City
of
Hurst

SPECIFICATIONS AND
CONTRACT DOCUMENTS
for the construction of

West Pipeline Road Improvements Phase 4 from Harrison Lane to Brown Trail

By

2601 Meacham Blvd., Ste 600
Fort Worth, Texas 76137

Hurst Project No. 6416-101 *March 2026*

MAYOR
Henry Wilson

COUNCIL MEMBERS
Jimmy Meeks
John Miller
Cathy Butler Brotherton
Gary N. Waldron
Jon McKenzie
Trasa Cobern

CITY MANAGER: Clay Caruthers

EXEC. DIRECTOR OF PUBLIC WORKS:

Robert Sauceda, P.E.

CITY ENGINEER: Duane Hengst, P.E.

Hurst, Texas

"A Quality of Life City"

West Pipeline Road Improvements Phase 4

PROJECT NO. 6416-101

APPROVED _____
CLAY CARUTHERS, CITY MANAGER — DATE

APPROVED _____ 3/23/26
ROBERT SAUCEDA, P.E., EXEC. DIRECTOR OF PUBLIC WORKS — DATE

APPROVED _____ 3/23/2026
DUANE HENGST, P.E., CITY ENGINEER — DATE

SPECIFICATIONS

and

CONTRACT DOCUMENTS

for the

CONSTRUCTION

of

West Pipeline Road Improvements Phase 4

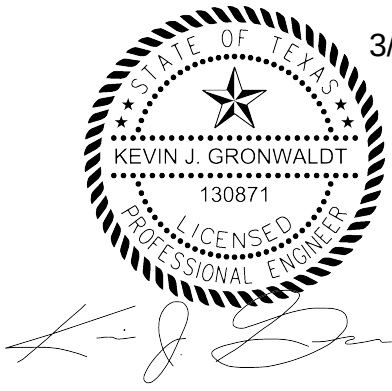
Project No. 6416-101

MARCH 2026

CITY OF HURST

Public Works Department
Engineering & Operations Divisions

Halff Associates, Inc.
TBPELS Eng. Firm No. F-312



3/19/2026

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This set of Contract Documents and Specifications should contain, and should be checked for:

2) NOTICE TO BIDDERS

NOTICE TO BIDDERS

Sealed Bids addressed to:

Jerry Lewandowski, CPPO, Director of Purchasing & Risk Management
Attn: Bid No. 26-004
City of Hurst
1505 Precinct Line Road
Hurst, Texas 76054-3395

will be received at the office of the City's Risk/Purchasing Managers office at City Hall until **2:00 P.M., Wednesday, April 29, 2026** and then publicly opened via virtual public meeting and read aloud, for furnishing all tools, labor, material and equipment and performing all work required for the construction of:

West Pipeline Road Improvements Phase 4,
From Harrison Lane to Brown Trail, Project No. 6416-101

Bids may be submitted by either of the two following methods:

For electronic bids go to http://www.hursttx.gov/ and click on "**ABOUT US**" click on "**DEPARTMENTS**" Click on "**PURCHASING**" click on "**Supplier Resource and Registration**" click on "**Supplier Registration**" and follow instructions. Bids can also be mailed or delivered to the City at the address above. For any questions concerning bidding process please contact Jerry Lewandowski, Director of Purchasing and Risk Management, at 817-788-7018

Submitted bids must be in sealed envelopes upon the blank form of proposal furnished and envelopes shall be marked in the upper left hand corner with project title and bid opening date and time. All proposals shall be accompanied by a bid bond from a corporate surety (with the appropriate "Powers of Attorney") or by a cashier's or certified check upon a national or state bank in the amount of five percent (5%) of the total maximum bid, as a guarantee that bidder will enter into a contract and execute performance, payment and maintenance bonds within ten (10) days after notice of award of contract to him.

All bidders will be required to comply with provision 5159a of "Vernon's Annotated Civil Statutes" of the State of Texas with respect to the payment of prevailing wage rates.

The successful bidder must furnish performance bond, payment bond, and maintenance bond (with the appropriate "Powers of Attorney") in the amount of one hundred percent (100%) of the contract price from an approved surety company holding a permit from the State of Texas to act as surety of other surety or sureties acceptable to the City of Hurst **(performance, payment and maintenance bonds will not be required on contracts less than $25,000.00).** The maintenance bond shall be in effect for a period of two (2) years after final acceptance of the work. The surety company must be treasury listed.

Plans, specifications and bidding documents may be secured from the office of Halff Associates, Inc., upon a non-refundable payment of one hundred dollars ($100.00) per set. Bidders are encouraged to call ahead before picking up plans, specifications, and bidding documents. You may also obtain electronic copies of Plans and Specifications by going to http://www.hursttx.gov/ and click on "**ABOUT US**" click on "**DEPARTMENTS**" click on "**PURCHASING**" click on "**Supplier Resource and Registration"** click on "**Supplier Registration**" and follow instructions to register.

Bidders are strongly encouraged to attend a pre-bid meeting for unique design discussion via virtual public meeting at 10:00 A.M. on Wednesday, April 15, 2026.

Information on how to attend the virtual bid opening and the virtual pre-bid meeting will be sent to all

registered vendors and contractors on this project. If you want to attend virtually but are note registered, please contact Jerry Lewandowski, Director of Purchasing and Risk Management, at 817-788-7018 for virtual meeting login information.

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

Executive Director of Public Works
Robert Sauceda, P.E.

Advertise: March 29, 2026
April 5, 2026

3) INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

1. The notice of award of contract shall be given by the OWNER within forty five (45) days following the opening of bids. The bid security must be enclosed in the same envelope with the bid. Bids without check or 5% bid bond will not be considered.

2. Upon request of the Bidder, all bid securities will be returned to the respective bidders within seven (7) days after bids are opened, except those that the OWNER elects to hold until the successful bidder has executed the contract. Thereafter, and upon request, all remaining securities will be returned within sixty (60) days.

3. Each Bidder must be prepared to submit within five (5) days of the Owner's request a written Statement of Bidder's Qualifications, a blank copy of which will be provided by the Owner, a list of the Proposed Subcontractors and Suppliers, and proof of insurability for Statutory Workers Compensation Insurance. The submitted Statement of Bidder's Qualifications shall then be made a binding part of this contract.

4. Plans and Specifications may be secured at a non-refundable cost of one hundred dollars ($100.00) per set.

5. Bidders should carefully examine the plans, specifications and other documents, visit the site of the work, and fully inform themselves as to all conditions and matters which can in any way affect the work or the costs thereof.

6. Bidders desiring further information, or interpretation of the plans or specifications, must make a request for such information through the City's Public Purchase website prior to seventy-two (72) hours before the bid opening. Answers to all such requests will be given via the City's Public Purchase website, in Addendum form, and all Addenda will be bound with, and 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 omissions from, the plans and specifications, or other contract documents, or should he be in doubt as to their meaning, he should at once notify Halff Associates, Inc. in order that a written Addendum may be sent to all bidders. No Addenda will be issued within forty-eight (48) hours of the opening of bids. The proposal as submitted by the BIDDER will be so constructed as to include any Addenda if such are issued by the ENGINEER prior to forty-eight (48) hours of the opening of bids.

7. Within fourteen (14) days of receipt of notice of award of contract, the Contractor must provide, along with executed contract documents and appropriate bonds, proof of insurance for Worker's Compensation and Comprehensive General Liability Insurance in the amounts required in the General and Supplemental Conditions. An insurance form is provided in this set of bid documents. If this form is not used and another form substituted, all information requested and cross-outs shown on our form shall be required. The City reserves the right to request any other insurance coverage as may be required by each individual project.

8. If the Contractor wishes to work overtime (more than thirty minutes per day) he must get overtime approval by the City Engineer at least 24 hours in advance and must agree to pay the City for the inspector's time at a rate of seventy-five dollars ($75.00) per hour. If the Contractor arranges to work on a weekend day and for any reason does not or cannot work, he will be responsible for a minimum of two (2) hours pay for the inspector. An After Hours Permit is available if needed for a fee.

9. In case of conflict or discrepancies between the various parts of Contract Documents the priority order of precedence, subject to the ruling of the City Engineer, shall generally, be as follows: the Plans; the Proposal Contract and Pay Item Specifications included herein; appropriate City Ordinances; the remainder of this document; the latest revisions of Standard Specifications for Construction, Texas Department of Transportation; and then the North Texas Council Of Governments Standard Specifications for Public Works Construction.

10. Contractor covenants and agrees to, and does hereby, indemnify, hold harmless and defend Owner, its officers, agents, servants and employees, from and against any and all claims or suits for property damage or loss and/or personal injury, including death, to any and all persons, of whatsoever kind or character, whether real or asserted, arising out of, or in connection with, directly or indirectly, the work and services to be performed hereunder by Contractor, its officers, agents, employees, contractors, subcontractors, licensees or invitees, whether or not caused, in whole or in part, by alleged negligence on the part of officers, agents, servants, employees, contractors, subcontractors, licensees and invitees of the Owner; and said Contractor does hereby covenant and agree to assume all liability and responsibility of owner, its officers, agents, servants and employees for property damage or loss, and /or personal injuries, including death, to any and all persons of whatsoever kind of character, whether real or asserted, arising out of or in connection with, directly or indirectly, the work and services to be performed hereunder by the Contractor, its officers, agents, employees, contractors, subcontractors, licensees and invitees, whether or not caused, in whole or in part, by alleged negligence of officers, agents, servants, employees, contractors, subcontractors, licensees or invitees of the Owner. Contractor likewise covenants and agrees to, and does hereby, indemnify and hold harmless Owner from and against all injuries, loss or damages to property of the Owner during the performance of any of the terms and conditions of this Contract, whether arising out of or in connection with or resulting from, in whole or in part, any and all alleged acts or omissions of officers, agents, servants, employees, contractors, subcontractors, licensees, or invitees of the Owner.

    In the event a written claim for damages against the Contractor or its subcontractors remains unsettled at the time all work on the project has been completed to the satisfaction of the City Engineer, as evidenced by a final inspection, final payment to the Contractor shall not be recommended by the City Engineer for a period of 30 days after the date of such final inspection, unless the Contractor shall submit written evidence satisfactory to the Engineer that the claim has been settled and a release has been obtained from the

claimant involved.

Although the claim concerned remains unsettled as the expiration of the above 30 day period, the Contractor may be deemed to be entitled to a semi-final payment for work completed, such semi-final payment to be in an amount equal to the total dollar amount then due less the dollar value of any written claims pending against the Contractor arising out of the performance of such work, and such semi-final payment may then be recommended by the Engineer.

