CONTRACT DOCUMENTS
AND
CONSTRUCTION SPECIFICATIONS
FOR
CALLOWAY BRANCH CHANNEL IMPROVEMENTS AT WAGGONER RANCH ROAD – PHASE II

FOR THE

CITY OF NORTH RICHLAND HILLS

September 2018

City of North Richland Hills
Public Works Department

Project RFB 19-006

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SECTION I

BIDDING DOCUMENTS

NOTICE TO BIDDERS

SEALED BIDS on forms prepared by the Engineer will be received by the office of the Purchasing Manager of the City of North Richland Hills at City Hall until 2:00 PM, CDST, Thursday, October 18th, 2018, for furnishing all labor, material, equipment and the performance of all work required for:

RFB 19-006
CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II
AT WAGGONER RANCH ROAD

at which time and place the bids will be publicly opened, read aloud and retained by the Public Works Department for tabulation, checking and evaluation.

COMPLETED BID FORMS shall be submitted in sealed envelopes upon the blank Bid Form furnished in the Construction Specifications. Sealed envelopes shall be marked: "19-006 CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II AT WAGGONER RANCH ROAD" – DO NOT OPEN UNTIL 2:00 PM, CDST, on Thursday, October 18th, 2018

COMPLETED BID FORMS shall be accompanied by a Bid Guaranty consisting of either a cashier's check or a Bid Bond on the form included or similar form of Surety Company (FACISIMILES WILL NOT BE CONSIDERED RESPONSIVE) made payable to The City of North Richland Hills, and in the amount of five percent (5%) of the total amount of the largest amount bid as a guarantee that if the bid is accepted, the bidder will execute the Contract and furnish the required Bonds, within the time-frame indicated in the Bid Form, to the City of North Richland Hills.

BIDDERS should carefully examine the plans, specifications and other documents; visit the site of the work; fully inform themselves as to all conditions and matters that can in any way affect the work or the costs thereof. Should a bidder find discrepancies or omissions from the plans, specifications or any other documents or should he/she be in doubt as to the meaning, he/she should at once notify the Purchasing Manager and obtain clarification prior to submitting any bid.

PLANS AND SPECIFICATIONS and contract documents may be examined without charge at North Richland Hills City Hall in the Public Works / Engineering Department: 4301 City Point Drive; North Richland Hills 76180; First Floor Development Services Area.

A NON-MANDATORY PRE-BID CONFERENCE has been scheduled for this Project at the North Richland Hills City Hall in the Community Room, (4301 City Point Drive, North Richland Hills, Texas), at 11:00 AM, CDST, Tuesday, October 9th, 2018. **While attendance of the pre-bid conference is not mandatory,**

attendance is highly recommended due to the nature of the project. Halff Associates and the City will not respond to any questions and/or comments regarding this Project after Thursday, October 11th, 2018. All questions should be submitted to Public Purchase. (www.publicpurchase.com).

Minimum wage rates to all laborers and mechanics on the project must not be less than as provided in the Contract Documents and Wage Provisions must particularly comply with all other applicable wage laws of the State of Texas.

The right is reserved, as the interest of the City of North Richland Hills may require, to reject any and all bids, to waive any informality in the bids received, and to select a bid best suited to the City of North Richland Hills' best interest.

In case of ambiguity or lack of clearness in stating bid prices, the City of North Richland Hills reserves the right to adopt the most advantageous construction thereof, or to reject any or all bids. No bid may be withdrawn within sixty (60) days after the date on which bids are opened.

CITY OF NORTH RICHLAND HILLS

Scott Kendall
Purchasing Manager

ADVERTISEMENT DATES:

- **Friday, September 28th, 2018**
- **Sunday, September 30th, 2018**

INVITATION TO BID

The City of North Richland Hills is accepting sealed bids from all interested parties for:

- Bid Number: 19-006
- Bid Type: REQUEST FOR BID
- Bid Name: CALLOWAY BRANCH CHANNEL REPAIR PROJECT – PHASE II
- Bid Due Date: Thursday, October 18, 2018
- Bid Due Time: 2:00 P.M. Central Standard Time
- Deadline for questions:
  Date: Thursday, October 11, 2018
  Time: 12:00 P.M.Central Standard Time

DOCUMENTS MAY BE SUBMITTED ELECTRONICALLY VIA:

www.publicpurchase.com

DOCUMENTS MAY BE DELIVERED TO:

City of North Richland Hills
Purchasing, Attn: 19-006 CALLOWAY BRANCH CHANNEL REPAIR PROJECT
4301 City Point Drive
North Richland Hills, TX 76180

If delivering a bid packet please include ***One (1) hard copy and One (1) soft copy on Flash drive*.** Submit documents in a sealed envelope with the following information marked plainly on the front:

ATTN: PURCHASING DEPARTMENT
19-006 CALLOWAY BRANCH CHANNEL REPAIR PROJECT – PHASE II

No oral explanation in regard to the meaning of the specifications will be made, and no oral instructions will be given after the pre-bid meeting and before the award of the contract. Requests from interested vendors for additional information or interpretation of the information included in the specifications should be directed in writing as a question related to this bid on Public Purchase and the question will be answered on Public Purchase. All addendums will also be posted to Public Purchase. It will be the vendor's responsibility to check all information related to this bid on Public Purchase before submitting a response.

The City of North Richland Hills reserves the right to reject in part or in whole all bids submitted, and to waive any technicalities for the best interest of the City of North Richland Hills.

GENERAL CONDITIONS

In submitting this bid, the Bidder understands and agrees to be bound by the following terms and conditions. These terms and conditions shall become a part of the purchase order or contract and will consist of the invitation to bid, specifications, the responsive bid and the contract with attachments, together with any additional documents identified in the contract and any written change orders approved and signed by a city official with authority to do so. All shall have equal weight and be deemed a part of the entire contract. If there is a conflict between contract documents, the provision more favorable to the City shall prevail.

1. BID TIME

It shall be the responsibility of each Bidder to ensure his/her bid is turned in to the City of North Richland Hills on or before **2:00 P.M..Thursday, October 18, 2018**. The official time shall be determined by the clock located in the North Richland Hills City Hall Purchasing Department. Bids received after the time stated above will be considered ineligible and returned unopened.

All attached bid documents are to be returned completely filled out, totaled, and signed. Envelopes containing bids must be ***sealed***. The City of North Richland Hills will not accept any bid documents other than the attached.

2. WITHDRAWING BIDS/PROPOSALS/QUOTES

Bids may be withdrawn at any time prior to the official opening; request for non-consideration of bids must be made in writing to the Purchasing Manager and received prior to the time set for opening bids. The bidder warrants and guarantees that his/her bid has been carefully reviewed and checked and that it is in all things true and accurate and free of mistakes. Bidder agrees that a bid price may not be withdrawn or canceled by the bidder for a period of ninety (90) days following the date designated for the receipt of bids.

3. IRREGULAR BIDS/PROPOSALS/QUOTES

Bids will be considered irregular if they show any omissions, alterations of form, additions, or conditions not called for, unauthorized alternate bids, or irregularities of any kind. However, the City of North Richland Hills reserves the right to waive any irregularities and to make the award in the best interest of the City.

4. REJECTION/DISQUALIFICATION

Bidders will be disqualified and/or their bids rejected, among other reasons, for any of the specific reasons listed below:

a) Bid received after the time set for receiving bids as stated in the advertisement;
b) Reason for believing collusion exists among the Bidders;
c) Bid containing unbalanced value of any item; bid offering used or reconditioned equipment;
d) Where the bidder, sub-contractor or supplier is in litigation with the

City of North Richland Hills or where such litigation is contemplated or imminent;

e) Uncompleted work which in the judgment of the City will prevent or hinder the prompt completion of additional work, or having defaulted on a previous contract;

f) Lack of competency as revealed by reference checks, financial statement, experience and equipment, questionnaires, or qualification statement;

g) Bid containing special conditions, clauses, alterations, items not called for or irregularities of any kind, which in the Owner's opinion may disqualify the Bidder.

However, the City of North Richland Hills reserves the right to waive any irregularities and to make the award in the best interest of the City of North Richland Hills.

5. BID SECURITY:

A certified check or cashier's check or acceptable bidder's bond made payable to the City of North Richland Hills, Texas, in an amount of five percent (5%) of the bid submitted must accompany each bid as a guarantee that if awarded the contract, the bidder will promptly enter into a contract and execute such bonds as are required.

6. QUALIFICATION OF BIDDERS:

No pre-qualification of bidders is required. However, in consideration of the bids, the City of North Richland Hills requires bidders to furnish a written experience record and a financial statement or the most recent audited financial statement of the firm. The contractor shall demonstrate that he has experience with similar projects which required working in confined areas in close proximity to many physical features (structures, fences, overhead and subsurface utilities, etc.) which required the contractor to sequence work efforts and equipment needs with these limitations in mind. The contractor shall include a **minimum of 5 (five) Public Works Projects** successfully completed within the last 5 years, **3 (three) of which are channel bank stabilization** and demonstrate the bidder is properly qualified to complete the work as described. The City of North Richland Hills reserves the right to use these items of data to influence a decision as to the award of the contract.

7. **PRE-BID CONFERENCE**:

A **NON-MANDATORY** Pre-Bidders Conference will be conducted at North Richland Hills City Hall in the Community Room, 4301 City Point Drive, North Richland Hills, Texas, at 11:00 AM on Tuesday the 9th of October,

2018. **While attendance of the pre-bid conference is not mandatory, attendance is highly recommended due to the nature of the project.**

8. STANDARD SPECIFICATIONS:

All work required by this project shall be in accordance with the "Public Works Design Manual" adopted by the City of North Richland Hills and the "Public Works Construction Standards - North Central Texas" adopted by the North Central Texas Council of Governments (NCTCOG), 5th Edition, except as modified in the Contract Documents. Where a conflict exists between the "Public Works Design Manual" and the "Public Works Construction Standards - North Central Texas", the "Public Works Design Manual" shall govern. Copies of both of these standards are included in the Contract Documents by reference and are made a part thereof. Omission of any section from this project's Contract Documents does not mean that such section is not applicable to this project.

9. UNIT PRICE CONTRACT:

The contract for this project is a "Unit Price" Contract. As such, the City of North Richland Hills reserves the right to add and/or delete quantities to specific pay items. The City of North Richland Hills may further delete an entire unit price pay item if the City of North Richland Hills desires. The City of North Richland Hills reserves the right to increase or decrease the amount of work to be done by any amount not to be exceeded by twenty-five percent (25%) of the original contract amount. In the event the increase pertains to items not originally bid, the Contractor shall submit a bid in writing to the City of North Richland Hills for approval.

It is further agreed that lump sum prices may be increased to cover additional work ordered by the City of North Richland Hills but not shown on the plans or required by the specifications, in accordance with the provisions of the general conditions; similarly, lump sum prices may be decreased to cover deletion of work so ordered.

The City of North Richland Hills reserves the right to reject the Contractor's bid on such extra work and secure such work to be done other than by said Contractor.

10. BID EVALUATION

Award of bid, if it be awarded, will be made to the lowest responsible bidder or may be awarded to the bidder that offers the goods and/or services at the *best value* for the City (Texas Local Government Code, 252.043). In determining the best value the City will consider the following:

a) The purchase price; terms and discounts; delivery schedule;
b) The reputation of the bidder and of the bidder's goods or services;
c) The quality of the bidders' goods or services;
d) The extent to which the bidder's goods or services meet the City specifications and needs;
e) The bidder's past relationship with the City;
f) Total long term cost to the city to acquire the bidder's goods or services;
g) Any relevant criteria specifically listed in the specifications;
h) Compliance with all State and local laws, general conditions and Specifications;
i) Results of testing, if required;
j) Warranty and/or guarantee, maintenance requirements and performance data of the product requested;
k) City's evaluation of the bidder's ability to perform to specifications.

11. AWARD OF BID

The bid award will be made within sixty (60) days after the opening of bids. No award will be made until after investigations are made as to the responsibilities of the best bidder.

The City of North Richland Hills reserves the right to award bids whole or in part when deemed to be in the best interest of the City. Bidder shall state on bid form if their bid is "all or none", otherwise it shall be considered as agreeing to this section.

Information contained in submitted bid documents shall not be available for inspection until after the award has been made by the City Council. Requests for this information must be submitted in writing.

12. ASSIGNMENT

The successful bidder may not assign his/her rights and duties under an award without the written consent of the North Richland Hills City Manager. Such consent shall not relieve the assignor of liability in the event of default by his assignee.

13. SUBSTITUTIONS/EXCEPTIONS

Exceptions/variations from the specifications may be acceptable provided such variations, in each instance, is noted and fully explained in writing and submitted with bid. NO substitutions or changes in the specifications shall be permitted after award of bid without prior written approval by the Purchasing Manager.

14. DELIVERY/ACCEPTANCE

The delivery date is an important factor of this bid and shall be considered during the evaluation process. The City considers delivery time the period elapsing from the time the order is placed until the City receives the order at

the specified delivery location.
All material shall be delivered F.O.B. City of North Richland Hills to the address specified at the time of order. Acceptance by the City of North Richland Hills of any delivery shall not relieve the Contractor of any guarantee or warranty, expressed or implied, nor shall it be considered an acceptance of material not in accordance with the specifications thereby waiving the City of North Richland Hills right to request replacement of defective material or material not meeting specifications.

15. NOTICE OF DELAYS

Whenever the contractor encounters any difficulty which is delaying or threatens to delay timely performance, written notice shall immediately be given to the Purchasing Manager, stating all relevant information. Such notice shall not in any way be construed as a waiver by the City of any rights or remedies to which it is entitled by law. Delays in performance and/or completion may result in cancellation of agreement.

16. SALES TAX

The City of North Richland Hills is exempt from Federal Excise and State sales tax; therefore tax must not be added to bid.

17. TIE BIDS

In the event of a tie bid, State Law provides the bid or contract shall be awarded to the local bidder. In cases where a local bidder is not involved, tie bids shall be awarded by drawing lots at the City Council meeting, or as otherwise directed by the Mayor.

18. BRAND NAME OR EQUAL

If items are identified by a "brand name" description, such identification is intended to be descriptive, not restrictive, and is to indicate the quality and characteristics of products that will be satisfactory. As used in this clause, the term "brand name" includes identification of products by make and model.

Such products must be clearly identified in the bid as an equal product and published specifications of the equal products offered must be included with the bid reply.

Bids offering equal products will be considered for award if determined by the Purchasing Manager and the user department to be equal in all material respects to the brand name products referenced. The decision of acceptable “equal" items or variat product referenced in the invitation for bids.

19. REFERENCES

A minimum of three (3) references, preferably located within the Dallas/Fort Worth Metroplex, must be submitted with each bid. Company name, contact and phone number must be included with each reference.

20. PROHIBITION AGAINST PERSONAL FINANCIAL INTEREST IN CONTRACTS

No employee of the City of North Richland Hills shall have a direct or indirect financial interest in any proposed or existing contract, purchase, work, sale or service to or by the City (CMA-074, Standards of Conduct, Section IV).

21. TERMINATION/NON PERFORMANCE

Continuing non-performance of the vendor in terms of Specifications shall be a basis for the termination of the contract by the City. The City of North Richland Hills reserves the right to enforce the performance of this contract in any manner prescribed by law or deemed to be in the best interest of the City in the event of breach or default of this contract. The City reserves the right to terminate the contract immediately in the event the successful bidder fails to 1.) Meet delivery schedules or, 2.) Otherwise not perform in accordance with these specifications.

Breach of contract or default authorizes the City to award to another bidder, and/or purchase elsewhere and charge the full increase in cost and handling to the defaulting successful bidder.

The contract may be terminated by either party upon written thirty (30) days' notice prior to cancellation without cause.

22. ATTORNEYS FEES

Neither party to this contract shall be entitled to attorney fees for any matter arising under this contract, whether for additional work, breach of contract, or other claim for goods, services, or compensation. All claims for attorney's fees are hereby WAIVED.

23. INDEMNITY

City shall not be liable or responsible for, and shall be saved and held harmless by Contractor from and against any and all suits, actions, losses, damages, claims, or liability of any character, type, or description, including claims for copyright and patent infringement, and including all expenses of litigation, court costs, and attorney's fees for injury or death to any person, or injury to any property, received or sustained by any person or persons or property, arising out of, or occasioned by, directly or indirectly, the performance of Contractor under this agreement, including claims and damages arising in part from the negligence of City, without; however, waiving any governmental immunity available to the CITY under Texas law and without waiving any defenses of the parties under Texas law. The provisions of this indemnification are solely for the benefit of the parties hereto and not intended to create or grant any rights, contractual or otherwise, to any other person or entity.

It is the expressed intent of the parties to this Agreement that the indemnity provided for in this section is an indemnity extended by Contractor to indemnify and protect City from the consequences of City's own negligence, provided, however, that the indemnity provided for in this section shall apply only when the negligent act of City is a contributory cause of the resultant injury, death, or damage, and shall have no application when the negligent act of City is the sole cause of the resultant injury, death, or damage, unmixed with the legal fault of another person or entity. Contractor further agrees to defend, at its own expense, and on behalf of City and in the name of City, any claim or litigation brought in connection with any such injury, death, or damage.

The Contractor will secure and maintain Contractual Liability insurance to cover this indemnification agreement that will be primary and noncontributory as to any insurance maintained by the City for its own benefit, including self-insurance.

24. PERFORMANCE AND PAYMENT BONDS

In the event the total contract amount exceeds $100,000, the Contractor shall be required to execute a performance bond in the amount of one hundred (100) percent of the total contract price; if the total contract amount exceeds $50,000 the contractor shall be required to execute a payment bond in the amount of one hundred (100) percent of the total contact price, each in standard forms for this purpose, guaranteeing faithful performance of work and guaranteeing payment to all persons supply labor and materials or furnishing any equipment in the execution of the contract. It is agreed that this contract shall not be in effect until such performance and payment bonds are furnished and approved by the City of North Richland Hills. No exceptions to this provision allowed.

Unless otherwise approved in writing by the City of North Richland Hills, the surety company underwriting the bonds shall be acceptable according to the latest list of companies holding certificates of authority from the Secretary of the Treasury of the United States.

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and current copy of their power of attorney.

25. INTERLOCAL AGREEMENT

Successful bidder agrees to extend prices and terms to all entities who have entered into or will enter into joint purchasing interlocal cooperation agreements with the City of North Richland Hills.

26. ELECTRONIC PROCUREMENT

The City of North Richland Hills has adopted policies and procedures

complying with Local Government Code Section 252.0415, Section 271.906 and Section 2155.062. The City of North Richland Hills may receive submittals in electronic form in response to procurement requests. However, a bid that is submitted non-electronically by the due date and time will be accepted and then entered electronically by Purchasing after the bid opening.

27. COMPLIANCE WITH SB 89:

Vendor agrees per HB 89 of the 85th Texas Legislative Session, and in accordance with Chapter 2270 of the Texas Government Code, vendor has not and shall not boycott Israel at any time while providing products or services to the City of North Richland Hills.

[ ] Yes, we agree [ ] No, we do not agree

28. COMPLIANCE WITH SB 252:

Vendor agrees per SB 252 of the 85th Texas Legislative Session, and in accordance with Chapter 2252 of the Texas Government Code, vendor shall not do business with Iran, Sudan or a foreign terrorist organization while providing products or services to the City of North Richland Hills.

[ ] Yes, we agree [ ] No, we do not agree *

* By selecting no, vendor certifies that it is affirmatively excluded from the federal sanctions regime by the United States government and is not subject to the contract prohibition under Section 2252.154 of the Texas Government Code. Vendor shall provide sufficient documentation to the City of such exclusion prior to award of any contract for goods or services.

29. <u>ETHICS AND COMPLIANCE POLICY</u>

The City's Ethics and Compliance Policy can be found at The City of North Richland Hills Purchasing Division webpage - Or you may request a copy from the Purchasing Division.

Acknowledgment - The City of North Richland Hills' Internal Ethics and Compliance Policy has been made available to me. I understand the expectations of ethical behavior and compliance with the law, and agree to adhere to the City's ethics policies.

https://www.nrhtx.com/DocumentCenter/View/389/Code-of-Ethics---PDF?bidId=

[ ] I agree

[ ] I do not agree

30. DEPARTMENT OF TRANSPORTATION (TXDOT) RELATED BIDS

"The City of North Richland Hills, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award."

Due care and diligence has been used in preparation of this information, and it is believed to be substantially correct. However, the responsibility for determining the full extent of the exposure and the verification of all information presented herein shall rest solely with the bidder. The City of North Richland Hills and its representatives will not be responsible for any errors or omissions in these specifications, nor for the failure on the part of the proposer to determine the full extent of the exposures.

INSURANCE REQUIREMENTS

Contractors performing work on City property or public right-of-way for the City of North Richland Hills shall provide the City a certificate of insurance evidencing the coverages and coverage provisions identified herein. Contractors shall provide the City evidence that all subcontractors performing work on the project have the same types and amounts of coverages as required herein or that the subcontractors are included under the contractor's policy. The City, at its own discretion, may require a certified copy of the policy.

All insurance companies and coverages must be authorized by the Texas Department of Insurance to transact business in the State of Texas and must be acceptable to the City of North Richland Hills.

Listed below are the types and amounts of insurance generally required. The City reserves the right to amend the insurance requirements or require additional types and amounts of coverages or provisions depending on the nature of the work or services to be performed.

Type of Insurance	Amount of Insurance	Provision
1. Commercial General Liability to include coverage for: a) Premises/Operations b) Products/Completed Operations c) Independent Contractors d) Personal Injury e) Contractual Liability f) Personal/Advertising Injury g) Medial Expense h) Fire Legal Liability i) Underground Hazard j) Explosion/Collapse Hazard k) Patent Infringement l) Copyright Law Violations	$1,000,000 each occurrence, $1,000,000 general aggregate; Or $1,000,000 combined single limits	City to be listed as additional insured and provided 30 day-notice of cancellation or material change in coverage City prefers that insurer be rated B+V1 or higher by A. M. Best or A or higher by Standard & Poors
2. Consultants, architects, engineers, Landscape design specialist, other professional services	$500,000 Professional Liability with proof that aggregate is still available.	
3. Workers' Compensation & Employers' Liability	Statutory Limits $500,000 each accident	Alternate employer endorsement required
4. Comprehensive Automobile Liability Insurance, including coverage for loading and unloading hazards, for a) Owned/Leased Vehicles b) Non-Owned Vehicles c) Hired Vehicles	$500,000 Combined single limit for bodily injury and property damage	

A PURCHASE ORDER WILL NOT BE ISSUED WITHOUT EVIDENCE OF INSURANCE.

NON-COLLUSION AFFIDAVIT OF BIDDER

State of _____ County of _____

_____ verifies that:
(Name)

(1) He/She is owner, partner, officer, representative, or agent of

_____, has submitted the attached
bid: (Company Name)

(2) He/She is fully informed in respect to the preparation, contents and circumstances in regard to attached bid;

(3) Neither said bidder nor any of its officers, partners, agents or employees has in any inany way colluded, conspired or agreed, directly or indirectly with any other bidder, firm or person to submit a collusive or sham bid in connection with attached bid and the price or prices quoted herein are fair and proper.

_____
SIGNATURE

_____
PRINTED NAME

Subscribed and sworn to before me this

_____ Day of _____ 2018.

_____
NOTARY PUBLIC in and for

_____ County, Texas.

My commission expires: _____

THIS FORM MUST BE COMPLETED, NOTARIZED AND SUBMITTED WITH BID

BID CERTIFICATION

The Undersigned, in submitting this bid, represents and certifies:

a. He/she is fully informed regarding the preparation, contents and circumstances of the attached bid;

b. He/she proposes to furnish all equipment/service at the prices quoted herein and bid is in strict accordance with the conditions and specifications stated herein;

c. There will be at no time a misunderstanding as to the intent of the specifications or conditions to be overcome or pleaded after the bids are opened;

d. He/she is an equal opportunity employer, and will not discriminate with regard to race, color, national origin, age or sex in the performance of this contract.

e. The undersigned hereby certifies that he/she has read, understands and agrees that acceptance by the City of North Richland Hills of the bidder's offer by issuance of a purchase order will create a binding contract. Further, he/she agrees to fully comply with documentary forms herewith made a part of this specific procurement.

COMPANY: _____

ADDRESS: _____

CITY, STATE & ZIP: _____

TELEPHONE: _____

FAX _____

EMAIL: _____

SIGNATURE: _____

PRINTED NAME: _____

DATE: _____

COMPLIANCE WITH HOUSE BILL 1295

In 2015, the Texas Legislature adopted House Bill 1295, which added section 2252.908 of the Government Code. The law states that a governmental entity may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the governmental entity at the time the business entity submits the signed contract to the governmental entity.

The law applies only to a contract of a governmental entity that either (1) requires an action or vote by the governing body of the entity or agency before the contract may be signed or (2) has a value of at least $1 million. The disclosure requirement applies to a contract entered into on or after January 1, 2016.

The Texas Ethics Commission has adopted rules necessary to implement the law, prescribed the disclosure of interested parties form, and posted a copy of the form on the commission's website.

Filing Process:
The commission has made available on its website a new filing application that must be used to file Form 1295. A business entity must:

1) Use the application to enter the required information on Form 1295,
2) Print a copy of the completed form, which will include a certification of filing that will contain a unique certification number.
3) Contract Number should be the Bid/RFP Number and Bid Title.
4) Sign the printed copy of the form (an authorized agent of the business entity must sign),
5) Either include your personal information or have the form notarized,
6) File the completed Form 1295 with the certification of filing with the governmental body with which the business entity is entering into the contract.

The governmental entity must notify the commission, using the commission's filing application, of the receipt of the filed Form 1295 with the certification of filing not later than the 30th day after the date the contract binds all parties to the contract. The commission will post the completed Form 1295 to its website within seven business days after receiving notice from the governmental entity.

Information regarding how to use the filing application may be found at https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm.

FOR DISADVANTAGED BUSINESS ENTERPRISES ONLY

Disadvantaged Business Enterprises (DBE) are encouraged to participate in the City of North Richland Hills bid process. Representatives from DBE Companies should identify themselves as such and submit a copy of their Certification.

The City of North Richland Hills recognizes the certifications of both the State of Texas Building and Procurement Commission HUB Program and the North Central Texas Regional Certification Agency. All companies seeking information concerning DBE certification are urged to contact:

Texas Building and Procurement Commission
Statewide HUB Program
1711 San Jacinto Blvd., Austin TX 78701-1416
P O Box 13186, Austin, TX 78711-3186
(512) 463-5872
http://www.window.state.tx.us/procurement/prog/hub/hub-certification/

North Central Texas
Regional Certification Agency
624 Six Flags Drive, Suite 216
Arlington, Texas 76011
(817) 640-0606
http://www.nctrca.org/certification.html

If your company is already certified, attach a copy of your certification to this form and return as part of your packet.

Company Names: _____

Representative: _____

Address: _____

City, State, Zip: _____

Telephone No. _____ **Fax No.** _____

Email address: _____

INDICATE ALL THAT APPLY:

_____**Minority-Owned Business Enterprise**
_____**Women-Owned Business Enterprise**
_____**Disadvantaged Business Enterprise**

CONFLICT OF INTEREST QUESTIONNAIRE

Pursuant to Chapter 176 of the Texas Local Government Code, a person, or agent of a person, who contracts or seeks to contract for the sale or purchase of property, goods, or services with the City of North Richland Hills must file a completed conflict of interest questionnaire. The conflict of interest questionnaire must be filed with the City Secretary of the City of North Richland Hills no later than the seventh business day after the person or agent begins contract discussions or negotiations with the City of North Richland Hills or submits to the City of North Richland Hills an application, response to a request for proposal or bid, correspondence, or another writing
related to a potential agreement with the City of North Richland Hills. An updated conflict of interest questionnaire must be filed in accordance with Chapter 176 of the Local Government Code. An offense under Chapter 176 is a Class C misdemeanor.

The Conflict of Interest Questionnaire is included as part of this document and can be found at:

https://www.ethics.state.tx.us/forms/CIQ.pdf

FINANCIAL STATEMENT

Condition of Bidder at close of Business month, September, 2018

		ASSETS	LIABILITIES
1.	Cash on Hand	$ _____	$ _____
	Cash in Bank	$ _____	$ _____
	Cash Elsewhere	$ _____	$ _____
2.	Accounts receivable from completed contracts (exclusive of claims not approved for payment)	$ _____	$ _____
3.	Accounts receivable from other sources than above	$ _____	$ _____
4.	Amounts earned on uncompleted contracts (not included in Item 3) (Contract price on completed portion of uncompleted contracts less total cost of completed portion)	$ _____	$ _____
5.	Deposits for bids on other guarantees		$ _____
6.	Notes Receivable Past Due	$ _____	
	Due 90 days	$ _____	
	Due Later	$ _____	
7.	Interest Earned	$ _____	
8.	Real Estate, Business Property, present value	$ _____	
	Other property, present value	$ _____	$ _____
9.	Stocks and Bonds, Listed on Exchange	$ _____	$ _____
	Unlisted	$ _____	$ _____
10.	Equipment, Machinery, Fixtures	$ _____	$ _____
	Less Depreciation	$ _____	$ _____
11.	Other Assets	$ _____	
	TOTAL ASSETS	$ _____	$ _____

LIABILITIES AND NET WORTH

		ASSETS	LIABILITIES
1.	Notes Payable to Banks Regular	$ _____	
	(For Certified Checks)	$ _____	
	Equipment Obligations	$ _____	
	Others	$ _____	$ _____
2.	Accounts Payable Current	$ _____	
	Past Due	$ _____	
3.	Real Estate Mortgages	$ _____	$ _____
4.	Other Liabilities		$ _____
5.	Reserves	$ _____	
6.	Capital Stock Paid Up		
	Common	$ _____	
	Preferred	$ _____	
7.	Surplus	$ _____	
	TOTAL LIABILITIES	$ _____	$ _____

EXPERIENCE RECORD

List of Projects your Organization has successfully completed:

Amount of Contract Award	Type of Work	Date Accepted	Name and Address of Owner

List of Projects your Organization is now engaged in completing:

Amount of Contract Award	Type of Work	Anticipated Date of Completion	Name and Address of Owner

List of Surety Bonds in Force on above Uncompleted Work:

Date of Contract Award	Type of Bond	Amount of Bond[1]	Name and Address of Surety

1List every type of bond separately. If one project has more than one type of bond, list each and every bond for that project on a separate line.

EQUIPMENT SCHEDULE

List of Equipment owned by bidder that is in serviceable condition and available for use:

Portions of work Bidder proposes to sublet if awarded the Contract including amount and type:

BID FORM

FOR

CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II AT WAGGONER RANCH ROAD

FOR THE

CITY OF NORTH RICHLAND HILLS, TEXAS

(THIS BID FORM MUST BE COMPLETED IN ITS ENTIRETY, SUBMITTED IN ITS ENTIRETY AND NOT REMOVED FROM THE CONTRACT DOCUMENTS)

Bid Opening Date: 2:00 PM Thursday, October 18th, 2018

TO: City of North Richland Hills
4301 City Point Drive
North Richland Hills, Texas 76180

FOR: Calloway Branch Channel Improvements – Phase II at Waggoner Ranch Road

Pursuant to the foregoing "Notice to Bidders", the undersigned bidder, having thoroughly examined the Contract Documents, the site of the project and understanding the amount of work to be done and the prevailing conditions, hereby proposes to fully complete all of the work and requirements as provided in the plans and Contract Documents and binds himself/herself upon acceptance of this bid form to execute a contract and furnish such bonds as required and proposes to complete the work within the time stated and for the following prices:

BID SCHEDULE

BASE BID – CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II AT WAGGONER RANCH ROAD
SECTION I – PAVING & DRAINAGE IMPROVEMENTS

Item No.	Estim. Quantity	Unit	Name of Pay Item with Unit Price in Words	Unit Bid Price	Amount Bid
1.	1	LS	Joint Storm Water Pollution Prevention Plan @ _____ Dollars and _____ Cents Per Unit	$ _____	$ _____
2.	170	LF	Silt Fence @ _____ Dollars and _____ Cents Per Unit	$ _____	$ _____
3.	30	LF	Rock Berm @ _____ Dollars and _____ Cents Per Unit	$ _____	$ _____
4.	1	LS	Construction Entrance @ _____ Dollars and _____ Cents Per Unit	$ _____	$ _____

BASE BID – CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II AT WAGGONER RANCH ROAD

SECTION I – PAVING & DRAINAGE IMPROVEMENTS

Item No.	Estim. Quantity	Unit	Name of Pay Item with Unit Price in Words	Unit Bid Price	Amount Bid
5.	400	SY	Erosion Control Matting @ _____ Dollars and _____ Cents Per Unit	$ _____	$ _____
6.	90	SY	Sodding @ _____ Dollars and _____ Cents Per Unit	$ _____	$ _____
7.	400	SY	Hydromulch Seeding @ _____ Dollars and _____ Cents Per Unit	$ _____	$ _____
8.	1	LS	Barricades, Warning, and Detour Signs @ _____ Dollars and _____ Cents Per Unit	$ _____	$ _____
9.	1	LS	General Site Preparation @ _____ Dollars and _____ Cents Per Unit	$ _____	$ _____

BASE BID – CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II AT WAGGONER RANCH ROAD

SECTION I – PAVING & DRAINAGE IMPROVEMENTS

Item No.	Estim. Quantity	Unit	Name of Pay Item with Unit Price in Words	Unit Bid Price	Amount Bid
10.	400	CY	Unclassified Channel Excavation @ _____ Dollars and _____ Cents Per Unit	$	$
11.	160	LF	Concrete Flume @ _____ Dollars and _____ Cents Per Unit	$	$
12.	837	LF	Drilled Shaft @ _____ Dollars and _____ Cents Per Unit	$	$
13.	160	LF	Fence @ _____ Dollars and _____ Cents Per Unit	$	$
14.	1	LS	Subsurface Drain @ _____ Dollars and _____ Cents Per Unit	$	$

BASE BID – CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II AT WAGGONER RANCH ROAD

SECTION I – PAVING & DRAINAGE IMPROVEMENTS

Item No.	Estim. Quantity	Unit	Name of Pay Item with Unit Price in Words	Unit Bid Price	Amount Bid
15.	1	LS	Miscellaneous Paving, Drainage, Landscape and Utility Improvements @ ten thousand Dollars and zero Cents Per Unit	$5,000.00	$5,000.00

SUB-TOTAL AMOUNT BID – Base Bid SECTION I – PAVING & DRAINAGE IMPROVEMENTS

$ _____

Total Amount Bid: Base Bid:

Section I – Paving & Drainage Improvements **$**_____

$_____

(Total Amount Bid, Numerical Value

CONFLICT OF INTEREST QUESTIONNAIRE FORM CIQ

For vendor or other person doing business with local governmental entity

This questionnaire is being filed in accordance with chapter 176 of the Local Government Code by a person doing business with the governmental entity.

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

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

OFFICE USE ONLY

Date Received

1 **Name of person doing business with local governmental entity.**

2 ☐ **Check this box if you are filing an update to a previous filed questionnaire.**

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than September 1 of the year for which an activity described in Section 176.006(a), Local Government Code, is pending and not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 **Describe each affiliation or business relationship with an employee or contractor of the local governmental entity who makes recommendations to a local government officer of the local governmental entity with respect to expenditure of money.**

4 **Describe each affiliation or business relationship with a person who is a local government officer and who appoints or employs a local government officer of the local governmental entity that is the subject of this questionnaire.**

CONFLICT OF INTEREST QUESTIONNAIRE FORM CIQ

For vendor or other person doing business with local governmental entity

5 **Name of local government officer with whom filer has affiliation or business relationship. (Complete this section only if the answer to A, B, or C is YES.)**

This section, item 5 including subparts A, B, C & D, must be completed for each officer with whom the filer has affiliation or business relationship. Attach additional pages to this Form CIQ as necessary.

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

☐ YES ☐ NO

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

☐ YES ☐ NO

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

☐ YES ☐ NO

D. Describe each affiliation or business relationship.

6 **Describe any other affiliation or business relationship that might cause a conflict of interest.**

7

_____ _____

Signature of person doing business with the governmental entity Date

Adopted 01/13/2006

The undersigned bidder acknowledges receipt of the following Addenda: **(If none is received, then write NONE across the blanks.)**

Addendum No. 1 - Date Received _____

Addendum No. 2 - Date Received _____

Addendum No. 3 - Date Received _____

The undersigned bidder agrees to execute and file with the Owner a contract and bonds on the forms provided within ten (10) days after written notification of award of the contract to him and to begin the work to be performed under the contract within ten (10) days after written authorization to begin the work (Work Order) and to complete the work in full within **90 Consecutive Calendar Days** after the date specified in the "Notice to Proceed/Work Order".

Enclosed with this bid form is a certified check or cashier's check or bid bond payable to the City of North Richland Hills in the amount of five percent (5%) of the total bid, which is to become the property of the City of North Richland Hills, or the attached Bidder's Bond is to be forfeited in the event the contract and bond are not executed within the time set forth, as liquidated damages for delay and additional work caused thereby.

Respectfully Submitted,

Signed: _____

Company: _____

Address: _____

_____

_____ SEAL
(If Bidder is a Corporation)

Telephone: _____

Fax: _____

Submitted by: _____ an individual
A partnership
A corporation

Doing Business As: _____

SECTION II

CONTRACTUAL DOCUMENTS

STANDARD FORM OF CONSTRUCTION AGREEMENT

THE STATE OF TEXAS §
§
COUNTY OF TARRANT §

THIS AGREEMENT is entered into this the ___ day of _____, 20___, by and between the CITY NORTH RICHLAND HILLLS, a municipal corporation, of the County of Tarrant and State of Texas, hereinafter called "OWNER" and _____of the City of _____, County of _____ and State of _____ hereinafter called "CONTRACTOR."

OWNER and CONTRACTOR in consideration of the mutual covenants contained in this Agreement, agree as follows:

ARTICLE 1. WORK.

CONTRACTOR covenants and agrees to perform the Work in every detail, in a good and first-class workmanlike manner as specified and indicated in the Contract Documents, of which are incorporated in this Agreement in their entirety as if they were herein set out at length written word for word. The CONTRACTOR shall furnish all labor, materials, tools and equipment required to perform and complete the Work in strict accordance with these Contract Documents. The Work is described as follows:

CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II
AT WAGGONER RANCH ROAD

ARTICLE 2. CONTRACT PRICE.

OWNER agrees to pay CONTRACTOR for completion of the Work in accordance with the Contract Documents, the price or prices shown in the bidder's proposal, which total the following amount:

_____
_____($ _____)

ARTICLE 3. CONTRACT TIME / LIQUIDATED DAMAGES.

Unless otherwise stated in this agreement, **time shall be considered of the essence.**

a. When **time is of** the essence, the CONTRACTOR shall be liable for failure to deliver or delay in delivery occasioned by and including without limitation strikes, lock-outs, inability of obtaining material or shopping space, breakdowns, delays of carriers or suppliers, and preexisting governmental acts and regulations of the Federal and State governments or any subdivision thereof, unless such governmental acts and regulations affecting delivery could not be found, recognized, or discovered by due diligence on the part of the CONTRACTOR prior to submission of his/her bid and City Council's acceptance thereof.

b. When **time is not of** the essence, this agreement shall be inoperative during such period of time that aforesaid delivery or acceptance may be rendered impossible by reason of fire, strike, Acts of God, or government regulation. Provided, however, to the extent that the CONTRACTOR has any commercially reasonable alternative method of performing this contract by purchase on the market or otherwise, he/she shall not be freed of his/her obligation hereunder by this clause, even though the goods intended for this contract were destroyed or their delivery delayed because of any event described above.

As time is of the essence on this contract, CONTRACTOR agrees to commence work under this contract within ten (10) days from the date specified in the "Notice to Proceed" and to totally complete the Work within **90** consecutive calendar days after the date specified in the "Notice to Proceed", subject to such extensions of time as are indicated in the Special Provisions.

This contract time is both multi-tiered and cumulative. The CONTRACTOR further agrees to pay the following as liquidated damages:

(1) $150 per calendar day for any unfinished work for the first 30 days beyond the 90th day. This $150 rate will start on the 91st consecutive calendar day after the “Notice to Proceed” issuance date and continue through the 120th consecutive calendar day after the “Notice to Proceed” issuance date.)

(2) $300 per calendar day for any unfinished work beyond the 120th consecutive calendar day after the “Notice to Proceed” issuance date. This rate shall continue until such time that the Project is complete and accepted by the OWNER.

It is understood between the parties hereto that these sums shall be treated as liquidated damages and not as a penalty, and the OWNER may withhold from the CONTRACTOR's compensation such sums as liquidated damages.

ARTICLE 4. PARTIAL PAYMENT.

OWNER shall make payments to the CONTRACTOR in the following manner. On or about the first of each month, the OWNER, or the OWNER's Authorized Representative, will make accurate estimates of the value, based on contract prices, of the work done and materials incorporated in the work and of materials suitably stored at the site during the preceding calendar month. The CONTRACTOR shall furnish to the OWNER, or the OWNER's Representative, such detailed information as the OWNER may request to aid OWNER as a guide in the preparation of the monthly estimate.

Within the following thirty (30) days, OWNER shall make partial payments to the CONTRACTOR for work performed during the preceding calendar month as estimated by the OWNER or OWNER's Representative. Ten percent (10%) of each estimate shall be retained by the OWNER until final completion and acceptance of all work covered by the Contract for contracts less than four hundred thousand dollars ($ 400,000). Five percent (5%) of each estimate shall be retained by the OWNER until final completion and acceptance of all work covered by the Contract for contracts greater than four hundred thousand dollars ($ 400,000). Upon completion and acceptance of all work in compliance with the Contract, the OWNER shall, within thirty (30) days, pay the CONTRACTOR the balance due under the terms and conditions of the Contract.

It is understood that the monthly estimates shall be approximate only, and all monthly estimates and partial payments shall be subject to correction in the estimate rendered following the discovery of an error in any previous estimate, and such estimate shall not in any respect be taken as an admission of the OWNER of the amount of work done or of its quality or sufficiency nor as an acceptance of the work or the release of the CONTRACTOR of any of its responsibility under the Contract.

ARTICLE 5. DISCRIMINATION.

The CONTRACTOR agrees, in connection with the performance of work under this contract as follows:

a. The CONTRACTOR will not discriminate against any employee or applicant for employment because of race, creed, color, sex, religion, national origin or ancestry. Such actions shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruiting or recruitment, advertising, layoff, termination, rates of pay or other forms of compensation and selection for training, including apprenticeship.

b. The CONTRACTOR agrees to include this non-discrimination clause in any subcontracts connected with the performance of this agreement.

c. In the event of the CONTRACTOR's non-compliance with the above non-discrimination clause, the contract may be canceled or terminated by the OWNER. The CONTRACTOR may be declared by the OWNER to be ineligible for future contracts with the OWNER, until satisfactory proof of intent to comply shall be made by the CONTRACTOR.

ARTICLE 6. ENTIRE CONTRACT.

This Contract and Agreement contains the entire understanding and agreement of the parties upon the subject matter hereof. There is no agreement, oral or otherwise, which is not set forth in writing as part of this Agreement or the Contract Documents.

ARTICLE 7. MODIFICATION.

This contract cannot be modified except by a writing signed by both parties.

ARTICLE 8. VARIABLES IN COST.

The parties hereto assume and understand that the variables in the CONTRACTOR's cost of performance may fluctuate; consequently, the parties hereto agree that any fluctuations in the CONTRACTOR's costs will in no way alter the CONTRACTOR's obligations under this contract nor excuse nonperformance or delay on his/her part.

ARTICLE 10. VENUE.

This contract shall be governed by the laws of the State of Texas. Venue for any court proceedings shall be in Tarrant County, Texas.

ARTICLE 11. CONTRACT DOCUMENTS.

Documents Listed. The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR for the performance of and payment for the Work, consist of the following:

(1) This Agreement
(2) Addendum(s)
(3) “Notice to Bidders” advertisement
(4) Bidder’s Proposal
(5) Special Instruction to Bidders
(6) Performance, Payment and Maintenance Bonds
(7) Certification of Insurance
(8) Notice to Proceed
(9) Technical Specifications
(10) City of North Richland Hills’ Public Works Design Manual

(11) Special Provisions
(12) General Provisions
(13) Special Specifications
(14) Project Construction Plans/Drawings
(15) Special Material and/or Equipment Specifications
(16) Special Material and/or Equipment Drawings
(17) “Public Works Construction Standards - North Central Texas” adopted by the North Central Texas Council of Governments (NCTCOG), Fifth Edition
(18) North Central Texas Council of Government references

IN TESTIMONY WHEREOF, the CITY OF NORTH RICHLAND HILLS has caused this instrument to be signed in its corporate name, and on its behalf by the Mayor, duly authorized to execute this instrument by action of the City Council and _____ a corporation, a partnership, an individual acting
(Name of Contractor) ***("X" out the inappropriate wording)***
by and through its duly authorized officials, thereby binding themselves for the faithful and full performance of the terms and provisions of this Agreement.

City of North Richland Hills	
OWNER	CONTRACTOR
By: _____	By: _____
Mayor	
	Title: _____
Attest: _____	Attest: _____
Title: _____	Title: _____

Bond No. _____

PERFORMANCE BOND

STATE OF TEXAS §
§ **KNOW ALL MEN BY THESE PRESENTS:**
COUNTY OF TARRANT §

THAT _____, a corporation organized and existing under the laws of the State of _____, and fully authorized to transact business in the State of Texas, whose address is _____ of the City of _____, County of _____, and State of _____, (hereinafter referred to as "Principal"), and _____ _____ (hereinafter referred to as "Surety"), a corporation organized under the laws of the State of _____ and authorized under the laws of the State of Texas to act as surety on bonds for principals, are held and firmly bound unto THE CITY OF NORTH RICHLAND HILLS (hereinafter referred to as "Owner") in the penal sum of _____ ($_____) [not less than 100% of the approximate total amount of the contract as evidenced in the bid proposal] in lawful money of the United States, for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors, and assigns, jointly and severally, firmly by these presents:

WHEREAS, the Principal has entered into a certain written Contract with the Owner, dated the _____ day of _____, 2018, to which said Contract is hereby referred to and made a part hereof and as fully and to the same extent as if copied at length herein for the construction of:

CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II
AT WAGGONER RANCH ROAD

NOW, THEREFORE, the condition of this obligation is such, that if the said Principal fully and faithfully executes the work and performance of the Contract in accordance with the plans, specifications and Contract Documents, including any extensions thereof which may be granted with our without notice to Surety, during the original term thereof, and during the life of any guaranty required under the Contract, and according to the true intent and meaning of said Contract and the plans and specifications hereto annexed, if the Principal shall repair and/or replace all defects due to faulty materials or workmanship that appear within a period of two years from the date of final completion and final acceptance of the work by owner; and if the Principal shall fully indemnify and save harmless the Owner from all costs and damages which Owner may suffer by reason of failure to so perform herein and shall fully reimburse and repay Owner all outlay and expense which the Owner may incur in making good any default or deficiency, then this obligation shall be void; otherwise, to remain in full force and effect; and in case said contractor shall fail to do so, it is agreed that the Owner may do said work and supply such materials and charge the same against said contractor and Surety on this obligation. Provided further, that if any legal action be filed on this Bond, venue shall lie in Tarrant County, Texas.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the provisions of Texas Government Code, Chapter 2253, as amended, and Article 7.19-1 of the Insurance Code, as amended, and all liabilities on this Bond shall be determined in accordance with the provisions of said articles to the same extent as if they were fully copied at length herein.

Surety, for value received, stipulates and agrees that the Bond shall automatically be increased by the amount of any Change Order or supplemental agreement with increases the Contract price with or without notice to the Surety, but in no event shall a Change Order or supplemental agreement which reduces the Contract price decrease the penal sum of this Bond. And further that no change, extension of time, alteration, or addition to the terms of the Contract, or to the work performed thereunder, or the plans, specifications, or drawings accompanying the same shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time alteration, or addition to the terms of the Contract or to the work to be performed thereunder.

Surety agrees that this Bond provides for the repairs and/or replacement of all defects due to faulty materials and workmanship that appear within a period of two (2) years from the date of completion and acceptance of the improvement by the Owner.

The undersigned and designated agent is hereby designated by Surety herein as the agent resident to whom any requisite notice may be delivered and on whom service of process may be had in matters arising out of such suretyship.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on this the ___ day of _____, 2018.

(Company Name of Principal)	*(Company Name of Surety)*
(Signature)	*(Signature)*
(Printed Name)	*(Printed Name)*
(Title)	*(Title)*
(Address Line 1)	*(Address Line 1)*
(Address Line 2)	*(Address Line 2)*
(City, State and Zip Code)	*(City, State and Zip Code)*
(Witness)	*(Witness)*

The name and address of the Resident Agent of Surety is:

(Name)

(Address Line 1)

(Address Line 2)

(City, State and Zip Code)

(Telephone Number)	*(Fax Number)*

Bond No. _____

PAYMENT BOND

STATE OF TEXAS §
§ **KNOW ALL MEN BY THESE PRESENTS:**
COUNTY OF TARRANT §

THAT _____, a corporation organized and existing under the laws of the State of _____, and fully authorized to transact business in the State of Texas, whose address is _____ of the City of _____, County of _____, and State of _____, (hereinafter referred to as "Principal"), and _____(hereinafter referred to as "Surety"), a corporation organized under the laws of the State of_____ and authorized under the laws of the State of Texas to act as surety on bonds for principals, are held and firmly bound unto THE CITY OF NORTH RICHLAND HILLS (hereinafter referred to as "Owner") and unto all persons, firms and corporations who may furnish materials for or perform labor upon the buildings, structures or improvements referred to in the attached Contract, in the penal sum of _____ _____ ($_____) [not less than 100% of the approximate total amount of the Contract as evidenced in the bid proposal] in lawful money of the United States, for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors, and assigns, jointly and severally, firmly by these presents:

WHEREAS, the Principal has entered into a certain written Contract with the Owner, dated the _____ day of _____, 2018, to which said Contract is hereby referred to and made a part hereof and as fully and to the same extent as if copied at length herein for the construction of:

CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II
AT WAGGONER RANCH ROAD

NOW, THEREFORE, the condition of this obligation is such, that the Bond guarantees the full and proper protection of all claimants supplying labor and material in the prosecution of the work provided for in said Contract and for the use of each claimant, and that conversely should the Principal faithfully perform said Contract and in all respects duly and faithfully observe and perform all and singular the covenants, conditions, and agreements in and by said Contract, agreed to by the Principal, and according to the true intent and meaning of said Contract and the claims and specifications hereto annexed, and any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modification to Surety being hereby waived, then this obligation shall be void; otherwise, to remain in full force and effect. Provided further, that if any legal action be filed on this Bond, venue shall lie in Tarrant County, Texas.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the provisions of Texas Government Code, Chapter 2253, as amended, and Article 7.19-1 of the Insurance Code, as amended, and all liabilities on this Bond shall be determined in accordance with the provisions of said articles to the same extent as if they were fully copied at length herein.

