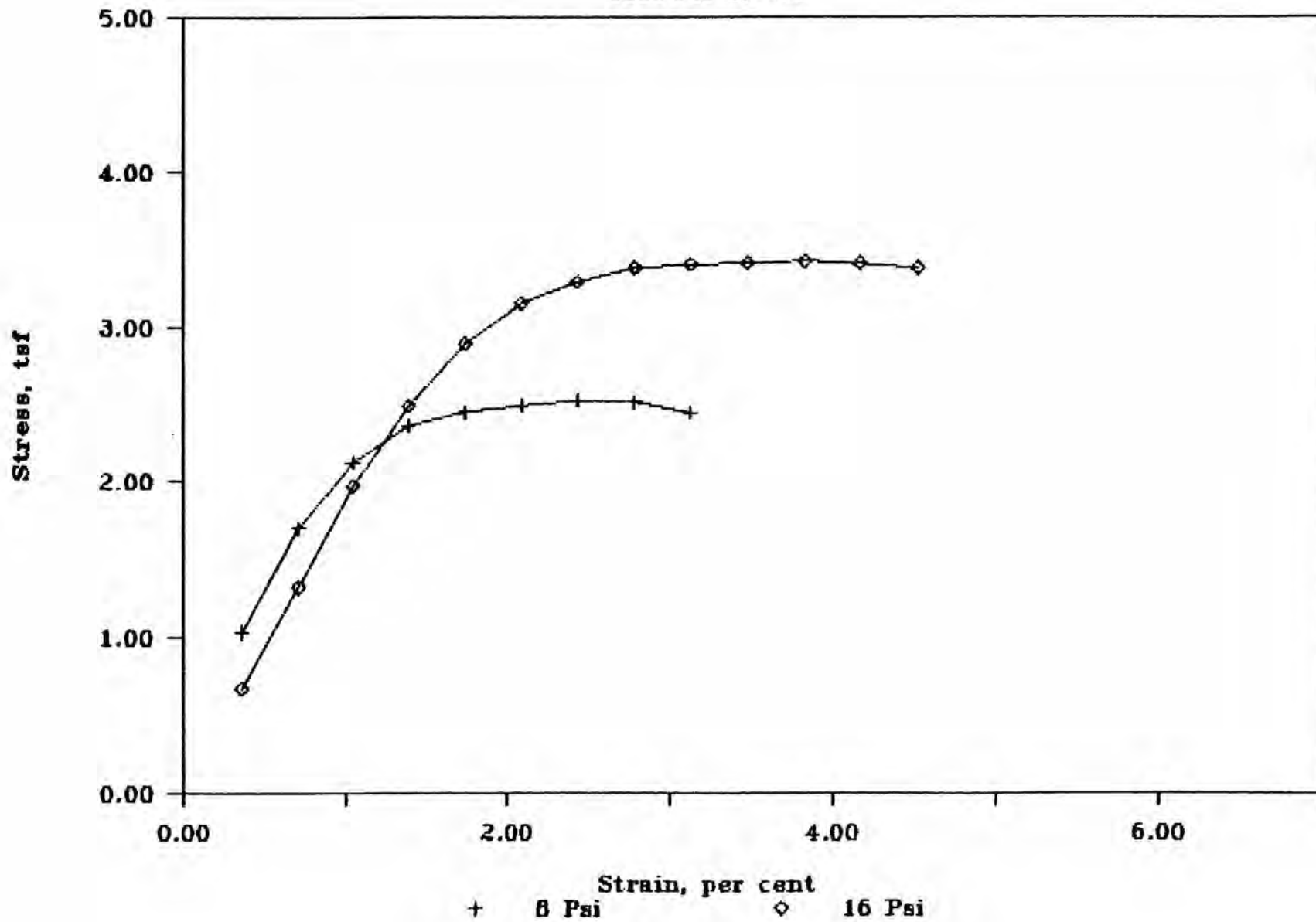


Unconsolidated-Undrained (UU) Triaxial Test Results
 TMPA Gibbons Creek SES
 Combustion Waste Landfill Facility

| Boring No. | Depth (Ft.) | Confining Pressure (Psi) | Moisture Content (%) | Dry Density (Pcf) | Stress (Tsf) | Strain (%) |
|------------|-------------|--------------------------|----------------------|-------------------|--------------|------------|
| TP-31 | 0.5-5 | 8 | 19 | 96 | 1.03 | 0.35 |
| | | | | | 1.70 | 0.70 |
| | | | | | 2.12 | 1.04 |
| | | | | | 2.36 | 1.39 |
| | | | | | 2.45 | 1.74 |
| | | | | | 2.49 | 2.09 |
| | | | | | 2.52 | 2.43 |
| | | | | | 2.51 | 2.78 |
| TP-31 | 0.5-5 | 16 | 19 | 96 | 2.44 | 3.13 |
| | | | | | 0.67 | 0.35 |
| | | | | | 1.32 | 0.70 |
| | | | | | 1.97 | 1.04 |
| | | | | | 2.49 | 1.39 |
| | | | | | 2.89 | 1.74 |
| | | | | | 3.15 | 2.09 |
| | | | | | 3.29 | 2.43 |
| | | | | | 3.38 | 2.78 |
| | | | | | 3.40 | 3.13 |
| | | | | | 3.41 | 3.48 |
| | | | | | 3.42 | 3.83 |
| 3.41 | 4.17 | | | | | |
| 3.38 | 4.52 | | | | | |

UU Triaxial Test

Test Pit TP-31

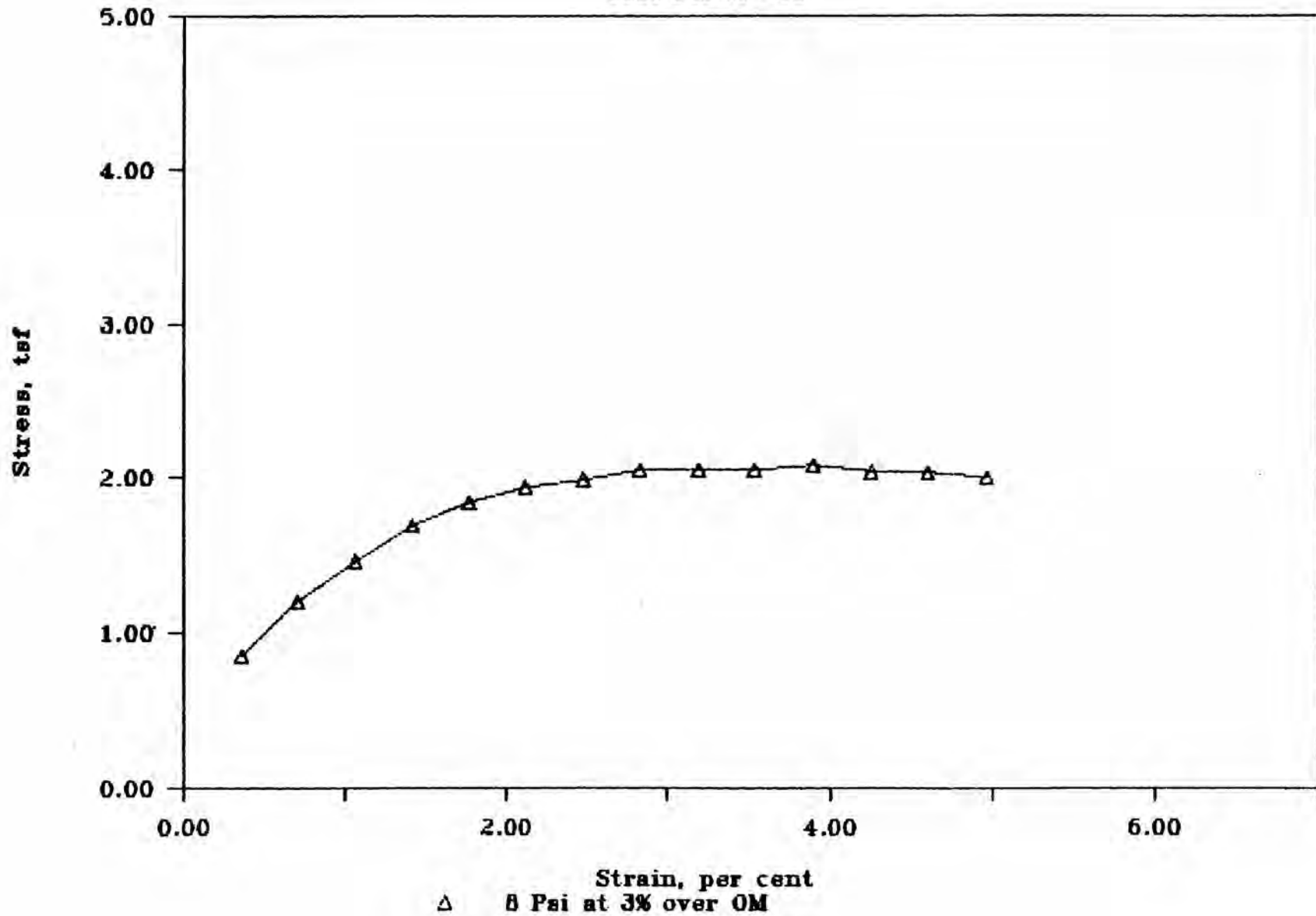


Unconsolidated-Undrained (UU) Triaxial Test Results
 TMPA Gibbons Creek SES
 Combustion Waste Landfill Facility

| Boring No. | Depth (Ft.) | Confining Pressure (Psi) | Moisture Content (%) | Dry Density (Pcf) | Stress (Tsf) | Strain (%) |
|------------|-------------|--------------------------|------------------------|-------------------|--------------|--------------|
| TP-31 | 0.5-5 | 8 | 22 | 97 | 0.85 | 0.35 |
| | | | | | 1.20 | 0.70 |
| | | | | | 1.46 | 1.06 |
| | | | | | 1.69 | 1.41 |
| | | | | | 1.84 | 1.76 |
| | | | | | 1.94 | 2.12 |
| | | | | | 1.99 | 2.48 |
| | | | | | 2.05 | 2.83 |
| | | | | | 2.05 | 3.19 |
| | | | | | 2.05 | 3.53 |
| | | | | | 2.08 | 3.89 |
| | | | | | 2.04 | 4.25 |
| | | | | | 2.03 | 4.60 |
| 2.00 | 4.96 | | | | | |

UU Triaxial Test

Test Pit TP-31

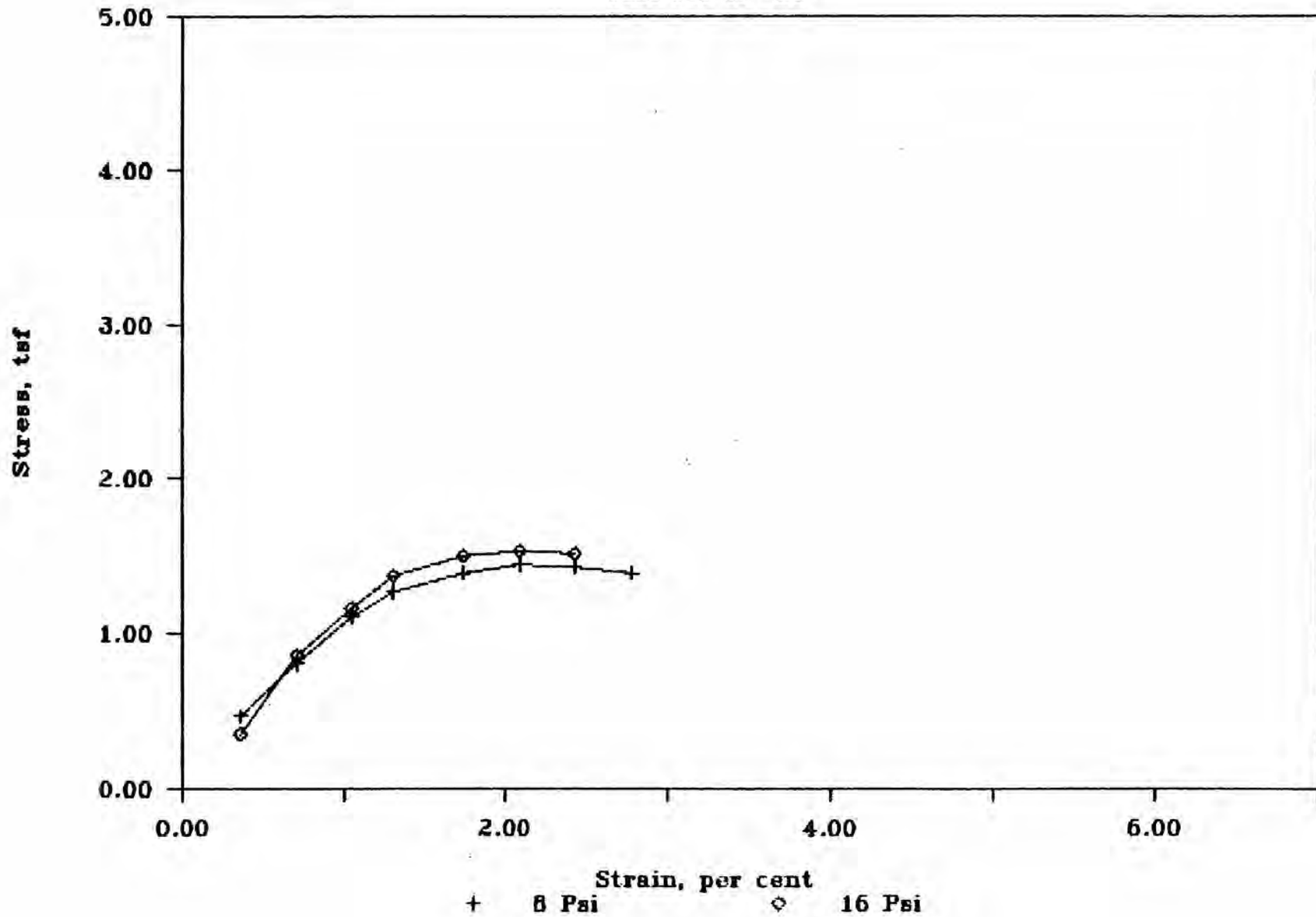


Unconsolidated-Undrained (UU) Triaxial Test Results
 TMPA Gibbons Creek SES
 Combustion Waste Landfill Facility

| Boring No. | Depth (Ft.) | Confining Pressure (Psi) | Moisture Content (%) | Dry Density (Pcf) | Stress (Tsf) | Strain (%) |
|------------|-------------|--------------------------|------------------------|-------------------|--------------|--------------|
| TP-39 | 7-9 | 8 | 29 | 80 | 0.47 | 0.35 |
| | | | | | 0.81 | 0.70 |
| | | | | | 1.11 | 1.04 |
| | | | | | 1.27 | 1.30 |
| | | | | | 1.39 | 1.74 |
| | | | | | 1.44 | 2.09 |
| | | | | | 1.43 | 2.43 |
| TP-39 | 7-9 | 16 | 29 | 80 | 1.39 | 2.78 |
| | | | | | 0.35 | 0.35 |
| | | | | | 0.86 | 0.70 |
| | | | | | 1.16 | 1.04 |
| | | | | | 1.37 | 1.39 |
| | | | | | 1.50 | 1.74 |
| | | | | | 1.53 | 2.09 |
| 1.51 | 2.43 | | | | | |

UU Triaxial Test

Test Pit TP-39

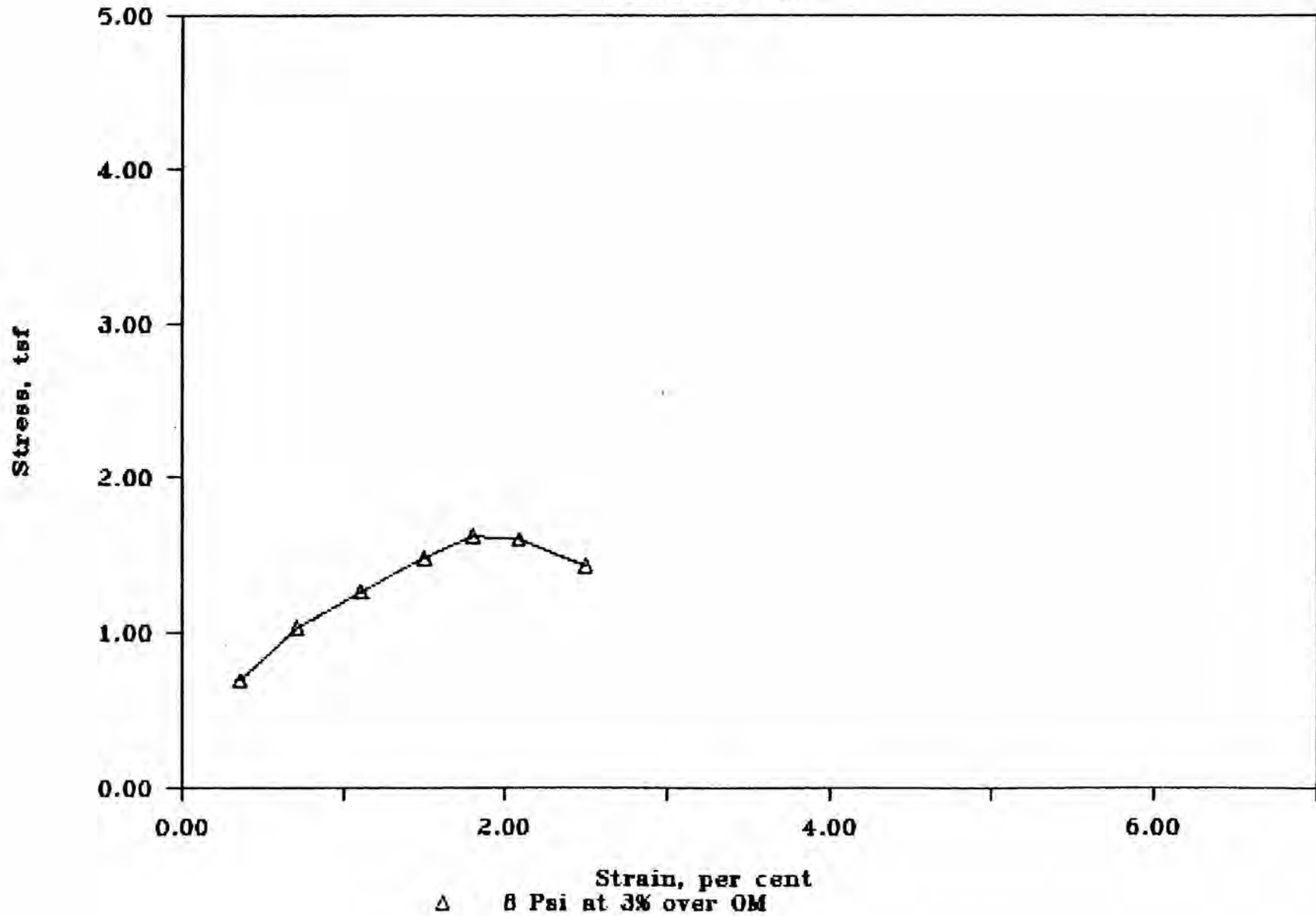


Unconsolidated-Undrained (UU) Triaxial Test Results
 TMPA Gibbons Creek SES
 Combustion Waste Landfill Facility

| Boring No. | Depth (Ft.) | Confining Pressure (Psi) | Moisture Content (%) | Dry Density (Pcf) | Stress (Tsf) | Strain (%) |
|------------|-------------|--------------------------|------------------------|-------------------|--------------|--------------|
| TP-39 | 7-9 | 8 | 32 | 80 | 0.69 | 0.35 |
| | | | | | 1.03 | 0.70 |
| | | | | | 1.26 | 1.10 |
| | | | | | 1.48 | 1.50 |
| | | | | | 1.62 | 1.80 |
| | | | | | 1.60 | 2.09 |
| | | | | | 1.43 | 2.50 |

UU Triaxial Test

Test Pit TP-39

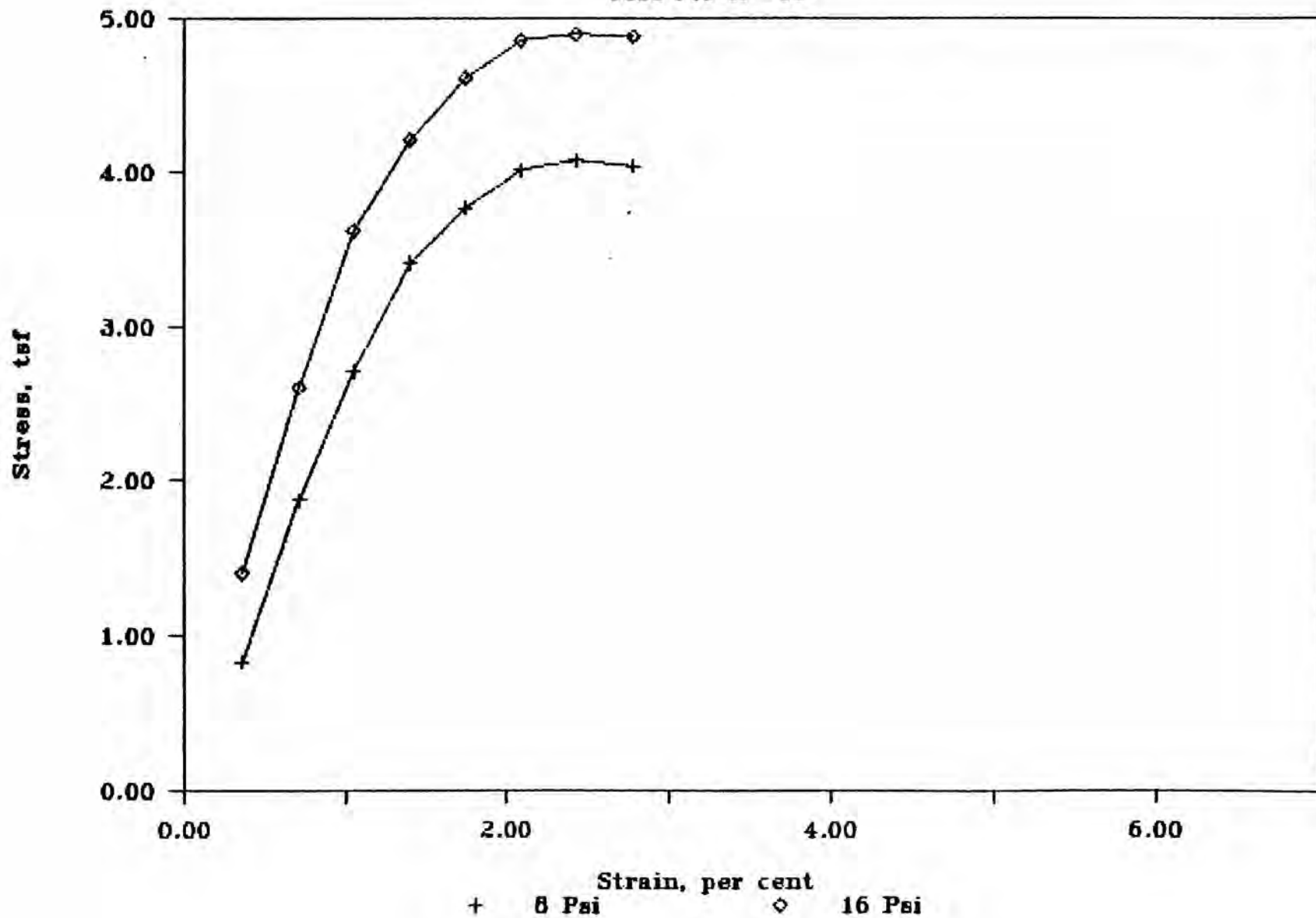


Unconsolidated-Undrained (UU) Triaxial Test Results
 TMPA Gibbons Creek SES
 Combustion Waste Landfill Facility

| Boring No. | Depth (Ft.) | Confining Pressure (Psi) | Moisture Content (%) | Dry Density (Pcf) | Stress (Tsf) | Strain (%) |
|------------|-------------|--------------------------|------------------------|-------------------|--------------|--------------|
| TP-49 | 1-10 | 8 | 25 | 85 | 0.83 | 0.35 |
| | | | | | 1.87 | 0.70 |
| | | | | | 2.71 | 1.04 |
| | | | | | 3.41 | 1.39 |
| | | | | | 3.77 | 1.74 |
| | | | | | 4.01 | 2.09 |
| | | | | | 4.08 | 2.43 |
| 4.04 | 2.78 | | | | | |
| TP-49 | 1-10 | 16 | 25 | 86 | 1.40 | 0.35 |
| | | | | | 2.60 | 0.70 |
| | | | | | 3.62 | 1.04 |
| | | | | | 4.21 | 1.39 |
| | | | | | 4.61 | 1.74 |
| | | | | | 4.85 | 2.09 |
| | | | | | 4.89 | 2.43 |
| 4.88 | 2.78 | | | | | |

UU Triaxial Test

Test Pit TP-49

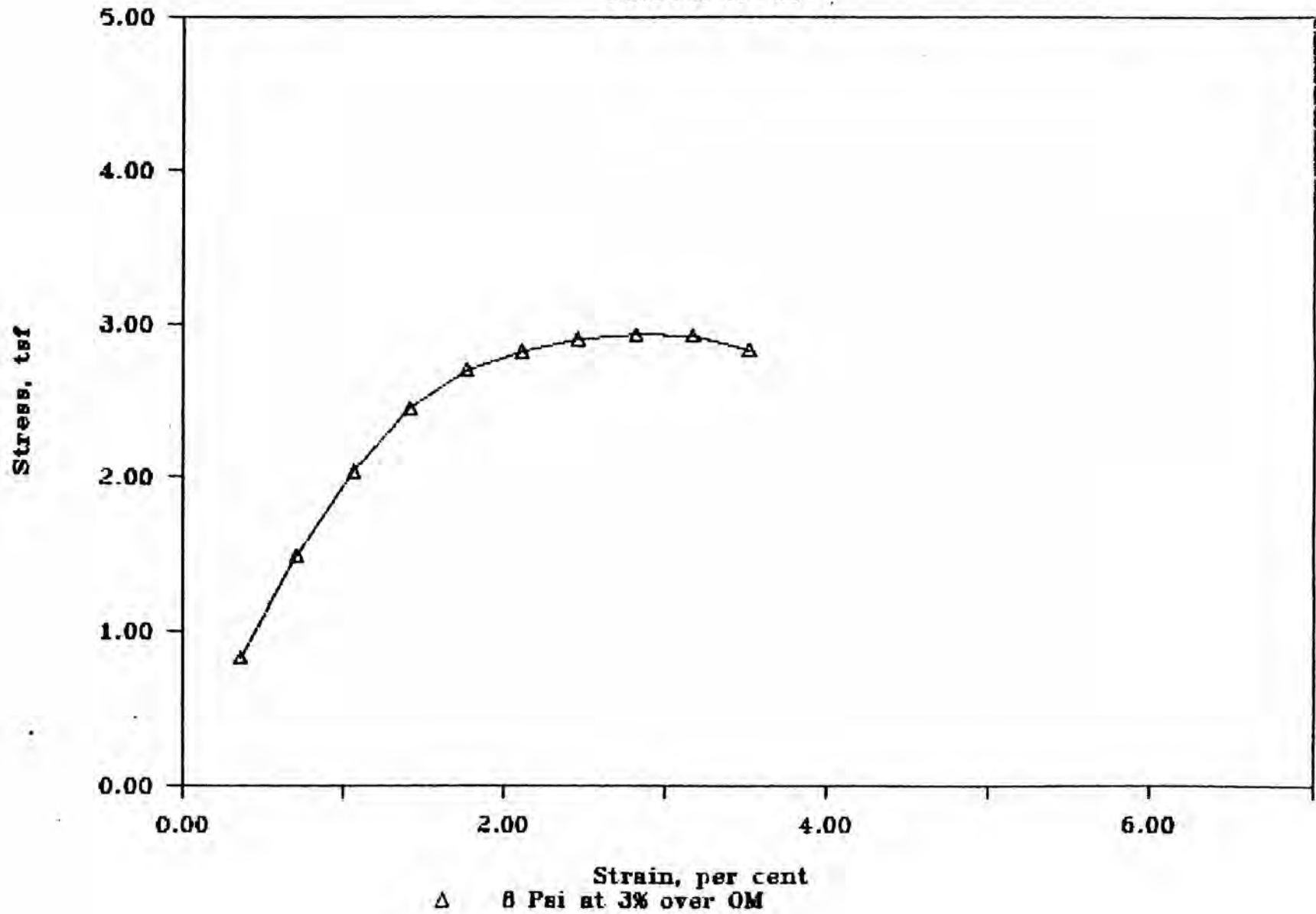


Unconsolidated-Undrained (UU) Triaxial Test Results
TMPA Gibbons Creek SES
Combustion Waste Landfill Facility

| Boring No. | Depth (Ft.) | Confining Pressure (Psi) | Moisture Content (%) | Dry Density (Pcf) | Stress (Tsf) | Strain (%) |
|------------|-------------|--------------------------|------------------------|-------------------|--------------|--------------|
| TP-49 | 1-10 | 8 | 28 | 85 | 0.83 | 0.35 |
| | | | | | 1.49 | 0.70 |
| | | | | | 2.04 | 1.06 |
| | | | | | 2.45 | 1.41 |
| | | | | | 2.70 | 1.76 |
| | | | | | 2.82 | 2.11 |
| | | | | | 2.90 | 2.46 |
| | | | | | 2.93 | 2.82 |
| | | | | | 2.92 | 3.17 |
| | | | | | 2.83 | 3.52 |

UU Triaxial Test

Test Pit TP-49

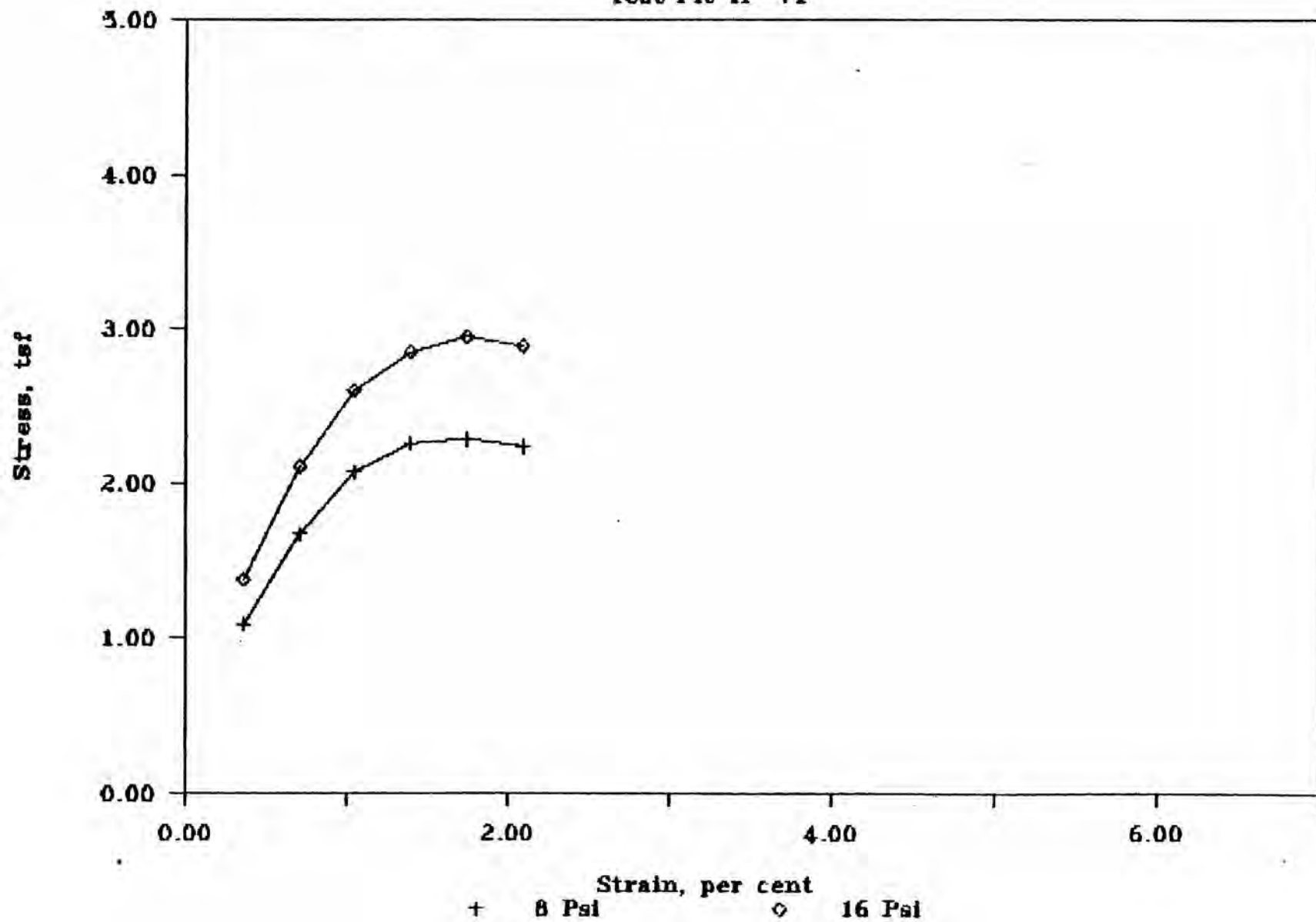


Unconsolidated-Undrained (UU) Triaxial Test Results
 TMPA Gibbons Creek SES
 Combustion Waste Landfill Facility

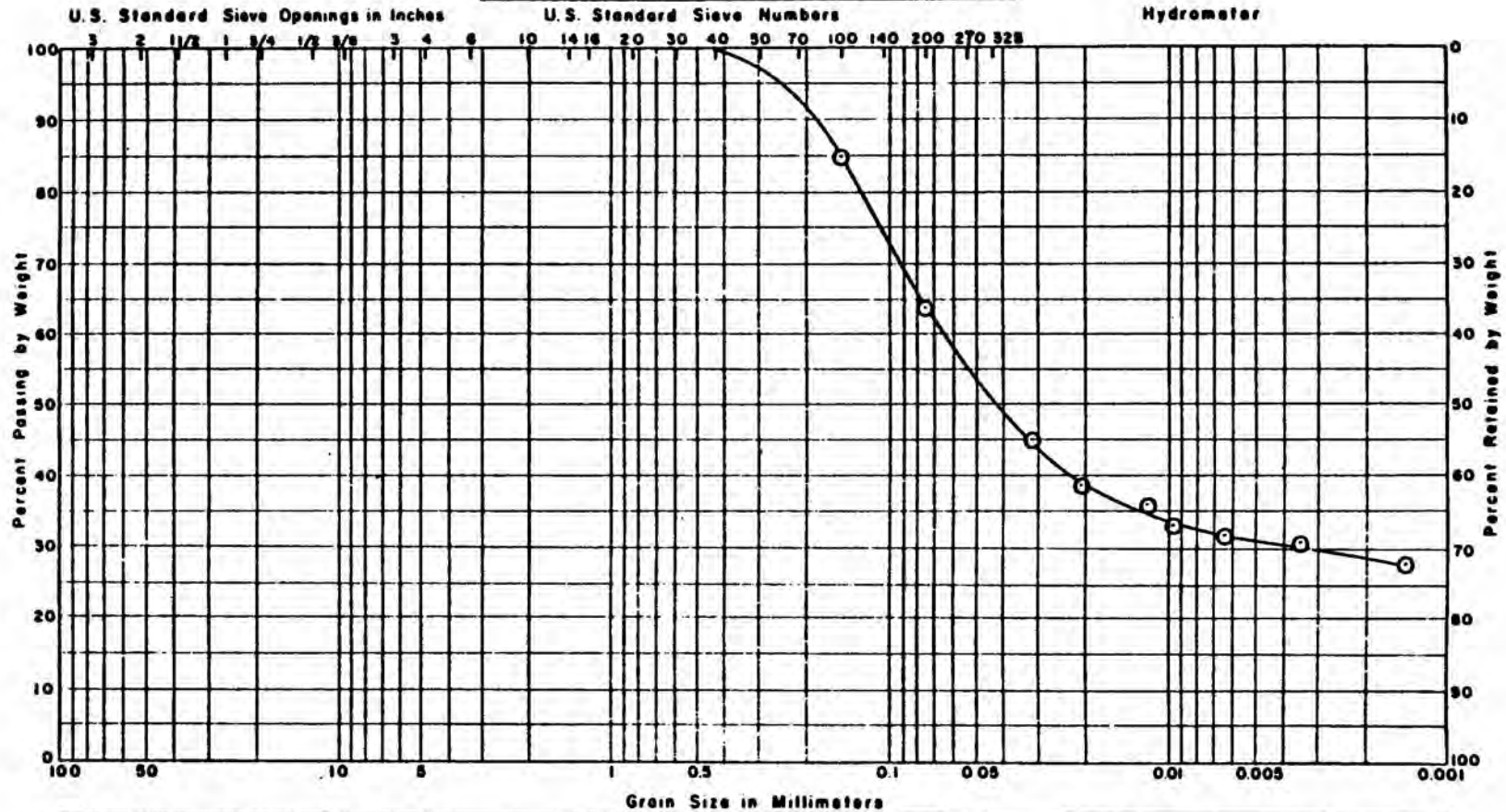
| Boring No. | Depth (Ft.) | Confining Pressure (Psi) | Moisture Content (%) | Dry Density (Pcf) | Stress (Tsf) | Strain (%) |
|------------|-------------|--------------------------|------------------------|-------------------|--------------|--------------|
| TP-71 | 1-10 | 8 | 28 | 81 | 1.09 | 0.35 |
| | | | | | 1.67 | 0.70 |
| | | | | | 2.07 | 1.04 |
| | | | | | 2.26 | 1.39 |
| | | | | | 2.29 | 1.74 |
| | | | | | 2.24 | 2.09 |
| TP-71 | 1-10 | 16 | 28 | 81 | 1.38 | 0.35 |
| | | | | | 2.11 | 0.70 |
| | | | | | 2.60 | 1.04 |
| | | | | | 2.85 | 1.39 |
| | | | | | 2.95 | 1.74 |
| | | | | | 2.89 | 2.09 |

UU Triaxial Test

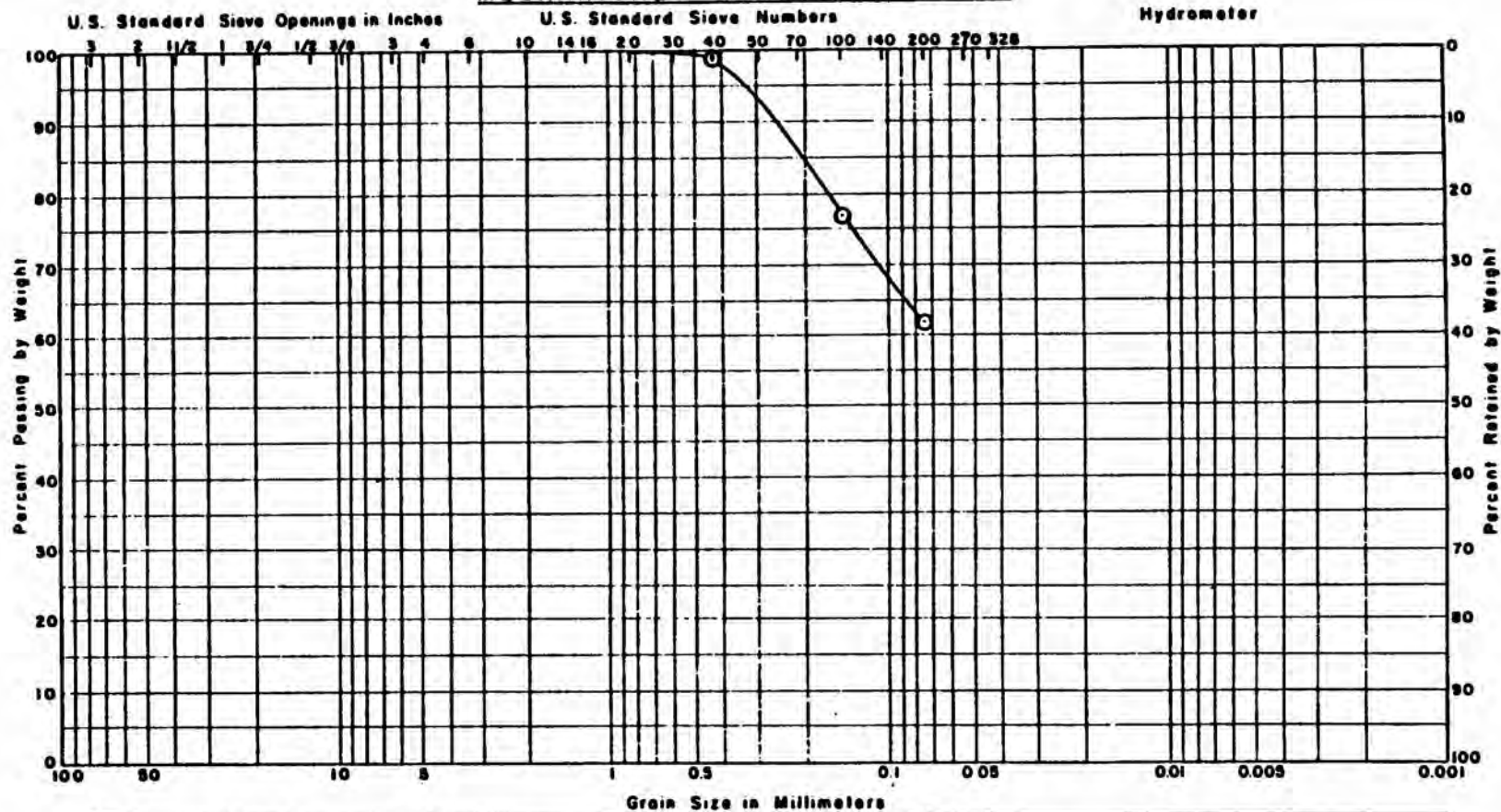
Test Pit TP-71



MECHANICAL ANALYSIS CHART



MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

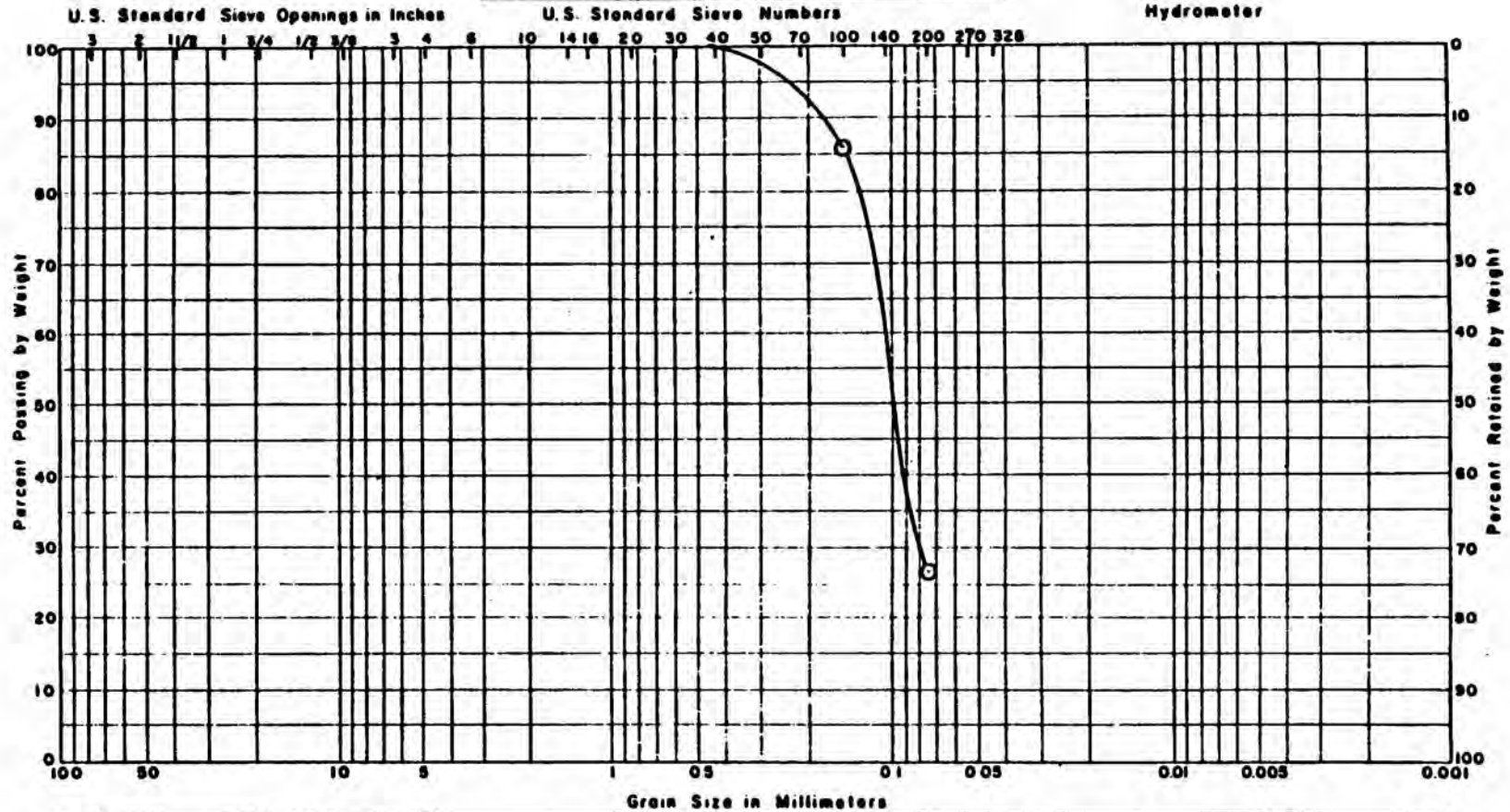
TEXAS MUNICIPAL POWER AGENCY

Site F Landfill
Gibbons Creek S.E.S.