The City Engineer shall not recommend final payment to a Contractor against whom such a claim for damage is outstanding for a period of six months following the date of the acceptance of the work performed unless the Contractor submits evidence in writing satisfactory to the City Engineer that:

(1) The claim has been settled and a release has been obtained from the claimant involved,

or

(2) Good faith efforts have been made to settle such outstanding claims, and such good faith efforts have failed.

If condition (1) above is met at any time within the six month period, the City Engineer shall recommend that the final payment to the Contractor be made. If condition (2) above is met at any time within the six month period, the City Engineer may recommend that the final payment to the Contractor be made. At the expiration of the six month period the City Engineer may recommend that final payment be made if all other work has been performed and all other obligations of the Contractor have been met to the satisfaction of the City Engineer.

The Director may, if he deems it appropriate, refuse to accept bids on other City of Hurst Contract work from a Contractor against whom a claim for damages is outstanding as a result of work performed under a City Contract.

11. SAFETY RESTRICTIONS - WORK NEAR HIGH VOLTAGE LINES

The procedure as outlined below will be followed when working near High Voltage Lines.

a.) Equipment that may be operated within ten feet of high voltage lines shall have an insulting cage-type of guard about the boom or arm, except back hoes or dippers, and insulator links on the lift hood connections.

b.) When necessary to work within six feet of high voltage electric lines, notification shall be given the power company (Oncor Electric) by the Contractor. The power company will erect temporary mechanical barriers, de-energize the line, raise or lower the line or advise the Contractor of precautions that should be taken. Any work performed by the power company shall be at the expense of the Contractor. A log of all notifications to the power company and the action taken shall be kept by the Contractor.

c.) The Contractor is required to make arrangements with the appropriate electric power company for the temporary relocation or raising of high voltage lines at the Contractor's sole cost and expense.

d.) No person shall work within six feet of a high voltage line without protection having been taken as outlined in Paragraph b.

12. The location of underground facilities indicated on the plans are taken from public records. By state law, it is the Contractor's responsibility to contact the owners of such underground facilities a minimum of 48 hours prior to working in the area to confirm their locations and to determine whether any additional facilities, other than the ones shown on the plans, may be present. The Contractor shall contact Dig-Tess at 1-800-DIG-TESS and other underground location companies and shall have all underground facilities located and marked on the ground 48 hours prior to beginning any work on the project. The Contractor shall preserve and protect all underground facilities, including but not limited to the following:

UNDERGROUND FACILITY OWNER	TELEPHONE NUMBER
Atmos Energy	(817) 303-2911
Oncor Electric	(817) 355-7019
AT&T	(817) 794-5225
City of Hurst	(817) 788-7212
Charter Spectrum	(469) 416-1191

13. Contractor will be responsible for supplying and placing all necessary barricades to conform to the Manual on Uniform Traffic Control Devices (MUTCD), (Current Edition), and the City of Hurst Barricade Manual.

14. The General Contractor shall provide one person, with authority to make decisions, to be in charge from the beginning to the end of the project. This person to be referred to as the contractor's project manager shall be at the work site at all times to coordinate all phases of the work and the work of the various subcontractors. Changes to contractor's project manager shall be given 3-day notice in writing.

15. The Contractor can obtain water, at his cost, from any City fire hydrant by placing a deposit with the Water Department at Hurst City Hall for a fire hydrant meter. An approved fire hydrant wrench must be used to turn on water. Water shall not be obtained from a residential faucet.

16. The Contractor shall provide and pay for all material testing for paving, drainage, water and sewer improvements installed. The type and number of tests to be performed shall be in accordance with the City of Hurst Specifications. For clarification contact the Public Works Department.

17. **It is required the Contractor create a videotape in DVD & USB format of the above ground existing condition of the project site. House and building foundations, pools, storage buildings, fences, trees, landscaping, and any other item which may**

be affected by the construction should be included in the video in sufficient detail. A copy of the video will be given to the City Engineer at the Preconstruction Conference meeting or before the meeting.

18. **CONFLICT OF INTEREST**

Pursuant to the requirements of Section 176.002(a) of the Texas Local Government Code, Suppliers or Respondents who meet the following criteria must fill out a conflict of interest questionnaire no later than the 7th day after the person begins contract discussions or negotiations with the City or submits to the City an application, response to a request for proposals or bids, correspondence or another writing related to a potential agreement with the City:

A Supplier or Respondent that:

(1) contracts or seeks to contract for the sale or purchase of property, goods, or services with a local governmental entity; or

(2) is an agent of a person described in Subdivision (1) in the person's business with a local governmental entity. Any person who meets the criteria. As for enforcement to ensure the veracity of the Suppliers, the statute makes it a Class C Misdemeanor to violate the Supplier disclosure provisions.

Additional information and the form to be used to file this notice can be found at:

www.ethics.state.tx.us/whatsnew/conflict_forms.htm.

By submitting a response to this Bid/RFP, supplier, contractor or person represents that it is in compliance with the requirements of Chapter 176 of the Texas Local Government Code.

4) PROPOSAL

PROPOSAL
Project No. 6416-101

TO: Honorable Mayor and City Council
City of Hurst
1505 Precinct Line Rd.
Hurst, Texas 76054

FOR: **West Pipeline Road Improvements Phase 4**
Project No. 6416-101

The undersigned, as bidder, declares that the only person or parties interested in this proposal as principals are those named herein, that this proposal is made without collusion with any other person, firm or corporation; that he has carefully examined the form of contract, Notice to Bidders, specifications, and the plans therein referred to, and has carefully examined the locations, conditions and classes of material of proposed work; and agrees that he will provide all the necessary labor, machinery, tools, apparatus, and other items incidental to construction, and will do all the work and furnish all the materials called for in the contract and specifications in the manner prescribed therein and according to the requirements of the ENGINEER as therein set fourth.

It is understood that the following quantities of work shown are approximate only, and are intended principally to serve as a guide in evaluating bids.

It is further agreed that the materials to be furnished and the quantities of work to be done at the unit prices bid may be increased or diminished as may be considered necessary, in the opinion of the ENGINEER, to complete the work fully as planned and contemplated, and that all quantities of work, whether increased or decreased are to be performed at the unit prices set forth below except as provided for in the specifications.

It is further agreed that lump sum prices may be increased to cover additional work ordered by the ENGINEER, but not shown on the plans or required by the Specifications, in accordance with the provisions of the General Conditions. Similarly, they may be decreased to cover deletion of work so ordered.

It is understood and agreed that the work is to be completed in full within **600 Calendar days** after the date stated in the work order or the Notice to Proceed. The calendar days noted includes the 60 days for ATMOS to install their new transmission main (if needed). If ATMOS completes their work prior to issuance of the Notice to Proceed (NTP), then work is to be completed in full within **540 Calendar days** after the date stated in the work order or the Notice to Proceed.

Accompanying this proposal is a certified 5% Bidder's Bond or Cashier's check payable to the City of Hurst.

The bid security accompanying this proposal shall be returned to the bidder, unless in case of the acceptance of the proposal the bidder shall fail to execute a contract and file a performance bond, maintenance bond, and a payment bond within fourteen (14) days after its acceptance, in which case the bid security shall become the property of the City of Hurst, and shall be considered as payment for damages due to delay and other inconveniences suffered by the City of Hurst on

account of such failure of the bidder.

It is understood that the City of Hurst reserves the right to reject any and/or all bids, to waive any and/or all irregularities and to adopt the most advantage construction of the stated prices in case of ambiguity or lack of clarity.

In the event of the award of a contract to the undersigned, the undersigned will furnish a performance bond, a payment bond and a two year maintenance bond for the full amount of the contract, to secure proper compliance with the terms and provisions of the contract, to insure and guarantee the work until final completion and acceptance, and to guarantee payment of all lawful claims for labor performed and materials furnished in fulfillment of the contract. **Note that at Owner's discretion performance, payment and maintenance bonds may not be required on contracts less than $25,000.00.**

The proposed work shall be accepted when fully completed and finished in accordance with the plans and specifications to the satisfaction of the ENGINEER.

The undersigned certifies that the bid prices contained in this proposal have been carefully checked and are submitted as correct and final.

The 1985 Session of the Texas Legislature passed House Bill 620 which provides that, in order to be awarded a contract as low bidder, non-resident bidders (out-of-state contractors whose corporate offices and/or principal place of business are outside of the state of Texas) bid projects for construction, improvements, supplies or services in Texas at an amount lower than the lowest Texas resident bidder by the same amount that a Texas resident bidder would be required to underbid a non-resident bidder in order to obtain a comparable contract in the state in which the non-resident's principal place of business is located. **The appropriate blanks in Section A below must be filled out by all non-resident bidders in order for their bid to meet specifications. The failure of non-resident contractors to do so will automatically disqualify that bidder. Resident bidders must so indicate in the space provided in Section B.**

A) 1. Non-resident vendors in _____(give state), our principal place of business, are required to be _____ percent lower than resident bidders by state law. A copy of the statute is attached.

2. Non-resident vendors in _____(give state), our principal place of business, are not required to underbid resident bidders.

B) [ ] Our principal place of business or corporate offices are in the State of Texas.

Receipt is hereby acknowledged of the following addenda to the contract documents:

Addendum No. 1 dated _____ Received _____

Addendum No. 2 dated _____ Received _____

Addendum No. 3 dated _____ Received _____

Addendum No. 4 dated _____ Received _____

It is understood that unit and lump sum prices must be shown in words and figures for each item listed in this proposal, and in the event of discrepancy, the words shall control. Should bid prices or any item be omitted, the right is reserved by the City to apply the lowest prices submitted by any other bidders for the omitted items in payment for work done under this proposal.

It is further agreed that item quantities shall be measured and paid for by quantity actually constructed or installed for each bid item. Contractor shall only be paid for work on bid items actually performed.