Surety, for value received, stipulates and agrees that the Bond shall automatically be increased by the amount of any Change Order or supplemental agreement with increases the Contract price with or without notice to the Surety and that no change, extension of time, alteration, or addition to the terms of the Contract, or to the work performed thereunder, or the plans, specifications, or drawings accompanying the same shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder.

The undersigned and designated agent is hereby designated by Surety herein as the agent resident to whom any requisite notice may be delivered and on whom service of process may be had in matters arising out of such suretyship.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on this the ___ day of _____, 2018.

(Company Name of Principal)	*(Company Name of Surety)*
(Signature)	*(Signature)*
(Printed Name)	*(Printed Name)*
(Title)	*(Title)*
(Address Line 1)	*(Address Line 1)*
(Address Line 2)	*(Address Line 2)*
(City, State and Zip Code)	*(City, State and Zip Code)*
(Witness)	*(Witness)*

The name and address of the Resident Agent of Surety is:

(Name)

(Address Line 1)

(Address Line 2)

(City, State and Zip Code)

(Telephone Number)	*(Fax Number)*

Bond No. _____

MAINTENANCE BOND

STATE OF TEXAS §
§ **KNOW ALL MEN BY THESE PRESENTS:**
COUNTY OF TARRANT §

THAT _____ a corporation organized and existing under the laws of the State of _____, and fully authorized to transact business in the State of Texas, whose address is _____ of the City of _____ _____, County of _____, and State of _____, (hereinafter referred to as "Principal"), and _____ (hereinafter referred to as "Surety"), a corporation organized under the laws of the State of _____ and authorized under the laws of the State of Texas to act as surety on bonds for principals, are held and firmly bound unto THE CITY OF NORTH RICHLAND HILLS (hereinafter referred to as "Owner") in the penal sum of _____ _____($_____) in lawful money of the United States, for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors, and assigns, jointly and severally, firmly by these presents:

WHEREAS, the Principal has entered into a certain written Contract with the Owner, dated the _____ day of _____, 2018, to which said Contract is hereby referred to and made a part hereof and as fully and to the same extent as if copied at length herein for the construction of:

CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II
AT WAGGONER RANCH ROAD

The maintenance under this Bond contemplates the complete restoration of the work to a functional use if that should be necessary. It is the intended purpose of this bond to require the correction of all defective conditions resulting from materials furnished or work and labor performed by the Contractor under the Contract; and in case the Contractor or Surety shall fail or refuse to commence and actively pursue such corrections within ten (10) days after written notification has been furnished to them by the Owner, it is agreed that the Owner may do the work and supply such materials and the Contractor and Surety shall be liable for the payment of all costs thereby incurred, jointly and severally.

It is further understood and agreed that the obligation under this bond shall be a continuing one against the Contractor and Surety, and that successive recoveries may be had hereon for successive breaches until the full amount shall have been exhausted. It is further understood that the obligation to maintain the work shall continue throughout the maintenance period, and the same shall not be changed, diminished, or in any manner affected from any cause during that time.

NOW, THEREFORE, the condition of this obligation is such, that the Bond guarantees the full and proper maintenance and repair of the work herein contracted to be done and performed for a period of two (2) years from the date of acceptance and Principal will do all necessary backfilling that may arise on account of sunken conditions in ditches, or otherwise, and do and perform all necessary work and repair any defective condition growing out of or arising from the improper laying or construction of same, or on account of any breaking of same caused by said Contractor in construction of same, or account of any defect arising in any of said work laid or constructed by said Contractor or on account of improper excavation or backfilling, it being understood that the purpose of this section is to cover all defective conditions arising by reason of defective materials, work or labor performed by said Contractor, then this obligation shall be void; otherwise, to remain in full force and effect; and in case said Contractor shall fail to do so, it is agreed that the Owner may do said work and supply such materials and charge the same against said Contractor and Surety on this obligation. Provided further, that if any legal action be filed on this Bond, venue shall lie in Tarrant County, Texas.

The Owner shall be entitled to its reasonable attorneys' fees and costs in any legal proceeding to enforce the Owner's rights under this bond.

PROVIDED, HOWEVER, that said Surety, for value received, stipulates and agrees that the Bond shall automatically be increased by the amount of any Change Order or supplemental agreement with increases the Contract price with or without notice to the Surety and that no change, extension of time, alteration, or addition to the terms of the Contract, or to the work performed thereunder, or the plans, specifications, or drawings accompanying the same shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder.

The undersigned and designated agent is hereby designated by Surety herein as the agent resident to whom any requisite notice may be delivered and on whom service of process may be had in matters arising out of such suretyship.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on this the ___ day of _____, 2018.

(Company Name of Principal)	*(Company Name of Surety)*
(Signature)	*(Signature)*
(Printed Name)	*(Printed Name)*
(Title)	*(Title)*
(Address Line 1)	*(Address Line 1)*
(Address Line 2)	*(Address Line 2)*
(City, State and Zip Code)	*(City, State and Zip Code)*
(Witness)	*(Witness)*

The name and address of the Resident Agent of Surety is:

_____
(Name)

_____
(Address Line 1)

_____
(Address Line 2)

_____
(City, State and Zip Code)

_____ _____
(Telephone Number) *(Fax Number)*

NOTE: Date of Maintenance Bond must not be prior to date of Contract.
Power of Attorney must be attached.
Amount and Term of Maintenance Bond shall be as stated in the "Special Conditions".

CONTRACTOR'S RELEASE TO CITY

TO: CITY OF NORTH RICHLAND HILLS

RE: **CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II AT WAGGONER RANCH ROAD**

This is to certify that _____, by acceptance
(NAME OF CONTRACTOR)
of this final payment, hereby releases the OWNER, the City of North Richland Hills, from all claims and all liabilities of the City of North Richland Hills for all things done or furnished in connection with work on this project and further releases the City of North Richland Hills from any and all liabilities arising from any act of the OWNER or his/her agent arising in connection with this project. This release in no way operates to release the CONTRACTOR or his/her Surety from any obligations under this contract or the bond tendered pursuant thereto.

_____
(NAME OF CORPORATION)

_____
(AUTHORIZED AGENT)

CORPORATION ACKNOWLEDGMENT

STATE OF TEXAS §
§
COUNTY OF _____ §

BEFORE ME, the undersigned authority in and for Tarrant County, Texas, on this day personally appeared _____ known to me to be the person and officer whose name is subscribed to the foregoing instrument and acknowledged to me that he/she is the _____ of the said _____, a corporation, and that he/she is authorized by said corporation to execute the foregoing instrument as the act of such corporation for the purposes and consideration therein expressed, and in the capacity therein stated.

CONTRACTOR'S RELEASE TO CITY *(Continued)*

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the _ day of _____, 2018.

_____ _____

(Notary Public in and for the State of Texas) *(Type or Print Notary's Name)*

My Commission Expires: _____

CONTRACTOR'S AFFIDAVIT OF FINAL PAYMENT

STATE OF TEXAS §
§
COUNTY OF TARRANT §

BEFORE ME, the undersigned authority, on this day personally appeared _____, (hereinafter referred to as "Affidant"), who, *(NAME)*

after being by me duly sworn, deposes and says that he/she is the _____ *(TITLE)*
_____ of _____ (a *(NAME OF COMPANY)*

corporation, partnership, trade name) of _____ County, State of *("X" OUT THE INCORRECT)*

Texas (hereinafter referred to as "Contractor"), which said Contractor was awarded the contract dated the _____ day of _____, 2018, for the construction of the **CALLOWAY BRANCH CHANNEL IMPROVEMENTS – PHASE II AT WAGGONER RANCH ROAD** (hereinafter referred to as the "Work"), for a total consideration of _____ and _____ Dollars ($ _____) to be paid to the said Contractor (the "Contract"), and that Affidant has full power of authority to make this affidavit.

That THE CITY OF NORTH RICHLAND HILLS, (hereinafter referred to as "Owner"), has approved the final estimate on said Work, and that the said Contractor has fully satisfied and paid any and all claims that may be covered by Texas Government Code, Chapter 2253, as amended, or any other applicable statutes or charter provisions, and that all just bills for labor and materials have been paid and discharged by said Contractor insofar as they pertain to the Work in question.

That in addition to any funds which may have been previously paid by the Owner, the Contractor hereby accepts the amount of _____ _____ and _____ Dollars ($ _____) as **FULL AND FINAL PAYMENT** under the aforementioned Contract, and hereby waives and releases any right Affidant and/or the Contractor may have to pursue claims of any nature against the Owner arising out of or in any manner connected with the performance of the Work and/or the Contract, including but not limited to claims of third parties that supplied material and/or labor for the Work for or through the Contractor (hereinafter referred to as "Subcontractors"), as well as claims for delay, additional compensation or for recovery of liquidated damages which may have been withheld by the Owner. The Contractor shall defend, hold harmless and indemnify the Owner from any such claims of such Subcontractors. The Contractor further releases the Owner from any claim or liability arising from any act or neglect of the Owner related to or connected with the Contract. This affidavit is given pursuant to the final payment provisions of the Contract, and shall not be deemed to alter or modify the terms and provisions of said Contract.

This affidavit is made in compliance with the law and in compliance especially with Chapter 2253 of the Texas Government Code, as amended, and that the undersigned, upon his/her oath, states that the facts indicated in the above instrument of writing are true and correct and that he/she is not incapacitated an any way from making this affidavit.

WITNESS my hand this the _____ day of _____, 2018.

_____
(Affidant)

_____
(Printed Name)

SUBSCRIBED AND SWORN TO BEFORE ME, this the ____ day of _____, 2018.

_____ _____
(Notary Public in and for the State of Texas) *(Type or Print Notary's Name)*

My Commission Expires: _____

SECTION III

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

For this contract, the Site Protection & Preparation (Division 200), Roadway Construction (Division 300), Roadway Maintenance & Rehabilitation (Division 400), Underground Construction & Appurtenances (Division 500), Conduit and Appurtenance Rehabilitation (Division 600), Structures (Division 700) and Miscellaneous Construction & Materials (Division 800) of the "Public Works Construction Standards – North Central Texas" adopted by the North Central Texas Council of Governments (NCTCOG), Fifth Edition, with all amendments thereto, shall govern and shall constitute as the Technical Specifications except as herein amended, modified or supplemented. Omission of any section from the Project's Contract Documents does not mean that such section is not applicable to this Project. The NCTCOG Technical Specifications will be referred to as the Technical Specifications (TS) and will not be physically bound with the other contract documents. Copies may be obtained from the North Central Texas Council of Governments.

EXPLANATION OF BID ITEMS

In this section, NCTCOG Items refer to "Public Works Construction Standards - North Central Texas" adopted by the North Central Texas Council of Governments (NCTCOG), Fifth Edition. TxDOT Standard Specification Item refers to Texas Department of Transportation's "Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges" 2014.

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

12.1.00 GENERAL

12.1.01 DESCRIPTION

This section covers the requirements for submittal data for equipment and material items to be furnished on this project.

12.2.00 MATERIAL

12.2.01 GENERAL EXECUTION

The CONTRACTOR shall submit to the Engineer, with such promptness as to cause no delay in his/her own work or in that of any other CONTRACTOR, five (5) copies of all shop drawings, manufacturer's catalog sheets, brochures, performance charts, diagrams, schedules and other standard descriptive data required for the work. The Engineer shall review these submittals with reasonable promptness, making any necessary corrections. If the submittals

indicate variances from the requirements of the contract, the CONTRACTOR shall make specific mention of such variation in his/her letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment. Otherwise, the CONTRACTOR shall not be relieved of the responsibility of executing the work in compliance with the contract even though the submittals have been reviewed.

12.2.02 FORM OF SUBMITTALS

The submittals shall be numbered consecutively and shall present the following data as applicable:

A. Name of project
B. Date of submittal
C. References to applicable section(s) of the specifications
D. Applicable standards
E. Identification of revisions on re-submittals
F. Kinds of materials and finishes
G. All working and erection dimensions and clearances
H. All arrangement and section views
I. Connections between functional parts

The Engineer may decline to consider any submittal that does not contain complete data on the work and full information on related matters.

12.2.03 SUBMITTAL PROCEDURE

The procedure for review of submittals shall be as follows:

A. **The CONTRACTOR shall submit <u>five (5) copies</u> of the submittal to the Engineer for his/her approval.** The submittal shall be accompanied by a letter of transmittal containing the following:
   1. Name of the project
   2. Name of the CONTRACTOR
   3. Name of the submittal
   4. References to applicable section(s) of the specifications
   5. Other pertinent information as indicated in Section 12.2.02: “Form of Submittals”

B. When the submittal is satisfactory to the Engineer, all five (5) copies will be stamped and/or marked "Approved" or "Approved as Noted", be dated, receive the signature of the Engineer and two (2) copies will be returned to the CONTRACTOR by separate letter.

C. Should a submittal be unsatisfactory to the Engineer, he/she will stamp and/or mark thereon "Revise and Resubmit" or "Rejected" and will send two (2) copies to the CONTRACTOR with necessary corrections and changes indicated. The CONTRACTOR must make such corrections and/or changes and submit at least five (5) copies of the re-submittal for approval to the Engineer. The CONTRACTOR shall review and resubmit as required by the Engineer until his/her approval is obtained.

D. The CONTRACTOR shall allow sufficient time for preliminary review, corrections, resubmission and final review of all submittals. The CONTRACTOR shall allow not less than fourteen (14) days for each review. Submittals critical to the progress of the project, when requested in writing by the CONTRACTOR, will be given priority review.

12.2.04 LIST OF REQUIRED SUBMITTALS

A. List of all subcontractors

B. Project Construction Schedule and Sequencing.

C. Manufacturer certification that the geogrid and erosion control matting meet specifications.

D. Concrete Mix Design for drill shafts

E. Stormwater Pollution Prevention Plan

F. Construction signing and traffic control plan

G. Trench Safety Plan

12.3.00 CONSTRUCTION

N/A

12.4.00 MEASUREMENT AND PAYMENT

NON-PAY ITEMS

No direct or additional payment will be made for the following non-pay items or any other item of work required for the completion of this project but which is not specifically itemized in the bid proposal. These items will be considered subsidiary to the contract, the cost of which shall be included in the unit price for the various construction pay items in the proposal.

NON-PAY ITEM: FRANCHISE UTILITY COORDINATION

The Contractor shall coordinate all work with the required franchise utilities within this area including but not limited to Atmos Energy for gas line services and mains, Oncor for the electric, Charter Communications for cable and AT&T/SBC for the telephone and fiberoptic. It is the Contractror's responsibility to identify all underground utilities prior to construction on the project and coordinate the progress of construction with the noted franchise utilities. No additional compensation or additional time extensions shall be due the Contractor for failure to coordinate with the utility companies. The plans identify the contacts that are to be made with all franchise utility companies. Plans have been provided in advance to the utility companies for review.

NON-PAY ITEM: SAMPLES AND TEST OF MATERIALS

The provisions of Item 105.4 of the NCTCOG Specifications are hereby revised. The CONTRACTOR shall engage the services of an acceptable testing laboratory company to perform all required testing services. The CONTRACTOR (not the OWNER) shall pay all costs for these services, including any retesting after failure to pass tests. The CONTRACTOR shall obtain OWNER'S acceptance of the testing laboratory before having the services performed.

Written reports of tests and engineering data furnished by CONTRACTOR for OWNER'S review shall be submitted as specified in Item 105.3, "Shop Drawings, Product Data and Samples" and as modified by the Special Specifications.

NON-PAY ITEM: REMOVAL AND REPLACEMENT OF TRAFFIC/STREET SIGNS

Any traffic and/or street signs which require removal to accomplish construction operations and/or which are removed for convenience by the Contractor shall be replaced at the locations directed by Engineer. This work shall be considered subsidiary to the bid item for Site Preparation.

NON-PAY ITEM: CONSTRUCTION LAYOUT AND STAKING

The provisions of Item 105.4 of the NCTCOG Specifications are hereby revised to state that Construction Stakes shall be provided by the CONTRACTOR. The Engineer will provide, on the plans, horizontal control in the form of grid reference points and/or bearings and distances and vertical control in the form of benchmarks. From the controls provided in the plans, the Contractor shall be responsible for the complete layout of the work and for establishing lines and elevations as needed during construction. The Contractor shall furnish, at his own expense, labor (including the services of competent personnel), equipment (including accurate surveying instruments), stakes, templates, tools, and materials as may be required for laying out any and all parts of the work. This work shall be considered subsidiary to the total contract price.

NON-PAY ITEM: SPRINKLING FOR DUST CONTROL

The sprinkling of water on exposed grade prior to subgrade preparation to preparation to prevent dust in the construction area shall be in accordance with NCTCOG Item 203.8, “Sprinkling for Dust Control”. This work shall be considered subsidiary to the bid item for Site Preparation.

NON-PAY ITEM: SITE CLEANUP AND DISPOSAL/SALVAGE OF EXCESS MATERIAL

Clean-up of the site and disposal of excess material shall be considered incidental to, and part of the overall contract without separate payment. The Contractor shall notify the City Inspector of materials removed from the project so the City may be provided the opportunity to salvage the materials. Contractor shall deliver salvaged materials to locations as directed by the City of North Richland Hills and no separate payment shall be made for hauling and delivery of materials.

NON-PAY ITEM: EMBANKMENT

Embankment shall be installed under the provisions of Item 203.7 Embankment of the NCTCOG Specifications. Embankment shall be constructed to the established grades shown on the Construction Plans or as established by the

Owner. For each lift of earth embankment, the relative compaction of the embankment shall be as shown on the plans.

MEASUREMENT AND PAYMENT: Embankment shall not be measured or paid for as a separate contract pay item, but the cost of construction of the embankment complete in place shall be included in such contract pay items as described in NCTCOG standard specification Item 203.5. Unclassified Channel Excavation.

NON-PAY ITEM: GEOTECHNICAL SERVICES

Contractor shall retain the services of a licensed professional engineer to perform geotechnical inspections during construction of the drilled piers and excavation within the utility easement in adjacent back yards. The City must approve the engineer's qualifications prior to the start of construction.

MEASUREMENT AND PAYMENT: Geotechnical services shall not be measured or paid for as a separate contract pay item.

PAY ITEMS

JOINT STORMWATER POLLUTION PREVENTION PLAN

This item shall govern the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the Texas Commission on Environmental Quality's (TCEQ) Texas Pollution Discharge Elimination System (TPDES) General Permit Number TXR150000. Implementation of the SWPPP, installation of erosion control devices, maintenance of such devices, removal of the devices after completion of the project and vegetation has been re-established in all disturbed areas, and all required documentation, and any required application fees as outlined in the TPDES General Permit TXR150000 shall be included in the price of this item. The Contractor shall submit to the City a copy of TPDES documents, as appropriate, prior to commencing construction. See NCTCOG Item 201 for erosion control devices.

MEASUREMENT AND PAYMENT: Payment for this item shall be at the contract unit price of lump sum for the preparation of the SWPPP and its implementation. Payment will be made on a monthly basis by dividing the lump sum contract price by the total contract time (months) for the project.

SILT FENCE

"Silt Fence" shall be constructed under the provisions of Item 201.5 of the NCTCOG Specifications. The unit cost shall include the cost of removing silt

fence upon submittal of the NOT. Costs of preparing and implementing the SWPPP are included under separate pay items.

MEASUREMENT AND PAYMENT: Rock berm shall be paid by the linear foot of silt fence installed.

ROCK BERM

"Rock Berm" shall be constructed under the provisions of Item 201.9 of the NCTCOG Specifications. The unit cost shall include maintenance of protective measures until final acceptance of the project by the OWNER as well as the removal of the rock berm upon submittal of the NOT.

MEASUREMENT AND PAYMENT: Rock berm shall be paid by the linear foot of rock berm installed.

CONSTRUCTION ENTRANCE

"Construction Entrance" shall be constructed under the provisions of Item 201.10 STABILIZED CONTRUCTION ENTRANCE of the NCTCOG Specifications. The unit cost shall be lump sum, complete, in-place including all labor and materials associated with installation, maintenance and removal of the temporary stone construction entrance shown in the drawings.

EROSION CONTROL MATTING

"Erosion Control Matting" shall be installed under the provisions of Item 201.16 of the NCTCOG Specifications. Providing compliance with TxDOT standards is the responsibility of the Contractor and may be proven by official listing on the most current annual "Approved Products List for TxDOT" applicable to TxDOT Item 196 Soil Retention Blanket and its Special Provisions.

All installed Erosion Control Matting shall meet TxDOT Class 2: Flexible Channel Liners, Type G. Nonbiodegradeable materials with shear stress less than 6.0 psf.

MEASUREMENT AND PAYMENT: Erosion control matting shall be measured and paid for by the square yard of surface area covered, shall include surface preparation, furnishing and placing, and for all labor, tools, equipment and incidentals necessary to complete the work in accordance with the plans and specifications.

SODDING

"Sodding" shall be installed under the provisions of Item 202.5 of the NCTCOG Specifications. The type of solid sod placed shall match the type of grass in the adjacent lawn area. A 4-inch layer of topsoil, furnished in accordance with NCTCOG Item 202.2, shall be placed on all areas to be solid sodded. The cost of topsoil is incidental to the unit cost of solid sodding. Fertilizer shall be furnished in accordance with Item 202.4 and applied at time of initial sodding only, and at the rate specified in Item 202.4.3.2. The cost of fertilizer is incidental to the unit cost of solid sodding. Sodding shall be watered for a **minimum period of 30 days** following placement and as directed by OWNER until completion and acceptance of the project by OWNER.

HYDROMULCH SEEDING

"Hydromulch Seeding" shall be installed under the provisions of Item 202.6 Seeing Turfgrass of the NCTCOG Specifications. The type of seed used shall be specified unless otherwise approved by the OWNER. All seed used must carry a Texas Testing Seed Label showing purity and germination, name and type of seed and that the seed meets all requirements of the Texas Seed Law. Seed furnished shall be of the previous season's crop and the date of analysis shown on each tag shall be within nine (9) months of the time of delivery to the project. Each variety of seed shall be furnished and delivered in separate bags or containers. A sample of each variety of seed shall be furnished for analysis and testing when directed by the OWNER. The Bermuda Grass shall equal or exceed 95% purity and 90% germination. Seed densities shall be as follows:

Type I Bermuda Grass-hulled – 45 pounds per acre
Type II Perennial Rye grass – 15 pounds per acre
Type III Bermuda Grass-unhulled – 45 pounds per acre

Planting hulled Bermuda Grass (Type I) shall be done between the months of April through September. Planting of combination unhulled Bermuda Grass seed (Type III) and Perennial Rye (Type II) shall be done between the months of September through February.

A 4-inch layer of topsoil, furnished in accordance with Item 202.2, shall be placed on all areas to be seeded. The cost of topsoil is incidental to the unit cost of hydromulch seeding. Fertilizer shall be furnished in accordance with Item 202.4 and applied at the rate specified in Item 202.4.3.1. The cost of fertilizer is incidental to the unit cost of hydromulch seeding. Seeding shall be watered **minimum period of 30 days** following placement and as directed by OWNER until completion and acceptance of the project by OWNER. The CONTRACTOR shall mow and protect the seeded areas until acceptance of the project by the OWNER, and the costs will be incidental to the unit cost of hydromulch seeding.

BARRICADES, WARNING, AND DETOUR SIGNS

Barriers, Warning and Detour Signs shall be performed in accordance with Item 801.1 of the NCTCOG Specifications and City Specifications.

Prior to construction, the CONTRACTOR will be required to submit a detailed construction sequencing and temporary traffic control plan to address all issues not covered by the construction plans. The Contractor shall maintain traffic and traffic control at all times near construction entrance.

No Street shall be closed except upon written authority from the OWNER. Access to adjacent properties must be maintained except for short periods of time when construction actually blocks the driveway.

The amount bid for this item shall be paid over the duration of the project with the amount paid on each monthly progress estimate determined by the percent complete on all other bid items.

GENERAL SITE PREPARATION

General Site Preparation shall be in accordance with 203.3 of the NCTCOG Specifications. Measurement and payment shall be a lump sum bid basis and shall be full compensation for all labor, materials, tools, equipment, supplies and other incidentals necessary to complete the work as specified. This pay item will include removal of improvements or obstructions not specifically provided for in other pay items of the Bid Proposal to include removing gravel, riprap, trees (smaller than 6 inches), landscaping, shrubbery, and plantings, fences, brick columns and other items located within the right-of-way or easement.

This item includes the cutting, removal and capping of all irrigations systems in a manner to keep the remaining irrigation system fully functional during construction. If yard is equipped with a sprinkler system, caution should be taken to preserve the system. If a portion of the sprinkler system is damaged or purposely capped during right-of-way preparation, it will be the responsibility of the Contractor, as part of the yard restoration, to repair the system or replace all broken parts and have the owner test the repaired system. **It is the Contractor's responsibility to verify the working condition of the sprinkler system prior to construction and notify the City representative in writing of any defective systems.**

All excavated areas shall be backfilled and compacted to prevent additional damage to pavement or other structures. Any damage to yard areas shall be restored at no additional pay, including planters and landscape edging and irrigation systems. This Item includes all safety measures and additional traffic control as needed to complete the work. All trees and plant materials shall be

properly disposed of offsite.

Only trees, landscaping and plantings located within the right-of-way and designated for removal on the plans shall be removed. All other trees and landscaping shall be protected from damage.

As part of the Contractor's work related to this item, Contractor shall prepare a video-taped survey of the existing conditions prior to construction. Each property along the reconstruction route shall contain video footage depicting all public and private improvements, structures, and appurtenances along with a vocal identification of each address. **One acceptable video copy / DVD shall be provided to the City prior to Preconstruction Conference.** The Contractor shall verify the working condition of existing sprinkler systems in the project area and shall notify the City of pre-existing system issues prior to the Preconstruction conference. All sprinkler systems will be deemed fully functional if no prior investigation is performed by the Contractor.

UNCLASSIFIED CHANNEL EXCAVATION

Unclassified Channel Excavation shall consist of all the required excavation within the project limits as shown on the Construction Plans, the removal, proper utilization or disposal of all excavated material, and the shaping and finishing of all earthwork in conformity with the lines and grades as shown on the Construction Plans or as established by the Owner.

This item includes over-excavation of materials and replacement with soils meeting embankment densities for proper installation of the fill embankment. All suitable materials removed from the excavation shall be used, insofar as practicable, in the formation of embankments as required by Item 203.7. Embankment, or shall be otherwise utilized. Unclassified Channel Excavation shall meet the requirements of Item 203.5 of the NCTCOG Specifications.

MEASUREMENT AND PAYMENT: Unclassified Channel Excavation shall be measured and paid for by the cubic yard for excavation from its original position, and shall include all materials excavated without regard to the materials encountered. These plans and specifications were prepared using slope-back excavation methods at a temporary construction slope of 1.5 horizontal to 1 vertical.

In accordance with Item 107.19 Protection of Work and of Persons and Property, Excavations adjacent to existing buildings or other structures, particular care shall be taken to adequately shore the excavated slope to prevent undermining or settlement beneath or adjacent to the structure. The contractor shall be responsible for providing the City an acceptable shoring plan signed and sealed by a Professional Engineer licensed in Texas qualified to do such work. **Cost related to shoring are subsidiary to the pay item unclassified channel**

excavation. Slopes created by excavation shall not exceed 1.5 feet horizontal to 1 foot vertical (1.5:1) for a period of more than 24 hours. **There shall be no compensation for any quantities in addition to what is provided in the Bid documents unless the lines and grades are changed by the Engineer.**

CONCRETE FLUME

Concrete Flume shall be installed under the provisions of Item 702.7 Constructing Concrete Structures of the NCTCOG Specifications.

MEASUREMENT AND PAYMENT: Concrete Flume shall be measured and paid for by the linear foot, shall include sawcutting and removal of old flume, surface preparation, furnishing and placing, and for all labor, tools, equipment and incidentals necessary to complete the work in accordance with the plans and specifications.

DRILLED SHAFT

Drilled shafts shall be installed under the provisions of 702.4 Drilled Shaft Foundations of the NCTCOG Specifications. Tie beam shall be installed under the provisions of 702.7 Constructing Concrete Structures of the NCTCOG Specifications.

MEASUREMENT AND PAYMENT: Construction and materials for tie beam shall be subsidiary to drilled shafts. Drilled shafts shall be measured from 3-foot below proposed grade or bottom elevation of tie beam to completed embedment depth as shown in plan and paid for by the linear foot. Bid item shall include temporary grading, furnishing and placing, removal of spoil material and for all labor, tools, equipment and incidentals necessary to complete the work in accordance with the plans and specifications.

Additional Payment shall include the following:

1. payment for individual completed shaft lengths, up to and including 5-ft. in excess of the maximum plan length shaft as defined herein, shall be made at the unit price bid per linear foot of the specified diameter of drilled shafts.
2. payment for that portion of individual completed shaft length in excess of 5-ft. and up to and including 15-ft. more than the maximum plan length shaft as defined herein shall be made at a unit price equal to 115-percent of the unit price bid per linear foot of the specified diameter of drilled shafts.

FENCE

This item shall consist of construction of fence as prescribed by this specification at such places shown on the plans or as designated by the owner. Matching existing shall be defined as same overall materials, aesthetics (stain), height, post spacing, hardware, etc...

MEASURE AND PAYMENT: Fence shall be measured in place from center to center of end posts or corner post and shall be the length of fence actually constructed, except the space occupied by the gates. Gates shall be measured in units for each gate installed and accepted. Payment shall be made at the contract price per linear foot. This price shall be full compensation for furnishing all material; for all preparation, erection and installation of these materials; and for all labor, equipment, tools and incidentals necessary to complete the work. Payment shall be made at the contract unit price per each for gates. This price shall be full compensation for furnishing all materials; for all preparation, erection and installation of these materials; and for all labor, equipment, tools and incidentals necessary to complete the work.

SUBSURFACE DRAIN

This item shall consist of construction subdrain trench wrapped in filter fabric, filled with drainage aggregate and 4” perforated PVC pipe within the trench and connected to the channel toe in three places as prescribed by this specification as shown on the plans or as designated by the owner.

MEASURE AND PAYMENT: Payment shall be made at the contract price as a lump sum. This price shall be full compensation for furnishing all material; for all preparation, erection and installation of these materials; and for all labor, equipment, tools and incidentals necessary to complete the work.

MISCELLANEOUS PAVING, DRAINAGE, LANDSCAPE AND UTILITY IMPROVEMENTS

The scope of work for these bid items will be determined in the field during the course of construction.

These items are provided to cover the cost of miscellaneous adjustments and other work ordered in writing by the OWNER, Inspector or Engineer but not included in any other Bid Schedule Item. A maximum allowance is indicated in the Bid Schedule for each of these items.

The OWNER reserves the right to delete any or all of these items from the Contract if not needed.

There will not be a measurement for this item. CONTRACTOR shall furnish all invoices and other documentation required by ONWER in order to determine the “actual field cost” of miscellaneous work covered under these items.

Miscellaneous Allowance Items will be paid for based on the “actual field cost” of the work provided plus fifteen percent (15%). The fifteen percent (15%) of the “actual field cost” to be paid to the CONTRACTOR shall cover and compensate him/her for his/her profit, overhead, and all other elements of cost and expense not embraced within the “actual field cost” or covered elsewhere by these specifications.

SECTION IV

SPECIAL PROVISIONS

SPECIAL PROVISIONS

INDEX

SPECIAL PROVISIONS

SP-1: GENERAL

For this contract, the General Provisions (Division 100) of the "Public Works Construction Standards - North Central Texas" adopted by the North Central Texas Council of Governments (NCTCOG), Fifth Edition, with all amendments thereto, shall govern and shall constitute as the Special Provisions except as herein amended, modified or supplemented. Omission of any section from this Project's Contract Documents does not mean that such section is not applicable to this Project. The NCTCOG General Provisions will be referred to as the General Provisions (GP) and will not be physically bound with the other contract documents. Copies may be obtained from the North Central Texas Council of Governments.

The following Special Provisions shall take precedence over all other contract conditions, specifications and agreements.

SP-2: PROJECT DESCRIPTION

The work associated with this Project includes, but is not limited to, the following tasks:

1. Construction staking
2. Erosion control
3. General site preparation
4. Channel Excavation
5. Install Rock Riprap
6. Embankment
7. Fencing
8. Cleanup and removal of erosion control
9. Temporary traffic control
10. Trench safety

SP-3: DEFINITIONS

Modify GP Item 101.1 Definitions as follows:

The word "City" or "OWNER" in these documents shall be understood as referring to:

The City of North Richland Hills, Texas
4301 City Point Drive
North Richland Hills, Texas 76180

The word "Engineer" in these documents shall be understood as referring to Halff Associates, Inc.

The word "Inspector" in these documents shall be understood as referring to the technical construction inspector within the OWNER's Public Works Department.

The word "OWNER's Representative" in these documents shall be understood as referring to the OWNER's Director of Public Works, Public Works Technical Construction Inspector(s), Engineer of the OWNER, or such other Engineer or Supervisor as may be authorized by the OWNER to act in any particular position.

Any reference to "Special Conditions" or "Supplemental Special Conditions" shall be understood as referring to these Special Provisions.

SP-4: INFORMATION CONCERNING CONDITIONS

Add the following to GP Item 102.3. Examination of Plans, Specifications and Site of the Work:

Prospective bidders shall make a careful examination of the entire site of the project and shall make such explorations as may be necessary to determine the subsoil and water conditions to be encountered; improvements and obstructions which may be encountered, especially those to be protected; methods of providing ingress and egress to private as well as public property; methods of handling traffic during construction and maintenance of the entire project as well as any section thereof; protection of all existing structures both above and below ground; and how the plans fit the proposed project and especially if any discrepancies exist.

The accuracy of the information furnished by the Engineer or the plans and specifications as to underground structures and surface structures, foundation conditions, character of soil, position and quality of ground and subsoil water, etc., are not guaranteed by the OWNER.

Subsurface exploration, to ascertain the nature of the soils at the project site, including the amount of rock, if any, is to be the responsibility of any and all prospective bidders. Whether prospective bidders perform this subsurface exploration jointly or independently, it shall be left to the discretion of such prospective bidders. Subsurface exploration shall not be attempted without the approval of the Engineer.

SP-5: ADDENDA

Bidders wanting further information, interpretation or clarification of the Contract Documents must make their request in writing to the Engineer **at least four (4) days prior to the Bid Opening.** Answers to all such requests will be made a part of the Contract Documents. No other explanation or interpretation will be considered official or binding.

Should a bidder find discrepancies in, or omission from the Contract Documents, or should he/she be in doubt as to their meaning, he/she should at once notify the Engineer in order that a written addendum may be sent to all bidders. Any addenda issued will be mailed or be delivered to each prospective bidder who has requested and received a bid packet. The bid proposal as submitted by the bidder must be so constructed as to include any addenda issued by the Engineer prior to 24 hours of the bid opening, with the appropriate recognition of addenda so noted in the bid proposal.

SP-6: PROPOSED GUARANTY

Modify GP Item 102.5. Proposal Guaranty to include:

The five percent (5%) proposal guaranty shall be five percent (5%) of the largest possible total for the bid submitted.

SP-7: FILING OF PROPOSAL

Add the following to GP Item 102.6. Filing of Proposals:

Bids, affidavits and proposed construction schedules must be submitted in sealed envelopes within the time limit for receiving proposals, as stated in the "NOTICE TO BIDDERS", which envelopes bear a legible notation, "PROPOSAL", and the name of the project. The original copy shall be filed with the City of North Richland Hills in the office of the City Secretary at City Hall.

SP-8: REJECTION OF PROPOSALS

Add the following reasons to GP Item 102.11. Rejection of Proposals:

(7) Proposals that are incomplete insofar as the required signatures, proposal guaranty, or containing any material irregularities.

SP-9: DISQUALIFICATION OF BIDDERS

Add the following reason to GP Item 102.12. Disqualification of Bidders:

(9) where more than one proposal for an individual firm, partnership, or corporation is filed under the same or different names and where such proposals are not identical in every respect.

SP-10: QUALIFICATION TO PERFORM

The OWNER may make such investigations as he/she deems necessary to determine the bidder's ability to perform the work, and the bidder shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any bid if the evidence submitted fails to satisfy the OWNER that such bidder can properly carry out the obligations of the contract and to complete the work contemplated therein.

SP-11: AWARD OF CONTRACT

Add the following to GP Item 103.2. Award of Contract and Commencement of Work:

The award, if made, shall be on the basis of the lowest acceptable bid submitted by a qualified responsible bidder, as determined by the OWNER, within 60 days after the opening of proposals. In determining the lowest acceptable bid, the OWNER will consider all relative factors such as: efficiency of a single contractor in the project area, increase in public safety due to a single contractor's operations, length of construction, coordination of construction activities, previous experience the OWNER may have had with the bidder, effects on area traffic due to construction detours and efficient use of City funds. The right is reserved, as the interest of the OWNER may require, to reject any and all bids and to waive any formality in bids received. It is the intention of the OWNER to award a single contract for this work.

SP-12: BONDS - AMOUNT AND TERMS

In addition to GP Item 103.3. Surety Bonds, add the following:

With the execution and delivery of the contract, the CONTRACTOR shall furnish and file with the City in the amount herein required, the following surety bonds:

(1) A good and sufficient Performance Bond in an amount equal to one hundred percent (100%) of the total awarded contract price, guaranteeing the full and faithful execution of the work and performance of the contract and for the protection of the City against any improper execution of the work or the use of inferior materials.

(2) A good and sufficient Payment Bond in an amount equal to one hundred percent (100%) of the total awarded contract price, guaranteeing payment for all labor, materials and equipment used in the construction of the project.

(3) A good and sufficient Maintenance Bond in an amount equal to twenty percent (20%) of the final contract price, guaranteeing the maintenance in good condition of such project for a period of two (2) years from and after the time of its completion and acceptance by the City.

General conditions for bonds are as follows:

1. The surety on each bond must be a responsible surety company which is licensed and qualified to do business in the State of Texas (surplus lines carriers are not acceptable) and satisfactory to the City. No surety will be accepted who is in default or delinquent on any bond or who is interested in any litigation against the City. Should any surety on the contract be determined unsatisfactory at any time by the City, notice will be given to the CONTRACTOR to the effect, and the CONTRACTOR shall forthwith substitute a new Surety or Sureties satisfactory to the City. (Texas Lloyd's Plan carriers are not acceptable.) No payment will be made under the contract until the new Surety or Sureties, as required, have qualified and have been accepted by the City. The contract shall not be operative nor shall any payments be due until approval of the bonds has been made by the City.

2. The surety company should be listed in the current circular of the "Federal Register - Department of the Treasury - Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsurance Companies".

3. The surety shall/must have an underwriting limitation (as shown in the Federal Register) to cover 110% of the project cost. Exceptions to a requirement may be made in unusual circumstances, subject to approval by the Office of Risk Management and the City Attorney's Office.

4. All bonds shall be made on forms furnished by the City and shall conform to the requirements as set forth herein.

5. Each Bond shall be executed by the CONTRACTOR and the Surety. The name and residence of each individual party to the bond shall be inserted in the body thereof, and each such party shall sign the bond with his/her usual signature on the line opposite the scroll seal, and if signed in the States of Main, Massachusetts, or New Hampshire, an adhesive seal shall be fixed opposite the signature.

6. If the principals are partners, their individual names will appear in the body of the bond or on proceeding pages to be included with said bond with the recital that they are partners composing a firm, naming it, and all the members of the firm shall execute the bond as individuals.

7. The signature of a witness shall appear in the appropriate place, attesting the signature of each individual party to the bond.

8. The principal or surety shall be a corporate surety; the name of the state in which incorporated shall be inserted in the appropriate place in the body of the bond or on proceeding pages to be included with said bond, and said instrument shall be executed and attested under the corporate seal, the fact shall be stated, in which case a scroll or adhesive seal shall appear following the corporate name.

9. The official character and authority of the person or persons executing the bond for the principal, if a corporation, shall be certified by the secretary or assistant secretary according to the form attached hereto. In lieu of such certificate, records of the corporation as will show the official character and authority of the officer signing, duly certified by the secretary or assistant secretary, under the corporate seal, to be true copies.

10. The date of any bond must not be prior to the date of the contract in connection with which it is given.

SP-13: INSURANCE REQUIREMENTS

In addition to the provisions of GP Item 1.03.4. Insurance, add the following:

Workmen's Compensation Insurance: Statutory requirements as specified by the Workmen's Compensation Law of the State of Texas and adopted by the Texas Workers' Compensation Commission per Title 28, TAC §110.110. Workers' Compensation Insurance Coverage:

A. Definitions:

(1) Certificate of coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self-insure issued by the commission or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees (including those subject to a coverage agreement) providing services on a project for the duration of the project.

(2) Building or construction - Has the meaning defined in the Texas Labor Code, §406.096(e)(1).

(3) Contractor - A Person bidding for or awarded a building or construction project by a governmental entity.

(4) Coverage - Workers' compensation insurance meeting the statutory requirements of the Texas Labor Code, §401.011(44).

(5) Coverage Agreement - A written agreement on form TWCC-81, form TWCC-82, form TWCC-83, or form TWCC-84, filed with the Texas Workers' Compensation Commission which establishes a relationship between the parties for purposes of the Workers' Compensation Act, pursuant to the Texas Labor Code, Chapter 406, Subchapters F and G, as one of employer/employee and establishes who will be responsible for providing workers' compensation coverage for persons providing services on the project.

(6) Duration of the project - Includes the time from the beginning of the work on the project until the work on the project has been completed and accepted by the governmental entity.

(7) Persons providing services on the project ("subcontractor" in §406.096) - Includes all persons or entities performing all or part of

the services the contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the CONTRACTOR and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the project such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

(8) Project - Includes the provision of all services related to a building or construction contract for a governmental entity.

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

C. The CONTRACTOR must provide a certificate of coverage to the governmental entity prior to being awarded the contract.

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

E. The CONTRACTOR shall obtain from each person providing services on the project and provide to the governmental entity:

(1) a certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and

(2) no later than seven days after receipt by the CONTRACTOR, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

F. The CONTRACTOR shall retain all required certificates of coverage for the duration of the project and for one year thereafter.

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

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

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

(1) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the project, for the duration of the project;

(2) provide to the CONTRACTOR, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;

(3) provide the CONTRACTOR, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

(4) obtain from each other person with whom it contracts, and provide to the CONTRACTOR:

(a) a certificate of coverage, prior to the other person beginning work on the project; and

(b) a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

(5) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

(6) notify the governmental entity in writing by certified mail or personal delivery, within ten (10) days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and

(7) contractually require each person with whom it contracts, to perform as required by paragraphs (1) - (7), with the certificates of coverage to be provided to the person for whom they are providing services.

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

K. The CONTRACTOR's failure to comply with any of these provisions is a breach of contract by the CONTRACTOR which entitles the governmental entity to declare the contract void if the CONTRACTOR does not remedy the breach within ten (10) days after receipt of notice of breach from the governmental entity.

In accordance with statutory requirements, the CONTRACTOR shall:

(1) provide coverage for its employees providing services on the project, for the duration of the project based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements;

(2) provide a certificate of coverage showing workers' compensation coverage to the governmental entity prior to beginning work on the project;

(3) provide the governmental entity, prior to the end of the coverage period, a new certificate of coverage showing extension of

coverage, if the coverage period shown on the CONTRACTOR's current certificate of coverage ends during the duration of the project;

(4) obtain from each person providing services on the project, and provide to the governmental entity:

(A) a certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and

(B) no later than seven (7) days after receipt by the contract, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

(5) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

(6) notify the governmental entity in writing by certified mail or personal delivery, within ten (10) days after contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project;

(7) post a notice on each project site informing all persons providing services on the project that they are required to be covered, and stating how a person may verify current coverage and report failure to provide coverage. This notice does not satisfy other posting requirements imposed by the Act or other commission rules. This notice must be printed with a title in at least 30 point bold type and text in at least 19 point normal type, and shall be in both English and Spanish and any other language common to the worker population. The text for the notices shall be the following text in Figure 1 provided by the commission on the sample notice, without any additional words or changes:

Figure 1:

REQUIRED WORKERS' COMPENSATION COVERAGE

"The law requires that each person working on this site or providing services related to this construction project must be covered by

workers' compensation insurance. This includes persons providing, hauling, or delivering equipment or materials, or providing labor or transportation or other service related to the project, regardless of the identity of their employer or status as an employee"

"Call the Texas Workers' Compensation Commission at (512) 440-3789 to receive information on the legal requirement for coverage, to verify whether your employer has provided the required coverage, or to report an employer's failure to provide coverage."

In GP Item 103.4.1.2. Commercial General Liability, change the respective limits as follows:

Contractor's General Liability and Property Damage Insurance:

Bodily Injury (or Death)	$ 600,000 each occurrence
Property Damage	$ 600,000 each occurrence

SP-14: POLICY ENDORSEMENTS AND SPECIAL CONDITIONS

In addition to the provisions of GP Item 103.4.5. Policy Endorsements and Special Conditions, add the following:

(a) CONTRACTOR will not be issued a Work Order to commence work on this Contract until he/she has obtained all the insurance required under this section and such insurance has been approved by the OWNER or his representative.

(b) CONTRACTOR shall procure and shall maintain during the life of this Contract, insurance coverage as herein specified, and in case of any work sublet, shall require any subcontractor in like manner to secure and maintain such minimum limits of insurance coverage, also.

(c) The CONTRACTOR shall furnish the OWNER with certificates showing the type, amount, class of operations covered, effective dates, and dates of expiration of policies. Such certificates shall contain substantially the following statement: "The insurance covered by this certificate will not be canceled or materially altered except after thirty (30) days written notice has been received by the OWNER."

SP-15: ORDER OF WORK

Add the following to GP Item 103.6. Notice to Proceed and Commencement of Work:

The CONTRACTOR shall be fully responsible for proper coordination for the relocation of utilities (i.e. power poles, electrical lines, gas lines, telephone lines, television (TV) cable lines, buried cables, etc.) public and private unless otherwise noted on the plans/drawings.

SP-16: PRIORITY OF CONTRACT DOCUMENTS

Delete GP Item 105.1.1. Priority of Contract Documents and substitute the following:

In case of conflict between contract documents, priority of interpretation shall be in the following order:

(1) This Agreement
(2) Addendum(s)
(3) “Notice to Bidders” advertisement
(4) Bidder’s Proposal
(5) Special Instruction to Bidders
(6) Performance, Payment and Maintenance Bonds
(7) Certification of Insurance
(8) Notice to Proceed
(9) Technical Specifications
(10) City of North Richland Hills’ Public Works Design Manual
(11) Special Provisions
(12) General Provisions
(13) Special Specifications
(14) Project Construction Plans/Drawings
(15) Special Material and/or Equipment Specifications
(16) Special Material and/or Equipment Drawings
(17) “Public Works Construction Standards - North Central Texas” adopted by the North Central Texas Council of Governments (NCTCOG), Fifth Edition
(18) North Central Texas Council of Government references

SP-17: WARRANTY

In GP Item 105.2.2. Special Warranty, change all references from one year to two (2) years and add the following:

Notwithstanding any certificate which may have been given by the Engineer, if any materials, equipment or any workmanship which does not comply with the requirements of this contract shall be discovered within two (2) years after

completion of construction of the project, and acceptance by the OWNER, the CONTRACTOR shall replace such defective materials or equipment, or remedy any such defective workmanship within ten (10) days after notice in writing of the existence thereof shall have been given by the OWNER or Engineer. In the event of failure of the CONTRACTOR to replace any such defective materials or equipment or to remedy defective workmanship as herein provided, the OWNER may replace such defective materials or equipment or remedy such workmanship as the case may be and in such event the CONTRACTOR shall pay to the OWNER the cost and expense thereof.

SP-18: LINES AND GRADES

Add the following to GP Item 105.4. Construction Stakes:

The CONTRACTOR is responsible to provide all construction staking under this contract.

All work under this contract shall be constructed in accordance with the lines and grades shown on the plans/drawings. The full responsibility for the holding to alignment and grade shall rest upon the CONTRACTOR.

The CONTRACTOR shall protect all property corner markers, and when any such markers or monuments are in danger of being disturbed, they shall be properly referenced and if disturbed shall be reset at the expense of the CONTRACTOR.

SP-19: INSPECTION AND TESTING

Add the following to GP Item 106.5. Samples and Tests of Materials:

The CONTRACTOR shall be responsible for paying for all testing and testing related items (acquiring specimens, proper specimen control, etc.) on this Project.

During the progress of the work, all materials, equipment and workmanship shall be subjected to such inspections and tests as will assure conformance with the contract requirements.

The CONTRACTOR shall furnish at his/her expense all necessary specimens and samples for testing.

Sampling and testing of all materials or construction methods shall be performed by a commercial laboratory, approved by the Engineer, and permitted with the City of North Richland Hills' Public Works Department.

When the CONTRACTOR's materials, construction items or products incorporated in the project fail to satisfy the minimum requirements of the initial test and he/she has to bear the cost of any retesting, he/she shall be responsible for any and all cost associated with such retesting. If in this situation, the CONTRACTOR utilizes the same testing laboratory as the OWNER, the CONTRACTOR shall pay said testing laboratory in full or the testing laboratory shall be able to gain recourse through the CONTRACTOR's Payment Bond.

In the event a conflict arises concerning the interpretation of A.S.T.M., A.C.I., A.W.W.A., etc., specifications/standards, the Engineer shall make his/her determination of the interpretation and his/her determination shall be final.

SP-20: INDEMNIFICATION

The CONTRACTOR shall familiarize himself/herself with GP Item 107.2. Indemnification and GP Item 107.19.3.2. Indemnification. Additionally, the following shall be added to both Indemnification items:

This agreement, however, does not waive any governmental immunity available to the OWNER under Texas law and nor any defenses of the parties under Texas law. The provisions of this paragraph are solely for the benefit of the parties hereto and not intended to create or grant any rights, contractual or otherwise, to any other person or entity.

SP-21: SALES TAX

Add the following to GP Item 107.14. State and Local Sales and Use Taxes:

The OWNER qualifies for exemption from state and local sales and use taxes, pursuant to the provisions of Section 151.309 of the Texas Limited Sales, Excise and Use Tax Act, as amended. Therefore, the OWNER shall not be liable for, or pay the CONTRACTOR's cost of such sales and use taxes which would otherwise be payable in connection with the performance of this contract.