Boring No.: B-6
Sample No.: 233
Depth: 8'-10'

B/SMI Project No. 880252
March 11, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

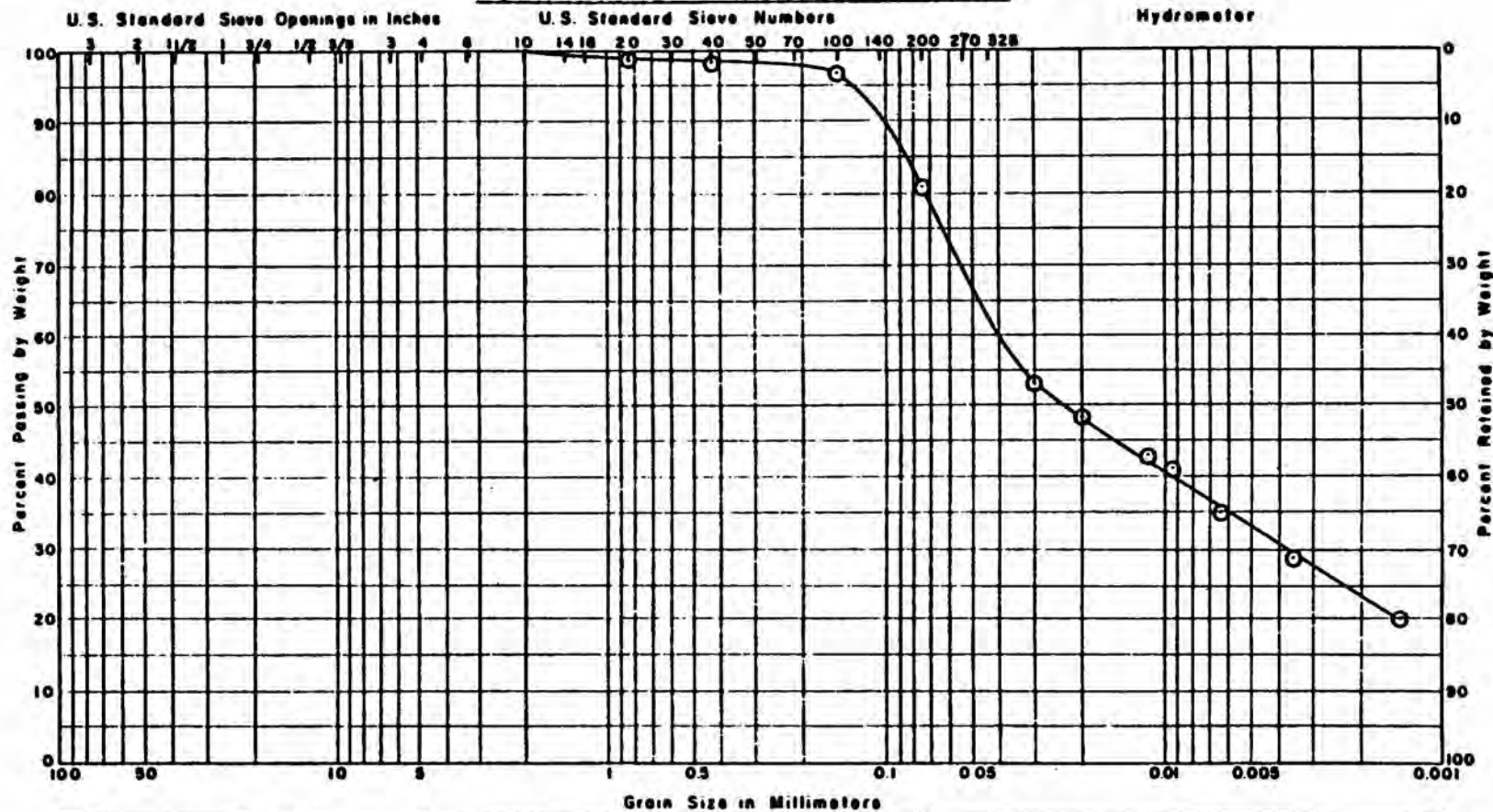
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-6
 Sample No.: 235
 Depth: 22'-22.5'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 11, 1988

MECHANICAL ANALYSIS CHART



| | | | | | | |
|--------|------|--------|--------|------|--------------|--|
| GRAVEL | | SAND | | | SILT or CLAY | |
| Coarse | Fine | Coarse | Medium | Fine | | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

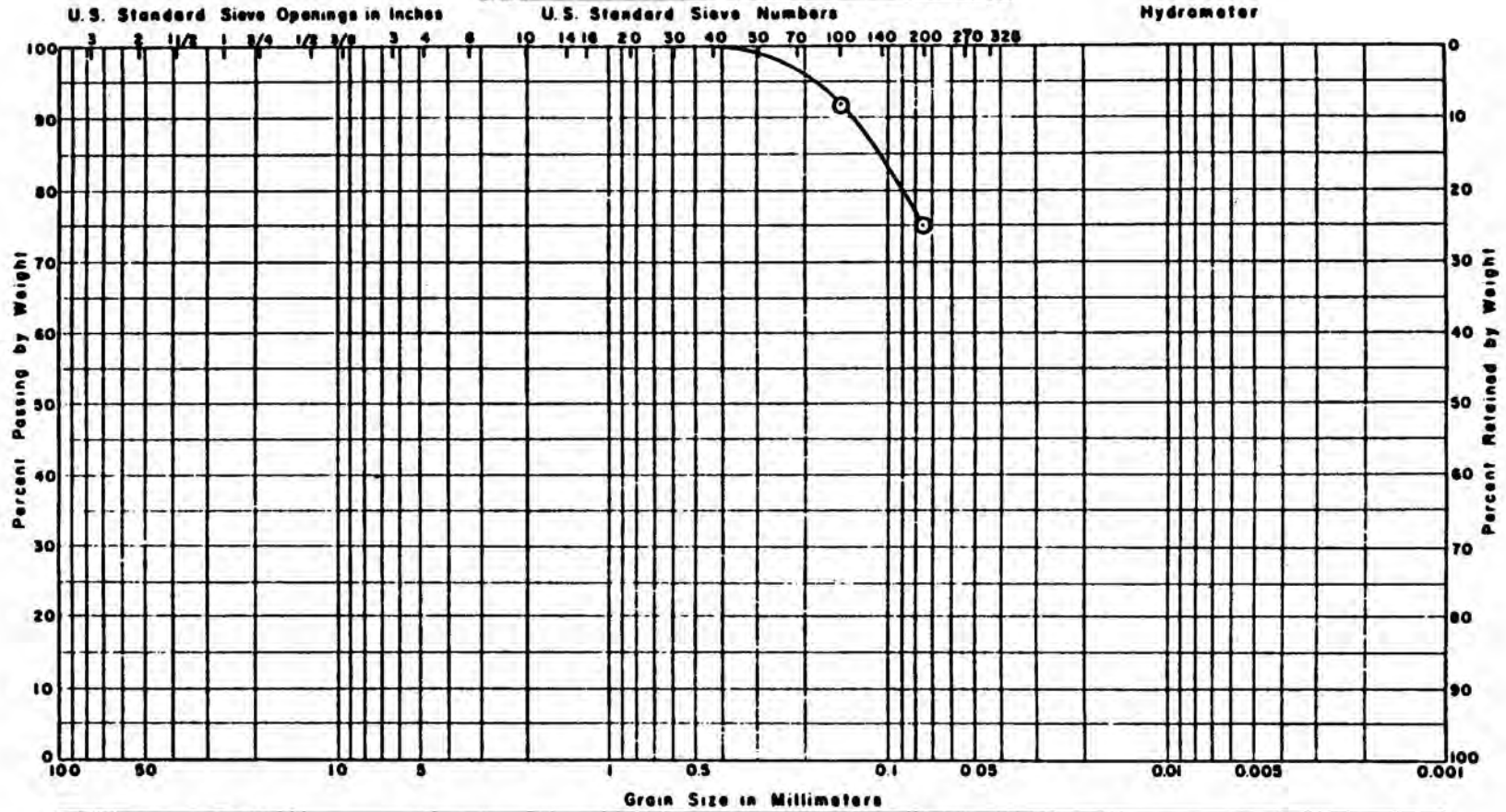
TEXAS MUNICIPAL POWER AGENCY

Site F Landfill
Gibbons Creek S.E.S.

B/SMI Project No. 880252
March 16, 1988

Boring No.: B-6
Sample No.: 237
Depth: 33'-35'

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

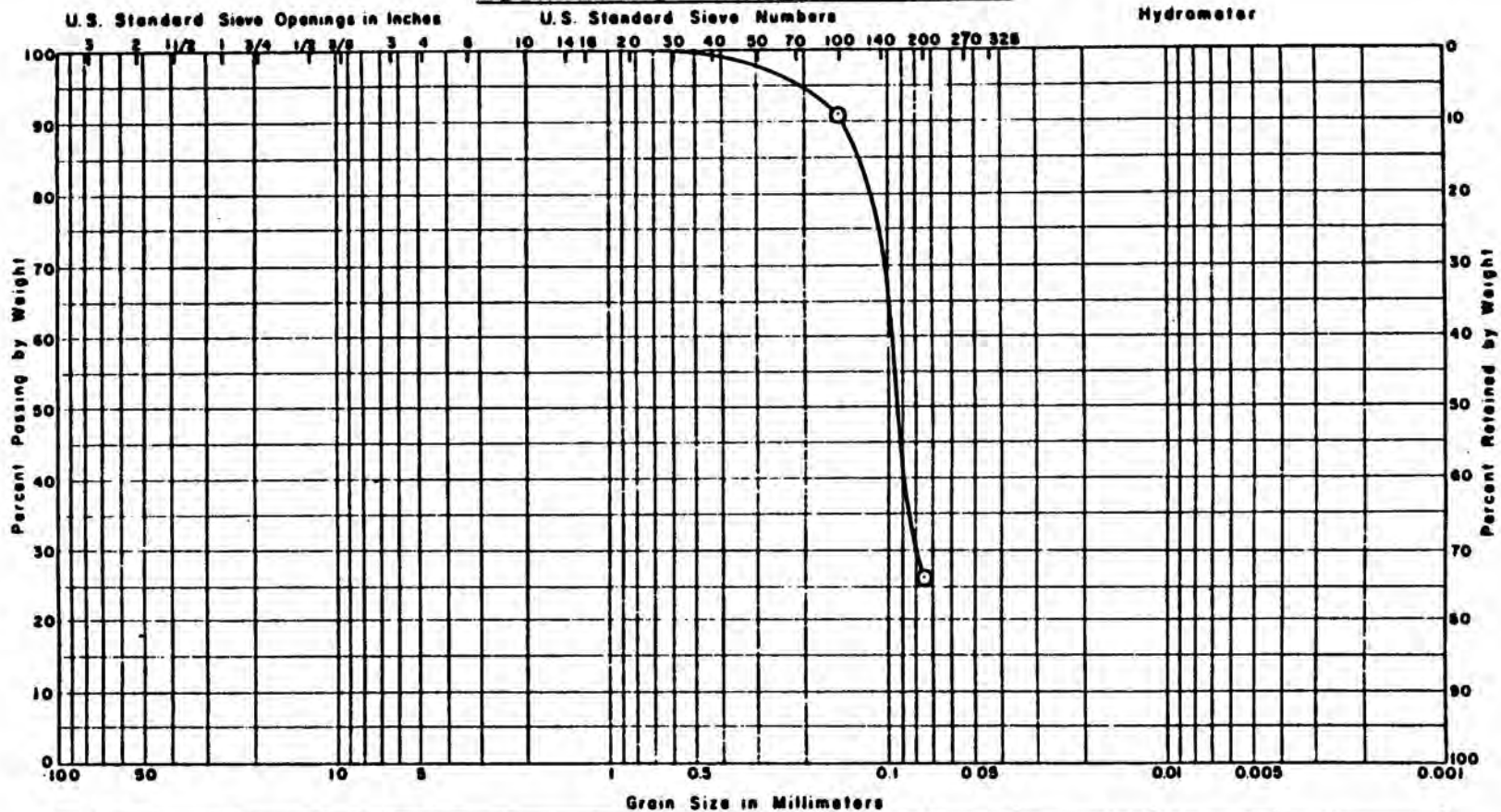
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-7
 Sample No.: 172
 Depth: 16'-17'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 11, 1988

MECHANICAL ANALYSIS CHART



| | | | | | | |
|--------|------|--------|--------|------|--------------|--|
| GRAVEL | | SAND | | | SILT or CLAY | |
| Coarse | Fine | Coarse | Medium | Fine | | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

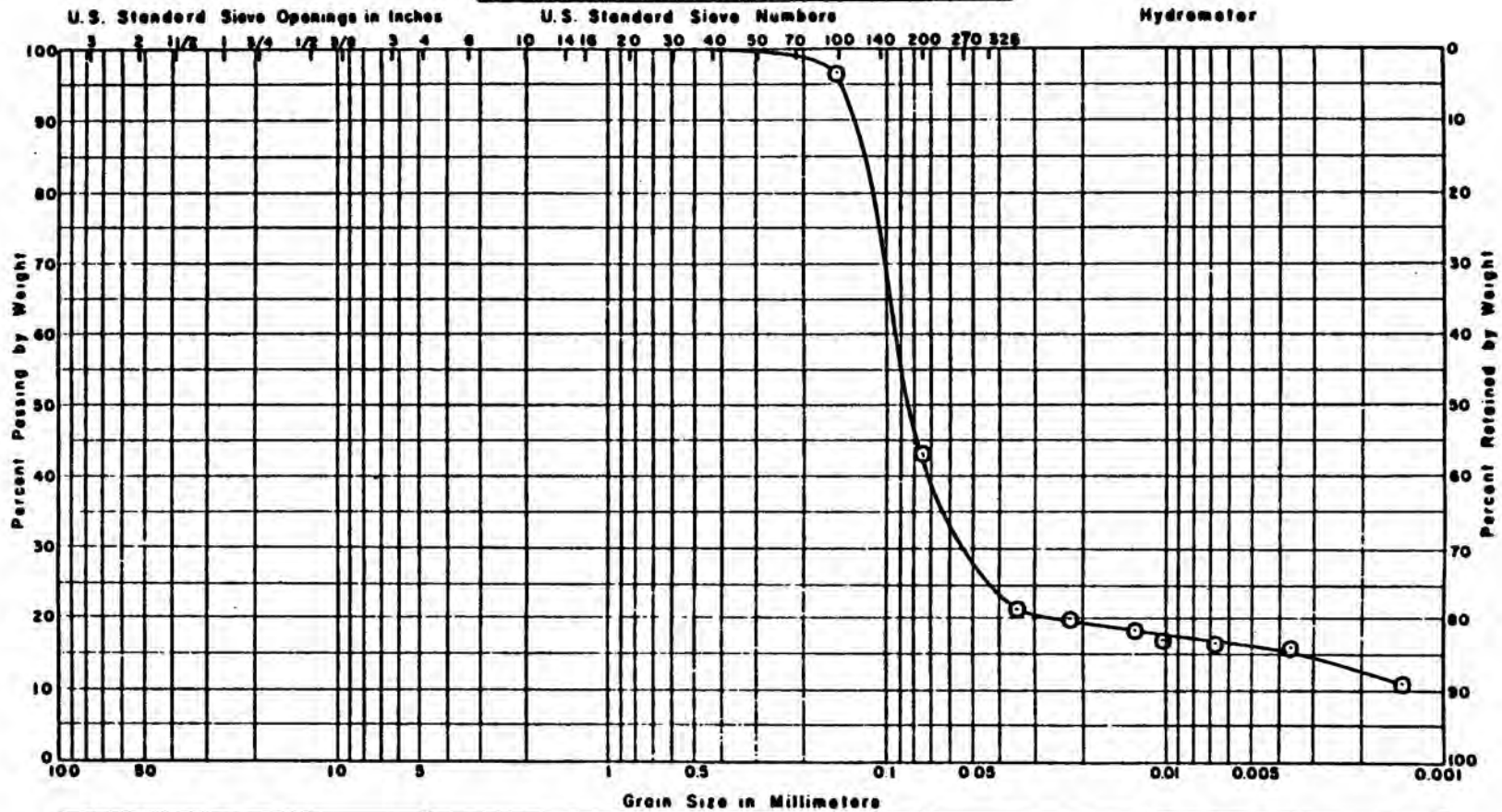
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-7
 Sample No.: 175
 Depth: 23'-24'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 11, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

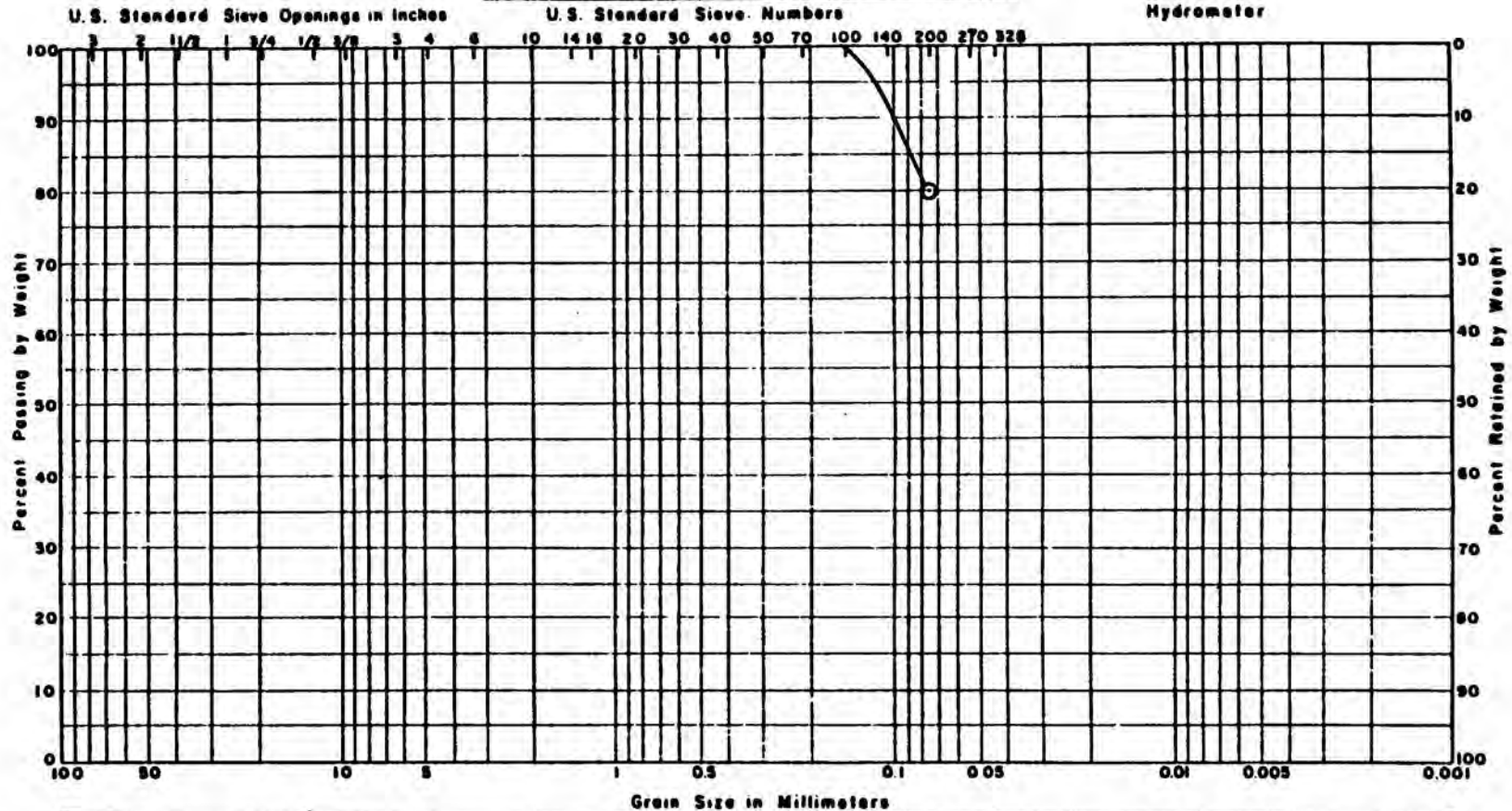
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-7
 Sample No.: 176
 Depth: 24'-26'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 16, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

United Soil Classification System - Corp of Engineers, U.S. Army

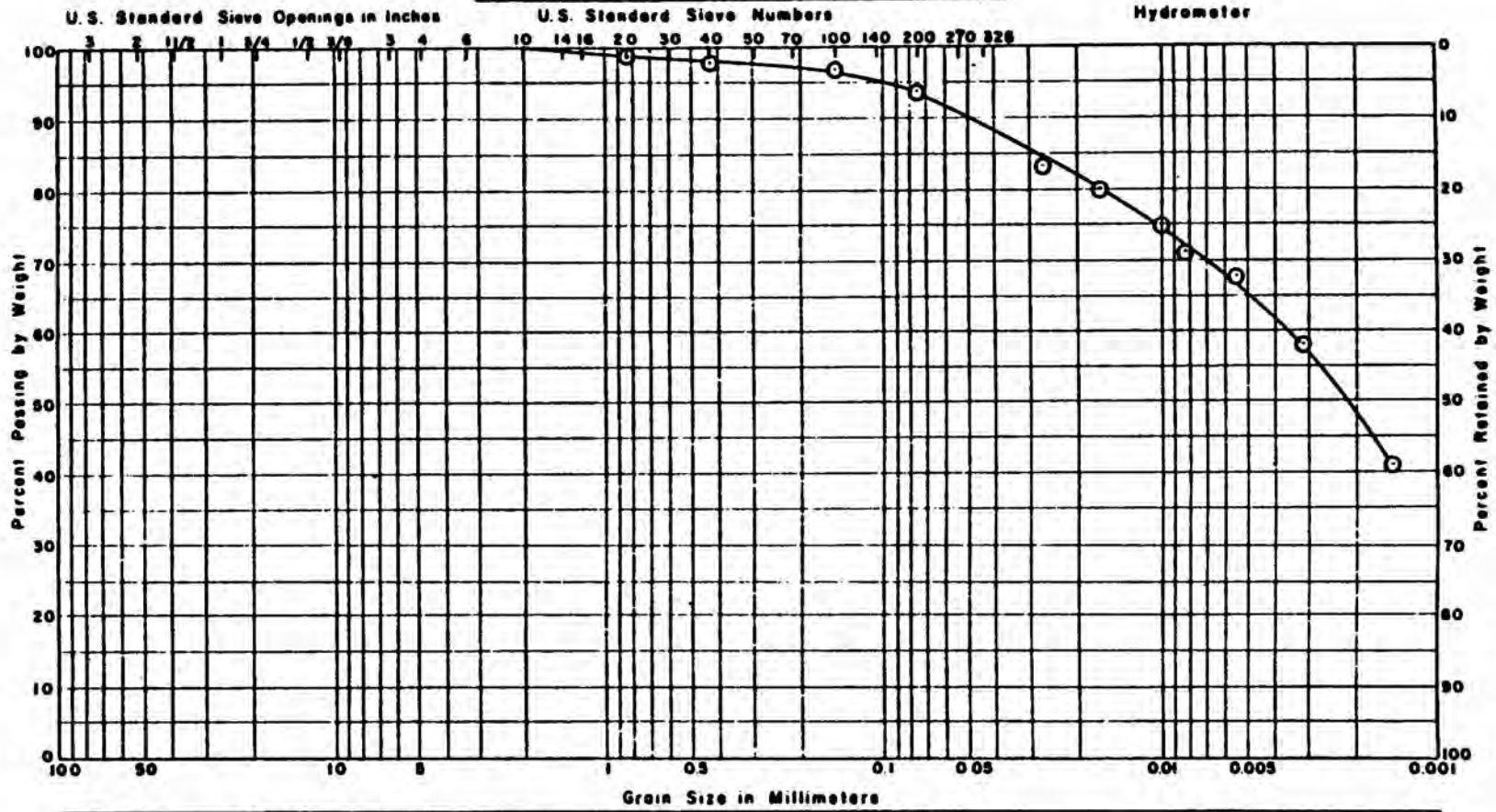
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-7
 Sample No.: 178
 Depth: 31'-32'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 11, 1988

MECHANICAL ANALYSIS CHART



| | | | | | | |
|--------|------|--------|--------|------|--------------|--|
| GRAVEL | | SAND | | | SILT or CLAY | |
| Coarse | Fine | Coarse | Medium | Fine | | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

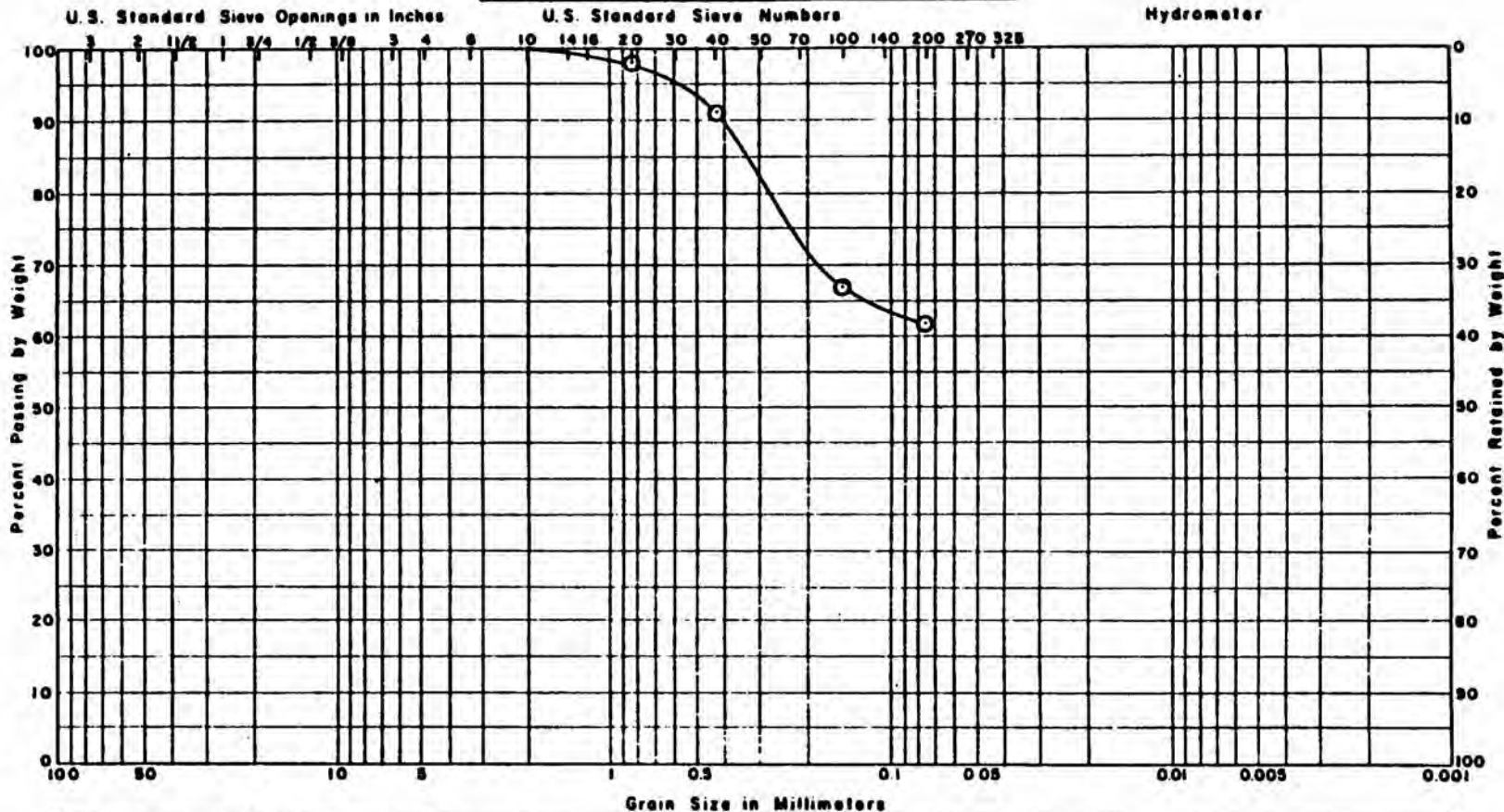
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-7
 Sample No.: 185
 Depth: 45'-46'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 16, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

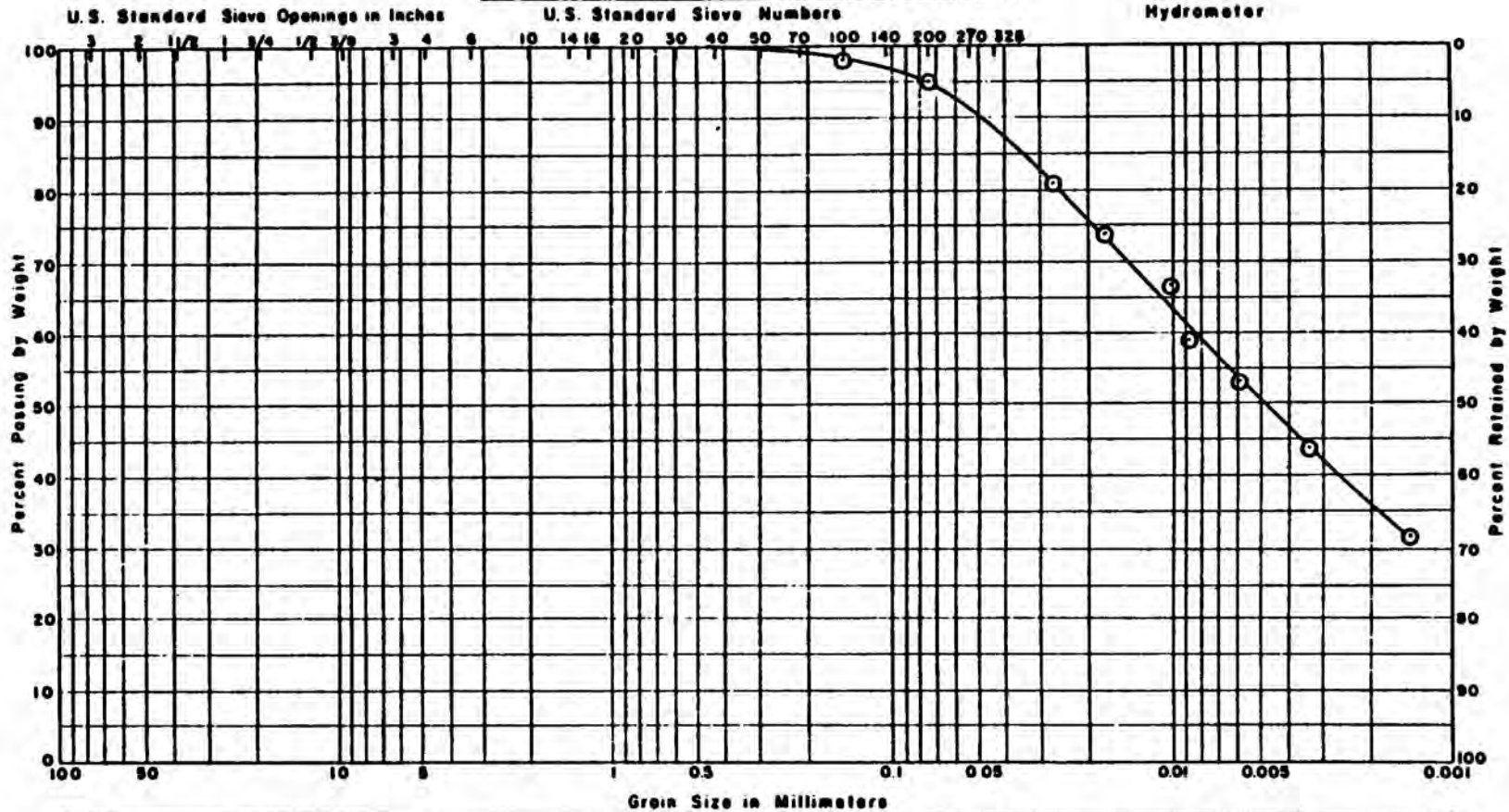
TEXAS MUNICIPAL POWER AGENCY

Site F Landfill
Gibbons Creek S.E.S.

B/SMI Project No. 880252
March 10, 1988

Boring No.: B-9
Sample No.: 154
Depth: 2.5'-4'

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

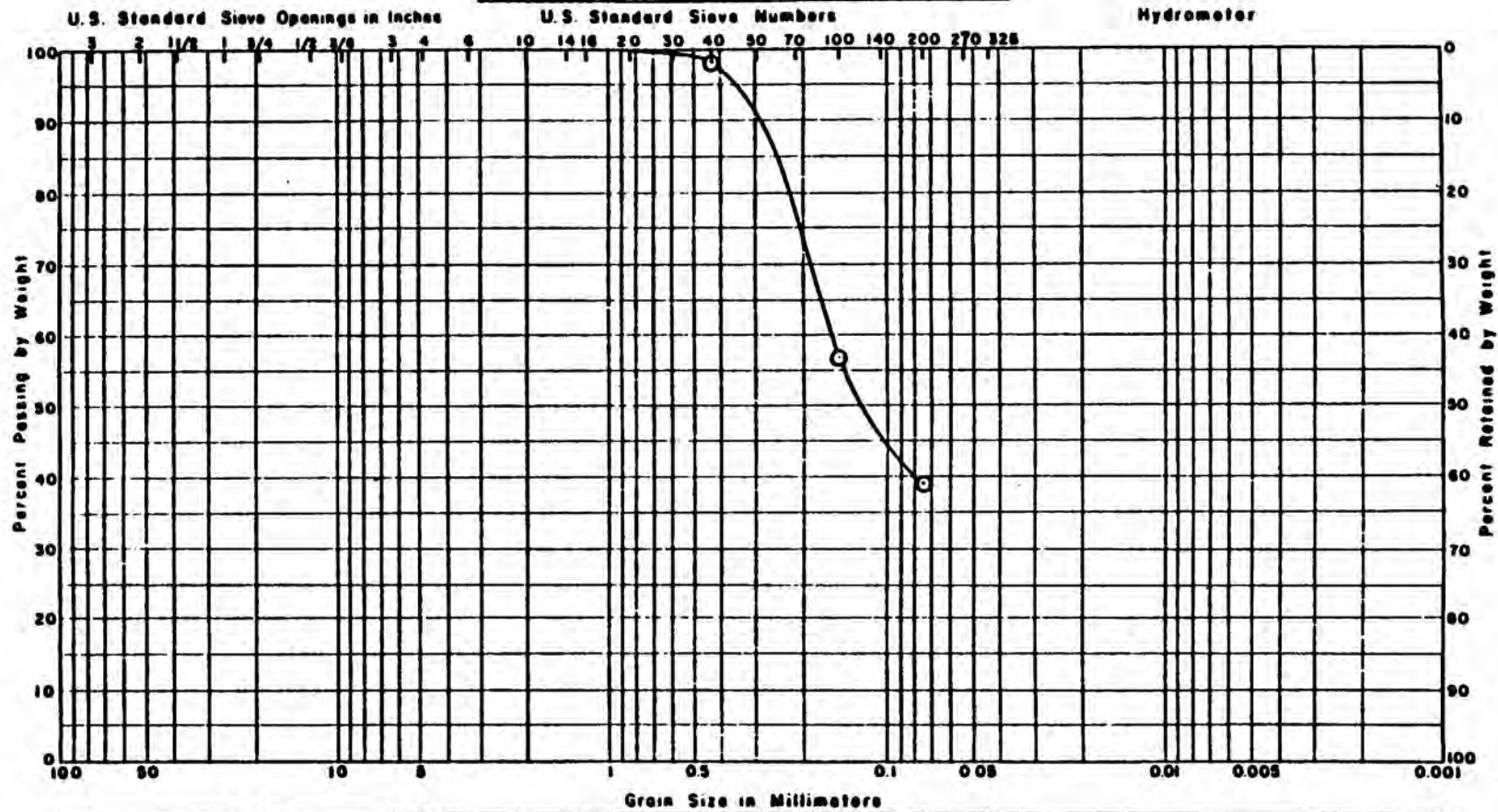
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-9
 Sample No.: 159
 Depth: 23'-25'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 16, 1988

MECHANICAL ANALYSIS CHART



| | | | | | | |
|--------|------|--------|--------|------|--------------|--|
| GRAVEL | | SAND | | | SILT or CLAY | |
| Coarse | Fine | Coarse | Medium | Fine | | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

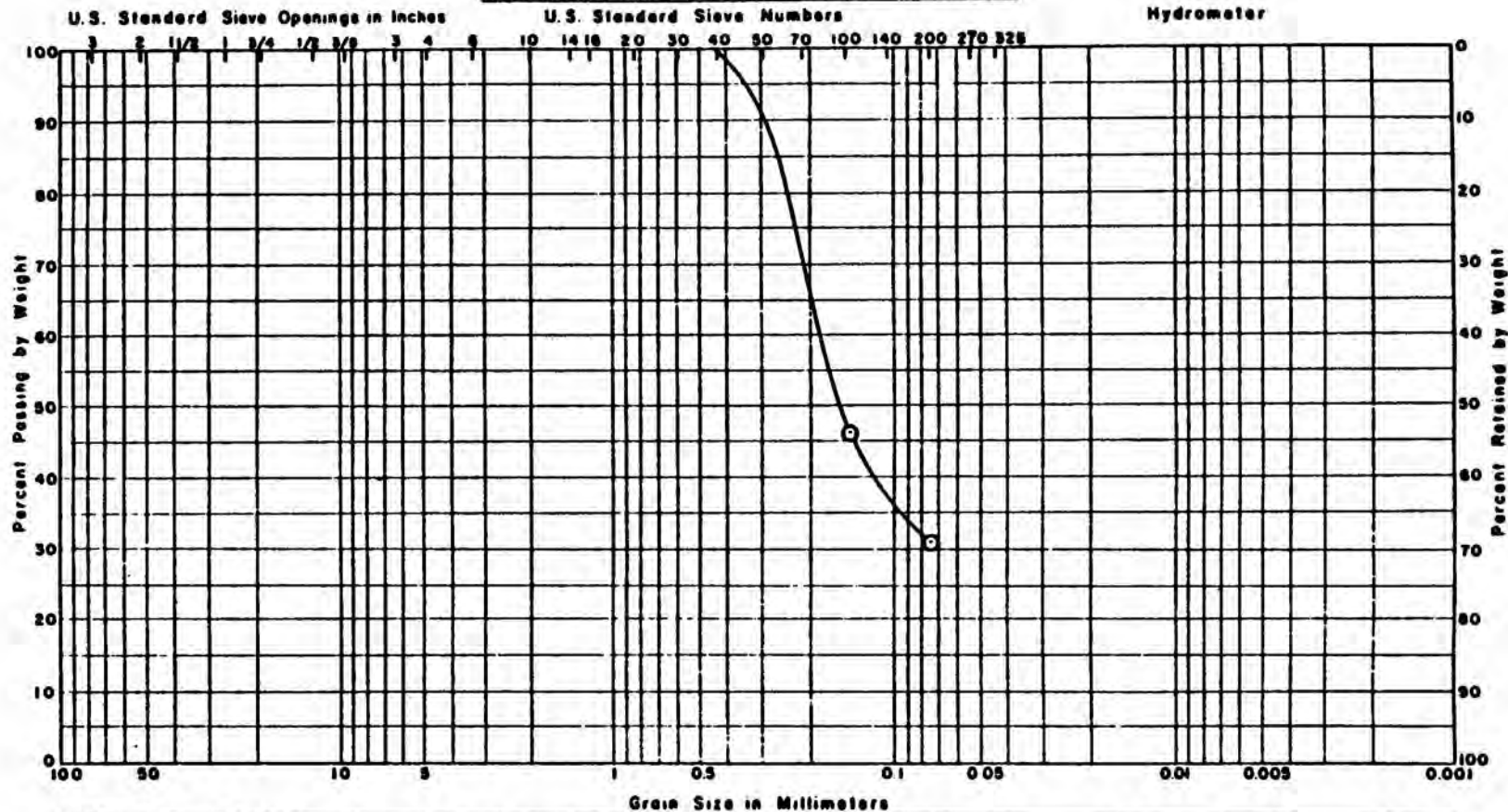
TEXAS MUNICIPAL POWER AGENCY

Site F Landfill
Gibbons Creek S.E.S.