PROPOSAL FORM

CITY OF HURST PROJECT NO. 6416-101
WEST PIPELINE ROAD IMPROVEMENTS PHASE 4 FROM HARRISON LANE TO BROWN TRAIL

SECTION I- PAVING AND DRAINAGE

ITEM No.	*APPROX. QUANTITY*		*DESCRIPTION OF ITEMS WITH BID PRICES WRITTEN IN WORDS*	*UNIT PRICE*	*TOTAL AMOUNT*
1	60	DAY	**ATMOS COORDINATION (if needed)**; Per Day _____ _____ Dollars _____ Cents	_____	_____
2	2	EA	**PROJECT SIGNS**; Per Each _____ _____ Dollars _____ Cents	_____	_____
3	1	LS	**JOINT STORM WATER POLLUTION PREVENTION PLAN**; Per Lump Sum _____ _____ Dollars _____ Cents	_____	_____
4	1,500	SY	**SOLID SOD**; Per Square Yard _____ _____ Dollars _____ Cents	_____	_____
5	1	LS	**GENERAL SITE PREPARATION**; Per Lump Sum _____ _____ Dollars _____ Cents	_____	_____
6	1	LS	**RIGHT OF WAY PREPARATION;** Per Lump Sum _____ _____ Dollars _____ Cents	_____	_____

7	1	EA	**REMOVE & REPLACE STREET LIGHT AND PEDESTAL**; Per Each _____ Dollars _____ Cents	_____	_____
8	1	LS	**UNCLASSIFIED STREET EXCAVATION**; Per Lump Sum _____ Dollars _____ Cents	_____	_____
9	1	LS	**UNCLASSIFIED CHANNEL EXCAVATION**; Per Lump Sum _____ Dollars _____ Cents	_____	_____
10	13,300	SY	**6-INCH THICK CEM-LIME STABILIZED SUBGRADE**; Per Square Yard _____ Dollars _____ Cents	_____	_____
11	210	TON	**FURNISH CEM-LIME MATERIAL**; Per Ton _____ Dollars _____ Cents	_____	_____
12	12,500	SY	**9-INCH THICK, 3,600 PSI PORTLAND CEMENT REINFORCED CONCRETE PAVEMENT**; Per Square Yard _____ Dollars _____ Cents	_____	_____
13	20,100	SF	**4-INCH THICK, 3,600 PSI PORTLAND CEMENT CONCRETE FOR SIDEWALKS**; Per Square Foot _____ Dollars _____ Cents	_____	_____

14	6,000	SF	**6-INCH THICK, 3,600 PSI PORTLAND CEMENT CONCRETE FOR DRIVEWAY APPROACHES**; Per Square Foot _____ Dollars _____ Cents	_____	_____
15	910	SY	**2-INCH ASPHALT TYPE "D" HMAC**; Per Square Yard _____ Dollars _____ Cents	_____	_____
16	165	SY	**4-INCH ASPHALT TYPE "B" HMAC**; Per Square Yard _____ Dollars _____ Cents	_____	_____
17	7,400	SF	**STAINED AND STAMPED CONCRETE MEDIAN**; Per Square Foot _____ Dollars _____ Cents	_____	_____
18	2,000	SF	**STAINED AND STAMPED CONCRETE CROSSWALK**; Per Square Foot _____ Dollars _____ Cents	_____	_____
19	12	EA	**BARRIER-FREE RAMP**; Per Each _____ Dollars _____ Cents	_____	_____
20	50	LF	**CONCRETE CURB & GUTTER**; Per Linear Foot _____ Dollars _____ Cents	_____	_____
21	400	LF	**INTEGRAL SIDEWALK WALL LESS THAN 1' TALL**; Per Linear Foot _____ Dollars _____ Cents	_____	_____

22	375	LF	**ANCHORAGE JOINT**; Per Linear Foot			
				Dollars		
				Cents		
23	280	LF	**CONCRETE PAVEMENT HEADER**; Per Linear Foot			
				Dollars		
				Cents		
24	1	LS	**MISCELLANEOUS PAVING ALLOWANCE**; Per Lump Sum			
			One Hundred Thousand	Dollars		
			Zero	Cents	$ 100,000.00	$ 100,000.00
25	620	SF	**INTEGRAL RETAINING WALL 1' AND TALLER**; Per Square Foot			
				Dollars		
				Cents		
26	260	LF	**18-INCH CLASS III REINFORCED CONCRETE STORM DRAIN**; Per Linear Foot			
				Dollars		
				Cents		
27	220	LF	**21-INCH CLASS III REINFORCED CONCRETE STORM DRAIN**; Per Linear Foot			
				Dollars		
				Cents		
28	260	LF	**24-INCH CLASS III REINFORCED CONCRETE STORM DRAIN**; Per Linear Foot			
				Dollars		
				Cents		

29	30	LF	**30-INCH CLASS III REINFORCED CONCRETE STORM DRAIN**; Per Linear Foot _____ Dollars _____ Cents	_____	_____
29	230	LF	**42-INCH CLASS III REINFORCED CONCRETE RADIUS STORM DRAIN**; Per Linear Foot _____ Dollars _____ Cents	_____	_____
30	850	LF	**42-INCH CLASS III REINFORCED CONCRETE STORM DRAIN**; Per Linear Foot _____ Dollars _____ Cents	_____	_____
31	40	LF	**60-INCH CLASS III REINFORCED CONCRETE STORM DRAIN**; Per Linear Foot _____ Dollars _____ Cents	_____	_____
32	3	EA	**5-FOOT SQUARE STORM DRAIN MANHOLE**; Per Each _____ Dollars _____ Cents	_____	_____
33	1	EA	**6-FOOT SQUARE STORM DRAIN MANHOLE**; Per Each _____ Dollars _____ Cents	_____	_____
34	8	EA	**10-FOOT STANDARD CURB INLET**; Per Each _____ Dollars _____ Cents	_____	_____

35	1	EA	**10-FOOT SPECIAL CURB INLET**; Per Each Dollars Cents			
36	4	EA	**15-FOOT STANDARD CURB INLET**; Per Each Dollars Cents			
37	10	EA	**20-FOOT STANDARD CURB INLET**; Per Each Dollars Cents			
38	1	EA	**20-FOOT SPECIAL TXDOT PCU INLET**; Per Each Dollars Cents			
39	25	SY	**CONCRETE FLUME**; Per Square Yard Dollars Cents			
40	1	LS	**MISCELLANEOUS DRAINAGE ALLOWANCE**; Per Lump Sum Forty-Five Thousand Dollars Zero Cents		$ 45,000.00	$ 45,000.00
41	1	LS	**BARRICADES, WARNING AND DETOUR SIGNS**; Per Lump Sum Dollars Cents			
42	1	LS	**PAVEMENT MARKINGS AND SIGNAGE**; Per Lump Sum Dollars Cents			

43	40	LF	**TXDOT PR-11 PEDESTRIAN RAIL**; Per Linear Foot _____ _____ Dollars _____ Cents	_____	_____
			Total Section I - PAVING AND DRAINAGE	_____	_____

SECTION II - WATER

ITEM No.	*APPROX. QUANTITY*		*DESCRIPTION OF ITEMS WITH BID PRICES WRITTEN IN WORDS*	*UNIT PRICE*	*TOTAL AMOUNT*
44	17	EA	**12-INCH GATE VALVE**; Per Each _____ _____ Dollars _____ Cents	_____	_____
45	7	EA	**8-INCH GATE VALVE**; Per Each _____ _____ Dollars _____ Cents	_____	_____
46	6	EA	**6-INCH GATE VALVE**; Per Each _____ _____ Dollars _____ Cents	_____	_____
47	8	EA	**INSTALL FIRE HYDRANT ASSEMBLY**; Per Each _____ _____ Dollars _____ Cents	_____	_____
48	4	EA	**FIRE SERVICE CONNECTION**; Per Each _____ _____ Dollars _____ Cents	_____	_____
49	12	EA	**RELOCATE EXISTING WATER METER**; Per Each _____ _____ Dollars _____ Cents	_____	_____

50	8	EA	**INSTALL NEW WATER METER BOX**; Per Each _____ Dollars _____ Cents	_____	_____
51	50	LF	**CONCRETE ENCASEMENT FOR WATER LINES**; Per Linear Foot _____ Dollars _____ Cents	_____	_____
52	170	LF	**4-INCH AWWA C900 PVC DR 18 WATER LINE**; Per Linear Foot _____ Dollars _____ Cents	_____	_____
53	280	LF	**6-INCH AWWA C900 PVC DR 18 WATER LINE**; Per Linear Foot _____ Dollars _____ Cents	_____	_____
54	320	LF	**8-INCH AWWA C900 PVC DR 18 WATER LINE**; Per Linear Foot _____ Dollars _____ Cents	_____	_____
55	2,100	LF	**12-INCH AWWA C900 PVC DR 18 WATER LINE**; Per Linear Foot _____ Dollars _____ Cents	_____	_____
56	40	LF	**12-INCH AWWA C900 PVC DR 18 WATER LINE WITHIN CONCRETE ENCASEMENT**; Per Linear Foot _____ Dollars _____ Cents	_____	_____

57	130	LF	**12-INCH AWWA C900 PVC DR 18 WATER LINE WITHIN STEEL ENCASEMENT BY OTHER THAN OPEN CUT**; Per Linear Foot			
				Dollars Cents		
58	6	EA	**WATER SERVICE LINE (LONG SERVICE) INCLUDING PVC CASING PIPE**; Per Each			
				Dollars Cents		
59	14	EA	**WATER SERVICE LINE (SHORT SERVICE)**; Per Each			
				Dollars Cents		
60	1	LS	**REMOVE EXISTING WATER LINE PIPE, AS NOTED IN THE PLANS (VARIOUS SIZES)**; Per Lump Sum			
				Dollars Cents		
61	15	EA	**REMOVE AND SALVAGE GATE VALVE (VARIOUS SIZES)**; Per Each			
				Dollars Cents		
62	5	EA	**REMOVE AND SALVAGE FIRE HYDRANT**; Per Each			
				Dollars Cents		
63	1	LS	**MISCELLANEOUS WATER ALLOWANCE**; Per Lump Sum			
			Forty Thousand Zero	Dollars Cents	$ 40,000.00	$ 40,000.00
			Total Section II - WATER			