SP-22: TRAFFIC CONTROL

Add the following to GP Item 107.19.2. Protection of Persons and Property:

The CONTRACTOR shall not remove any regulatory sign, instructional sign, street name sign, or other sign which has been erected by the City. If it is determined that a sign must be removed to permit required construction, the CONTRACTOR shall contact the City to remove the sign. In the case of regulatory signs, the CONTRACTOR must replace the permanent sign with a temporary sign meeting the requirements of the above referenced manual and such temporary sign must be installed prior to the removal of the permanent

sign. If the temporary sign is not installed correctly or if it does not meet the required specifications, the permanent sign shall be left in place until the temporary sign requirements are met. When construction work is completed to the extent that the permanent sign can be reinstalled, the CONTRACTOR shall again contact the City to reinstall the permanent sign and shall leave his temporary sign in place until such installation is completed.

The CONTRACTOR shall prosecute his traffic control work in such a manner as to create a minimum of interruption to traffic and pedestrian facilities and to the flow of vehicular and pedestrian traffic within the project area.

Access to adjacent property shall be maintained at all times unless otherwise approved by the OWNER.

SP-23: TRENCH SAFETY

Add the following paragraph to GP Item 107.19.3. Trench Safety:

Per Chapter 756, Texas Health & Safety Code, it shall be the responsibility of the CONTRACTOR to provide and maintain a viable trench safety system at all times during construction activities. The CONTRACTOR is directed to become knowledgeable and familiar with the standards as set forth by the Occupational Safety and Heath Administration for trench safety that will be in effect during the period of construction of the project and the CONTRACTOR is responsible for conforming to such regulations as prescribed by Occupational Safety and Health Administration standards.

SP-24: WORK-SITE AREA AND CLEAN-UP

Add the following to GP Item 107.21. Working Area:

During construction the CONTRACTOR shall at all times keep the job site free from waste, debris and rubbish, and shall maintain a daily routine of clean-up.

The working operations of the CONTRACTOR shall at all times be conducted so as to create a minimum of inconvenience to the OWNER or to the public. Stringing of pipe, stockpiling of materials, etc., will be allowed only where no inconvenience is caused and only in amounts that can be readily used by the CONTRACTOR.

All trees, stumps, slashings, brush or other debris to be removed from the site, shall be disposed of in a manner consistent with Local Ordinances and all State Regulations. Burning of trash, etc., will only be permitted where allowed by Local Ordinances and State Pollution Regulations.

All excavated earth in excess of that required for project embankments and/or backfilling shall be removed from the job site and disposed of in a satisfactory manner. Disposal of excess material into area creeks and drainageways will not be allowed.

Any trees or other landscape features scarred or damaged by the CONTRACTOR's operations shall be restored or replaced at the CONTRACTOR's expense. Trimming or pruning to facilitate the work will be permitted only by experienced workmen in an approved manner. Pruned limbs of one inch (1") diameter or larger, shall be thoroughly treated as soon as possible with a tree wound dressing.

The CONTRACTOR shall take all precautions required to prevent soil erosion during construction. If, in the opinion of the Engineer, excessive erosion occurs, the CONTRACTOR shall take immediate measure to prevent further erosion and restore the disturbed surface with topsoil at completion of the work.

All property along and adjacent to the CONTRACTOR's operations including lawns, yards, shrubs, trees, etc., shall be preserved or restored after completion of the work, to a condition equal to or better than existed prior to start of work.

Upon completion of the work as a whole and prior to final acceptance, the CONTRACTOR shall clean and remove from the site all surplus and discarded materials, temporary structures and all debris. He/She shall leave the site in a neat and orderly condition with an appearance satisfactory to the Engineer and OWNER. Method and location of disposal or surplus and waste materials shall be satisfactory to the Engineer.

The CONTRACTOR shall then thoroughly clean all equipment and materials installed by him/her and shall present for final inspection materials and equipment in a clean, bright and new condition.

No extra payment will be made for any of this type of work required on the project.

SP-25: EXISTING STRUCTURES, FACILITIES AND IMPROVEMENTS

Add the following to GP Item 107.23. Existing Structures, Facilities and Appurtenances:

The CONTRACTOR's attention is directed to the necessity of taking adequate measures to protect all existing structures, facilities, improvements and utilities, including sprinkler systems, encountered.

The plans show the locations of most known surface and subsurface structures. However, the OWNER assumes no responsibility for failure to show any or all of

these structures on the plans or in their exact location. It is mutually agreed that such failure shall not be considered sufficient basis for claims for additional compensation for extra work, or for increasing the pay quantities in any manner, unless the obstruction encountered is such as to necessitate substantial changes in the lines or grades, or requires the building of special works not provided for in the Contract Documents.

Any non-City utilities (cable, electric, gas, telephone, etc.) damaged by the CONTRACTOR shall be the responsibility of the CONTRACTOR for relocation and/or repair as well as the costs associated with the relocation and/or repair of utilities. Any City utilities (sanitary sewer main and water distribution main) damaged by the non-negligent acts of the CONTRACTOR will not be the responsibility of the CONTRACTOR for repair. Any delays associated with the relocation and/or repair of utilities shall not be basis for a claim for extra pay.

In the progress of the work, the CONTRACTOR may have to relocate certain existing utility service lines. All relocation, repairs and replacement work shall be done at the expense of the CONTRACTOR to the satisfaction of the OWNER, except those for which specific pay items appear in the Bid Proposal.

Any utilities damaged during construction work shall be immediately repaired at the CONTRACTOR's expense.

The CONTRACTOR shall at all times maintain streets and drives in a condition which will provide easy ingress and egress and upon completion of the work, repair all damages to roads and streets used during construction, to a condition at least as good as existed prior to the start of work.

SP-26: PROSECUTION OF CONSTRUCTION

Add the following to GP Item 108.2. Prosecution of the Work:

The CONTRACTOR will, unless otherwise approved by the Engineer, prosecute the construction of this project during normal working hours as defined below:

(a) Normal Work Day shall mean the normal eight (8) hour working day between the hours of 8:00am and 5:00pm

(b) Normal Work Week shall mean the forty (40) hour work week encompassing the five (5) eight-hour days, Monday through Friday.

(c) Holidays to be observed and to be included into the normal work week will be:

New Years Day	January 1st
MLK Day	Third Monday in January
Memorial Day	Last Monday in May
Independence Day	July 4th
Labor Day	First Monday in September
Thanksgiving Holiday	Fourth Thursday in November and the following Friday
Christmas Holiday	December 24th & December 25th

Any of the above dates falling on a Sunday shall be observed on the following Monday.

(d) All work contemplated to be done which will not be in accordance with the normal hours will require prior approval from the Engineer. The CONTRACTOR shall request permission by the Engineer 72 hours in advance of the time he/she intends to work.

Work which is of necessity performed at times other than normal working hours will not require prior approval unless construction scheduling can be arranged to prevent such conflict of time requirements.

All work performed other than the normal working hours, whether scheduled or required, will in no way increase the cost to the OWNER for the performance of such work. The CONTRACTOR shall pay the OWNER for inspection services, city administrative fees, etc. when work has been approved to be performed on Weekends, Holidays and outside any normal working hours. These services shall be charged at the rate of $75.00 per hour and shall include a four (4) hour minimum charge.

(e) Calendar Days is defined as any day of the week or month; no days being excepted, such as, Saturdays, Sundays, holidays and inclement weather days. Counting of contract time will only be stopped when the Owner issues a written notice stating this fact, or when the project is noted as substantially complete by written notice from the Owner. The Owner shall determine when such action is necessary.

Extensions of time due to weather delays shall be determined in accordance with the following formula:

E = R – P where P is greater than or equal to R, and

E = Extra Precipitation Days
P = Average Precipitation Days
R = Total Precipitation Days

Average Precipitation Days (P) is defined as a day of rain, sleet, hail, snow or any combination thereof, and shall be based upon the average precipitation for each month of the year as defined in the Local Climatological Data summaries issued by the National Climatic Data Center in Asheville, North Carolina, and for this contract shall be as follows:

Average Precipitation

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
No. of Days	6	6	7	7	8	6	4	4	6	6	6	6

Partial months shall be prorated uniformly for the entire month and the sum of all the months used will be rounded to the nearest whole number. This number shall be P.

Total Precipitation Days (R) is defined as a day of rain, sleet, hail, snow or any combination thereof, if determined by the Owner's Project Representative that the Contractor's construction cannot progress substantially due to precipitation and thus be put in the Daily Inspection Logs as a precipitation day. The sum of all precipitation says shall be R.

The total number of Extra Precipitation Days (E) shall be granted to the Contractor as extension of time due to weather delays, and no additional time due to drying time for saturated soil will be allowed.

SP-27: LIQUIDATED DAMAGES FOR FAILURE TO COMPLETE ON TIME

Delete the Table [Schedule 108.8.1.(a) Liquidated Damages] within GP Item 108.8.1. Priority of Contract Documents and substitute the following:

The contract time for the entire project from the “Notice to Proceed” issuance date through the final completion date is 90 consecutive calendar days (note, this 90 consecutive calendar days is for final completion and not substantial completion). This contract time is both multi-tiered and cumulative.

Liquidated damages will be assessed at the rate of $150 per calendar day for any unfinished work for the first 30 days beyond the 90th day. This $150 rate will start on the 91st consecutive calendar day after the “Notice to Proceed” issuance date and continue through the 120th consecutive calendar day after the “Notice to Proceed” issuance date.

Liquidated damages will be assessed at the rate of $300 per consecutive calendar day for any unfinished work beyond the 120th calendar day after the “Notice to Proceed” issuance date. This rate shall continue until such time that the Project is complete and accepted by the OWNER.

SP-28: OCCUPATIONAL SAFETY AND HEALTH ACT

All work performed under this contract shall meet the requirements of the Occupational Safety and Health Act. It is the responsibility of the CONTRACTOR to familiarize himself/herself with the latest provisions of regulations published by the Occupational Safety and Health Administration in the Federal Register and to perform all of his/her responsibilities thereunder.

The CONTRACTOR shall comply with the provisions of the Occupational Safety and Health Act and the standards and regulations issued thereunder and warrant that all work, materials and products furnished under this contract will conform to and comply with said standards and regulations which are in existence on the date of this contract. The CONTRACTOR further agrees to indemnify, defend, and hold harmless the OWNER for all damages suffered by the OWNER as a result of the CONTRACTOR's failure to comply with the Act and the Standards issued thereunder and for the failure of any material and/or equipment furnished under this contract to so comply.

The CONTRACTOR shall also comply with all pertinent provisions of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc., if not in conflict with those of the Occupational Safety and Health Act and shall maintain an accurate record of all cases of death, occupational disease and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment or work under the contract.

The CONTRACTOR alone shall be responsible for the safety, efficiency and adequacy of his/her equipment and employees and for any damage which may result from their failure or their improper construction, maintenance or operation.

SP-29: EASEMENTS/RIGHTS-OF-WAY

Without cost to the CONTRACTOR, the OWNER will provide the necessary easements or rights-of-way required for the project. However, the CONTRACTOR may desire additional temporary easements for the duration of the work for his/her construction, storage or access. All such temporary easements shall be obtained by the CONTRACTOR at no additional cost to the contract or the OWNER.

Unless specifically provided otherwise, the CONTRACTOR, as part of his/her work, shall clear all easements or rights-of-way of all obstructions to the work. On conclusion of his/her operations, he/she shall replace, repair or restore any improvements which may have been removed or damaged, as directed by the Engineer.

SP-30: RIGHT OF ENTRY

The OWNER reserves the right to enter the property or location on which the works herein contracted for are to be constructed or installed, by such agent or agents as he/she may elect, for the purpose of inspecting the work, or for the purchase of constructing or installing such collateral work as said OWNER may desire.

SP-31: AUTHORITY AND DUTIES OF INSPECTOR

Inspectors, designated by and acting under the direction of the OWNER, shall have the authority to inspect all work done and all materials furnished. Such inspection may extend to all or any part of the work and to the preparation, fabrication or manufacture of the materials to be used. He/She is authorized to call to the attention of the CONTRACTOR any failure of the work or materials to conform to the plans, specifications and contract documents. He/She shall have the authority to reject materials or suspend the work until any situation at issue can be referred to and decided by the OWNER.

The Inspector is not authorized to revoke, alter or waive any requirements of the plans and specifications. He/She shall in no case act as foreman or perform other duties for the CONTRACTOR, interfere with the management of the work by the latter. Any advice which the Inspector may give the CONTRACTOR shall otherwise not be construed as binding the Engineer in any way, or releasing the CONTRACTOR from fulfilling all of the terms of the Contract.

If the CONTRACTOR refuses to suspend operations on verbal order of the Inspector, a written order will be presented to the CONTRACTOR by the Inspector giving the reason for suspension of work. After placing the order in the hand of the "man-in-charge", the Inspector shall immediately leave the job. Work performed during the absence of the Inspector will not be accepted nor paid for, and shall be removed and replaced.

Notwithstanding any other provision of this agreement or any other Contract Documents, the Inspector shall not be in any way responsible or liable for any act, errors, omissions or negligence of the CONTRACTOR, any subcontractor or any of the CONTRACTOR's or subcontractor's agents, servants or employees or any other person, firm or corporation performing or attempting to perform any of the work.

SP-32: OWNER-ENGINEER RELATIONSHIP

The Engineer will be the OWNER's representative during construction. The duties, responsibilities and limitations of authority of the Engineer as the OWNER's Representative during construction are as set forth in the Contract Documents and shall not be extended or limited without written consent of the OWNER and Engineer. The Engineer will advise and consult with the OWNER, and all of OWNER's instructions to the CONTRACTOR shall be issued through the Engineer.

SP-33: PROFESSIONAL INSPECTION BY ENGINEER

The Engineer shall make periodic visits to the Site to familiarize himself/herself generally with the progress of the executed work and to determine if such work generally meets the essential performance and design features and the technical and functional engineering requirements of the Contract Documents; provided and except, however, that the Engineer shall not be responsible for making any detailed, exhaustive, comprehensive or continuous on-site inspection of the quality or quantity of the work or be in any way responsible, directly or indirectly, for the construction means, methods, techniques, sequences, quality, procedures, programs, safety precautions or lack of same incident thereto or in connection therewith.

Notwithstanding any other provision of this agreement or any other Contract Documents, the Engineer shall not be in any way responsible or liable for any acts, errors, omissions or negligence of the CONTRACTOR, any subcontractor or any of the CONTRACTOR's or subcontractor's agents, servants or employees or any other person, firm or corporation performing or attempting to perform any of the work.

SP-34: COPIES OF PLANS AND SPECIFICATIONS FURNISHED

Four (4) sets of plans and specifications (not including the General Provisions) shall be furnished to the CONTRACTOR at no charge for construction purposes. Additional sets may be obtained from the Engineer at **$ 75.00 per set.**

SP-35: VERIFICATION OF MEASUREMENTS

Before ordering any material or doing any work, the CONTRACTOR shall verify all measurements involved and shall be responsible for the correctness of these measurements. No extra charge or compensation will be allowed because of

differences between actual dimensions and the dimensions shown on the drawings; any difference which may be found shall be called to the attention of the Engineer for consideration before proceeding with the work.

SP-36: PAY ITEMS - INCIDENTAL CONSTRUCTION

The CONTRACTOR shall be paid only for those items which are listed in the proposal or which are added to the job through a change order. All construction or removal considerations which are not listed as a separate pay item shall be considered as incidental construction. Cost for these items shall be considered in the most appropriate item listed in the schedule(s) of pay items.

SP-37: OMISSIONS

(a) In the event that the specifications inadvertently omit some of the usual and customary work, auxiliary equipment or material required for the satisfactory installation and operation of all work, equipment or material, the CONTRACTOR shall provide these items as directed by the Engineer at his/her own expense. The CONTRACTOR will be assumed to be an experienced and qualified CONTRACTOR in this type of work, and to have studied the purpose of operation of the equipment and the results to be obtained, and is to furnish equipment suitable for the work to be done.

(b) In the event that the specifications inadvertently fail to contain a specification for work to be done and material to be furnished, then the Standard Current Specification or Requirements of the A.W.W.A., A.S.T.M., A.S.C.E., A.S.E.E., A.S.M.E., N.B.F.U., N.E.C., N.E.M.A., O.S.H.A., NCTCOG "Standard Specifications for Public Works Construction" or TxDOT "Standard Specifications for Construction of Highways, Streets and Bridges" shall apply. Should the above specifications not apply, then the work done, equipment or material furnished shall be as directed by the Engineer.

SP-38: MINIMUM WAGE RATES

For the work required of this project, the CONTRACTOR and all sub-contractors shall pay his/her employees the prevailing wage rates in accordance with the Texas Government Code, Chapter 2258. The prevailing wage rates determined applicable for this project are the current prevailing wage rate schedules of the United States Department of Labor adopted in accordance with the Davis-Bacon Act (40 U.S.C. Section 276a, et. seq.) and its subsequent amendments. These prevailing wage rates can be obtained from the following web page: **www.access.gpo.gov/davisbacon/tx.html** (Tarrant County).

A CONTRACTOR or sub-contractor who does not pay his/her employees in accordance with these prevailing wages shall pay $ 60.00 for each worker employed

for each calendar day or part of the day that the worker is paid less than the wage rates stipulated in these prevailing wage rates to the CITY.

SP-39: LOSSES FROM NATURAL CAUSES

Unless otherwise specified, all loss or damage to the CONTRACTOR arising out of the nature of the work to be done, or from the action of the elements, or from any unforeseen circumstance in the prosecution of same, or from unusual obstructions or difficulties which may be encountered in the prosecution of the work, shall be sustained and borne by the CONTRACTOR at his/her own cost and expense.

SP-40: EXPLOSIVES, BLASTING, ETC.

Neither explosives nor blasting shall be allowed or used on this project.

SP-41: WORK WITH OWN FORCES

The CONTRACTOR shall perform with his own forces work of a value of not less than fifty percent (50%) of the contract amount.

SP-42: PROJECT NAME CONSTRUCTION SIGNS

The CONTRACTOR shall install two (2) Project Name Construction Signs on Simmons Drive. One sign shall be at or near the intersection of Simmons Drive and Mid-Cities Boulevard and one sign shall be at or near the proposed intersection of Simmons Drive and Grand Avenue. The exact locations shall be approved by the OWNER prior to installation.

These signs shall be in accordance with Figure 2M (R 02-26-2007) of the City of North Richland Hills' Public Works Design Manual. These signs shall be installed within 15 calendar days from the date the OWNER awards the contract and shall remain in place during the entire construction period. These Signs shall be removed within 15 calendar days after the OWNER's acceptance of the project improvements.

Sign Data:

Project Name:	**Calloway Branch Channel Improvements – Phase II at Waggoner Ranch Road**
Projected Completion:	*To Be Determined After Contract Award*

SP-43: WATER FOR CONSTRUCTION

The CONTRACTOR shall make the necessary arrangements for securing and transporting all water required in the construction, including water required for mixing of concrete, sprinkling, testing, flushing or jetting.

The CONTRACTOR may remit the City a deposit for a fire hydrant water meter; additionally, the CONTRACTOR will be billed for the water used on the construction of this contract and measured by such fire hydrant meter. Additionally, the cost of any temporary pipe line, metering or other equipment which may be necessary to make use of such fire hydrant water meter and water, shall be considered as incidental to the work and payment therefore shall be included in the various bid items of the proposal. If the CONTRACTOR chooses to use such fire hydrant water meter, he/she shall assume full responsibility for it and return it in the same or similar condition as received otherwise the CONTRACTOR will not be returned his/her deposit.

SP-44: OWNER'S RIGHT TO SUSPEND WORK AND ANNUL CONTRACT

Delete GP Item 108.9.(2) and replace it with the following:

(2) failure of the CONTRACTOR to make the progress set out in the Progress Schedule;

SP-45: OWNERSHIP OF DRAWINGS

All drawings, specifications and copies thereof furnished by the Engineer shall not be reused on other work, and, with the exception of the signed contract sets, are to be returned to him on request, at the completion of the work. All models are the property of the OWNER.

SP-46: ADEQUACY OF DESIGN

It is understood that the OWNER believes it has employed competent engineers and designers. It is, therefore, agreed that the Engineer shall be responsible for the adequacy of the design, sufficiency of the Contract Documents, the safety of the structure and the practicability of the operations of the completed project; provided the CONTRACTOR has complied with the requirements of the Contract Documents, all approved modifications thereof, and additions and alterations thereto approved in writing by the OWNER. The burden of proof of such compliance shall be upon the CONTRACTOR to show that he/she has complied with the requirements of the Contract Documents, approved modifications thereof and all approved additions and alternations thereto.

CMJ ENGINEERING, INC.

7636 Pebble Drive
Fort Worth, Texas 76118
www.cmjengr.com

January 20, 2016

Halff Associates, Inc.
4000 Fossil Creek Boulevard
Fort Worth, Texas 76137

Attn: Mr. Levi Hein, P.E.

RE: CMJ REPORT 117-15-197
ADDITIONAL ANALYSES
CALLOWAY BRANCH CHANNEL REPAIR
NORTH RICHLAND HILLS, TEXAS

Dear Mr. Hein:

INTRODUCTION

CMJ Engineering, Inc. (CMJ) is pleased to present herein additional geotechnical recommendations associated with the above referenced project. This work was performed in general accordance with CMJ Proposal No. 15-5775 dated September 4, 2016. Authorization to provide these recommendations was provided via Standard Subcontract with Halff Associates, Inc., Project Number 31248, and authorized by Mr. Benjamin Pylant, P.E.

CMJ Engineering, Inc. performed a geotechnical investigation for this project for the City of North Richland Hills with results provided in CMJ Report 245-15-11 dated July 29, 2015. We understand Halff Associates has been retained by the city to prepare channel repair plans for this project and has obtained detailed survey data. Preliminary repaired channel cross sections were provided by Halff for slope stability analyses in addition to those performed in the referenced report. The purpose of the additional work, contained herein, was to analyze the proposed cross section and provide additional recommendations as needed based on maintaining an acceptable slope stability value. Furthermore, we understand Option 2 has been selected for remediation of the channel bank slope as discussed in detail in the referenced geotechnical report. This letter is considered supplemental to the referenced report.

ADDITIONAL SLOPE STABILITY ANALYSIS

Analyses/Input Parameters

Plates 1 through 4 depict the repaired channel slope as derived from cross sections provided by Halff Associates. The typical cross section depicted has an overall height of approximately 13 feet (maximum) with a side slope of 2.5H:1V incorporating a geogrid slope reinforcement zone

and rock rip rap toe erosion protection. We understand the rip rap is planned to be on the order of 3 feet thick. The assumed soil properties utilized for analysis are denoted in the table in the upper left on Plates 1 through 4. The soil type below each profile line is denoted with a number that corresponds to the table in the upper left. The table lists the assumed unit weight and strength properties for each soil type. The method for determining the strength of the in-situ slope soils was field and laboratory soil testing performed in the previous study.

Long-term acceptable factors of safety for slope stability are considered to be approximately 1.5 or above. In other words, the resisting forces to failure are 50 percent greater than the driving forces. A factor of safety of 1.0 indicates impending failure.

Analyses and Additional Recommendations

Multiple analyses were performed in order to obtain the factors of safety for the typical slope geometry considered. Outputs of analyses are included on Plates 1 through 4. These outputs present the assumed orientation on the slope, soil strength parameters, 10 most critical failure surfaces, and factors of safety for the surfaces. Table 1 presents a summary of final analyses.

Table 1 – Slope Stability Analysis Summary

Plate	Factory of Safety	Comment
1	1.35	Circular Analysis, no geogrid
2	1.27	Wedge Analysis, no geogrid
3	1.58	Circular Analysis, with 12-foot wide geogrid
4	1.48	Wedge Analysis, with 12-foot wide geogrid

Based on the global stability analyses above, a minimum geogrid length of 12 feet is required to produce factors of safety on the order of 1.5 for the proposed cross section provided. Therefore, the recommendations for Option 2 should also require a minimum total horizontal grid length of 12 feet or removal of disturbed existing soil plus 5 feet, whichever is longer as referenced from the final slope face. Reference should be made to Report 245-15-11 for details on Option 2 installation, testing, and geogrid manufacturer.

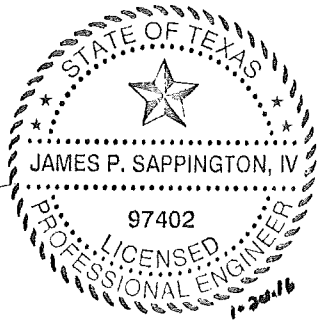
CLOSURE

CMJ Engineering, Inc. appreciates the opportunity to provide these analyses and results of slope stability for the proposed channel repair cross section for Calloway Branch. Should

questions arise on information contained herein, please contact us. The following plates are attached and complete this report:

Plates 1 – 4 – Slope Stability Analyses

Respectfully submitted,
CMJ ENGINEERING, INC.
TEXAS FIRM REGISTRATION NO. F-9177



James P. Sappington IV, P.E.
Senior Engineer

copies submitted: (2) Mr. Levi Hein, P.E.; Halff Associates, Inc. (by mail and e-mail)

CMJ ENGINEERING, INC.

Calloway Branch Channel Improvements - Typ. Section - NRH, Texas

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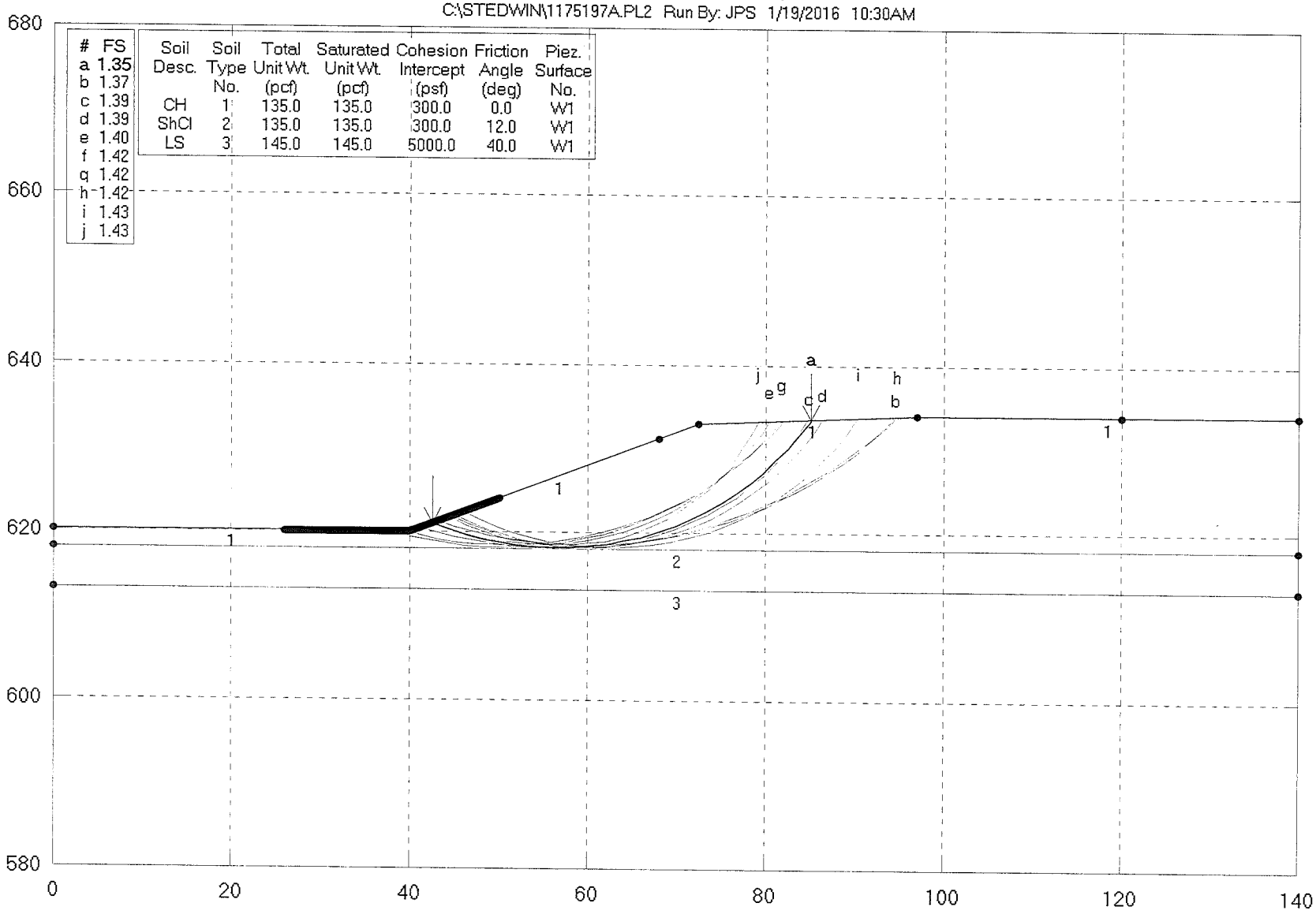

GSTABL7 v.2 FSmin=1.35

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

PLATE 1

CMJ ENGINEERING, INC.

Calloway Branch Channel Improvements - Typ. Section - NRH, Texas

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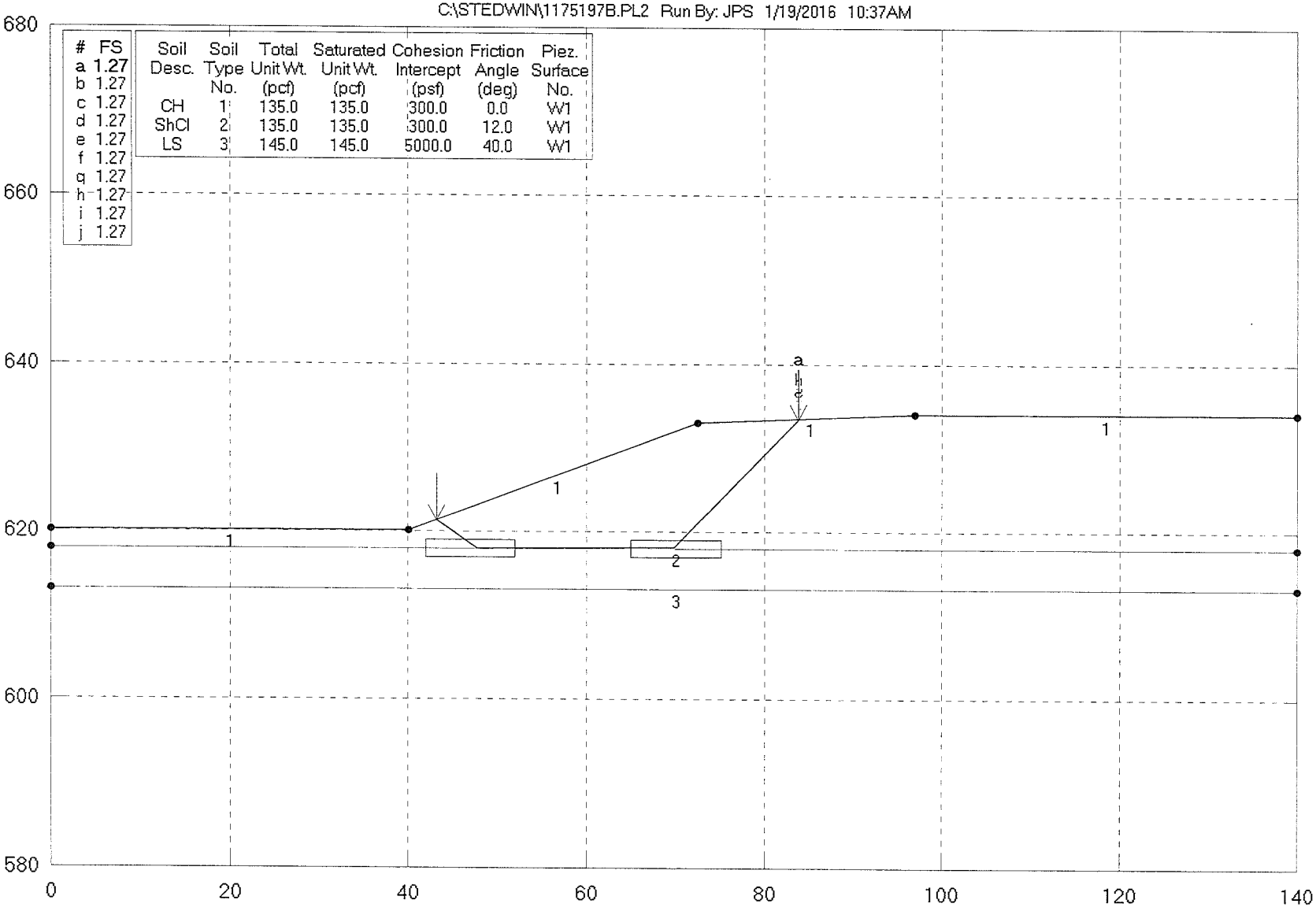

#	FS
a	1.27
b	1.27
c	1.27
d	1.27
e	1.27
f	1.27
g	1.27
h	1.27
i	1.27
j	1.27

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
CH	1	135.0	135.0	300.0	0.0	W1
ShCl	2	135.0	135.0	300.0	12.0	W1
LS	3	145.0	145.0	5000.0	40.0	W1

GSTABL7 v.2 FSmin=1.27

Safety Factors Are Calculated By The Simplified Janbu Method

GSTABL7

PLATE 2

CMJ ENGINEERING, INC.

Calloway Branch Channel Improvements - Typ. Section w/ Grid - NRH, Texas

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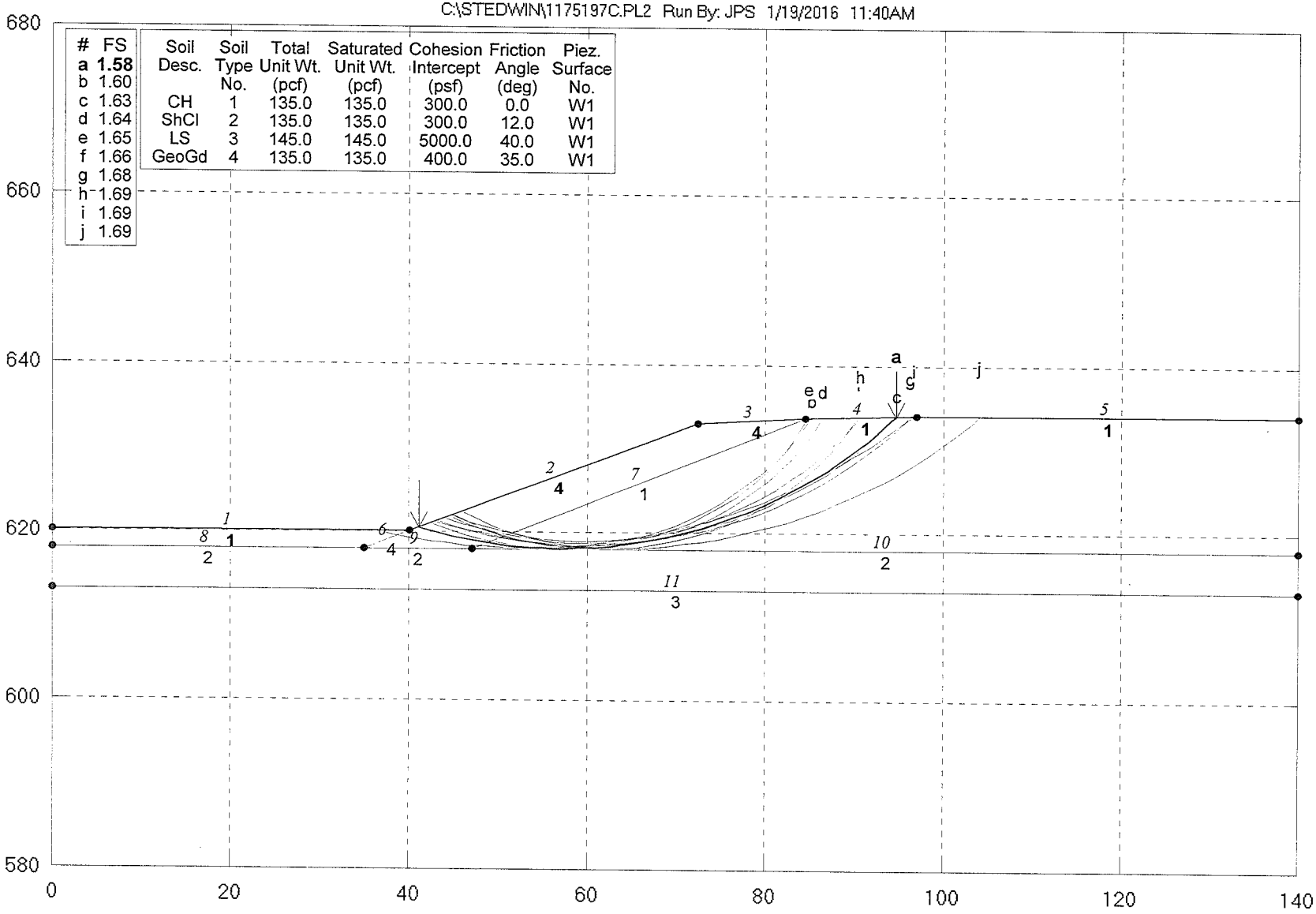

#	FS
a	1.58
b	1.60
c	1.63
d	1.64
e	1.65
f	1.66
g	1.68
h	1.69
i	1.69
j	1.69

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
CH	1	135.0	135.0	300.0	0.0	W1
ShCl	2	135.0	135.0	300.0	12.0	W1
LS	3	145.0	145.0	5000.0	40.0	W1
GeoGd	4	135.0	135.0	400.0	35.0	W1

GSTABL7 v.2 FSmin=1.58

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

PLATE 3

CMJ ENGINEERING, INC.

Calloway Branch Channel Improvements - Typ. Section w/ Grid - NRH, Texas

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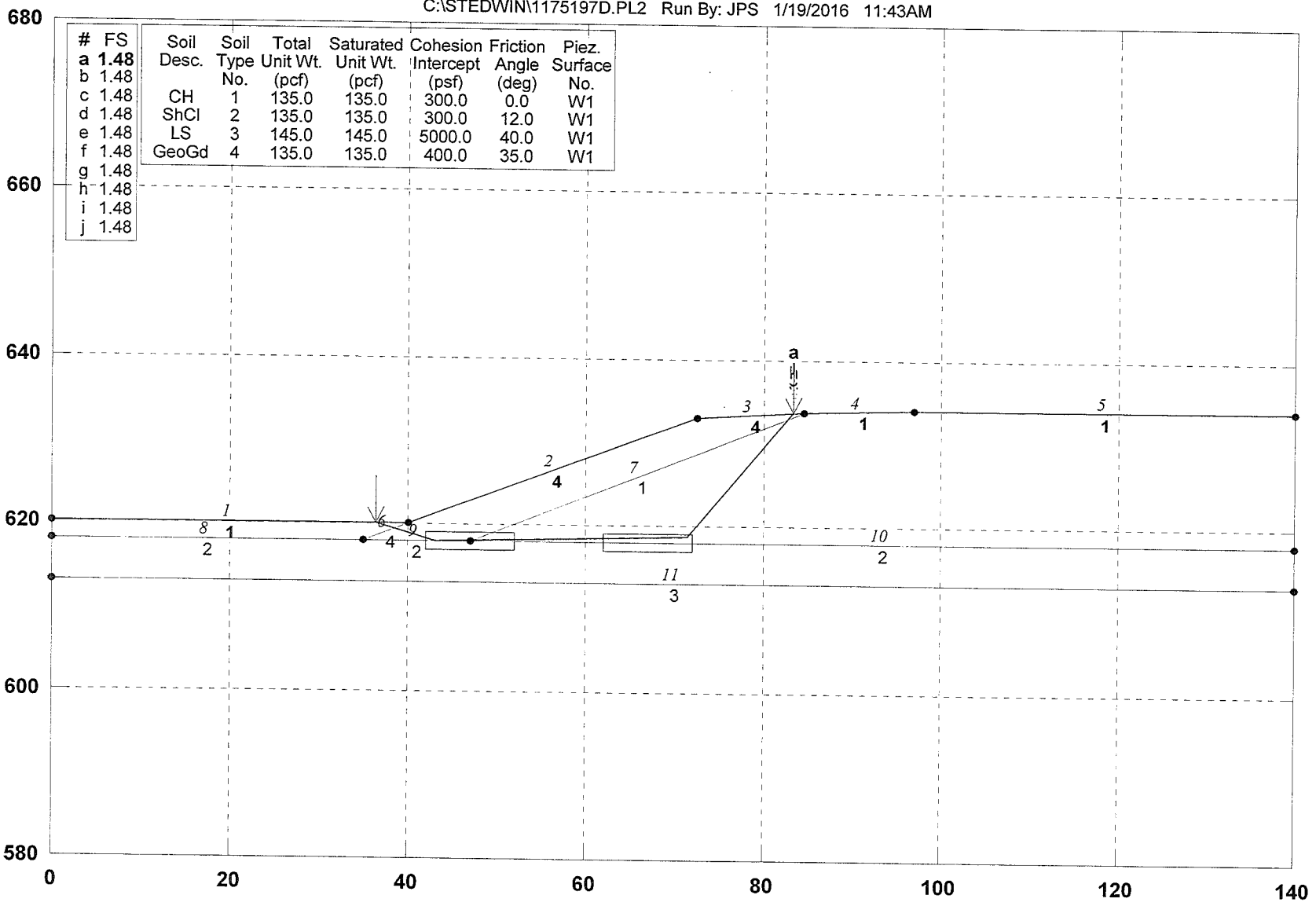


#	FS
a	**1.48**
b	1.48
c	1.48
d	1.48
e	1.48
f	1.48
g	1.48
h	1.48
i	1.48
j	1.48

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
CH	1	135.0	135.0	300.0	0.0	W1
ShCl	2	135.0	135.0	300.0	12.0	W1
LS	3	145.0	145.0	5000.0	40.0	W1
GeoGd	4	135.0	135.0	400.0	35.0	W1

GSTABL7 v.2 FSmin=1.48

Safety Factors Are Calculated By The Simplified Janbu Method for the case of Specified.

GSTABL7

PLATE 4

GEOTECHNICAL ENGINEERING STUDY
SLOPE SLIDES
EAST OF WAGGONER RANCH ROAD
GRAHAM RANCH SUBDIVISION
NORTH RICHLAND HILLS, TEXAS

Presented To:

City of North Richland Hills

July 2015

PROJECT NO. 245-15-11

CMJ ENGINEERING, INC.

7636 Pebble Drive
Fort Worth, Texas 76118
www.cmjengr.com

July 29, 2015
Report No. 245-15-11

City of North Richland Hills
7301 N.E. Loop 820
North Richland Hills, Texas 76180

Attn: Ms. Caroline Waggoner, P.E., City Engineer

GEOTECHNICAL ENGINEERING STUDY
SLOPE SLIDES
EAST OF WAGGONER RANCH ROAD
GRAHAM RANCH SUBDIVISION
NORTH RICHLAND HILLS, TEXAS

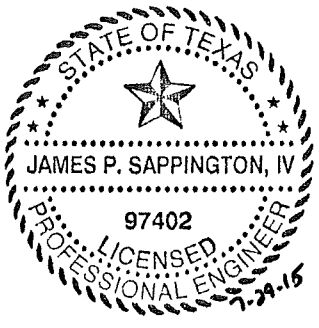
Dear Ms. Waggoner:

Submitted here are the results of a geotechnical engineering study for the referenced project. This study was performed in general accordance with CMJ Estimate No. 15-5633 dated May 11, 2015. The geotechnical services were authorized on May 13, 2015 by Mr. Mike Curtis, Managing Director of the City of North Richland Hills.

Engineering analyses and recommendations are contained in the text section of the report. Results of our field and laboratory services are included in the appendix of the report. We would appreciate the opportunity to be considered for providing geotechnical engineering services for any future projects.

We appreciate the opportunity to be of service to City of North Richland Hills. Please contact us if you have any questions or if we may be of further service at this time.

Respectfully submitted,
CMJ ENGINEERING, INC.
TEXAS FIRM REGISTRATION NO. F-9177



James P. Sappington IV, P.E.
Senior Engineer
Texas No. 97402

copies submitted: (2) Ms. Caroline Waggoner, P.E.; City of North Richland Hills (mail)

TABLE OF CONTENTS

APPENDIX A

APPENDIX A

1.0 INTRODUCTION

1.1 General

The subject site is located along the east side of the Graham Ranch subdivision in North Richland Hills, Texas. The existing west slope of the Calloway Branch channel located parallel and east of Waggoner Ranch Road has shifted and failed in multiple locations along an approximate 850 linear foot reach. The slides nearly encroach the nearby fence line of approximately 10 residences. The existing channel is on the order of 7 to 9 feet in height with side slopes varying from 1.5H:1V to 2H:1V. Plate A.1, Plan of Borings depicts the location of exploration borings.

1.2 Purpose and Scope

The purpose of this geotechnical engineering study has been to determine the general surface and subsurface conditions, evaluate the engineering characteristics of the subsurface materials encountered, comments on the potential for slope instability, and provide recommendations, as appropriate, for slope remediation.

To accomplish its intended purposes, the study has been conducted in the following phases: (1) drilling sample borings to determine the general subsurface conditions and to obtain samples for testing; (2) performing laboratory tests on appropriate samples to determine pertinent engineering properties of the subsurface materials; and (3) performing engineering analyses, using the field and laboratory data, to develop geotechnical recommendations for the proposed construction.

The design is currently in progress and the locations and/or elevations of the structure could change. The recommendations contained in this report are based on data supplied by the City of North Richland Hills. Once the final design is near completion (80-percent to 90-percent stage), it is recommended that CMJ Engineering, Inc. be retained to review those portions of the construction documents pertaining to the geotechnical recommendations, as a means to determine that our recommendations have been interpreted as intended.

1.3 Report Format

The text of the report is contained in Sections 1 through 7. All plates and large tables are contained in Appendix A. The alpha-numeric plate and table numbers identify the appendix in

which they appear. Small tables of less than one page in length may appear in the body of the text and are numbered according to the section in which they occur.

Units used in the report are based on the English system and may include tons per square foot (tsf), kips (1 kip = 1,000 pounds), kips per square foot (ksf), pounds per square foot (psf), pounds per cubic foot (pcf), and pounds per square inch (psi).

2.0 FIELD EXPLORATION AND LABORATORY TESTING

2.1 Field Exploration

Subsurface materials at the project site were explored by four (4) vertical soil borings. Borings B-1 through B-3 were drilled to depths of 8 to 12 feet and Boring B-4 was drilled to a depth of 25 feet. Borings B-2 and B-4 was advanced on the uphill side of the slope slide. Borings B-1 and B-3 were advanced by hand methods approximately mid-slope within the slope slide zone. The borings were drilled using continuous and intermittent sampling and continuous flight auger methods at the approximate locations shown on the Plan of Borings, Plate A.1. The boring logs are included on Plates A.4 through A.7, and keys to classifications and symbols used on the logs are provided on Plates A.2 and A.3.

Undisturbed samples of cohesive soils were obtained with nominal 3-inch diameter thin-walled (Shelby) tube samplers at the locations shown on the logs of borings. The Shelby tube sampler consists of a thin-walled steel tube with a sharp cutting edge connected to a head equipped with a ball valve threaded for rod connection. The tube is pushed into the soil by the hydraulic pulldown of the drilling rig. The soil specimens were extruded from the tube in the field, logged, tested for consistency with a hand penetrometer, sealed, and packaged to limit loss of moisture.

The consistency of cohesive soil samples was evaluated in the field using a calibrated hand penetrometer. In this test a 0.25-inch diameter piston is pushed into the relatively undisturbed sample at a constant rate to a depth of 0.25 inch. The results of these tests, in tsf, are tabulated at respective sample depths on the logs. When the capacity of the penetrometer is exceeded, the value is tabulated as 4.5+.

To evaluate the relative density and consistency of the harder formations, a modified version of the Texas Cone Penetration test was performed at selected locations. Texas Department of

Transportation (TXDOT) Test Method Tex-132-E specifies driving a 3-inch diameter cone with a 170-pound hammer freely falling 24 inches. This results in 340 foot-pounds of energy for each blow. This method was modified by utilizing a 140-pound hammer freely falling 30 inches. This results in 350 foot-pounds of energy for each hammer blow. In relatively soft materials, the penetrometer cone is driven 1 foot and the number of blows required for each 6-inch penetration is tabulated at respective test depths, as blows per 6 inches on the log. In hard materials (rock or rock-like), the penetrometer cone is driven with the resulting penetrations, in inches, recorded for the first and second 50 blows, a total of 100 blows. The penetration for the total 100 blows is recorded at the respective testing depths on the boring logs.

Ground-water observations during and after completion of the borings are shown on the upper right of the boring log. Upon completion of the borings, the bore holes were backfilled with soil cuttings and plugged at the surface by hand tamping.

2.2 Laboratory Testing

Laboratory soil tests were performed on selected representative samples recovered from the borings. In addition to the classification tests (liquid limits, plastic limits, and gradations), moisture content, unconfined compressive strength, and unit weight tests were performed. Results of the laboratory classification tests, moisture content, unconfined compressive strength, and unit weight tests conducted for this project are included on the boring logs. Particle size analyses are presented on Plates A.8 through A.10.

Direct shear tests were performed within the overburden soils. The shear tests were performed in order to obtain strength parameters of the soils in their existing state. The results of the direct shear tests are presented on Plates A.11 through A.16.

The above laboratory tests were performed in general accordance with applicable ASTM procedures, or generally accepted practice.

3.0 SURFACE AND SUBSURFACE CONDITIONS

3.1 Site Geology

According to the Dallas Sheet of the Geologic Atlas of Texas, the project is geologically located in the Grayson Marl Formation of the Lower Cretaceous age. In full section, the Grayson Formation

is approximately 50 feet thick, relatively uniform, and composed of clays, marls, and limestones. The residual soils of the Grayson are usually deep and highly active, possess low permeability, and generally contain considerable amounts of gypsum and pyrite. Layers of limestone are relatively thin, and occur in the middle to upper portion of the formation.

3.2 Site Reconnaissance and Discussion

The slope is vegetated with various grasses and occasional small caliper trees. A wood fence is present several feet behind the top of the slope and one concrete drainage outfall with associated rip-rap is present near the north project limit. Multiple slope slippage planes were noted at various locations along the entire length of the subject site, with varying degrees of failure progression. The base of the wood fence exhibits minor distress in several locations, likely as a result of loss of ground support. The slope slide planes generally all had semi-circular arcs (looking horizontal). The highest degree of failure progression tended to occur where surface drainage swales are present at the top and perpendicular to the slope. This typically occurred between residential lots where surface drainage swales exist. Several corrugated plastic drain pipes also outlet near the top of the slope, where similarly high degree of failure progression was observed. Of interesting note; the east channel embankment slope exhibited little to no slide distress.