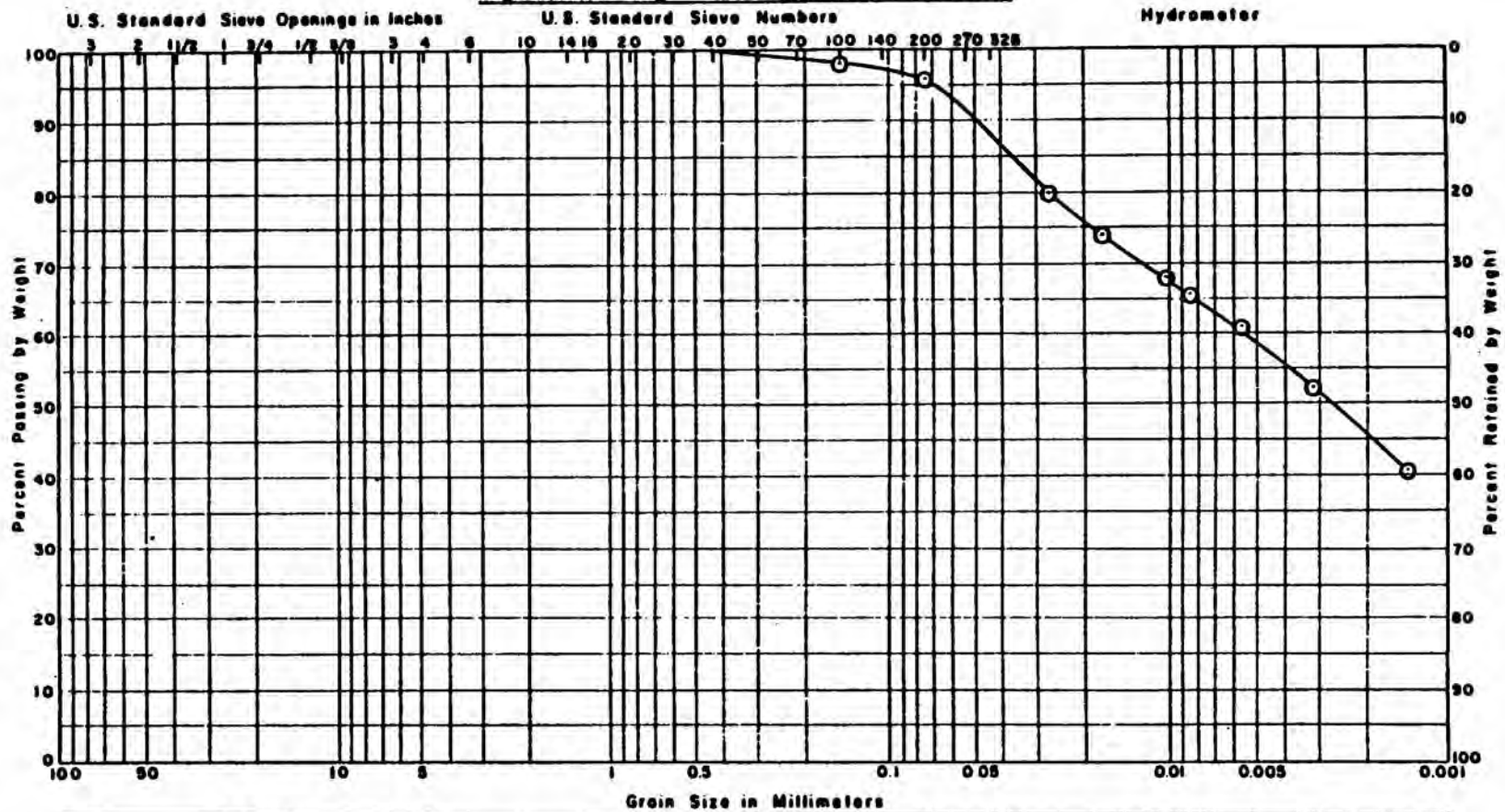
B/SMI Project No. 880252
March 10, 1988

Boring No.: B-10
Sample No.: 148
Depth: 2.5'-4'

MECHANICAL ANALYSIS CHART



MECHANICAL ANALYSIS CHART



| | | | | | | |
|--------|------|--------|--------|------|--------------|--|
| GRAVEL | | SAND | | | SILT or CLAY | |
| Coarse | Fine | Coarse | Medium | Fine | | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

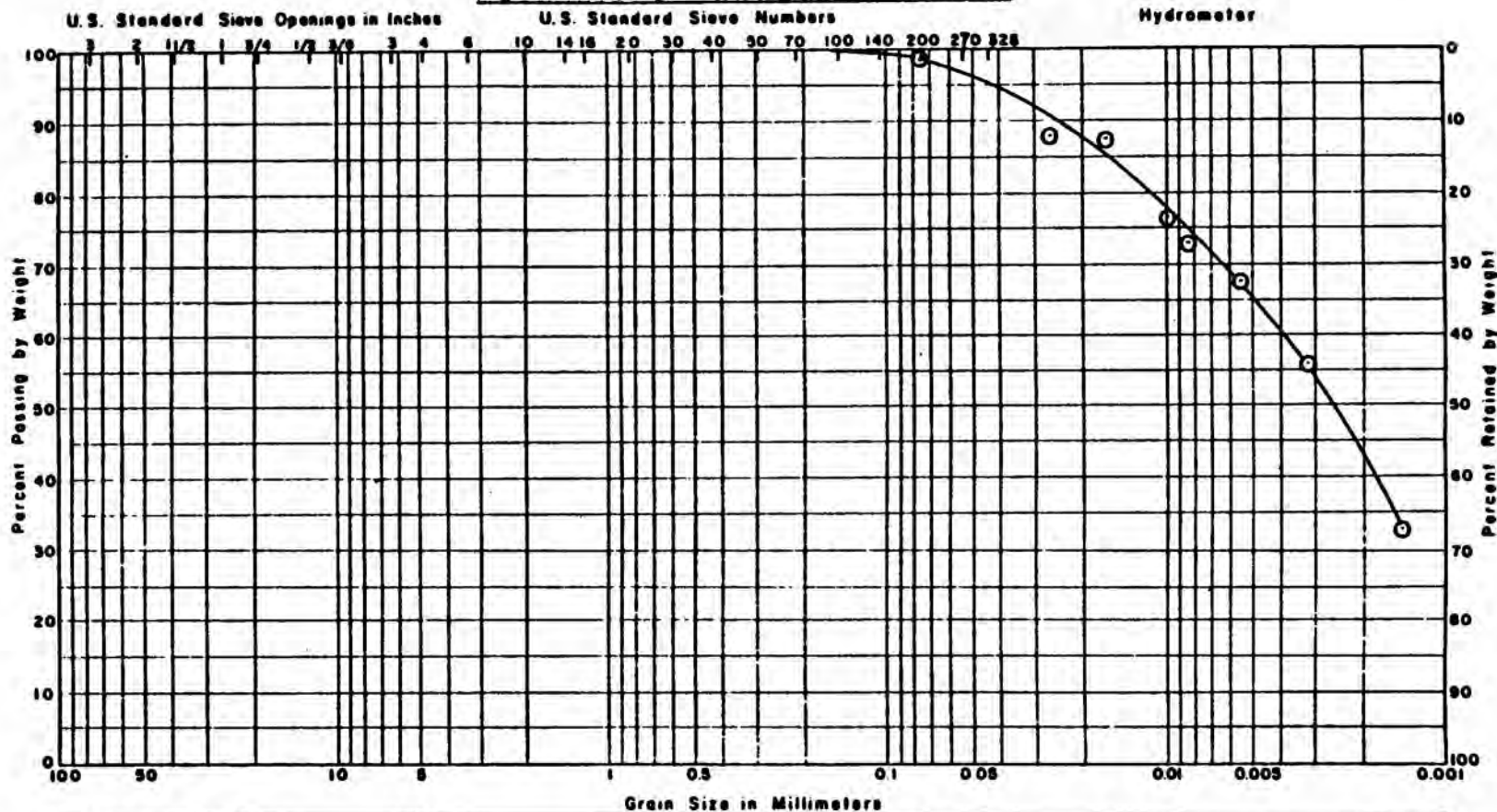
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-11
 Sample No.: 213
 Depth: 16'-18'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 21, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

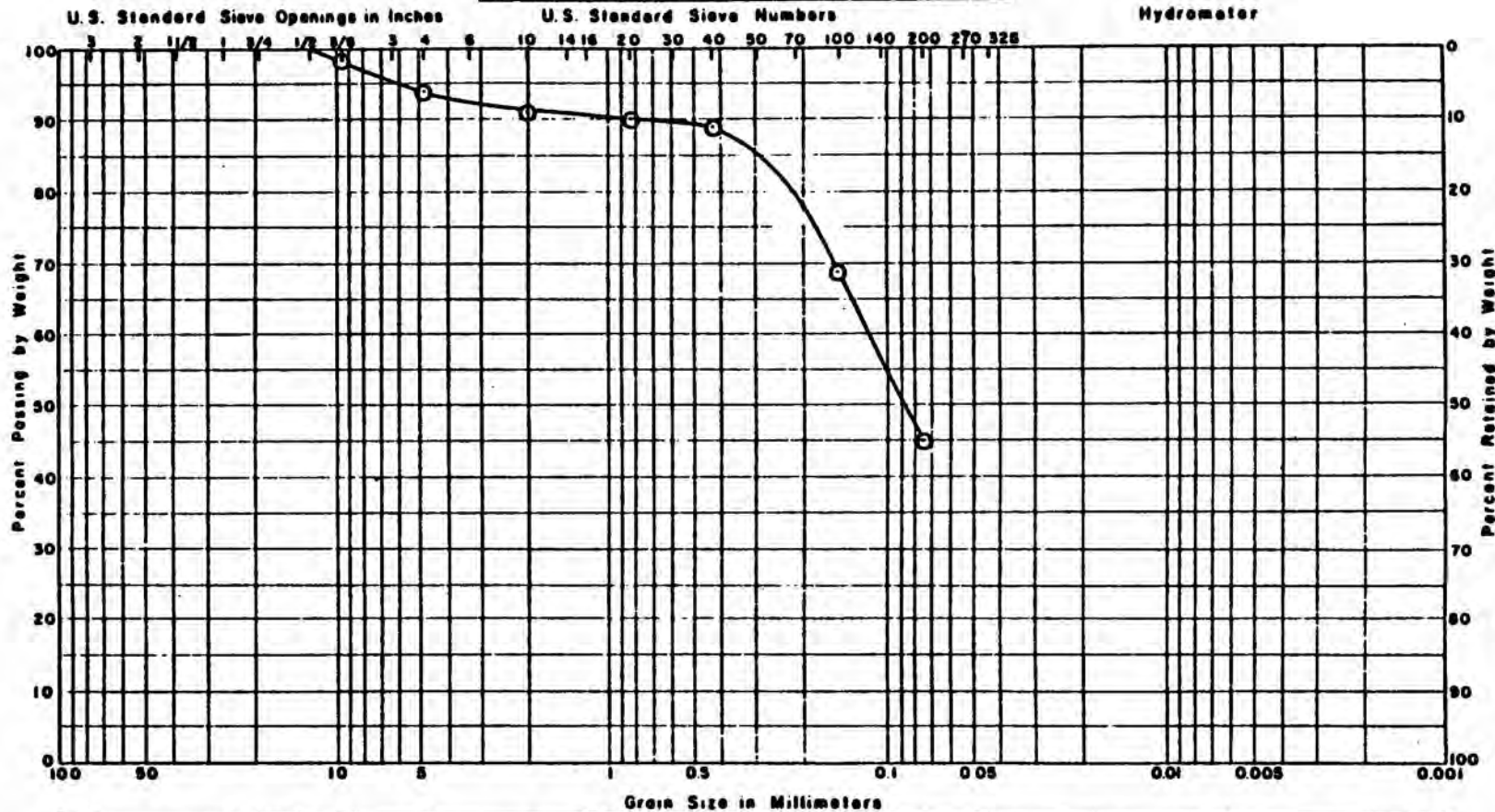
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-11
 Sample No.: 220
 Depth: 30'-32'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 21, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

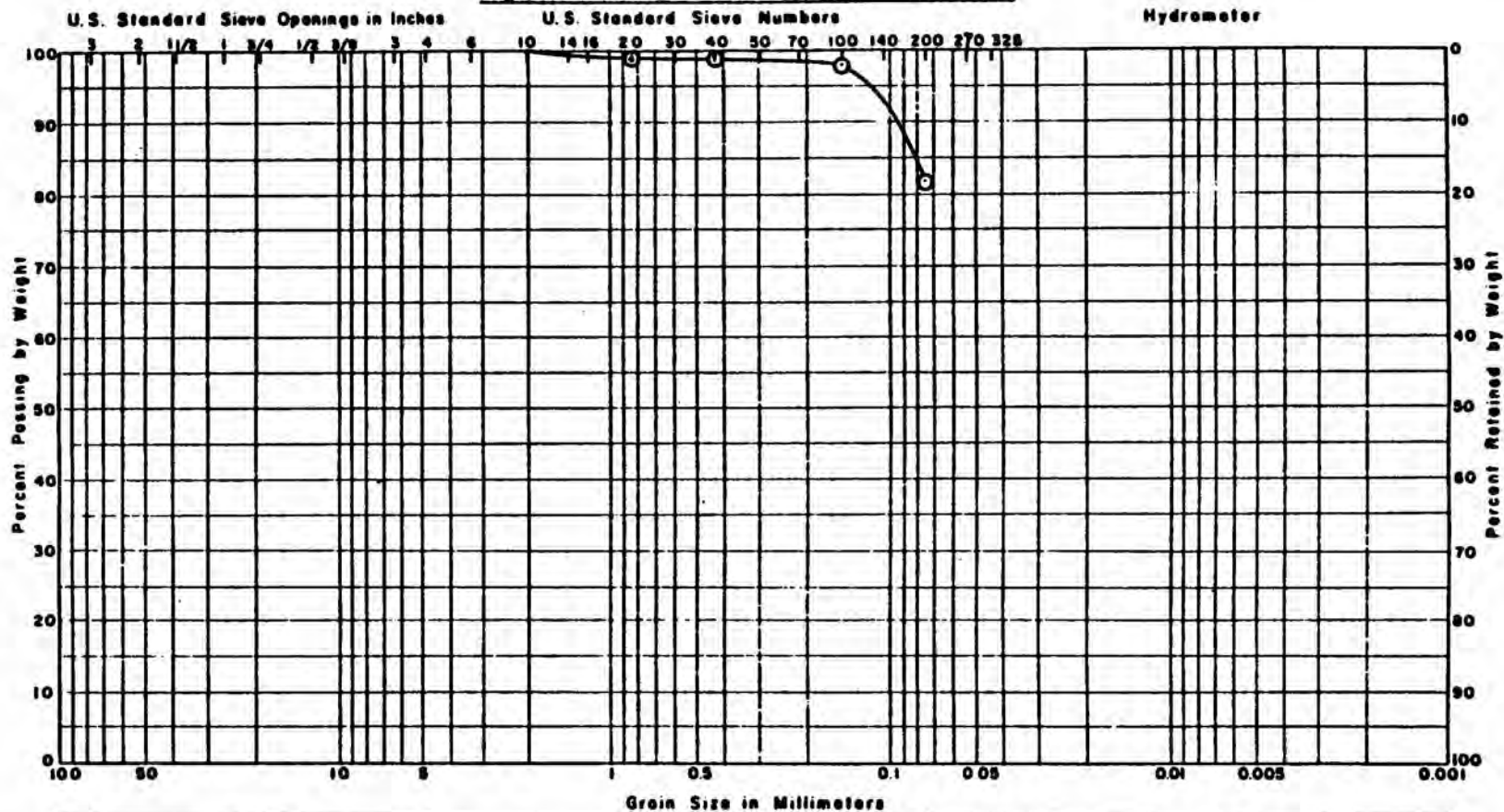
TEXAS MUNICIPAL POWER AGENCY

Site F Landfill
Gibbons Creek S.E.S.

B/SMI Project No. 880252
March 11, 1988

Boring No.: B-12
Sample No.: 242
Depth: 2'-4'

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

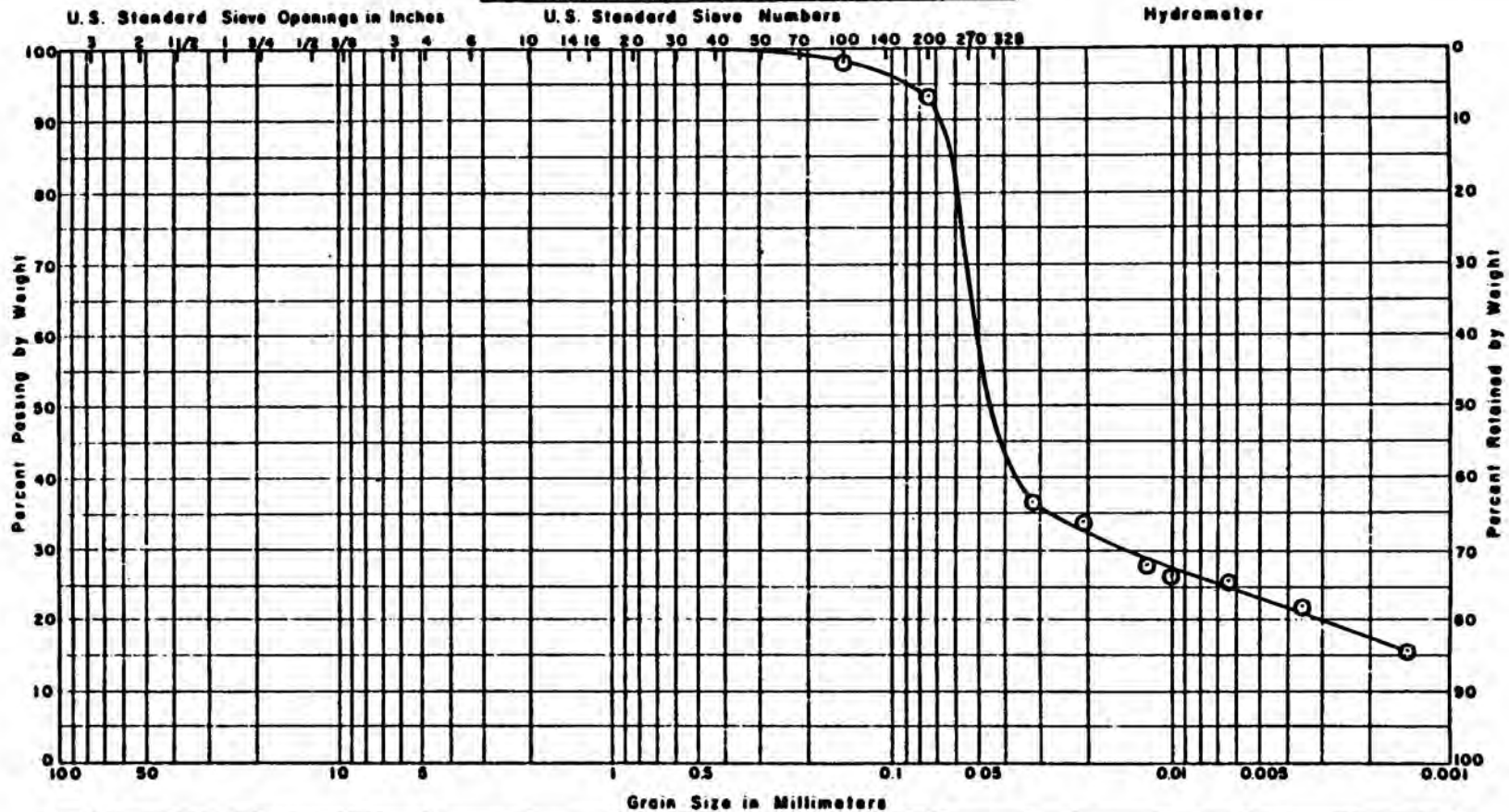
TEXAS MUNICIPAL POWER AGENCY

Site F Landfill
Gibbons Creek S.E.S.

B/SMI Project No. 880252
March 11, 1988

Boring No.: B-12
Sample No.: 246
Depth: 18'-20'

MECHANICAL ANALYSIS CHART



| | | | | | | |
|--------|------|--------|--------|------|--------------|--|
| GRAVEL | | SAND | | | SILT or CLAY | |
| Coarse | Fine | Coarse | Medium | Fine | | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

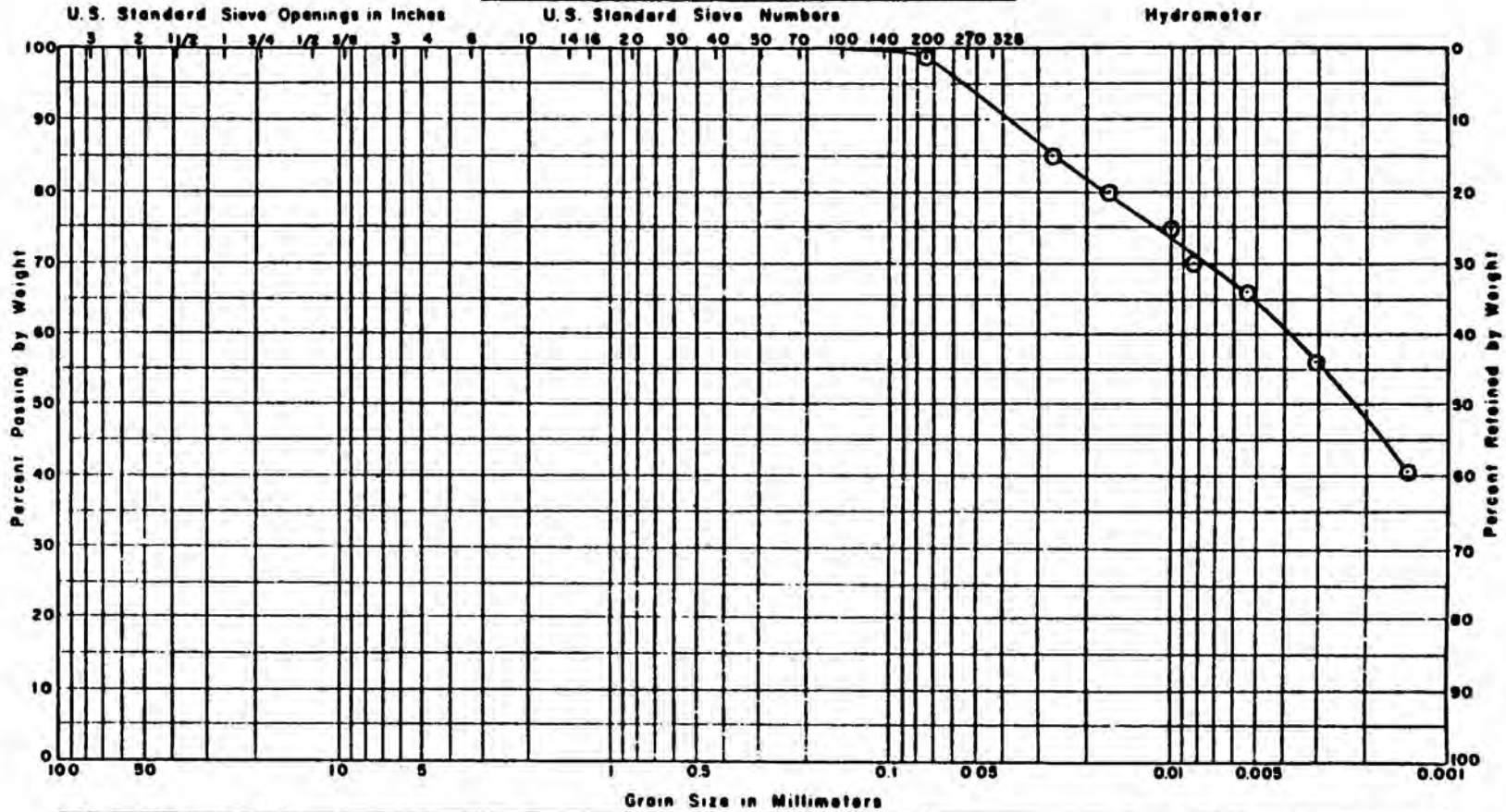
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-12
 Sample No.: 248
 Depth: 28'-30'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 19, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

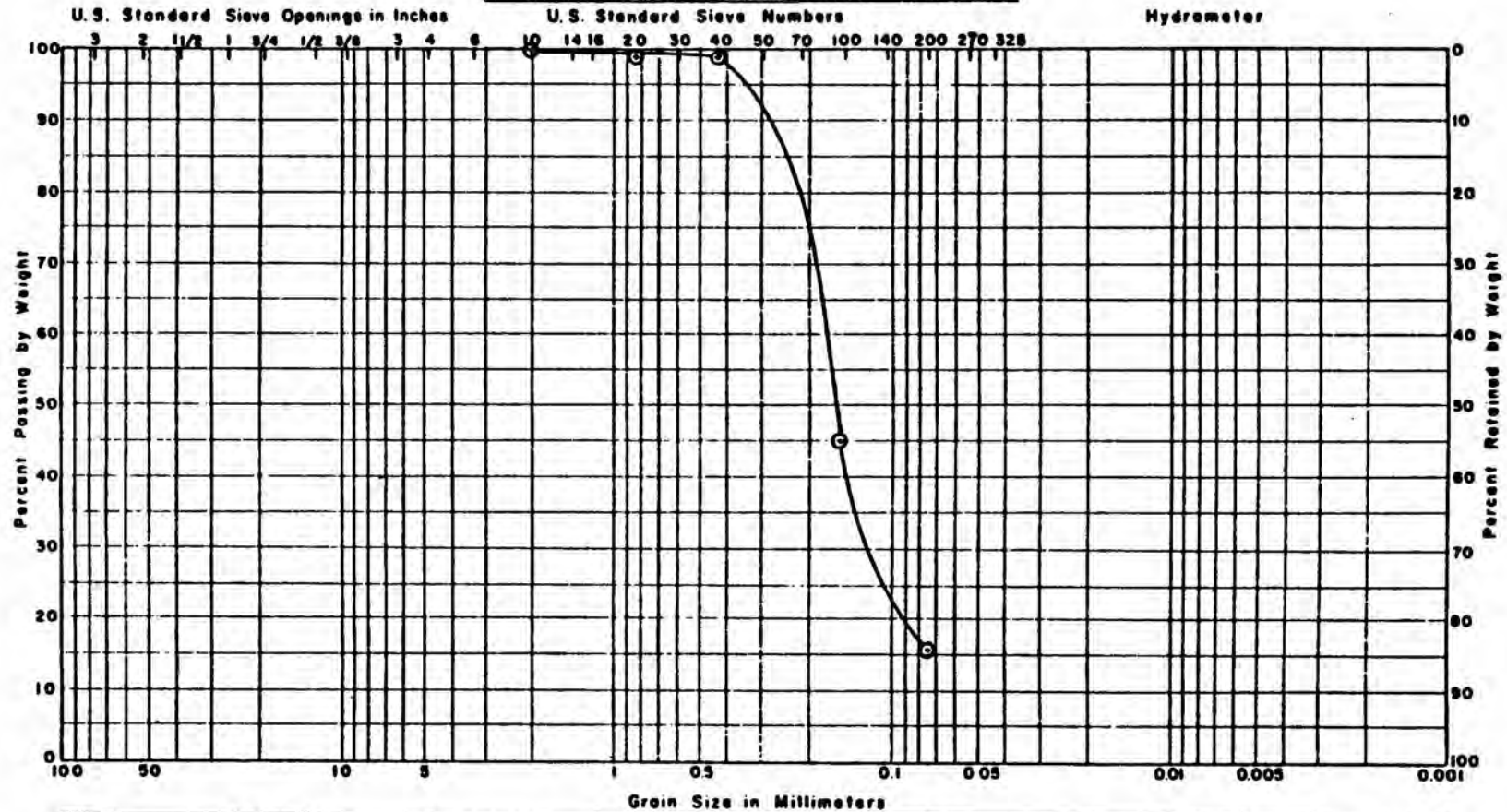
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-12
 Sample No.: 250
 Depth: 38'-40'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 21, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

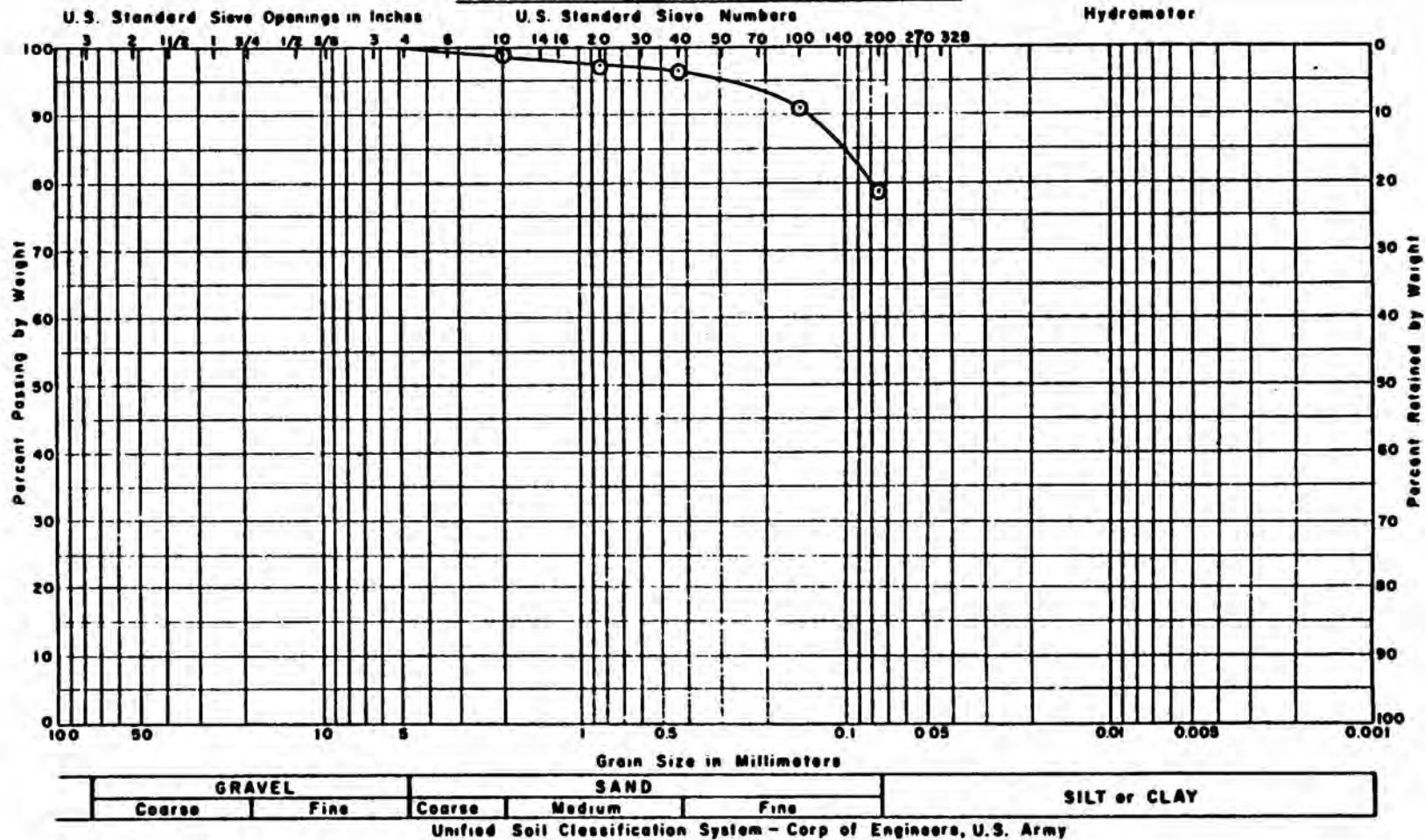
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-14
 Sample No.: 271
 Depth: 13'-15'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 23, 1988

MECHANICAL ANALYSIS CHART



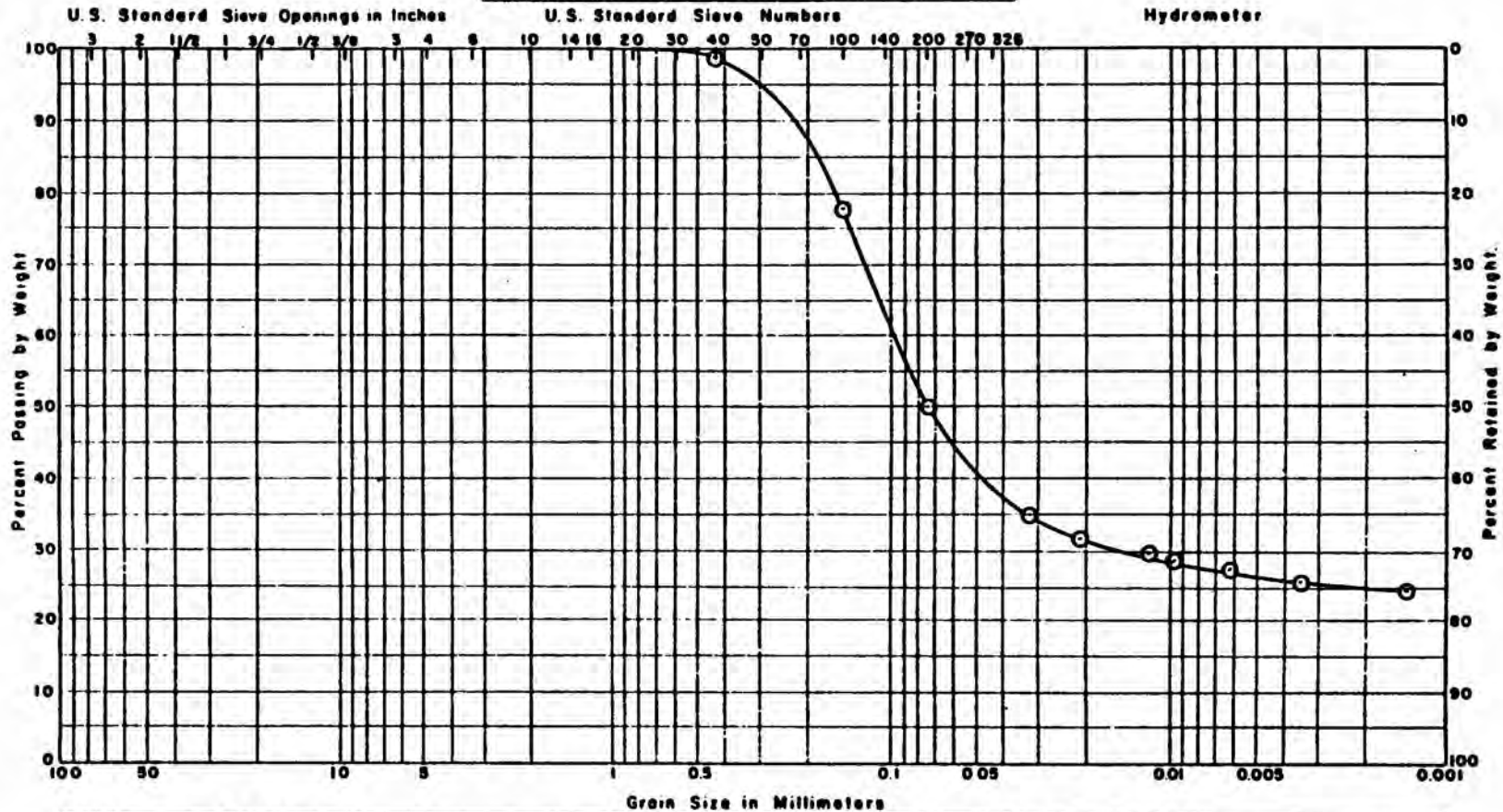
TEXAS MUNICIPAL POWER AGENCY

Site F Landfill
Gibbons Creek S.E.S.

B/SMI Project No. 880252
March 11, 1988

Boring No.: B-14
Sample No.: 277
Depth: 43'-45'

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

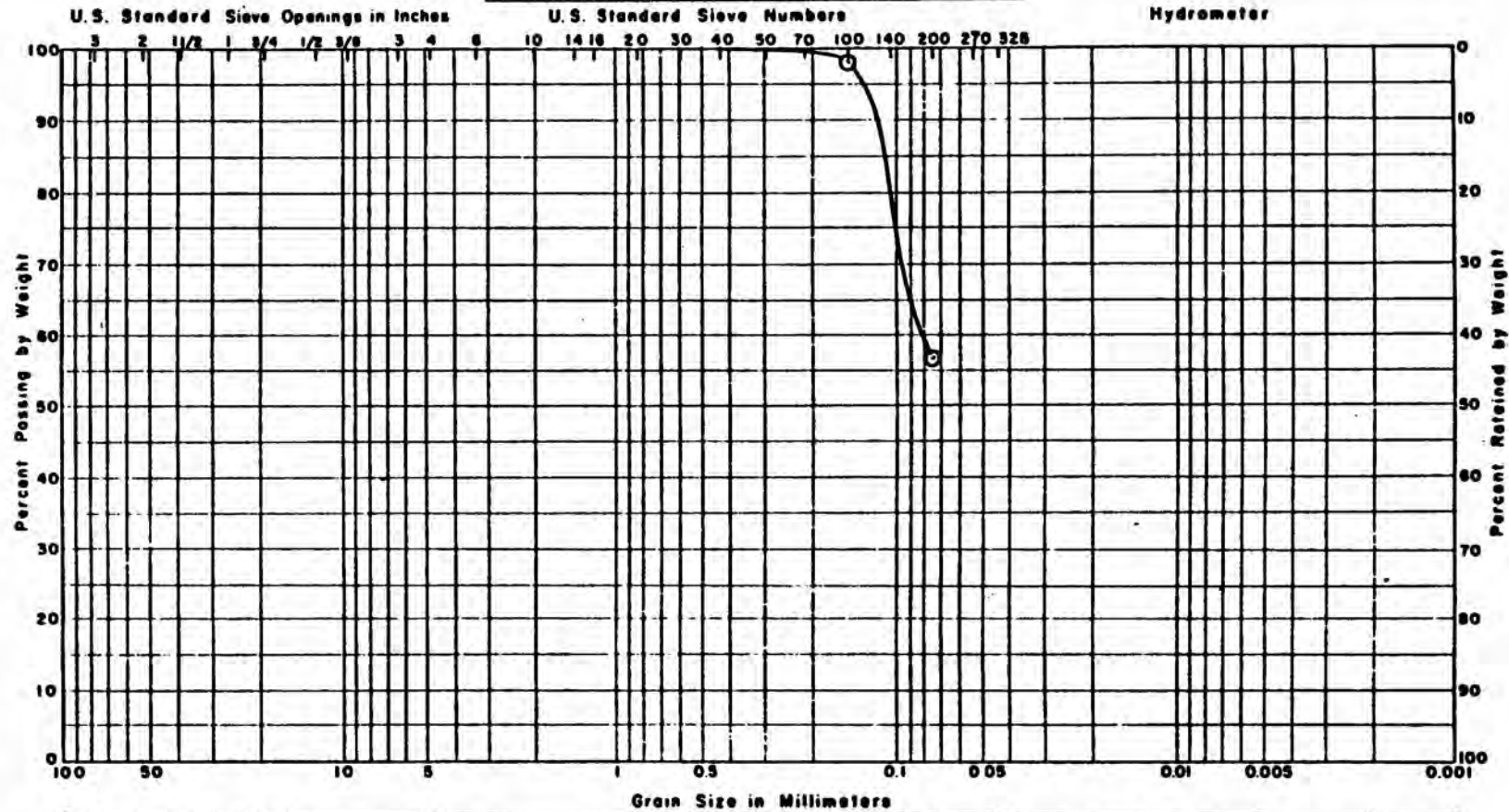
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-15
 Sample No.: 137
 Depth: 3'-4'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 19, 1988

MECHANICAL ANALYSIS CHART



| | | | | | | |
|--------|------|--------|--------|------|--------------|--|
| GRAVEL | | SAND | | | SILT or CLAY | |
| Coarse | Fine | Coarse | Medium | Fine | | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

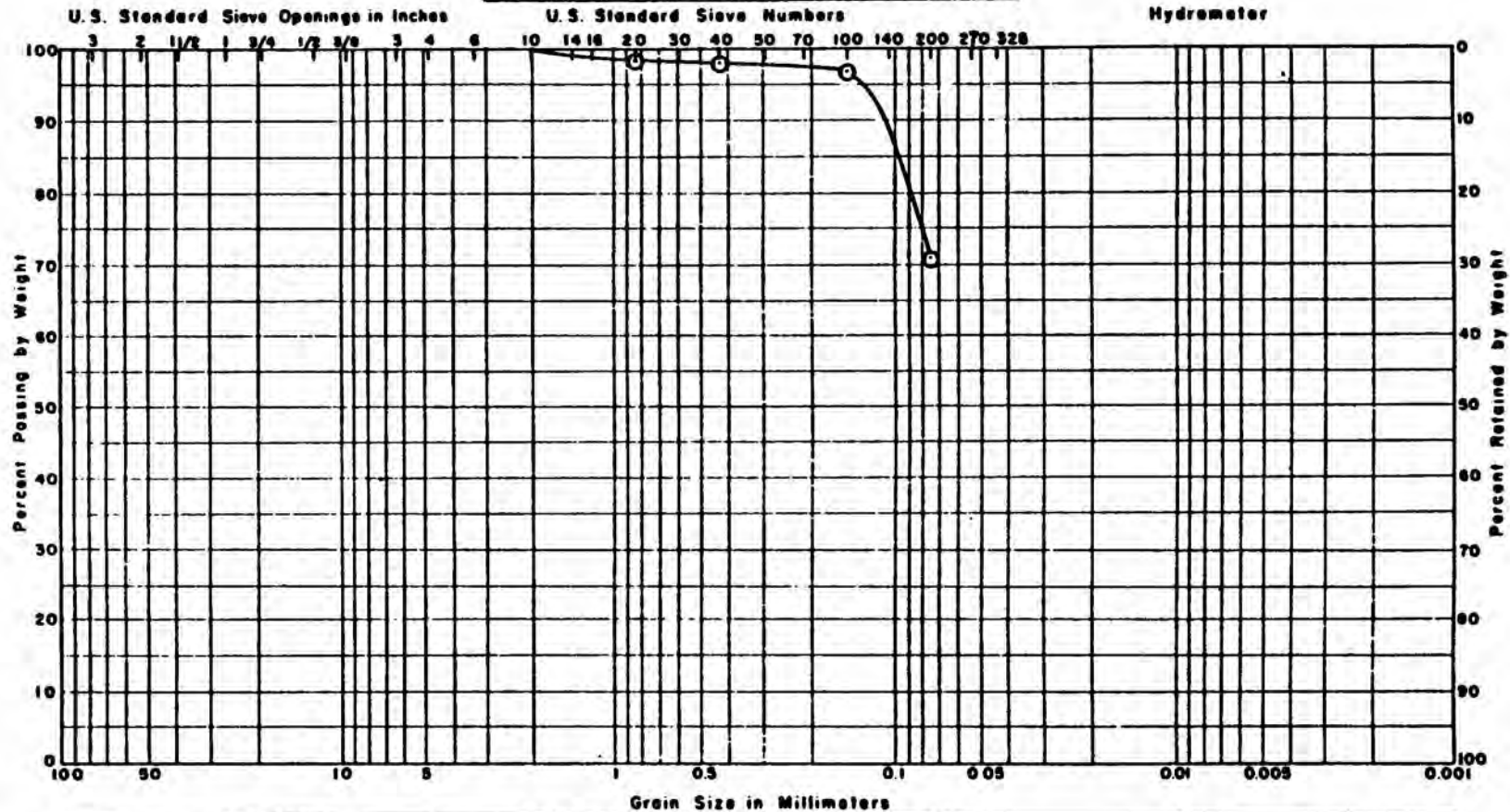
TEXAS MUNICIPAL POWER AGENCY

Site F Landfill
Gibbons Creek S.E.S.

B/SMI Project No. 880252
March 11, 1988

Boring No.: B-17
Sample No.: 88
Depth: 4'-6'

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

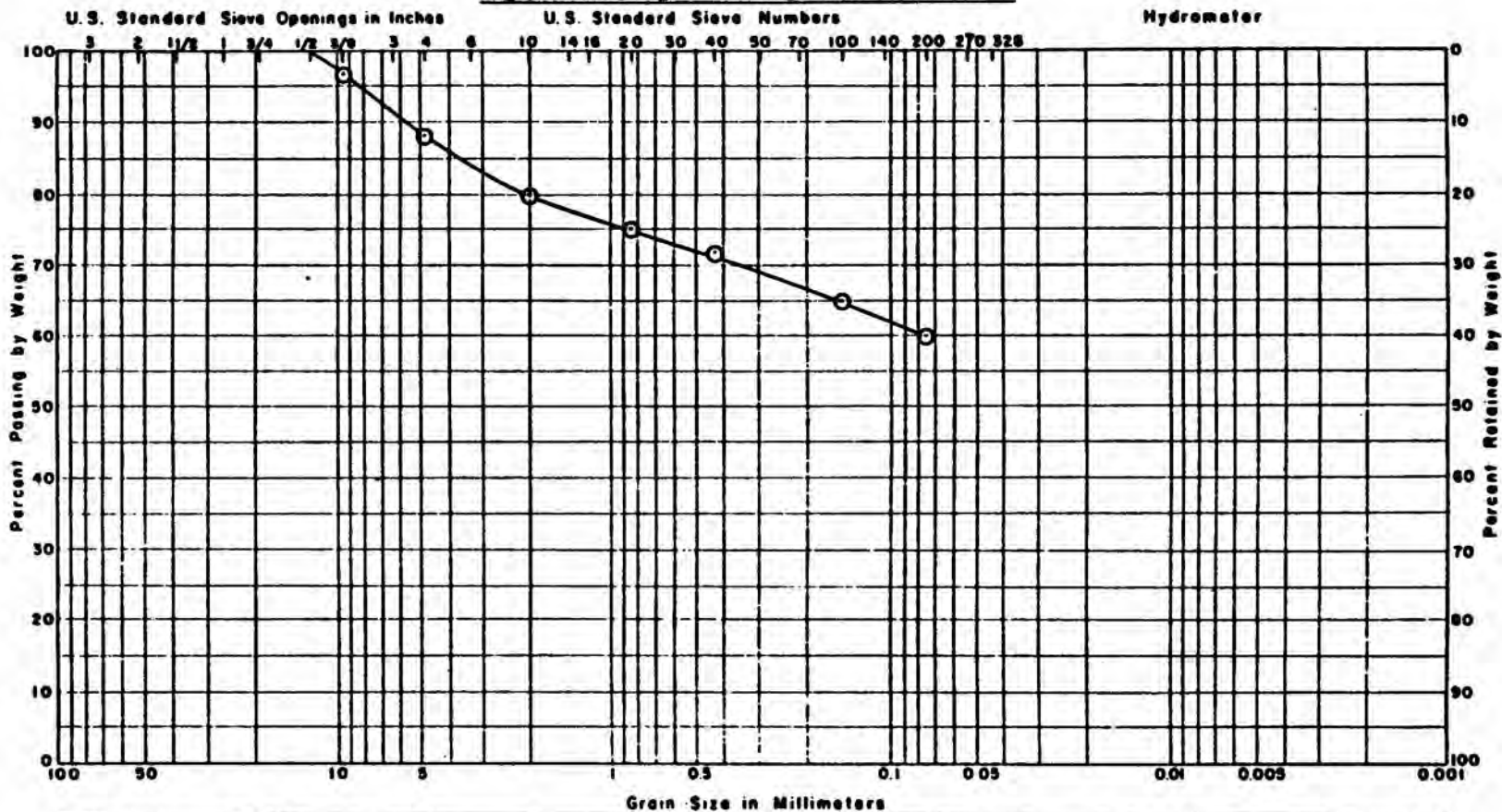
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-17
 Sample No.: 91
 Depth: 10'-12'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 11, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

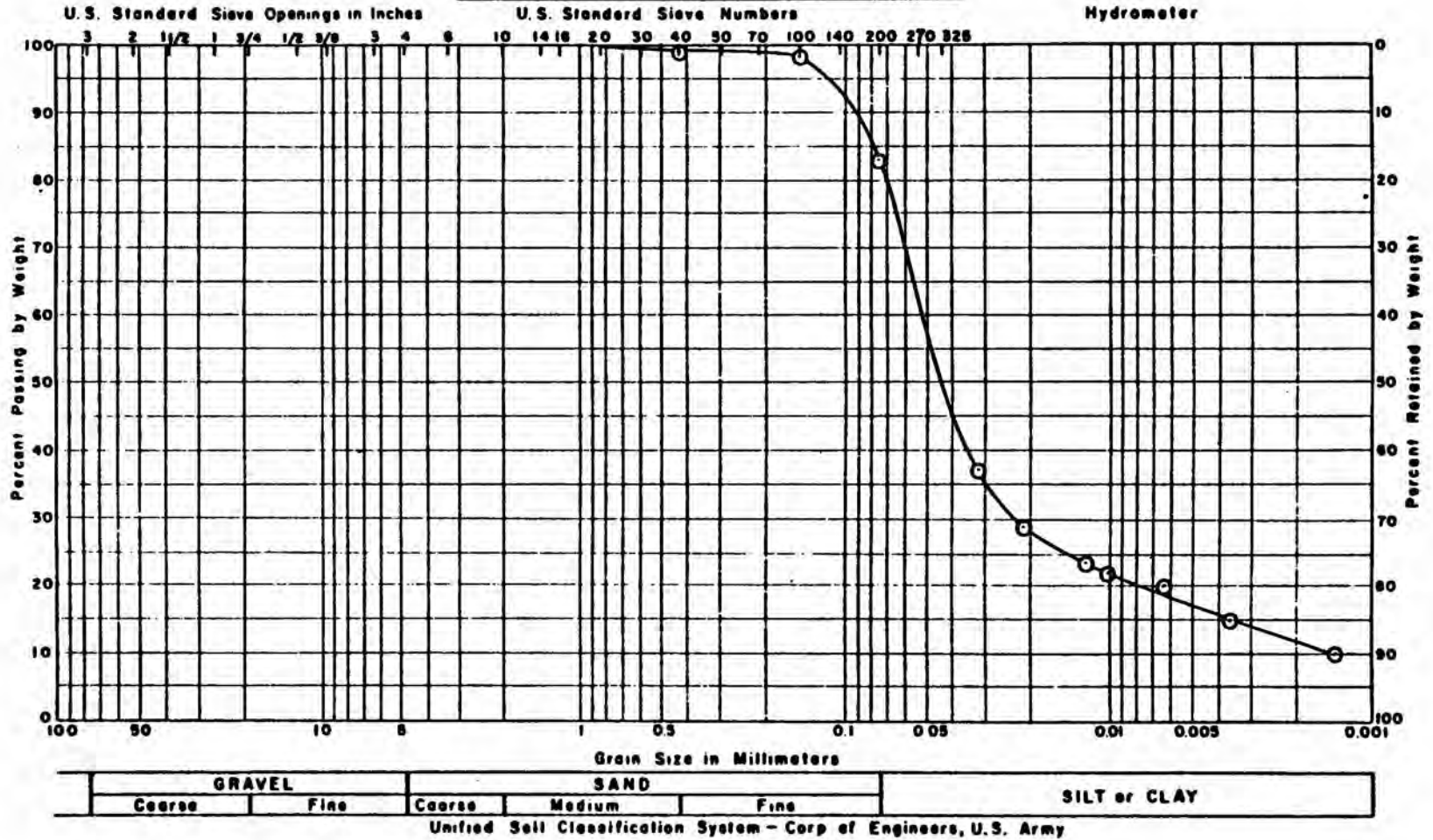
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-18
 Sample No.: 114
 Depth: 6'-8'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 11, 1988