SECTION III - SANITARY SEWER

ITEM No.	APPROX. QUANTITY		DESCRIPTION OF ITEMS WITH BID PRICES WRITTEN IN WORDS	UNIT PRICE	TOTAL AMOUNT
64	100	LF	**8-INCH SDR 26 PVC SANITARY SEWER, IPS PRESSURE RATED WITHIN STEEL ENCASEMENT, BY OTHER THAN OPEN CUT**; Per Linear Foot (ASTM D2241) _____ Dollars _____ Cents		
65	30	LF	**8-INCH SDR 26 PVC SANITARY SEWER, IPS PRESSURE RATED WITHIN CONCRETE ENCASEMENT, BY OPEN CUT**; Per Linear Foot (ASTM D2241) _____ Dollars _____ Cents		
66	800	LF	**8-INCH SDR 26 PVC SANITARY SEWER, IPS PRESSURE RATED, BY OPEN CUT**; Per Linear Foot (ASTM D2241) _____ Dollars _____ Cents		
67	50	LF	**10-INCH SDR 26 PVC SANITARY SEWER, IPS PRESSURE RATED, BY OPEN CUT**; Per Linear Foot (ASTM D2241) _____ Dollars _____ Cents		
68	100	LF	**21-INCH SDR 26 PVC SANITARY SEWER, IPS PRESSURE RATED WITHIN CONCRETE ENCASEMENT, BY OPEN CUT**; Per Linear Foot **(**ASTM D2241**)** _____ Dollars _____ Cents		

69	460	LF	**21-INCH SDR 26 PVC SANITARY SEWER, IPS PRESSURE RATED, BY OPEN CUT**; Per Linear Foot **(**ASTM D2241**)**		
			_____ Dollars _____ Cents	_____	_____
70	9	EA	**4' DIAMETER SANITARY SEWER MANHOLE**; Per Each With Sewper Coat		
			_____ Dollars _____ Cents	_____	_____
71	30	VF	**EXTRA DEPTH FOR 4' SANITARY SEWER MANHOLE**; Per Vertical Foot		
			_____ Dollars _____ Cents	_____	_____
72	4	EA	**5' DIAMETER SANITARY SEWER DROP MANHOLE**; Per Each With Sewper Coat		
			_____ Dollars _____ Cents	_____	_____
73	7	EA	**5' DIAMETER SANITARY SEWER MANHOLE**; Per Each With Sewper Coat		
			_____ Dollars _____ Cents	_____	_____
74	85	VF	**EXTRA DEPTH FOR 5' SANITARY SEWER MANHOLE**; Per Vertical Foot		
			_____ Dollars _____ Cents	_____	_____
75	125	LF	**CONCRETE ENCASEMENT FOR SANITARY SEWER LINES**; Per Linear Foot		
			_____ Dollars _____ Cents	_____	_____
76	1	LS	**REMOVE EXISTING SANITARY SEWER LINE**; Per Lump Sum		
			_____ Dollars _____ Cents	_____	_____

77	8	EA	**REMOVE EXISTING SANITARY SEWER MANHOLE**; Per Each			
				Dollars		
				Cents		
78	1	LS	**MISCELLANEOUS SANITARY SEWER ALLOWANCE**; Per Lump Sum			
			Forty Thousand	Dollars		
			Zero	Cents	$ 40,000.00	$ 40,000.00
			Total Section III - SANITARY SEWER			

SECTION IV - STREET LIGHTS & IRRIGATION

ITEM No.	*APPROX. QUANTITY*		*DESCRIPTION OF ITEMS WITH BID PRICES WRITTEN IN WORDS*	*UNIT PRICE*	*TOTAL AMOUNT*
79	29	EA	**PEDESTRIAN STREET LIGHT AND FOUNDATION**; Per Each		
			Dollars		
			Cents		
80	17	EA	**STREET LIGHT FOUNDATION**; Per Each		
			Dollars		
			Cents		
81	3,000	LF	**2-INCH PVC SCHEDULE 40 CONDUIT**; Per Linear Foot		
			Dollars		
			Cents		
82	3,300	LF	**1.25-INCH PVC SCHEDULE 80 CONDUIT**; Per Linear Foot		
			Dollars		
			Cents		

83	6,600	LF	**NO 6 INSULATED ELECTRICAL CONDUCTOR**; Per Linear Foot			
				Dollars		
				Cents		
84	3,300	LF	**NO 6G INSULATED ELECTRICAL CONDUCTOR**; Per Linear Foot			
				Dollars		
				Cents		
85	1	EA	**CONTACT ENCLOSURE, PAD MOUNT**; Per Each			
				Dollars		
				Cents		
86	21	EA	**GROUND BOXES**; Per Each			
				Dollars		
				Cents		
87	1	LS	**MISCELLANEOUS ELECTRICAL & LIGHTING ALLOWANCE**; Per Lump Sum			
			Twenty Thousand	Dollars		
			Zero	Cents	$ 20,000.00	$ 20,000.00
			Total Section IV - STREET LIGHTS & IRRIGATION			

SECTION V - BRIDGE & CHANNEL IMPROVEMENTS

ITEM No.	*APPROX. QUANTITY*		*DESCRIPTION OF ITEMS WITH BID PRICES WRITTEN IN WORDS*	*UNIT PRICE*	*TOTAL AMOUNT*
88	1	LS	**TXDOT REMOVE EXISTING BRIDGE**; Per Lump Sum		
				Dollars	
				Cents	

89	100	CY	**TXDOT CEM STABIL BKFL**; Per Cubic Yard _____ Dollars _____ Cents			
90	360	LF	**TXDOT DRILLED SHAFT (24 IN)**; Per Linear Foot _____ Dollars _____ Cents			
91	60	CY	**TXDOT CL "C" CONC (HPC) (ABUT)**; Per Cubic Yard _____ Dollars _____ Cents			
92	3,750	SF	**TXDOT REINF CONC SLAB (HPC)**; Per Square Foot _____ Dollars _____ Cents			
93	150	CY	**TXDOT APPROACH SLAB (HPC)**; Per Cubic Yard _____ Dollars _____ Cents			
94	1,200	SF	**TXDOT BRIDGE SIDEWALK (HPC)**; Per Square Foot _____ Dollars _____ Cents			
95	110	LF	**TXDOT PRESTR CONC BEAM (4SB15)**; Per Linear Foot _____ Dollars _____ Cents			
96	670	LF	**TXDOT PRESTR CONC BEAM (5SB15)**; Per Linear Foot _____ Dollars _____ Cents			

97	350	LB	**TXDOT STR STL (MISC) (BS-EJCP)**; Per Pound _____ Dollars _____ Cents	_____	_____
98	150	LF	**TXDOT RAIL (HPC) (TY 223)**; Per Linear Foot _____ Dollars _____ Cents	_____	_____
99	175	LF	**TXDOT TYPE A JOINT**; Per Linear Foot _____ Dollars _____ Cents	_____	_____
100	2	EA	**TXDOT TRINITY HIGHWAY CRASH CUSHION ATTENUATOR (TRACC(W)-16)**; Per Each _____ Dollars _____ Cents	_____	_____
101	200	SY	**TXDOT CONCRETE RIPRAP (TYPE RR8)**; Per Square Yard _____ Dollars _____ Cents	_____	_____
102	500	SY	**6-INCH CONCRETE RIPRAP**; Per Square Yard _____ Dollars _____ Cents	_____	_____
103	575	SY	**REMOVE EXISTING CONCRETE CHANNEL RIPRAP**; Per Square Yard _____ Dollars _____ Cents	_____	_____
			Total Section V - BRIDGE & CHANNEL IMPROVEMENTS	_____	_____

ADDED ALTERNATE BID ITEMS

ITEM No.	*APPROX. QUANTITY*		*DESCRIPTION OF ITEMS WITH BID PRICES WRITTEN IN WORDS*	*UNIT PRICE*	*TOTAL AMOUNT*
A1	1	LS	**FINAL PROJECT COMPLETION 30 CALENDAR DAYS EARLY**; Per Lump Sum _____ _____ Dollars _____ Cents	_____	_____
A2	1	LS	**FINAL PROJECT COMPLETION 60 CALENDAR DAYS EARLY**; Per Lump Sum _____ _____ Dollars _____ Cents	_____	_____

BID SUMMARY		
Section No.	**Section Title**	**Bid Amount**
I	Paving and Drainage	**$**
II	Water	**$**
III	Sanitary Sewer	**$**
IV	Street Lights	**$**
V	Bridge & Channel Improvements	**$**
	Total Base Bid Sections I-V	**$**
	Total Base Bid + Item A1	**$**
	Total Base Bid + Item A2	**$**

The City intends to award a single construction contract.

In compliance with State Legislature, House Bill 11, the charges on the Project are separated in the following manner:

Materials: $_____

Services: $_____

Total: **$**_____

Respectfully submitted,

_____
Company Name (please print)

By:_____
(please print)

Signature:_____

Title: _____
(please print)

Contractor's
Project Manager:_____

_____
Street Address

_____
City State Zip

_____
Phone

Seal if Bidder is a Corporation

Date: _____

5) STANDARD FORM OF AGREEMENT

STANDARD FORM OF AGREEMENT
BETWEEN THE CITY OF HURST AND CONTRACTOR

THIS AGREEMENT is dated as of the _____day of _____ in the year 20 ____ by and between the City of Hurst (hereinafter called OWNER) and;

_____,

of the City of _____, County of _____, State of _____Texas____ (hereinafter called CONTRACTOR).

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

Article 1. WORK.

The PROJECT for the Work detailed under the Contract Documents (see Article 8 of this Agreement for items included in the "Contract Documents") is generally identified as following:

West Pipeline Road Improvements Phase 4
Project No. 6416-101

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

Reconstruction of the paving, bridge, channel, drainage, water (6 thru 12-inch distribution lines), sanitary sewer (8 thru 15-inch distribution lines) and street light improvements of West Pipeline Road from Harrison Lane to Brown Trail, approximately 1,865 linear feet.

Article 2. ENGINEER.

The Project has been designed by:

Halff Associates, Inc.

but the term ENGINEER in these Contract Documents shall refer to the City Engineer, or his authorized representative, who shall exercise the rights and authority assigned to ENGINEER in the Contract Documents and in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIME.

3.1. The Work will be completed and ready for final payment in accordance with paragraph 14.13. of the General Conditions within the calendar day time period established in the Proposal.

3.2. Liquidated damages. OWNER and CONTRACTOR recognize that time is of the essence of this agreement and that the OWNER will suffer financial loss if the Work is not completed within the time specified in paragraph 3.1. above, plus extensions thereof allowed in accordance with Article 12 of the General Conditions, Accordingly, instead of requiring proof of such loss, OWNER and CONTRACTOR agree that liquidated damages for delay (but not as a penalty) OWNER shall deduct from the amount due to the CONTRACTOR, the amount(s) shown in paragraph 12.4.1. of Supplementary Conditions, for each day that expires after the time specified in paragraph 3.1.

Article 4. CONTRACT PRICE.