Visual observations indicate the various slides which have occurred at this site are characterized as shallow skin slides, ergo the failure mode was not a deep-seated phenomenon. Results of slope stability analyses confirm these visual observations as discussed in detail below. This failure mechanism is typically a series of thin surficial failures, with depths varying from on the order of 3 to 6 feet. Surface drying of moderately to highly plastic surface soils of this nature can open surficial fissures and cracks, which allows surface water infiltration and promotes seepage of water parallel to the slope face. Shallow surface failures will eventually occur with increase soil moisture contents and reduction of shear strength. A surficial failure usually develops during or after a period of heavy and prolonged rainfall. The condition can be exacerbated when the rain event occurs immediately following a prolonged dry spell, which occurred in the spring of 2015. Furthermore, the concentration of surface water at existing drainage swales and outlet drain pipe locations along the top of the slope further aggravates the phenomenon. It is the opinion of CMJ that shallow sliding of natural surface soils will occur periodically at this site with the existing slope angle being on the order of 1.5H:1V to 2H:1V.

3.3 Soil Conditions

Specific types and depths of subsurface strata encountered at the boring locations are shown on the boring logs in Appendix A. The generalized subsurface stratigraphy encountered in the borings are discussed below. Note that depths on the borings refer to the depth from the existing grade or ground surface present at the time of the investigation, and the boundaries between the various soil types are approximate.

Fill is present at the surface in Boring B-4 extending to a depth of 1 foot. The fill consists of dark brown silty clays containing calcareous nodules. Natural soils encountered consist of dark brown, brown, and light brown silty clays and clays overlying light brown, light gray, and gray shaly clays at depths of 3 to 9 feet. Calcareous nodules and occasional ironstone nodules are present within the natural soils. Occasional gravel is present within the shaly clays in Boring B-1 and tan limestone seams are present below 13 feet in Boring B-4.

Silty clays and shaly clays within the upper 6 feet in Boring B-1 conducted in the slide zone were considered soft (soil basis), with pocket penetrometer values of 0.25 to 1.0 tsf. In Boring B-3, the upper 3 feet were firm to stiff in consistency (soil basis), with pocket penetrometer values of 1.0 to 1.75 tsf. The upper 6 feet in Boring B-2 exhibit select zones of firm (soil basis) clays, with pocket penetrometer values of 1.0 to 1.25 tsf. Elsewhere, the clays encountered were generally stiff to hard in consistency (soil basis), with pocket penetrometer values of 1.75 to over 4.5 tsf. The various clays encountered in the borings had tested Liquid Limits (LL) ranging from 37 to 70 with Plasticity Indices (PI) ranging from 21 to 48 and are classified as CL and CH by the USCS. Tested unit weight values ranged from 97 to 115 pcf and unconfined compressive strength values were 1,170 to 5,640 psf.

Tan weathered limestone is next present in Boring B-4 at 16 feet, underlain by gray limestone at 18 feet. The gray limestone is very hard (sedimentary rock basis) with Texas Cone Penetrometer values of ¾ to 1¼ inches per 100 blows.

3.4 Ground-Water Observations

The borings were drilled using continuous drilling methods in order to observe ground-water seepage during drilling. Ground-water seepage was encountered at a depth of 3 feet in Boring B-1 during drilling. A water level of 3 feet was measured at drilling completion in Boring B-1, with

associated bore-hole cave-in at 4 feet. Borings B-2 through B-4 were dry during drilling and at completion.

Fluctuations of the ground-water level can occur due to seasonal variations in the amount of rainfall; site topography and runoff; hydraulic conductivity of soil strata; and other factors not evident at the time the borings were performed. Ground-water can occur atop harder, less-permeable materials (e.g., clay or limestone) or flow through granular, more permeable zones, and should be considered when developing the design and construction plans for this project.

Due to the variable subsurface conditions, long-term observations would be necessary to more accurately evaluate the ground-water level. Such observations would require installation of piezometer or observation wells which are sealed to prevent the influence of surface water.

4.0 SLOPE STABILITY ANALYSIS

4.1 Slope Stability Analysis System-Computer Solutions

CMJ Engineering, Inc. selected GSTABL7 with STEDwin to perform the slope stability analyses for this project. GSTABL7 with STEDwin is a combination of GSTABL7, an off shoot based on the original PCSTABL6-1986 developed at Purdue University. It is a two-dimensional, limit equilibrium slope stability program developed and enhanced by Garry H. Gregory, P.E. and Harold W. VanAller, P.E. CMJ Engineering, Inc. utilized GSTABL7, Version 2.

This slope stability analysis utilizes Modified Bishop, Simplified Janbu, or the Spencer Method of Slices for analysis. Circular, random, and sliding block search routines are available for analysis. Analysis also allows the utilization of anisotropic soil strength parameters which aid in modeling tension cracks of bedding planes as well as different soil strength in different directions. The system overall allows analyses of hundreds of search options and potential failure surfaces and results in a print out showing the geometry, soil parameter summary, and listing of the ten most critical failure surfaces analyzed, focusing and highlighting the most critical surface with the lowest safety factor.

4.2 Analyses/Input Parameters

Numerous analyses were conducted by CMJ Engineering, Inc. to identify the worst-case methodology to use in analysis as well as the appropriate soil parameters, which affect the slope stability. Plates B.1 through B.4 depict an overall slope height of 9 feet with the lower 7-foot high portion possessing slope angles of 1.5 horizontal to 1 vertical (1.5H:1V). This slope orientation was selected as an overall project template for slopes consisting of on-site materials. The cross section was derived from construction plans for Calloway Branch Channel Improvements dated January, 1996 by Knowlton, English, Flowers, Inc. as provided by the City of North Richland Hills. The section modeled is shown on Sheet 20 of 30 labeled "Sta. 22+00," depicting a concrete-lined channel with an overall height of 9 feet. The channel did not receive a concrete lining.

The assumed soil properties utilized for analysis are denoted in the table in the upper left on Plates B.1 through B.4. The soil type below each profile line is denoted with a number that corresponds to the table in the upper left. The table lists the assumed unit weight and strength properties for each soil type. Two soil zones are selected to represent in-situ materials and consist of the following:

- Soil 1 – Upper clay soil zone, exhibiting relatively low cohesive strength and zero internal angle of friction to model saturated conditions; selected to have a cohesion of 250 to 300 psf and a friction angle of 0 degrees
- Soil 2 – Shaly clay with moderate cohesive strength over Soil 1; selected to have a cohesion of 300 psf and a friction angle of 12 degrees

4.3 Slope Stability Analysis – Deep-Seated Slide

Slope stability analyses were performed assuming the case of complete saturation (i.e., soils have internal angle of friction of 0 degrees; therefore, an ultra-conservative analysis) in order to analyze worst-case conditions. The following summarizes deep-seated slope stability results:

TABLE 4.3-1 SLOPE STABILITY ANALYSES SUMMARY

Plate No.	Upper Clay Zone Strength		Failure Plane	Factor of Safety
	Cohesion (psf)	Friction Angle, Φ		
B.1	300	0	Circular	1.83
B.2	300	0	Wedge	1.79
B.3	250	0	Circular	1.52
B.4	250	0	Wedge	1.50

Analyses with a $\Phi = 0$ option are considered conservative. Even small values of angle of internal friction increases resultant factors of safety significantly. A $\Phi = 0$ degree analysis assumes a saturated slope condition for clay soils.

Readers should understand that a factor of safety of 1.0 implies impending failure and a factor of safety of less than 1.0 implies the slope would fail based on the input parameters. Common practices in the geotechnical industry requires that a long-term safety factor on the order of 1.5 or greater be established for the safety of a slope. This essentially means that the resisting forces to sliding will be 50 percent greater that the driving forces for long-term conditions.

The results for deep-seated slope stability indicate that this failure mechanism has satisfactory factors of safety. Even ultra-conservative parameters shown on Plates B.1 through B.4 reflect a factor of safety above failure.

4.4 Slope Stability Analysis - Shallow Skin Slide

Analyses of shallow skin slides are not conducive to computer aided methodologies. Hand solutions using an infinite slope were employed (Lambe and Whitman). The goal was to assess what value of soil cohesion, assuming an angle of internal friction equals 0 degrees, would cause failure (i.e., factor of safety equal 1). Assuming an infinite 1.5 horizontal to 1 vertical slope with a 6-foot thickness, a soil cohesion on the order of 350 psf would cause instability. This analysis does not account for desiccation cracks which, when filled with water, adds to the instability of a slope.

The results of this analysis indicate that tested cohesion values of the in-situ clays are in the general range to reach shallow skin failure of this slope. The typical failure mechanism for a similar shallow slide is water infiltration through desiccation cracks resulting in weakened surficial soils and development of seepage parallel to the slope face. This seepage is evident in Boring B-1. Otherwise, a soft soil zone could have been placed along the actual slide plane or poor earthwork practices (no benching of fill/natural soils) may have occurred when the slope was constructed, however, no evidence of previous fill along the channel was found. Regardless, surface slippage/creep problems should be expected for an earthen slope with a height of 7 to 9 feet and a slope on the order of 1.5H:1V within the Grayson geology.

4.5 Slope Stability Results Comment

The results of slope stability analyses indicate that deep-seated slope instability is not a concern for the assumed geometry. Furthermore, a factor of safety equal 1 condition would require near-surface soils to significantly moisten and lose strength compared to tested values.

Based on final observations and the above analyses, it is out opinion that the slope failures are skin slides, combining a combination of a block failure with slight rotation. Remediation should concentrate on the near-surface soil refurbishing.

4.6 Remediation Recommendations

The primary objective in slope remediation is to prevent future skin sliding in the area of the existing slope slippage. Several options exist to remediate the slope as follows:

- Option 1 – Remove existing soil in the failure zone and replace this soil with select fill, thereby providing a soil fill with greater strength. In lieu of replacement with select fill, the existing soils could also be lime stabilized with 8 percent lime by weight. However, this option could result in an undesirable aesthetic as vegetation would be difficult to grow atop the lime stabilized slope. In addition, the existing clay soils must be tested for soluble sulfates prior to lime treatment to check for sulfate-induced heave potential. In addition, this option must reduce the overall slope to an angle of 2H:1V or flatter.

- Option 2 – Remove existing soil in the failure zone; use the same soil as backfill and "reinforce" the clay soil with geogrid for the full width/length of the affected area, with GeoGrid placed every 2 feet of elevation.

- Option 3 – Reinforce the slope with a suppressor wall, consisting of reinforced drilled shafts on 5-foot center-to-center spacing, aligned approximately midway, uphill/downhill, within and just passed the exposed failure zone.

- Option 4 – Reinforcing the slope vertically with flat plate reinforcing. This method consists of driving vertically a series of steel posts with flat plates that act as small "braces" which provide horizontal passive pressure to resist further soil movement.

Option 1 is most conventional. It replaces the soft, disturbed soil with a sandy clay/clayey sand select fill (Liquid Limit less than 35 and Plasticity Index between 4 and 16). The disturbed soil should be removed to the failure plane plus 5 feet. New select fill should be placed in 8-inch loose lifts, stair-stepped into natural soils with height, and compacted to at least 95 percent Standard

Proctor Density, at a moisture content between -2 and +3 percentage points of optimum. The overall slope must be re-oriented to an angle of 2H:1V or less with a maximum overall height of 9 feet.

Option 2 requires removing disturbed existing soil, plus 5 feet, in a similar nature as above. This soil is stockpiled for future re-use. A geogrid (Tensar TriAx TX160 or equivalent) is placed every 2 feet of fill height to add reinforcing strength to the existing skin slide soils. The clay soils should be pulverized and placed/compacted per Option 1 above.

Consideration can be given to installing the concrete channel lining for Options 1 and 2. This option will also add stability by reducing the likelihood of surface water infiltration into the slope. If a concrete channel liner is installed, a maximum slope angle of 1.5H:1V with similar geometry as depicted on the "Sta. 22+00" cross section with an overall height of 9 feet may be utilized. Proper erosion protection with rip-rap or gabion structures of the concrete liner must be provided at the toe (if the channel is not fully lined on both banks and bottom) and/or termination points to prevent undercutting and migration of water beneath the concrete. If the concrete liner is not provided, the establishment of slope vegetation becomes important with respect to slope erosion and minor slides, not including the lime-stabilized slope option.

Option 3 employs installing 24-inch diameter concrete piers (drilled shafts) on 5-foot centers, embedded a minimum of 5 feet into gray limestone, and placed mid-height within the failure soils. This method would require earthwork to prepare a level surface for a pier drilling rig to work. Further recommendations and analyses followed by collaboration with a selected structural engineer would be required. Our office should be contacted for additional recommendations should this option be selected.

Option 4 employs vertical flat plate reinforcing within the existing failed slope. This technology is marketed by Slope Reinforcement Technology (Danville, California [email: contact@sloperepair.com]). This option requires a larger shovel-type machine, capable of hammering the flat plate through the softer surficial clays and into the very stiff to hard shaly clays. As long as natural soils do not possess rock fragments, this method may be successful. It is important that the plate device penetrate undisturbed soils below the slide plane. This methodology should be reviewed by the above company for feasibility, design, and installation.

CMJ recommends Option 1 with select fill or Option 2. Option 3 likely will be more expensive and labor/equipment intensive. Option 4 may be problematical due to installation problems. Option 1 with select fill is likely easier than lime stabilizing the existing soils or Option 2 because all clays will be removed and discarded, and select fill replacement using a sandy clay/clayey sand soil should be relatively easy to place and compact. In Option 1 with lime stabilization or Option 2, the clays will require manipulation onsite to pulva-mix it to an acceptable size for replacement/recompaction. The geogrid in Option 2 should be placed/overlapped and protected from damage in accordance with manufacturer's recommendations.

With the given slope angles discussed above, minor erosion of surface soils and related maintenance should be anticipated for exposed earth slopes. If weather patterns of considerably long periods of extended rainfall occur, the surface soils will tend to moisten, soften to a certain degree, and be more susceptible to surface sloughing as their relative strength decreases. Surface run-off from heavy rainfall may also cause surface erosion of soils along the slope. **Most importantly, the existing drainage swales and pipes should not be allowed to freely exit at the top of the slope. The proper design of surface drainage with appropriate conveying of surface water to suitable outlets (via the use of concrete drainage flumes, etc.) at the toe of the slope into the channel should be provided for any of the above options.**

5.0 EARTHWORK

5.1 Site Preparation

The subgrade should be firm and able to support the construction equipment without displacement. Soft or yielding subgrade should be corrected and made stable before construction proceeds. The subgrade should be proof rolled to detect soft spots, which if exist, should be reworked to provide a firm and otherwise suitable subgrade. Proof rolling should be performed using a heavy pneumatic tired roller, loaded dump truck, or similar piece of equipment. The proof rolling operations should be observed by the project geotechnical engineer or his/her representative. Prior to fill placement, the subgrade should be scarified to a minimum depth of 8 inches, its moisture content adjusted, and recompacted to the moisture and density recommended for fill.

5.2 Placement and Compaction

Fill material should be placed in loose lifts not exceeding 8 inches in uncompacted thickness. The uncompacted lift thickness should be reduced to 4 inches for structure backfill zones requiring

hand-operated power compactors or small self-propelled compactors. The fill material should be uniform with respect to material type and moisture content. Clods and chunks of material should be broken down and the fill material mixed by disking, blading, or plowing, as necessary, so that a material of uniform moisture and density is obtained for each lift. Water required for sprinkling to bring the fill material to the proper moisture content should be applied evenly through each layer.

The fill material should be compacted to a minimum of 95 percent of the maximum dry density determined by the Standard Proctor test, ASTM D 698. In conjunction with the compacting operation, the fill material should be brought to the proper moisture content. The moisture content for general earth fill should range from 2 percentage points below optimum to 5 percentage points above optimum (-2 to +5). These ranges of moisture contents are given as maximum recommended ranges. For some soils and under some conditions, the contractor may have to maintain a more narrow range of moisture content (within the recommended range) in order to consistently achieve the recommended density.

Field density tests should be taken as each lift of fill material is placed. As a guide, one field density test per lift for each 5,000 square feet of compacted area is recommended. For small areas or critical areas the frequency of testing may need to be increased to one test per 2,500 square feet. A minimum of 2 tests per lift should be required. The earthwork operations should be observed and tested on a continuing basis by an experienced geotechnician working in conjunction with the project geotechnical engineer.

Each lift should be compacted, tested, and approved before another lift is added. The purpose of the field density tests is to provide some indication that uniform and adequate compaction is being obtained. The actual quality of the fill, as compacted, should be the responsibility of the contractor and satisfactory results from the tests should not be considered as a guarantee of the quality of the contractor's filling operations.

5.3 Excavation

The side slopes of excavations through the overburden soils should be made in such a manner to provide for their stability during construction. Existing structures, pipelines or other facilities, which are constructed prior to or during the currently proposed construction and which require excavation, should be protected from loss of end bearing or lateral support.

Temporary construction slopes and/or permanent embankment slopes should be protected from surface runoff water. Site grading should be designed to allow drainage at planned areas where erosion protection is provided, instead of allowing surface water to flow down unprotected slopes.

Trench safety recommendations are beyond the scope of this report. The contractor must comply with all applicable safety regulations concerning trench safety and excavations including, but not limited to, OSHA regulations.

5.4 Soil Corrosion Potential

Specific testing for soil corrosion potential was not included in the scope of this study. However, based upon past experience on other projects in the vicinity, the soils at this site may be corrosive. Standard construction practices for protecting metal pipe and similar facilities in contact with these soils should be used.

5.5 Erosion and Sediment Control

All disturbed areas should be protected from erosion and sedimentation during construction, and all permanent slopes and other areas subject to erosion or sedimentation should be provided with permanent erosion and sediment control facilities. All applicable ordinances and codes regarding erosion and sediment control should be followed.

6.0 CONSTRUCTION OBSERVATIONS

In any geotechnical investigation, the design recommendations are based on a limited amount of information about the subsurface conditions. In the analysis, the geotechnical engineer must assume the subsurface conditions are similar to the conditions encountered in the borings. However, quite often during construction anomalies in the subsurface conditions are revealed. Therefore, it is recommended that CMJ Engineering, Inc. be retained to observe earthwork and perform materials evaluation during the construction phase of the project. This enables the geotechnical engineer to stay abreast of the project and to be readily available to evaluate unanticipated conditions, to conduct additional tests if required and, when necessary, to recommend alternative solutions to unanticipated conditions. Until these construction phase services are performed by the project geotechnical engineer, the recommendations contained in this report on such items as final foundation bearing elevations, proper soil moisture condition, and other such subsurface related recommendations should be considered as preliminary.

It is proposed that construction phase observation and materials testing commence by the project geotechnical engineer at the outset of the project. Experience has shown that the most suitable method for procuring these services is for the owner or the owner's design engineers to contract directly with the project geotechnical engineer. This results in a clear, direct line of communication between the owner and the owner's design engineers and the geotechnical engineer.

7.0 REPORT CLOSURE

The borings for this study were selected by CMJ Engineering, Inc. The locations and elevations of the borings should be considered accurate only to the degree implied by the methods used in their determination. The boring logs shown in this report contain information related to the types of soil encountered at specific locations and times and show lines delineating the interface between these materials. The logs also contain our field representative's interpretation of conditions that are believed to exist in those depth intervals between the actual samples taken. Therefore, these boring logs contain both factual and interpretive information. Laboratory soil classification tests were also performed on samples from selected depths in the borings. The results of these tests, along with visual-manual procedures were used to generally classify each stratum. Therefore, it should be understood that the classification data on the logs of borings represent visual estimates of classifications for those portions of each stratum on which the full range of laboratory soil classification tests were not performed. It is not implied that these logs are representative of subsurface conditions at other locations and times.

With regard to ground-water conditions, this report presents data on ground-water levels as they were observed during the course of the field work. In particular, water level readings have been made in the borings at the times and under conditions stated in the text of the report and on the boring logs. It should be noted that fluctuations in the level of the ground-water table can occur with passage of time due to variations in rainfall, temperature and other factors. Also, this report does not include quantitative information on rates of flow of ground water into excavations, on pumping capacities necessary to dewater the excavations, or on methods of dewatering excavations. Unanticipated soil conditions at a construction site are commonly encountered and cannot be fully predicted by mere soil samples, test borings or test pits. Such unexpected conditions frequently require that additional expenditures be made by the owner to attain a properly

designed and constructed project. Therefore, provision for some contingency fund is recommended to accommodate such potential extra cost.

The analyses, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our field investigation and further on the assumption that the exploratory borings are representative of the subsurface conditions throughout the site; that is, the subsurface conditions everywhere are not significantly different from those disclosed by the borings at the time they were completed. If, during construction, different subsurface conditions from those encountered in our borings are observed, or appear to be present in excavations, we must be advised promptly so that we can review these conditions and reconsider our recommendations where necessary. If there is a substantial lapse of time between submission of this report and the start of the work at the site, if conditions have changed due either to natural causes or to construction operations at or adjacent to the site, or if structure locations, structural loads or finish grades are changed, we urge that we be promptly informed and retained to review our report to determine the applicability of the conclusions and recommendations, considering the changed conditions and/or time lapse.

Further, it is urged that CMJ Engineering, Inc. be retained to review those portions of the plans and specifications for this particular project that pertain to earthwork and foundations as a means to determine whether the plans and specifications are consistent with the recommendations contained in this report. In addition, we are available to observe construction, particularly the compaction of structural fill, or backfill and the construction of foundations as recommended in the report, and such other field observations as might be necessary.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, ground water or air, on or below or around the site.

This report has been prepared for use in developing an overall design concept. Paragraphs, statements, test results, boring logs, diagrams, etc. should not be taken out of context, nor utilized without a knowledge and awareness of their intent within the overall concept of this report. The reproduction of this report, or any part thereof, supplied to persons other than the owner, should indicate that this study was made for design purposes only and that verification of the subsurface

conditions for purposes of determining difficulty of excavation, trafficability, etc. are responsibilities of the contractor.

This report has been prepared for the exclusive use of the City of North Richland Hills and their consultants for specific application to design of this project. The only warranty made by us in connection with the services provided is that we have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession practicing in the same or similar locality. No other warranty, expressed or implied, is made or intended.

* * * *

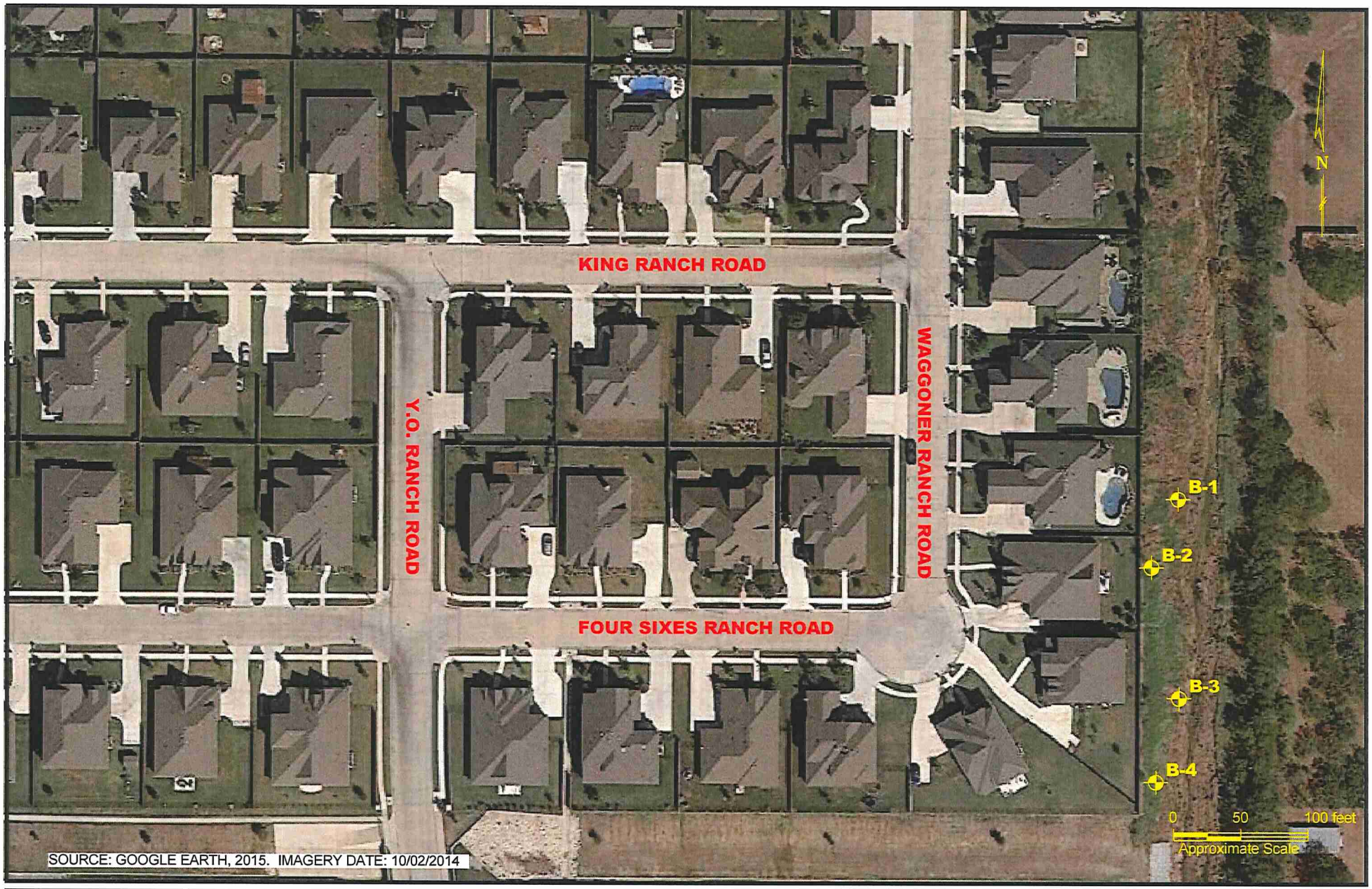


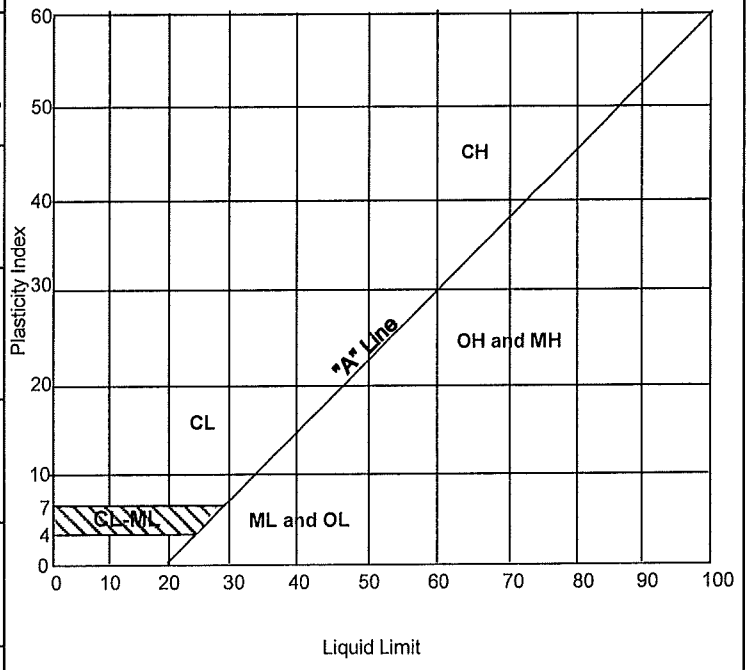
PLATE A.1

PLAN OF BORINGS

SLOPE SLIDES
EAST OF WAGGONER RANCH ROAD
NORTH RICHLAND HILLS, TEXAS

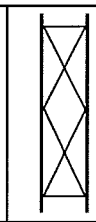
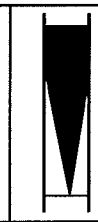
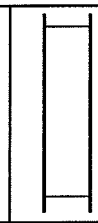
CMJ ENGINEERING, INC.

CMJ PROJECT NO. 245-15-11

Major Divisions			Grp. Sym.	Typical Names	Laboratory Classification Criteria	
Coarse-grained soils (more than half of the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from grain size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 percent.....GW, GP, SW, SP; More than 12 percent.....GM, GC, SM, SC; 5 to 12 percent.....*Borderline* cases requiring dual symbols	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4: $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines		Not meeting all gradation requirements for GW
		Gravels with fines (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures	Liquid and Plastic limits below "A" line or P.I. greater than 4	Liquid and plastic limits plotting in hatched zone between 4 and 7 are borderline cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures	Liquid and Plastic limits above "A" line with P.I. greater than 7	
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6: $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
			SP	Poorly graded sands; gravelly sands, little or no fines		Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures	Liquid and Plastic limits below "A" line or P.I. less than 4	Liquid and plastic limits plotting between 4 and 7 are borderline cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Liquid and Plastic limits above "A" line with P.I. greater than 7	
Fine-grained soils (More than half of material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	 Plasticity Chart	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, and lean clays		
			OL	Organic silts and organic silty clays of low plasticity		
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts		
			CH	Inorganic clays of high plasticity, fat clays		
			OH	Organic clays of medium to high plasticity, organic silts		
	Highly Organic soils		Pt	Peat and other highly organic soils		

UNIFIED SOIL CLASSIFICATION SYSTEM **PLATE A.2**

SOIL OR ROCK TYPES

GRAVEL	LEAN CLAY	LIMESTONE						
SAND	SANDY	SHALE									
SILT	SILTY	SANDSTONE									
CLAYEY	HIGHLY PLASTIC CLAY	CONGLOMERATE	Shelby Tube	Auger	Split Spoon	Rock Core	Cone Pen	No Recovery

TERMS DESCRIBING CONSISTENCY, CONDITION, AND STRUCTURE OF SOIL

Fine Grained Soils (More than 50% Passing No. 200 Sieve)

Descriptive Item	Penetrometer Reading, (tsf)
Soft	0.0 to 1.0
Firm	1.0 to 1.5
Stiff	1.5 to 3.0
Very Stiff	3.0 to 4.5
Hard	4.5+

Coarse Grained Soils (More than 50% Retained on No. 200 Sieve)

Penetration Resistance (blows/foot)	Descriptive Item	Relative Density
0 to 4	Very Loose	0 to 20%
4 to 10	Loose	20 to 40%
10 to 30	Medium Dense	40 to 70%
30 to 50	Dense	70 to 90%
Over 50	Very Dense	90 to 100%

Soil Structure

Calcareous	Contains appreciable deposits of calcium carbonate; generally nodular
Slickensided	Having inclined planes of weakness that are slick and glossy in appearance
Laminated	Composed of thin layers of varying color or texture
Fissured	Containing cracks, sometimes filled with fine sand or silt
Interbedded	Composed of alternate layers of different soil types, usually in approximately equal proportions

TERMS DESCRIBING PHYSICAL PROPERTIES OF ROCK

Hardness and Degree of Cementation

Very Soft or Plastic	Can be remolded in hand; corresponds in consistency up to very stiff in soils
Soft	Can be scratched with fingernail
Moderately Hard	Can be scratched easily with knife; cannot be scratched with fingernail
Hard	Difficult to scratch with knife
Very Hard	Cannot be scratched with knife
Poorly Cemented or Friable	Easily crumbled
Cemented	Bound together by chemically precipitated material; Quartz, calcite, dolomite, siderite, and iron oxide are common cementing materials. and iron oxide are common cementing materials.

Degree of Weathering

Unweathered	Rock in its natural state before being exposed to atmospheric agents
Slightly Weathered	Noted predominantly by color change with no disintegrated zones
Weathered	Complete color change with zones of slightly decomposed rock
Extremely Weathered	Complete color change with consistency, texture, and general appearance approaching soil

CMJ ENGINEERING INC.

Project No.	Boring No.	Project
245-15-11	B-1	Slope Slides - E. of Waggoner Ranch Road Graham Ranch Subdivision - North Richland Hills, Texas

Location	Water Observations
See Plate A.1	Water at 3' during drilling; water at 3' and cave-in at 4' at completion

Completion Depth	Completion Date
8.0'	6-11-15

Surface Elevation

Type: Portable Rig

Depth, Ft.	Symbol	Samples	Stratum Description	REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.
			SILTY CLAY, dark brown to brown, w/ calcareous nodules, soft			0.5					22		
						0.5		37	16	21	21		
						1.0					23	103	1660
						1.0					19	103	1420
						0.25					20	113	1170
5			**SHALY CLAY**, light brown, w/ calcareous nodules and occasional gravel, soft -very stiff to hard below 6'			0.25					22		
						4.0	98	50	16	34	22	102	
						4.5+					26		

LOG OF BORING NO. **B-1**

PLATE A.4

LOG OF BORING 245-15-11.GPJ CMJ.GDT 7/28/15

CMJ ENGINEERING INC.

Project No.	Boring No.	Project
245-15-11	B-2	Slope Slides - E. of Waggoner Ranch Road Graham Ranch Subdivision - North Richland Hills, Texas

Location	Water Observations
See Plate A.1	Dry during drilling; dry at completion

Completion Depth	Completion Date
12.0'	6-11-15

Surface Elevation

Type: Portable Rig

Depth, Ft.	Symbol	Samples	Stratum Description	REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.
			SILTY CLAY, dark brown, stiff			2.0					17		
						3.0	83	42	14	28	22	97	
			CLAY, brown, w/ calcareous nodules and occasional ironstone nodules, firm to stiff			1.25					16		
			-w/ reddish brown above 2'			2.0					25	104	3210
5						1.0	68	52	16	36	20		
						1.25					20	108	2880
						2.75	54	43	17	26	19	105	
						1.75					21		
						4.5+					16		
			SHALY CLAY, light brown and light gray, w/ occasional calcareous nodules, slickensided, very stiff to hard			4.5+					22	110	5640
10						4.5					20		
						4.5					23		

LOG OF BORING 245-15-11.GPJ CMJ.GDT 7/28/15

LOG OF BORING NO. **B-2**

PLATE A.5

CMJ ENGINEERING INC.

Project No.	Boring No.	Project
245-15-11	B-3	Slope Slides - E. of Waggoner Ranch Road Graham Ranch Subdivision - North Richland Hills, Texas

Location	Water Observations
See Plate A.1	Dry during drilling; dry at completion

Completion Depth	Completion Date
8.0'	6-11-15

Surface Elevation

Type: Portable Rig

Depth, Ft.	Symbol	Samples	Stratum Description	REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.
			SILTY CLAY, brown, w/ calcareous nodules, firm to stiff			1.75					19		
						1.0					24		
			SILTY CLAY, light brown, w/ calcareous deposits, firm			1.25	90	45	15	30	18	115	1200
						3.25					22	109	2460
5			**SHALY CLAY**, light brown, w/ occasional calcareous nodules, slickensided, stiff to very stiff -hard below 5'			1.75	99	70	22	48	22		
						4.5+					20		
						4.5+					19		
						4.5+					19		

LOG OF BORING 245-15-11.GPJ CMJ.GDT 7/28/15

LOG OF BORING NO. **B-3**

PLATE A.6

CMJ ENGINEERING INC.

Project No.	Boring No.	Project
245-15-11	B-4	Slope Slides - E. of Waggoner Ranch Road Graham Ranch Subdivision - North Richland Hills, Texas

Location	Water Observations
See Plate A.1	Dry during drilling; dry at completion

Completion Depth	Completion Date
25.0'	6-12-15

Surface Elevation

Type: B-24, w/ CFA

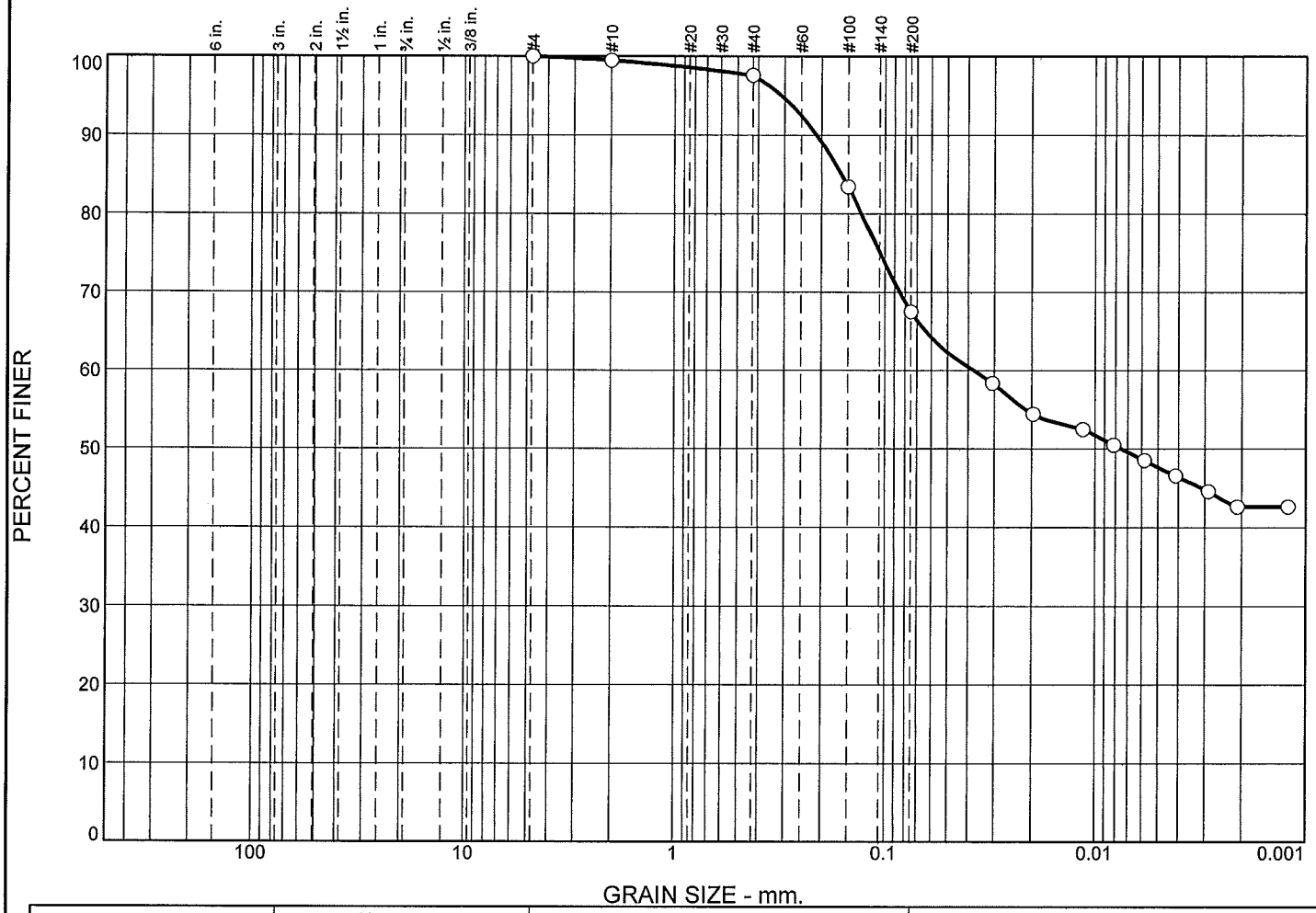
Depth, Ft.	Symbol	Samples	Stratum Description	REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.
			SILTY CLAY, dark brown, w/ calcareous nodules, hard (FILL)			4.5+					12		
						2.5					27		
			SILTY CLAY, brown, w/ calcareous nodules and ironstone nodules, stiff			2.25					22		
						2.5					19	113	3910
5						2.0	70	43	14	29	19		
			SILTY CLAY, light brown, w/ calcareous deposits, stiff to very stiff			3.0					15		
			SHALY CLAY, light brown and gray, very stiff			4.5					18		
10			-w/ occasional tan limestone seams below 13'										
						3.0					15		
15			**LIMESTONE**, tan, weathered										
			LIMESTONE, gray, very hard										
20						100/0.75"							
25						100/1.25"							

LOG OF BORING 245-15-11.GPJ CMJ.GDT 7/28/15

LOG OF BORING NO. **B-4**

PLATE A.7

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.5	1.9	30.1	19.8	47.7

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	52	16	0.1612	0.0375	0.0075					

	Material Description	USCS	AASHTO
○		CH	

Project No. 245-15-11 **Client:** City of North Richland Hills

Project: Slope Slide Repair - Graham Ranch

○ **Location:** B-2 **Depth:** 4'-5'

Remarks:

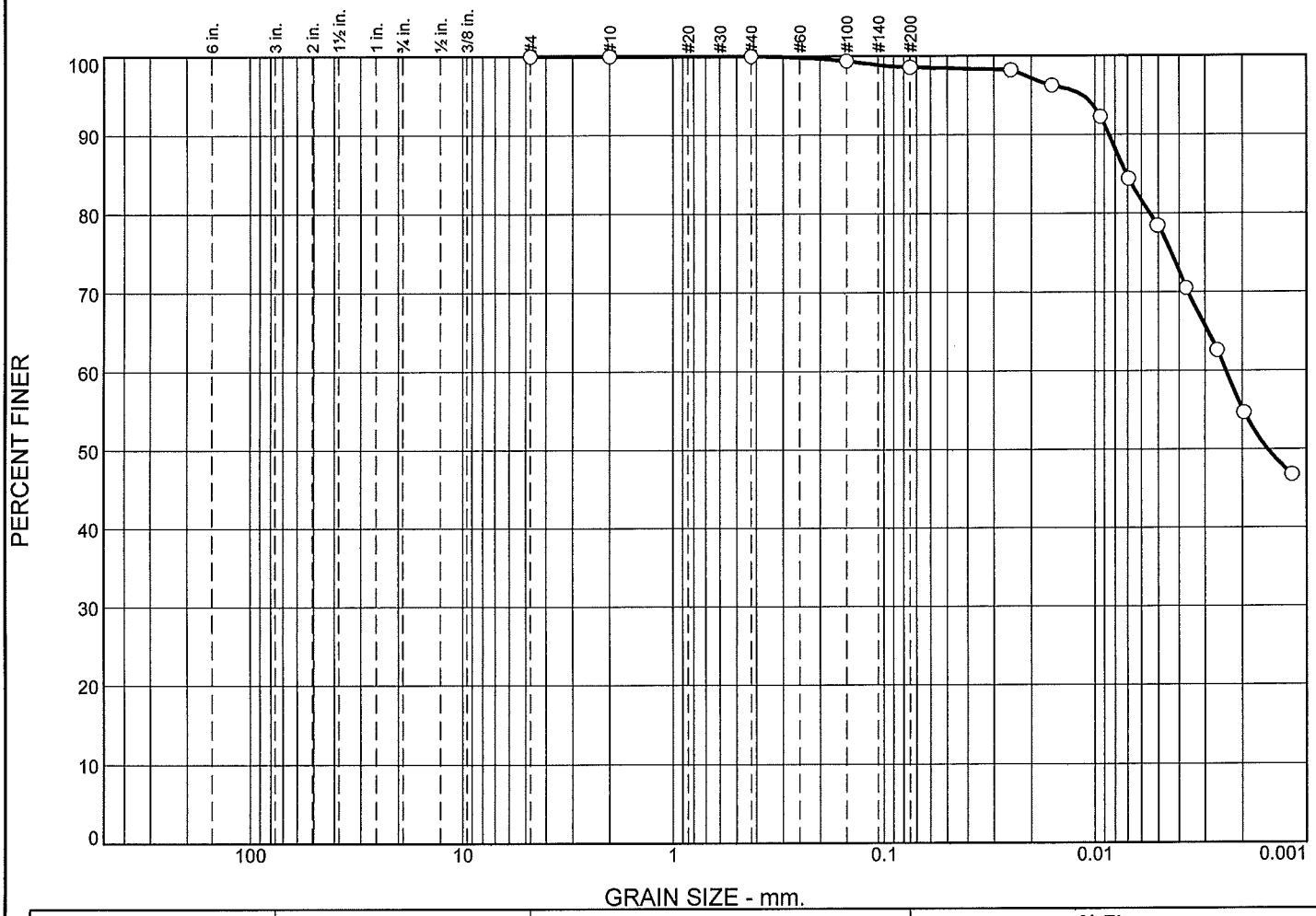
CMJ ENGINEERING, INC.

Fort Worth, Texas

Tested By: AM

PLATE A.8

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.0	1.4	20.3	78.3

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	70	22	0.0071	0.0024	0.0015					

	Material Description	USCS	AASHTO
○		CH	

Project No. 245-15-11 **Client:** City of North Richland Hills

Project: Slope Slide Repair - Graham Ranch

○ **Location:** B-3 **Depth:** 4'-5'

Remarks:

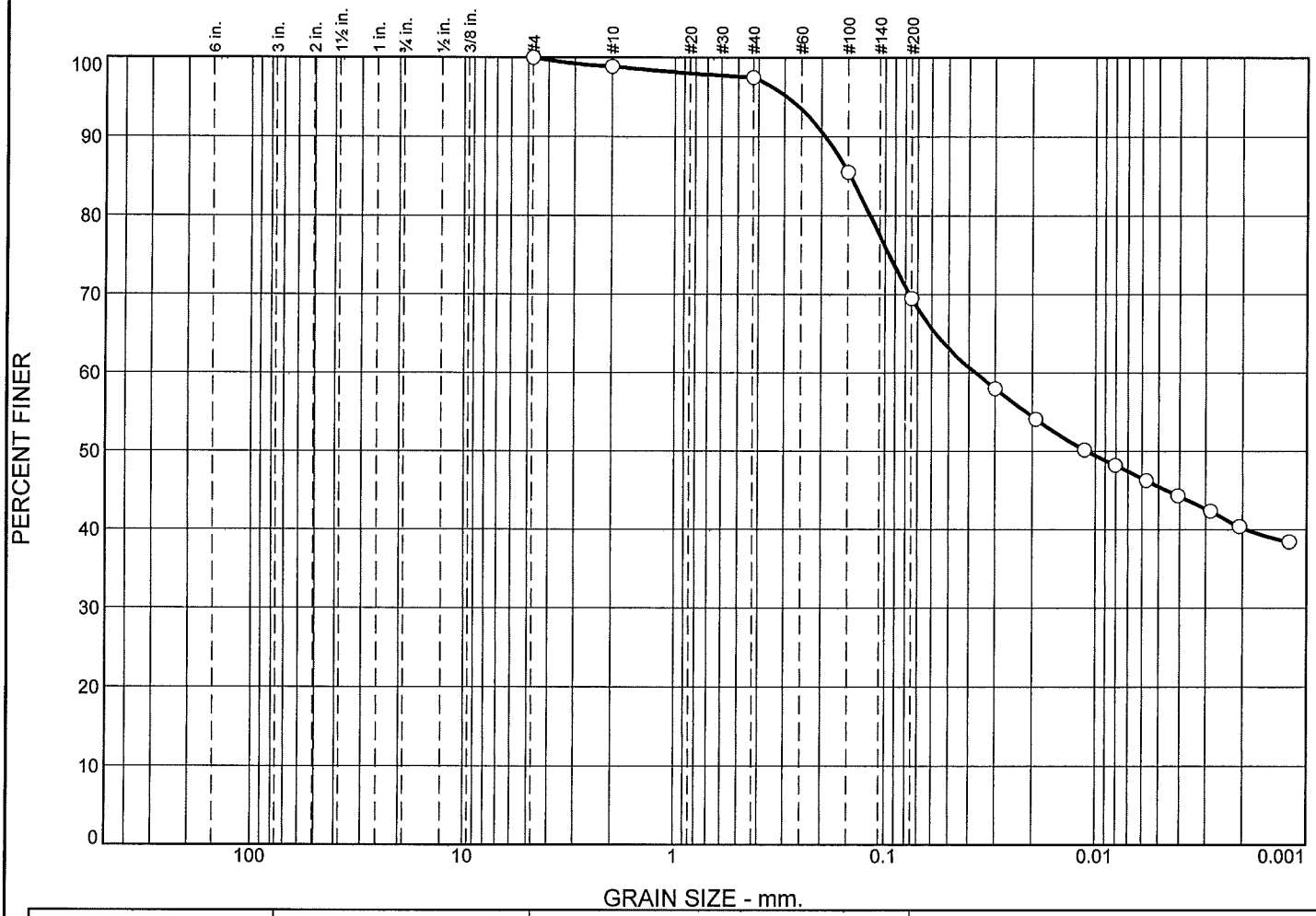
CMJ ENGINEERING, INC.

Fort Worth, Texas

Tested By: AM

PLATE A.9

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	1.1	1.4	28.0	24.0	45.5

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	43	14	0.1465	0.0373	0.0109					

	Material Description	USCS	AASHTO
○		CL	

Project No. 245-15-11 **Client:** City of North Richland Hills

Project: Slope Slide Repair - Graham Ranch

○ **Location:** B-4 **Depth:** 4'-5'

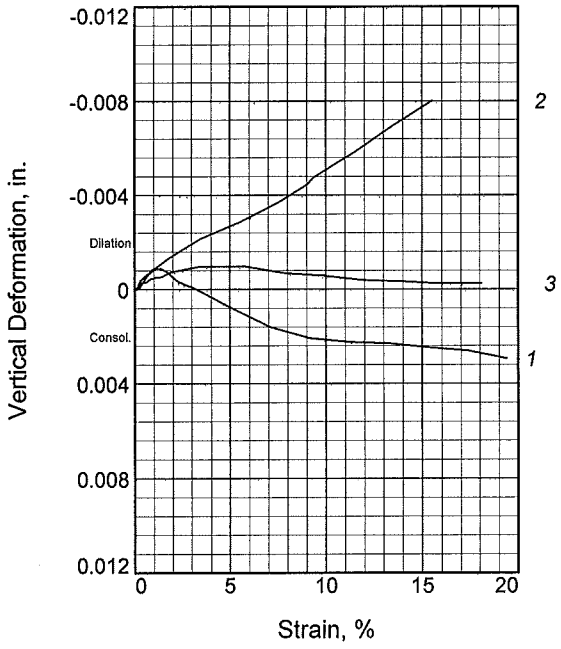
Remarks:

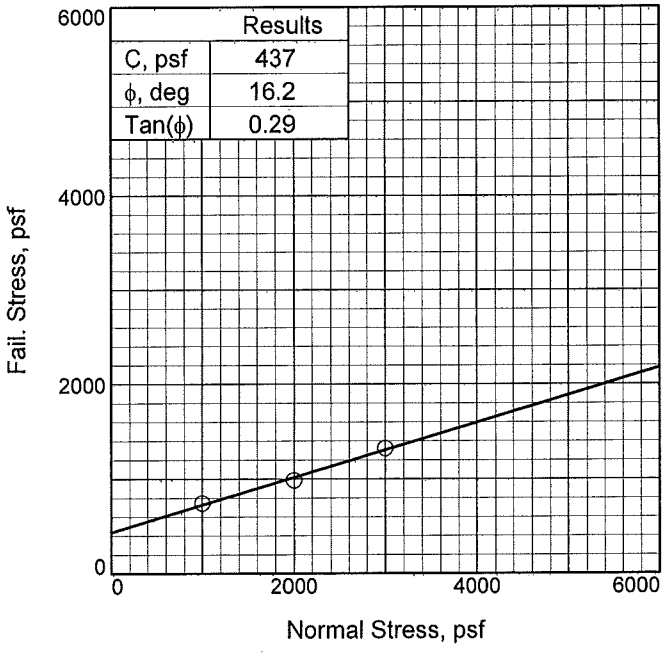
CMJ ENGINEERING, INC.