MECHANICAL ANALYSIS CHART



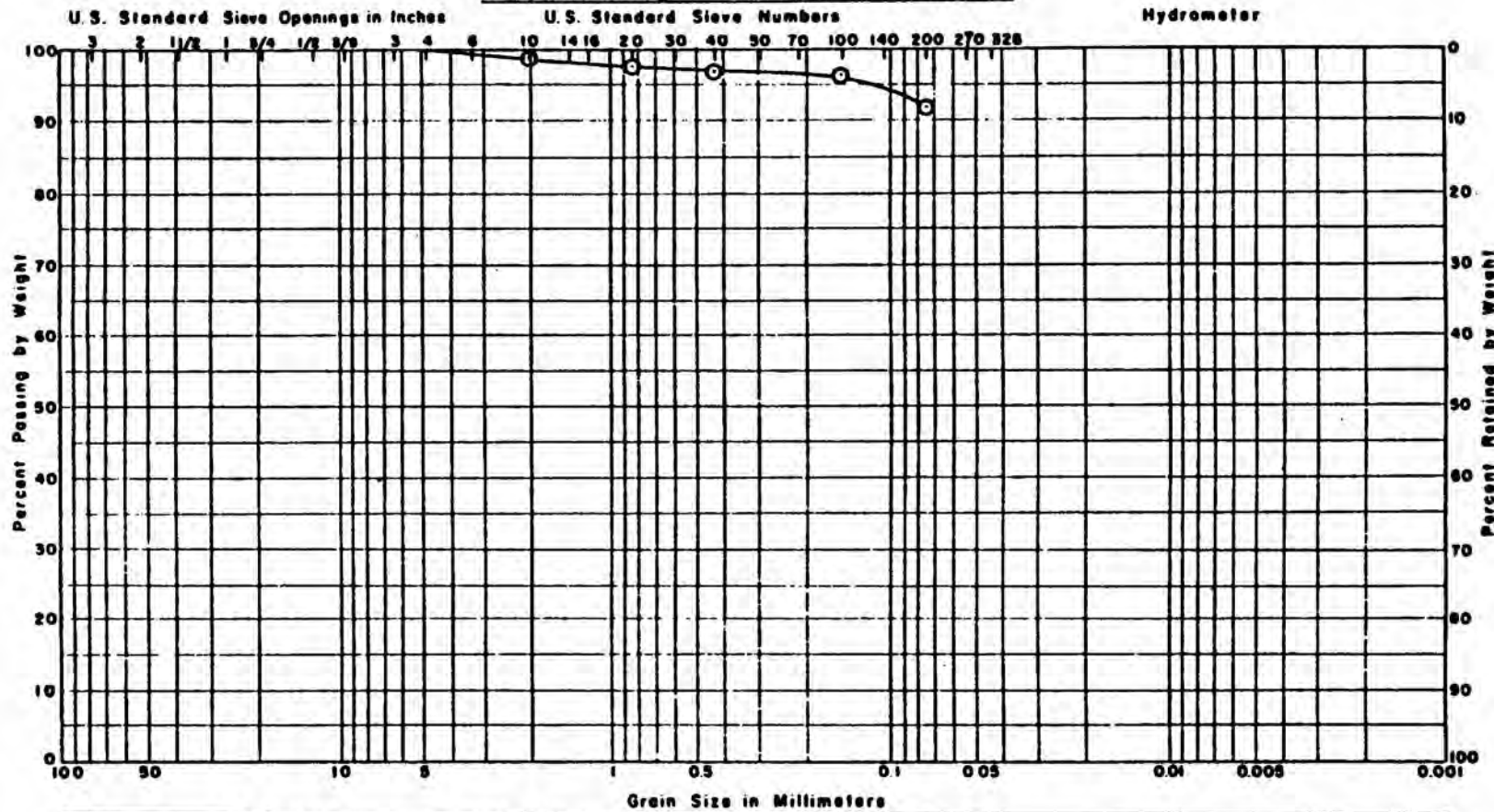
TEXAS MUNICIPAL POWER AGENCY

Boring No.: B-18
 Sample No.: 121
 Depth: 20'-22'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 19, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

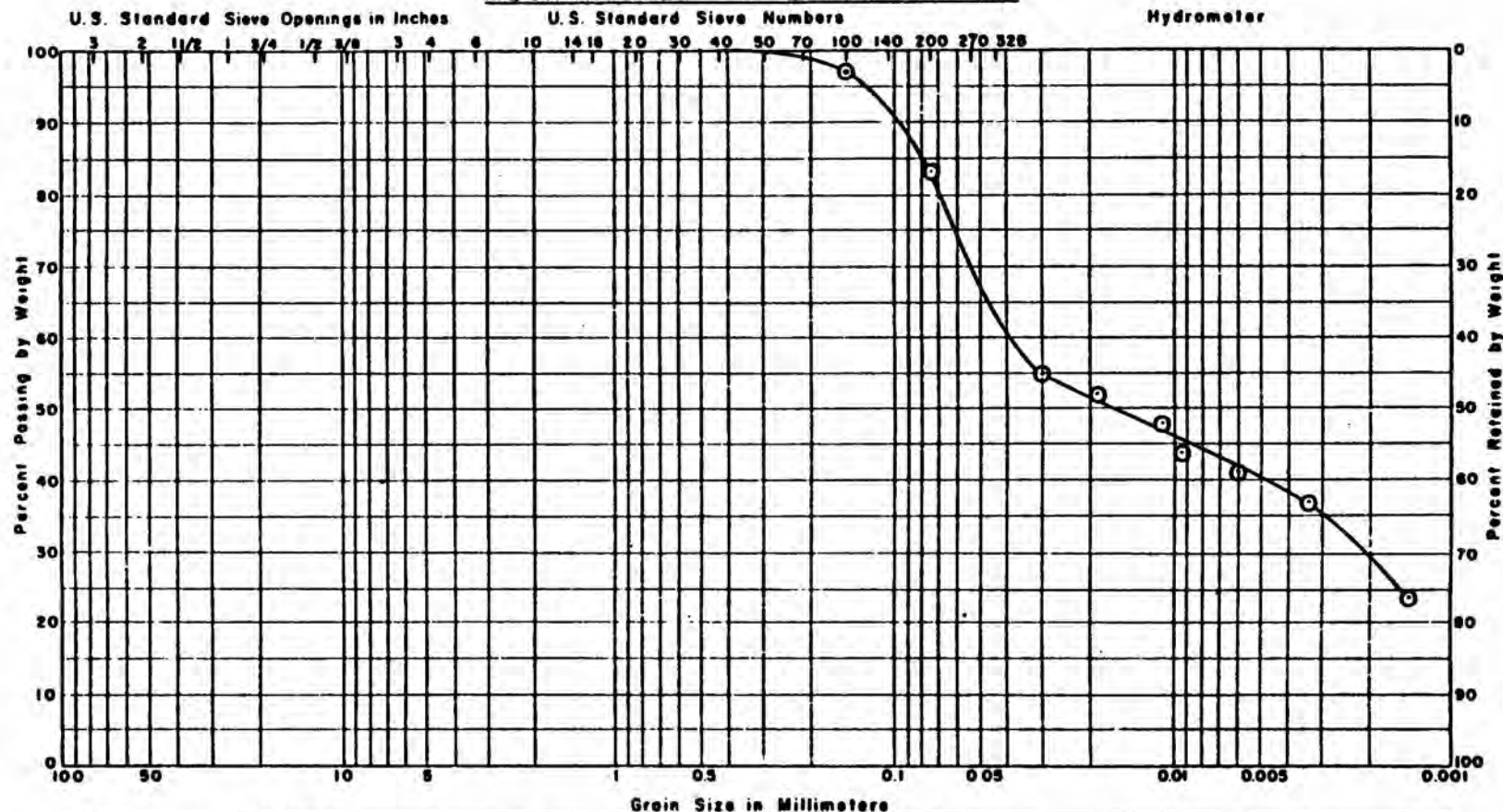
TEXAS MUNICIPAL POWER AGENCY

Site F Landfill
Gibbons Creek S.E.S.

B/SMI Project No. 880252
March 10, 1988

Boring No.: CB-12
Sample No.: 83
Depth: 15'-16'

MECHANICAL ANALYSIS CHART



| | | | | | | |
|--------|------|--------|--------|------|--------------|--|
| GRAVEL | | SAND | | | SILT or CLAY | |
| Coarse | Fine | Coarse | Medium | Fine | | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

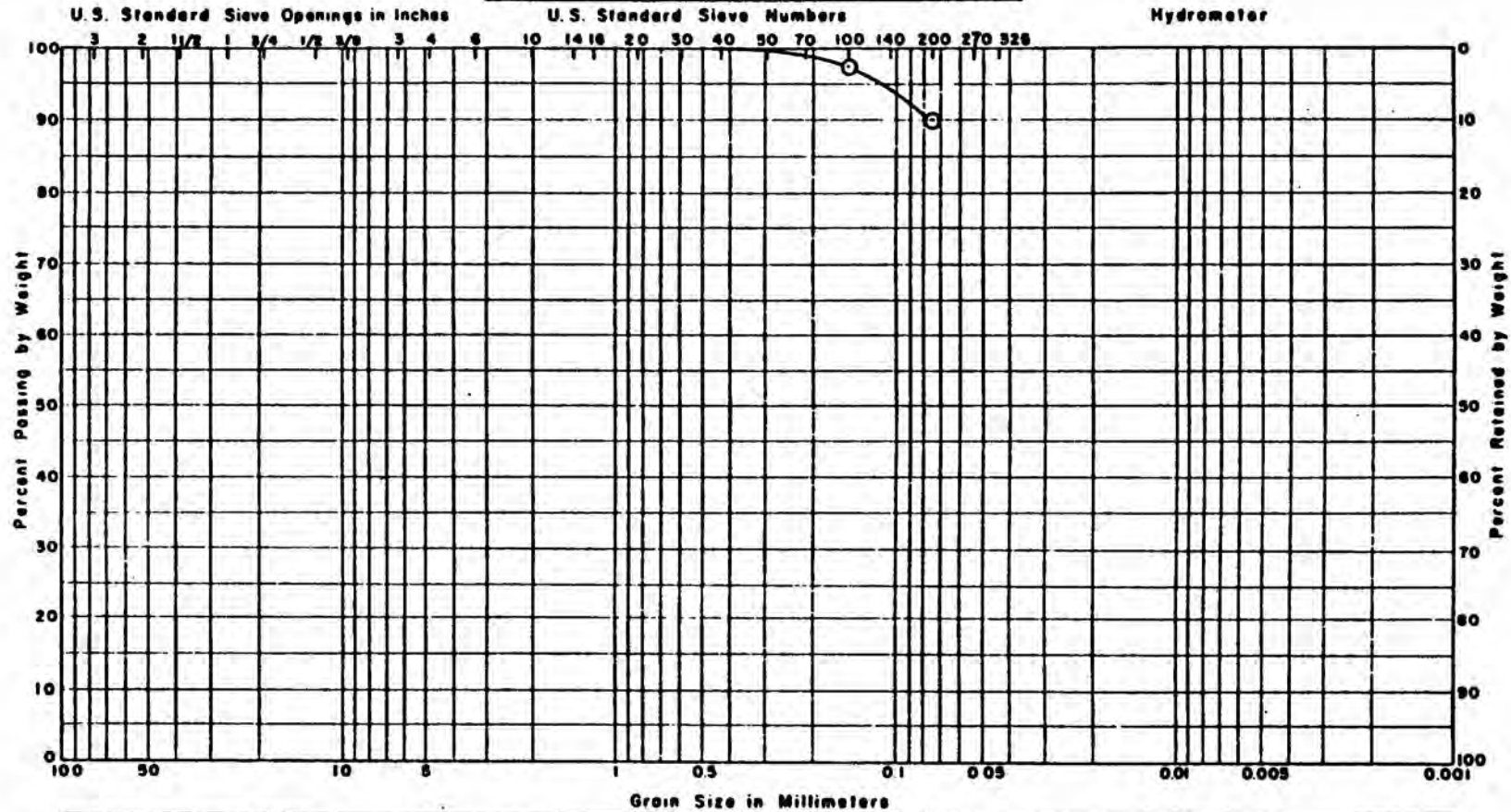
TEXAS MUNICIPAL POWER AGENCY

Boring No.: CB-13
 Sample No.: 72
 Depth: 12'-14'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 21, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

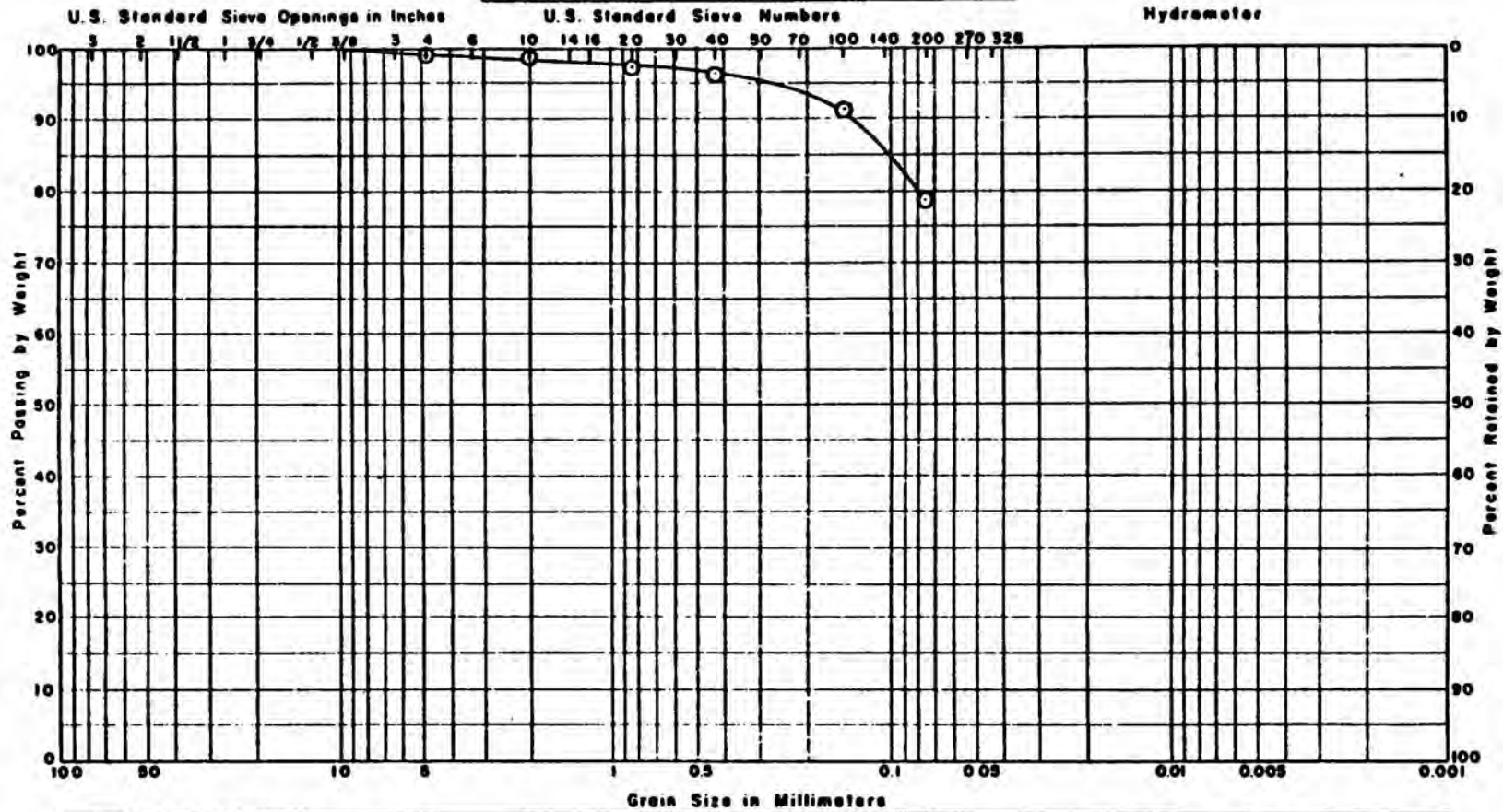
TEXAS MUNICIPAL POWER AGENCY

Site F Landfill
Gibbons Creek S.E.S.

B/SMI Project No. 880252
March 10, 1988

Boring No.: CB-13
Sample No.: 75
Depth: 18'-20'

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

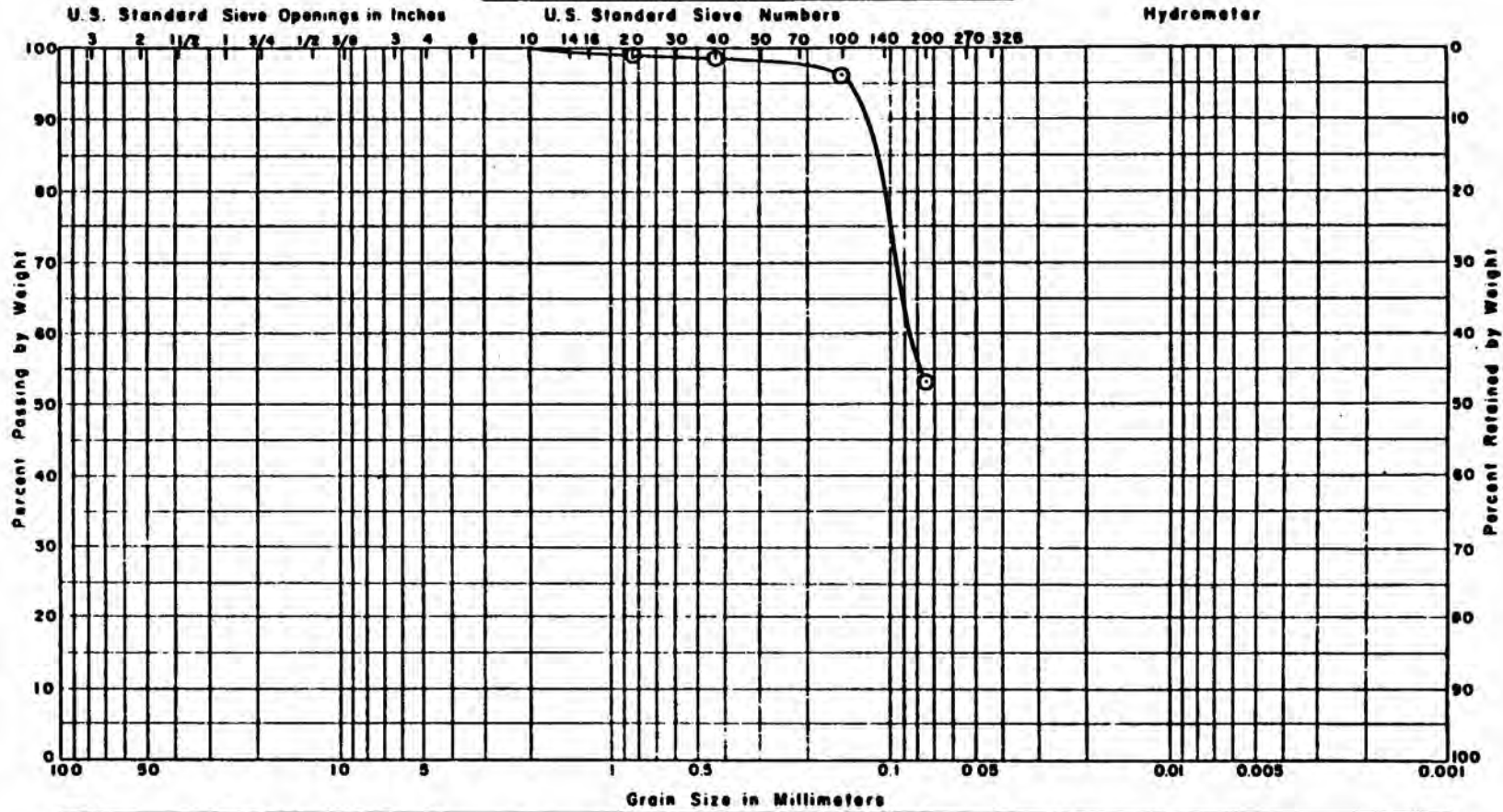
TEXAS MUNICIPAL POWER AGENCY

Boring No.: CB-14
 Sample No.: 57
 Depth: 3'-4'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 11, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

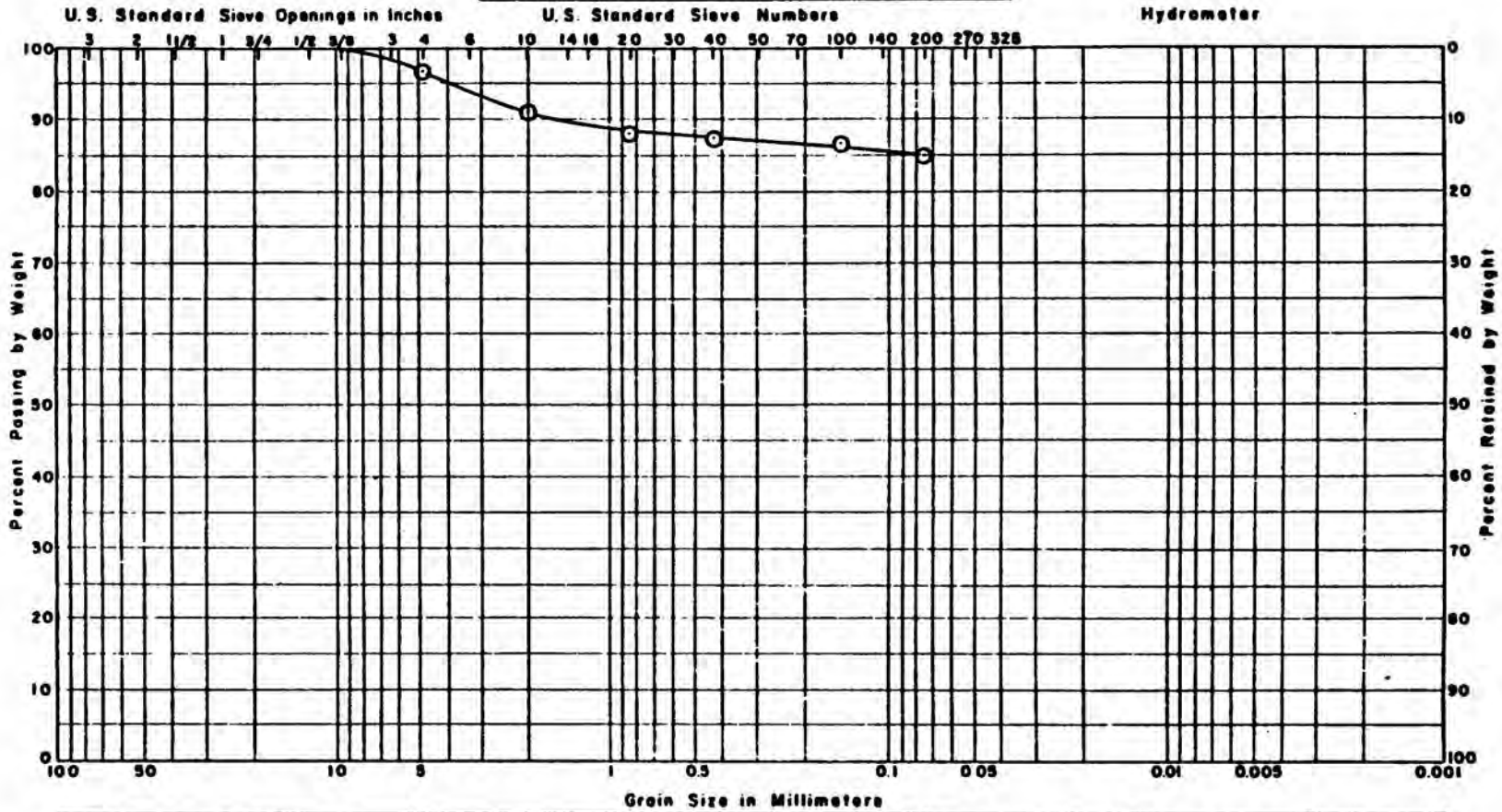
TEXAS MUNICIPAL POWER AGENCY

Boring No.: CB-14
 Sample No.: 61
 Depth: 11'-12'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 11, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

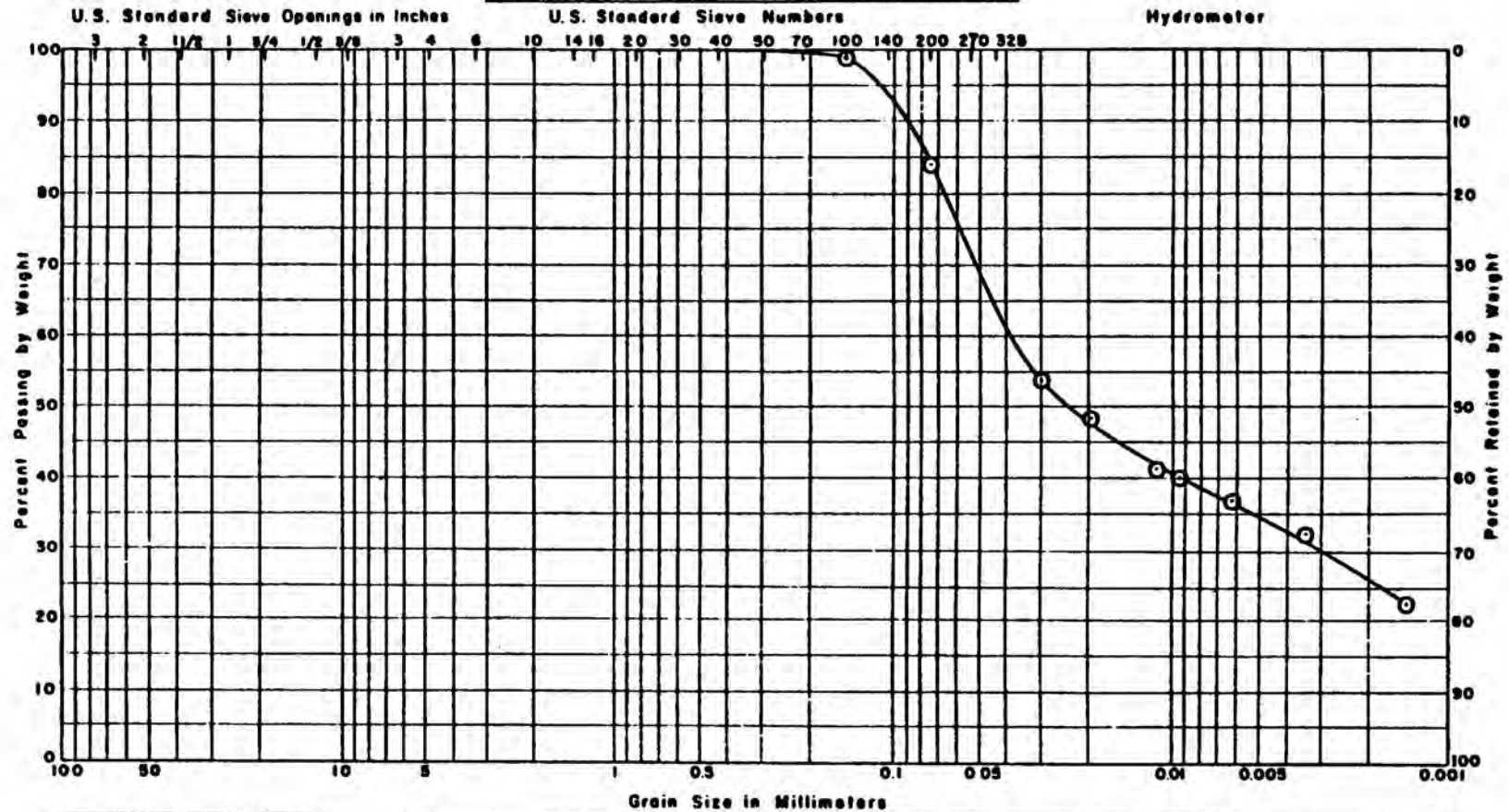
TEXAS MUNICIPAL POWER AGENCY

Boring No.: CB-15
 Sample No.: 51
 Depth: 10'-12'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 11, 1988

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

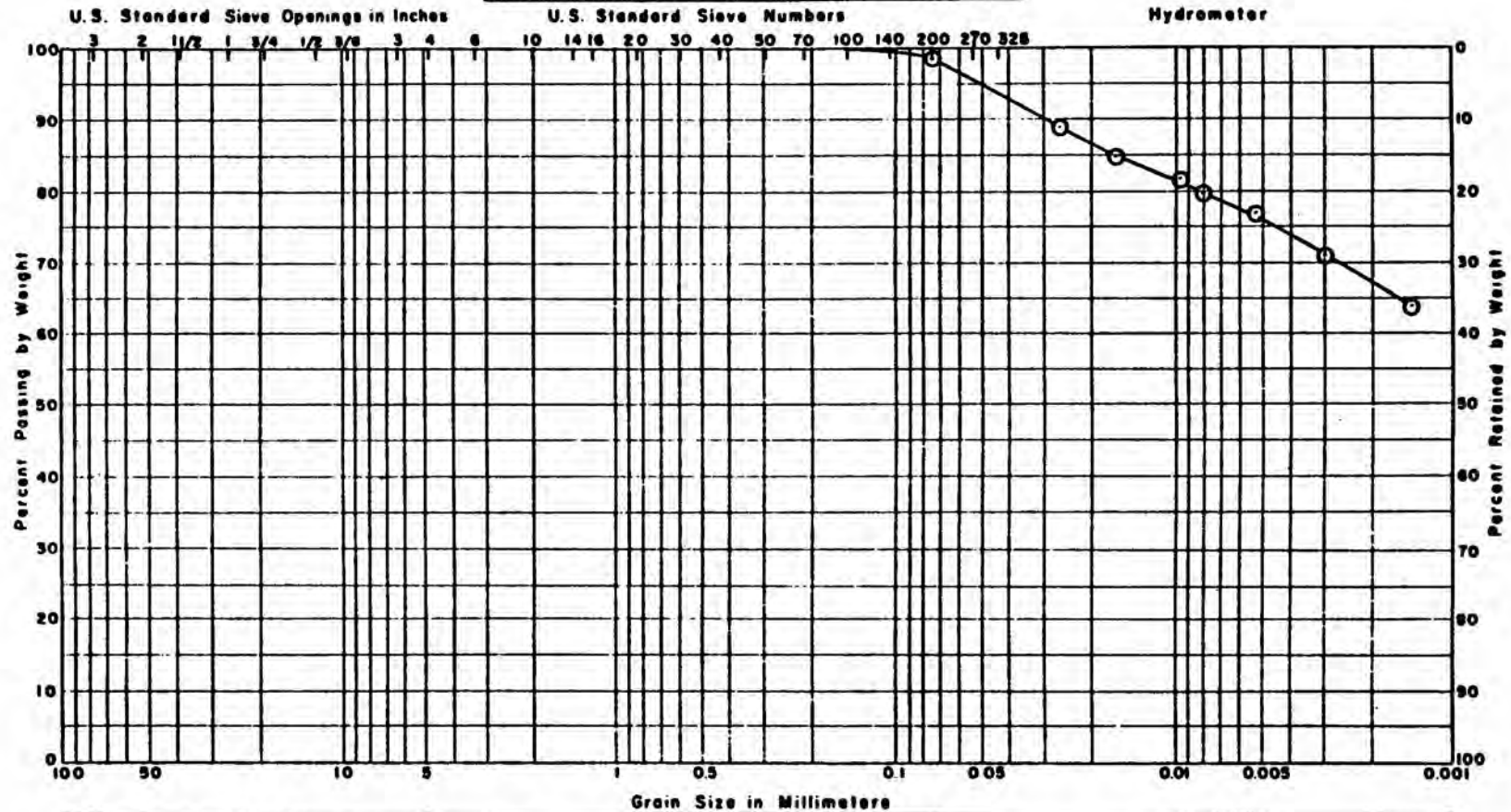
TEXAS MUNICIPAL POWER AGENCY

Boring No.: CB-15
 Sample No.: 53
 Depth: 14'-16'

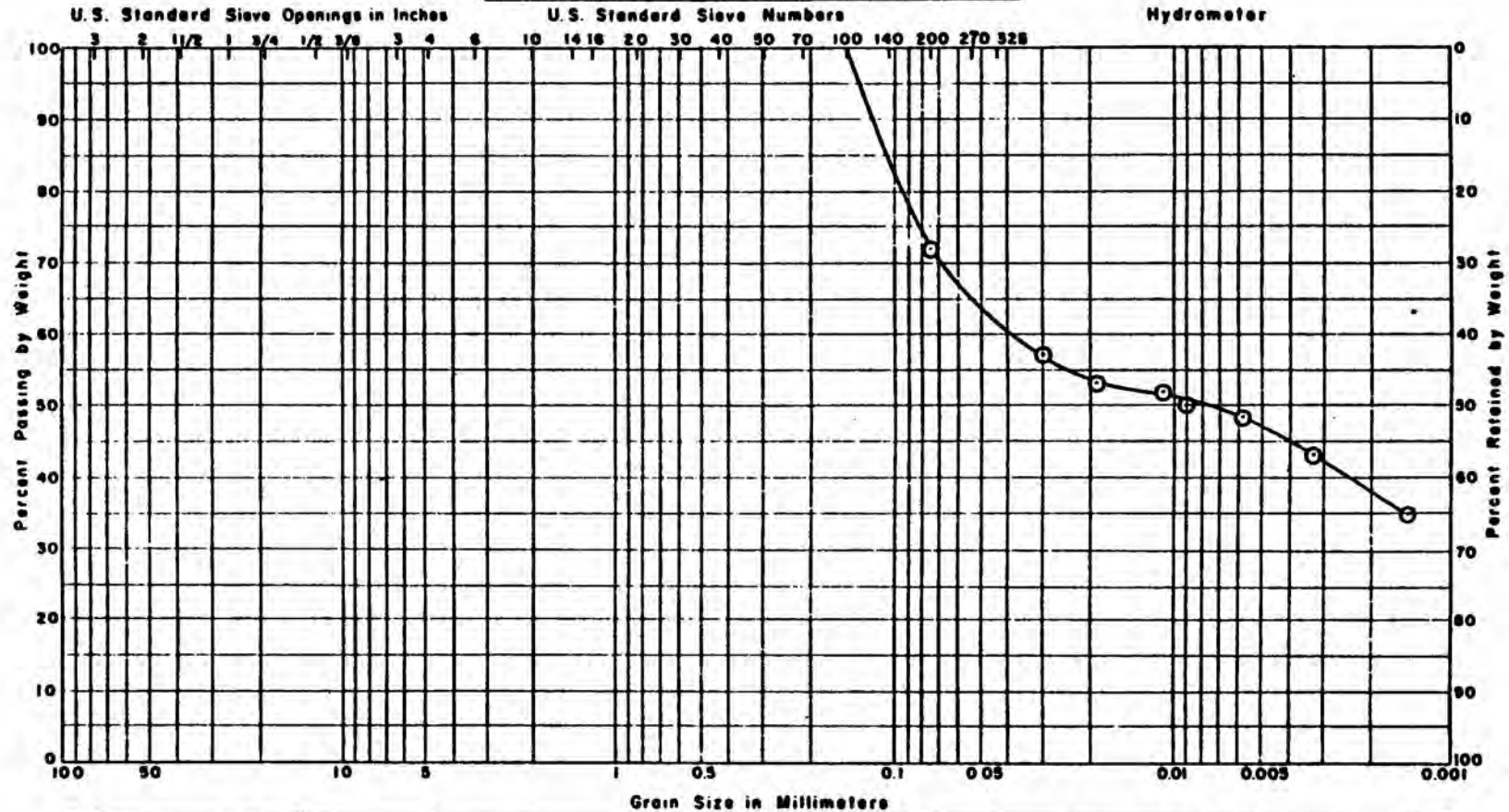
Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 21, 1988

MECHANICAL ANALYSIS CHART



MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

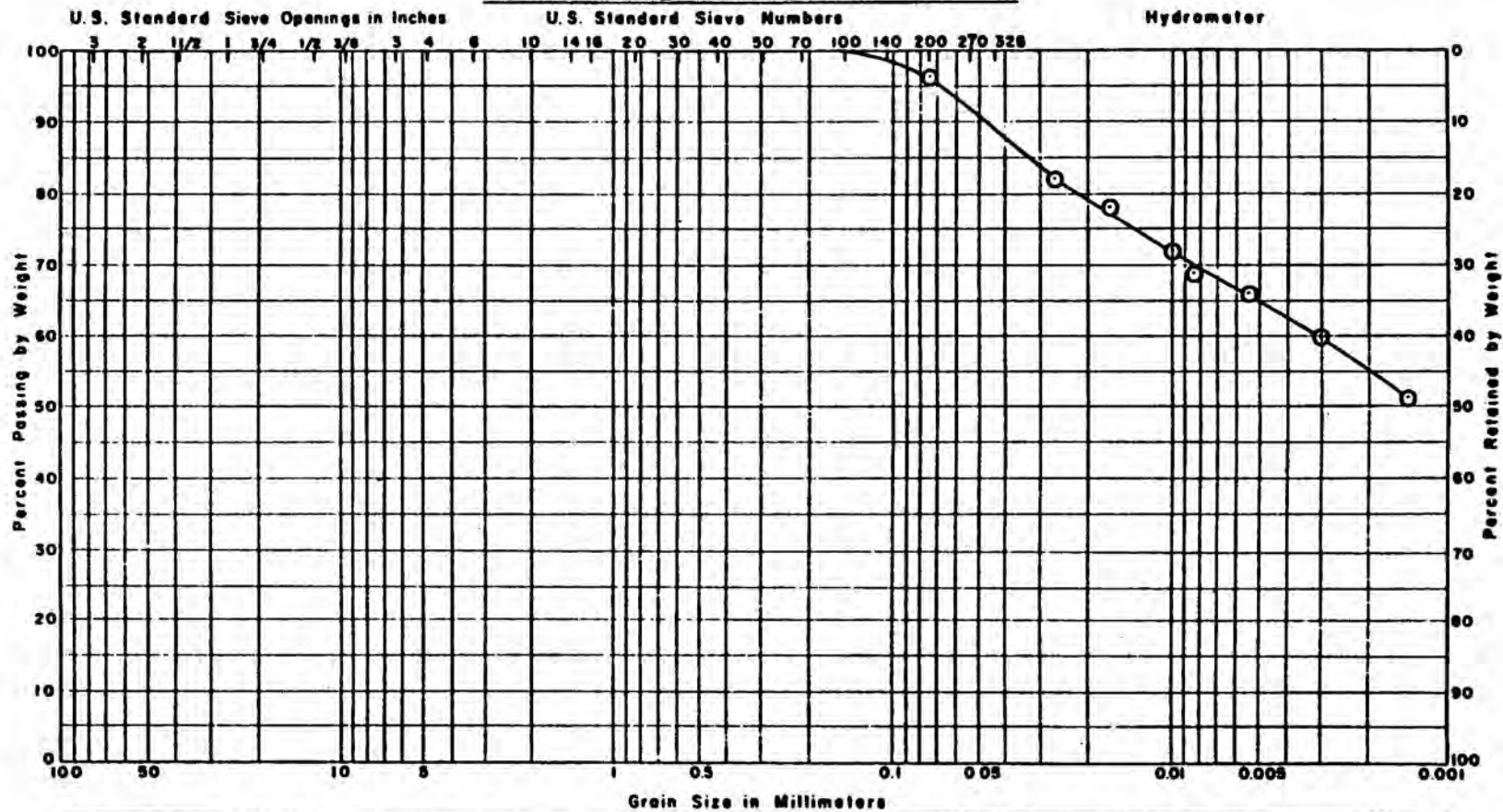
TEXAS MUNICIPAL POWER AGENCY

Test Pit No.: TP-10
 Sample No.: Jar 2
 Depth: 4.0'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 17, 1988

MECHANICAL ANALYSIS CHART



| | | | | | | |
|--------|------|--------|--------|------|--------------|--|
| GRAVEL | | SAND | | | SILT or CLAY | |
| Coarse | Fine | Coarse | Medium | Fine | | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

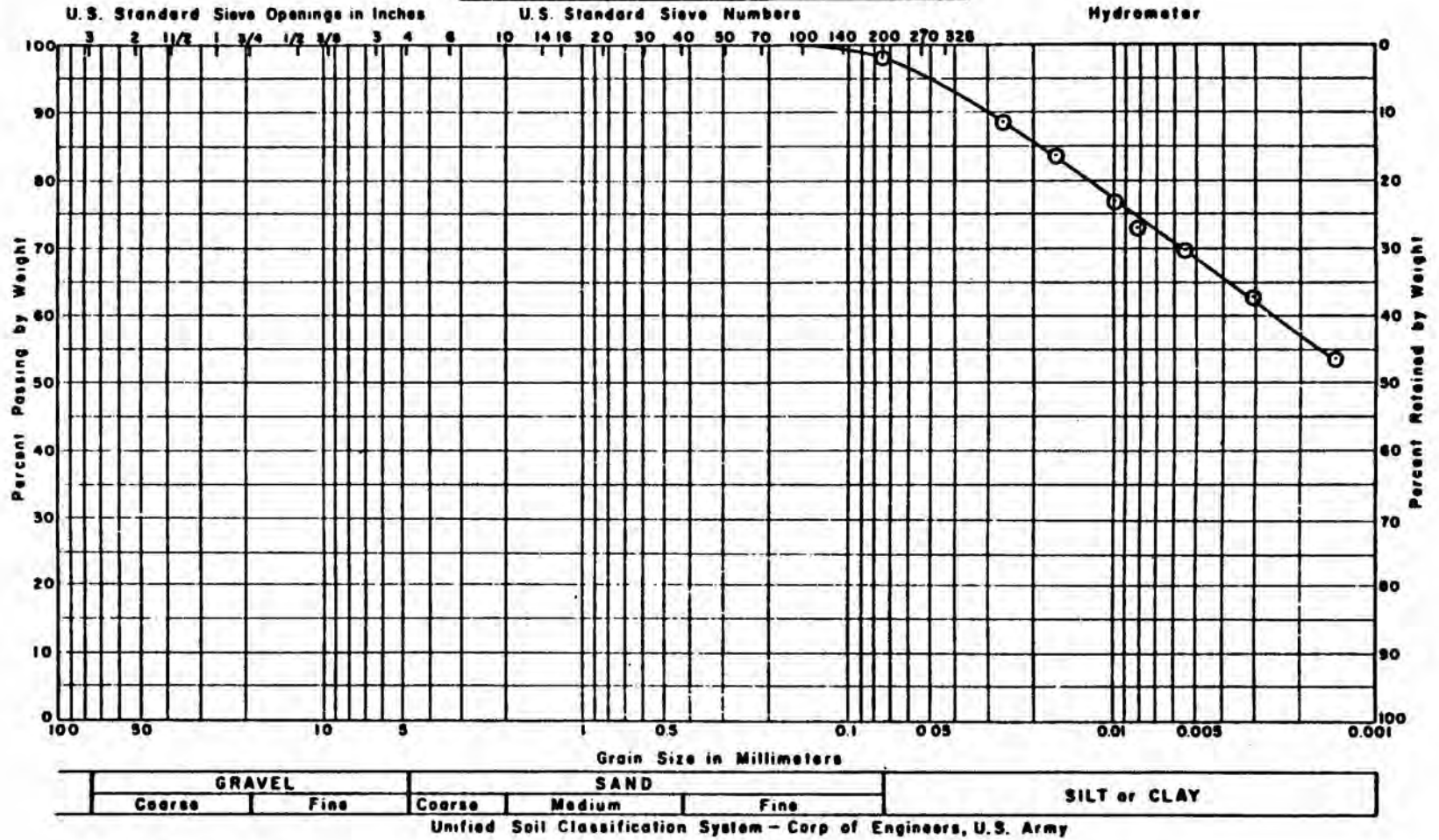
TEXAS MUNICIPAL POWER AGENCY

Test Pit No.: TP-21
 Sample No.: Jar 2
 Depth: 6.0'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 17, 1988

MECHANICAL ANALYSIS CHART



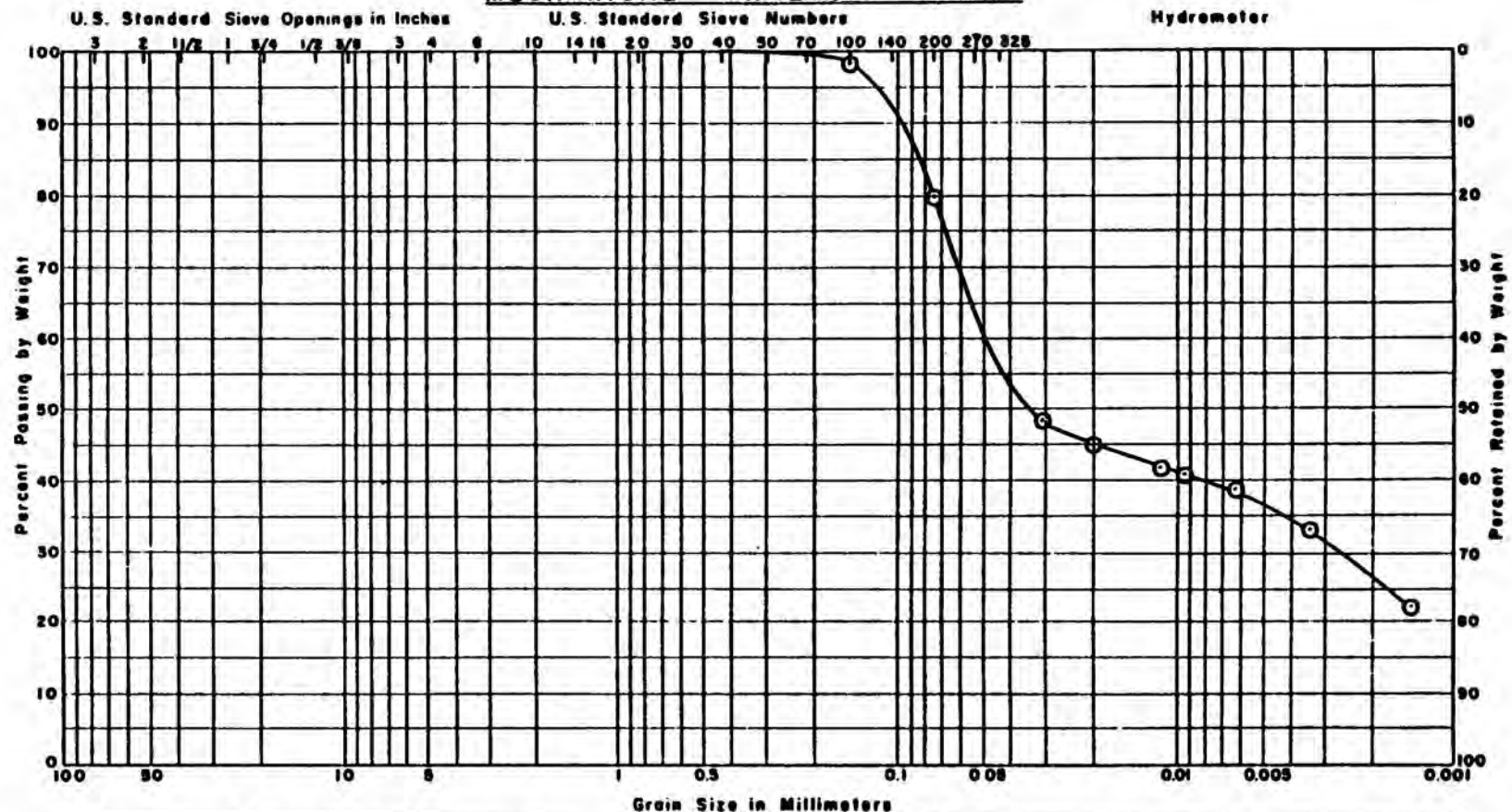
TEXAS MUNICIPAL POWER AGENCY

Test Pit No.: TP-23
 Sample No.: Jar 2
 Depth: 5.0'

Site F Landfill
 Gibbons Creek S.E.S.