4.1. OWNER shall Pay the CONTRACTOR according to in place quantities multiplied times the price or prices shown in the Proposal, which form a part of this contract, or according to an approved

Schedule of Values, plus (or minus) any approved extra work or change orders.

Article 5. PAYMENT PROCEDURES.

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

5.1. Progress Payments. OWNER shall make progress payments on the basis of CONTRACTOR'S Applications for payment as recommended and approved by ENGINEER. On or above the last day of each month during the construction CONTRACTOR shall meet with ENGINEER'S representative to determine number of units completed and/or value of completed work. All progress payments will be on the basis of the progress of the Work measured by the number of units completed or, if applicable, by the schedule of values established in paragraph 2.9. of the General Conditions, or as provided in the General or Supplementary Conditions.

5.1.1. Prior to completion, in accordance with paragraph 14.7. of the General Conditions, progress payments will be subject to a retainage in an amount equal to the percentage indicated in paragraph 14.2 of Supplementary Conditions and less the aggregate of payments previously made.

5.2. Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13. of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by the ENGINEER.

Article 6. CONTRACTOR'S REPRESENTATIONS.

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

6.1. CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality and all local and State Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

6.2. CONTRACTOR has studied carefully all reports of explorations and test of subsurface conditions and drawings of physical conditions which are identified in the Supplementary Conditions as provided in paragraph 4.2. of the General Conditions, and accepts the determination set forth in the Supplementary Conditions of the extent of the technical data contained in such reports and drawings upon which CONTRACTOR is entitled to reply.

6.3. CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, test, reports and studies (in addition to or supplement those referred to in paragraph 6.2. above) which pertain to the subsurface or physical conditions at or contiguous to the site or otherwise may effect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work of the Work at the Contract Price, within the Contract Time and in accordance with the other terms of and conditions of the Contract Documents, including specifically the provisions of paragraph 4.2. of the General Conditions; and no additional examinations, investigations, explorations, test, studies or similar information or date are or will be require by the CONTRACTOR for such purposes.

6.4. CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, exploration, test, reports studies or similar information or data in

respect of said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3. of the General Conditions.
6.5. CONTRACTOR including assigned Project Manager has visited the site prior to bidding.
6.6. CONTRACTOR has correlated the results of all such observations, investigations, explorations, test, reports and studies with the terms and conditions of the Contract Documents.
6.7. CONTRACTOR has give ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and in the written resolution there of by ENGINEER is acceptable to CONTRACTOR.

Article 7. MISC.

7.1. Terms in this agreement are defined in Article 1 of the General conditions will have the meanings indicated in the General Conditions.

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

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

Article 8. CONTRACT DOCUMENTS.

The Contract Documents that comprise the entire agreement between the OWNER and CONTRACTOR concerning the work consist of the following:

8.1 Table of Contents (1)
8.2 Notice to Bidders (1)
8.3 Instructions to Bidders (1 to 5)
8.4 Proposal (1 to 22)
8.5 Standard Form of Agreement (1 to 4)
8.6 Performance, Payment and Maintenance Bonds (1 to 6)
8.7 Insurance (1 to 6)
8.8 Certificate of Insurance (1)
8.9 Form TCG 2270 (1)
8.10 General Conditions (1 to 41)
8.11 Supplementary Conditions (1 to 12)
8.12 Wage Rate (1)
8.13 Pay Item Specifications (1 to 35)
8.14 Capital Improvements Project Sign (1)
8.15 Construction Plans (1 to 148)
8.16 Other published specifications and standard drawings manuals (including, but not limited to, City of Hurst Standard Specifications and Standard Details, North Central Texas Council of Governments Standard Specifications for Public Works Construction and Texas State Department of Highways and Public Transportation Standard Specifications for Construction) as may be referenced in other portions of the Contract Documents.

There is no Contract Documents other than those listed above in this Article 8. The Contract Documents

may be only being amended, modified or supplemented as provided in paragraphs 3.4. and 3.5. of the General Conditions.

Article 9. OTHER PROVISIONS.

NONE

This contract shall include the base bid of $_____and shall be completed in 600 calendar days, including 60 calendar days for Atmos work. If Atmos work is completed before the issuance of the Notice to Proceed (NTP), work shall be completed in 540 calendar days.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement.

This Agreement will be effective on the _____ day of _____, 20___.

CITY OF HURST
1505 PRECINCT LINE RD.
HURST, TEXAS 76054

By: _____
Signature

Clay Caruthers, City Manager

Recommended:

By:_____

Robert Sauceda, P.E.
Executive Director of Public Works

CONTRACTOR:

_____

By: _____
Signature

_____
Print Name and Title

Street Address

_____

City, State & Zip

_____

_____
Phone Number

Seal (if Corporation)

Approved as to Form and Legality this _____ day of _____, 20___.

_____
City Attorney

6) PERFORMANCE, PAYMENT AND MAINTENANCE BONDS

PERFORMANCE BOND

STATE OF TEXAS '
COUNTY OF Tarrant '

KNOWN ALL MEN BY THESE PRESENTS: That _____ of the City of _____, County of _____ and State of Texas as principal, and _____ _____ authorized under the laws of the State of Texas to act as surety on bonds for principals, are held and firmly bound unto City of Hurst, Texas (Owner), in the penal sum of _____ Dollars ($_____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

West Pipeline Road Improvements Phase 4
Project No. 6416-101

WHEREAS, the Principal has entered into a certain written contract with the Owner, dated the __ day of _____, 20____, to which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform said Contract and shall in all respects duly and faithfully observe and perform all and singular the covenants, conditions and agreements in and by said contract agreed and covenanted by the Principal to be observed and conformed, and according to the true intent and meaning of said Contract and the Plans and Specifications hereto annexed, then this obligation shall be void; otherwise to remain in full force and effect;

"PROVIDED, HOWEVER, that the this bond executed pursuant to the provisions of (chapter 2253 of the Texas Government Code and all Local Government Code requirements for Public Works) (Texas Property Code chapter 53 for Private Work)* as amended and all liabilities of this bond shall be determined in accordance with the provisions of said statutes and Codes to the same extent as if it were copied at length herein."

Surety, for value received, stipulates and agrees that no charge, extension of time, alteration or addition to the terms of the contract, or to the work performed hereunder, or the plans, specifications, or drawings accompanying the same, shall in anyway 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 hereunder.

*Not applicable for federal work. See "The Miller Act" 40 U.S.C. Section 3131.

IN WITNESS, WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 20__.

Principal	Surety
By: _____	By: _____
Title: _____	Title: _____
Address: _____	Address: _____
_____	_____

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

_____

_____

PAYMENT BOND

STATE OF TEXAS '
COUNTY OF Tarrant '

KNOWN ALL MEN BY THESE PRESENTS: That _____ of the City of _____, County of _____ and State of Texas as principal, and _____ _____ authorized under the laws of the State of Texas to act as surety on bonds for principals, are held and firmly bound unto City of Hurst, Texas (Owner), in the penal sum of _____ Dollars ($_____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

West Pipeline Road Improvements Phase 4
Project No. 6416-101

WHEREAS, the Principal has entered into certain written contract with the Owner, dated the _____ day of _____, 20__, to which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall pay all claimants supplying labor and material to him or a subcontractor in the prosecution of the work provided for in said contract, then, this obligation shall be void; otherwise to remain in full force and effect;

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Texas Government Code chapter 2253 as amended and all liabilities on this bond shall be determined in accordance with provisions of said Article to the same extent as if it were copied at length herein.

Surety for value received, stipulates and agrees that no change, extension time, alterations or addition to the terms of the contract, or to the work performed hereunder, or the plans, specifications or drawings accompanying the same, shall in anywise affect its obligation on this bond and does hereby waive notice of any such change, extension tie, alteration or addition to the terms of the contract, or to the work to be performed hereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 20__.

Principal	Surety
By: _____	By: _____
Title: _____	Title: _____
Address: _____	Address: _____
_____	_____

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

_____

_____

MAINTENANCE BOND

KNOWN ALL MEN BY THESE PRESENTS:

THAT _____as PRINCIPAL, and _____ a CORPORATION organized under the laws of _____, as Sureties, do hereby expressly acknowledge themselves to be held and bound to pay unto the City of Hurst, a municipal corporation chartered by virtue of a Special Act of the Legislature of the State of Texas, at Hurst, Tarrant County, Texas, the sum of _____ Dollars ($_____) for the payment of which sum will and truly to be made until said City of Hurst, its successors, said PRINCIPAL AND SURETIES do hereby bind themselves, their assigns and successors jointly and severally.

THIS obligation is conditioned, however, that whereas said _____ has this _____day of _____, 20__, entered into a written contract with the said City of Hurst to build and construct:

West Pipeline Road Improvements Phase 4
Project No. 6416-101

in the City of Hurst, Texas, which contract and the Plans and Specifications therein mentioned adopted by the City of Hurst, are hereby expressly made a part hereof as though the same were written and embodied herein.

WHEREAS, under the Plans and Specifications, and contract, it is provided that the CONTRACTOR will maintain and keep in good repair the work herein contracted to be done and performed for a period of two (2) years from the date of acceptance, and to do all necessary backfilling that may arise on account of sunken conditions in ditches, or otherwise, out of or arising from improper doing of the same, or on account of account of any breaking of the same, or on account of any defect arising in any parts of said work laid or constructed by the said CONTRACTOR, or on account of improper excavation or backfilling; it being understood that the purpose of this section is to cover al defective conditions arising by reason of defective material, work, or labor performed by said CONTRACTOR; and in case the said CONTRACTOR shall fail to do so, it is agreed that the City may do said work and supply such materials, and charge the same against the said CONTRACTOR and SURETIES, on this obligation, and said CONTRACTOR and SURETIES hereon shall be subject to the liquidated damages mentioned in said contract for each day's failure on its part to comply with the terms of the said provision of said contract.

NOW, THEREFORE, if the said CONTRACTOR shall keep and perform its said agreement to maintain said work and keep the same in repair for the said maintenance

period of two (2) years, as provided, then these presents shall be null and void, and have no further effect, but if default shall be made by the said CONTRACTOR in the performance of his contract to so maintain and repair said work, then these presents shall have full force and effect, and said CITY of HURST shall have and recover from said CONTRACTOR and SURETIES damages in the premises, as provided, and it is further agreed that this obligation shall be continuing one against the PRINCIPAL and SURETIES, hereon, and that successive recoveries may be had thereon for successive breaches until the full amount shall have been exhausted; and it is further understood that the obligation herein to maintain said work shall continue throughout said maintenance period, and the same shall not be changed, diminished, or in any manner affected from any cause during said time.