Fort Worth, Texas

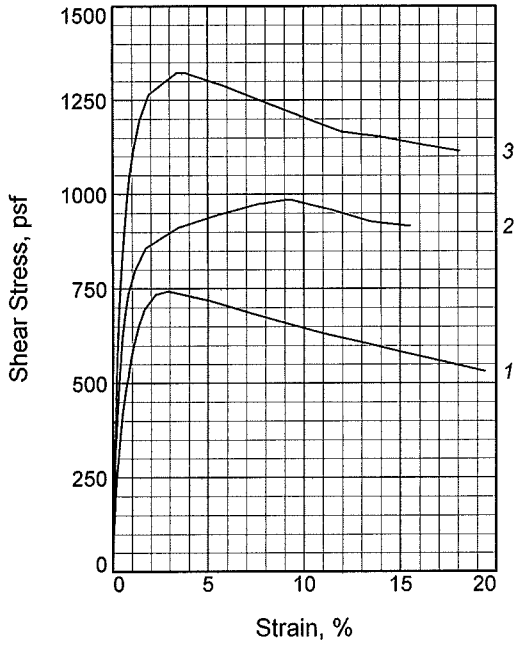
Tested By: AM

PLATE A.10





Results	
C, psf	437
ϕ, deg	16.2
Tan(ϕ)	0.29



Sample No.		1	2	3
Initial	Water Content, %	22.0	24.0	25.1
	Dry Density, pcf	102.1	100.6	98.7
	Saturation, %	91.2	95.9	95.8
	Void Ratio	0.6506	0.6763	0.7086
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	24.6	25.4	27.2
	Dry Density, pcf	100.6	99.2	96.7
	Saturation, %	98.3	98.1	98.9
	Void Ratio	0.6754	0.6998	0.7427
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.01	1.01	1.02
Normal Stress, psf		1000	2000	3000
Fail. Stress, psf		743	985	1323
Strain, %		3.0	9.0	3.8
Ult. Stress, psf				
Strain, %				
Strain rate, in./min.		0.02	0.02	0.02

Sample Type: Shelby Tube
Description:

LL= 50 **PL=** 16 **PI=** 34
Assumed Specific Gravity= 2.70
Remarks: Strain rate, in/min: 0.02

Client: City of North Richland Hills

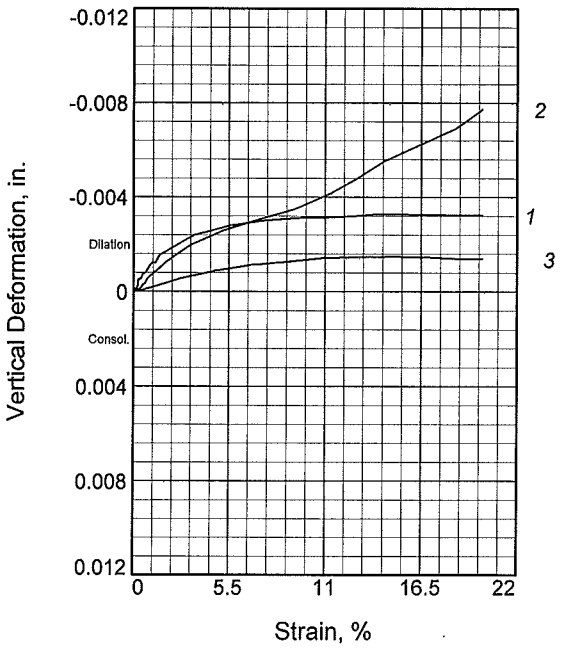
Project: Slope Slide Repair - Graham Ranch

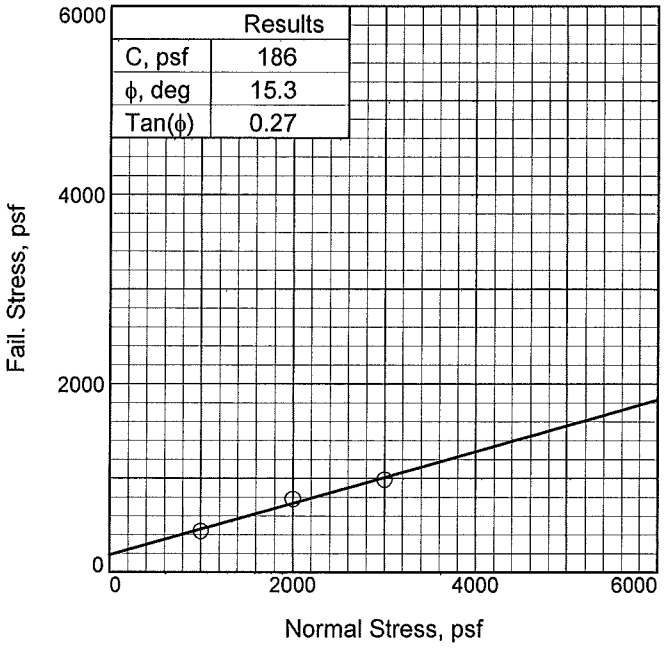
Location: B-1
Depth: 6'-7'
Proj. No.: 245-15-11

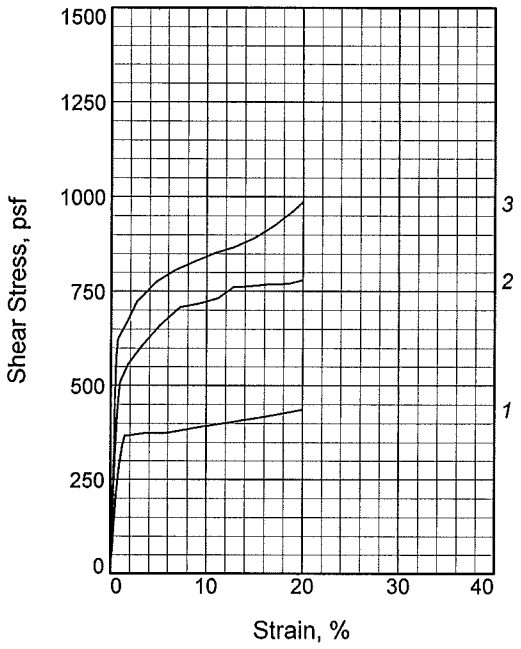
DIRECT SHEAR TEST REPORT
CMJ ENGINEERING, INC.
Fort Worth, Texas

Tested By: AM

PLATE A.11







Sample No.		1	2	3
Initial	Water Content, %	22.0	24.0	25.1
	Dry Density, pcf	102.1	100.6	98.7
	Saturation, %	91.2	95.9	95.8
	Void Ratio	0.6506	0.6763	0.7086
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	24.6	25.4	27.2
	Dry Density, pcf	100.6	99.2	96.7
	Saturation, %	98.3	98.1	98.9
	Void Ratio	0.6754	0.6998	0.7427
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.01	1.01	1.02
Normal Stress, psf		1000	2000	3000
Fail. Stress, psf		438	780	987
Strain, %		20.0	20.0	20.0
Ult. Stress, psf				
Strain, %				
Strain rate, in./min.		0.02	0.02	0.02

Sample Type: Shelby Tube
Description:

LL= 50 **PL=** 16 **PI=** 34
Assumed Specific Gravity= 2.70
Remarks: Strain rate, in/min: 0.02
Residual

Client: City of North Richland Hills

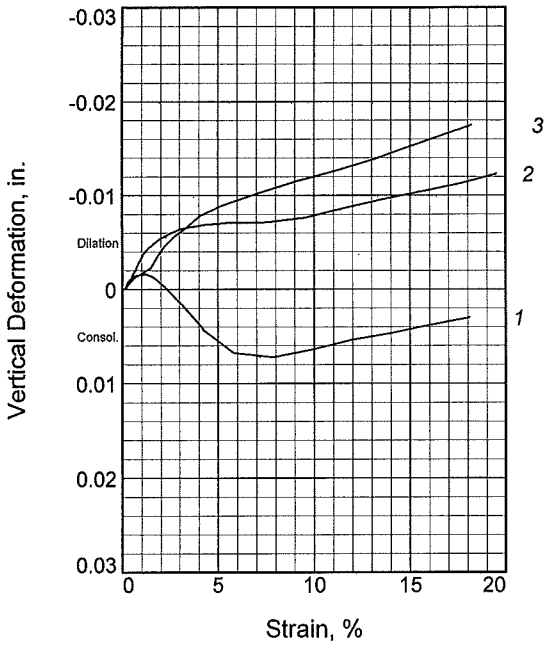
Project: Slope Slide Repair - Graham Ranch

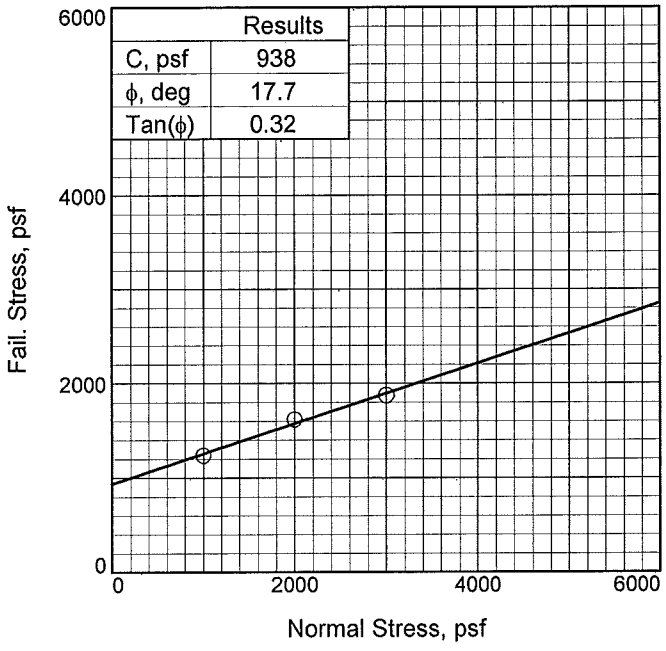
Location: B-1
Depth: 6'-7'
Proj. No.: 245-15-11

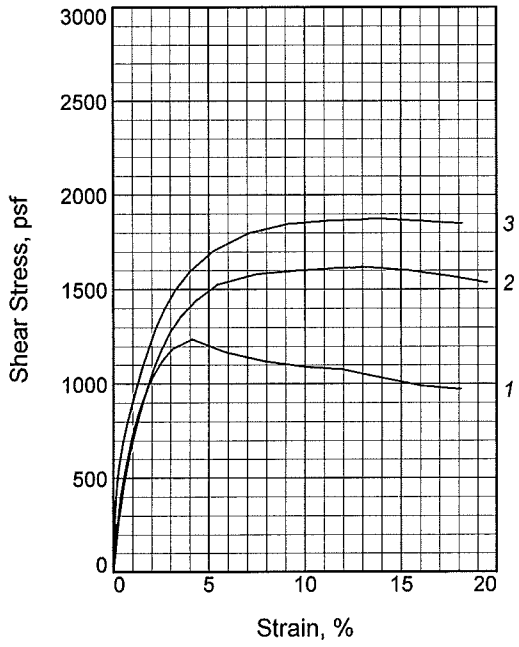
DIRECT SHEAR TEST REPORT
CMJ ENGINEERING, INC.
Fort Worth, Texas

Tested By: AM

PLATE A.12







Sample No.		1	2	3
Initial	Water Content, %	21.6	22.0	21.0
	Dry Density, pcf	97.2	96.7	98.2
	Saturation, %	79.5	79.8	79.0
	Void Ratio	0.7336	0.7438	0.7168
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	23.6	22.8	20.5
	Dry Density, pcf	97.2	96.7	98.2
	Saturation, %	86.8	82.6	77.2
	Void Ratio	0.7336	0.7438	0.7168
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	1.00	1.00
Normal Stress, psf		1000	2000	3000
Fail. Stress, psf		1237	1618	1875
Strain, %		4.1	12.9	13.4
Ult. Stress, psf				
Strain, %				
Strain rate, in./min.		0.02	0.02	0.02

Sample Type: Shelby Tube
Description:

LL= 42 **PL=** 14 **PI=** 28
Assumed Specific Gravity= 2.70
Remarks: Strain rate, in/min: 0.02

Client: City of North Richland Hills

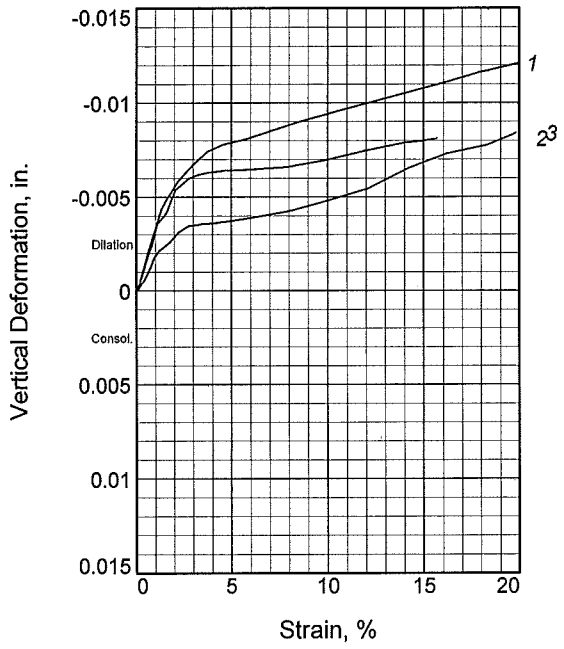
Project: Slope Slide Repair - Graham Ranch

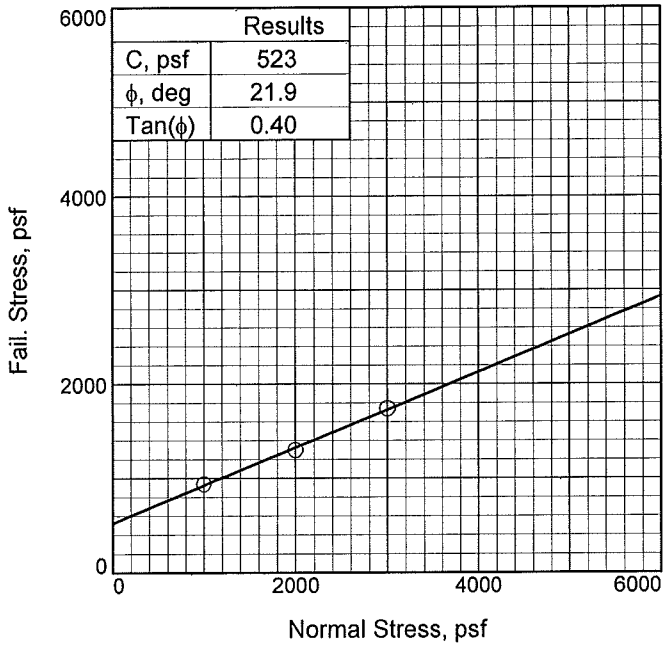
Location: B-2
Depth: 1'-2'
Proj. No.: 245-15-11

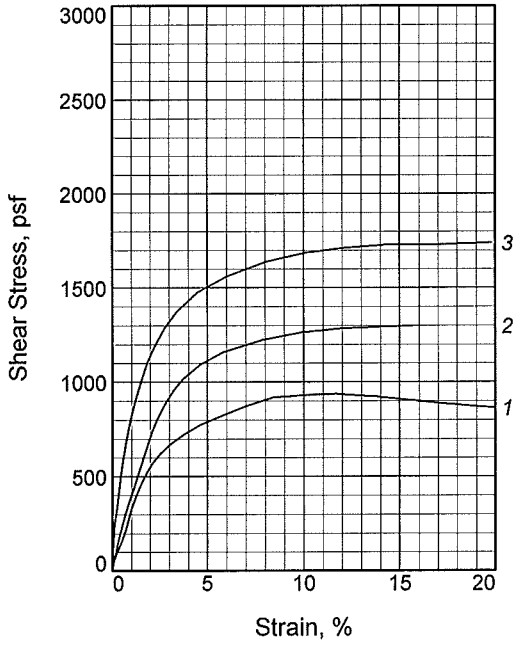
DIRECT SHEAR TEST REPORT
CMJ ENGINEERING, INC.
Fort Worth, Texas

Tested By: AM

PLATE A.13







Sample No.		1	2	3
Initial	Water Content, %	21.6	22.0	21.0
	Dry Density, pcf	97.2	96.7	98.2
	Saturation, %	79.5	79.8	79.0
	Void Ratio	0.7336	0.7438	0.7168
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	23.6	22.8	20.5
	Dry Density, pcf	97.2	96.7	98.2
	Saturation, %	86.8	82.6	77.2
	Void Ratio	0.7336	0.7438	0.7168
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	1.00	1.00
Normal Stress, psf		1000	2000	3000
Fail. Stress, psf		938	1298	1741
Strain, %		11.6	15.7	19.7
Ult. Stress, psf				
Strain, %				
Strain rate, in./min.		0.02	0.02	0.02

Sample Type: Shelby Tube
Description:

LL= 42 **PL=** 14 **PI=** 28
Assumed Specific Gravity= 2.70
Remarks: Strain rate, in/min: 0.02
Residual

Client: City of North Richland Hills

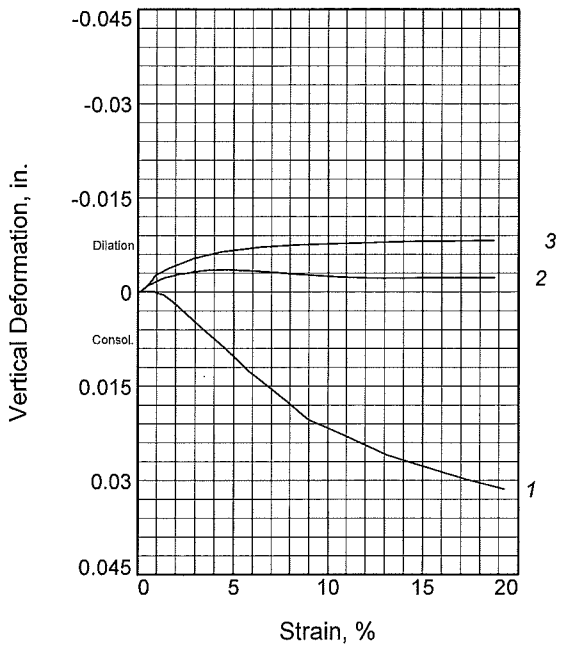
Project: Slope Slide Repair - Graham Ranch

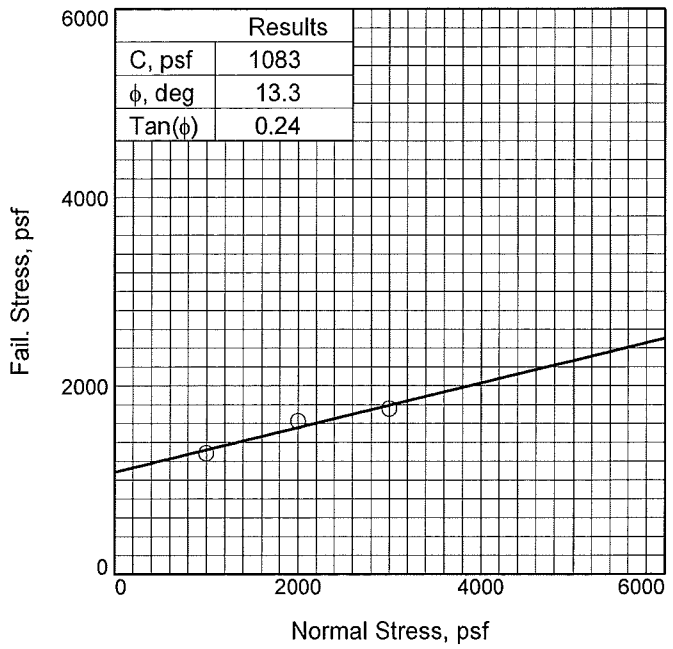
Location: B-2
Depth: 1'-2'
Proj. No.: 245-15-11

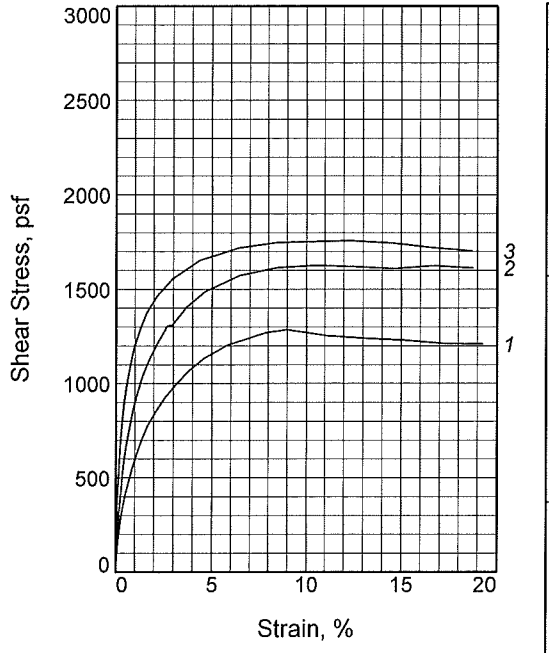
DIRECT SHEAR TEST REPORT
CMJ ENGINEERING, INC.
Fort Worth, Texas

Tested By: AM

PLATE A.14







Sample No.		1	2	3
Initial	Water Content, %	19.0	19.4	19.8
	Dry Density, pcf	104.6	104.6	104.0
	Saturation, %	83.8	85.8	86.0
	Void Ratio	0.6112	0.6109	0.6212
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	23.7	22.1	21.2
	Dry Density, pcf	102.1	102.6	104.0
	Saturation, %	98.2	92.9	92.2
	Void Ratio	0.6515	0.6431	0.6212
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.02	1.02	1.00
Normal Stress, psf		1000	2000	3000
Fail. Stress, psf		1284	1626	1758
Strain, %		8.9	10.6	12.5
Ult. Stress, psf				
Strain, %				
Strain rate, in./min.		0.02	0.02	0.02

Sample Type: Shelby Tube
Description:

LL= 43 **PL=** 17 **PI=** 26
Assumed Specific Gravity= 2.70
Remarks: Strain rate, in/min: 0.02

Client: City of North Richland Hills

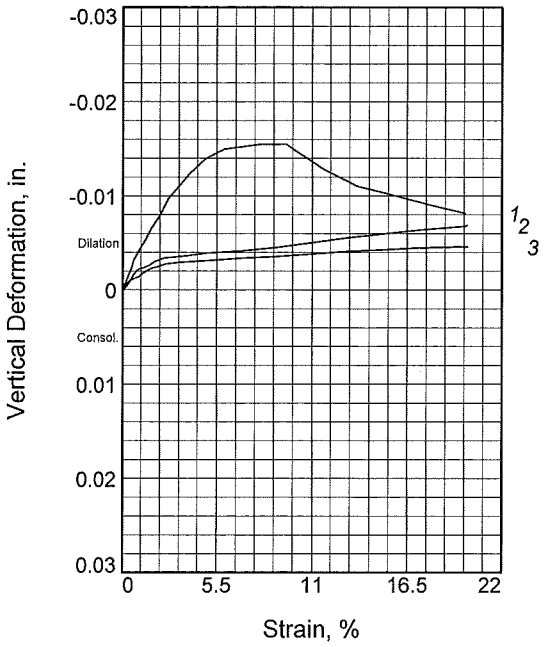
Project: Slope Slide Repair - Graham Ranch

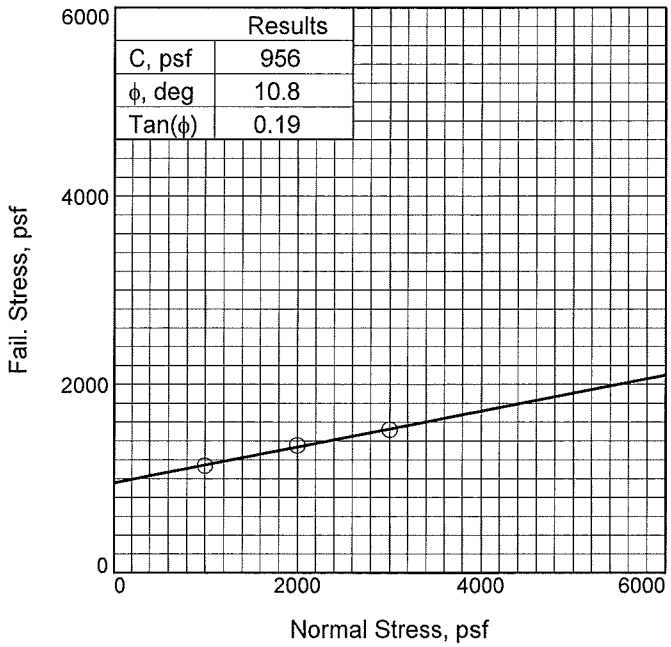
Location: B-2
Depth: 6'-7'
Proj. No.: 245-15-11

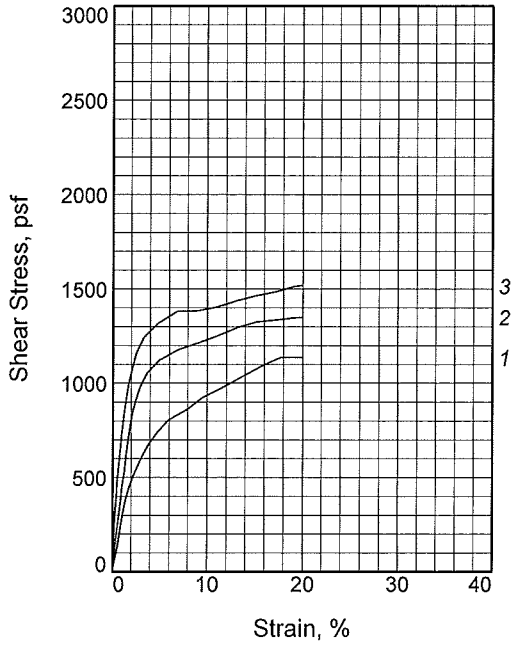
DIRECT SHEAR TEST REPORT
CMJ ENGINEERING, INC.
Fort Worth, Texas

Tested By: AM

PLATE A.15







Sample No.		1	2	3
Initial	Water Content, %	19.0	19.4	19.8
	Dry Density, pcf	104.6	104.6	104.0
	Saturation, %	83.8	85.8	86.0
	Void Ratio	0.6112	0.6109	0.6212
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	23.7	22.1	21.2
	Dry Density, pcf	102.1	102.6	104.0
	Saturation, %	98.2	92.9	92.2
	Void Ratio	0.6515	0.6431	0.6212
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.02	1.02	1.00
Normal Stress, psf		1000	2000	3000
Fail. Stress, psf		1139	1352	1520
Strain, %		18.1	20.0	20.0
Ult. Stress, psf				
Strain, %				
Strain rate, in./min.		0.02	0.02	0.02

Sample Type: Shelby Tube
Description:

LL= 43 **PL=** 17 **PI=** 26
Assumed Specific Gravity= 2.70
Remarks: Strain rate, in/min: 0.02
Residual

Client: City of North Richland Hills

Project: Slope Slide Repair - Graham Ranch

Location: B-2
Depth: 6'-7'
Proj. No.: 245-15-11

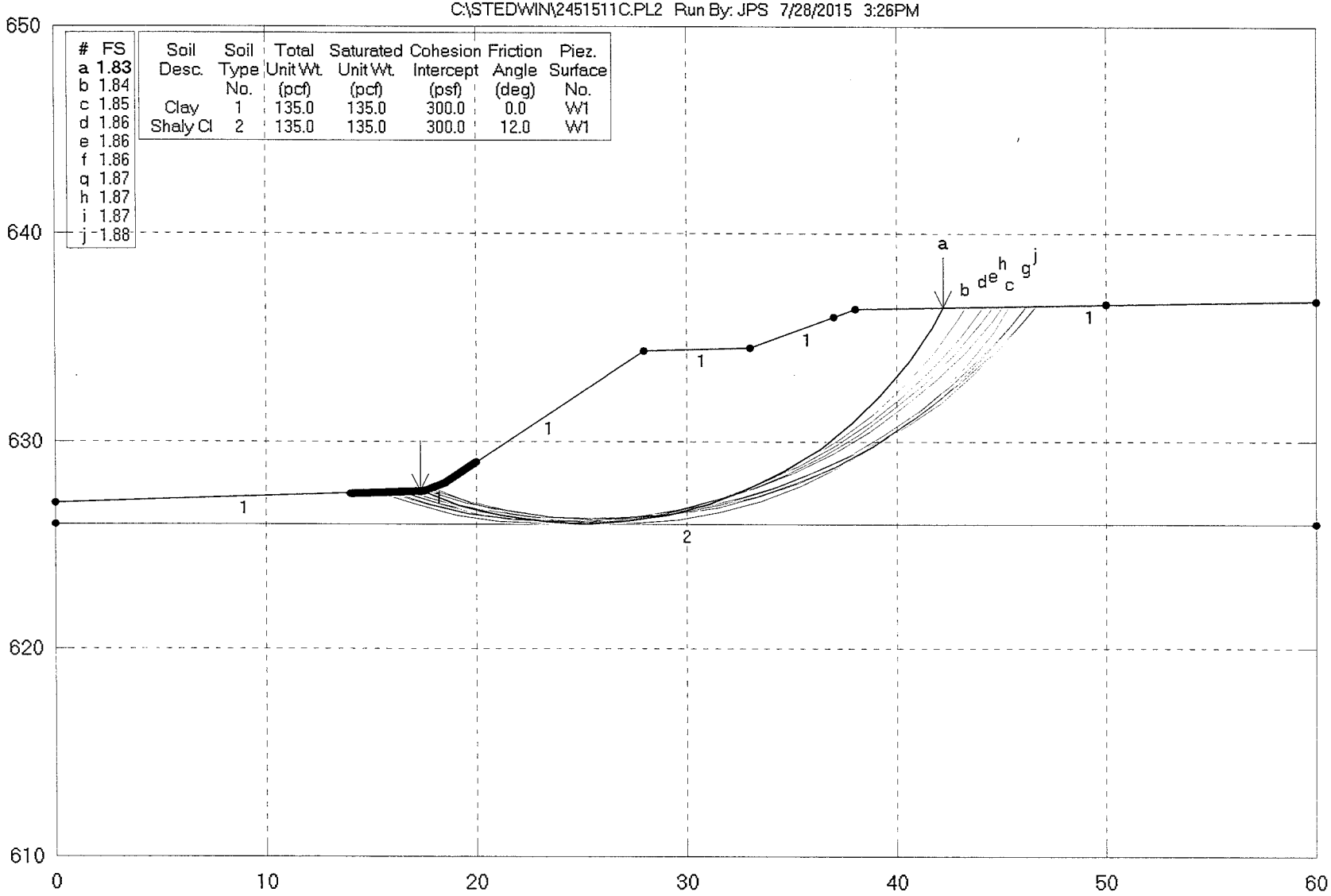
DIRECT SHEAR TEST REPORT
CMJ ENGINEERING, INC.
Fort Worth, Texas

Tested By: AM

PLATE A.16

Slope Slides - Graham Ranch Section at Sta. 22+00 - NRH, Tx

C:\STEDWIN\2451511C.PL2 Run By: JPS 7/28/2015 3:26PM



#	FS
a	1.83
b	1.84
c	1.85
d	1.86
e	1.86
f	1.86
g	1.87
h	1.87
i	1.87
j	1.88

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Clay	1	135.0	135.0	300.0	0.0	W1
Shaly Cl	2	135.0	135.0	300.0	12.0	W1

GSTABL7 v.2 FSmin=1.83

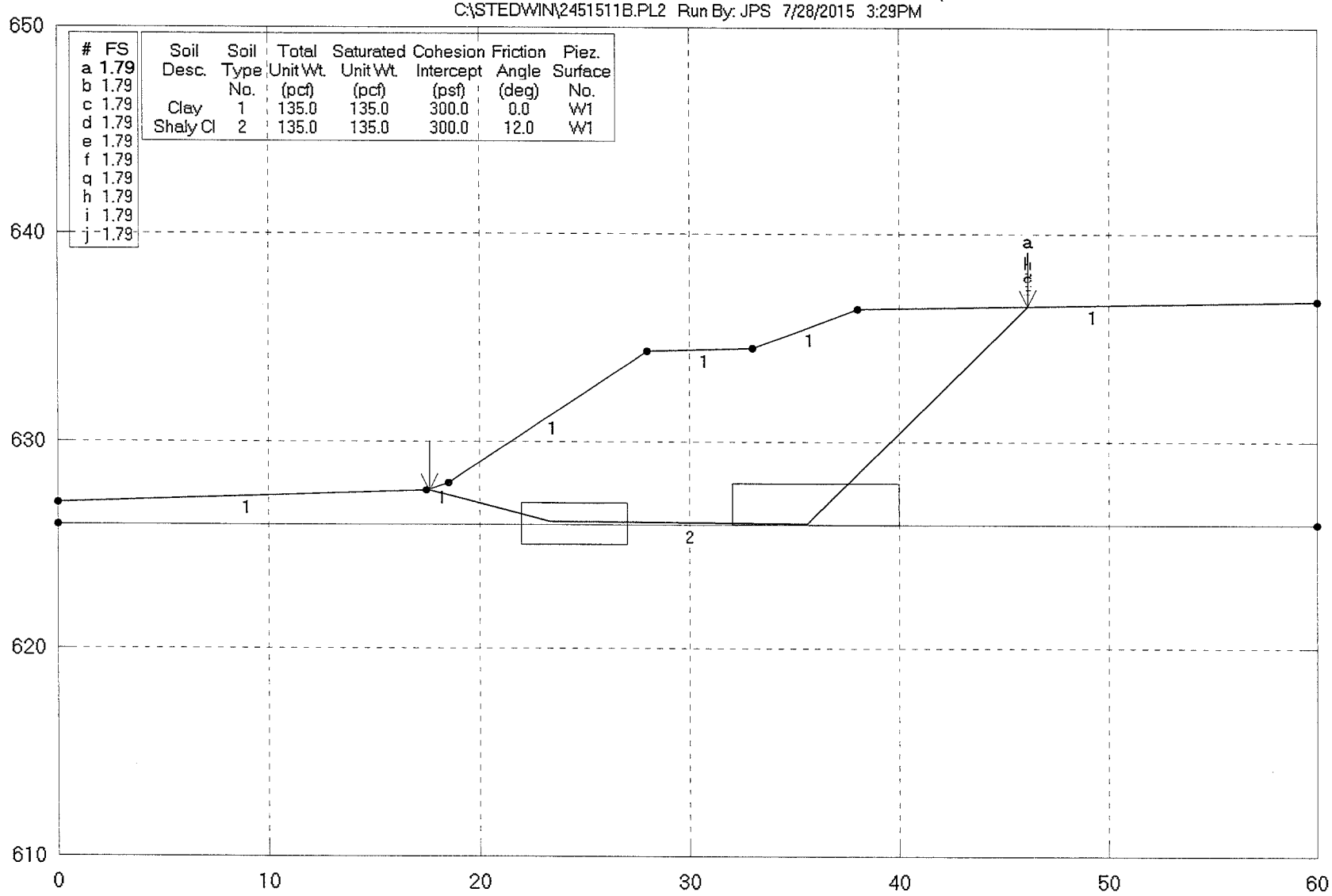
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

PLATE B.1

Slope Slides - Graham Ranch Section at Sta. 22+00 - NRH, Tx

C:\STEDWIN\2451511B.PL2 Run By: JPS 7/28/2015 3:29PM



#	FS
a	1.79
b	1.79
c	1.79
d	1.79
e	1.79
f	1.79
g	1.79
h	1.79
i	1.79
j	1.79

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Clay	1	135.0	135.0	300.0	0.0	W1
Shaly Cl	2	135.0	135.0	300.0	12.0	W1

GSTABL7 v.2 FSmin=1.79

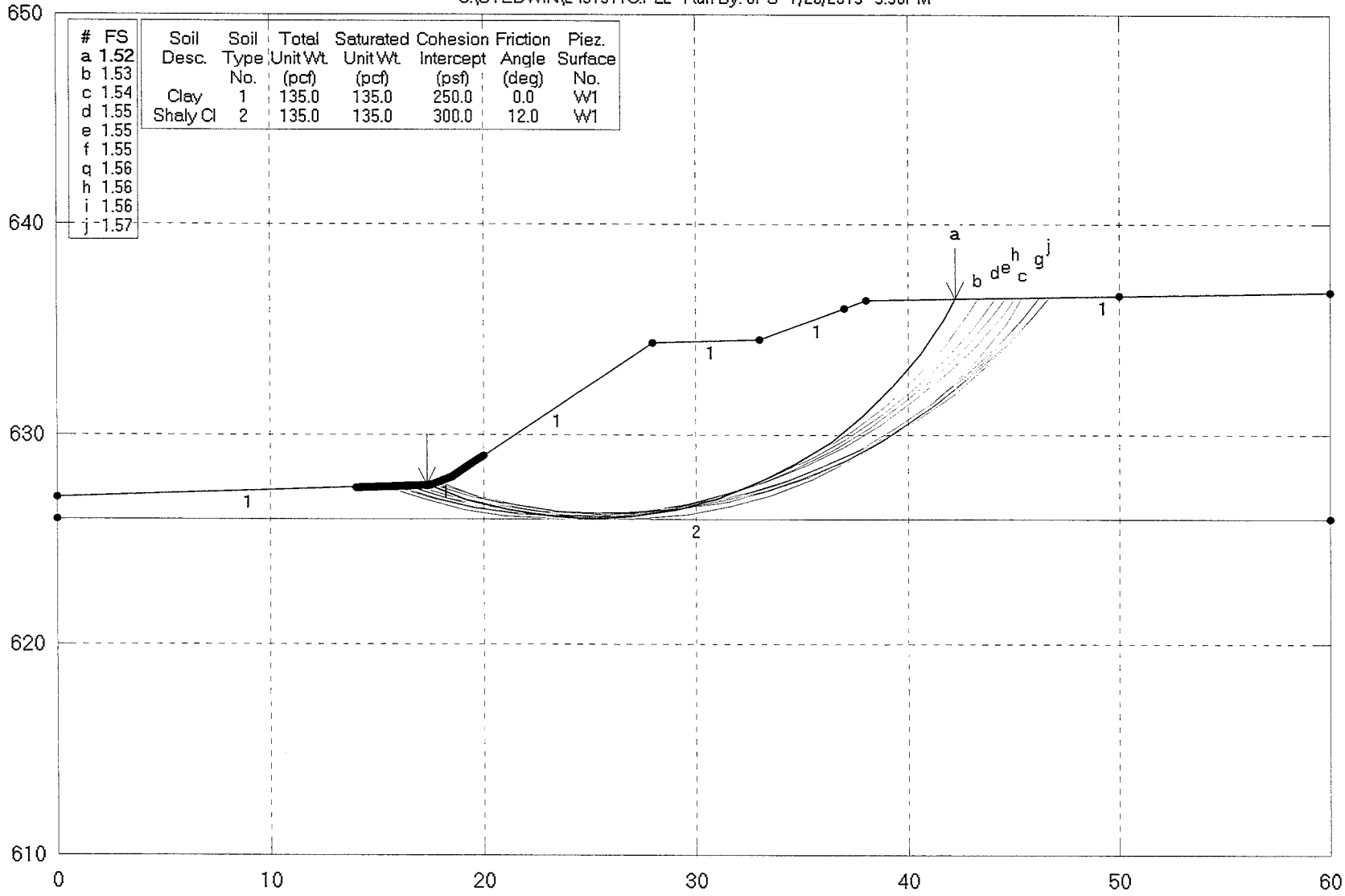
Safety Factors Are Calculated By The Simplified Janbu Method

GSTABL7

PLATE B.2

Slope Slides - Graham Ranch Section at Sta. 22+00 - NRH, Tx

C:\STEDWIN\2451511C.PL2 Run By: JPS 7/28/2015 3:30PM



GSTABL7 v.2 FSmin=1.52

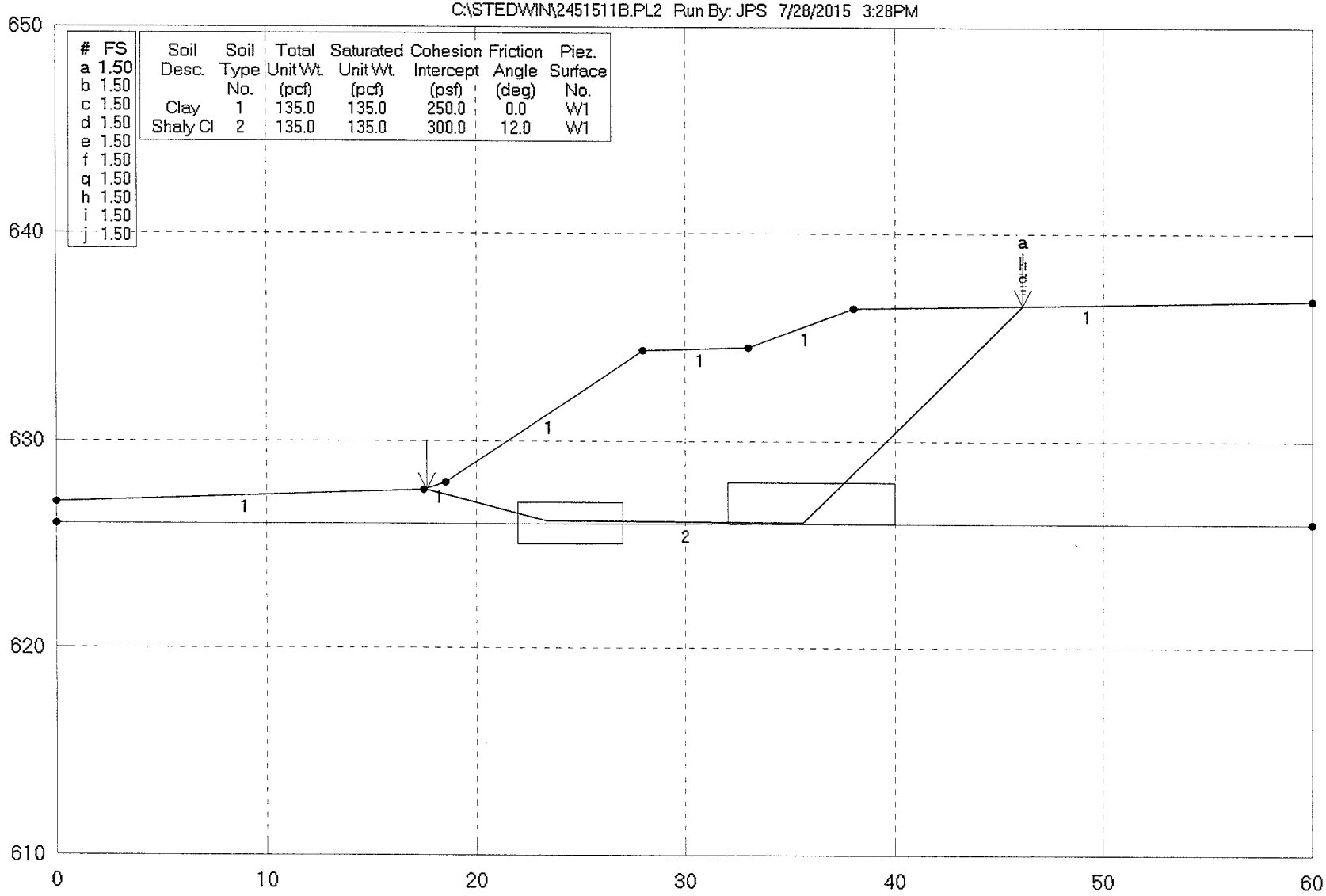
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

PLATE B.3

Slope Slides - Graham Ranch Section at Sta. 22+00 - NRH, Tx

C:\STEDWIN\2451511B.PL2 Run By: JPS 7/28/2015 3:28PM



#	FS
a	1.50
b	1.50
c	1.50
d	1.50
e	1.50
f	1.50
g	1.50
h	1.50
i	1.50
j	1.50

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Clay	1	135.0	135.0	250.0	0.0	W1
Shaly Cl	2	135.0	135.0	300.0	12.0	W1

GSTABL7 v.2 FSmin=1.50

Safety Factors Are Calculated By The Simplified Janbu Method

GSTABL7

PLATE B.4

NATIONWIDE PERMIT 13

Bank Stabilization

Effective Date: March 19, 2012
(NWP Final Notice, 77 FR 10184)

Bank Stabilization. Bank stabilization activities necessary for erosion prevention, provided the activity meets all of the following criteria:

(a) No material is placed in excess of the minimum needed for erosion protection;

(b) The activity is no more than 500 feet in length along the bank, unless the district engineer waives this criterion by making a written determination concluding that the discharge will result in minimal adverse effects;

(c) The activity will not exceed an average of one cubic yard per running foot placed along the bank below the plane of the ordinary high water mark or the high tide line, unless the district engineer waives this criterion by making a written determination concluding that the discharge will result in minimal adverse effects;

(d) The activity does not involve discharges of dredged or fill material into special aquatic sites, unless the district engineer waives this criterion by making a written determination concluding that the discharge will result in minimal adverse effects;

(e) No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the United States;

(f) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored trees and treetops may be used in low energy areas); and,

(g) The activity is not a stream channelization activity.

This NWP also authorizes temporary structures, fills, and work necessary to construct the bank stabilization activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Invasive plant species shall not be used for bioengineering or vegetative bank stabilization.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the bank stabilization activity: (1) involves discharges into special aquatic sites; or (2) is in excess of 500 feet in length; or (3) will involve the discharge of greater than an average of one cubic yard per running foot along the bank below the plane of the ordinary high water mark or the high tide line. (See general condition 31.) (Sections 10 and 404)

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district

office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River

designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures

wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district

engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or

State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____

(Transferee)

_____

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the

certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. For a linear project, this determination will include an evaluation of the individual crossings to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to intermittent or ephemeral streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51 or 52, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in minimal adverse effects. When making minimal effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. The district engineer will also consider site specific factors, such as the environmental setting in the

vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

2. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

3. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (a) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the project is authorized under the NWP subject to the applicant’s submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (c) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period, with activity-specific

conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project.

F. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence

of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities eligible for exemptions under Section 404(f) of the Clean Water Act are not considered when calculating the loss of waters of the United States.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of standing or

flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through

which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent

mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a wetland (i.e., water of the United States) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line, which is defined at 33 CFR 328.3(d).

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a jurisdictional wetland is adjacent – meaning bordering, contiguous, or neighboring – to a waterbody determined to be a water of the United States under 33 CFR 328.3(a)(1)-(6), that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

ADDITIONAL INFORMATION

This nationwide permit is effective March 19, 2012, and expires on March 18, 2017.

Information about the U.S. Army Corps of Engineers regulatory program, including nationwide permits, may also be accessed at http://www.swf.usace.army.mil/regulatory or http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx

NATIONWIDE PERMIT (NWP) REGIONAL CONDITIONS FOR THE STATE OF TEXAS

The following regional conditions apply within the entire State of Texas:

1. Compensatory mitigation is required at a minimum one-for-one ratio for all special aquatic site losses that exceed 1/10 acre and require pre-construction notification (PCN), and for all losses to streams that exceed 300 linear feet and require PCN, unless the appropriate District Engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement.

2. For all discharges proposed for authorization under nationwide permits (NWP) 3, 6, 7, 12, 14, 18, 19, 25, 27, 29, 39, 40, 41, 42, 43, 44, 51, and 52, into the following habitat types or specific areas, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 31, Pre-Construction Notification (PCN). The Corps of Engineers (Corps), except for the Tulsa District, will coordinate with the resource agencies as specified in NWP General Condition 31(d) (PCN). The habitat types or areas are:

a. Pitcher Plant Bogs: Wetlands typically characterized by an organic surface soil layer and include vegetation such as pitcher plants (Sarracenia sp.), sundews (Drosera sp.), and sphagnum moss (Sphagnum sp.).

b. Bald Cypress-Tupelo Swamps: Wetlands comprised predominantly of bald cypress trees (Taxodium distichum), and water tupelo trees (Nyssa aquatica), that are occasionally or regularly flooded by fresh water. Common associates include red maple (Acer rubrum), swamp privet (Forestiera acuminata), green ash (Fraxinus pennsylvanica) and water elm (Planera aquatica). Associated herbaceous species include lizard's tail (Saururus cernuus), water mermaid weed (Proserpinaca spp.), buttonbush (Cephalanthus occidentalis) and smartweed (Polygonum spp.). (Eyre, F. H. Forest Cover Types of the United States and Canada. 1980. Society of American Foresters, 5400 Grosvenor Lane, Bethesda, Maryland 20814-2198. Library of Congress Catalog Card No. 80-54185)

3. For all activities proposed for authorization under NWP 12 that involve a discharge of fill material associated with mechanized land clearing in a forested wetland, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 31 (Pre-Construction Notification) prior to commencing the activity.

4. For all activities proposed for authorization under NWP 16, the applicant shall notify the appropriate District Engineer in accordance with the NWP General Condition 31 (Pre-Construction Notification), and work cannot begin under NWP 16 until the applicant has received written approval from the Corps.

The following regional conditions apply only within the Fort Worth District in the State of Texas:

5. For all discharges proposed for authorization under all NWPs, into the area of Caddo Lake within Texas that is designated as a "Wetland of International Importance" under the Ramsar Convention, the applicant shall notify the Fort Worth District Engineer in accordance with the NWP General Condition 31. The Corps will coordinate with the resource agencies as specified in NWP General Condition 31(d) (Pre-Construction Notification).

6. For all discharges proposed for authorization under NWP 43 that occur in forested wetlands, the applicant shall notify the Fort Worth District Engineer in accordance with the General Condition 31 (Pre-Construction Notification).

7. For all discharges proposed for authorization under any nationwide permit in Dallas, Denton, and Tarrant Counties that are within the study area of the "Final Regional Environmental Impact Statement (EIS), Trinity River and Tributaries" (May 1986), the applicant shall meet the criteria and follow the guidelines specified in Section III of the Record of Decision for the Regional EIS, including the hydraulic impact requirements. A copy of these guidelines is available upon request from the Fort Worth District and at the District website www.swf.usace.army.mil (select "Permits").