B/SMI Project No. 880252
 March 17, 1988

MECHANICAL ANALYSIS CHART



| | | | | | | |
|--------|------|--------|--------|------|--------------|--|
| GRAVEL | | SAND | | | SILT or CLAY | |
| Coarse | Fine | Coarse | Medium | Fine | | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

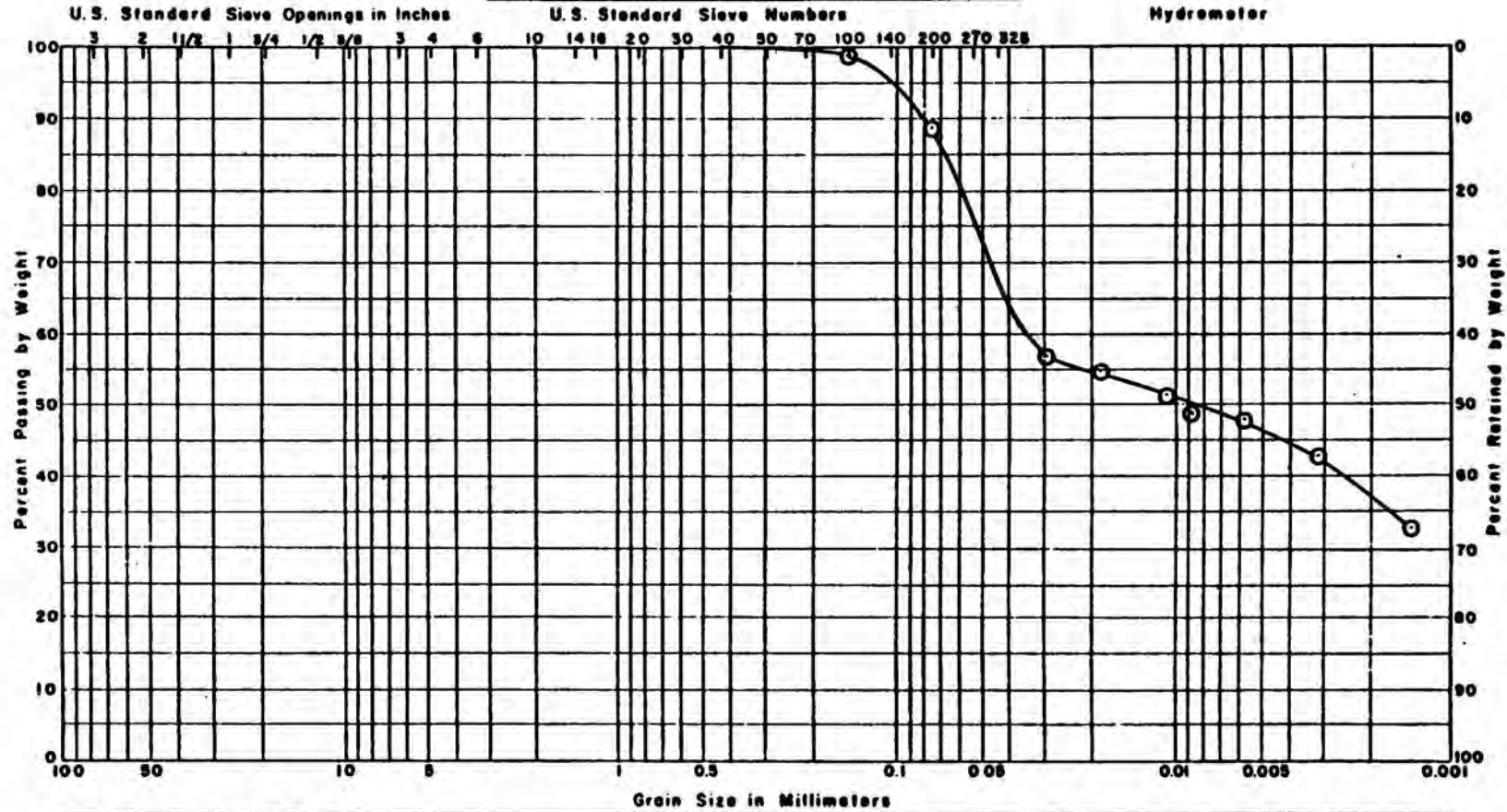
TEXAS MUNICIPAL POWER AGENCY

Site F Landfill
Gibbons Creek S.E.S.

B/SMI Project No. 880252
March 19, 1988

Test Pit No.: TP-43
Sample No.: Jar 1
Depth: 4.75'

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

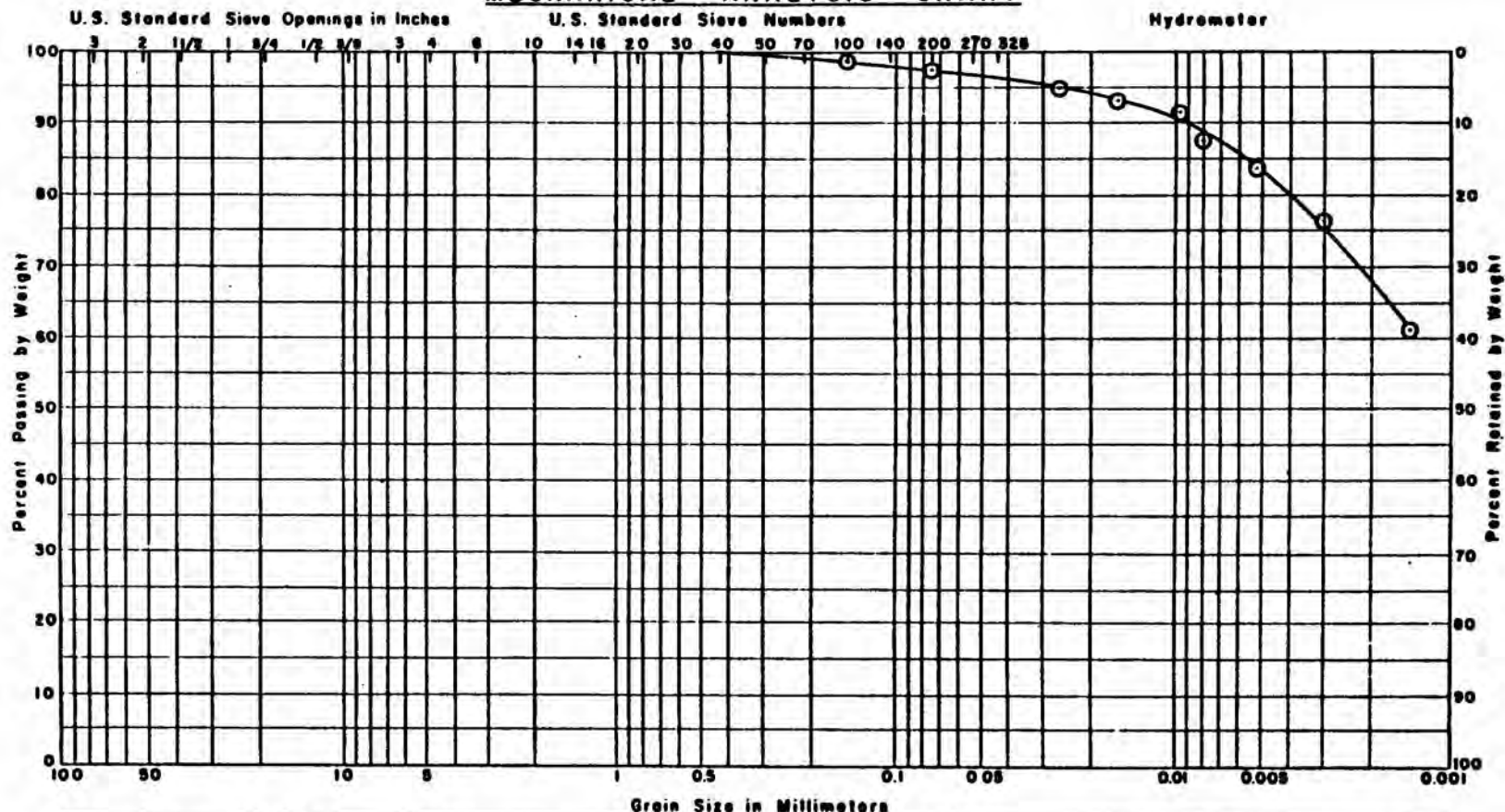
TEXAS MUNICIPAL POWER AGENCY

Site F Landfill
Gibbons Creek S.E.S.

B/SMI Project No. 880252
March 17, 1988

Test Pit No.: TP-51
Sample No.: Jar 1
Depth: 4.0'

MECHANICAL ANALYSIS CHART



| | | | | | |
|--------|------|--------|--------|------|--------------|
| GRAVEL | | SAND | | | SILT or CLAY |
| Coarse | Fine | Coarse | Medium | Fine | |

Unified Soil Classification System - Corp of Engineers, U.S. Army

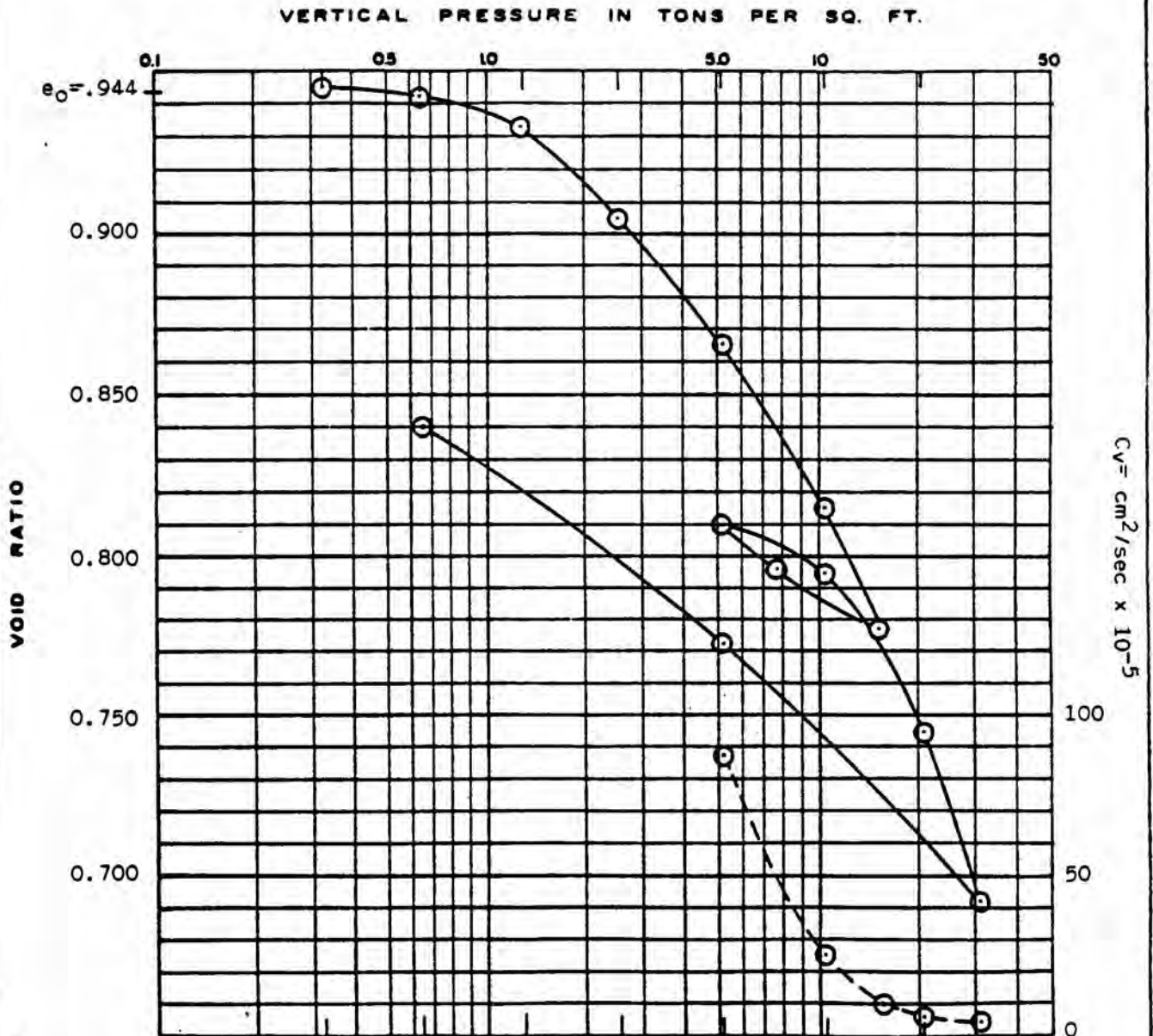
TEXAS MUNICIPAL POWER AGENCY

Test Pit No.: TP-71
 Sample No.: Jar 3
 Depth: 9.5'

Site F Landfill
 Gibbons Creek S.E.S.

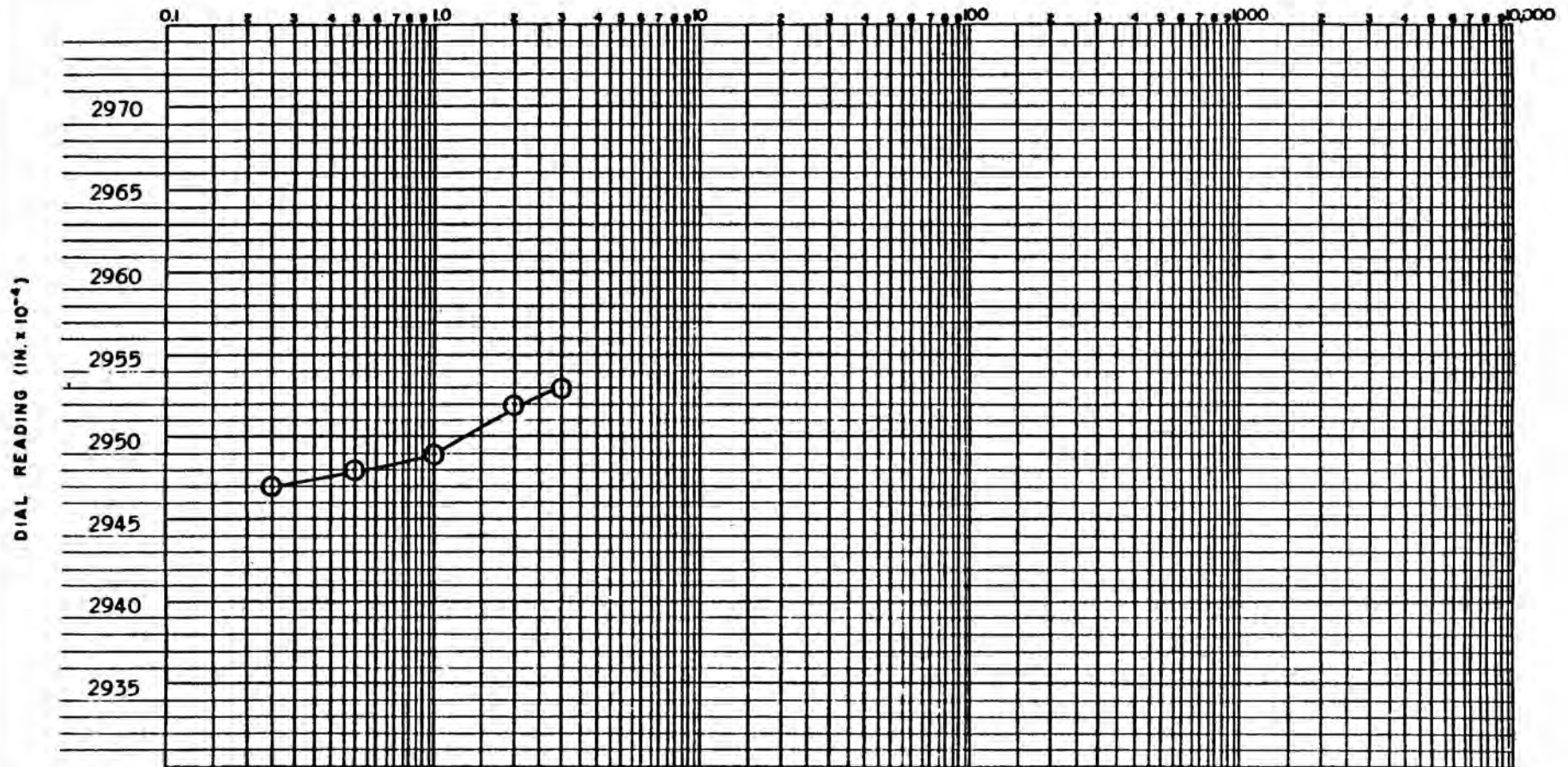
B/SMI Project No. 880252
 March 19, 1988

PROJECT: TEXAS MUNICIPAL POWER AGENCY
 Site F Landfill, Gibbons Creek S.E.S.
 JOB NO.: 880252 DATE: March 21, 1988
 BORING NO.: B-11 SAMPLE NO.: 212 DEPTH: 14'-16'
 MATERIAL: Tan clay with sand and iron stain seams
 MOISTURE CONTENT: 35 DRY UNIT WEIGHT: 85
 LL: _____ PL: _____ PI: _____ SPECIFIC GRAVITY: 2.645



VOID RATIO VS LOG PRESSURE CURVE

TIME IN MINUTES



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/7/88

BORING NO.: B-11

SAMPLE NO.: 212 DEPTH: 14'-16'

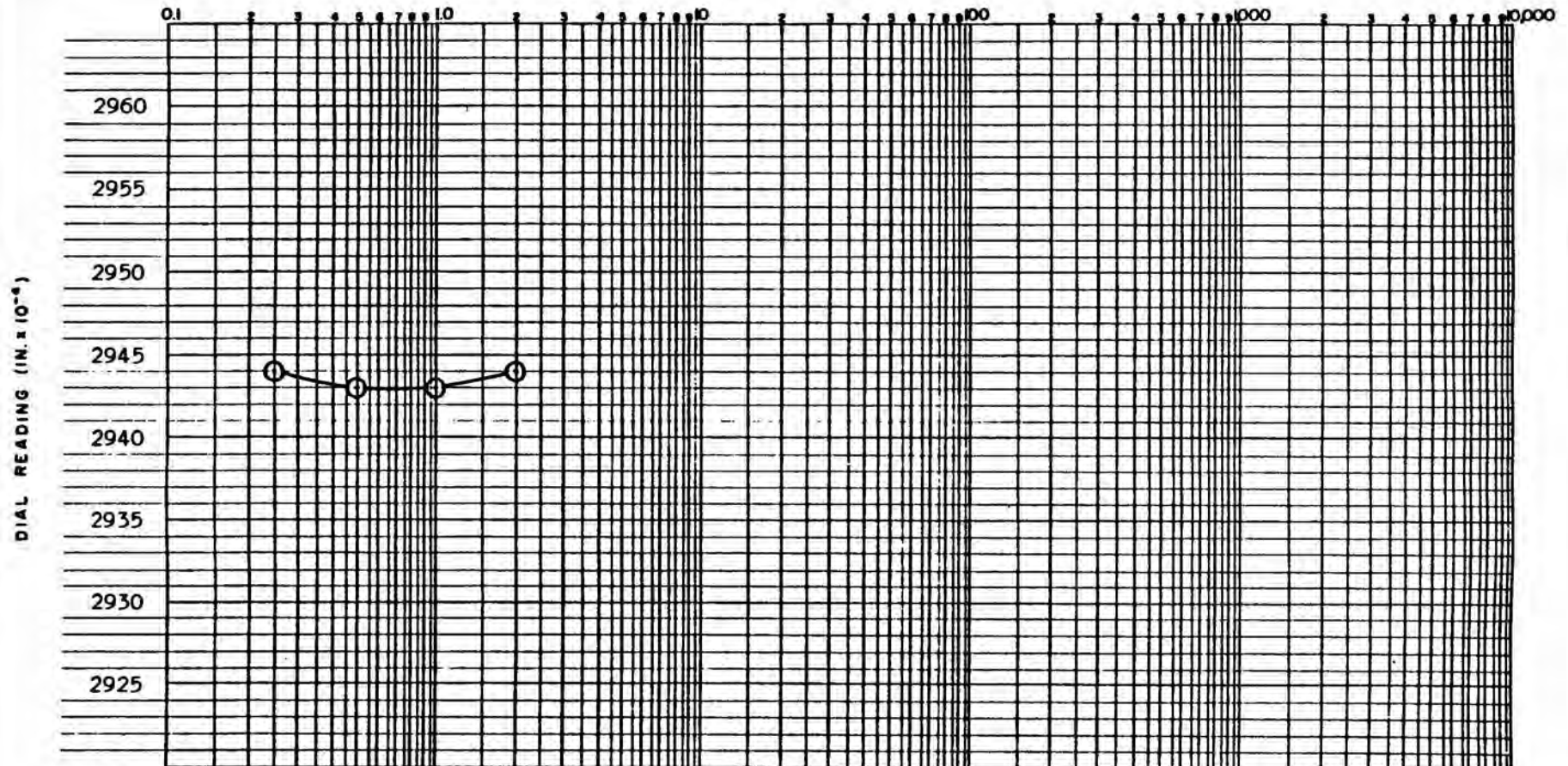
LOAD: 0.32 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double 1/50" MIN

SOIL MECHANICS INCORPORATED

TIME IN MINUTES



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/7/88

BORING NO.: B-11

SAMPLE NO.: 212 DEPTH: 14'-16'

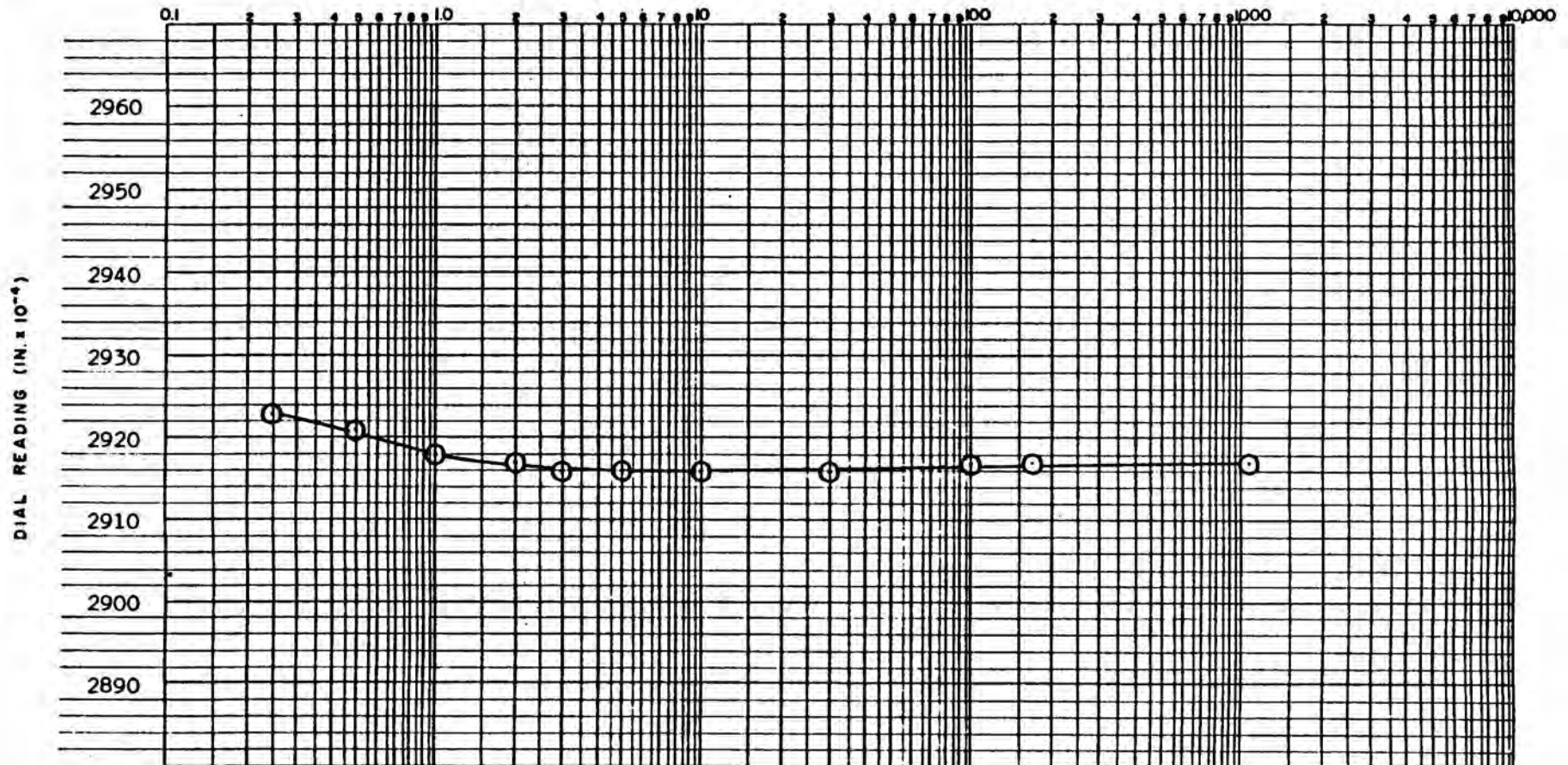
LOAD: 0.64 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double '50' MIN

SOIL MECHANICS INCORPORATED

TIME IN MINUTES



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/7/88

BORING NO.: B-11

SAMPLE NO.: 212 DEPTH: 14'-16'

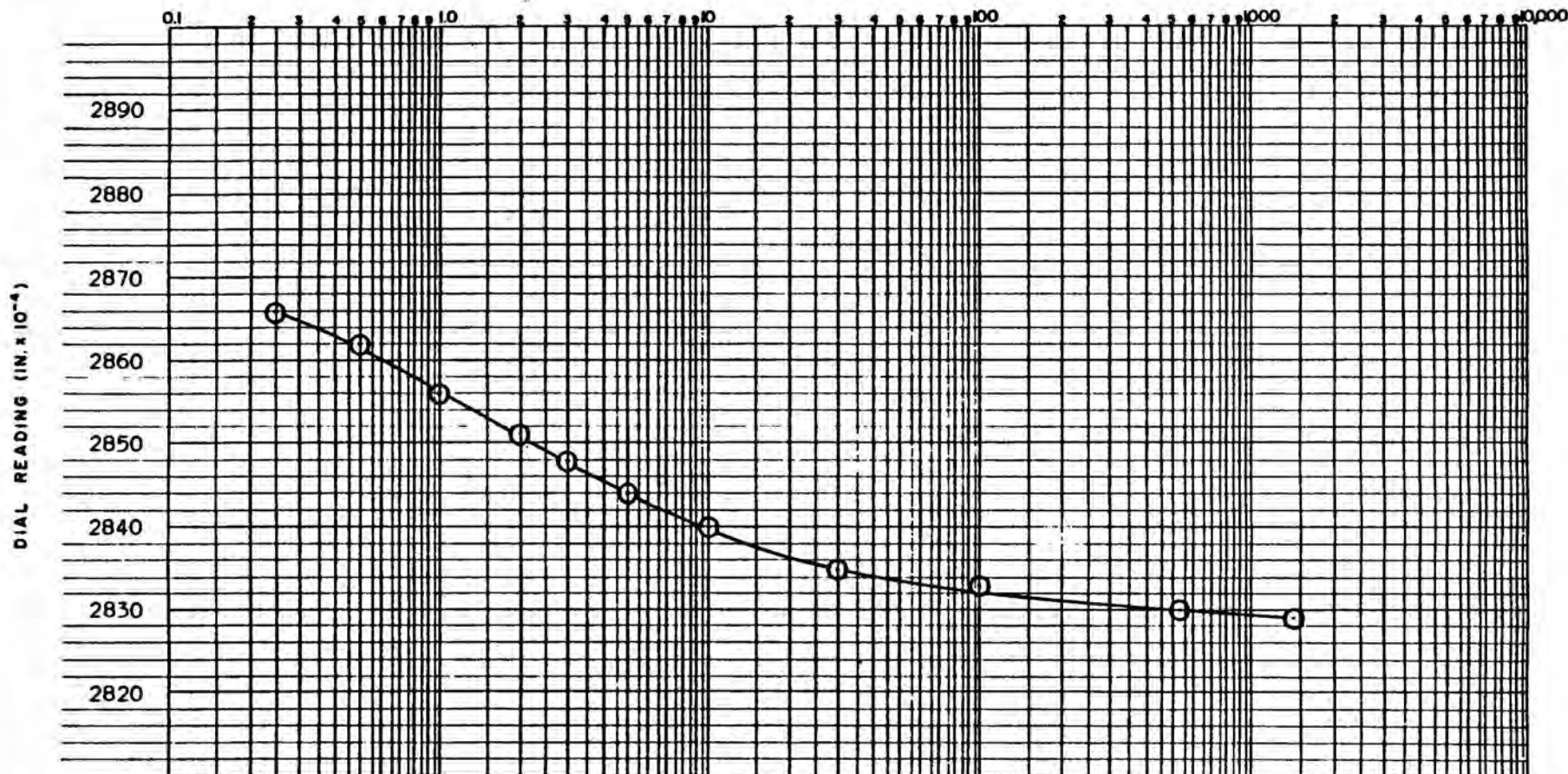
LOAD: 1.29 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 0.33 MIN

SOIL MECHANICS INCORPORATED

TIME IN MINUTES



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/8/88

BORING NO.: B-11

SAMPLE NO.: 212 DEPTH: 14'-16'

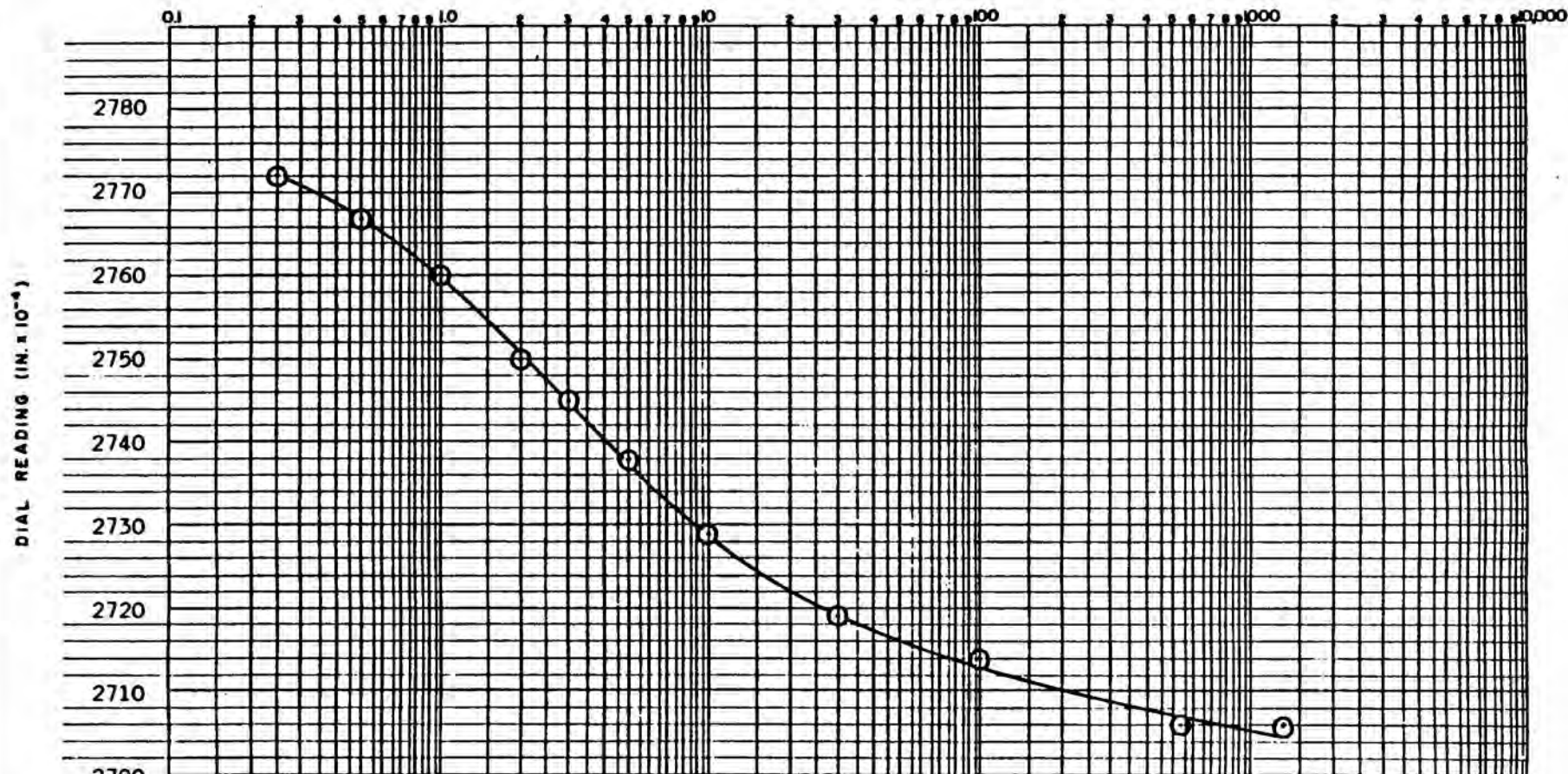
LOAD: 2.57 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 1.2 MIN

SOIL MECHANICS INCORPORATED

TIME IN MINUTES



2700
PROJECT: TMPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/9/88

BORING NO.: B-11

SAMPLE NO.: 212 DEPTH: 14'-16'

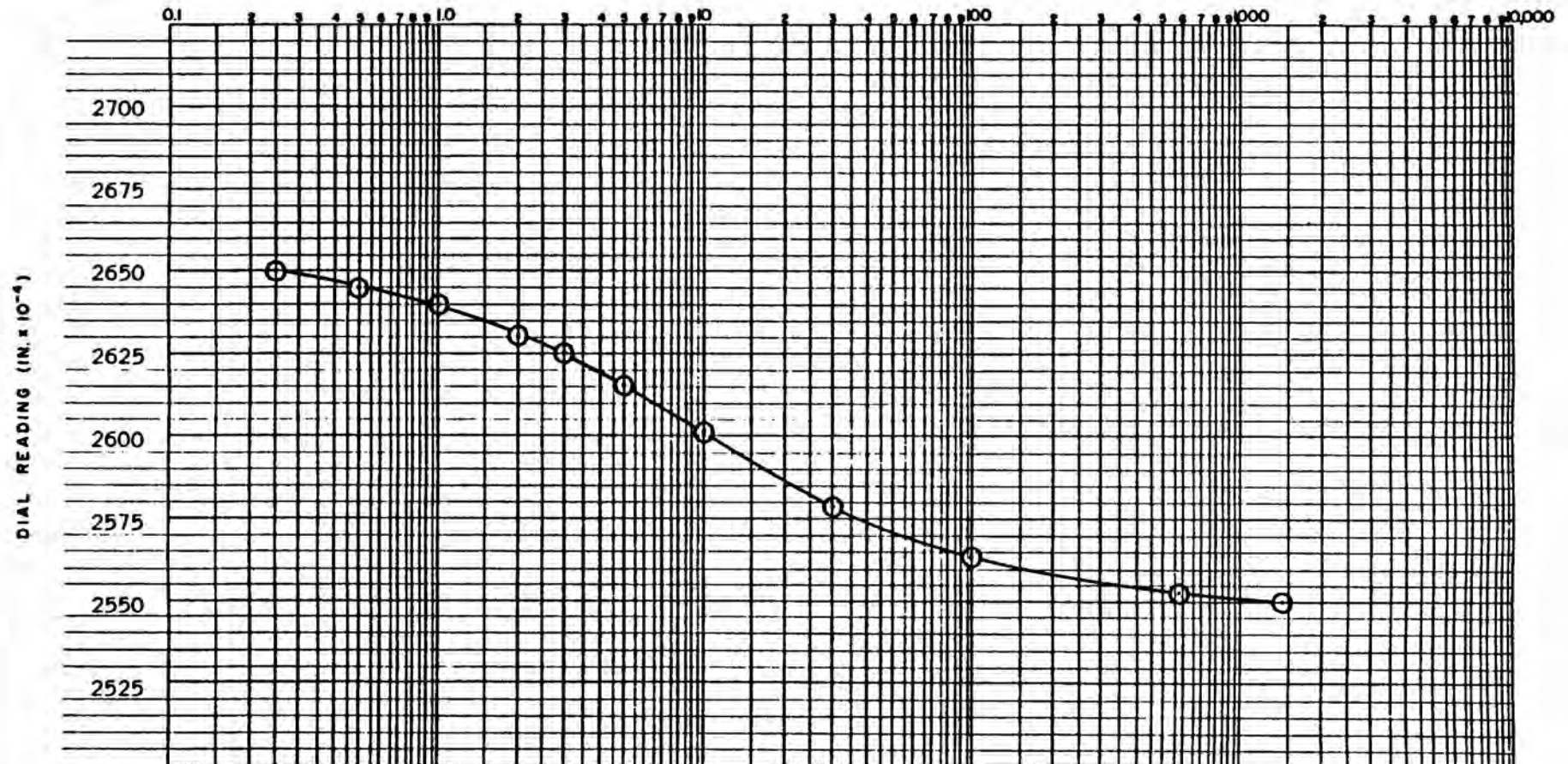
LOAD: 5.17 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 2.0 MIN

SOIL MECHANICS INCORPORATED

TIME IN MINUTES



PROJECT: TMPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/10/88

BORING NO.: B-11

SAMPLE NO.: 212 DEPTH: 14'-16'

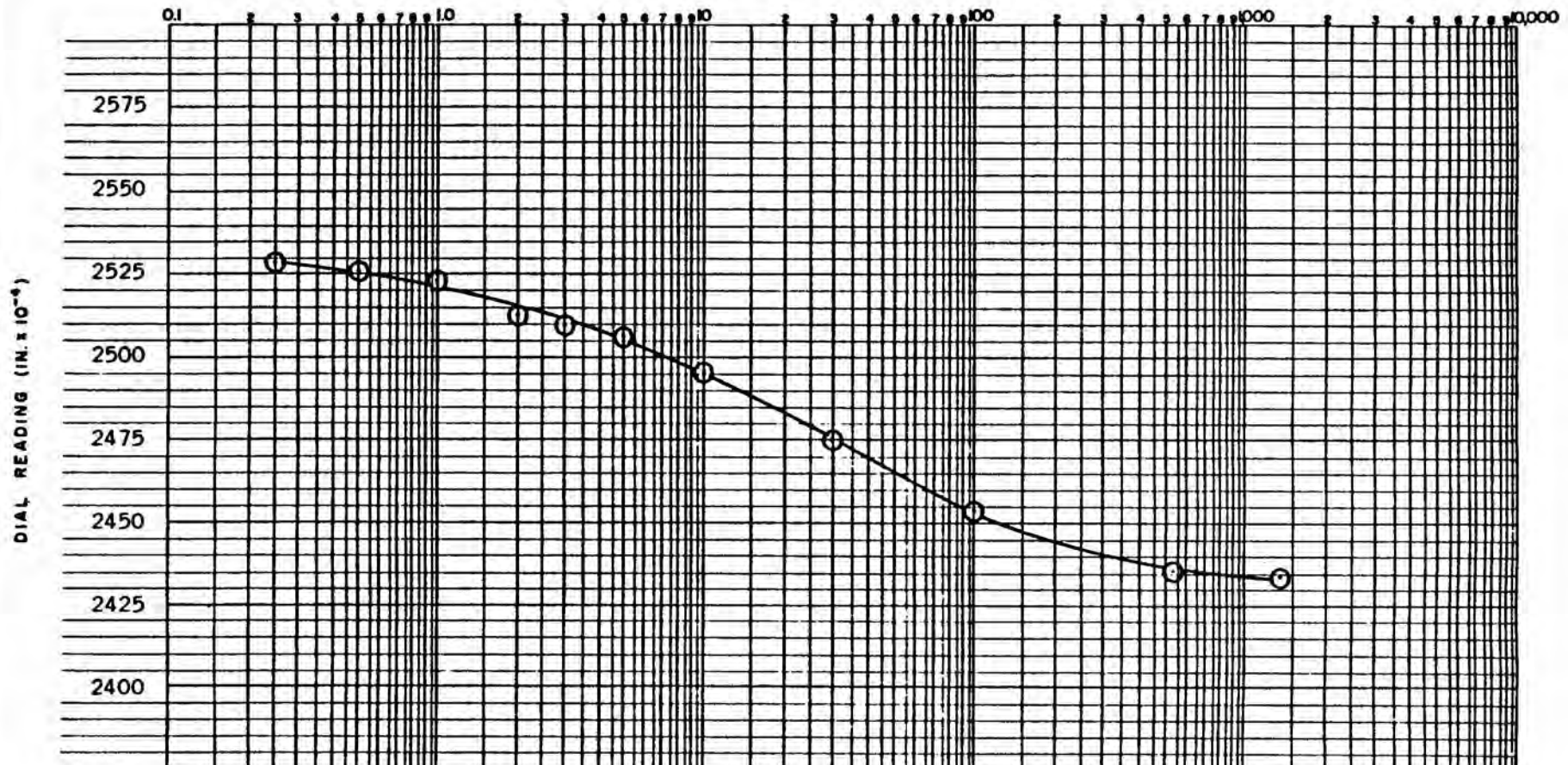
LOAD: 10.33 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 6.5 MIN

SOIL MECHANICS INCORPORATED

TIME IN MINUTES



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/11/88

BORING NO.: B-11

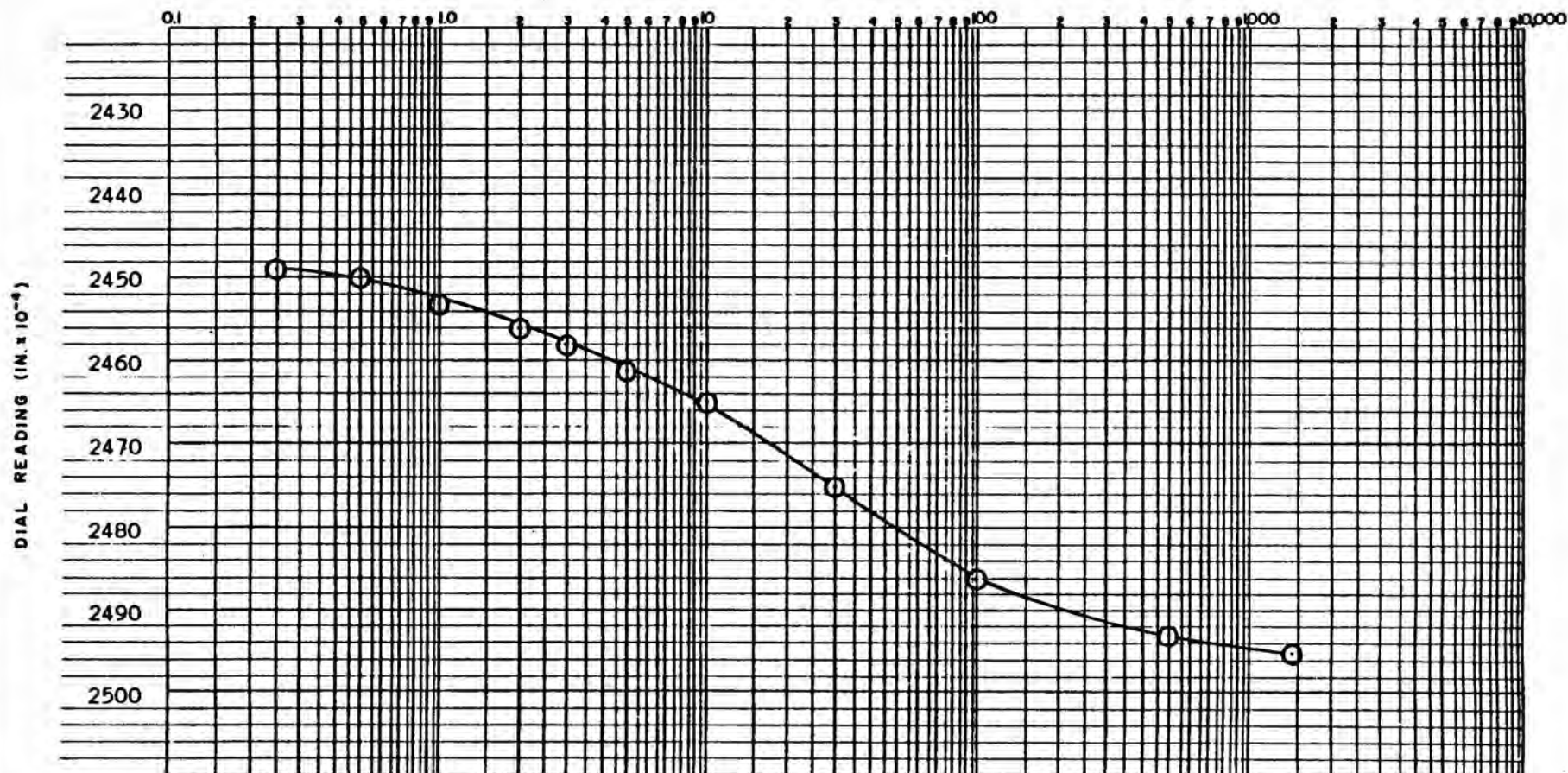
SAMPLE NO.: 212 DEPTH: 14'-16'