IN WITNESS WHEREOF, the said _____ has caused these presents to be executed by them; and the said _____ _____ has caused these presents to be executed by its ATTORNEY-IN -FACT _____ and the said ATTORNEY-IN-FACT _____ has hereunto set his hand this the _____ day of _____, 20__.

Principal	Surety
By: _____	By: _____
Title: _____	Title: _____
Address: _____	Address: _____
_____	_____

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

_____

_____

7) ATTACHMENT I INSURANCE

ATTACHMENT 1

INSURANCE

SECTION A. Prior to the approval of this contract by the City, the successful Contractor shall furnish a completed Insurance Certificate to the City, which shall be completed by an agent authorized to bind the named underwriter(s) to the coverages, limits, and termination provisions shown thereon, and which shall furnish and contain all required information referenced or indicated thereon. THE CITY SHALL HAVE NO DUTY TO PAY OR PERFORM UNDER THIS CONTRACT UNTIL SUCH CERTIFICATE SHALL HAVE BEEN DELIVERED TO THE CITY.

INSURANCE COVERAGE REQUIRED

SECTION B. The City reserves the right to review the insurance requirements of this section during the effective period of the contract and to require adjustment of insurance coverages and their limits when deemed necessary and prudent by the City based upon changes in statutory law, court decisions, or the claims history of the industry as well as the Contractor.

SECTION C. Subject to the Contractor's right to maintain reasonable deductibles in such amounts as are approved by the City, the Contractor shall obtain and maintain in full force and effect for the duration of this contract, and any extension hereof, at the successful Contractor's sole expense, insurance coverage written by companies approved by the State of Texas and acceptable to the City, in the following type(s) and amount(s):

TYPE	**AMOUNT**
1. **Worker's Compensation** and **Employers Liability**	Statutory $100,000/500,000/100,000

NOTE: For building or construction projects, the successful Contractor shall meet the minimum requirements defined in the Texas Workers' Compensation Commission Rule 28 TAC ' 110.110 which is appended herewith.

2. **Commercial General (public) Liability** insurance including coverage for the following:

a.	Premises operations	Combined single limit for bodily injury and property damage of $1,000,000 per occurrence or its equivalent.
b.	Independent contractors	
c.	Products/completed operations	
d.	Personal injury	
e.	Advertising injury	
f.	Contractual liability	
g.	Medical payments	
h.	Underground hazard	
i.	Explosion and collapse hazard	

3. **Comprehensive Automobile Liability** insurance, including coverage for loading and unloading hazards, for:

   a. Owned/leased vehicles
   b. Non-owned vehicles
   c. Hired vehicles

   Combined single limit for bodily injury and property damage of $500,000 per occurrence or its equivalent.

ADDITIONAL POLICY ENDORSEMENTS

The City shall be entitled, upon request, and without expense, to receive copies of the policies and all endorsements thereto and may make any reasonable request for deletion, revision, or modification of particular policy terms, conditions, limitations, or exclusions (except where policy provisions are established by law or regulation binding upon either of the parties hereto or the underwriter of any of such policies). Upon such request by the City, the Contractor shall exercise reasonable efforts to accomplish such changes in policy coverages, and shall pay the cost thereof.

REQUIRED PROVISIONS

The successful Contractor agrees that with respect to the above required insurance, all insurance contracts and certificate(s) of insurance will contain and state, in writing, on the certificate or its attachment, the following required provisions:

a. Name the City of Hurst and its officers, employees, and elected representatives as additional insured, (as the interest of each insured may appear) as to all applicable coverage;

b. Provide for 30 days notice to the City for cancellation, nonrenewal, or material change; 10 days for Workman's' Compensation change in coverage

   Remove all language on the certificate of insurance indicating that the insurance company or agent/broker will endeavor to notify the City but failure to do so shall impose no obligation or liability of any kind upon the company, its agents, or representatives.

c. All copies of the certificates of insurance shall reference the project name or bid number for which the insurance is being supplied.

d. Provide for an endorsement that the "other insurance" clause shall not apply to the City of Hurst;

e. The Contractor agrees to waive subrogation against the City of Hurst, its officers, employees, and elected representatives for injuries, including death, property damage, or any other loss to the extent same may be covered by the proceeds of insurance;

f. Provide that all provisions of this agreement concerning liability, duty, and standard of care together with the indemnification provision, shall be underwritten by contractual liability coverage sufficient to include such obligations within applicable policies.

g. Provide for notice to the City at the two addresses shown below by registered mail;

h. For coverages that are only available with claims made policies, the required period of coverage will be determined by the following formula: Continuous coverage for the life of the contract, plus two years (to provide coverage for the warranty period) and an extended discovery period for a minimum of 5 years which shall begin at the end of the warranty period.

NOTICES

The Contractor shall notify the City in the event of any change in coverage and shall give such notices not less than 30 days prior to the change, which notice must be accompanied by a replacement CERTIFICATE OF INSURANCE.

All notices shall be given to the City at the following two addresses:

Executive Director of Public Works
City of Hurst
1505 Precinct Line Road
Hurst, TX 76053

Risk/Purchasing Manager
City of Hurst
1505 Precinct Line Road
Hurst, TX 76054

SECTION D. Approval, disapproval, or failure to act by the City regarding any insurance supplied by the Contractor shall not relieve the Contractor of full responsibility or liability for damages and accidents as set forth in the contract documents. Neither shall the bankruptcy, insolvency, or denial of liability by the insurance company exonerate the Contractor from liability.

WORKERS COMPENSATION INSURANCE
FOR
BUILDING OR CONSTRUCTION PROJECTS

TEXAS WORKERS COMPENSATION COMMISSION RULE 28, '110.110

****

As required by the Texas Workers' Compensation Commission Rule 28, '110.110, the Contractor shall accept the following definitions and comply with the following provisions:

Workers' Compensation Insurance Coverage

A. Definitions:

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 providing services on a project, for the duration of the project.

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

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 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.

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 City of Hurst 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 City of Hurst showing that coverage has been extended.

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

(1) a certificate of coverage, prior to that person beginning work on the project, so the City of Hurst 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 City of Hurst in writing by certified mail or personal delivery, within 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 City of Hurst in writing by certified mail or personal delivery, within 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 the City of Hurst 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 City of Hurst to declare the contract void if the contractor does not remedy the breach within ten days after receipt of notice of breach from the City of Hurst.

As defined by the Texas Labor Code, Chapter 269, Section 406.096(e), building or construction is defined as:

1. Erecting or preparing to erect a structure, including a building, bridge, roadway, public utility facility, or related appurtenance;

2. Remodeling, extending, repairing, or demolishing a structure; or

3. Otherwise improving real property or an appurtenance to real property through similar activities.

The employment of a maintenance employee who is not engaging in building or construction as the employer's primary business does not constitute engaging in building or construction.

L. The Worker’s Compensation policy must be endorsed by the contractor’s insurance agency with a Waiver of Subrogation in favor of the City of Hurst.

8) CERTIFICATE OF INSURANCE

CERTIFICATE OF INSURANCE

The Company indicated below certifies that the insurance afforded by the polices numbered and described below is in force as of the effective date on this certificate. This Certificate of Insurance does not amend or otherwise alter the Terms and Conditions of Insurance coverage contained in any policy or policies numbered and described below. (this certificate shall apply to all work by subcontractors)

Certificate Holder's Name and Address:

City of Hurst
1505 Precinct Line Road
Hurst, Texas 76054

Insured Name and Address:

and
City of Hurst, Texas

DESCRIPTION SCHEDULE

TYPE OF INSURANCE	*POLICY NUMBER AND ISSUING COMPANY	POLICY EFFECT DATE	POLICY EXPIRE DATE	LIMITS OF LIABILITY (Stated in Thousands)
GENERAL LIABILITY ☐ Premises-Operations ☐Products-Completed Operations ☐ Personal and Advertising Injury ☐ Medical Expense ☐ Fire Damage Legal ☐ Other Liability				General-aggregate- Pr. Comp. Op. Agg.- Each Occurrence- Any One Person or Organization- Any One Person- Any One Fire-
AUTOMOBILE LIABILITY ☐ Comprehensive Form ☐ Owned ☐ Hired ☐ Non-Owned				OCCURRENCE Bodily Injury (Each Person)- Bodily Injury (Each Accident)- Property Damage Bodily Injury and Property Damage Combined-
EXCESS LIABILITY ☐ Umbrella Form				Bodily Injury and Property Damage Combined: Occurrence- Aggregate-
☐ Worker's Compensation and ☐ Employer's Liability				STATUTORY LIMITS

Insurance in force for hazards indicated by X.

Producer: Name/Address/Phone Number

Description of Operations/Locations Vehicles/Restrictions/Special Items

*** West Pipeline Road Improvements Phase 4**
PROJECT NO. XXXX-XXX
* Waiver of Subrogation in favor of Certificate Holder
* The City of Hurst, its officers, employees, and elected representatives as Additional Insured

CANCELLATION:
Should any of the described policies be canceled before the expiration date, the insurance company will mail thirty(30) days written notice to the above named certificate holder.

*NOTE: Name/Address/Contact Person/Phone Number

Executive Director of Public Works
City of Hurst
1505 Precinct Line Rd.
Hurst, TX 76054

Risk/Purchasing Manager
City Of Hurst
1505 Precinct Line Rd.
Hurst, TX 76054

Date Certificate Issued:_____

Authorized Representative_____

Form TCG 2270
VERIFICATION REQUIRED BY TEXAS GOVERNMENT CODE CHAPTER 2270

By signing below, Company herby verifies the following:

1. Company does not boycott Israel; and
2. Company will not boycott Israel during the term of the contract.

SIGNED BY: _____

Print Name of Person Signing, Title, and Company: _____

_____

Date signed: _____

STATE OF TEXAS §
COUNTY OF _____ §

BEFORE ME, the undersigned Notary Public on this day personally appeared _____(Name), on behalf of _____ (Company) who being duly sworn, stated under oath that he/she has read the foregoing verification required by Texas Government Code Section 2270.002 and said statements contained therein are true and correct..

SWORN AND SUBSCRIBED TO before me, this _____ day of _____, 20____.