8. Federal Projects. The applicant shall notify the Forth Worth District Engineer in accordance with the NWP General Condition 31, Pre-Construction Notification (PCN) for any regulated activity where the applicant is proposing work that would result in the modification or alteration of any completed Corps of Engineer projects that are either locally or federally maintained and for work that would occur within the conservation pool or flowage easement of any Corps of Engineers lake project. PCN's cannot be deemed complete until such time as the Corps has made a determination relative to 33 USC Section 408, 33 CFR Part 208, Section 208.10, 33 CFR Part 320, Section 320.4.

9. Invasive and Exotic Species. Best management practices are required where practicable to reduce the risk of transferring invasive plant and animal species to or from project sites. Information concerning state specific lists and threats can be found at: http://www.invasivespeciesinfo.gov/unitedstates/tx.shtml. Best management practices can be found at: http://www.invasivespeciesinfo.gov/toolkit/prevention.shtml. Known zebra mussel waters within can be found at: http://nas.er.usgs.gov/queries/zmbyst.asp.

10. For all discharges proposed for authorization under NWPs 51 and 52, the Corps will provide the PCN to the US Fish and Wildlife Service as specified in NWP General Condition 31(d)(2) for its review and comments.

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

May 3, 2016

Regulatory Division

SUBJECT: Project Number SWF-2016-00111, Calloway Branch Bank Stabilization

Ms. Caroline Waggoner
City of North Richland Hills
Public Works
7301 NE Loop 820
North Richland Hills, Texas 76180

Dear Ms. Waggoner:

This letter is in regard to information received March 23, 2016, concerning a proposal by the City of North Richland Hills - Public Works to construct a bank stabilization project located along Calloway Branch in North Richland Hills, Tarrant County, Texas. This project has been assigned Project Number SWF-2016-00111. Please include this number in all future correspondence concerning this project.

Under Section 404 of the Clean Water Act the U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged and fill material into waters of the United States, including wetlands. USACE responsibility under Section 10 of the Rivers and Harbors Act of 1899 is to regulate any work in, or affecting, navigable waters of the United States. Based on the description of the proposed work, and other information available to us, we have determined this project will involve activities subject to the requirements of Section 404. The USACE based this decision on a preliminary jurisdictional determination that there are waters of the United States on the project site.

We have reviewed this project under the pre-construction notification procedures of Nationwide Permit General Condition 31 (Federal Register, Vol. 77, No. 34, Tuesday, February 21, 2012). We have determined the discharge of dredged or fill materials into waters of the United States associated with this project is authorized by Nationwide Permit 13 for Bank Stabilization. To use this permit, the permittee must ensure the work is in compliance with the specifications and conditions listed on the enclosures. Additionally, all activities must comply with the water quality certification conditions of the Texas Commission on Environmental Quality located at: http://www.tceq.texas.gov/assets/public/permitting/assess/401cert/NWPcert.pdf Failure to comply with these specifications and conditions invalidates the authorization and may result in a violation of the Clean Water Act.

We have determined the proposed activity would comply with all the terms and conditions of Nationwide Permit 13 for Bank Stabilization and that the adverse environmental effects of the proposed project would be minimal both individually and cumulatively. Therefore, we are waiving the 500-linear foot limit for stabilization along the stream bank in this case.

Our verification for the construction of this activity under this nationwide permit is valid until March 18, 2017, unless prior to that date the nationwide permit is suspended, revoked, or modified such that the activity would no longer comply with the terms and conditions of the nationwide permit on a regional or national basis. The USACE will issue a public notice announcing the changes when they occur. Furthermore, activities that have commenced, or are under contract to commence, in reliance on a nationwide permit will remain authorized provided the activity is completed within 12 months of the date of the nationwide permit's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 330.4(e) and 33 CFR 330.5(c) or (d). Continued confirmation that an activity complies with the specifications and conditions, and any changes to the nationwide permit, is the responsibility of the permittee.

Our review of this project also addressed its effects on threatened and endangered species. Based on the information provided, we have determined this project will not affect any species listed as threatened or endangered by the U.S. Fish and Wildlife Service within our permit area. However, please note you are responsible for meeting the requirements of General Condition 18 on endangered species.

The permittee must sign and submit to us the enclosed certification that the work, including any proposed mitigation, was completed in compliance with the nationwide permit. The permittee should submit the certification within 30 days of the completion of work.

This permit should not be considered as an approval of the design features of any activity authorized or an implication that such construction is considered adequate for any purpose intended. It does not authorize any damages to private property, invasion of private rights, or any infringement of federal, state, or local laws or regulations.

Thank you for your interest in our nation's water resources. If you have any questions concerning our regulatory program, please refer to our website at http://www.swf.usace.army.mil/Missions/Regulatory or contact Mr. Darvin Messer at the address above or telephone 817-886-1744.

Please help the regulatory program improve its service by completing the survey on the following website: http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey

Sincerely,

for Stephen L Brooks
Chief, Regulatory Division

Enclosures

Copy Furnished (w/o enclosures):

Mr. David Galindo
Director, Water Quality Division
Texas Commission on Environmental Quality
MC-150
P.O. Box 13087
Austin, Texas 78711

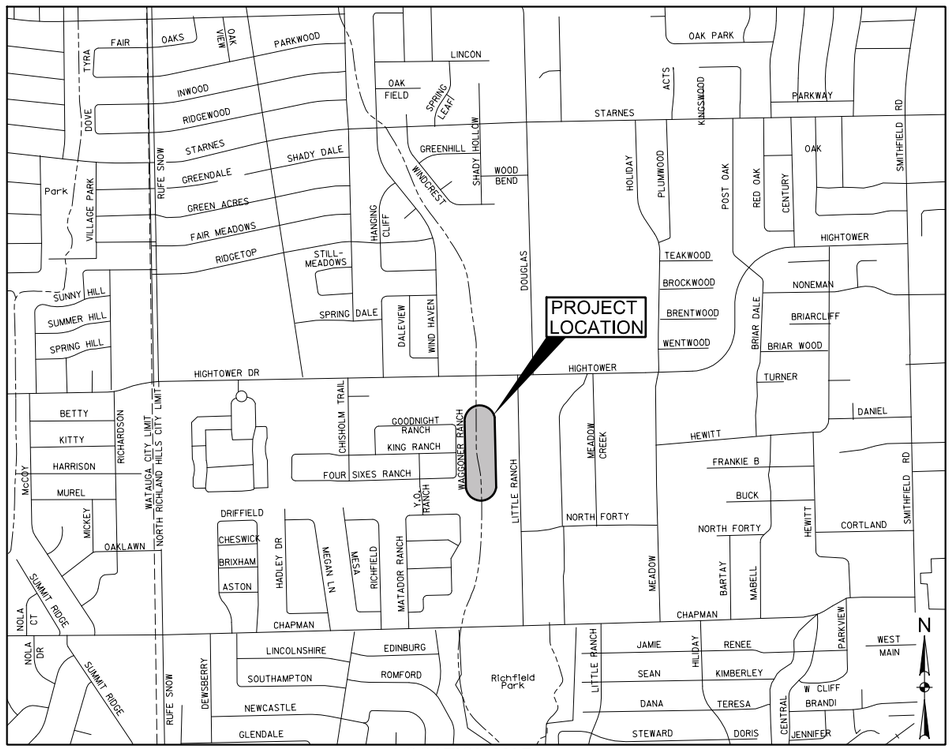
Mr. Danny Griffith
Halff Associates, Inc.
4000 Fossil Creek Boulevard
Fort Worth, Texas 76137

CALLOWAY BRANCH CHANNEL IMPROVEMENTS

ALONG WAGGONER RANCH ROAD

NORTH RICHLAND HILLS

SHEET INDEX



LOCATION MAP

MAY 20, 2016
AVO 31248

Civil Engineer:

HALFF

4000 FOSSIL CREEK BLVD
FORT WORTH, TEXAS 76137-2797
TEL (817) 847-1422
FAX (817) 232-9784
TBPE FIRM #F-312

SMITHFIELD ROAD IMPROVEMENTS FROM DAVIS BLVD. TO MID CITIES BLVD.

GENERAL NOTES

1. All construction, materials and workmanship shall conform to North Central Texas Council of Governments (NCTCOG Standard Specifications), latest edition, unless otherwise noted.

2. The Contractor shall provide "red lined" marked prints to the Engineer prior to final inspection indicating all construction which deviated from the plans or was constructed in addition to that indicated on the plans.

3. The construction schedule shall be such that there is a minimum of interference with traffic along or adjacent to project. Contractor is to notify a City Technical Construction Inspector at (817) 427-6440, at least 48 hours prior to beginning construction. All barricades, warning signs, light devices, etc., for the guidance and protection of traffic and pedestrians shall be in accordance with current "Texas Manual on Uniform Traffic Control Devices for Streets and Highways" Guidelines. Contractor shall be responsible for maintaining general safety at and adjacent to the project area, including the personal safety of the construction crew and general public.

4. Prior to construction, the Contractor will be required to submit a detailed construction sequencing and temporary traffic control plan to address all issues not covered by the construction plans. A schedule will also be submitted to address time of completion of each stage of the construction sequence. The Contractor shall update this schedule on a monthly basis. The construction schedule shall address measures to be taken in the event of heavy rain or wet weather during construction. Construction may not begin earlier than 8:00 am on weekdays nor continued after 5:00 pm without permission. Construction on Saturday and Sunday is prohibited without special permission. The Contractor shall follow the sequence of construction provided in these plans. Any deviations from the plans must be submitted in writing to the City for approval.

5. The Contractor shall maintain traffic and traffic control at all times near construction entrance.

6. The locations, elevations and dimensions of all existing utilities shown on the plans were obtained from available utility company records and plans and are considered approximate. It shall be the Contractor's responsibility to verify locations, elevations, and dimensions of adjacent and/or conflicting utilities sufficiently in advance of construction in order that adjustments can be made to provide adequate clearances. The Contractor shall preserve and protect public utilities at all times during construction. Any damage to utilities resulting from Contractor's operations shall be restored at his expense. The Engineer shall be notified when proposed facility grades conflict with existing utility grades. The following utility companies shall be notified at least ten (10) days in advance of construction:

Oncor Electric Delivery (Attn: Robert X. Martinez)	(817) 215-6688
AT&T (Attn: Leon Simon)	(817) 338 6013
Atmos Energy (Attn: Jeff Wiley)	(817) 359-1313
Charter Communications (Attn: Greg Piatt)	(817) 298-3625

7. The Contractor shall immediately repair or replace any physical damage to private property, including, but not limited to fences, walls, pavement, grass, trees, planters and lawn sprinklers, irrigation systems, surface drains at no cost to the owner. This work shall be completed with equal or better quality material and maintain the functionality of the existing system as directed by the Inspector and approved by the respective party. This work shall be subsidiary to the contract, unless otherwise noted, and is not a separate pay item.

8. Contractor shall install and maintain a temporary screened 6-foot chain link fence around the construction staging area and along the west line of the utility easements adjacent to homeowner properties along Calloway Branch. Temporary fence installation shall be continuous and approved by the City Inspector. Temporary Fence work shall be subsidiary to the contract and is not a separate pay item.

9. The Contractor shall provide temporary drainage measures during construction including any dewatering of groundwater, subsidiary to the contract. Construction is within the FEMA floodplain and Floodway. Contractor shall NOT stockpile materials or equipment within the FEMA Floodway that could restrict conveyance of stormwater. Contractor is responsible for maintaining positive drainage at all time and is responsible for any damages related to flooding to existing improvement.

10. The Contractor shall remove from the project area all surplus material. This work shall be incidental and not a separate pay item. Surplus material from excavation including concrete, trash, etc., shall be properly disposed.

11. Material testing shall be performed by an independent testing laboratory and paid for by the Contractor.

12. All excavation on this project is unclassified channel.

13. The Contractor shall abide by all applicable federal, state, and local laws governing excavation. Contractor shall provide all required sheeting, shoring or bracing as needed. All trenching and excavation shall be performed in accordance with OSHA standards.

14. The Contractor shall supply water and electricity for construction.

15. Prior to final acceptance of a project, the City may require a field survey provided by a registered professional surveyor to verify that the as-built coordinates match the approved design.

16. Proposed improvements shown on these plans are under the jurisdiction of the U.S. Army Corps of Engineers' Nationwide Permit 13 - Bank Stabilization. The Contractor shall restore all portions of the channel and bank that are temporarily filled, cleared of vegetation, flooded, excavated, graded or drained during construction to pre-project grades and conditions, including haul route between construction entrance and project site in accordance with said permit. See contract book for additional information.

17. All areas beyond limits of proposed improvements disturbed by the Contractor as defined by Note 15, shall be adequately stabilized by the contractor to prevent future erosion. Any stabilization measures beyond those shown on these plans will be considered subsidiary to the project. The contractor shall use the following guidelines for stabilization:

    a. Approved structural measure for slopes 2:1 or steeper.

    b. Rock riprap for slopes steeper than 3:1 less than 2:1.

    c. Topsoil, turf reinforcement matting, and seeding for slopes steeper than 4:1 less than 3:1.

    d. Topsoil and seeding for slopes flatter than 4:1.

TREE PROTECTION NOTES

18. Protective measures shall be taken prior to the start of any work in the area and shall be maintained throughout the duration of the project. All such measures shall be incidental and not a separate pay item.

19. The Contractor shall employ a qualified landscaper/arborist for all work required for tree care to ensure utilization of best agricultural practices and procedures.

20. All trees within the construction area shall be protected during construction with temporary fencing and other measures as needed including pruning of limbs. Contractor shall inspect each work site in advance and arrange to have any tree limbs pruned that might be damaged by equipment operations. Pruning of limbs to provide clearance for construction equipment shall take place before construction begins to prevent damage to trees by ripping and tearing of branches. No tree trimming work will be permitted on private property without written permission of the Owner. Pruned limbs of 1-inch diameter and or larger shall be thoroughly treated as soon as possible with a tree wound dressing.

21. Nothing shall be stored over the tree root system within the drip line limits of any tree. No topsoil dressing or fill greater than 4 inches shall be permitted within drip line areas.

22. Tree damage for the purpose of this project is defined as any damage to trees such as bruising, scarring, tearing, or breaking of stems or branches. The Contractor shall be responsible for damage to trees and vegetation. The contractor shall be assessed damage in the following manner:

    a. The amount of circumference damaged at one or a combination of points along the stem and/or limbs will be determined by measurement at the wound around the trunk or limb involved. The percentage of the circumference damaged will be multiplied by the appropriate value for the size of the tree involved, as given by the following table, to determine the amount of penalty. Long, narrow, vertical wounds over one (1) foot long will be measured every foot along the trunk to determine the total percentage of damage.

Tree Diameter at Breast Height	Value Assigned per Inch of Tree Diameter
Up to 5-inch Inclusive	$150
6-inches and larger	$1000

    b. Trees less than breast height (4.5-feet) will be callipered six inches above ground. The Owner reserves the right to use nursery costs as a basis of valuation for trees up to five-inches in diameter.

    c. The total amount of such penalties shall be deducted from the final payment to the Contractor.

TREE REMOVAL NOTES

23. No tree greater than 6-inches in diameter shall be removed unless shown in the plans for removal. Tree removal less then 6-inches is subsidiary to item "General Site Preparation". Removal of trees shall include stump and root ball removal, loading, hauling, and dumping.

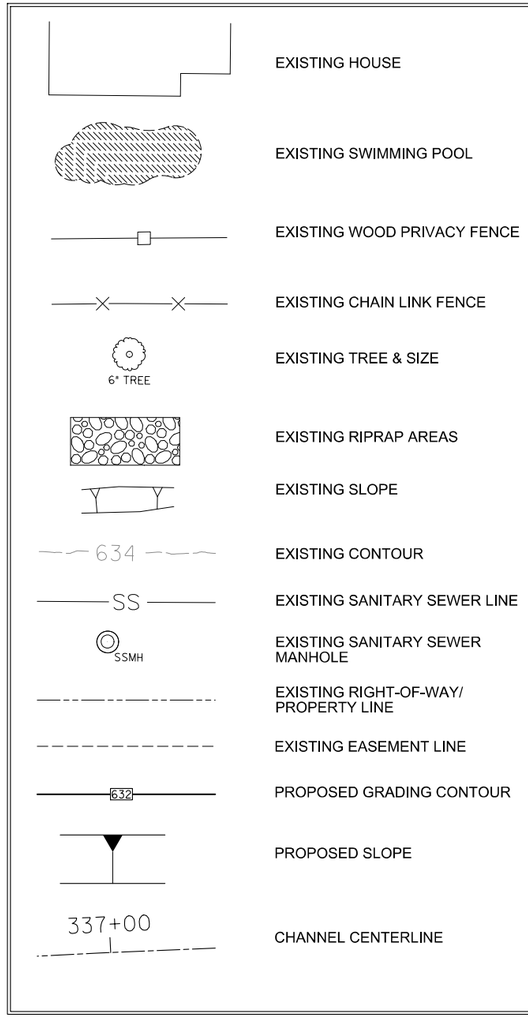
24. Trees to be removed shall be cut approximately 24-36 inches above the ground leaving a well-defined stump that can be used in the rootball removal process.

25. The stump and rootball shall be removed by pulling the stump, or by using a track-mounted backhoe to loosen the rootball by pulling on the stump and then extracting the stump and rootball all together.

26. The remaining root system and loose soil at the stump extraction site shall be removed by excavating the sides of the cavity to slopes no steeper than 1H:1V and benching the bottom of the cavity to approximately horizontal.

27. Backfill of the cavity and over excavation shall be in accordance with Site Notes "Embankment".

GRADING PLAN LEGEND



GRADING GENERAL NOTES

28. No grading or earthwork shall commence until implementation of the SWPPP by the contractor. The construction site notice shall be posted on-site and a copy provided to the city at least 48 hours prior to the commencement of construction with approval of the City.

29. All grading shall conform to the Geotechnical Engineering Study prepared by CMJ Engineering, Inc. dated July 2015 and Addendum dated January 20th, 2016.

30. Grades shown are finished grades which include minimum 4" top soil and sod, refer to NCTCOG specifications. No on-site materials shall be used as topsoil. All topsoil shall be imported from a commercial source for topsoil and must meet specification 202.2 for imported topsoil.

31. The term "Match Existing" shall be understood to signify horizontally and vertically.

32. The existing ground surface shall be stripped of vegetation, roots, old construction debris, rocks greater than 6", and other organic materials. Deleterious material unsuitable for fill as determined by the onsite geotechnical consultant shall be removed from the site.

33. The Contractor shall place topsoil, block sod, and fertilize all areas disturbed by construction, including areas outside the construction boundary. The Contractor shall provide whatever measures are needed, including temporary irrigation and mowing, to ensure establishment of grass. Areas disturbed by construction shall be replaced with block sod of a similar grass to that existing. All areas where sod is placed shall receive a minimum of four (4) inches of topsoil. Contractor shall cut-in edges of block sodding pads to match existing ground elevations. Fertilizer and topsoil shall be subsidiary to pay item sodding and hydromulch seeding.

CALLOWAY BRANCH
CHANNEL IMPROVEMENTS
North Richland Hills, TX

NORTH RICHLAND HILLS

HALFF
TBPE FIRM # 312
4000 FOSSIL CREEK BLVD.
FORT WORTH, TEXAS 76137-2797
TEL (817) 847-1422
FAX (817) 232-4784

Revision No.	Date	Description

STATE OF TEXAS
LEVI R. HEIN
109956
LICENSED PROFESSIONAL ENGINEER
5/20/16

Project No.:	31248
Issued:	06-13-2016
Drawn By:	RLS
Checked By:	LRH
Scale:	NONE

Sheet Title
CHANNEL IMPROVEMENTS
GENERAL NOTES
AND LEGEND

C0.11
Sheet Number

LEGEND

- PROPOSED ALIGNMENT CENTERLINE
- EXISTING RIGHT-OF-WAY/ PROPERTY LINE
- EXISTING EASEMENT
- EXISTING CORNERS/POINTS
- EXISTING DRAINAGE & UTILITY EASEMENT
- EXISTING DRAINAGE EASEMENT
- EXISTING UTILITY EASEMENT
- EXISTING SANITARY SEWER EASEMENT
- 7 TRACT NUMBER

LOT 5, BLK. 11 GRAHAM RANCH PHASE TWO CAB. A, SLIDE 11392

LOT 7, BLK. 11 GRAHAM RANCH PHASE TWO CAB. A, SLIDE 11392

LOT 6, BLK. 11 GRAHAM RANCH PHASE TWO CAB. A, SLIDE 11392

7.5' UTILITY EASEMENT

LOT 48, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 COMMON OPEN SPACE & DRAIN. ESM'T. GRAHAM RANCH HOMEOWNERS ASSOC.

1 LOT 43, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 CLIFTON COWAN

7.5' UTILITY EASEMENT

2 LOT 42, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 KATHY PAPTHOPOULOS

3 LOT 41, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 PETER UNGAR

4 LOT 40, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 LESLIE WHITE

5 LOT 39, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 CYNTHIA BOWERS

7.5' UTILITY EASEMENT

6 LOT 38, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 JOHN GAGNON

7 LOT 37, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 JULIE McWILLIAMS

8 LOT 36, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 CARLA SWENSON

329+00 330+00 331+00 332+00 333+00 334+00 335+00 336+00 337+00 338

DRAINAGE & UTILITY ESMT. EXHIBIT "B" VOL. 13038, PG. 356

DRAINAGE & UTILITY ESMT. EXHIBIT "B" VOL. 13038, PG. 356

MATCH LINE STA 338+00

10' UTILITY EASEMENT VOL. 388-13, PG. 50

10' UTILITY EASEMENT VOL. 388-13, PG. 50

13 LOT 7, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 NANCY BROOKS

14 LOT 6, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 GARY CHANBERS

10' UTILITY EASEMENT VOL. 388-13, PG. 50

15 LOT 5, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 JAMES SHAW

16 LOT 4, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 JAMES SHAW

10' UTILITY EASEMENT VOL. 388-13, PG. 50

9 LOT 35, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 DAVID BOLTON

10 LOT 34, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 JUSTIN TAYLOR

11 LOT 33, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 DANIEL MERRITT

10' SANITARY SEWER EASEMENT

7.5' UTILITY EASEMENT

15' DRINAGE & UTILITY EASEMENT

7.5' UTILITY EASEMENT

12 LOT 1, BLK. 1 COMBS ADDITION CAB. A, SLIDE 2975 STEVE HUDSON

7.5' DRAINAGE & UTILITY EASEMENT CAB. A, SLIDE 2975

HIGHTOWER DR. (CO. RD. NO. 3066)

JOHN CONDRA SURVEY, A-311 TRACT 2F AND 2G VOL. 11049, PG. 1989 KEITH DODD

DRAINAGE & UTILITY EASEMENT CAB.A, SLIDE 2975

DRAINAGE ESMT. VOL. 10908, PG. 647

DRAINAGE ESMT. VOL. 7467, PG. 1072

+00 339+00 340+00 341+00 342+00 343+00 344+00

DRAINAGE & UTILITY ESMT. EXHIBIT "B" VOL. 13038, PG. 356

MATCH LINE STA 338+00

16 LOT 4, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 JAMES SHAW

10' UTILITY EASEMENT VOL. 388-13, PG. 50

17 LOT 3, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 MACK GARVIN

10' UTILITY EASEMENT VOL. 388-13, PG. 50

18 LOT 2, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 DUNG VAN HO

10' UTILITY EASEMENT VOL. 388-13, PG. 50

25' BUILDING LINE CAB. A, SLIDE 6512

19 LOT 1-R-A, BLK. 1 MORGAN MEADOWS CAB. A, SLIDE 6512 HANNAH FISHER

7.5' UTILITY EASEMENT CAB. A, SLIDE 6512

LOT 1, BLK. 1 FIRE DEPARTMENT ADDITION CITY OF NORTH RICHLAND HILLS

N

0 20 40 60 80

SCALE: 1"=40'

CALLOWAY BRANCH CHANNEL IMPROVEMENTS

North Richland Hills, TX

NORTH RICHLAND HILLS

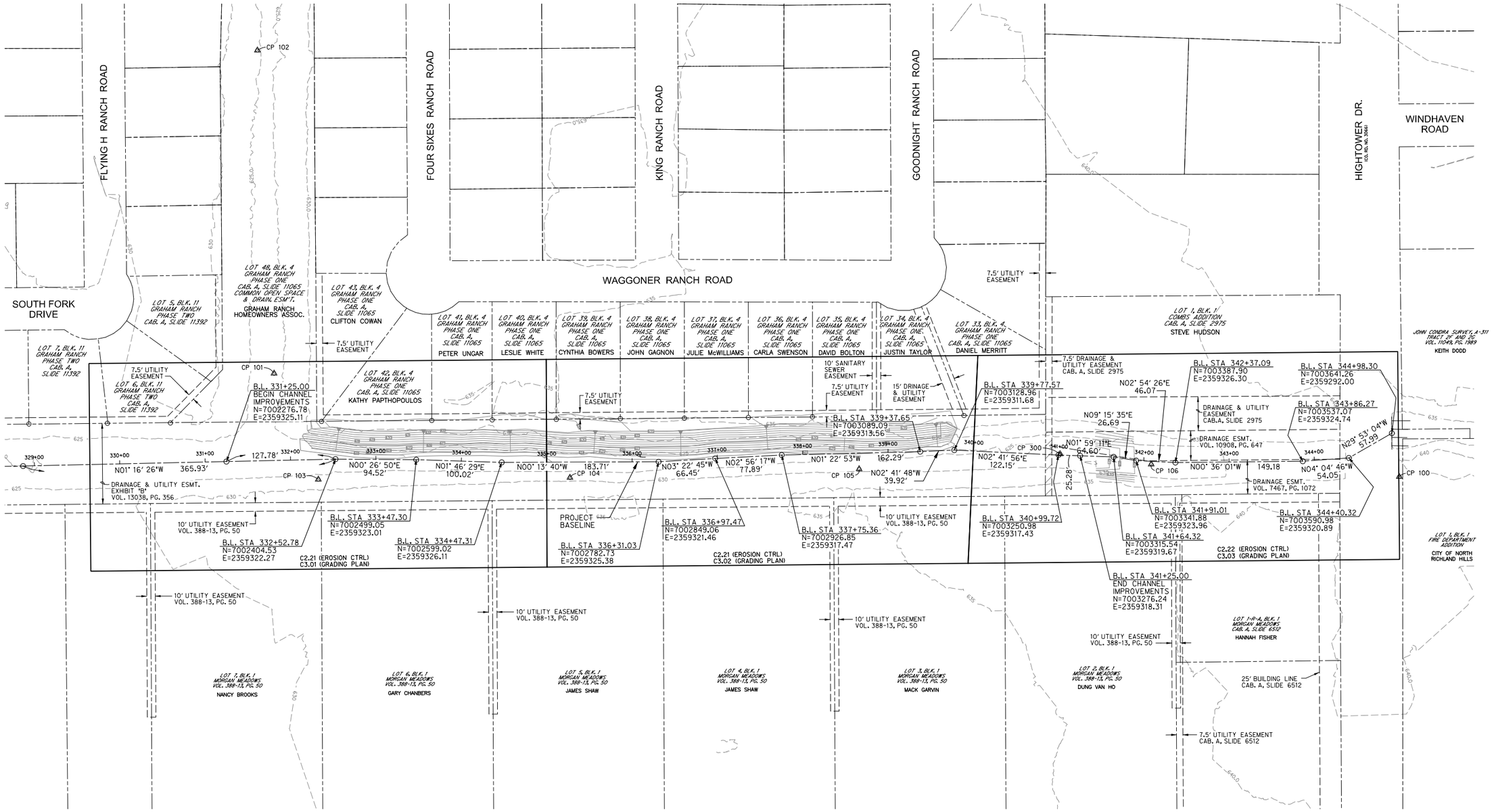
HALFF
TBPE FIRM # 312
4000 FOSSIL CREEK BLVD.
FORT WORTH, TEXAS 76137-2797
TEL (817) 847-1422
FAX (817) 232-0784

Revision No.	Date	Description

Project No.:	31248
Issued:	06-13-2016
Drawn By:	RLS
Checked By:	LRH
Scale:	1" = 40'

Sheet Title
CHANNEL IMPROVEMENTS
RIGHT-OF-WAY
MAP

C1.01
Sheet Number



CONTROL POINT TABLE				
No.	DESCRIPTION	NORTHING	EASTING	ELEVATION
100	FOUND X CUT	7003650.04	2359342.97	640.02
101	FOUND X BOX CUT	7002332.50	2359221.87	624.23
102	SET X CUT TP	7002313.05	2358843.59	630.06
103	1/2" SET IRON ROD W/RED TP CAP	7002384.29	2359346.04	625.67
104	1/2" SET IRON ROD W/RED TP CAP	7002678.99	2359344.02	628.09
105	1/2" SET IRON ROD W/RED TP CAP	7003017.57	2359333.82	628.55
106	1/2" SET IRON ROD W/RED TP CAP	7003359.61	2359328.22	629.26
300	SET 60D NAIL TP	7003252.85	2359316.35	626.39

CALLOWAY BRANCH
CHANNEL IMPROVEMENTS
North Richland Hills, TX

NORTH RICHLAND HILLS

HALFF
TBPE FIRM # 312
4000 FOSSIL CREEK BLVD.
FORT WORTH, TEXAS 76137-2797
TEL (817) 847-1422
FAX (817) 232-3784

Revision		
No.	Date	Description

STATE OF TEXAS
LEVI R. HEIN
109956
LICENSED PROFESSIONAL ENGINEER
5/20/16

Project No.:	31248
Issued:	06-13-2016
Drawn By:	RLS
Checked By:	LRH
Scale:	1" = 60'

Sheet Title
CHANNEL IMPROVEMENTS LAYOUT AND BASELINE CONTROL

C1.11
Sheet Number

FTW
HEIN-1628

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Sheet
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HALFF

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7/14/2016

LOT 5, BLK. 11 GRAHAM RANCH PHASE TWO CAB. A, SLIDE 11392

LOT 48, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 COMMON OPEN SPACE & DRAIN. ESM'T. GRAHAM RANCH HOMEOWNERS ASSOC.

LOT 43, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 CLIFTON COWAN

LOT 41, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 PETER UNGAR

LOT 40, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 LESLIE WHITE

LOT 39, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 CYNTHIA BOWERS

LOT 38, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 JOHN GAGNON

LOT 37, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 JULIE McWILLIAMS

LOT 36, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 CARLA SWENSON

LOT 8, BLK. 11 GRAHAM RANCH PHASE TWO CAB. A, SLIDE 11392

LOT 7, BLK. 11 GRAHAM RANCH PHASE TWO CAB. A, SLIDE 11392

LOT 6, BLK. 11 GRAHAM RANCH PHASE TWO CAB. A, SLIDE 11392

LOT 42, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 KATHY PAPTHOPOULOS

REMOVE AND REPLACE 6 LF 6' WOOD PRIVACY FENCE

7.5' UTILITY EASEMENT

REMOVE AND REPLACE 129 LF 6' WOOD PRIVACY FENCE

REMOVE AND REPLACE 71 LF 6' WOOD PRIVACY FENCE

REMOVE AND REPLACE 75 LF 6' WOOD PRIVACY FENCE

REMOVE AND REPLACE 75 LF 6' WOOD PRIVACY FENCE

REMOVE AND REPLACE 75 LF 6' WOOD PRIVACY FENCE

REMOVE AND REPLACE 64 LF 6' WOOD PRIVACY FENCE

CHANNEL FLOW DIRECTION

GABION MATTRESS

329+00 330+00 331+00 332+00 333+00 334+00 335+00 336+00 337+00 338

DRAINAGE & UTILITY ESMT. EXHIBIT "B" VOL. 13038, PG. 356

GABION MATTRESS TO REMAIN IN PLACE

TEMPORARY FENCE PER GENERAL NOTE 8

REMOVE 553 LF 6' CHAIN LINK FENCE

REMOVE EXISTING TREE

REMOVE EXISTING 6" TREE

REMOVE AND REPLACE 75 LF 6' WOOD PRIVACY FENCE

MATCH LINE STA 338+00

10' UTILITY EASEMENT VOL. 388-13, PG. 50

LOT 7, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 NANCY BROOKS

LOT 6, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 GARY CHANBERS

LOT 5, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 JAMES SHAW

LOT 4, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 JAMES SHAW

10' SANITARY SEWER EASEMENT

15' DRAINAGE & UTILITY EASEMENT

7.5' UTILITY EASEMENT

7.5' DRAINAGE & UTILITY EASEMENT CAB. A, SLIDE 2975

LOT 35, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 DAVID BOLTON

LOT 34, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 JUSTIN TAYLOR

LOT 33, BLK. 4 GRAHAM RANCH PHASE ONE CAB. A, SLIDE 11065 DANIEL MERRITT

LOT 1, BLK. 1 COMBS ADDITION CAB. A, SLIDE 2975 STEVE HUDSON

HIGHTOWER DR. (CO. RD. NO. 3066)

REMOVE AND REPLACE 11 LF 6' WOOD PRIVACY FENCE

REMOVE AND REPLACE 75 LF 6' WOOD PRIVACY FENCE

REMOVE AND REPLACE 97 LF 6' WOOD PRIVACY FENCE

TEMPORARY FENCE PER GENERAL NOTE 8

SANITARY SEWER MANHOLE AND RIPRAP TO REMAIN IN PLACE

REMOVE AND REPLACE 20 LF 6' CHAIN LINK FENCE FOR EQUIPMENT ACCESS

TEMPORARY FENCE PER GENERAL NOTE 8

REMOVE EXISTING TREES (LESS THAN 6") ALONG TOP EXISTING CONC. CHANNEL WITHIN 3-FT OFFSET

DRAINAGE & UTILITY EASEMENT CAB.A, SLIDE 2975

DRAINAGE ESMT. VOL. 10908, PG. 647

DRAINAGE ESMT. VOL. 7467, PG. 1072

7.5' UTILITY EASEMENT

339+00 340+00 341+00 342+00 343+00 344+00

DRAINAGE & UTILITY ESMT. EXHIBIT "B" VOL. 13038, PG. 356

SANITARY SEWER MANHOLE TO REMAIN IN PLACE

EXISTING TREES TO REMAIN IN PLACE

REMOVE 185 LF 6' CHAIN LINK FENCE

REMOVE 32 S.Y. GROUTED ROCK RIPRAP SLOPED HEADWALL TO REMAIN IN PLACE

10' UTILITY EASEMENT VOL. 388-13, PG. 50

LOT 3, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 MACK GARVIN

LOT 1-R-A, BLK. 1 MORGAN MEADOWS CAB. A, SLIDE 6512 HANNAH FISHER

25' BUILDING LINE CAB. A, SLIDE 6512

LOT 2, BLK. 1 MORGAN MEADOWS VOL. 388-13, PG. 50 DUNG VAN HO

7.5' UTILITY EASEMENT CAB. A, SLIDE 6512

LEGEND

- 6' CHAIN LINK FENCE TO BE REMOVED
- 6' WOOD PRIVACY FENCE TO BE REMOVED AND REPLACED
- EXISTING TREE TO BE REMOVED
- EXISTING STRUCTURE TO BE REMOVED

160' 160'

TEMPORARY FENCE PER GENERAL NOTE 8

CONSTRUCTION STAGING AREA

0 20 40 60 80

SCALE: 1"=40'

CALLOWAY BRANCH CHANNEL IMPROVEMENTS

North Richland Hills, TX

NORTH RICHLAND HILLS

HALFF
TBPE FIRM # 312
4000 FOSSIL CREEK BLVD.
FORT WORTH, TEXAS 76137-2797
TEL (817) 847-1422
FAX (817) 232-0784

Revision No.	Date	Description

LEVI R. HEIN 109956 LICENSED PROFESSIONAL ENGINEER

5/20/16

Project No.:	31248
Issued:	06-13-2016
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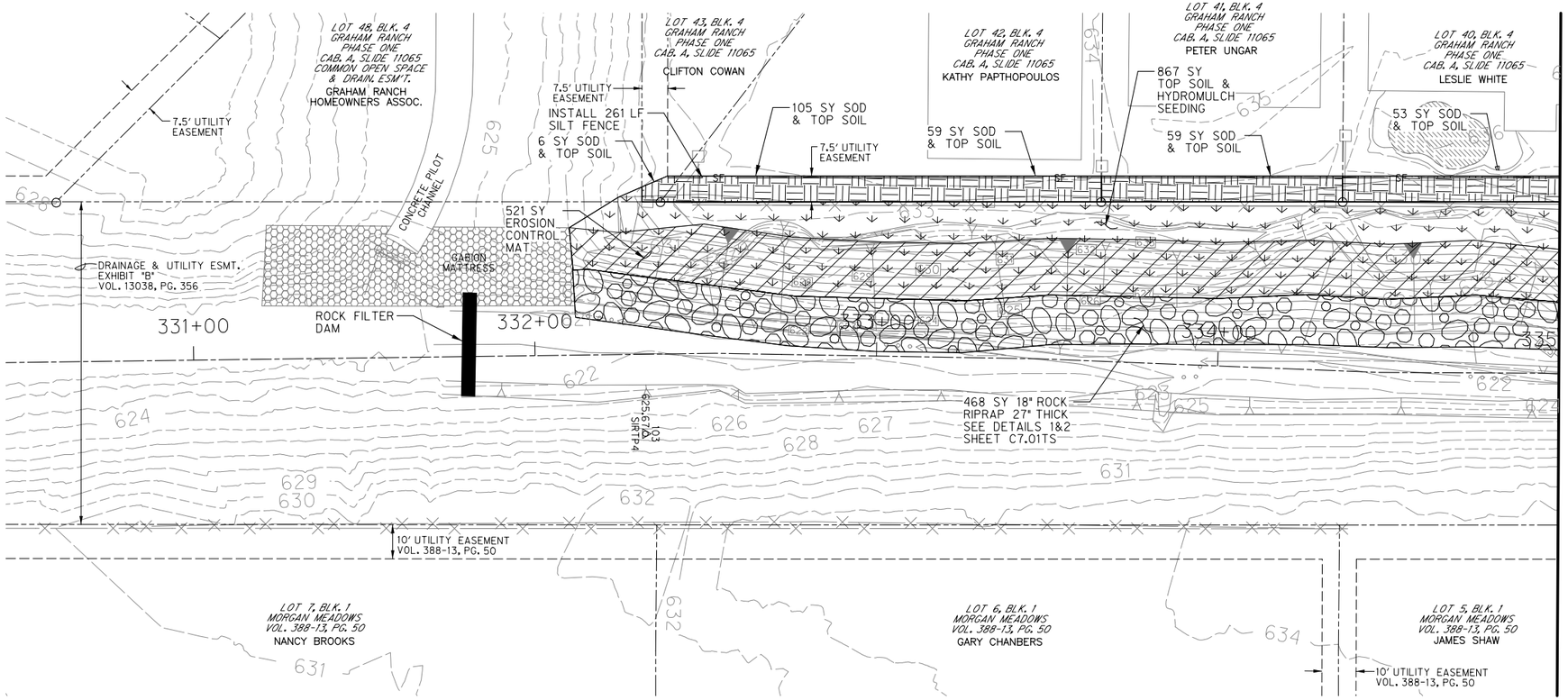
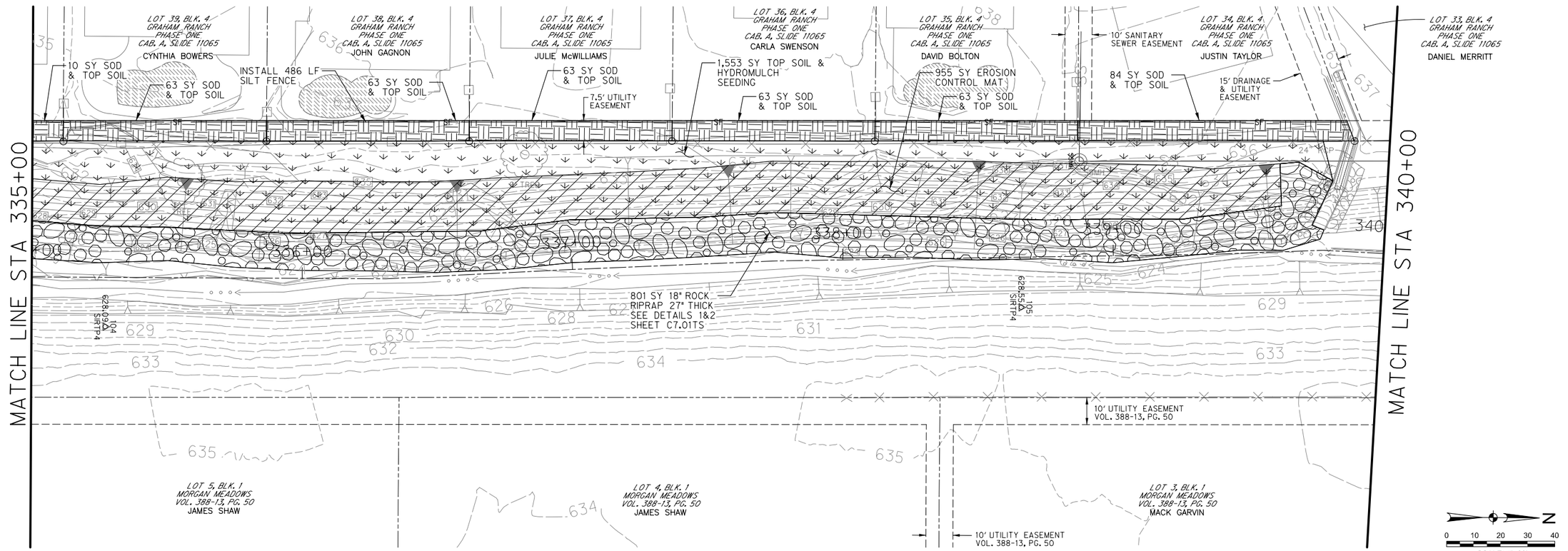
Checked By:	LRH
Scale:	1" = 40'

Sheet Title: CHANNEL IMPROVEMENTS DEMOLITION PLAN

C2.11

Sheet Number





LEGEND

- SOD AND TOPSOIL
- HYDROMULCH SEEDING AND TOPSOIL
- EROSION CONTROL MAT
- 18" ROCK RIPRAP
- ROCK FILTER DAM
- SF — SILT FENCE

N

0 10 20 30 40

SCALE: 1"=20'

NORTH RICHLAND HILLS

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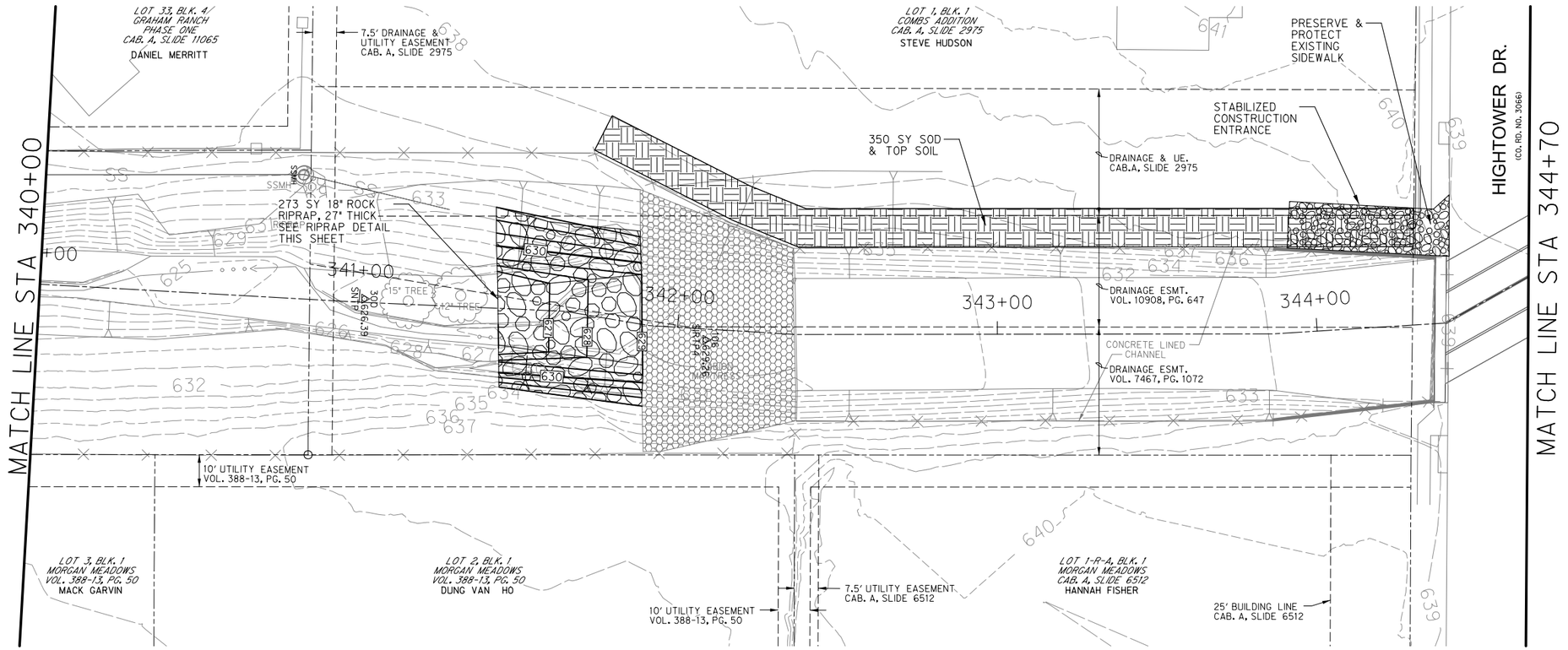
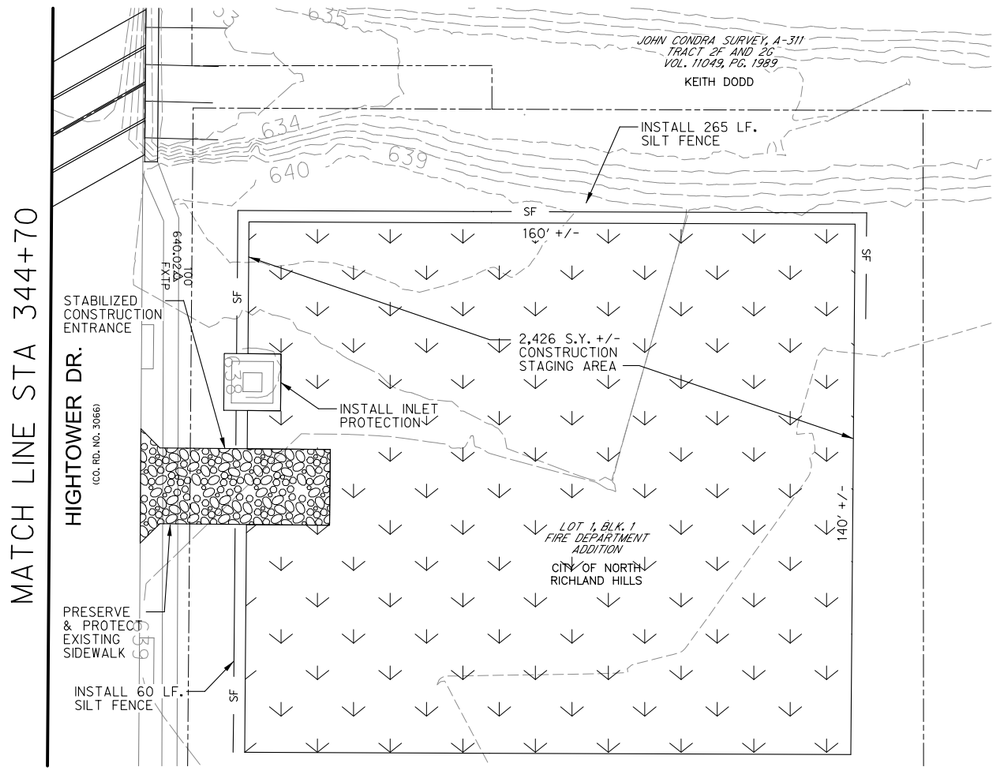
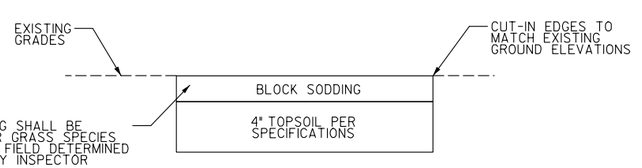
Scale:	1" = 20'

Sheet Title
CHANNEL IMPROVEMENTS EROSION CONTROL PLAN BEGINNING TO STA 340+00

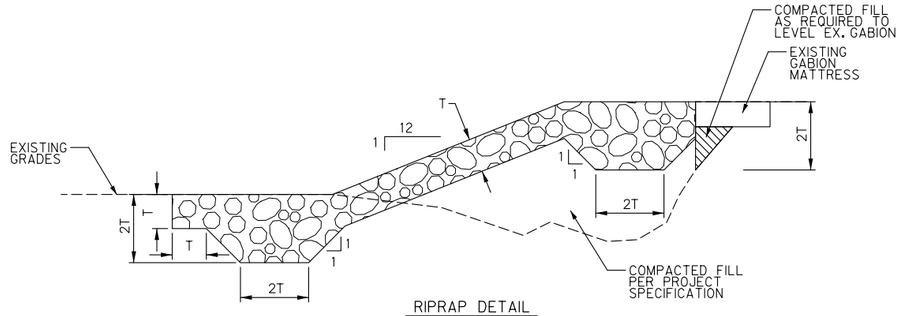
C2.21
Sheet Number







SOD INSTALL DETAIL



RIPRAP DETAIL
SCALE: NONE

0 10 20 30 40
SCALE: 1"=20'

NORTH RICHLAND HILLS

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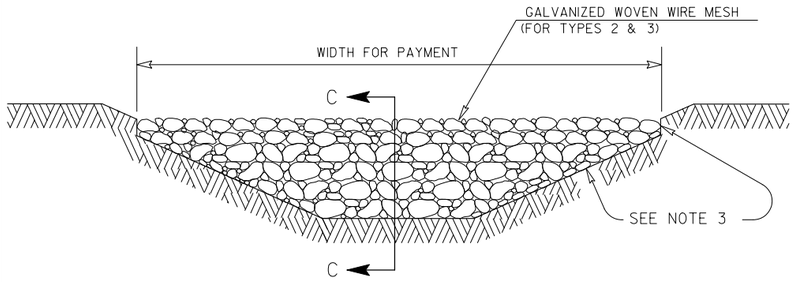
Sheet Title
CHANNEL IMPROVEMENTS
EROSION CONTROL PLAN
STA 340+00 TO END

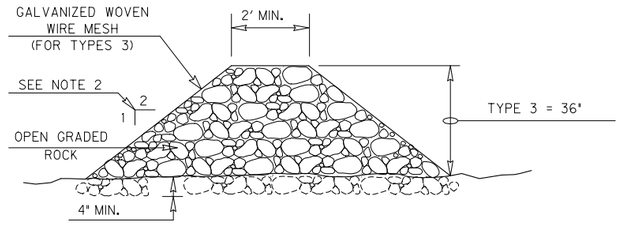
C2.22
Sheet Number



1 FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

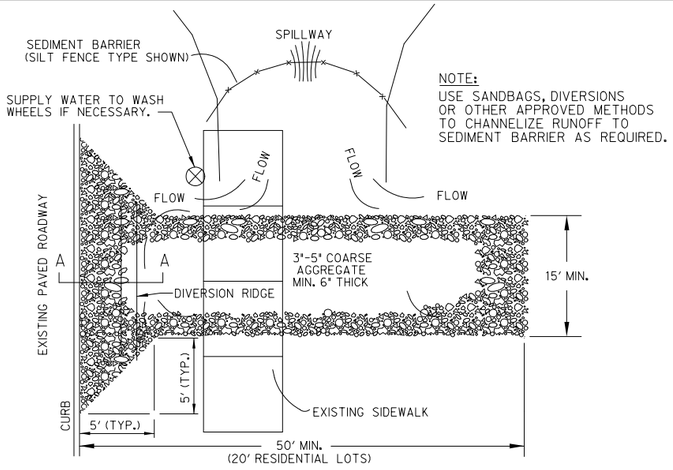
TYPE 1 OR TYPE 2



SECTION C-C

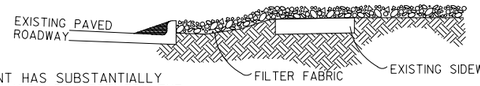
FILTER DAM GENERAL NOTES

1. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE SW3P PLANS.
2. SIDE SLOPES SHOULD BE 2:1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDESLOPES OF 6:1 OR FLATTER.
3. FILTER DAMS SHOULD BE EMBEDDED A MINIMUM OF 4" INTO EXISTING GROUND.
4. ROCK FILTER DAM TYPE 3 SHALL BE SECURED WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1" DIAMETER HEXAGONAL OPENINGS. THE AGGREGATE SHALL BE PLACED ON THE MESH TO THE HEIGHT & SLOPES SPECIFIED. THE MESH SHALL BE FOLDED AT THE UPSTREAM SIDE OVER THE AGGREGATE AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS. IN STREAM USE THE MESH SHOULD BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.