LOAD: 15.5 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 16.5 MIN

TIME IN MINUTES



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/12/88

BORING NO.: B-11

SAMPLE NO.: 212 DEPTH: 14'-16'

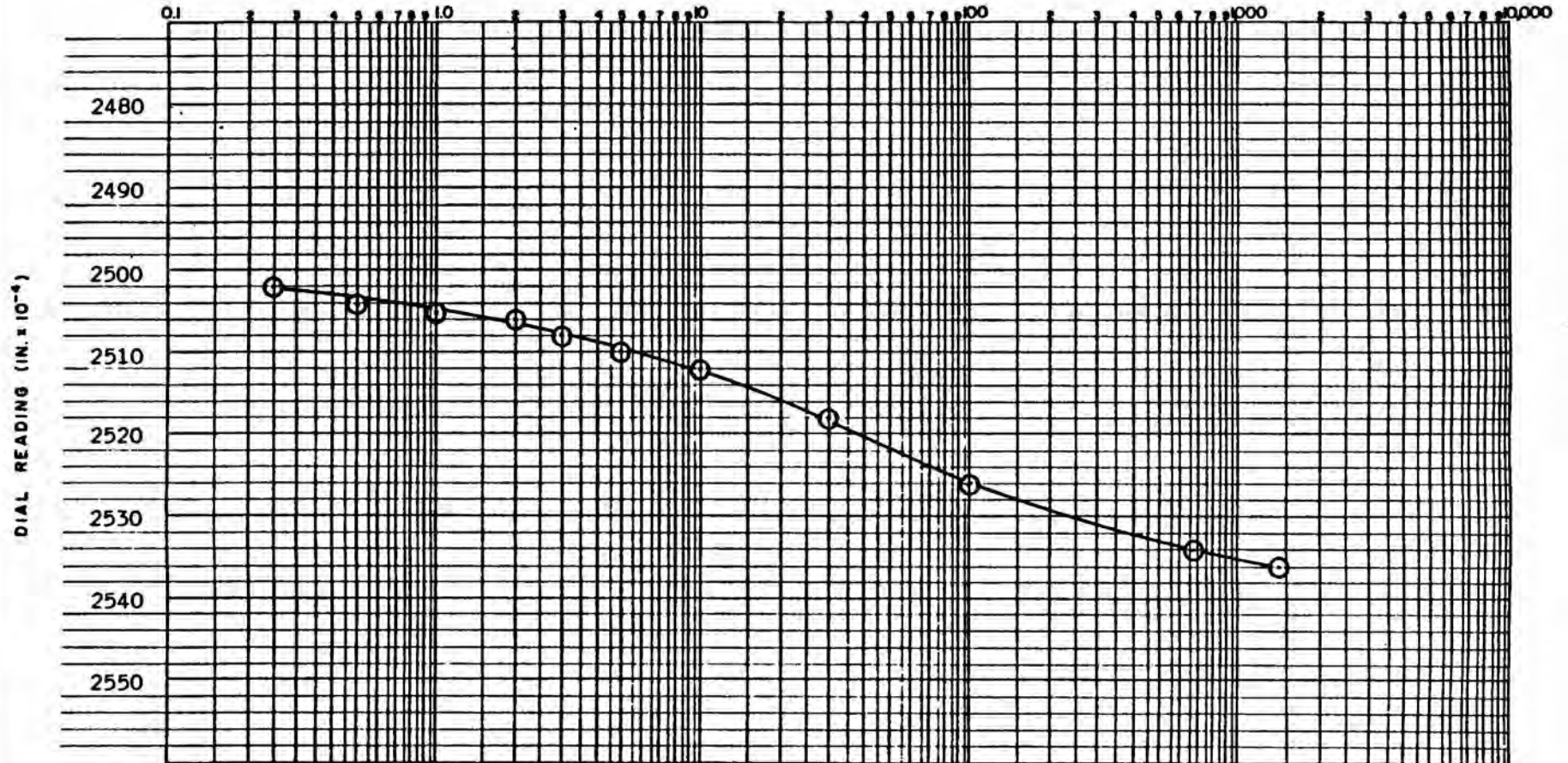
LOAD: 7.75 tsf (Rebound)

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} MIN

SOIL MECHANICS INCORPORATED

TIME IN MINUTES



PROJECT: TMPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO: 880252 DATE: 3/13/88

BORING NO: B-11

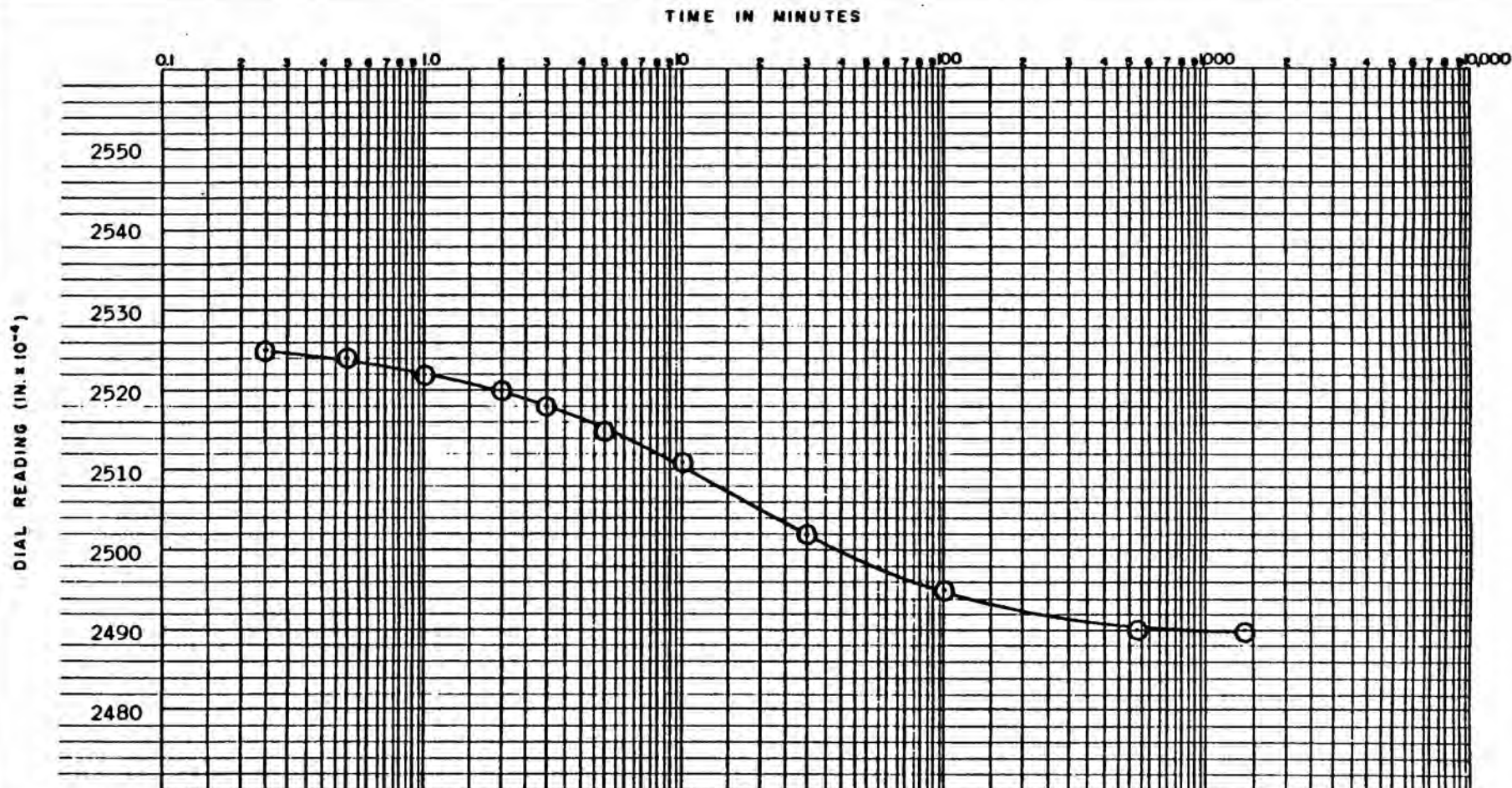
SAMPLE NO: 212 DEPTH: 14'-16'

LOAD: 5.17 tsf (Rebound)

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t₅₀ MIN

SOIL MECHANICS INCORPORATED



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/14/88

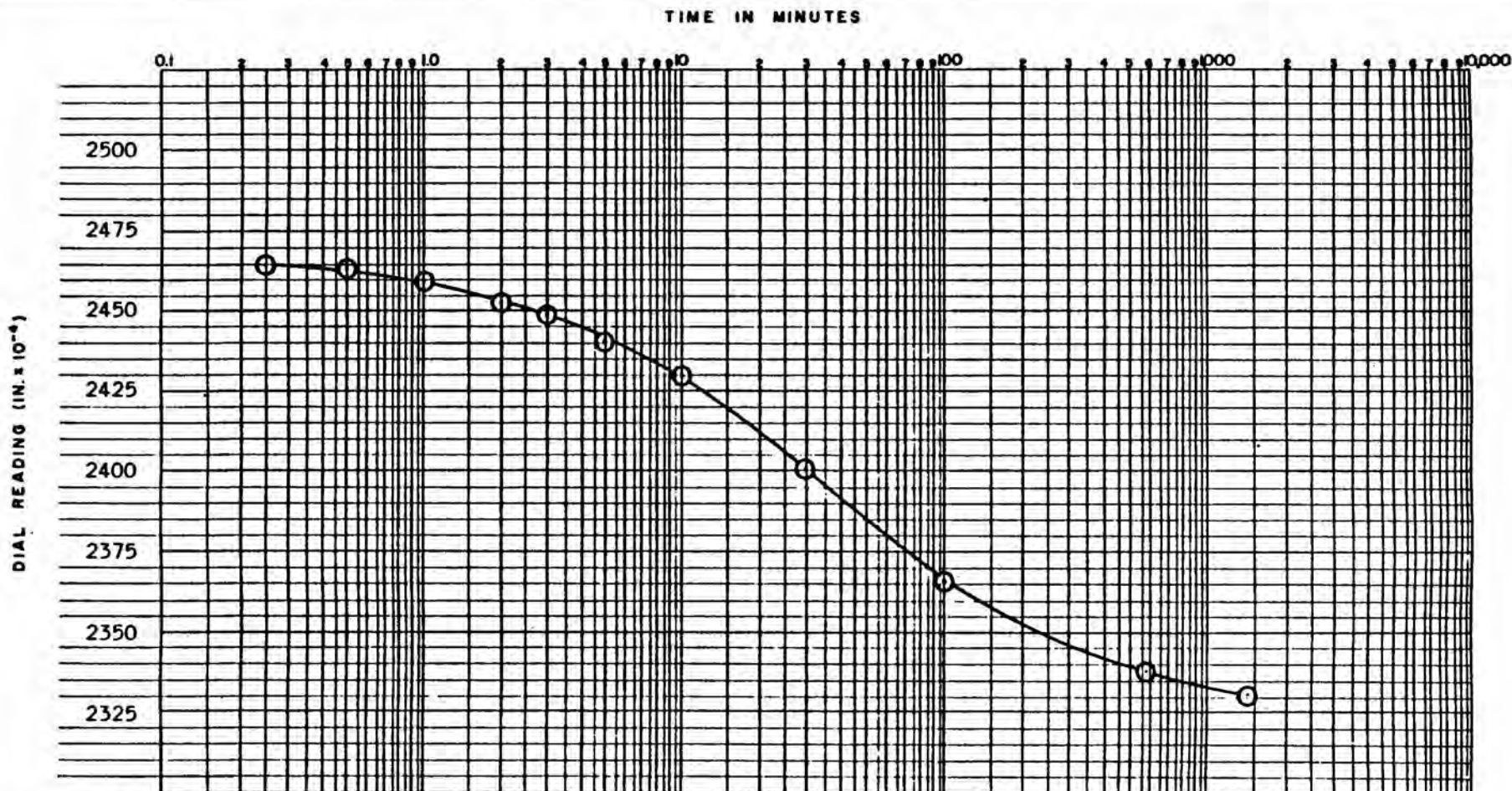
BORING NO.: B-11

SAMPLE NO.: 212 DEPTH: 14'-16'

LOAD: 10.33 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 11.0 MIN



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/15/88

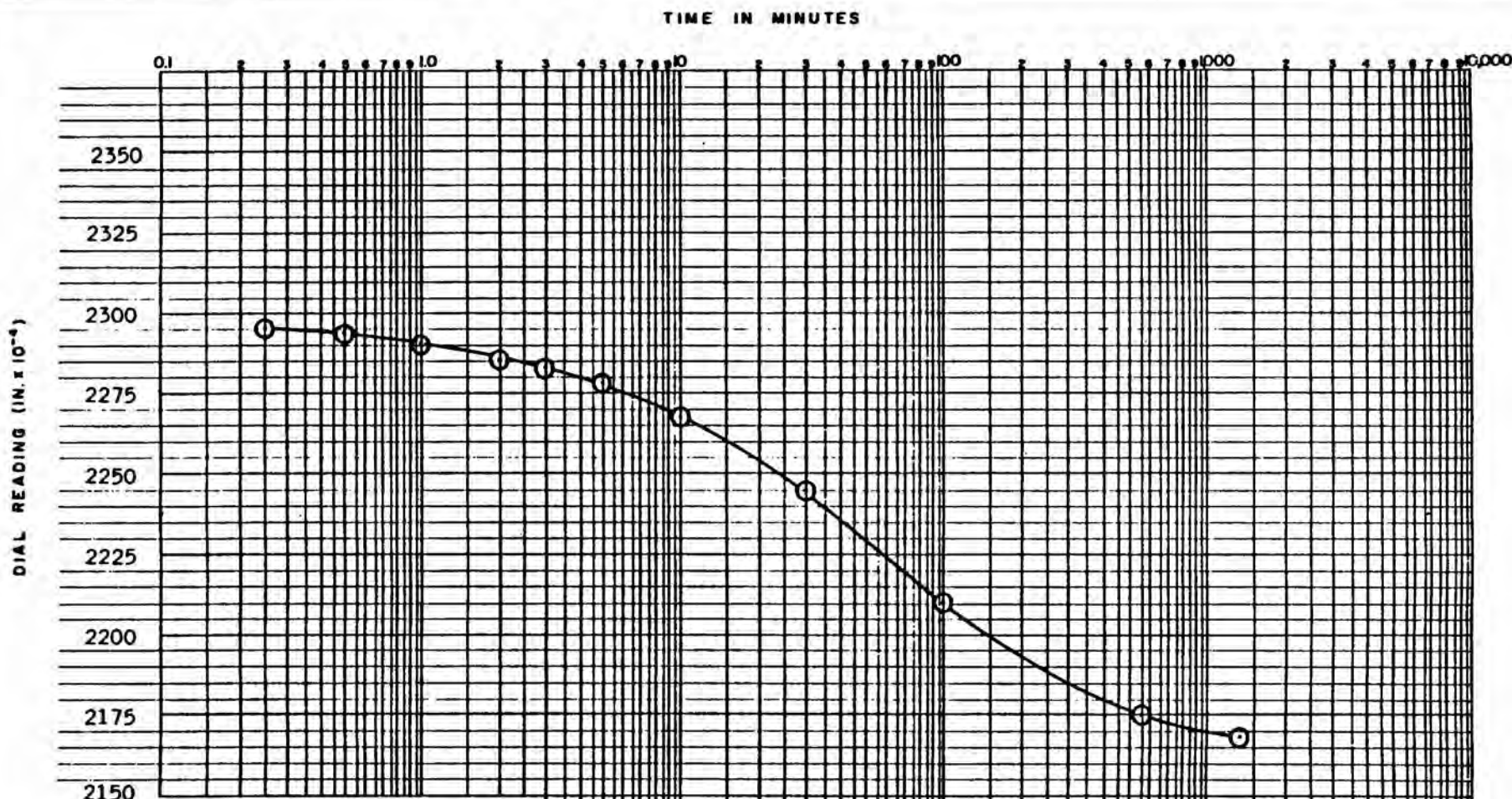
BORING NO.: B-11

SAMPLE NO.: 212 DEPTH: 14'-16'

LOAD: 20.63 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 23.5 MIN.



PROJECT: Tmpa, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/16/88

BORING NO.: B-11

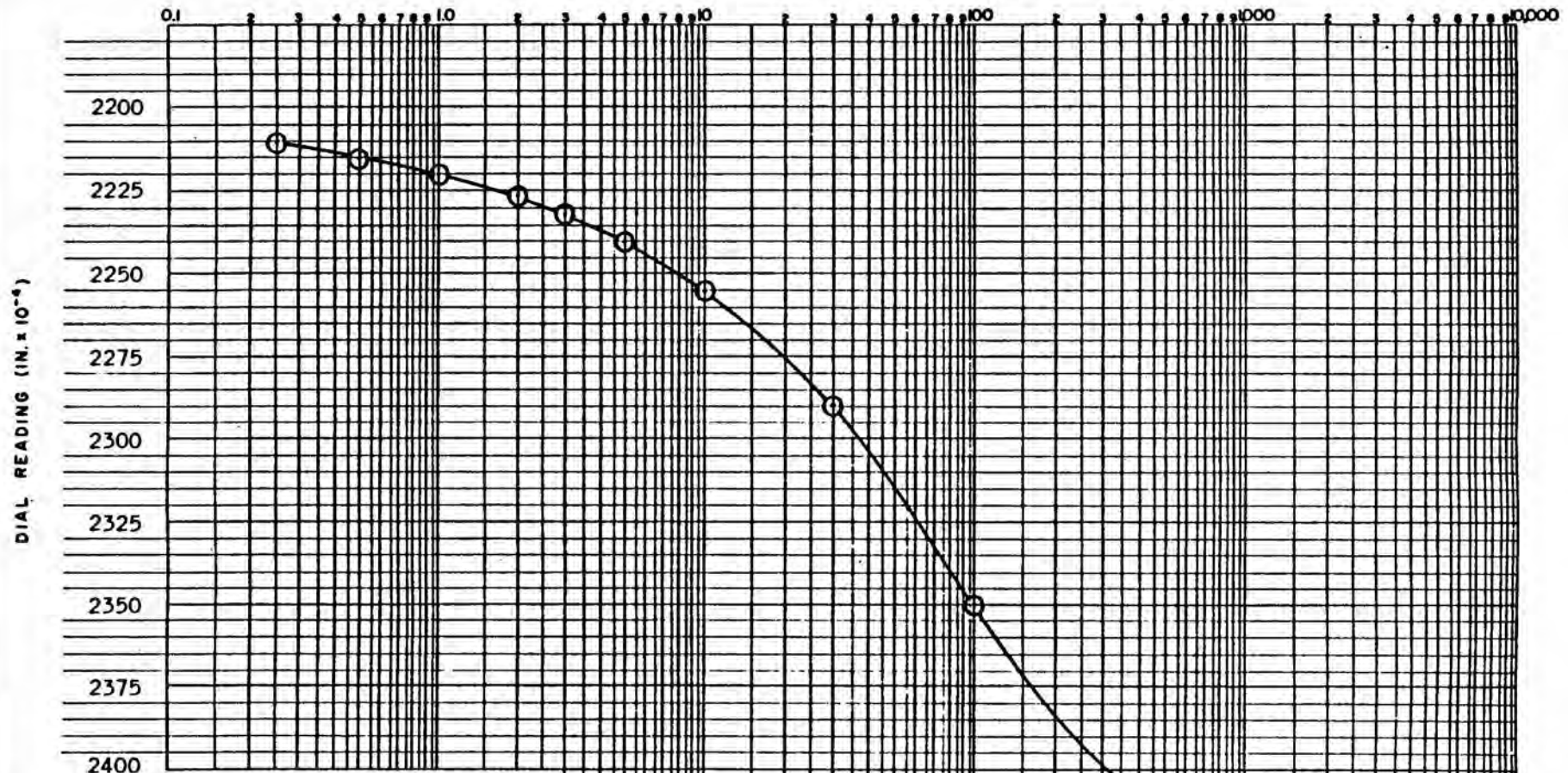
SAMPLE NO.: 212 DEPTH: 14'-16'

LOAD: 30.96 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 34.5 MIN

TIME IN MINUTES



PROJECT: TMPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/17/88

BORING NO.: B-11

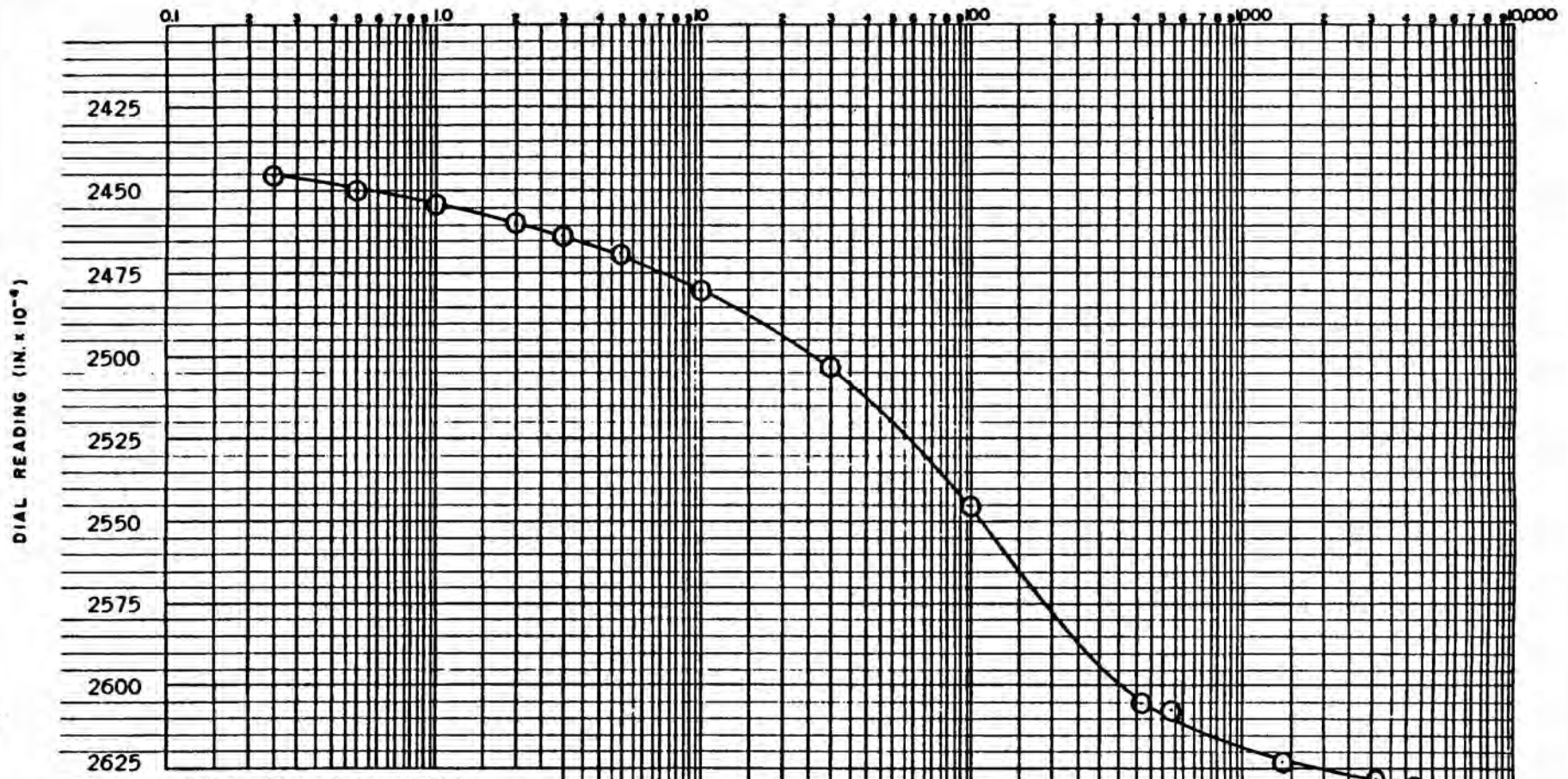
SAMPLE NO.: 212 DEPTH: 14'-16'

LOAD: 5.17 tsf (Rebound)

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} MIN

TIME IN MINUTES



DIAL READING (IN. x 10⁻⁴)

PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/18/88

BORING NO.: B-11

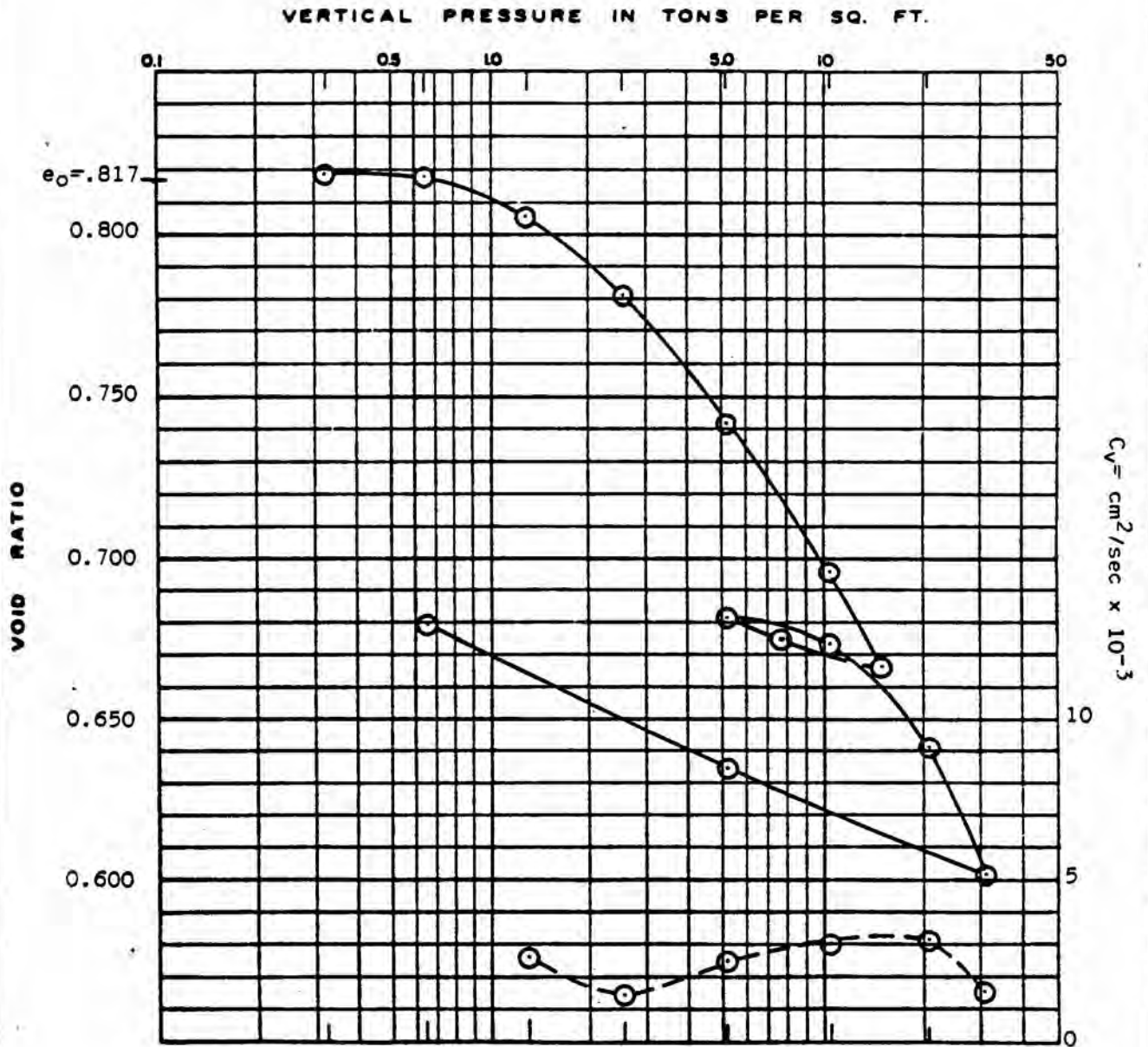
SAMPLE NO.: 212 DEPTH: 14'-16'

LOAD: 0.64 tsf (Rebound)

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

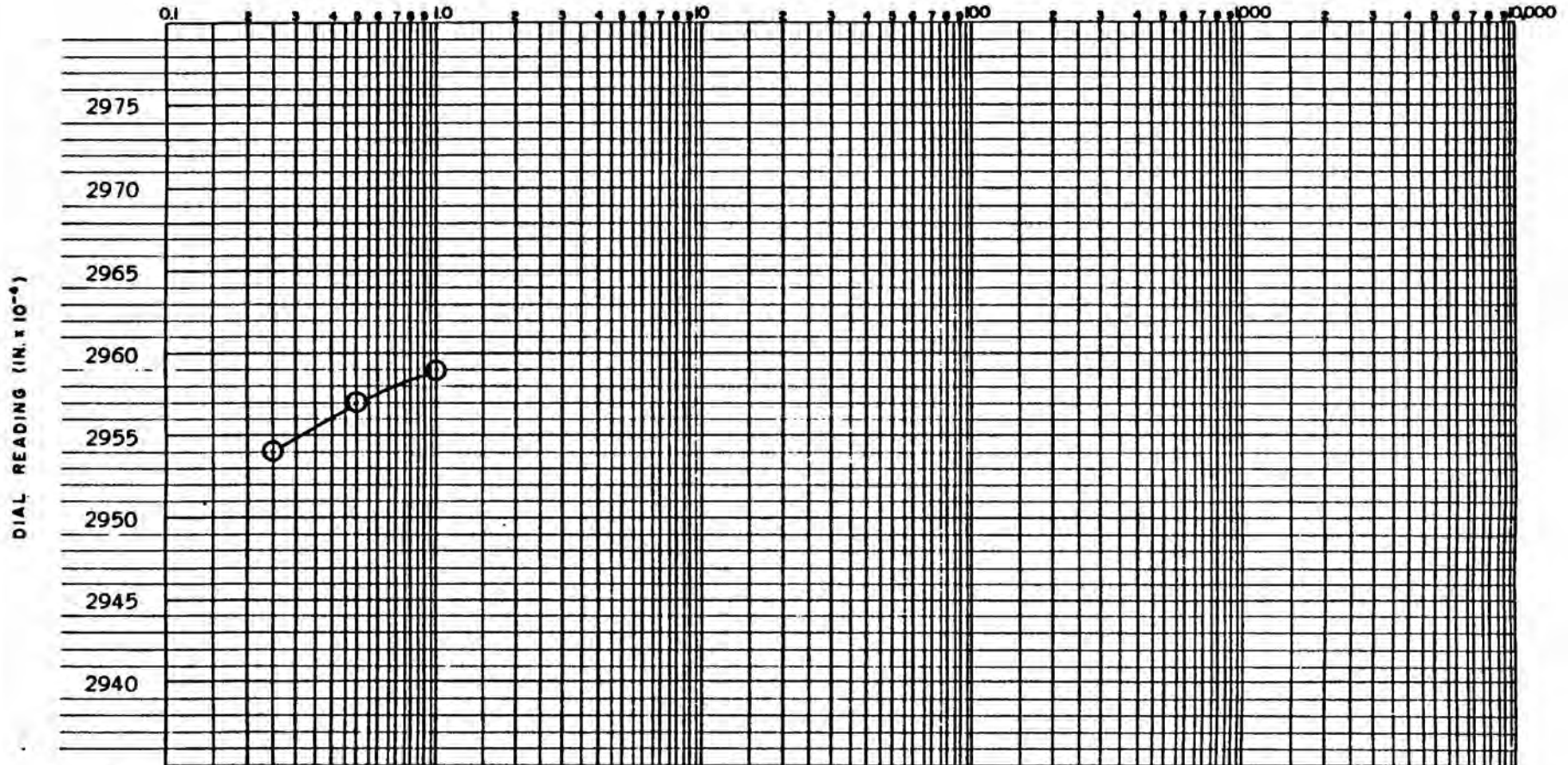
TYPE OF DRAINAGE: double t₅₀: MIN

TEXAS MUNICIPAL POWER AGENCY
 PROJECT: Site F Landfill, Gibbons Creek S.E.S.
 JOB NO: 880252 DATE: March 21, 1988
 BORING NO: B-13 SAMPLE NO: 258 DEPTH: 13'-15'
 MATERIAL: Brown sandy clay
 MOISTURE CONTENT: 23 DRY UNIT WEIGHT: 92
 LL: _____ PL: _____ PI: _____ SPECIFIC GRAVITY: 2.672



VOID RATIO VS LOG PRESSURE CURVE

TIME IN MINUTES



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252

DATE: 3/7/88

BORING NO.: B-13

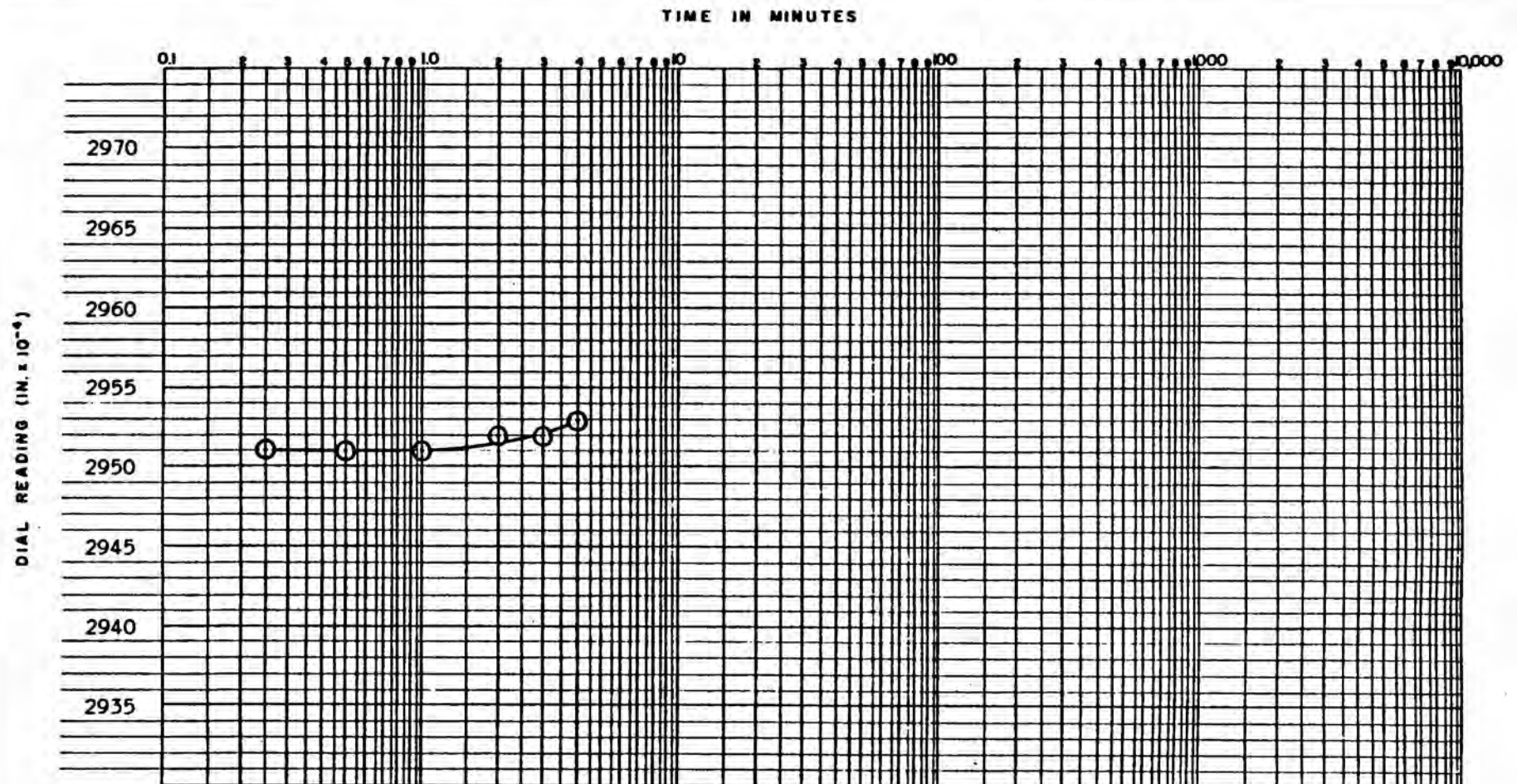
SAMPLE NO.: 258

DEPTH: 13'-15'

LOAD: 0.32 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{90} : MIN



PROJECT: TMPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/7/88

BORING NO.: B-13

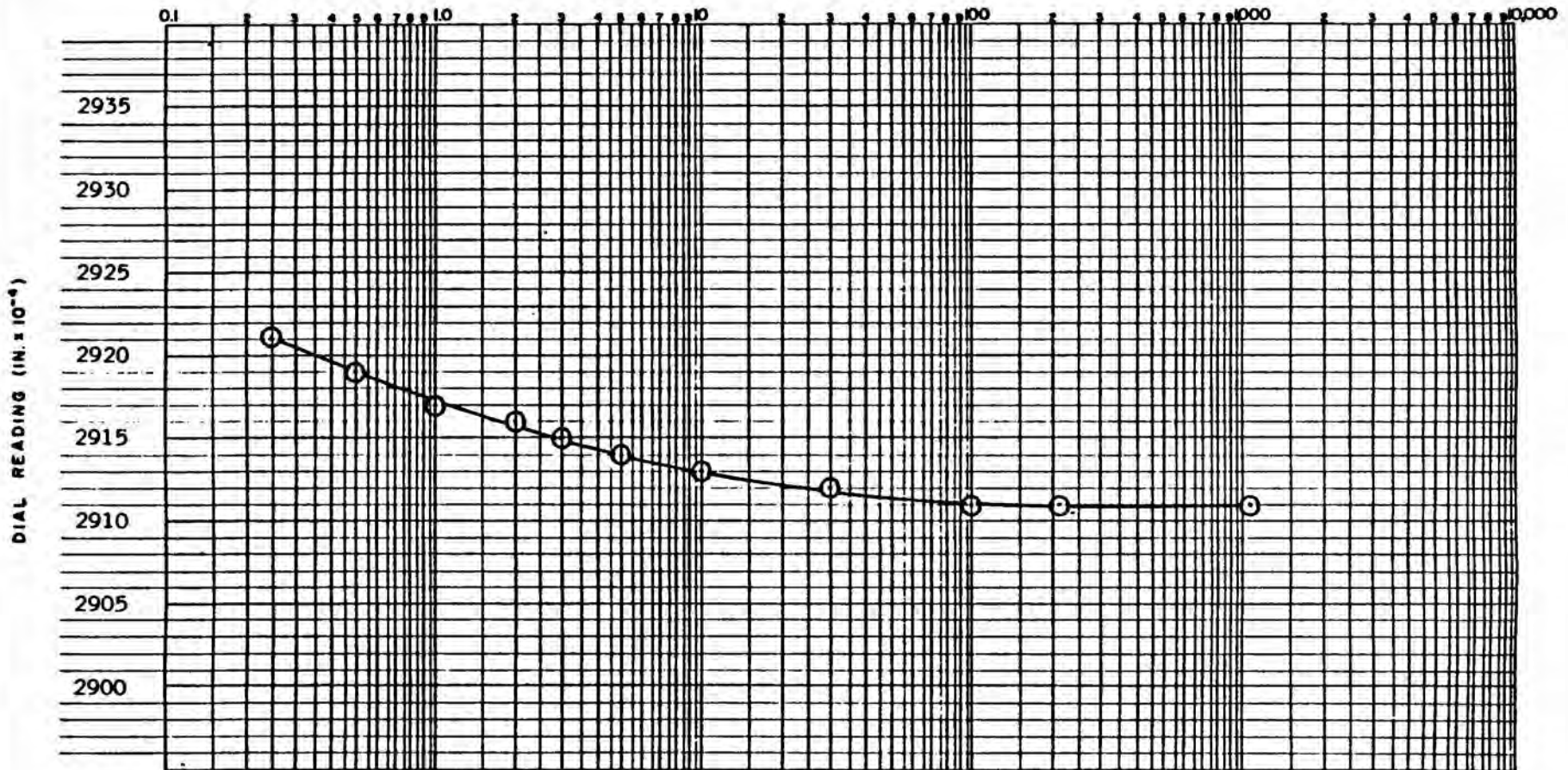
SAMPLE NO.: 258 DEPTH: 13'-15'

LOAD: 0.64 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} MIN

TIME IN MINUTES



PROJECT: TMPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/7/88

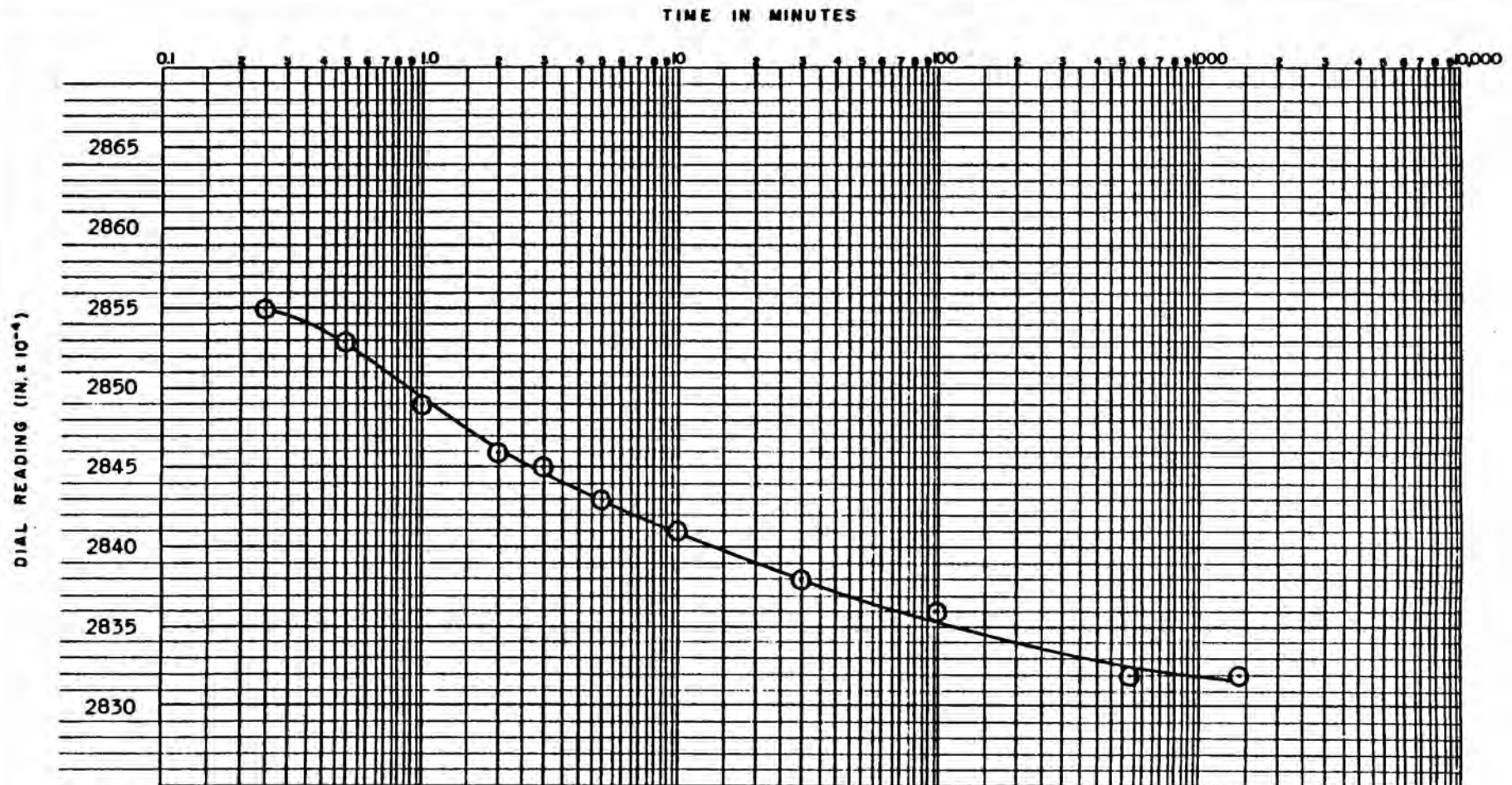
BORING NO.: B-13

SAMPLE NO.: 258 DEPTH: 13'-15'