_____
NOTARY OF PUBLIC,
FOR THE STATE OF TEXAS

My Commission Expires:
_____

Government Code § 2270.002. Provision Required in Contract
Effective: September 1, 2017
A governmental entity may not enter into a contract with a company for goods or services unless the contract contains a written verification from the company that it:
(1) does not boycott Israel; and
(2) will not boycott Israel during the term of the contract.

The following definitions apply:

(1) “Boycott Israel” means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes.

(2) “Company” means a for-profit sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of those entities or business associations that exists to make a profit.

(3) “Governmental entity” means a state agency or political subdivision of this state.

State law requires verification from a Company for contracts involving goods or services (regardless of the amount) before the City can enter into the contract.

Contract identifier: _____
Department: _____

9) GENERAL CONDITIONS

TABLE OF CONTENTS OF GENERAL CONDITIONS

INDEX TO GENERAL CONDITIONS

GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

Addenda - Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the bidding documents or the Contract Documents.

Agreement - The written agreement between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Abandoned Worksite - A site that has had little or no substantial construction activity for a period of at least 10 days.

Application for Payment - The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

Bid - The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bonds - Bid, performance and payment bonds and other instruments of security.

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

Contract Documents - The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all amendments, modifications and supplements issued pursuant to paragraphs 3.4, and 3.5 on or after the Effective Date of the Agreement.

Contract Price - The moneys payable to OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work).

Contract Time - The number of days (computed as provided in paragraph 17.2) or the date stated in the Agreement for the completion of the Work.

CONTRACTOR - The person, firm or corporation with whom OWNER has entered into the Agreement.

Defective - An adjective which when modifying the Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval

referred to in the contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10).

Drawings - The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.

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

Engineer - The person, firm or corporation named as such in the Agreement.

Field Order - A written order issued by ENGINEER which orders minor changes in the work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Time.

General Requirements - Sections of Division 1 of the Specifications.

Laws and Regulations; Laws or Regulations - Laws, rules, regulations, ordinances, codes and/or orders.

Notice of Award - The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

Notice to Proceed - A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR's obligations under the Contract Documents.

OWNER - The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

Partial Utilization - Placing a portion of the Work in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion for all the Work.

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

Resident Project Representative - The authorized representative of ENGINEER who is assigned to the site or any part thereof.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

Site Stabilization – 70% coverage of permanent vegetation.

Specifications - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor - An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

Substantial Completion - The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if there by no

such certificate issued, when final payment is due in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof. All systems must be in working condition to be substantially complete.

Supplementary Conditions - The part of the Contract Documents which amends or supplements these General Conditions.

Supplier - A manufacturer, fabricator, supplier, distributor, materialman or vendor.

Underground Facilities - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

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

Work - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

Work Directive Change - A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.22. A Work Directive Change may not change the Contract Price or the Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the contract Price or Contract Time as provided in paragraph 10.2.

Written Amendment - A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly Work-related aspects of the Contract Documents

ARTICLE 2 - PRELIMINARY MATTERS

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Time; Notice to Proceed:

2.3. The Contract Time will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. In no event will the Contract Time commence to run later than the seventy-fifth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

Starting the Project:

2.4. CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

Before Starting Construction:

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

2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:

2.6.1. an estimated progress schedule indicating the starting and completion dates of the various stages of the Work;

2.6.2. a preliminary schedule of Shop Drawing submissions; and

2.6.3. a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by CONTRACTOR at the time of submission.

2.7. Before any Work at the site is started, CONTRACTOR shall deliver to OWNER, with a copy to

ENGINEER, certificates (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with paragraphs 5.3 and 5.4, and OWNER shall deliver to CONTRACTOR certificates (and other evidence of insurance requested by CONTRACTOR) which OWNER is required to purchase and maintain in accordance with paragraphs 5.6 and 5.7.

Preconstruction Conference:

2.8. Within 10 days after the Effective Date of the Agreement, but before CONTRACTOR starts the Work at the site, a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to discuss the schedules referred to in paragraph 2.6, to discuss procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish a working understanding among the parties as to the Work.

Finalizing Schedules:

2.9. At least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to finalize the schedules submitted in accordance with paragraph 2.6. The finalized progress schedule will be acceptable to ENGINEER as providing an orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on ENGINEER responsibility for the progress or scheduling of the Work nor relieve CONTRACTOR from full responsibility therefor. The finalized schedule of Shop Drawing submissions will be acceptable to ENGINEER as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to ENGINEER as to form and substance.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent:

3.1. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

3.2. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 9.4.

3.3. If, during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so

to ENGINEER in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from ENGINEER; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or

discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

Amending and Supplementing Contract Documents:

3.4. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

3.4.1. a formal Written Amendment,

3.4.2. a Change Order (pursuant to paragraph 10.4), or

3.4.3. a Work Directive Change (pursuant to paragraph 10.1).

As indicated in paragraphs 11.2 and 12.1, Contract Price and Contract Time may only be changed by Change Order or a Written Amendment.

3.5. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

3.5.1. a Field Order (pursuant to paragraph 9.5),

3.5.2. ENGINEER's approval of a Shop Drawing or sample (pursuant to paragraphs 6.26 and 6.27), or

3.5.3. ENGINEER's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

3.6. Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings. Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without

written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

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

Availability of Lands:

4.1. OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER's furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage to materials and equipment.

Physical Conditions:

4.2.1. *Explorations and Reports:* Reference is made to the Supplementary Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon nontechnical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

4.2.2. *Existing Structures:* Reference is made to the Supplementary Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3) which are at or contiguous to the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2. CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures. Contractor was required to visit site prior to bidding.

4.2.3. *Report of Differing Conditions:* If CONTRACTOR believes that:

4.2.3.1. any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2. any physical condition uncovered or revealed at the site differs materially from that indicated, reflected or referred to in the Contract Documents.

CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work in connection therewith (except in an

emergency as permitted by paragraph 6.22), notify OWNER and ENGINEER in writing about the inaccuracy or difference.

4.2.4. *ENGINEER's Review:* ENGINEER will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

4.2.5. *Possible Document Change:* If ENGINEER concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change in the Contract Documents is required, a Work Directive Change or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6. *Possible Price and Time Adjustments:* In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to any such inaccuracy or difference. If OWNER and CONTRACTOR are unable to agree as to the amount or length thereof, a claim may be made therefor as provided in Articles 11 and 12.

Physical Conditions - Underground Facilities:

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

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

4.3.1.2. CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction, for the safety and protection thereof as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2. *Not Shown or Indicated.* If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency as permitted by paragraph 6.22), identify the owner of such Underground Facility and give written notice thereof to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of. If the parties are unable to agree as to the amount or length thereof, CONTRACTOR may make a

claim therefor as provided in Articles 11 and 12.

Reference Points:

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

ARTICLE 5 - BONDS AND INSURANCE

Performance and Other Bonds:

5.1. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as otherwise provided by Law or Regulation or by the contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the forms prescribed by Law or Regulation or by the Contract Documents and be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within five days thereafter substitute another Bond and Surety, both of which must by acceptable to OWNER.

Contractor's Liability Insurance:

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

5.3.1. Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts;

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

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

5.3.4. Claims for damages insured by personal injury liability coverage which are sustained (a) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (b) by any other person for any other reason;

5.3.5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever

located, including loss of use resulting therefrom;

5.3.6. Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and,

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

The insurance required by this paragraph 5.3 shall include the specific coverages and be written for not less than the limits of liability and coverages provided in the Supplementary Conditions, or required by law, whichever is greater. The comprehensive general liability insurance shall include completed operations insurance. All of the policies of insurance so required to be purchased and maintained for the certificates (or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at lease thirty days' prior written notice has been given to OWNER and ENGINEER by certified mail. All such insurance shall remain in effect until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing *defective* Work in accordance with paragraph 13.12. In addition, CONTRACTOR shall maintain such completed operations insurance for at least two years after final payment and furnish OWNER with evidence of continuation of such insurance at final payment and one year thereafter.

Contractual Liability Insurance:

5.4. The comprehensive general liability insurance required by paragraph 5.3 will include contractual liability insurance applicable to CONTRACTOR's obligations under paragraphs 6.30 and 6.31.

Owner's Liability Insurance:

5.5. OWNER shall be responsible for purchasing and maintaining OWNER's own liability insurance and, at OWNER's option, may purchase and maintain such insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

Property Insurance:

5.6. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER and ENGINEER's consultants in the Work, all of whom shall be listed as insureds or additional insured parties, shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in the Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance or otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment.

5.7. OWNER shall purchase and maintain such boiler machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER and ENGINEER's consultants in the Work, all of whom shall be listed as insured or additional insured parties.

5.8. All the policies of insurance (or the

certificates or other evidence thereof) required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least thirty days' prior written notice has been given to CONTRACTOR by certified mail and will contain waiver provisions in accordance with paragraph 5.11.2.

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

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

Waiver of Rights:

5.11.1. OWNER and CONTRACTOR waive all rights against each other for all losses and damages caused by any of the perils covered by the policies of insurance provided in response to paragraphs 5.6 and 5.7 and any other property insurance applicable to the Work, and also waive all such rights against the Subcontractors, ENGINEER, ENGINEER's consultants and all other parties named as insureds in such policies for losses and damages so caused. As required by paragraph 6.11, each subcontract between CONTRACTOR and a Subcontractor will contain similar waiver provisions by the Subcontractor in favor of OWNER, CONTRACTOR, ENGINEER, ENGINEER's consultants and all other parties named as insureds. None of the above waivers shall extend to the rights that any of the insured parties may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

5.11.2. OWNER and CONTRACTOR intend that any policies provided in response to paragraphs 5.6 and 5.7 shall protect all of the parties insured and provide primary coverage for all losses and damages caused by the perils covered thereby. Accordingly, all such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any of the parties named as insureds or additional insureds, and if the insurers require separate waiver forms to be signed by ENGINEER or ENGINEER's consultant OWNER will obtain the same, and if such waiver forms are required of any Subcontractor, CONTRACTOR will obtain the same.

Receipt and Application of Proceeds:

5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 will be adjusted with OWNER and made payable to OWNER as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

5.13. OWNER as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as trustee shall, upon the

occurrence of an insured loss, give bond for the proper performance of such duties.