PLAN

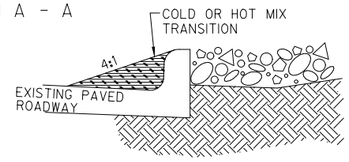
DIVERSION RIDGE REQUIRED
WHERE GRADE EXCEEDS 2%



SECTION A - A

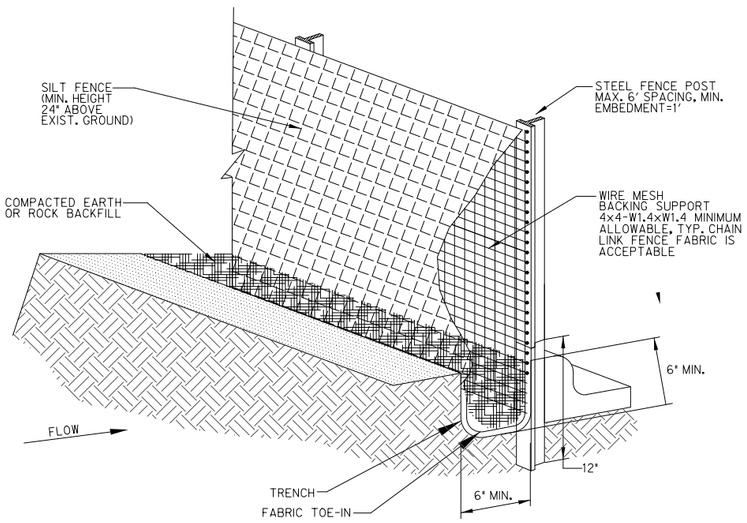
NOTE:
WHEN SEDIMENT HAS SUBSTANTIALLY CLOGGED THE VOID AREA BETWEEN THE ROCKS, THE AGGREGATE MAT MUST BE WASHED DOWN OR REPLACED. PERIODIC RE-GRADING AND TOP DRESSING WITH ADDITIONAL STONE MUST BE DONE TO KEEP THE EFFICIENCY OF THE ENTRANCE FROM DIMINISHING.

NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY DAMAGED PROPERTY, INCLUDING BUT NOT LIMITED TO PAVEMENT, CURB, PARKWAY, SIDEWALK, ETC.

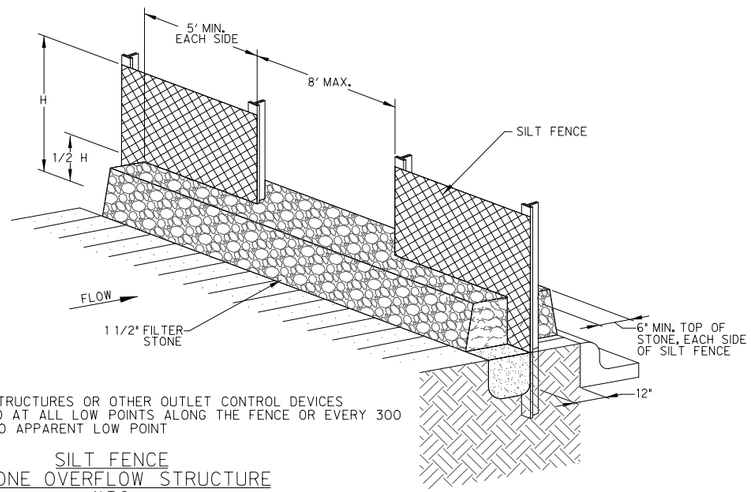


TRANSITION

2 TEMPORARY STONE CONSTRUCTION ENTRANCE/EXIT
N.T.S.



2 ISOMETRIC PLAN VIEW
N.T.S.



NOTE:
STONE OVERFLOW STRUCTURES OR OTHER OUTLET CONTROL DEVICES SHALL BE INSTALLED AT ALL LOW POINTS ALONG THE FENCE OR EVERY 300 FEET IF THERE IS NO APPARENT LOW POINT

3 SILT FENCE STONE OVERFLOW STRUCTURE
N.T.S.

SILT FENCE GENERAL NOTES

(1) STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.

(2) THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

(3) THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

(4) SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IN TURN IS ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

(5) INSPECTION SHALL BE MADE EVERY TWO WEEKS AND AFTER EACH ½" RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.

(6) SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

(7) ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.

NORTH RICHLAND HILLS

CALLOWAY BRANCH
CHANNEL IMPROVEMENTS
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109956
LICENSED PROFESSIONAL ENGINEER
5/20/16

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Scale:	AS NOTED

Sheet Title
EROSION CONTROL DETAILS

C2.23
Sheet Number

LOT 48, BLK. 4
GRAHAM RANCH
PHASE ONE
CAB. A, SLIDE 11065
COMMON OPEN SPACE
& DRAIN. ESM'T.
GRAHAM RANCH
HOMEOWNERS ASSOC.

LOT 43, BLK. 4
GRAHAM RANCH
PHASE ONE
CAB. A, SLIDE 11065
CLIFTON COWAN

LOT 42, BLK. 4
GRAHAM RANCH
PHASE ONE
CAB. A, SLIDE 11065
KATHY PAPTHOPOULOS

LOT 41, BLK. 4
GRAHAM RANCH
PHASE ONE
CAB. A, SLIDE 11065
PETER UNGAR

LOT 40, BLK. 4
GRAHAM RANCH
PHASE ONE
CAB. A, SLIDE 11065
LESLIE WHITE

7.5' UTILITY EASEMENT

FLUME
FL=632.13

FLUME
FL=627.32

CONCRETE PILOT CHANNEL

GABION MATTRESS

INSTALL 292 LF
CONCRETE
FLUME

FLUME
FL=632.82

FLUME
FL=632.91

330+00

331+00

332+00

333+00

334+00

335+00

DRAINAGE & UTILITY ESMT.
EXHIBIT 'B'
VOL. 13038, PG. 356

425.67 CA
103
SIRTP4

10' UTILITY EASEMENT
VOL. 388-13, PG. 50

LOT 7, BLK. 1
MORGAN MEADOWS
VOL. 388-13, PG. 50
NANCY BROOKS

LOT 6, BLK. 1
MORGAN MEADOWS
VOL. 388-13, PG. 50
GARY CHANBERS

LOT 5, BLK. 1
MORGAN MEADOWS
VOL. 388-13, PG. 50
JAMES SHAW

10' UTILITY EASEMENT
VOL. 388-13, PG. 50

MATCH LINE STA 335+00

0 10 20 30 40
SCALE: 1"=20'

N

635
630
625
620
615
610

EX. LEFT OVERBANK

EX. RIGHT OVERBANK

EX. 100YR FLOOD

PROP. 100YR FLOOD

EX. FLOWLINE

331+00 332+00 333+00 334+00 335+00

MATCH LINE STA 335+00

CALLOWAY BRANCH
CHANNEL IMPROVEMENTS
North Richland Hills, TX

NORTH RICHLAND HILLS

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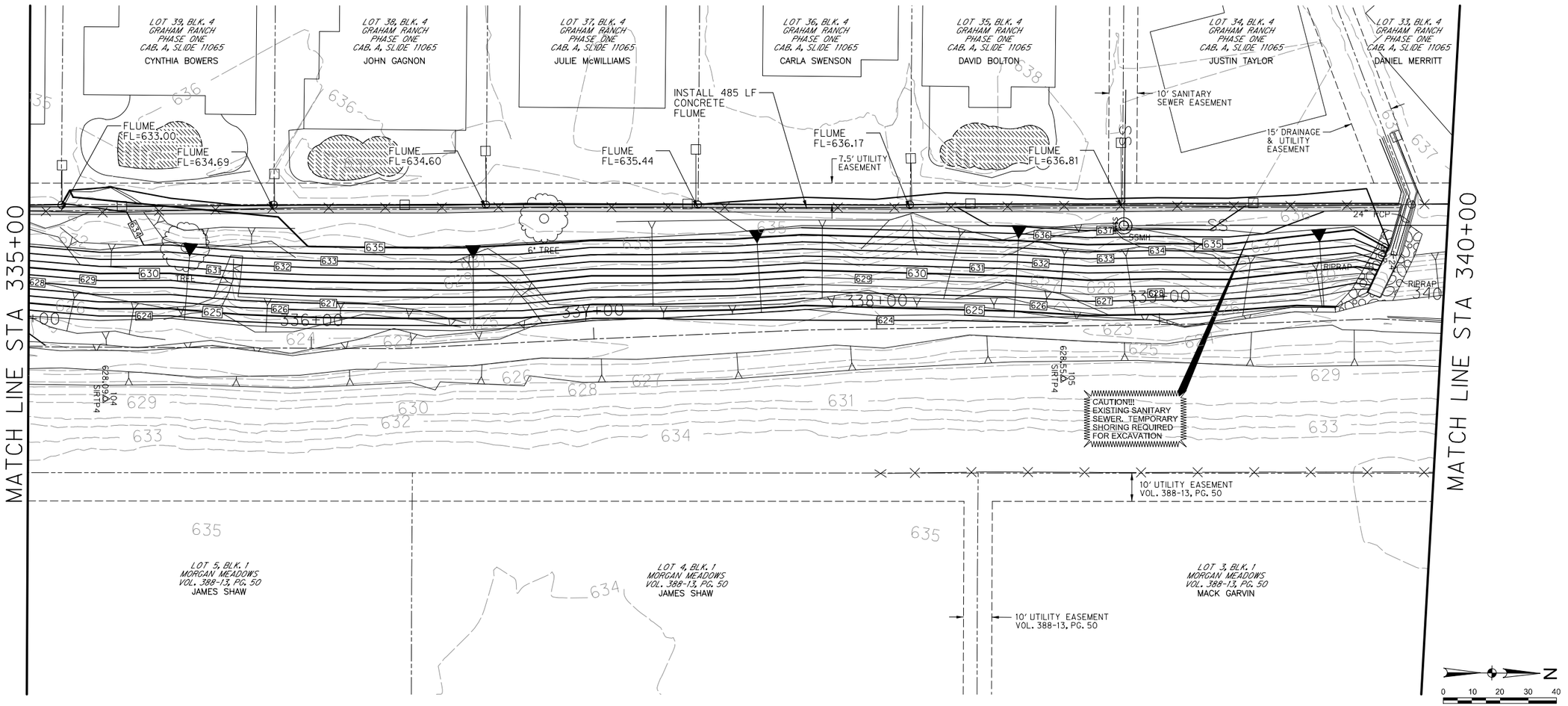
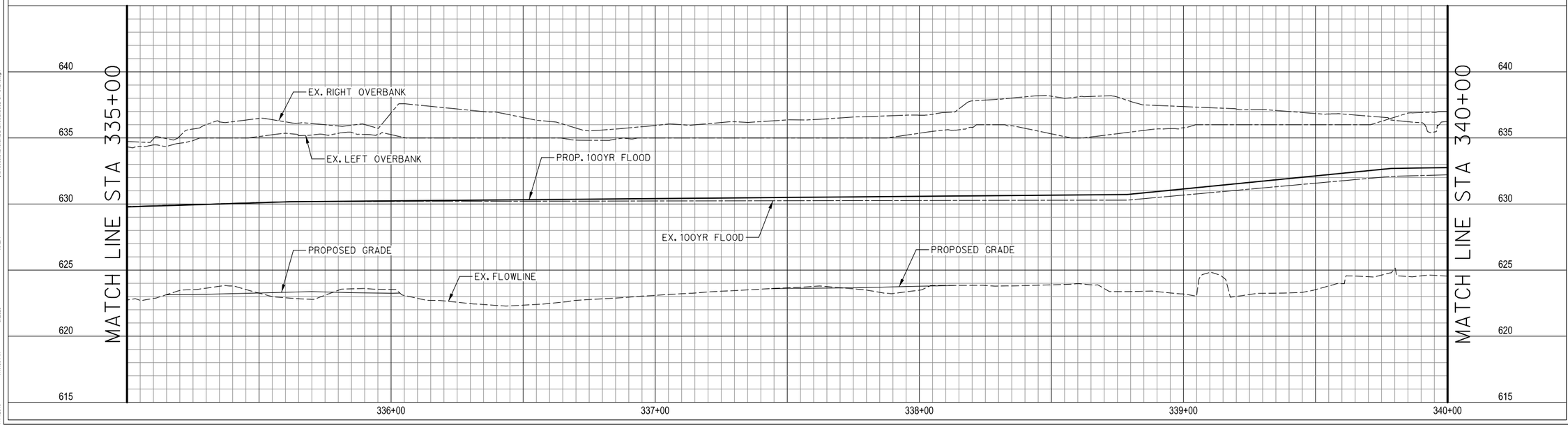
Scale:	1" = 20' H, 1" = 4' V

Sheet Title
CHANNEL IMPROVEMENTS
GRADING PLAN
BEGINNING TO STA 335+00

C3.01
Sheet Number





NORTH RICHLAND HILLS

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CHANNEL IMPROVEMENTS
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Sheet Title
CHANNEL IMPROVEMENTS
GRADING PLAN
STA 335+00 TO STA 340+00

C3.02
Sheet Number

FTW
HEIN-1628

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Sheet
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HALFF

an2029

1:47:36 PM

7/1/2016

LOT 33, BLK. 4
GRAHAM RANCH
PHASE ONE
CAB. A, SLIDE 11065
DANIEL MERRITT

7.5' DRAINAGE & UTILITY EASEMENT CAB. A, SLIDE 2975

LOT 1, BLK. 1
COMBS ADDITION
CAB. A, SLIDE 2975
STEVE HUDSON

HIGHTOWER DR.
(CO. RD. NO. 3066)

MATCH LINE STA 340+00

EL=633.00

EL=633.50

SSMH

RIPRAP

EL=626.71

341+00

15" TREE

12" TREE

SSMH

342+00

343+00

344+00

DRAINAGE & UE. CAB.A, SLIDE 2975

DRAINAGE ESMT. VOL. 10908, PG. 647

DRAINAGE ESMT. VOL. 7467, PG. 1072

CONCRETE LINED CHANNEL

GABION MATTRESS

EL=625.48

EL=633.00

EL=633.00

10' UTILITY EASEMENT VOL. 388-13, PG. 50

EL 626.41

LOT 3, BLK. 1
MORGAN MEADOWS
VOL. 388-13, PG. 50
MACK GARVIN

LOT 2, BLK. 1
MORGAN MEADOWS
VOL. 388-13, PG. 50
DUNG VAN HO

10' UTILITY EASEMENT VOL. 388-13, PG. 50

7.5' UTILITY EASEMENT CAB. A, SLIDE 6512

LOT 1-R-A, BLK. 1
MORGAN MEADOWS
CAB. A, SLIDE 6512
HANNAH FISHER

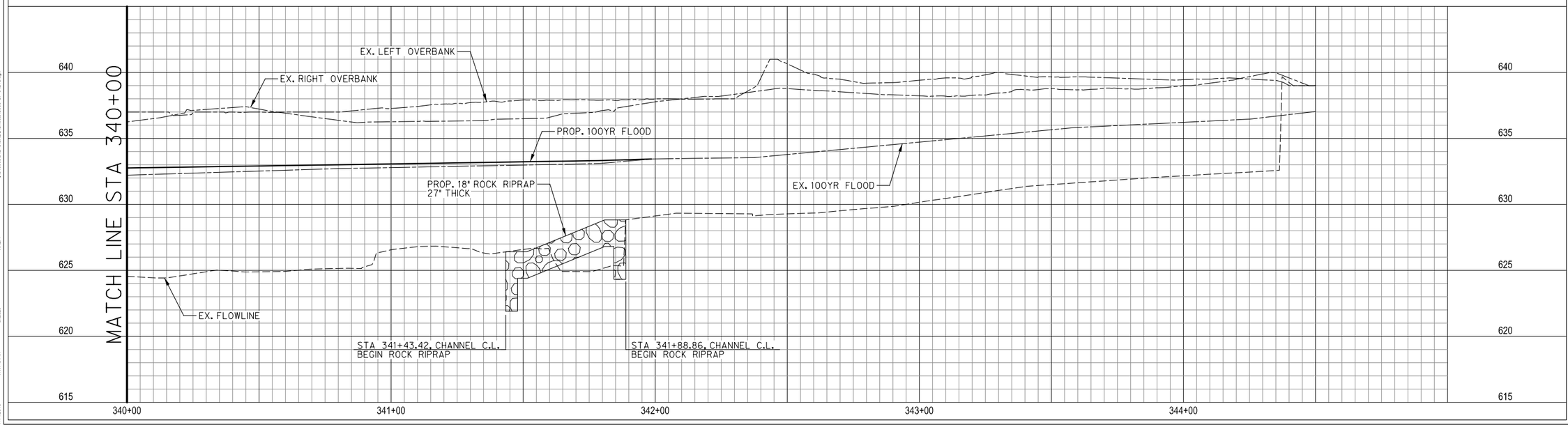
25' BUILDING LINE CAB. A, SLIDE 6512

FXTP

N

0 10 20 30 40

SCALE: 1"=20'



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Sheet Title
CHANNEL IMPROVEMENTS
GRADING PLAN
STA 340+00 TO END

C3.03
Sheet Number

GENERAL NOTES

1. CONSTRUCTION OF CONCRETE COLUMNS, SLABS, BENTS AND ABUTMENTS SHALL BE IN ACCORDANCE WITH THESE DRAWINGS AND THE 2004 TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES.

2. CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE AT ALL TIMES. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL STORM WATER CONTROL, EROSION CONTROL, PUMPING AND DEWATERING NECESSARY FOR THE CONSTRUCTION OF THIS PROJECT. THIS WORK SHALL BE CONSIDERED INCIDENTAL, AND NOT A SEPARATE PAY ITEM.

3. CONTRACTOR SHALL LOCATE EXISTING UTILITIES AT LEAST THREE (3) WEEKS PRIOR TO COMMENCING CONSTRUCTION OF THIS PROJECT. CONTRACTOR SHALL NOTIFY OWNER OF ANY POTENTIAL CONFLICT IN A TIMELY MANNER. EXCAVATED AREAS SHALL BE BACKFILLED AS PER THE GEOTECHNICAL REPORT.

4. ANY STRUCTURAL EXCAVATION AND BACKFILL SHALL BE CONSIDERED INCIDENTAL AND NOT A SEPARATE PAY ITEM.

5. COMPLETE SHOP DRAWINGS FOR THE STRUCTURAL WORK SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCEMENT OF CONSTRUCTION, IN ACCORDANCE WITH THE SPECIFICATIONS. A PERIOD OF AT LEAST 10 WORKING DAYS SHALL BE PROVIDED FOR THIS REVIEW. REVIEW OF SHOP DRAWINGS BY THE ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY FOR CORRECT FABRICATION AND CONSTRUCTION OF THE WORK.

6. ANY DEVIATION FROM, ADDITION TO, SUBSTITUTION FOR, OR MODIFICATION TO THE STRUCTURE OR ANY PART OF THE STRUCTURE SHOWN ON THESE DRAWINGS SHALL BE SUBMITTED IN WRITING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS THAT ARE SUBMITTED FOR REVIEW DO NOT CONSTITUTE "IN-WRITING" UNLESS IT IS CLEARLY NOTED THAT SPECIFIC CHANGES ARE BEING SUGGESTED.

7. THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS AT THE SITE AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE ACTUAL CONDITIONS AND INFORMATION SHOWN ON THE DRAWINGS BEFORE PROCEEDING WITH THE WORK.

8. THE STRUCTURAL DRAWINGS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS, OR FIT OF MATERIALS.

9. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHODS OF CONSTRUCTION UNLESS SO STATED OR NOTED. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE WORKMEN AND OTHER PERSONS DURING CONSTRUCTION.

10. FOUNDATION EXCAVATIONS SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE PRIOR TO PLACEMENT OF REINFORCING STEEL AND CONCRETE IN ORDER TO VERIFY THAT THE BEARING SOILS AT THE BOTTOM OF THE EXCAVATIONS ARE SIMILAR TO THOSE ENCOUNTERED IN THE EXPLORATORY BORINGS AND THAT EXCESSIVE LOOSE MATERIALS AND WATER ARE NOT PRESENT IN THE EXCAVATIONS. IF SOFT POCKETS OF SOIL ARE ENCOUNTERED IN THE FOUNDATION EXCAVATIONS, THEY SHALL BE REMOVED AND REPLACED WITH A COMPACTED NON-EXPANSIVE FILL MATERIAL OR LEAN CONCRETE UP TO THE DESIGN FOUNDATION BEARING ELEVATIONS.

11. IF POSSIBLE, ALL CONCRETE FOR FOUNDATIONS SHALL BE PLACED ON THE SAME DAY THE EXCAVATION IS MADE. EACH FOUNDATION EXCAVATION SHALL BE CLEAN, DRY, AND FREE OF ANY LOOSE SOIL OR UNCOMPACTED FILL. ALL SATISFACTORY FOUNDATION EXCAVATIONS SHALL BE ADEQUATELY PROTECTED AGAINST DETRIMENTAL CHANGES IN CONDITIONS SUCH AS FREEZING, DISTURBANCE, DRYING OR SATURATION. THE EXPOSED FOUNDATION SOILS SHALL NOT BE ALLOWED TO BECOME EXCESSIVELY DRY OR WET BEFORE PLACEMENT OF CONCRETE. THE MOISTURE CONTENT AND CONDITION OF THE SOILS SHALL BE MAINTAINED IN A DAMP, BUT NOT WET, CONDITIONS BOTH DURING AND AFTER CONSTRUCTION.

12. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF ACI 318 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.

13. MILD STEEL REINFORCING BARS SHALL CONFORM TO ASTM A-615 GRADE 60.

14. MILD STEEL REINFORCEMENT AND ACCESSORIES SHALL BE DETAILED AND FABRICATED IN ACCORDANCE WITH ACI SP-66.

15. PORTLAND CEMENT SHALL BE A SINGLE BRAND CONFORMING TO ASTM C-150, TYPE 1, UNLESS OTHERWISE APPROVED.

16. NORMAL WEIGHT AGGREGATES SHALL CONFORM TO ASTM C-33. ALL CONCRETE SHALL USE NORMAL WEIGHT AGGREGATES, UNLESS NOTED OTHERWISE.

17. ALL ADDITIVES FOR AIR ENTRAINMENT, WATER REDUCTION, AND SET CONTROL SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS. THE USE OF CALCIUM CHLORIDE IS PROHIBITED.

18. THE MAXIMUM NOMINAL SIZE OF COARSE AGGREGATE SHALL BE 1½" AT PIERS AND 1" ELSEWHERE.

19. CONCRETE SLUMPS SHALL BE AS FOLLOWS:

    CONCRETE CONTAINING SUPER PLASTICIZER ..... 8" MAX

    PIERS ..... 6" MAX

    ALL OTHER CONCRETE..... 4" MAX

20. MILD STEEL REINFORCEMENT SHALL BE PLACED AND SECURED IN ACCORDANCE WITH CRSI "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS."

21. REINFORCING BARS NO. 11 AND SMALLER SHALL BE CONTACT LAP SPLICED 40 BAR DIAMETERS, UNLESS SHOWN OTHERWISE. BARS LARGER THAN NO. 11 SHALL BE MECHANICALLY SPLICED WITH APPROVED DEVICES.

22. THE TESTING LABORATORY SHALL BE NOTIFIED AFTER THE MILD STEEL REINFORCEMENT AND EMBEDS ARE POSITIONED PRIOR TO EACH CONCRETE PLACEMENT. NO CONCRETE SHALL BE PLACED UNTIL THESE ITEMS ARE CHECKED AND APPROVED BY THE TESTING LABORATORY.

23. CONCRETE SHALL BE CLASS "S" WITH fc' = 4000 PSI. CONCRETE FOR DRILLED SHAFTS SHALL BE CLASS SS WITH f'c = 3600 PSI.

DRILLED SHAFT GENERAL NOTES

24. ALL REINFORCING STEEL SHALL BE GR 60 WITH fy = 60 KSI.

25. CHAMFER ALL EXPOSED CONCRETE EDGES ¾" UNLESS NOTED OTHERWISE.

26. GEOTECHNICAL INFORMATION IS BASED ON A REPORT BY CMJ ENGINEERING INC., NUMBER 245-15-11 DATED JULY 29, 2015 WITH SUPPLEMENTAL LETTER DATED JANUARY 20, 2016.

27. DRILLED SHAFTS ARE DESIGNED FOR END BEARING OF 40 KSF PENETRATING INTO THE GRAY LIMESTONE, SKIN FRICTION OF 0.60 KSF FOR COMPRESSIVE LOADS AND 4.5 KSF FOR TENSILE LOADS.

28. DRILLED SHAFT CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION FOR THE CONSTRUCTION OF DRILLED PIERS, ACI 336.1-97. REFER TO THE AFOREMENTIONED GEOTECHNICAL REPORT FOR ACCEPTABLE METHODS OF THE DRILLED PIER INSTALLATION.

29. THE CONTRACTOR SHALL ENGAGE A REGISTERED SURVEYOR TO PERFORM SURVEYS, LAYOUTS AND MEASUREMENTS FOR PIER WORK. THIS INCLUDES LAYOUT WORK FOR EACH PIER'S ACTUAL FINAL LOCATION. PIER SHALL BE CONSTRUCTED WITHIN THE FOLLOWING CENTERLINE TOLERANCES:

    - MAXIMUM PERMISSIBLE VARIATION OF LOCATION: NOT MORE THAN 1%.
    - SHAFTS OUT OF PLUM: NOT MORE THAN 1% OR 2".
    - CONCRETE CUT-OFF ELEVATION: PLUS 1" TO MINUS 2".

30. CONTRACTOR SHALL PROVIDE TEMPORARY CASING AS REQUIRED TO SEAL OUT GROUND WATER AND PREVENT SLOUGHING OF DRILLED SHAFT EXCAVATIONS. REFER TXDOT ITEM 416.

31. BAR DIMENSIONS ARE MEASURED TO FACE OF BARS, UNLESS NOTED OTHERWISE.

32. PRIOR TO THE PLACEMENT OF CONCRETE, WATER SHALL BE REMOVED FROM THE DRILLED SHAFT EXCAVATIONS. IF DELAYS OCCUR, THE DRILLED SHAFT EXCAVATION SHALL BE DEEPENED AND CLEANED, IN ORDER TO PROVIDE A FRESH BEARING SURFACE.

33. CONCRETE SHALL BE PLACED PROMPTLY AFTER THE EXCAVATIONS ARE COMPLETED, CLEANED, AND OBSERVED. DRILLED PIERS SHALL BE CONCRETED BEFORE THE END OF THE WORK DAY.

34. THE CONCRETE SHALL BE PLACED IN A MANNER TO PREVENT THE CONCRETE FROM STRIKING THE REINFORCING CAGE OR THE SIDES OF THE EXCAVATION. CONCRETE SHALL BE TREIMED TO THE BOTTOM OF THE EXCAVATION TO CONTROL THE FREE FALL OF THE PLASTIC CONCRETE.

35. CONCRETE AND REINFORCING STEEL SHALL BE PLACED IMMEDIATELY AFTER THE EXCAVATION HAS BEEN COMPLETED AND INSPECTED BY THE GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE TO ASSURE COMPLIANCE WITH DESIGN ASSUMPTIONS AND TO VERIFY:

    - THE BEARING STRATUM
    - THE MINIMUM PENETRATION
    - THE REMOVAL OF ALL SMEAR ZONES AND CUTTINGS
    - THAT GROUNDWATER SEEPAGE IS CORRECTLY HANDLED

36. PROVIDE PIER BOLSTERS AND CENTERING DEVICES FOR PIER REINFORCEMENT BY PIERSEARCH, OR APPROVED EQUAL.

37. THE CONTRACTOR SHALL NOTIFY THE GEOTECHNICAL ENGINEER 72 HOURS PRIOR TO COMMENCEMENT OF DRILLING. EACH PIER EXCAVATION SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO CONCRETING.

38. "MUSHROOMING" AT THE TOP OF PIERS IS PROHIBITED.

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Revision No.	Date	Description

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5-20-16

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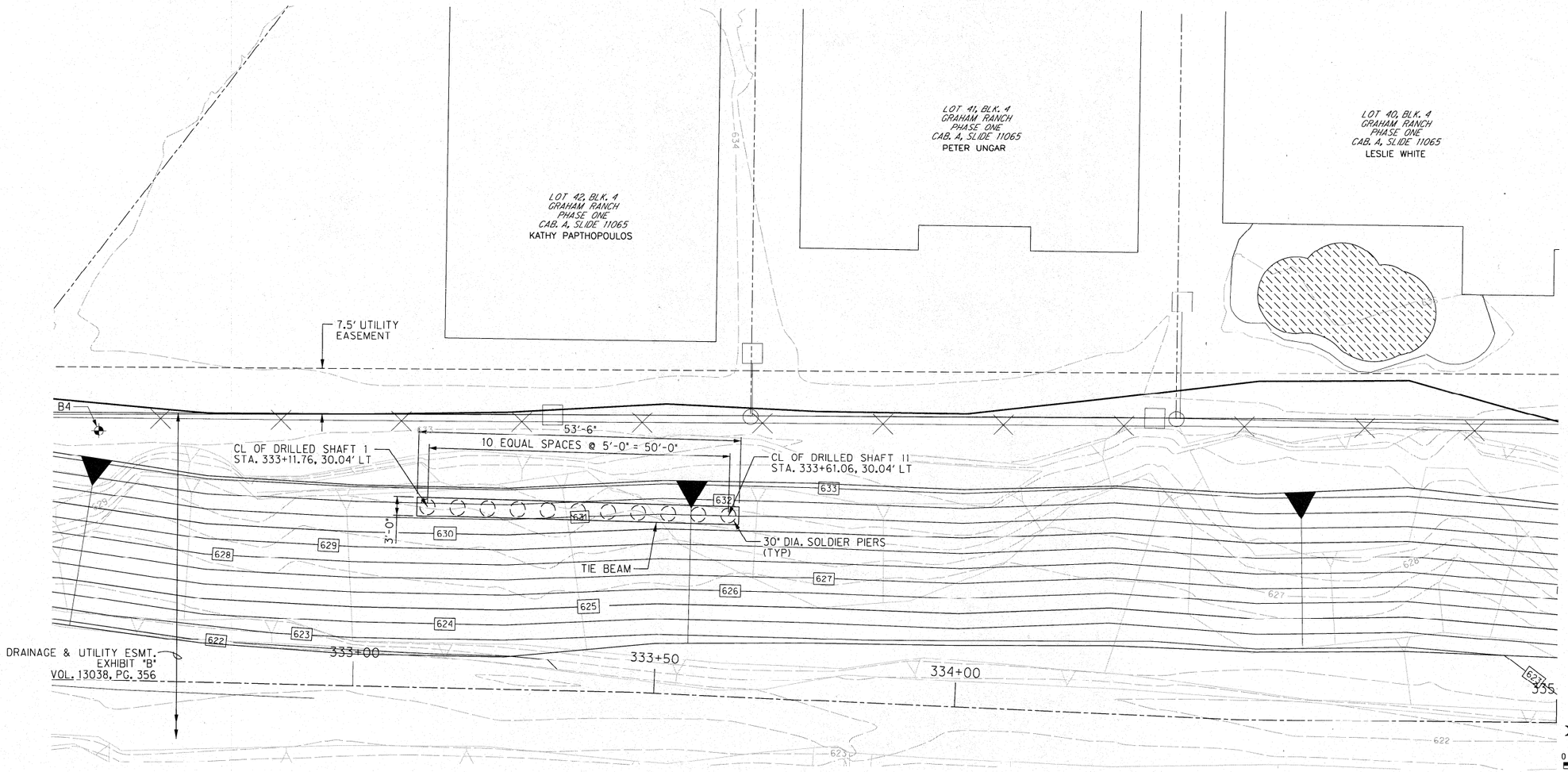
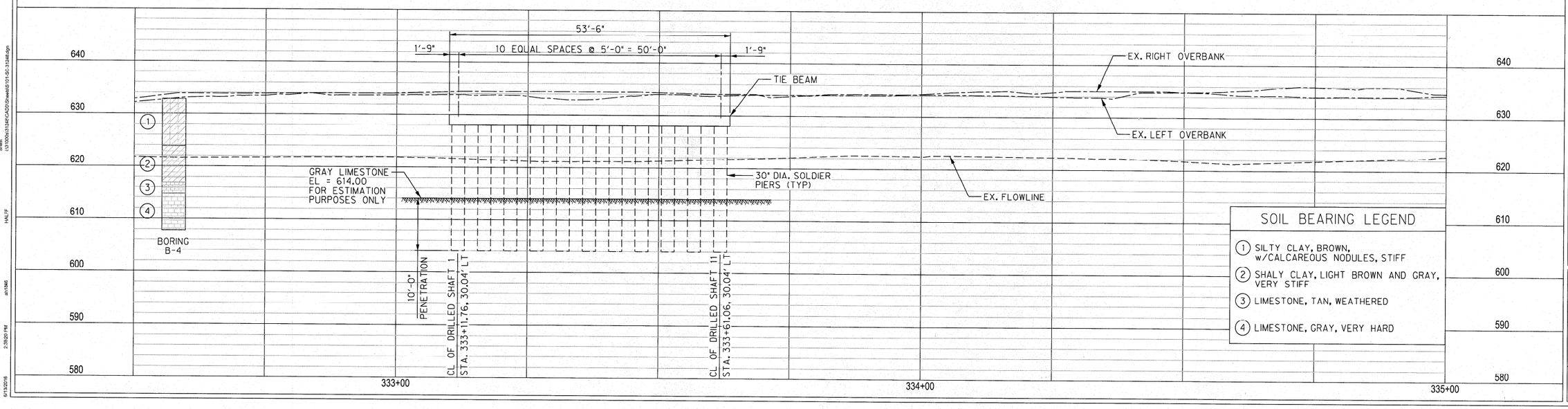
Sheet Title

STRUCTURAL GENERAL NOTES

S0.01

Sheet Number





SOIL BEARING LEGEND

1. SILTY CLAY, BROWN, w/CALCAREOUS NODULES, STIFF
2. SHALY CLAY, LIGHT BROWN AND GRAY, VERY STIFF
3. LIMESTONE, TAN, WEATHERED
4. LIMESTONE, GRAY, VERY HARD

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Sheet Title
SOLDIER PIER WALL PLAN AND PROFILE

S1.01
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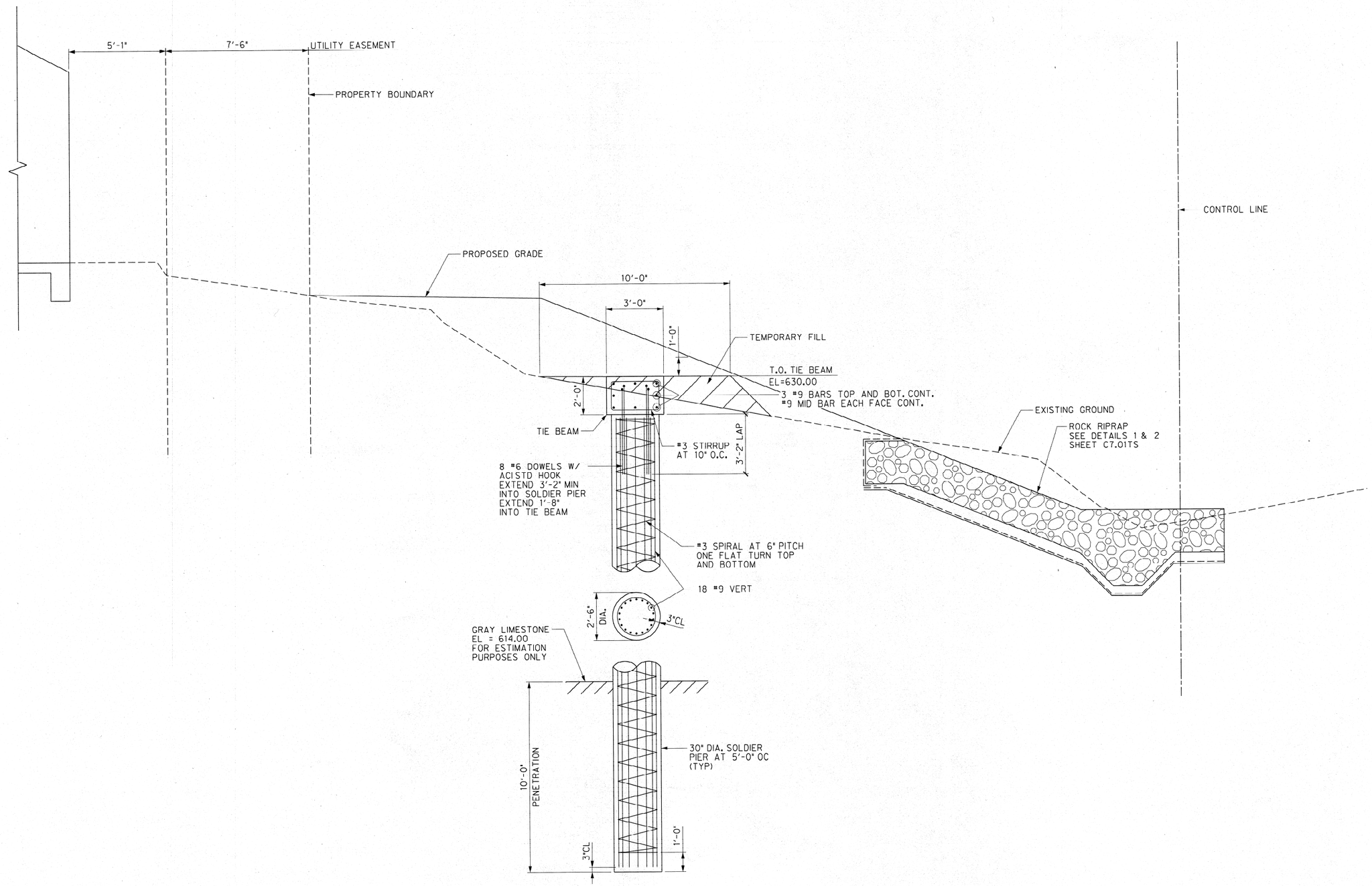

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S2.01

TYP SOLDIER PIER SECTION

SCALE = 3/8" = 1'-0"

EARTHWORK TO PREPARE A TEMPORARY LEVEL SURFACE FOR PIER DRILLING MAY BE REQUIRED.

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SOLDIER PIER WALL DETAILS

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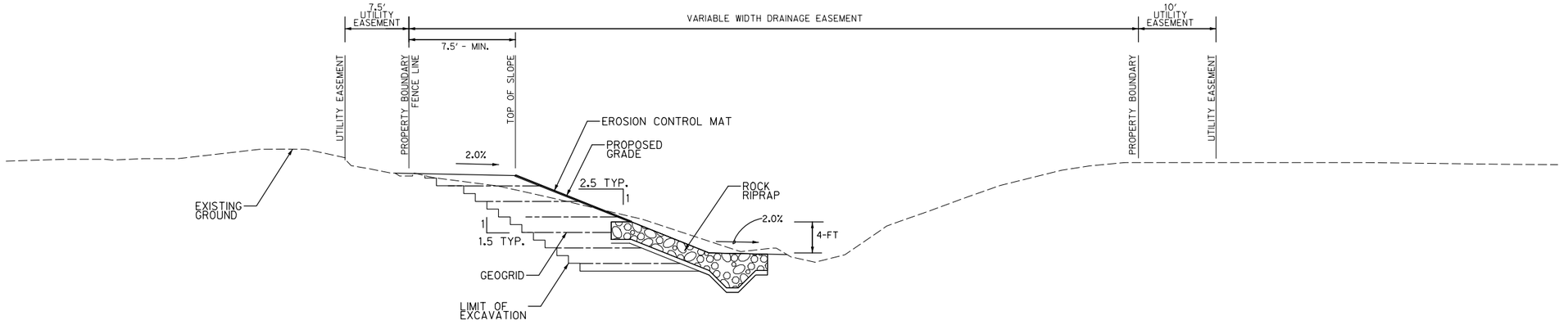


TYPICAL SECTION

SITE NOTES

1. A qualified geotechnical engineer shall be retained by the Contractor to observe all grading operations and the required testing for implementing the recommendations of the aforementioned subsurface investigation and report.

2. Excavations adjacent to existing buildings or other structures, particular care shall be taken to adequately shore the excavated slope to prevent undermining or settlement beneath or adjacent to the structure. The contractor shall be responsible for providing the City an acceptable shoring plan signed and sealed by a Professional Engineer qualified to do such work. Cost related to shoring are subsidiary to the pay item unclassified channel excavation. Slopes created by excavation shall not exceed 1.5 feet horizontal to 1 foot vertical (1.5:1) for a period of more than 24 hours.

3. Embankments shall be constructed in accordance with the following:

   a. Area to receive embankment shall be placed from the toe of slope leading upwards. The subgrade should be firm and be able to support the construction equipment without displacement. The subgrade shall be proof rolled using a heavy pneumatic tire roller, loaded dump truck or similar piece of heavy equipment. Any soft spots detected shall be reworked to provide a firm and otherwise stable subgrade.

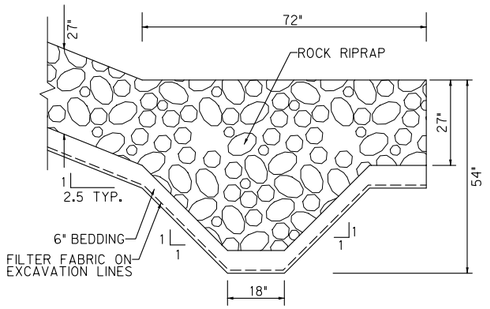
   b. The surface soils should be scarified 6-inches and uniformly compacted to a minimum 95 percent of ASTM D 698, near -2 to +5 percent optimum moisture. It should be then protected and maintained in a moist condition until the subsequent embankment lift is placed.

   c. The initial lift of fill should be at least 12-feet wide and placed on a horizontal plane. Each progressive "stair-step" vertical lift shall be placed in minimum 12-foot horizontal or removal of disturbed existing soil plus 5-feet, whichever is greater. The benches should continue to work uphill to prevent a continuous vertical plane from occurring at the fill interface.

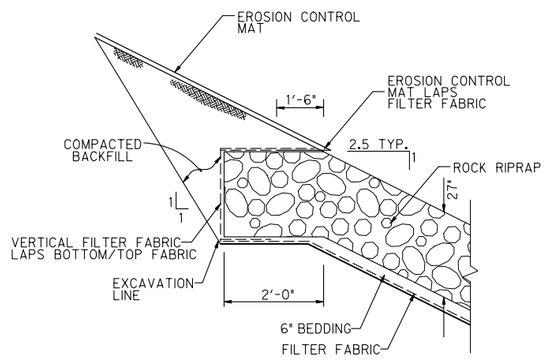
   d. A geogrid (Tensar TriAx TX160 or equivalent) shall be placed every 2-feet of embankment fill height. The minimum install horizontal length of geogrid to be installed shall be 12-feet, referenced from the final slope face.

   e. Fill material shall be placed in loose lifts not exceeding 8-inches in uncompacted thickness and reduced to 4-inches uncompacted thickness around existing structures. As additional fill is placed, the fill should be benched into natural soil for every 1-foot thickness at 95% standard proctor density (ASTM D-698) within 3% optimum moisture content. The fill material shall be uniform with respect to material type and moisture content. Clods and chunks of material greater than 4-inches should be removed or shall be broken down and the fill material mixed by disking, blading, or plowing, as necessary, so that a material of uniform moisture and density is obtained for each lift. Water required for sprinkling to bring the fill material to the proper moisture content should be applied evenly through each layer. The benches should continue to work uphill to prevent a continuous vertical plane from occurring at the fill interface.

   f. The Contractor shall be responsible for the cost of a maximum number of passing field density tests. Field density test should be taken as each lift of fill material is placed. Contractor shall take minimum one field density test per lift for each 5,000 square feet for all areas. Contractor shall take minimum one field density test per 2,500 square feet for fill material place adjacent to proposed rock riprap, existing drainage structure, existing utilities, and existing structures.



1 ROCK RIPRAP TOE OF SLOPE DETAIL
N.T.S



2 ROCK RIPRAP TOP OF BANK DETAIL
N.T.S

ROCK RIPRAP MATERIAL SHALL BE WELL GRADED AND SHALL CONFORM TO THE TABLE BELOW.

PERCENT LIGHTER BY WEIGHT (SSD)	LIMITS OF STONE WEIGHT, LB
100	270 - 110
50	80 - 60
15	40 - 20

ROCK RIPRAP FILLER MATERIAL SHALL BE WELL GRADED COARSE ROUNDED RIVER GRAVEL WITH 100% PASSING A 3" U.S. STANDARD SIEVE AND 0% PASSING A 1" U.S. STANDARD SIEVE.

BEDDING MATERIAL SHALL CONFORM TO THE TABLE BELOW.