LOAD: 1.29 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 0.73 MIN



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/8/88

BORING NO.: B-13

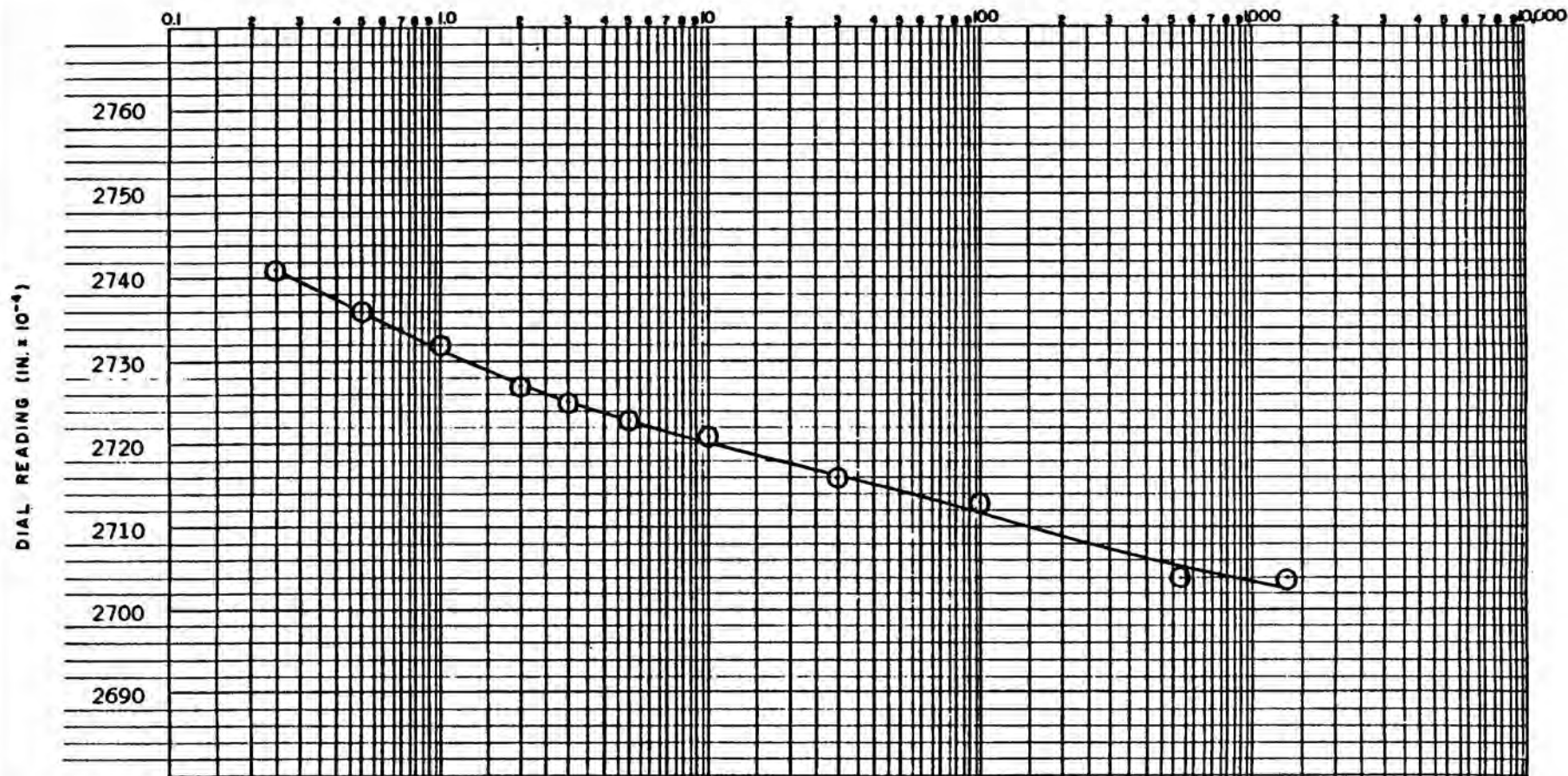
SAMPLE NO.: 258 DEPTH: 13'-15'

LOAD: 2.57 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 1.3 MIN

TIME IN MINUTES



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/9/88

BORING NO.: B-13

SAMPLE NO.: 258 DEPTH: 13'-15'

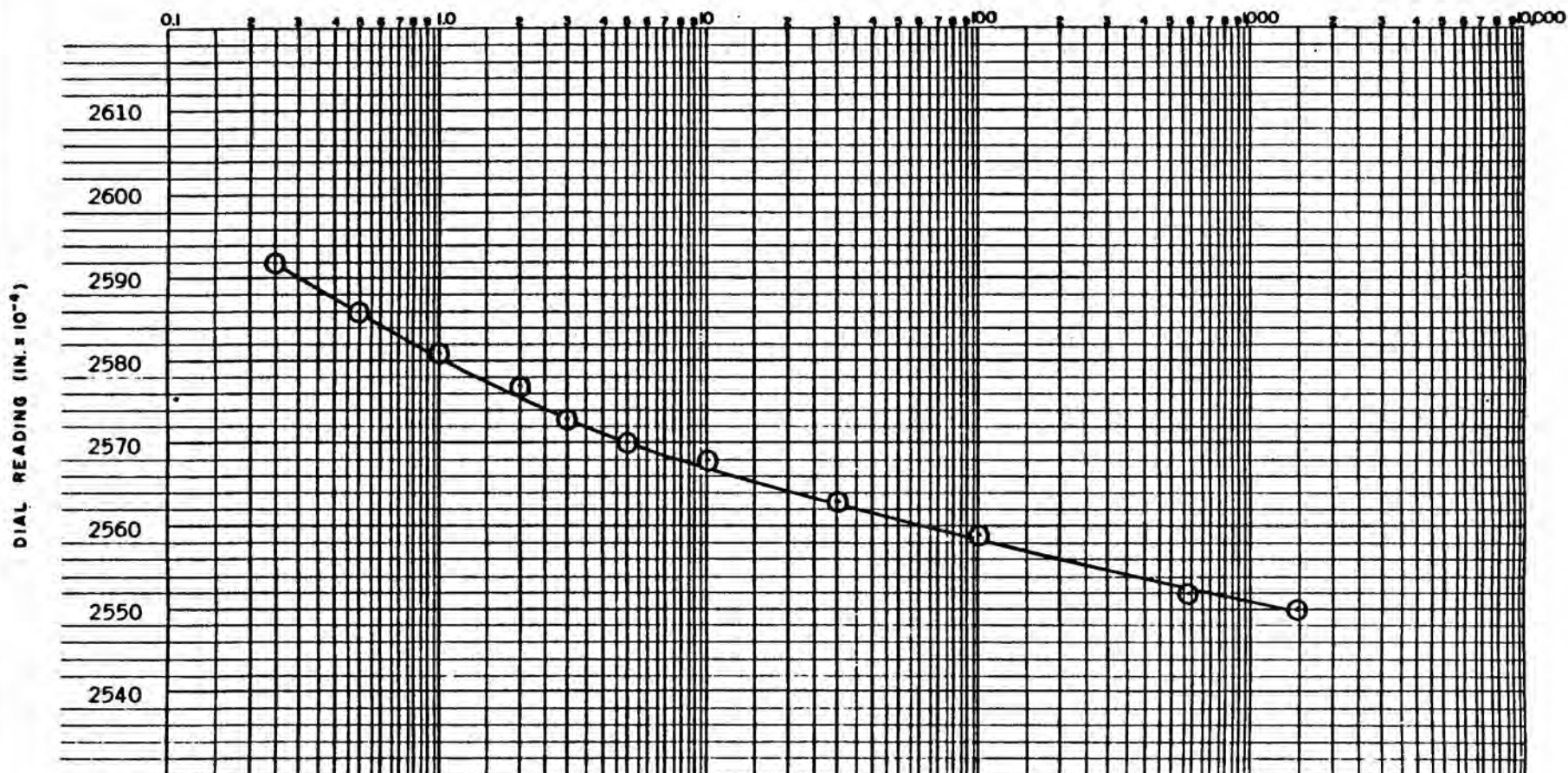
LOAD: 5.17 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 0.7 MIN

SOIL MECHANICS INCORPORATED

TIME IN MINUTES



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/10/88

BORING NO.: B-13

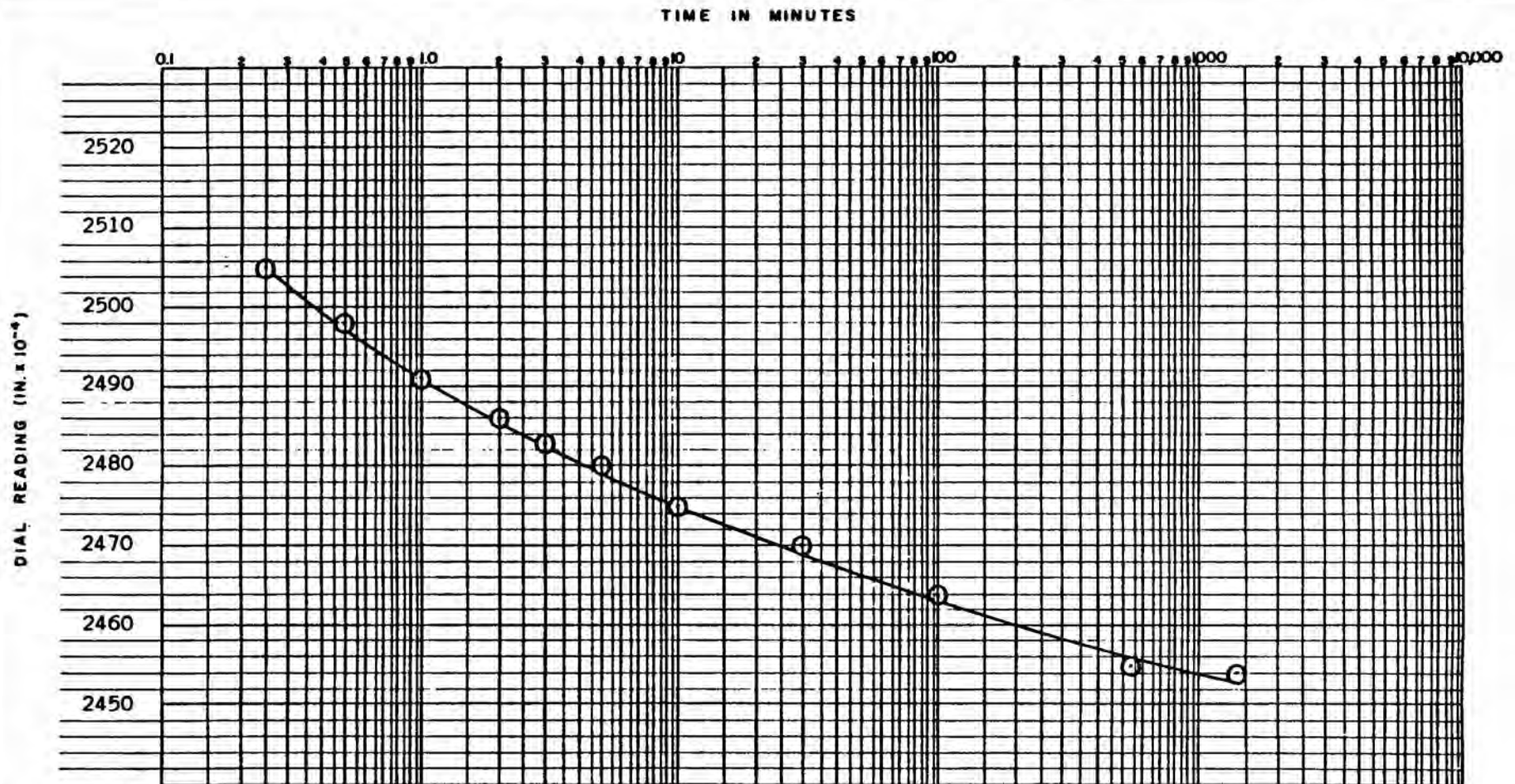
SAMPLE NO.: 258 DEPTH: 13'-15'

LOAD: 10.33 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 0.55 MIN

SOIL MECHANICS INCORPORATED



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/11/88

BORING NO.: B-13

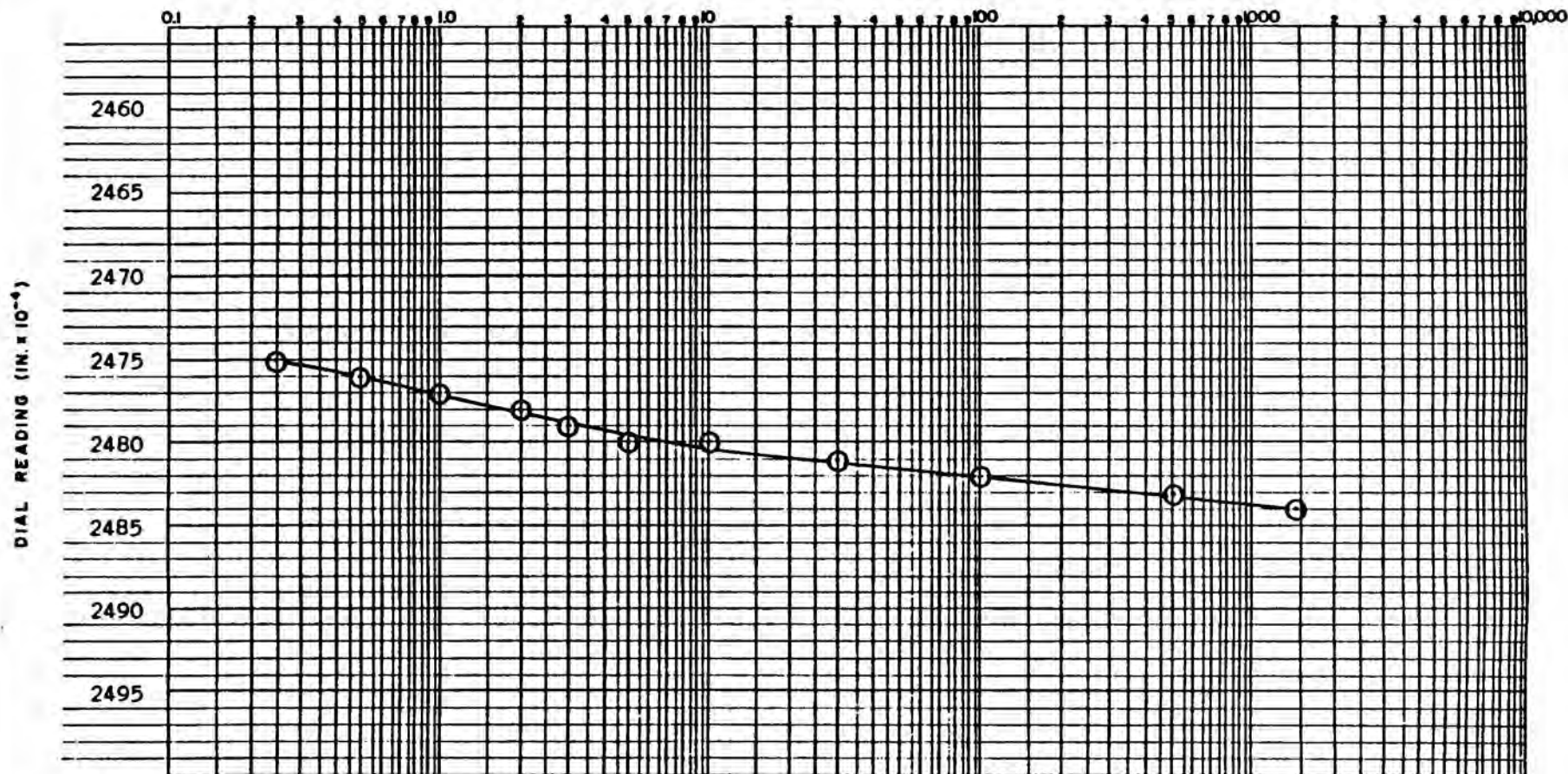
SAMPLE NO.: 258 DEPTH: 13'-15'

LOAD: 15.5 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 0.75 MIN

TIME IN MINUTES



PROJECT: TMPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/12/88

BORING NO.: B-13

SAMPLE NO.: 258 DEPTH: 13'-15'

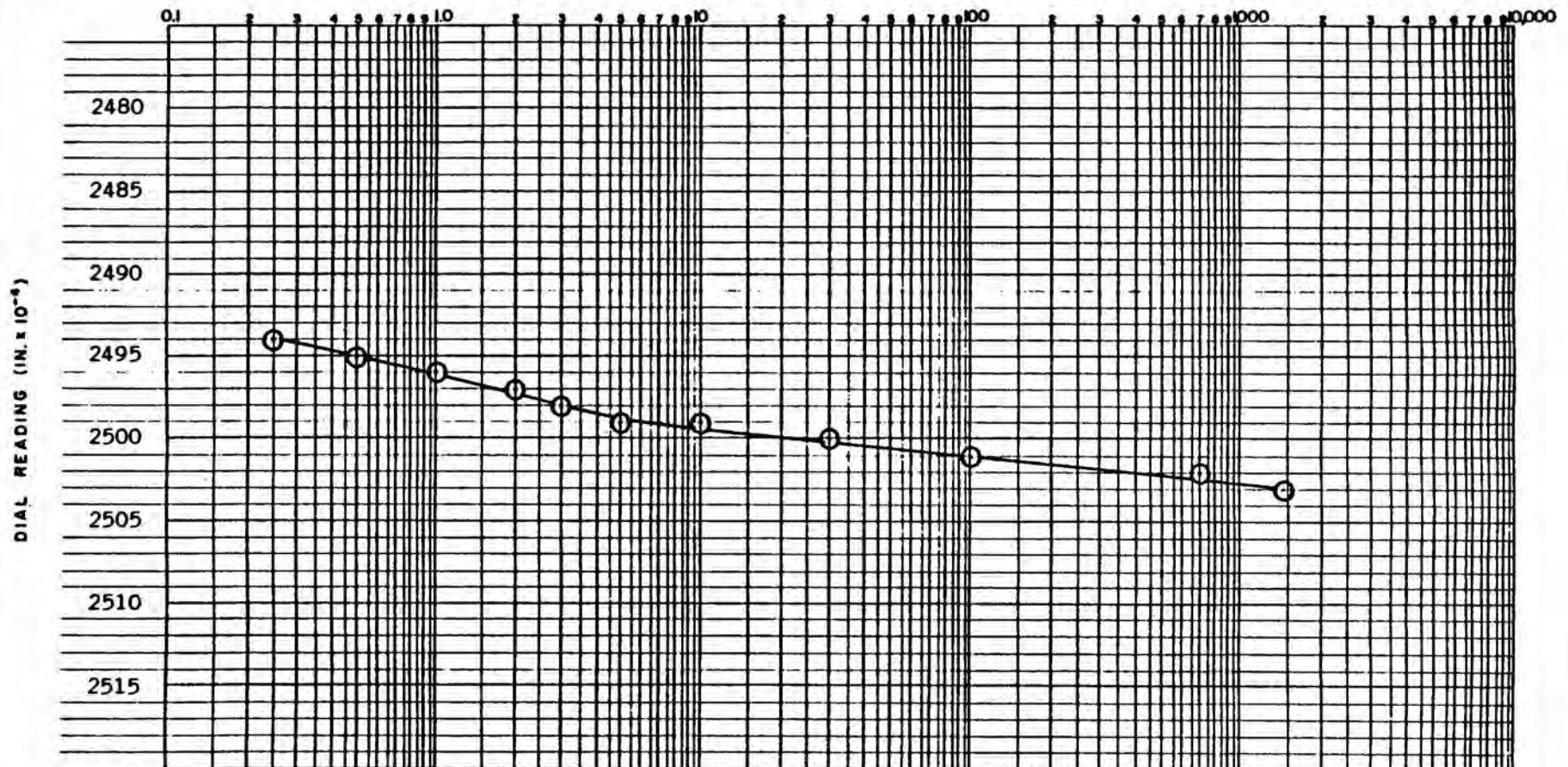
LOAD: 7.75 tsf (Rebound)

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} MIN.

SOIL MECHANICS INCORPORATED

TIME IN MINUTES



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/13/88

BORING NO.: B-13

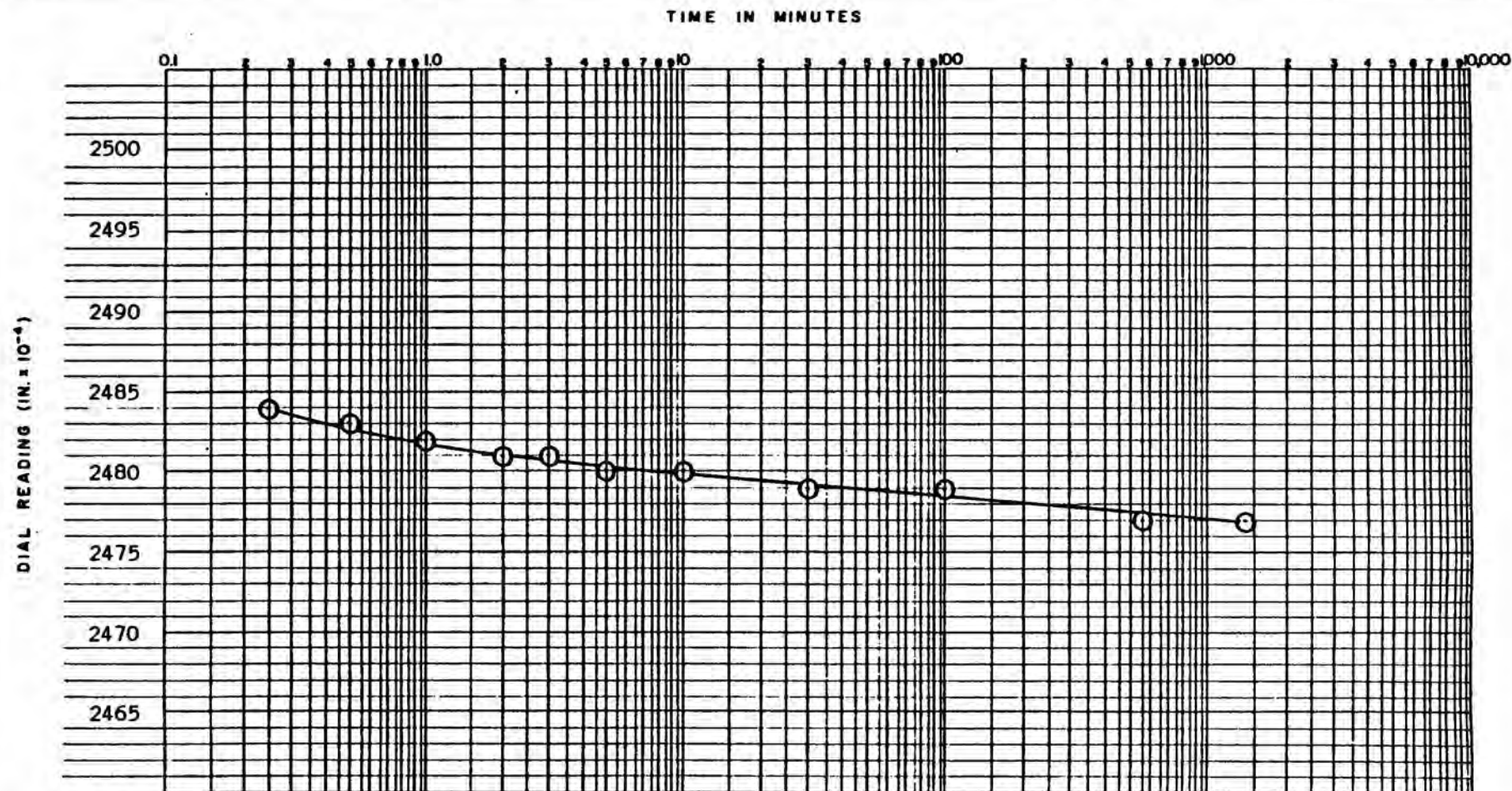
SAMPLE NO.: 258 DEPTH: 13'-15'

LOAD: 5.17 tsf (Rebound)

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} MIN

SOIL MECHANICS INCORPORATED



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/14/88

BORING NO.: B-13

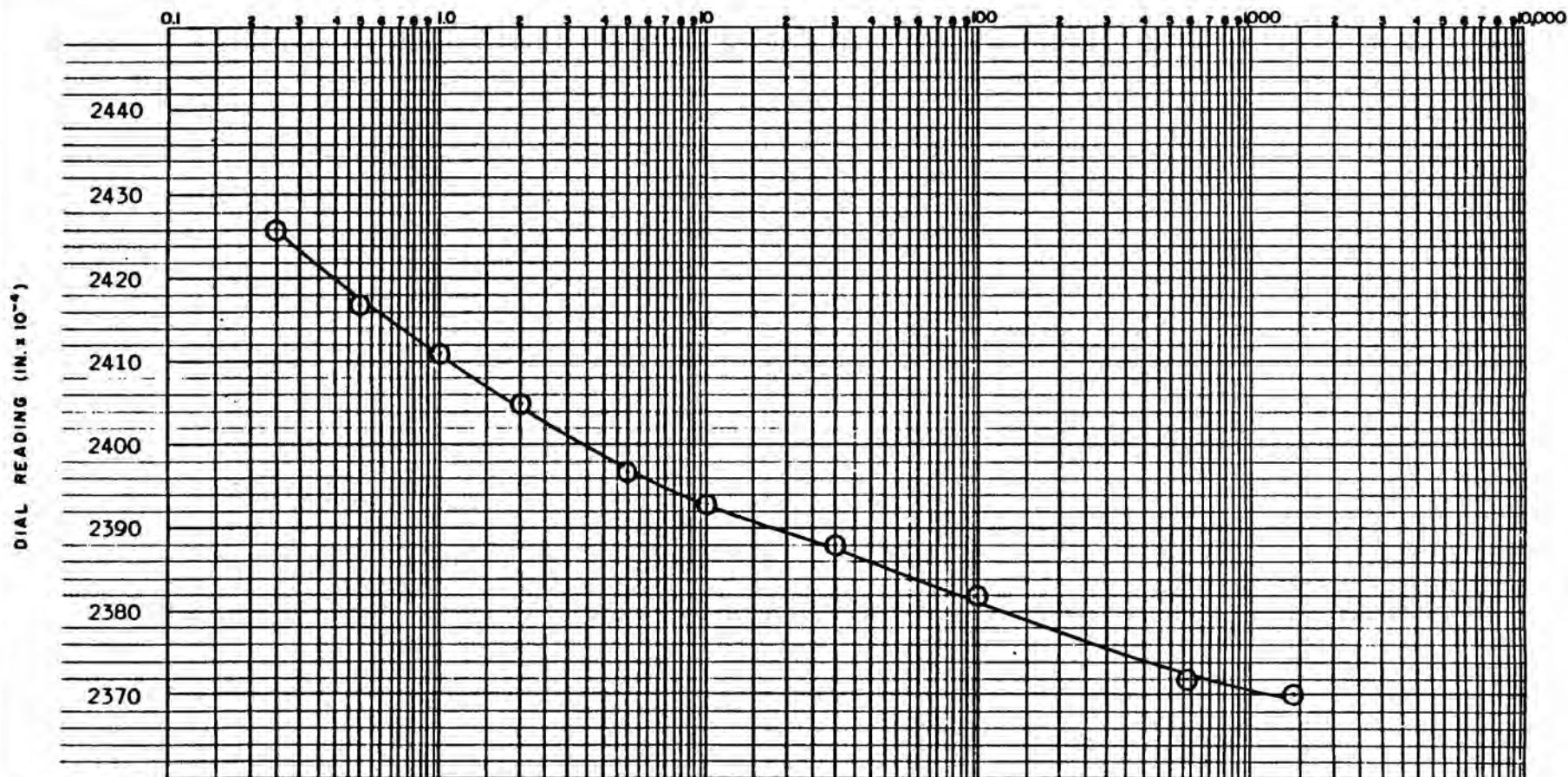
SAMPLE NO.: 258 DEPTH: 13'-15'

LOAD: 10.33 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 0.40 MIN

TIME IN MINUTES



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/15/88

BORING NO.: B-13

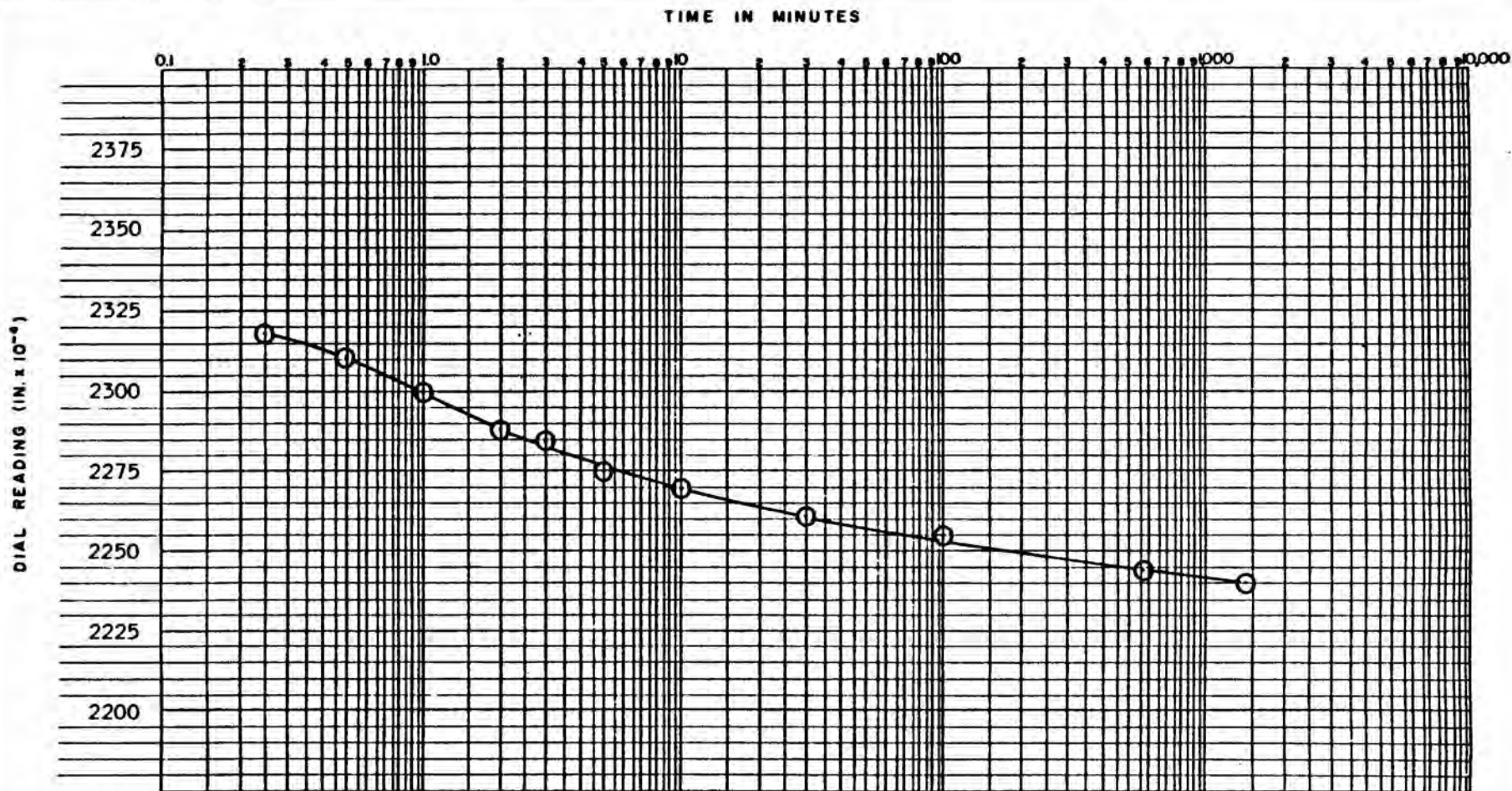
SAMPLE NO.: 25B DEPTH: 13'-15'

LOAD: 20.63 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 0.5 MIN

SOIL MECHANICS INCORPORATED



PROJECT: TMPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/16/88

BORING NO.: B-13

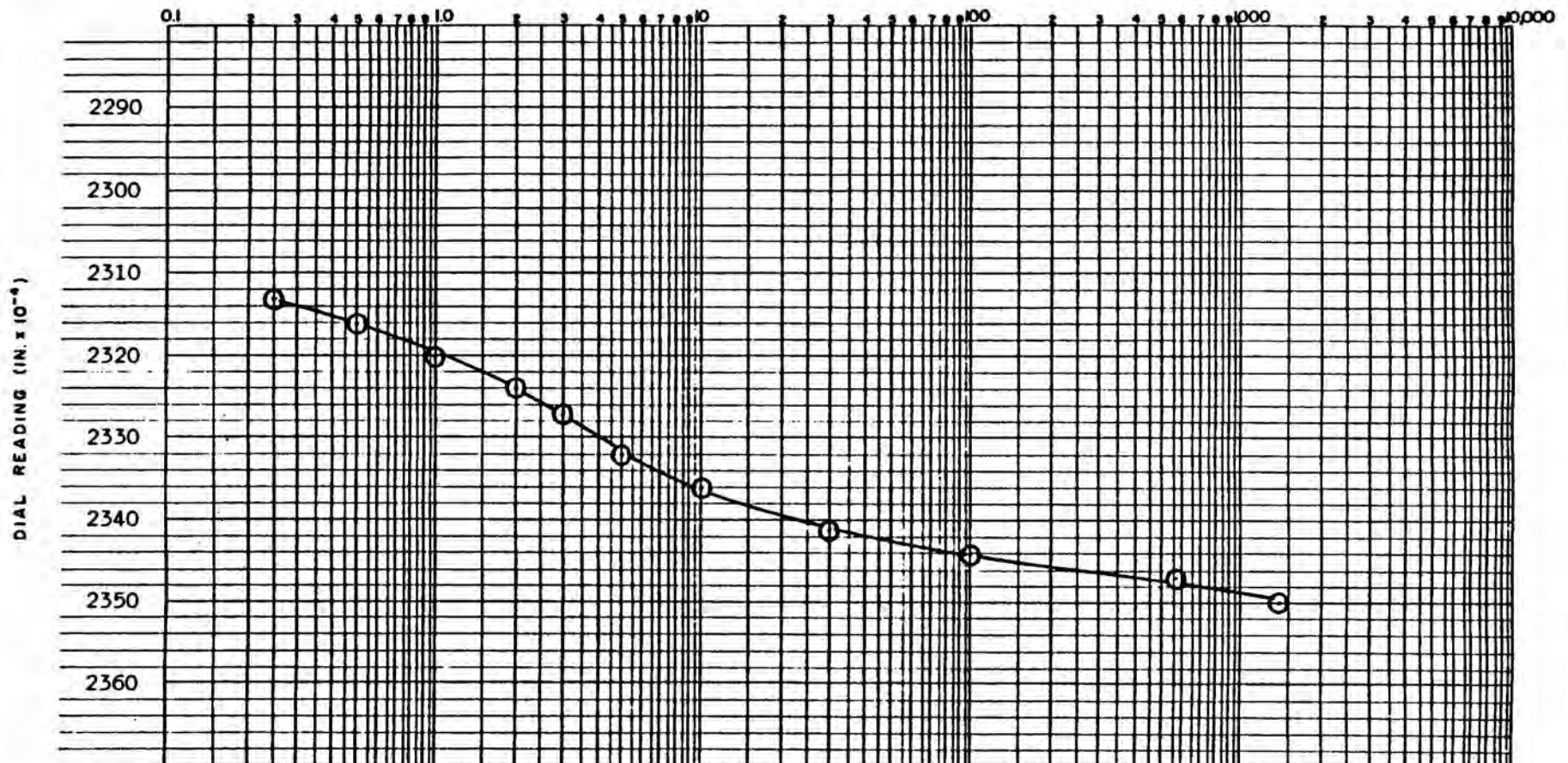
SAMPLE NO.: 258 DEPTH: 13'-15'

LOAD: 30.96 tsf

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t_{50} : 1.0 MIN

TIME IN MINUTES



PROJECT: TMPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/17/88

BORING NO.: B-13

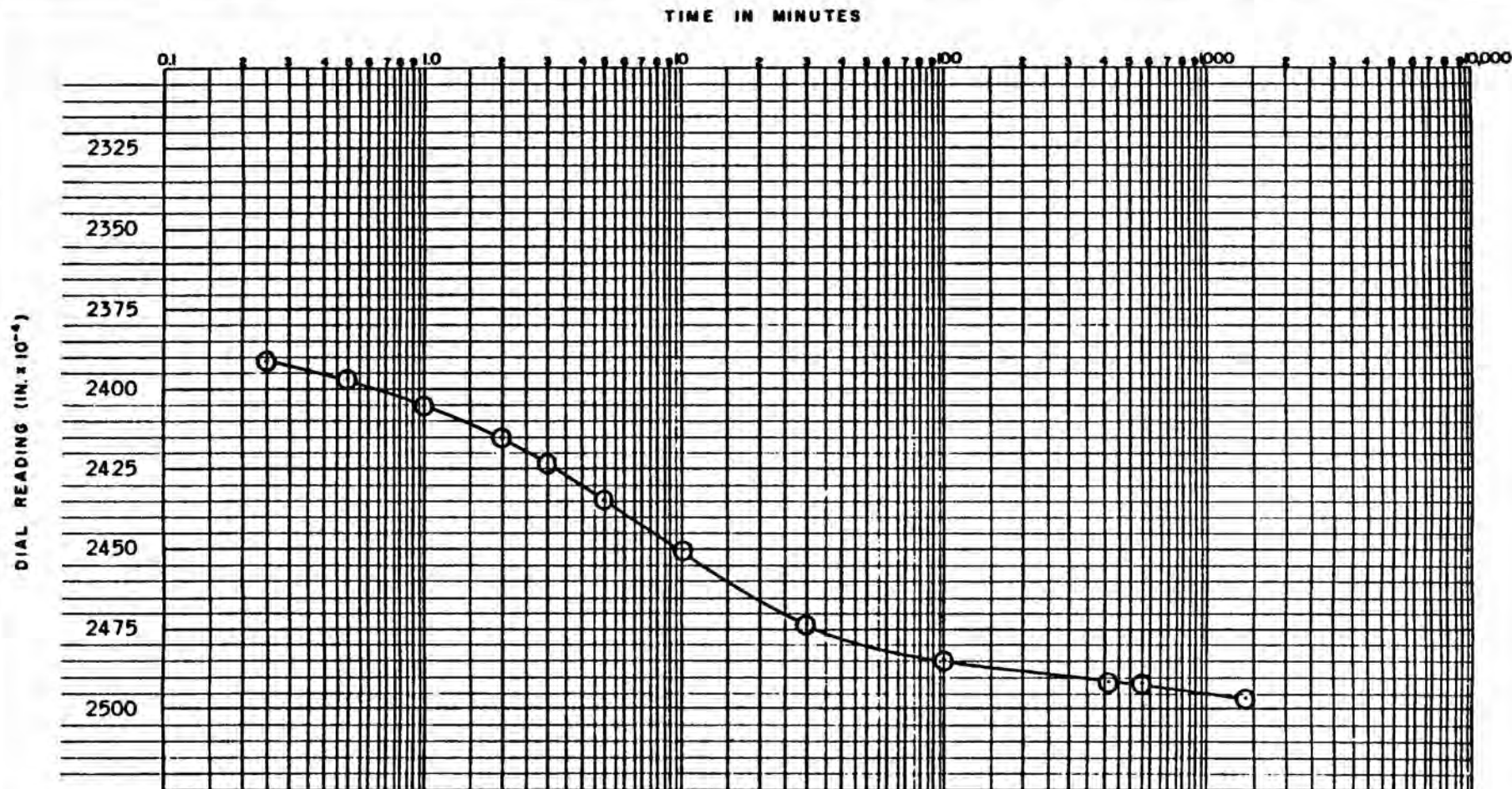
SAMPLE NO.: 258 DEPTH: 13'-15'

LOAD: 5.17 tsf (Rebound)

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double t₅₀: MIN

SOIL MECHANICS INCORPORATED



PROJECT: TPA, Site F Landfill,
Gibbons Creek S.E.S.

JOB NO.: 880252 DATE: 3/18/88

BORING NO.: B-13

SAMPLE NO.: 258 DEPTH: 13'-15'

LOAD: 0.64 tsf (Rebound)

SAMPLE THICKNESS: 0.60" DIAMETER: 2.50"

TYPE OF DRAINAGE: double f_{50} MIN.

BUCHANAN/SOIL MECHANICS, INC.

P. O. Box 672, Bryan, Texas, 77806
(409) 822 - 6810 (409) 822 - 3767.

OPTIMUM MOISTURE/DENSITY RELATIONSHIP

Client: TEXAS MUNICIPAL POWER AGENCY

B/SMI No.: 880252

Project: Site F Landfill, Gibbons Creek, S.E.S.

Project No.:

Date: February 22, 1988

Method of Compaction: ASTM D 698, Method A

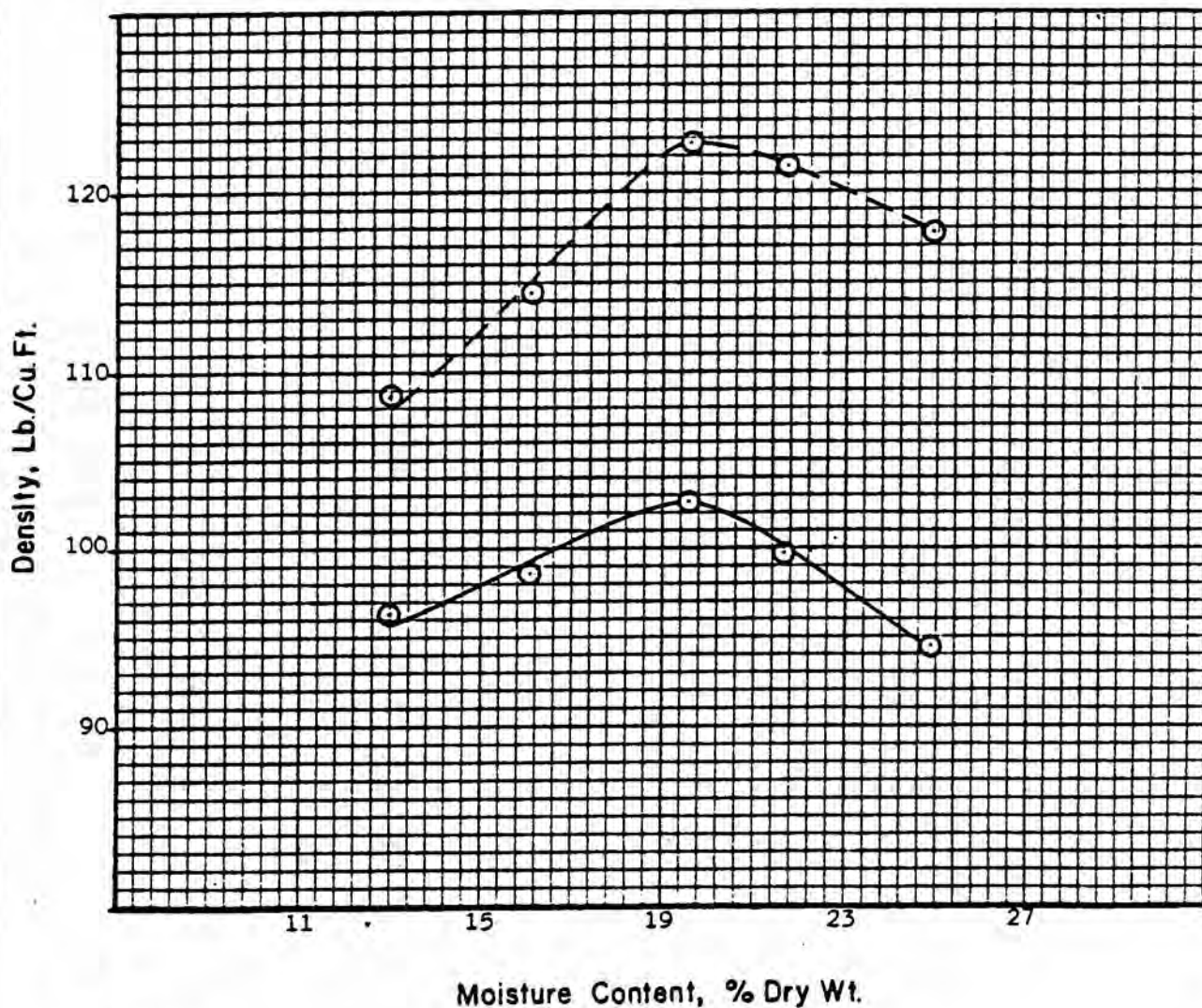
Material: Tan sandy clay

Optimum Moisture Content 19.6 % - Maximum Dry Density 102.6 Lb./Cu. Ft.

Liquid Limit

Plastic Limit

Plasticity Index



Legend:
Dry Density ———
Wet Density - - - -

Remarks: Bag Sample
Test Pit No. 3
Depth 1.5'-8.0'

BUCHANAN/SOIL MECHANICS, INC.

P. O. Box 672, Bryan, Texas, 77806
(409) 822 - 6810 (409) 822 - 3767

OPTIMUM MOISTURE/DENSITY RELATIONSHIP

Client: TEXAS MUNICIPAL POWER AGENCY

B/SMI No.: 880252

Project: Site F Landfill, Gibbons Creek S.E.S.

Project No.:

Date: March 3, 1988

Method of Compaction: ASTM D 698, Method A

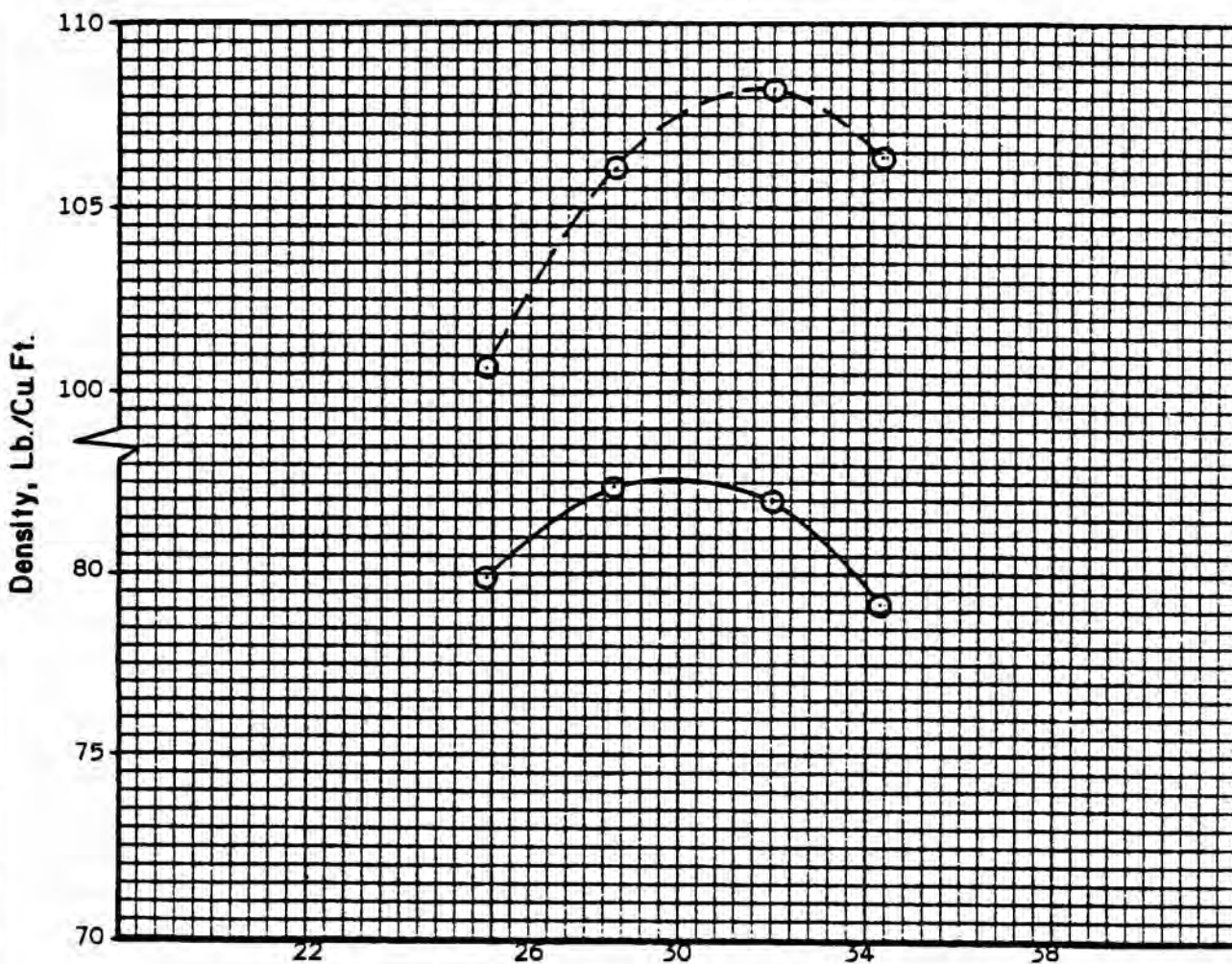
Material: Brownish gray clay

Optimum Moisture Content 30.0 % - Maximum Dry Density 82.6 Lb./Cu.Ft.