U.S. STANDARD SIEVE	PERMISSIBLE LIMITS PERCENT BY WEIGHT, PASSING
6 IN.	100
3 IN.	65 - 100
1 1/2 IN.	40 - 60
3/4 IN.	25 - 40
NO. 4	0 - 25

FILTER FABRIC SHALL BE MIRAFI FW 402 OR APPROVED EQUAL.
FILTER FABRIC SPLICES SHALL HAVE A MINIMUM OVERLAP OF 18 INCHES

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5/20/16

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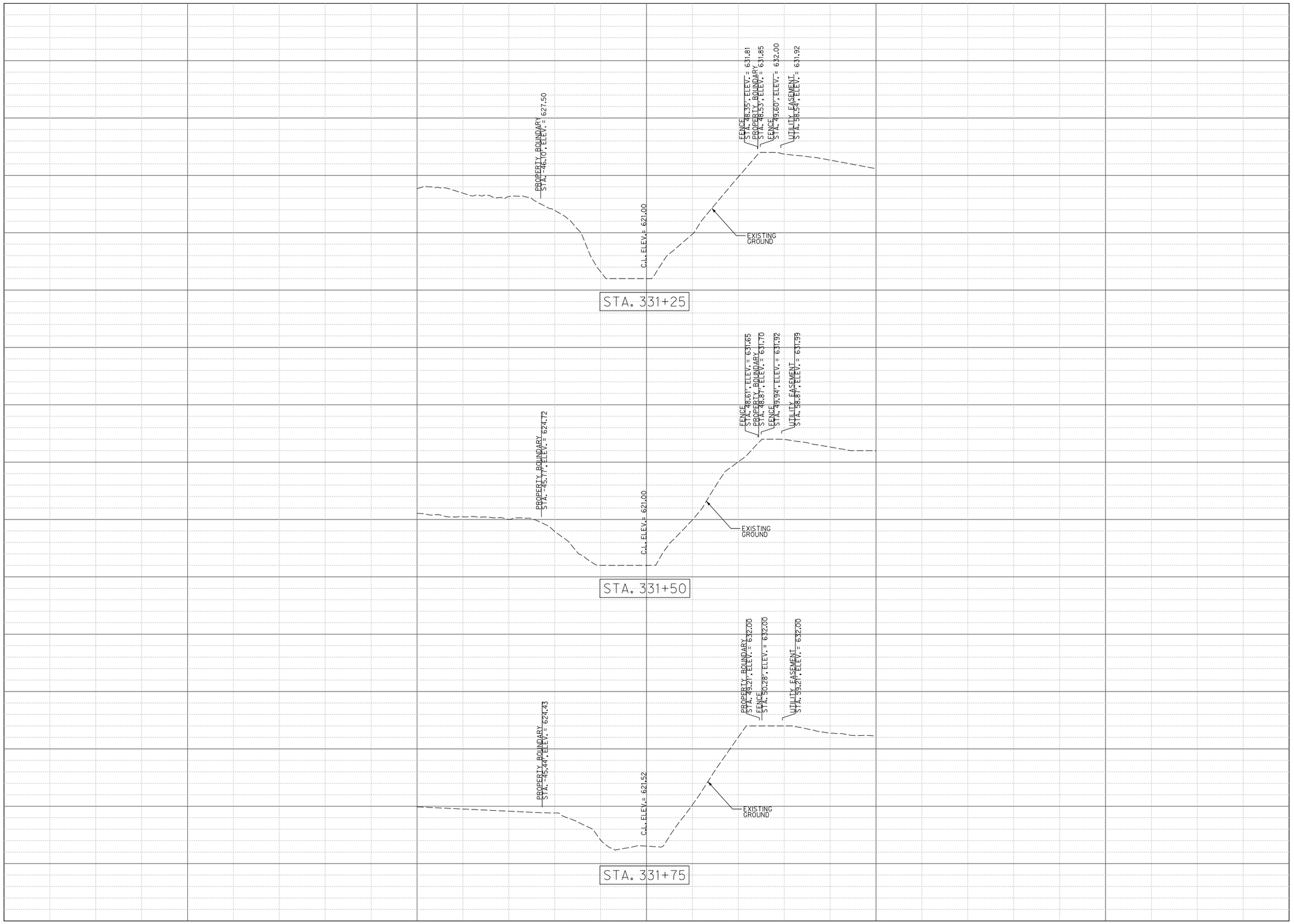

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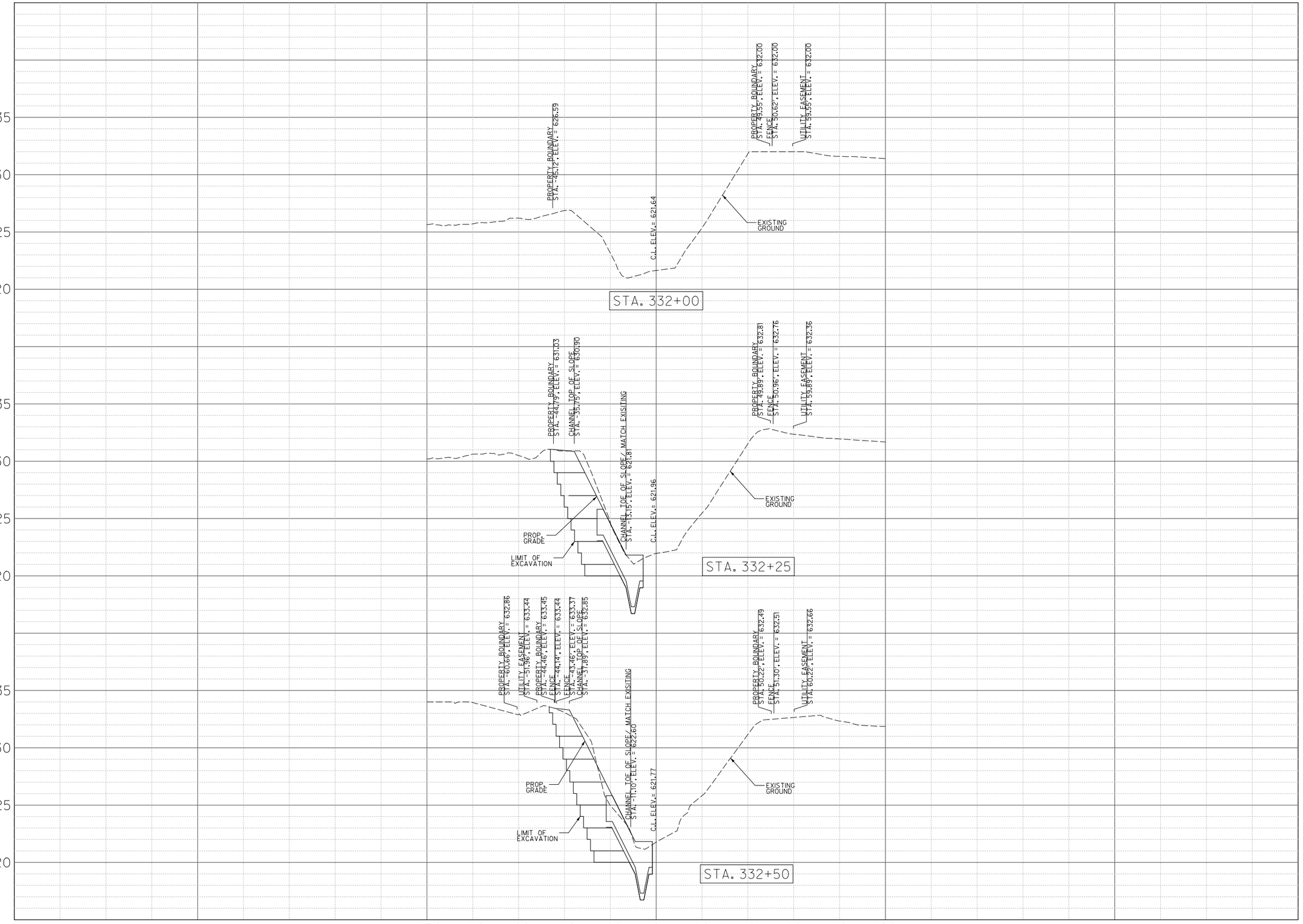

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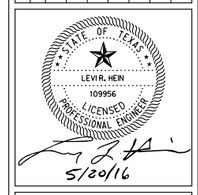

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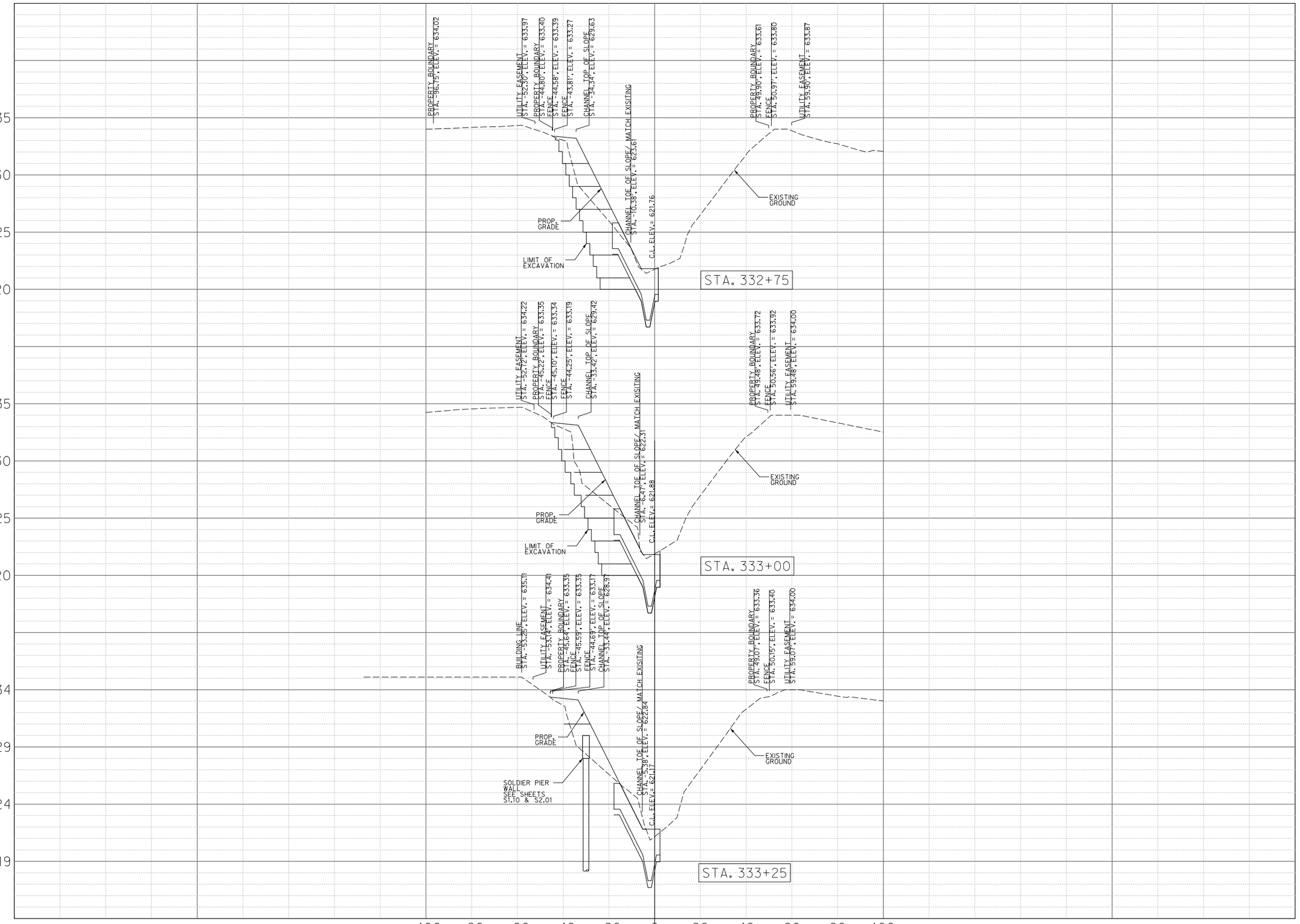

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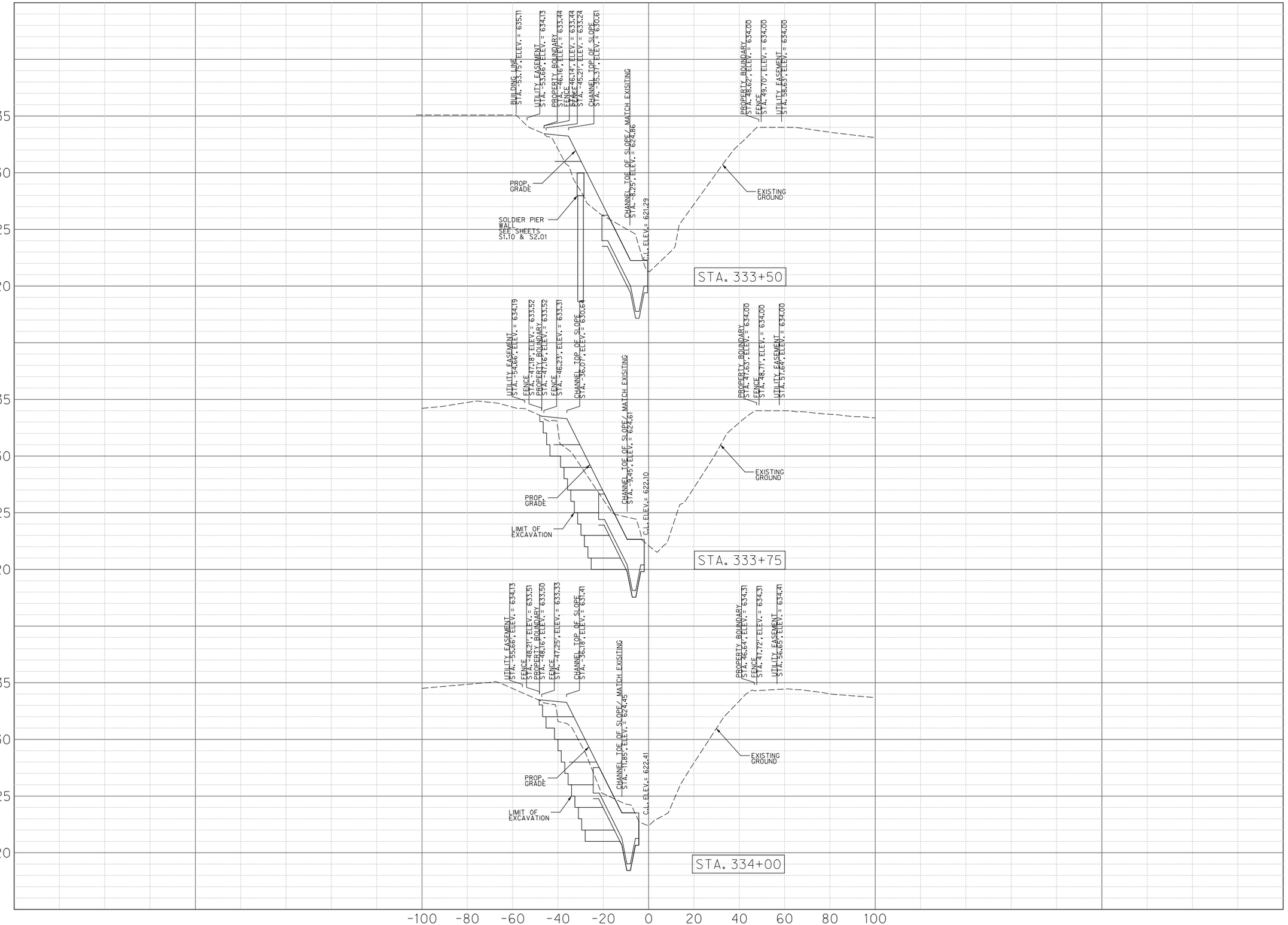

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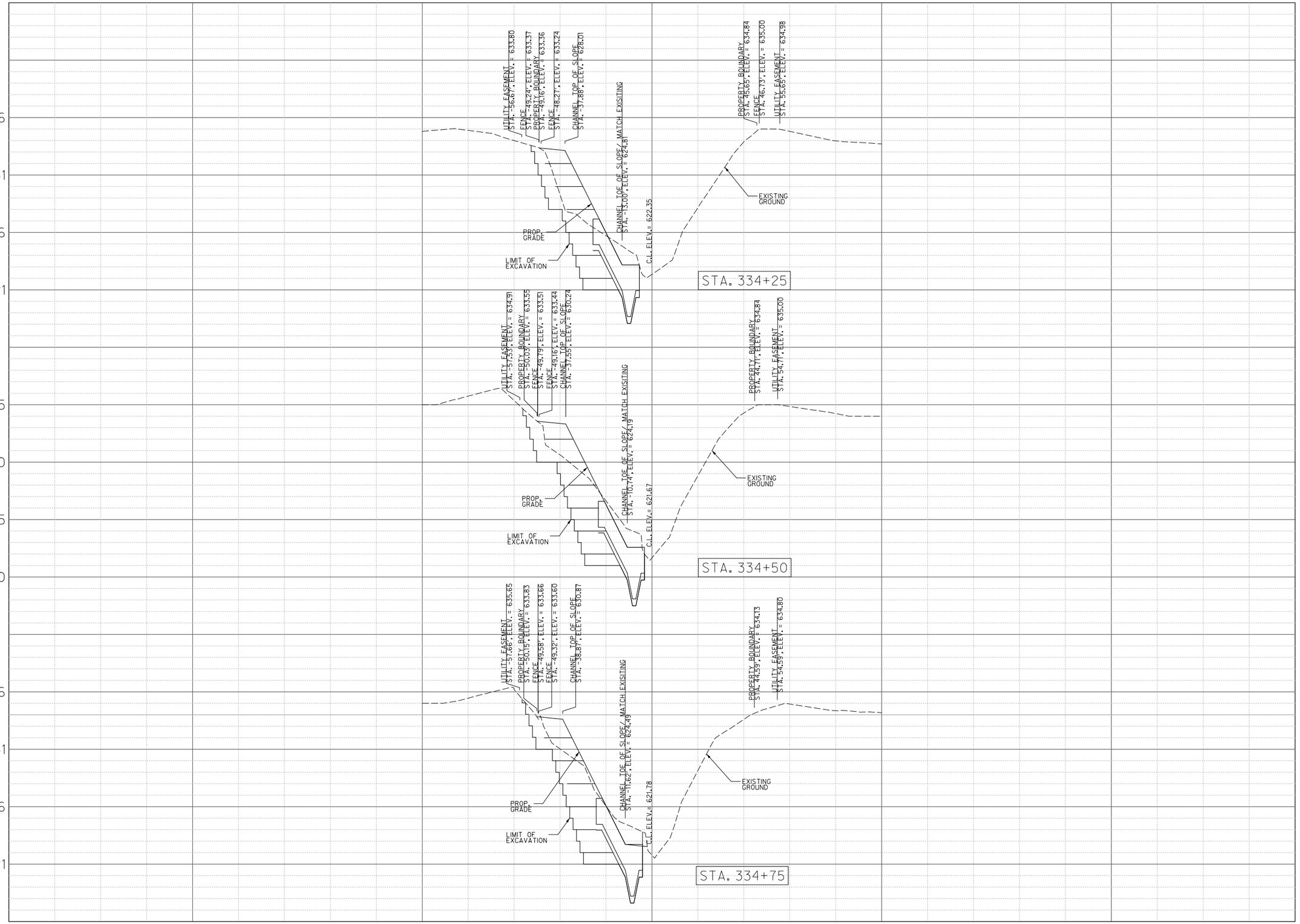

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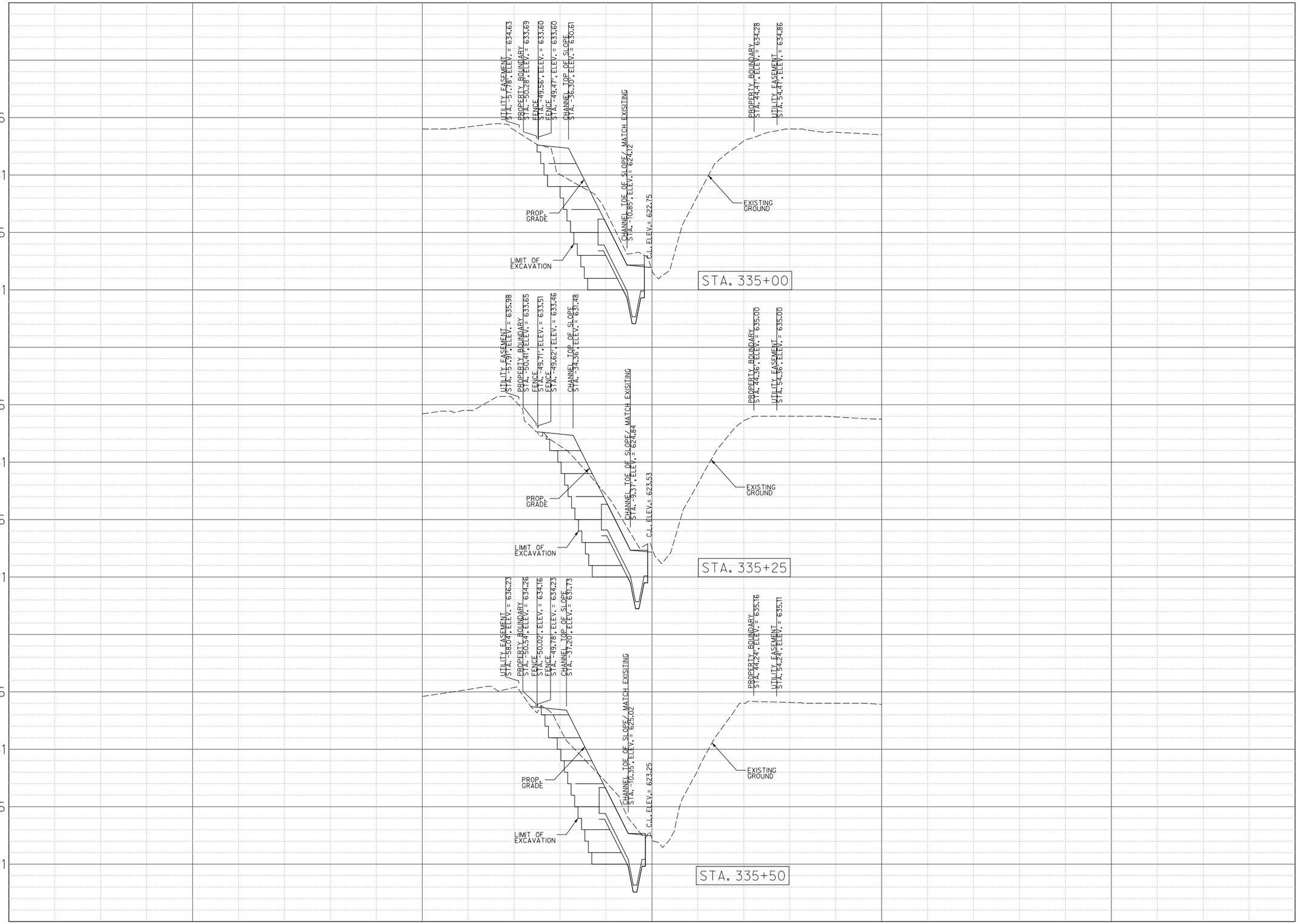

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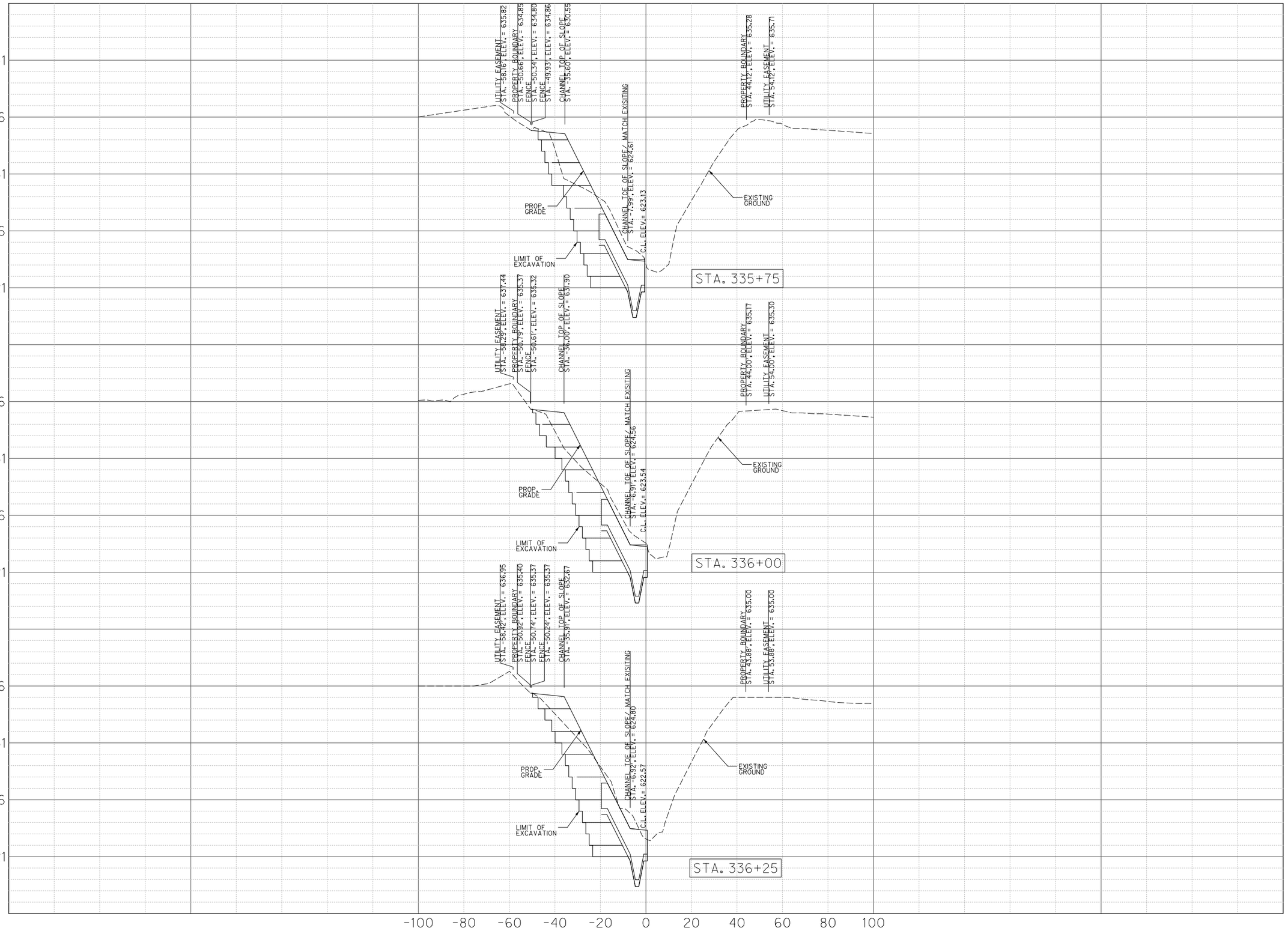

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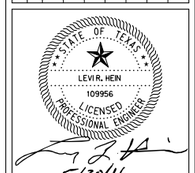

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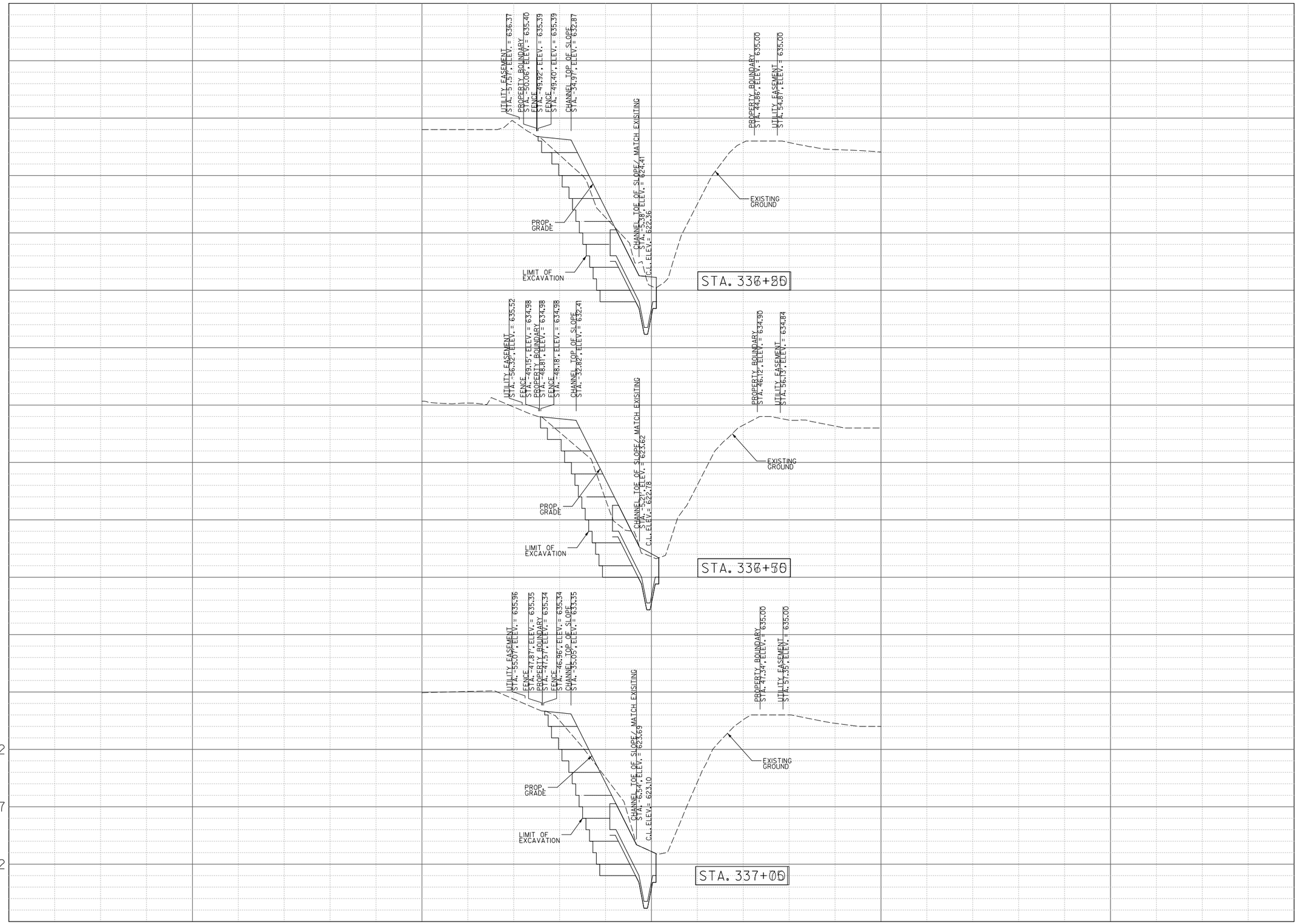

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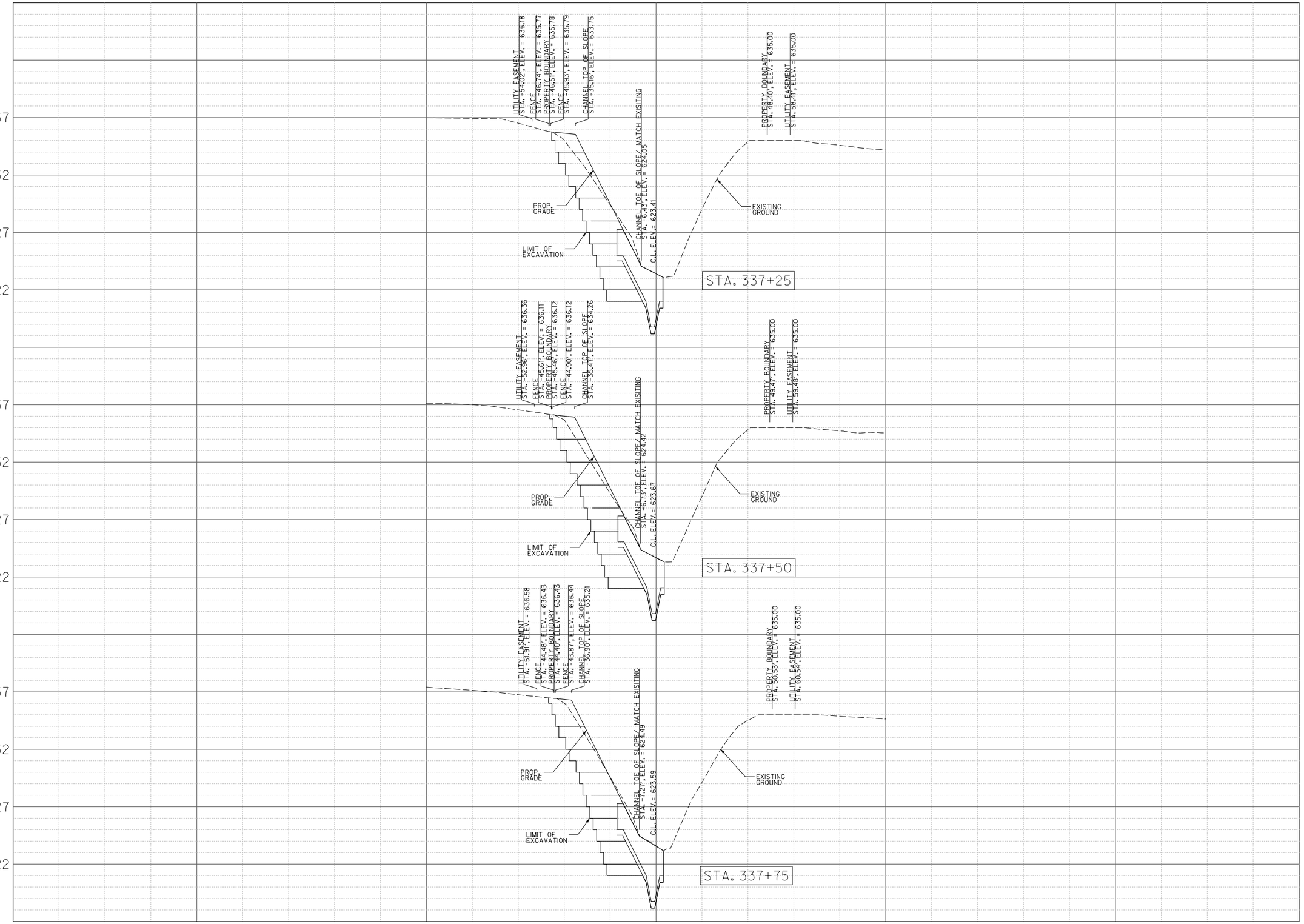

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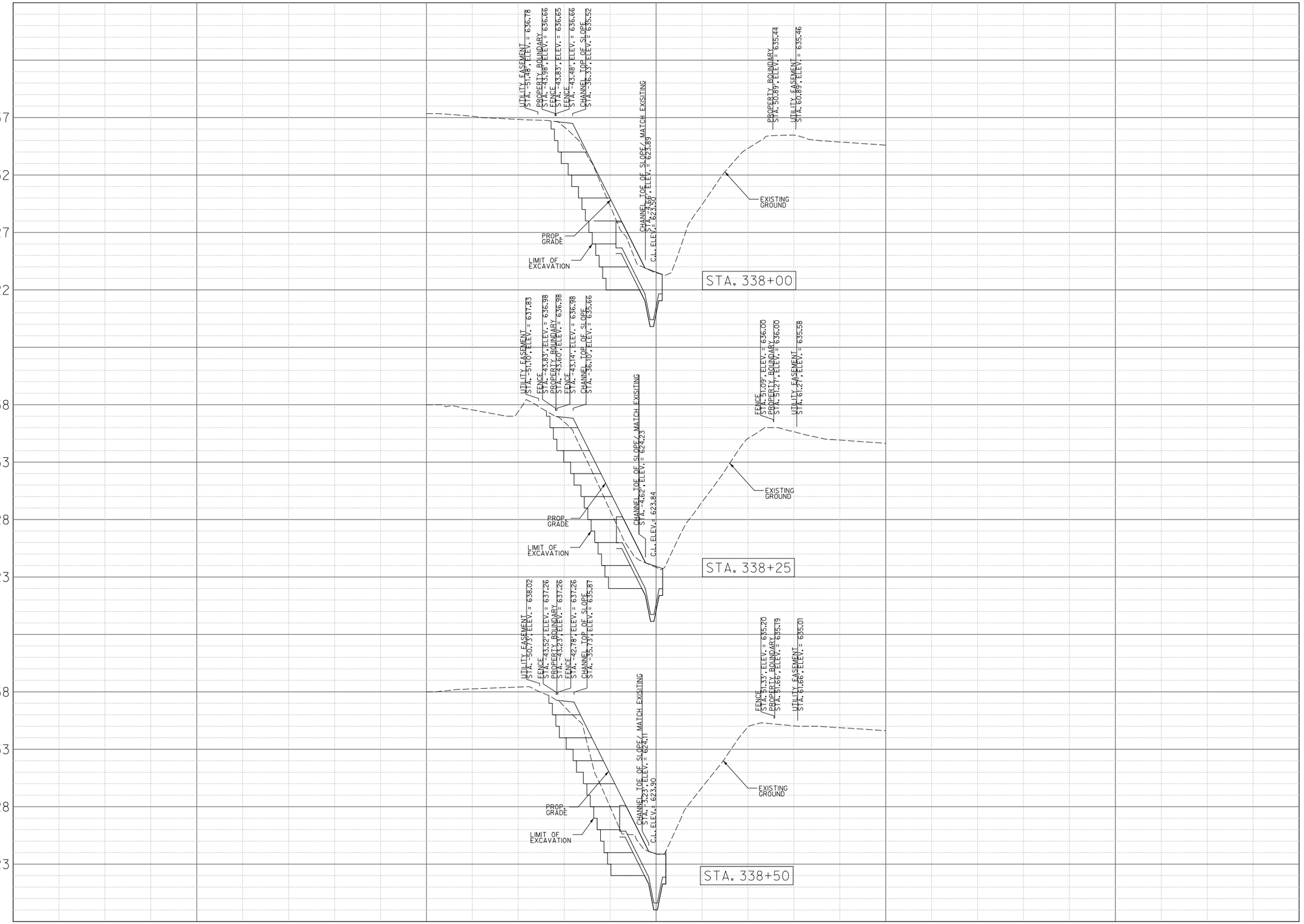

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7/14/2016

NORTH RICHLAND HILLS

CALLOWAY BRANCH
CHANNEL IMPROVEMENTS
North Richland Hills, TX

HALFF
TBPE FIRM # 312
4000 FOSSIL CREEK BLVD.
FORT WORTH, TEXAS 76137-2797
TEL (817) 847-1422
FAX (817) 232-0784

Revision No.	Date	Description

STATE OF TEXAS
LEVI R. HEIN
109956
LICENSED PROFESSIONAL ENGINEER
5/20/16

Project No.:	31248
Issued:	06-13-2016
Drawn By:	JTO
Checked By:	LRJ
Scale:	1"=40'

Sheet Title
CROSS SECTIONS

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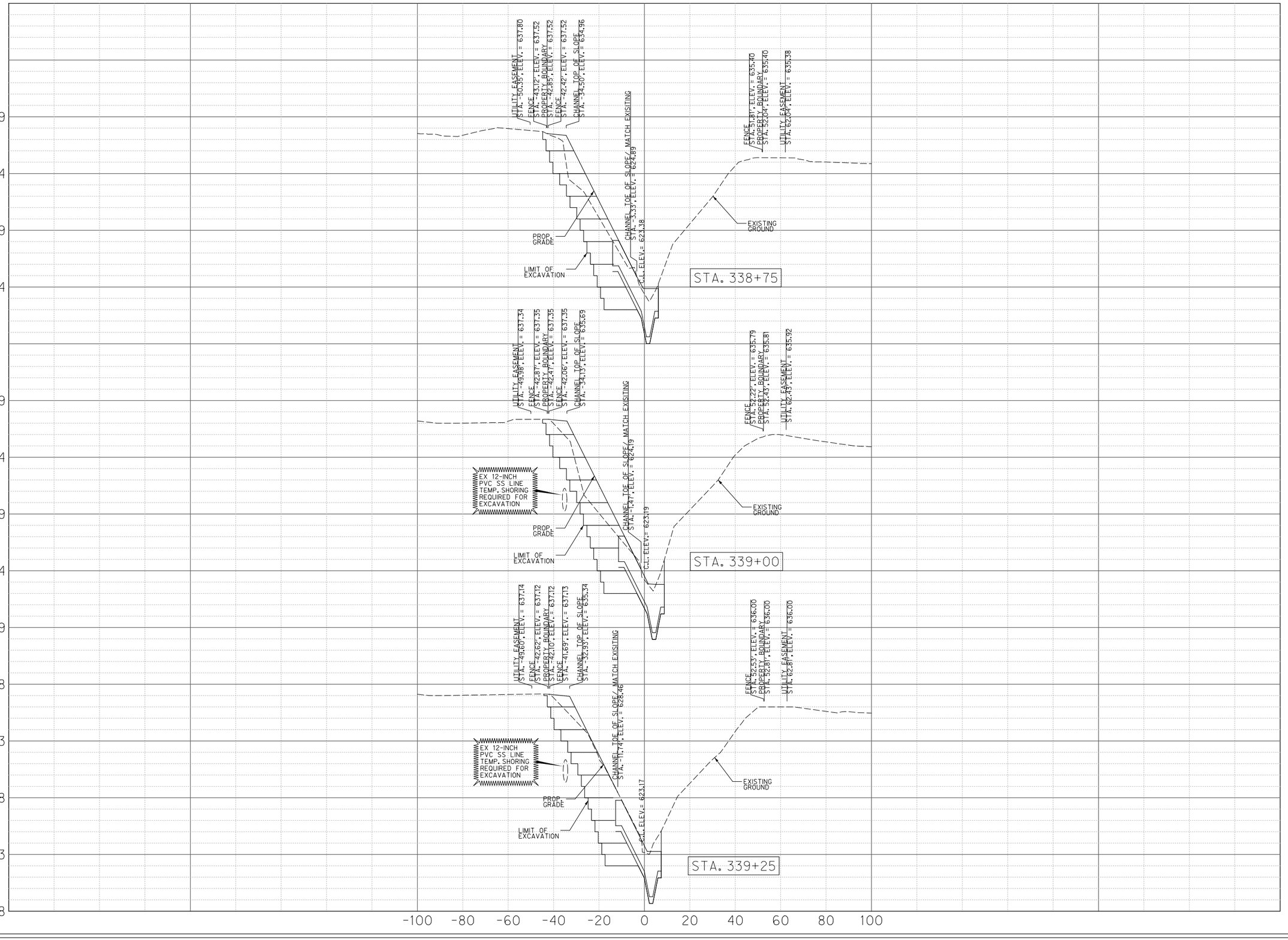

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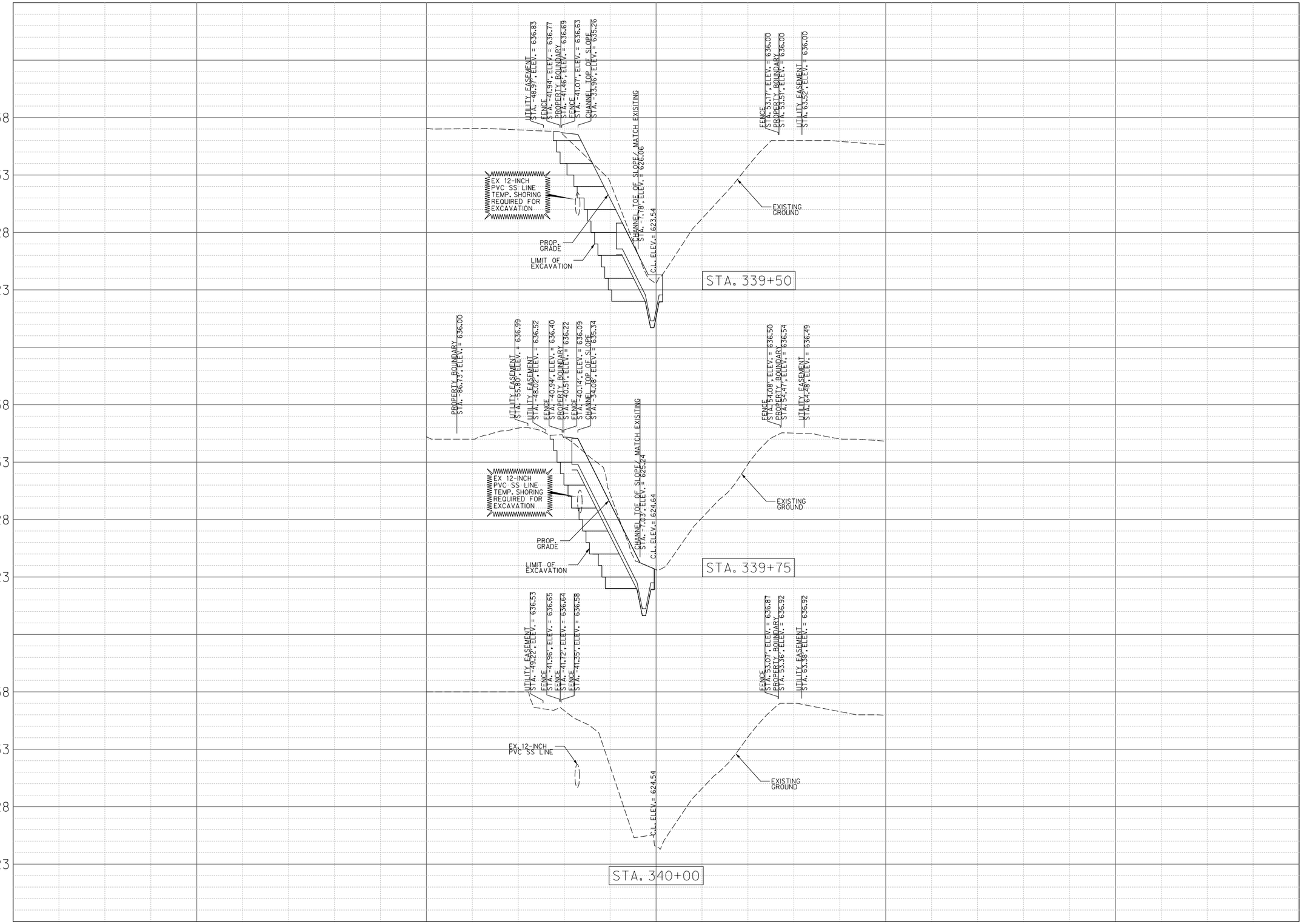
CROSS SECTIONS

C7.11
Sheet Number



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Sheet Title
CROSS SECTIONS

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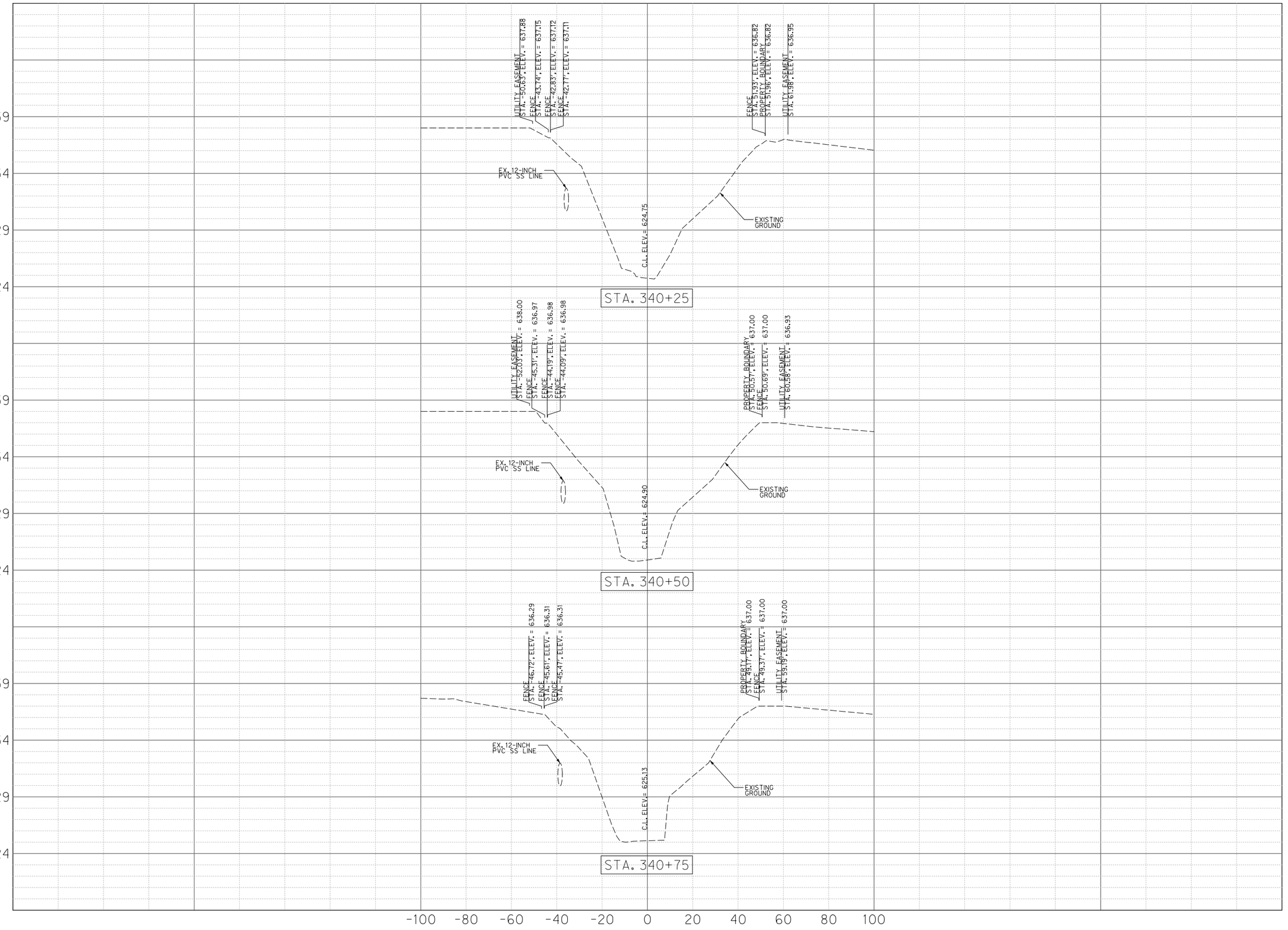

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Scale:	1"=40'

Sheet Title
CROSS SECTIONS

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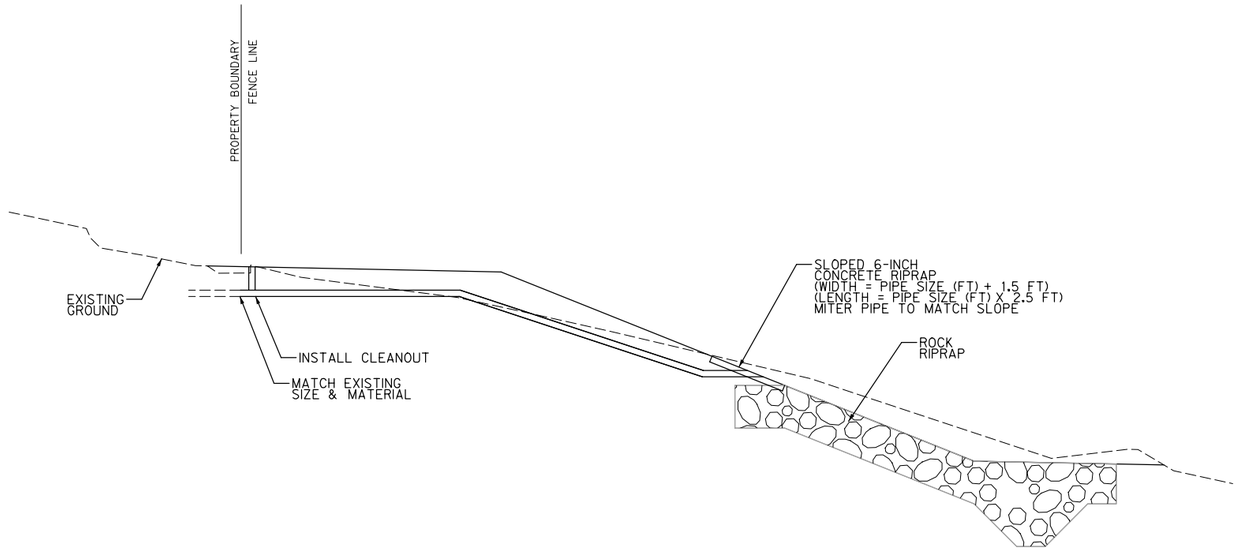
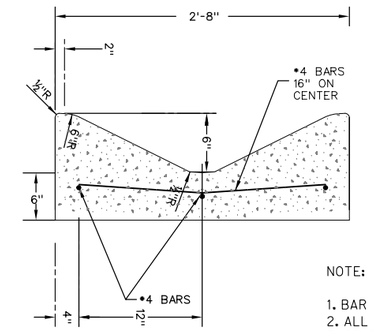
Sheet Number



1. CONTRACTOR SHALL ONLY USE PREFABRICATED CONNECTION, BENDS, AND TEES.

2. DRAIN EXTENSIONS SHALL BE PAID UNDER BID ITEM LANDSCAPE DRAIN.

1 DRAIN EXTENSION DETAIL
N.T.S



LIMITS OF FLUME PER PLAN.

NOTE:

1. BAR SPLICES, LAP BARS 40 DIAMETERS AND TIE.
2. ALL HAND POURS SHALL BE 6 SACK.
3. CONTRACTOR SHALL INSTALL FLUME 1.5-FT OFFSET FROM THE PROPOSED FENCE.

2 FLUME DETAIL
N.T.S

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5/20/16

Project No.:	31248
Issued:	06-13-2016
Drawn By:	JTO
Checked By:	LRH
Scale:	NTS

Sheet Title
MISCELLANEOUS DETAILS

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