Liquid Limit 76

Plastic Limit 34

Plasticity Index 42



Moisture Content, % Dry Wt.

Legend:
Dry Density ———
Wet Density - - - -

Remarks: Test Pit No. 19
Depth 1'-5.5'
Bag Sample

BUCHANAN/SOIL MECHANICS, INC.

P. O. Box 672, Bryan, Texas, 77806
(409) 822 - 6810 (409) 822 - 3767.

OPTIMUM MOISTURE/DENSITY RELATIONSHIP

Client: TEXAS MUNICIPAL POWER AGENCY

B/SMI No.: 880252

Project: Site F Landfill, Gibbons Creek S.E.S.

Project No.:

Date: February 23, 1988

Method of Compaction: ASTM D 698, Method A

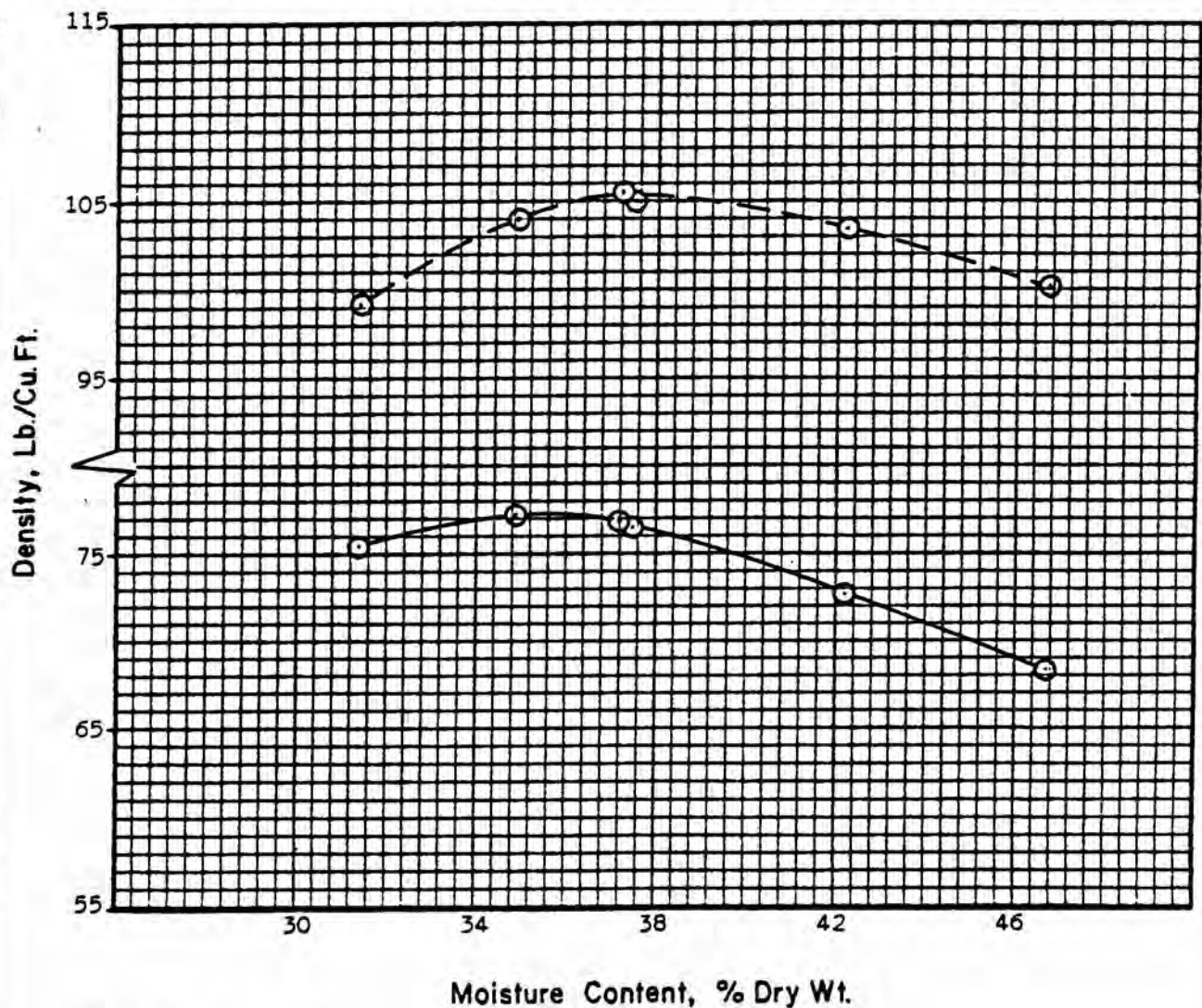
Material: Light gray clay

Optimum Moisture Content 35.6 % - Maximum Dry Density 77.3 Lb./Cu. Ft.

Liquid Limit

Plastic Limit

Plasticity Index



Legend:
Dry Density ———
Wet Density - - - -

Remarks: Bag Sample
Test Pit No. 23
Depth 4'-5'

BUCHANAN/SOIL MECHANICS, INC.

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(409) 822 - 6810 (409) 822 - 3767

OPTIMUM MOISTURE/DENSITY RELATIONSHIP

Client: TEXAS MUNICIPAL POWER AGENCY

B/SMI No.: 880252

Project: Site F Landfill, Gibbons Creek S.E.S.

Project No.:

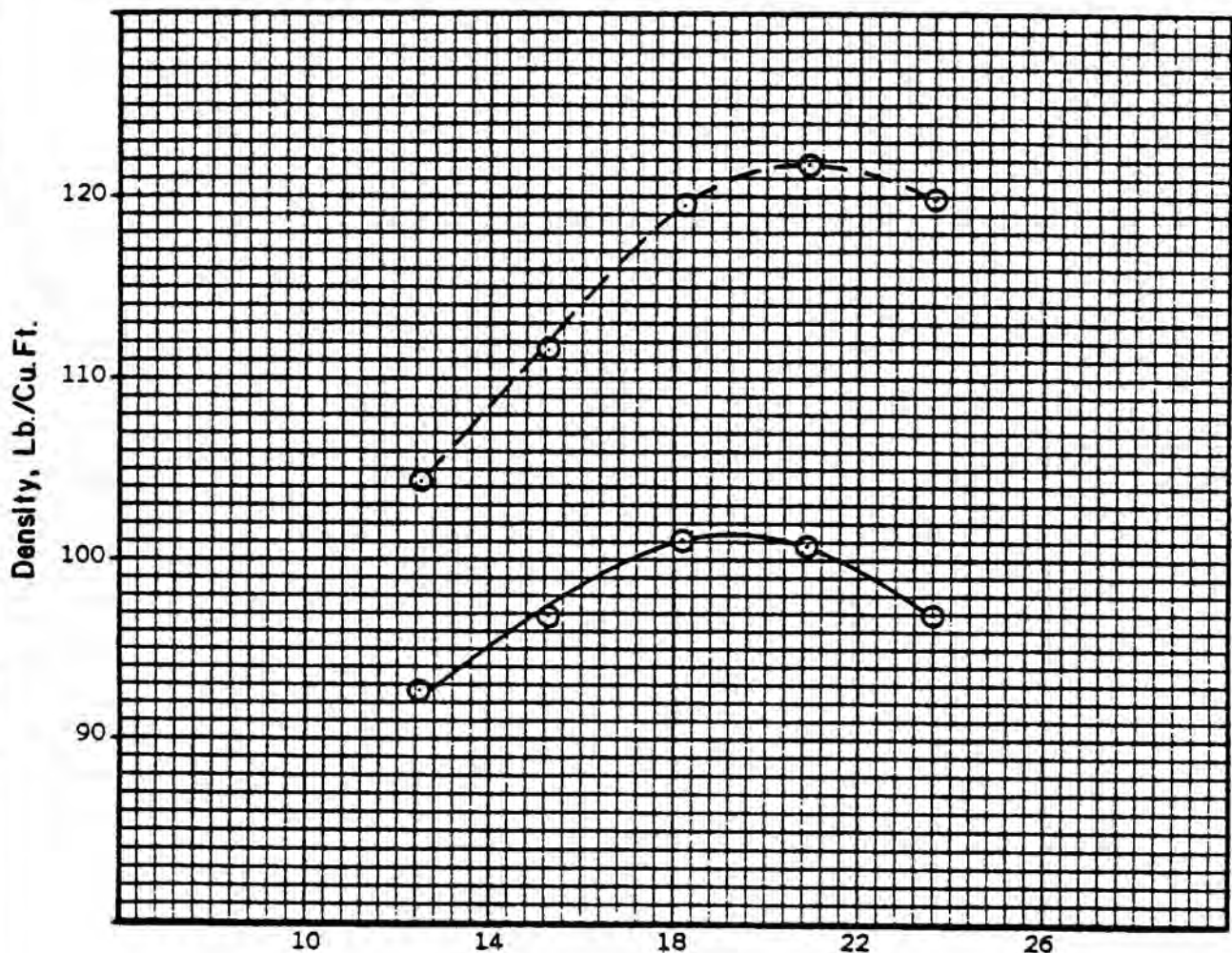
Date: March 2, 1988

Method of Compaction: ASTM D 698, Method A

Material: Brownish gray sandy clay

Optimum Moisture Content 19.3 % - Maximum Dry Density 101.4 Lb./Cu. Ft.

Liquid Limit 48 Plastic Limit 18 Plasticity Index 30



Legend:
Dry Density ———
Wet Density - - - -

Moisture Content, % Dry Wt.

Remarks: Test Pit No. 31
Depth 0.5'-5'
Bag Sample

BUCHANAN/SOIL MECHANICS, INC.

P. O. Box 672, Bryan, Texas, 77806
(409) 822 - 6810 (409) 822 - 3767

OPTIMUM MOISTURE/DENSITY RELATIONSHIP

Client: TEXAS MUNICIPAL POWER AGENCY

B/SMI No.: 880252

Project: Site F Landfill, Gibbons Creek S.E.S.

Project No.:

Date: March 3, 1988

Method of Compaction: ASTM D 698, Method A

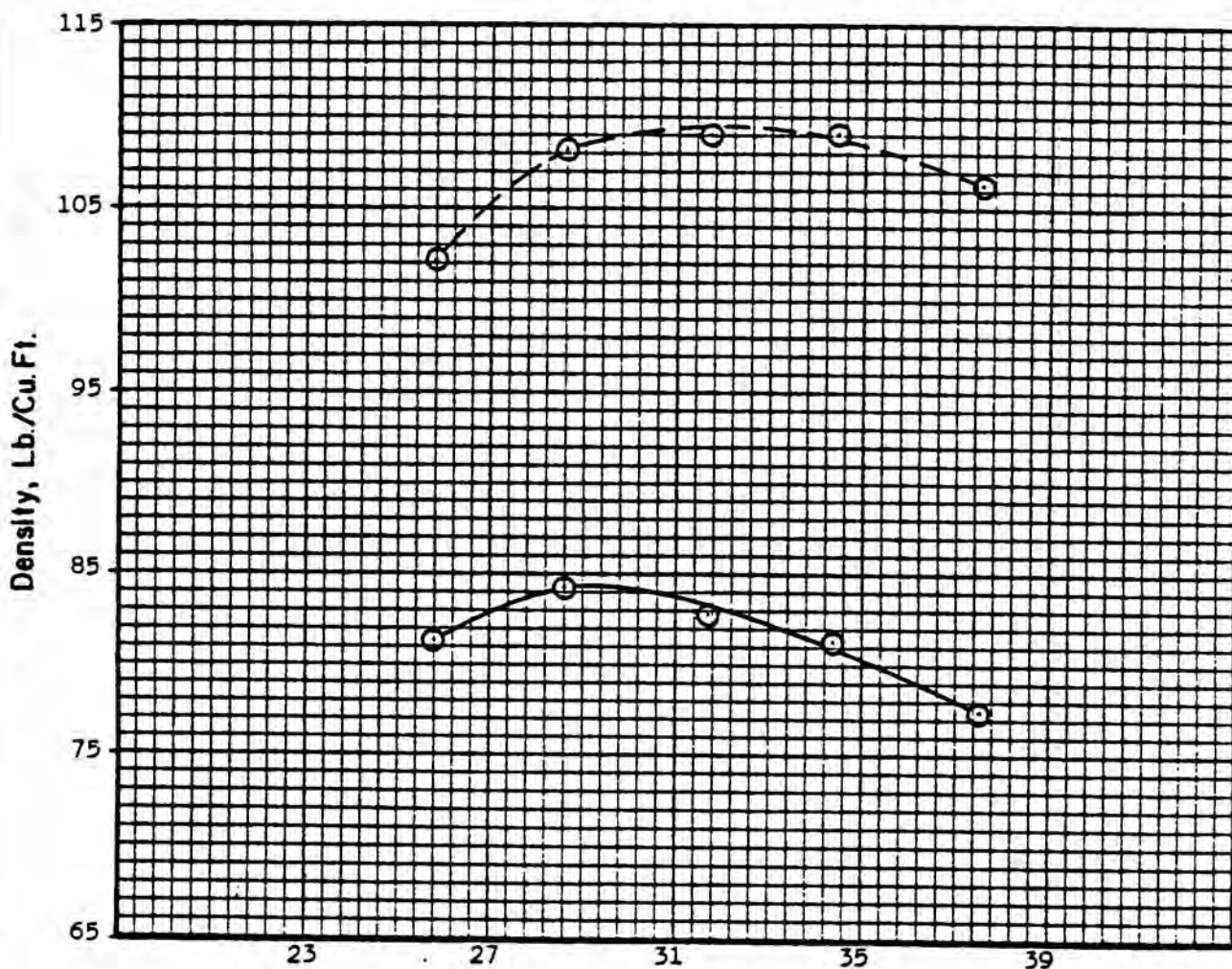
Material: Light gray clay

Optimum Moisture Content 29.2 % - Maximum Dry Density 84.3 Lb./Cu. Ft.

Liquid Limit 76

Plastic Limit 33

Plasticity Index 43



Legend:

Dry Density ———
Wet Density - - - - -

Moisture Content, % Dry Wt.

Remarks: Test Pit No. 39
Depth 7'-9'
Bag Sample

BUCHANAN/SOIL MECHANICS, INC.

P. O. Box 672, Bryan, Texas, 77806
(409) 822 - 6810 (409) 822 - 3767

OPTIMUM MOISTURE/DENSITY RELATIONSHIP

Client: TEXAS MUNICIPAL POWER AGENCY

B/SMI No.: 880252

Project: Site F Landfill, Gibbons Creek S.E.S.

Project No.:

Date: March 2, 1988

Method of Compaction: ASTM D 698, Method A

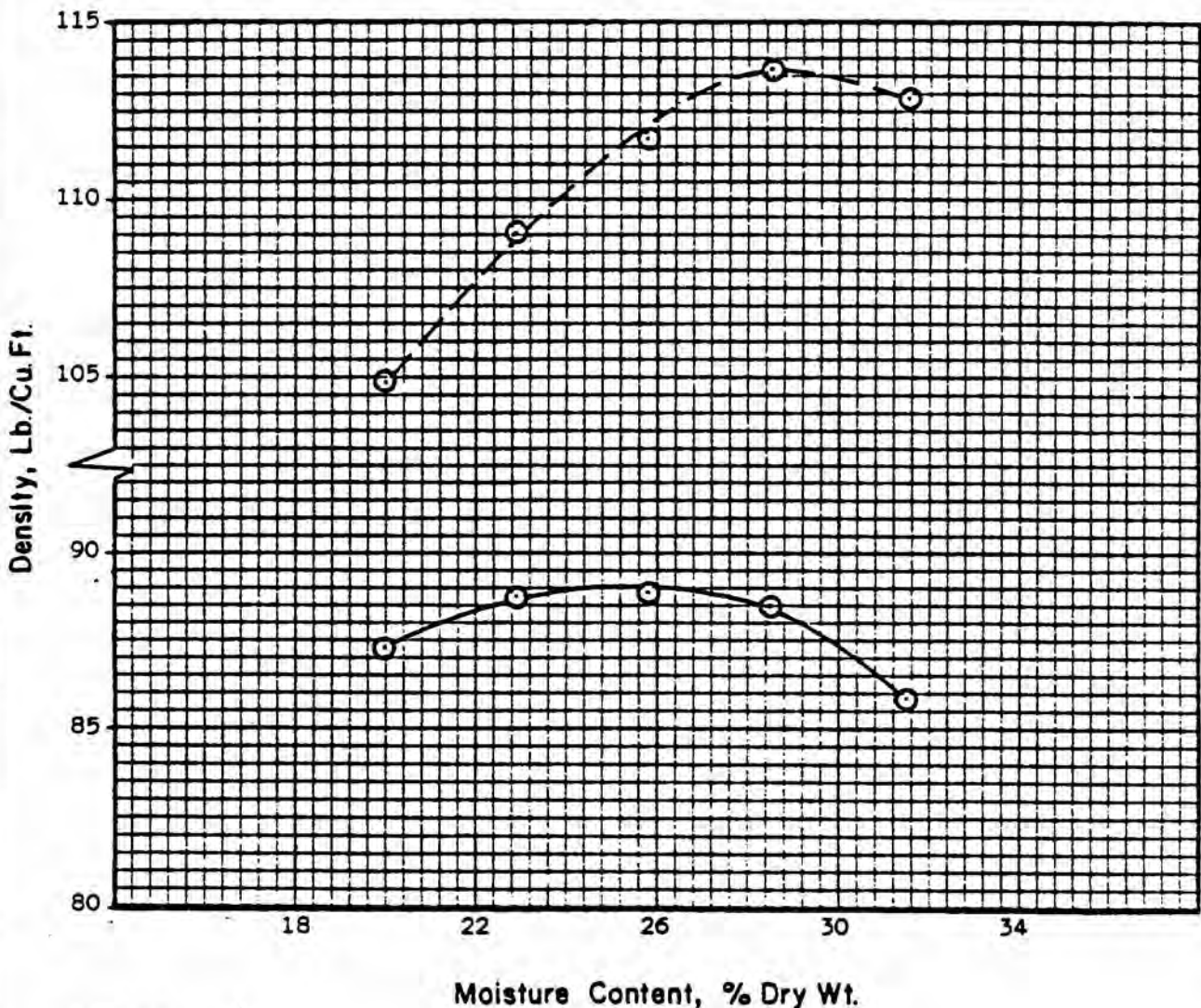
Material: Brown and gray clay

Optimum Moisture Content 25.4 % - Maximum Dry Density 89.0 Lb./Cu. Ft.

Liquid Limit 88

Plastic Limit 31

Plasticity Index 57



Legend:
Dry Density ———
Wet Density - - - -

Remarks: Test Pit No. 49
Depth 1'-10'
Bag Sample

BUCHANAN/SOIL MECHANICS, INC.

P. O. Box 672, Bryan, Texas, 77806
(409) 822 - 6810 (409) 822 - 3767

OPTIMUM MOISTURE/DENSITY RELATIONSHIP

Client: TEXAS MUNICIPAL POWER AGENCY

B/SMI No.: 880252

Project: Site F Landfill, Gibbons Creek S.E.S.

Project No.:

Date: March 3, 1988

Method of Compaction: ASTM D 698, Method A

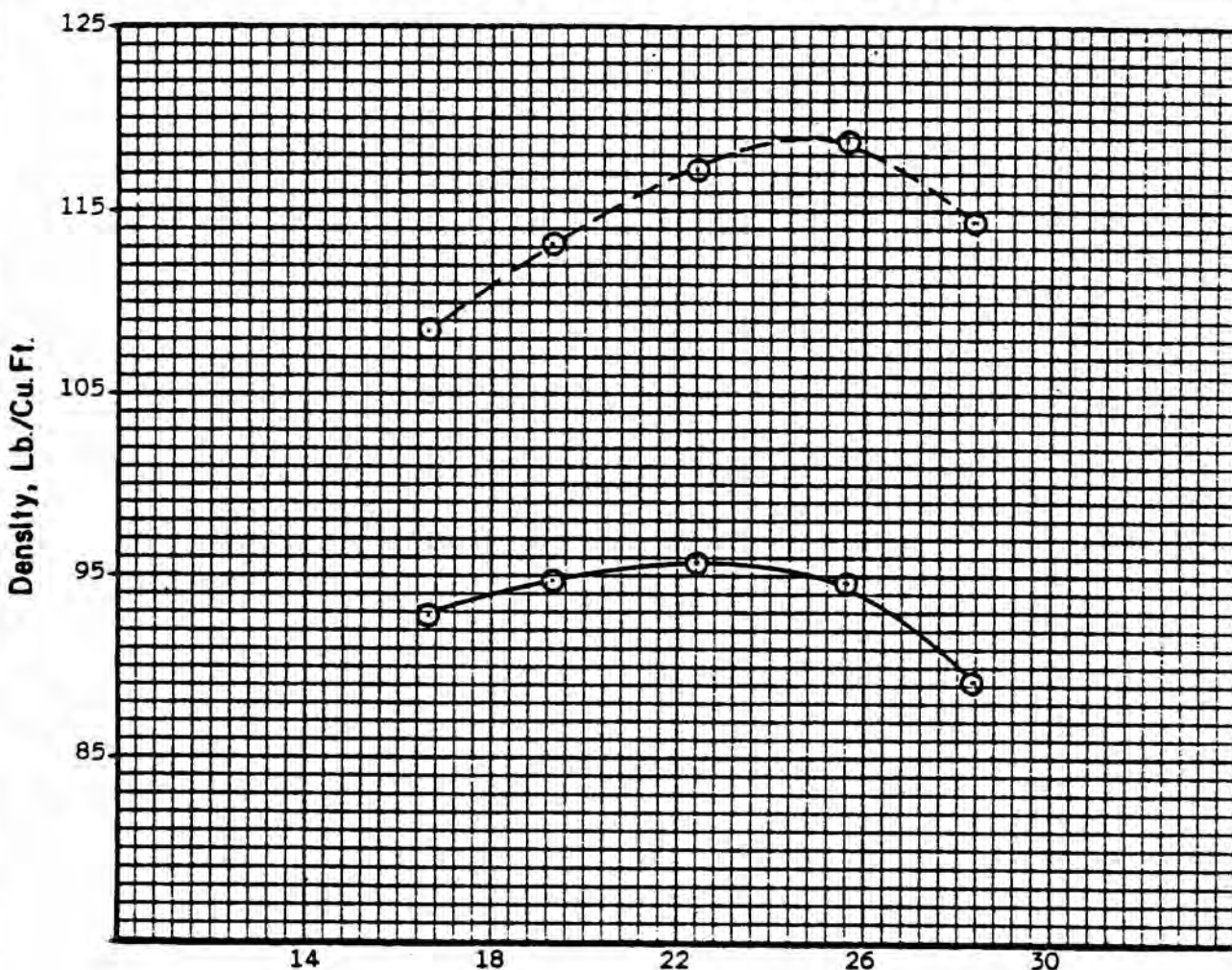
Material: Brownish gray clay

Optimum Moisture Content 22.8 % - Maximum Dry Density 95.8 Lb./Cu. Ft.

Liquid Limit 69

Plastic Limit 27

Plasticity Index 42



Moisture Content, % Dry Wt.

Legend:

Dry Density ———

Wet Density - - - - -

Remarks: Test Pit No. 57

Depth 0.75'-9'

Bag Sample

BUCHANAN/SOIL MECHANICS, INC.

P. O. Box 672, Bryan, Texas, 77806
(409) 822 - 6810 (409) 822 - 3767

OPTIMUM MOISTURE/DENSITY RELATIONSHIP

Client: TEXAS MUNICIPAL POWER AGENCY

B/SMI No.: 880252

Project: Site F Landfill, Gibbons Creek S.E.S.

Project No.:

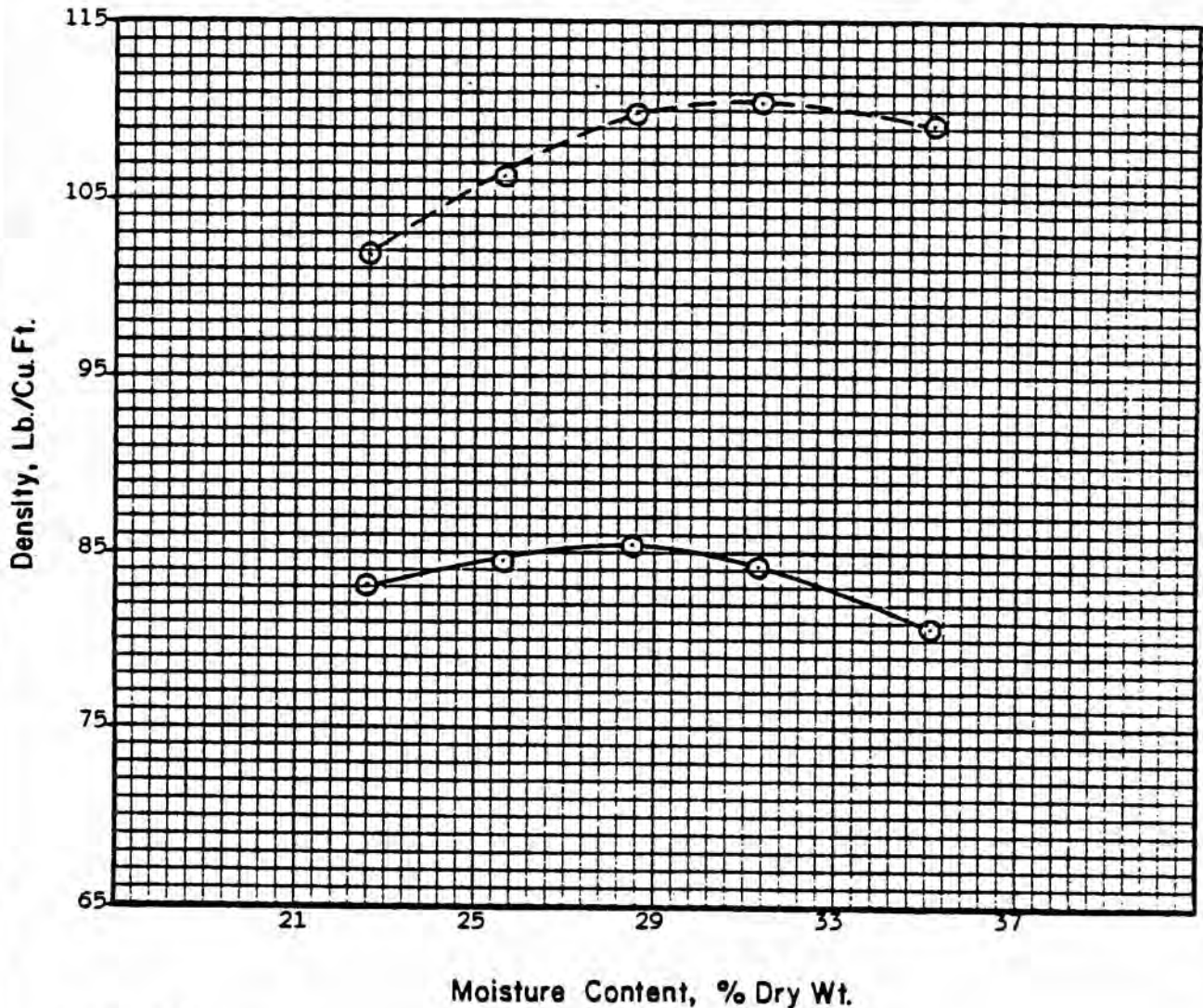
Date: March 4, 1988

Method of Compaction: ASTM D 698, Method A

Material: Brown clay

Optimum Moisture Content 28.5 % - Maximum Dry Density 85.4 Lb./Cu. Ft.

Liquid Limit 93 Plastic Limit 35 Plasticity Index 58



Legend:
Dry Density ———
Wet Density - - - -

Remarks: Test Pit No. 71
Depth 1'-10'
Bag Sample

BUCHANAN/SOIL MECHANICS, INC.

P. O. Box 672, Bryan, Texas, 77806
(409) 822 - 6810 (409) 822 - 3767

OPTIMUM MOISTURE/DENSITY RELATIONSHIP

Client: TEXAS MUNICIPAL POWER AGENCY

B/SMI No.: 880252

Project: Site F Landfill, Gibbons Creek S.E.S.

Project No.:

Date: March 3, 1988

Method of Compaction: ASTM D 698, Method A

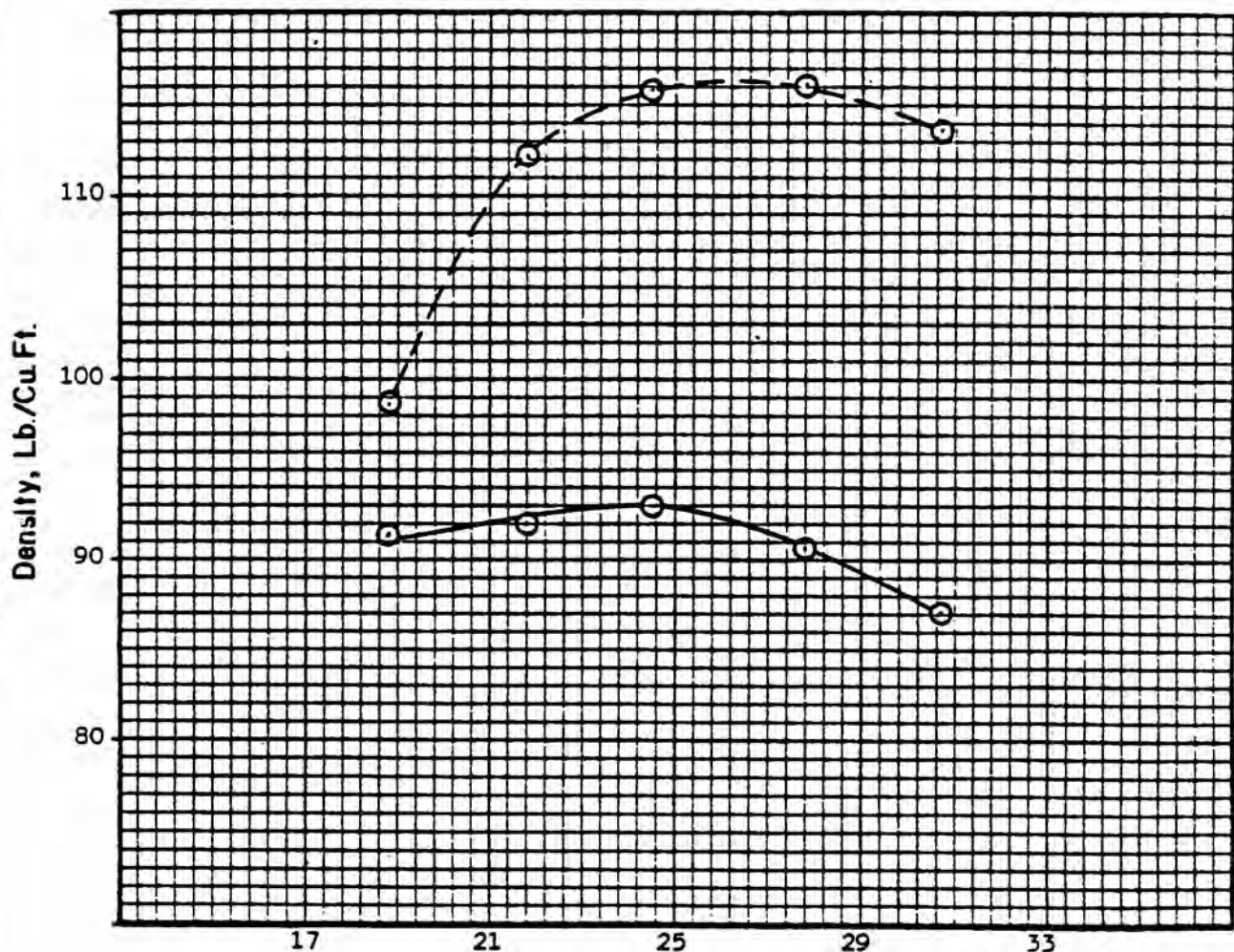
Material: Brownish gray clay

Optimum Moisture Content 24.5 % - Maximum Dry Density 93.0 Lb./Cu. Ft.

Liquid Limit 69

Plastic Limit 22

Plasticity Index 47



Moisture Content, % Dry Wt.

Legend:

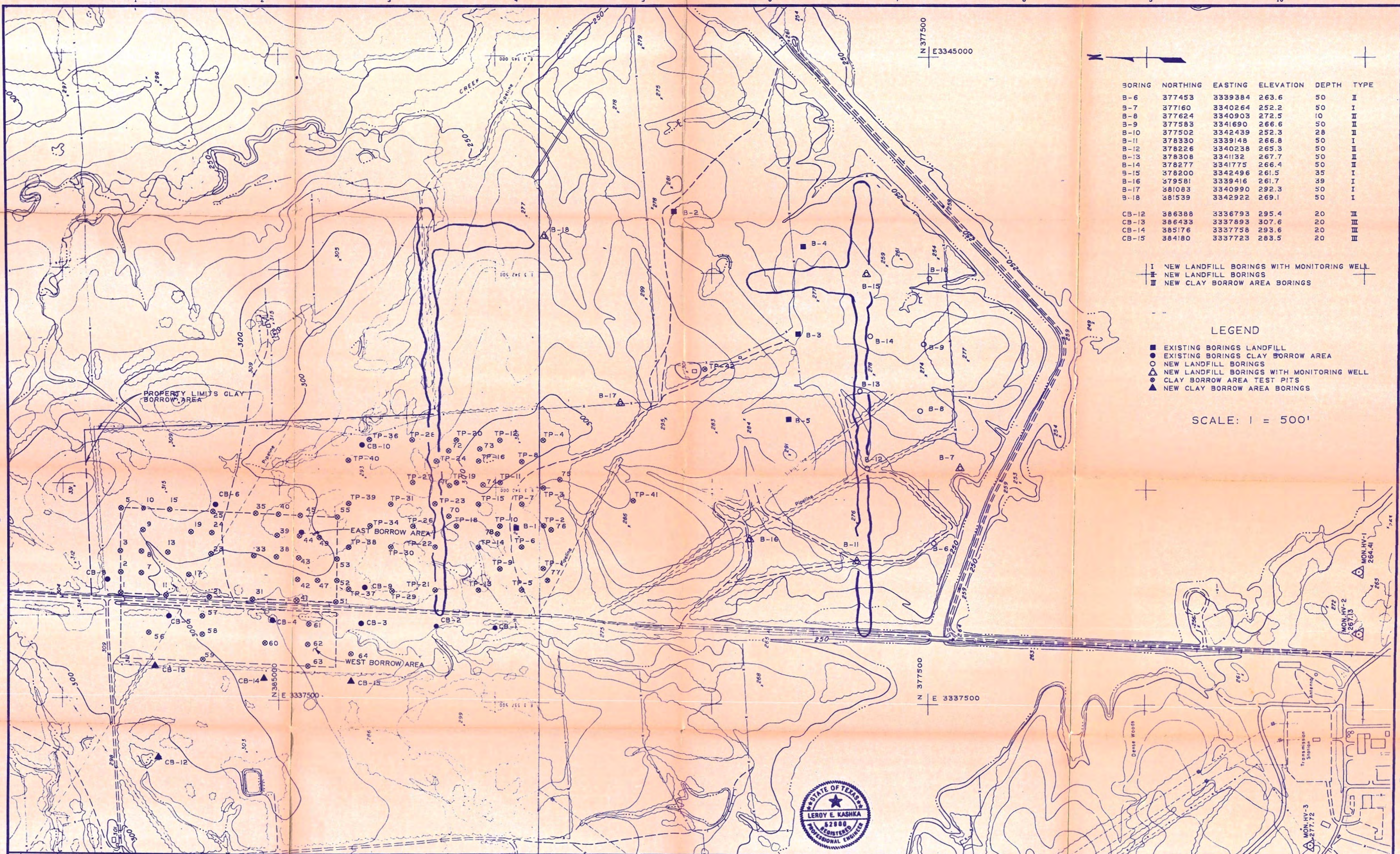
Dry Density ———

Wet Density - - - - -

Remarks: Test Pit No. 75

Depth 1'-10'

Bag Sample



| BORING | NORTHING | EASTING | ELEVATION | DEPTH | TYPE |
|--------|----------|---------|-----------|-------|------|
| B-6 | 377453 | 3339384 | 263.6 | 50 | I |
| B-7 | 377160 | 3340264 | 252.2 | 50 | I |
| B-8 | 377624 | 3340903 | 272.5 | 10 | II |
| B-9 | 377583 | 3341690 | 266.6 | 50 | II |
| B-10 | 377502 | 3342439 | 252.3 | 28 | II |
| B-11 | 378330 | 3339148 | 266.8 | 50 | I |
| B-12 | 378226 | 3340238 | 265.3 | 50 | II |
| B-13 | 378308 | 3341132 | 267.7 | 50 | II |
| B-14 | 378277 | 3341775 | 266.4 | 50 | II |
| B-15 | 378200 | 3342496 | 261.5 | 35 | I |
| B-16 | 379581 | 3339416 | 261.7 | 39 | I |
| B-17 | 381083 | 3340990 | 292.3 | 50 | I |
| B-18 | 381539 | 3342922 | 269.1 | 50 | I |
| CB-12 | 386388 | 3336793 | 295.4 | 20 | III |
| CB-13 | 386433 | 3337893 | 307.6 | 20 | III |
| CB-14 | 385176 | 3337758 | 293.6 | 20 | III |
| CB-15 | 384180 | 3337723 | 283.5 | 20 | III |

- I NEW LANDFILL BORINGS WITH MONITORING WELL
- II NEW LANDFILL BORINGS
- III NEW CLAY BORROW AREA BORINGS

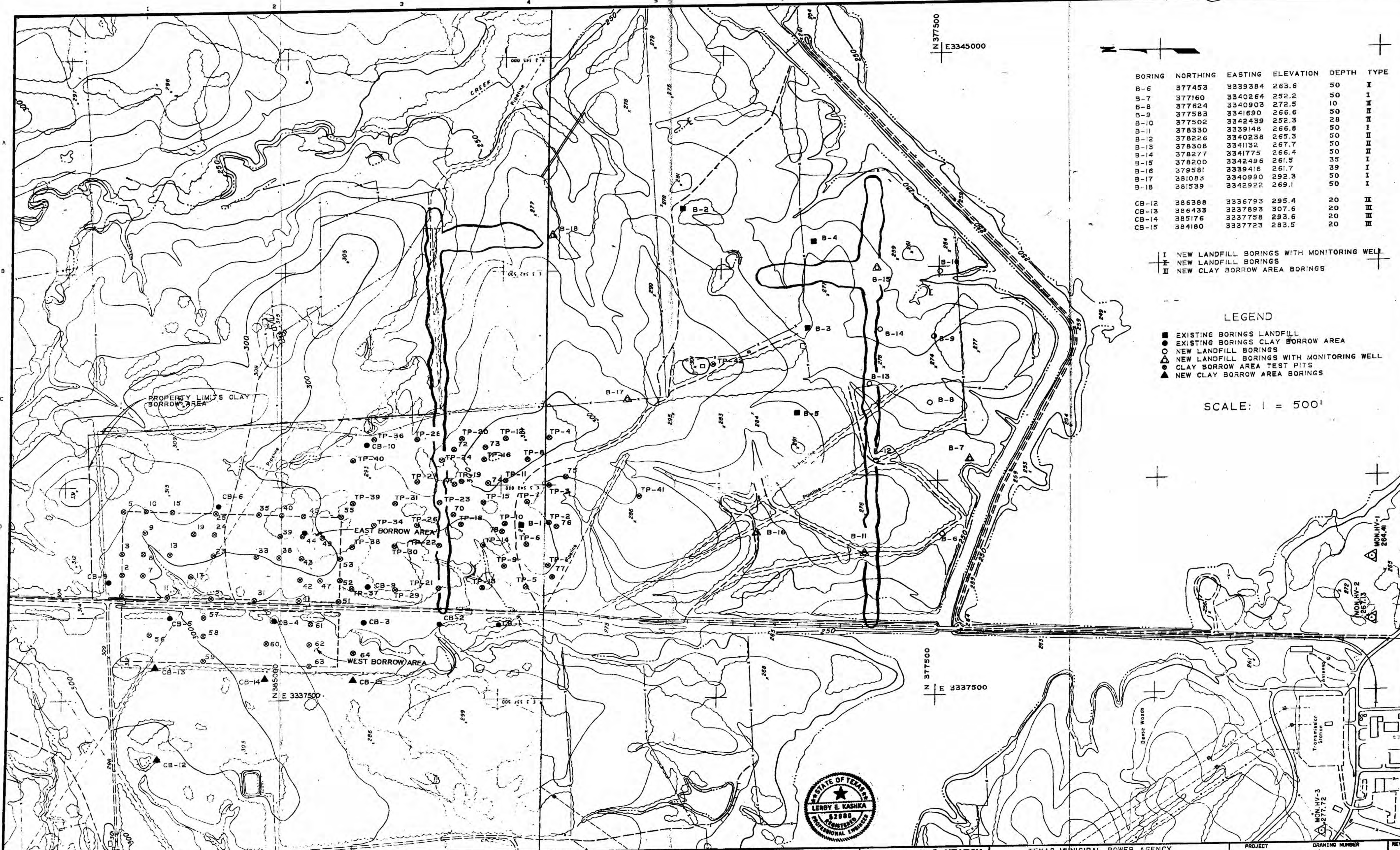
LEGEND

- EXISTING BORINGS LANDFILL
- EXISTING BORINGS CLAY BORROW AREA
- NEW LANDFILL BORINGS
- △ NEW LANDFILL BORINGS WITH MONITORING WELL
- CLAY BORROW AREA TEST PITS
- ▲ NEW CLAY BORROW AREA BORINGS

SCALE: 1 = 500'



| | | | | | |
|--|--|---|---|--|-----------------------------|
| I 8-1-89 ISSUED FOR SPECIFICATION 71.0200 O 4-8-88 ISSUED FOR GEOTECHNICAL INVESTIGATION REPORT NO. DATE REVISIONS AND RECORD OF ISSUE | | I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF TEXAS. SIGNED: <i>Leroy E. Kashka</i> DATE: 4/13/88 REG. NO. 52900 | BLACK & VEATCH ENGINEERS-ARCHITECTS ENGINEER: MCS DRAWN: MJJ CHECKED: LJA DATE: 4-8-88 | TEXAS MUNICIPAL POWER AGENCY SERVING THE CITIES OF BRYAN, DENTON, GARLAND & GREENVILLE PROJECT: COMBUSTION WASTE LANDFILL FACILITY DRAWING NUMBER: 14578-S0001 AREA: SITE INVESTIGATION PROGRAM | REV: 1 FIGURE 2-1 |
|--|--|---|---|--|-----------------------------|



| BORING | NORTHING | EASTING | ELEVATION | DEPTH | TYPE |
|--------|----------|---------|-----------|-------|------|
| B-6 | 377453 | 3339384 | 263.6 | 50 | II |
| B-7 | 377160 | 3340264 | 252.2 | 50 | I |
| B-8 | 377624 | 3340903 | 272.5 | 10 | II |
| B-9 | 377583 | 3341690 | 266.6 | 50 | II |
| B-10 | 377502 | 3342439 | 252.3 | 28 | II |
| B-11 | 378330 | 3339148 | 266.8 | 50 | I |
| B-12 | 378226 | 3340238 | 265.3 | 50 | II |
| B-13 | 378308 | 3341132 | 267.7 | 50 | II |
| B-14 | 378277 | 3341775 | 266.4 | 50 | II |
| B-15 | 378200 | 3342496 | 261.5 | 35 | I |
| B-16 | 379581 | 3339416 | 261.7 | 39 | I |
| B-17 | 381083 | 3340990 | 292.3 | 50 | I |
| B-18 | 381539 | 3342922 | 269.1 | 50 | I |
| CB-12 | 386388 | 3336793 | 295.4 | 20 | III |
| CB-13 | 386433 | 3337893 | 307.6 | 20 | III |
| CB-14 | 385176 | 3337758 | 293.6 | 20 | III |
| CB-15 | 384180 | 3337723 | 283.5 | 20 | III |

- I NEW LANDFILL BORINGS WITH MONITORING WELL
- II NEW LANDFILL BORINGS
- III NEW CLAY BORROW AREA BORINGS

LEGEND

- EXISTING BORINGS LANDFILL
- EXISTING BORINGS CLAY BORROW AREA
- NEW LANDFILL BORINGS
- ⊙ NEW LANDFILL BORINGS WITH MONITORING WELL
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BLACK & VEATCH
 ENGINEERS-ARCHITECTS
 ENGINEER: MCS DRAWN: MJJ
 CHECKED: LJA DATE: 4-8-88

TEXAS MUNICIPAL POWER AGENCY
 SERVING THE CITIES OF
 BRYAN, DENTON, GARLAND & GREENVILLE
 COMBUSTION WASTE LANDFILL FACILITY
 SITE INVESTIGATION PROGRAM

PROJECT: 14578-S0001
 DRAWING NUMBER: 1
 CODE: AREA: FIGURE 2-1

P-0N-285R