Acceptance of Insurance:

5.14. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with paragraphs 5.3 and 5.4 on the basis of its not complying with the Contract Documents, OWNER shall notify CONTRACTOR in writing thereof within ten days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.7. If CONTRACTOR has any objection to the coverage afforded by or other provisions of the policies of insurance required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 on the basis of their not complying with the Contract Documents, CONTRACTOR shall notify OWNER in writing thereof within ten days of the date of delivery of such certificates to CONTRACTOR in accordance with paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided by each as the other may reasonably request. Failure by OWNER or CONTRACTOR to give any such notice of objection within the time provided shall constitute acceptance of such insurance purchased by the other as complying with the Contract Documents.

Partial Utilization - Property Insurance:

5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or lapse on account of any such partial use of occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1. CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selections of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf on CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

6.3.1 CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.

6.3.2 CONTRACTOR is required to give 3 days notice in writing for change of project manager. A meeting is then required with the new project manager within 1 week.

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

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to ENGINEER, or any of ENGINEER's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

Adjusting Progress Schedule:

6.6. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.9) adjustments in the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto. Such schedule and basic progress description shall be submitted with each pay application.

Substitutes or "Or-Equal"Items:

6.7.1. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by ENGINEER if sufficient information is submitted by CONTRACTOR to allow ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by ENGINEER will include the following as supplemented in the General Requirements. Requests for review of substitute items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the

resulting change, all of which shall be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR's expense additional data about the proposed substitute.

6.7.2. If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to ENGINEER, if CONTRACTOR submits sufficient information to allow ENGINEER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in paragraph 6.7.1 as applied by ENGINEER and as may be supplemented in the General Requirements.

6.7.3. ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without ENGINEER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute. ENGINEER will record time required consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's consultants for evaluating each proposed substitute.

Concerning Subcontractors, Suppliers and Others:

6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

6.8.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions. OWNER's or ENGINEER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be increased by the difference in the cost occasioned by such substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right or OWNER or ENGINEER to reject *defective* Work.

6.9. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions.

Nothing in the Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

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

6.11. All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER and contains waiver provisions as required by paragraph 5.11. CONTRACTOR shall pay each Subcontractor a just share of any insurance moneys received by CONTRACTOR on account of losses under policies issued pursuant to paragraphs 5.6 and 5.7.

Patent Fees and Royalties:

6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorney's fees and court and arbitration costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

Permits:

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

6.13.2 A copy of the required TCEQ Notice of Intent as required by the plans is to be delivered to the City at the Pre-Con.

Laws and Regulations:

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER or ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

6.14.2. If CONTRACTOR observes that the Specifications or Drawings are at variance with any Laws or Regulations, CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work

knowing or having reason to know that it is contrary to such Laws or Regulations, and without such notice to ENGINEER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Taxes:

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

Use of Premises:

6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against OWNER or ENGINEER by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations indemnify and hold OWNER and ENGINEER harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against OWNER or ENGINEER to the extent based on a claim arising out of CONTRACTOR's performance of the Work.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

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

Record Documents:

6.19.1 CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Directive Changes, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, samples and Shop Drawings will be delivered to ENGINEER for OWNER.

6.19.2 Erosion control inspection reports shall be kept in the same location.

Safety and Protection:

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety

precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. all employees on the Work and other persons and organizations who may be affected thereby;

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

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

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR). CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.21. CONTRACTOR shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR's superintendent unless otherwise designated in writing by CONTRACTOR to OWNER.

Emergencies:

6.22. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from ENGINEER or OWNER, is obliged to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Work Directive Change or Change Order will be issued to document the consequences of the changes or variations.

Shop Drawings and Samples:

6.23. After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, CONTRACTOR shall submit to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.9), or for other appropriate action if so indicated in the Supplementary Conditions, five copies (unless otherwise specified in the General Requirements) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials

and similar data to enable ENGINEER to review the information as required.

6.24. CONTRACTOR shall also submit to ENGINEER for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

6.25.1 Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

6.25.2. At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to ENGINEER for review and approval of each such variation.

6.26. ENGINEER will review and approve with reasonable promptness Shop Drawings and samples, but ENGINEER's review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.27. ENGINEER's review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of submission as required by paragraph 6.25.2 and ENGINEER has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 6.25.1.

6.28. Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to ENGINEER's review and approval of the pertinent submission will be the sole expense and responsibility of CONTRACTOR.

Continuing the Work:

6.29. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as CONTRACTOR and OWNER may otherwise agree in writing.

Indemnification:

6.30. To the fullest extent permitted by Laws and Regulations CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and their consultants, agents and employees from and

against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by Law and Regulations regardless of the negligence of any such party.

6.31. In any and all claims against OWNER or ENGINEER or any of their consultants, agents or employees by any employee of CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.30 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefit payable by or for CONTRACTOR or any such Subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

6.32. The obligations of CONTRACTOR under paragraph 6.30 shall not extend to the liability of ENGINEER, ENGINEER's consultants, agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications.

ARTICLE 7 - OTHER WORK

Related Work at Site:

7.1. OWNER may perform other work related to the Project at the site by OWNER's own forces, have other work performed by utility owners or let other direct contracts therefor which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to CONTRACTOR prior to starting any such other work; and, if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

7.2. CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with theirs. CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

7.3. If any part of CONTRACTOR's Work depends for proper execution or results upon the Work of any such other contractor or utility owner (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. CONTRACTOR's failure so to report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's Work except for latent or nonapparent defects and deficiencies in the other work.

Coordination:

7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Supplementary Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Supplementary Conditions. Unless otherwise provided in the Supplementary Conditions, neither OWNER nor ENGINEER shall have any authority or responsibility in respect of such coordination.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.1. OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.2. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER. Any dispute in connection with such appointment shall be subject to arbitration.

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly after they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing structures which have been utilized by ENGINEER in preparing the Drawings and Specifications.

8.5. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.5 through 5.8.

8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.

8.7. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4

8.8. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

Owner's Representative:

9.1 ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site:

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages or construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations as an experienced and qualified design professional, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and

deficiencies in the Work.

Project Representation:

9.3. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in observing the performance of the Work. The duties, responsibilities and limitations of authority of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions. If OWNER designates another agent to represent OWNER at the site who is not ENGINEER's agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Supplementary Conditions.

Clarifications and Interpretations:

9.4. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If CONTRACTOR believes that a written clarification or interpretation justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5 ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER, and also on CONTRACTOR who shall perform the Work involved promptly. If CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Article 11 or 12.

Rejecting Defective Work:

9.6. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be *defective*, and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7. In connection with ENGINEER's responsibility for Shop Drawings and samples, see paragraphs 6.23 through 6.29 inclusive.

9.8. In connection with ENGINEER's responsibilities as to Change Orders, see Articles 10, 11 and 12.

9.9. In connection with ENGINEER's responsibilities in respect of Applications for Payment, etc., see Article 14.

Determinations for Unit Prices:

9.10. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decisions thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other party to the Agreement to ENGINEER written notice of intention to appeal from such a decision.

Decisions on Disputes:

9.11. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Time will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered by the claimant to ENGINEER and the other party to the Agreement promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.

9.12. When functioning as interpreter and judge under paragraphs 9.10 and 9.11, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 and 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraphs 14.16) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter.

Limitations on ENGINEER's Responsibilities:

9.13. Neither ENGINEER's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

9.14. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirements, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

9.15. ENGINEER will not be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

9.16. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

ARTICLE 10 - CHANGES IN THE WORK

10.1. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by a Written Amendment, a Change Order, or a Work Directive Change. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed

under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2. If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Work Directive Change, a claim may be made therefor as provided in Article 11 or 12.

10.3. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.4 and 3.5, except in the case of an emergency as provided in paragraph 6.22 and except in the case of uncovering Work as provided in paragraph 13.9.

10.4. OWNER and CONTRACTOR shall execute appropriate Change Orders (or Written Amendments) covering:

10.4.1. changes in the Work which are ordered by OWNER pursuant to paragraph 10.1, are required because of acceptance of *defective* Work under paragraph 13.13 or correcting *defective* Work under paragraph 13.14, or are agreed to by the parties;

10.4.2. changes in the Contract Price or Contract Time which are agreed to by the parties; and

10.4.3. changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11;

provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.5. In notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11 - CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph 11.2.

11.3. The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1 through 11.9.3 inclusive).

11.3.2. By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2.1).

11.3.3. On the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's Fee for overhead and profit (determined as provided in paragraphs 11.6 and 11.7).

Cost of the Work:

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5.

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors, if required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as CONTRACTOR's Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2. Cost, including transportation

and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof - all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

11.4.5.5. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

11.4.5.6. Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they have resulted from causes other than the negligence of CONTRACTOR, and Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's Fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such a telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9. Cost of premiums for additional Bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER in accordance with paragraph 5.9.

11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by

paragraph 11.4.4 - all of which are to be considered administrative costs covered by the CONTRACTOR's Fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.9 above).

11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of *defective* Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

11.5.6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

CONTRACTOR'S Fee:

11.6. The CONTRACTOR's Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. a mutually acceptable fixed fee; or if none can be agreed upon,

11.6.2. a fee based on the following percentages of the various portions of the Cost of the Work:

11.6.2.1. for costs incurred under paragraphs 11.4.1 and 11.4.2, the CONTRACTOR's Fee shall be fifteen percent;

11.6.2.2. for costs incurred under paragraph 11.4.3, the CONTRACTOR's Fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a Fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors shall be fifteen percent;

11.6.2.3. no fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5, and 11.5;

11.6.2.4. the amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR's Fee by an amount equal to ten percent of the net decrease; and

11.6.2.5. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's Fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.4, inclusive.

11.7. Whenever the cost of any Work is to be determined pursuant to paragraph 11.4 or 11.5, CONTRACTOR will submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

Cash Allowances:

11.8. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to ENGINEER. CONTRACTOR agrees that:

11.8.1. The allowances include the cost to CONTRACTOR (less any applicable trade discounts)

of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

11.8.2. CONTRACTOR's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any thereof will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

Unit Price Work:

11.9.1. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with Paragraph 9.10.

11.9.2 Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

11.9.3. Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the amount of any such increase.

ARTICLE 12 - CHANGE OF CONTRACT TIME

12.1. The Contract Time may only be changed by a Change Order or a Written Amendment. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph

12.2. The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefor as provided in paragraph 12.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 7, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God.

12.3. All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 12 shall not exclude

recovery for damages (including but not limited to fees and changes of engineers, architects, attorneys and other professionals and court and arbitration costs) for delay by either party.

ARTICLE 13 - WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee:

13.1. CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all Work will be in accordance with the Contract Documents and will not be *defective*. Prompt notice of all defects shall be given to CONTRACTOR. All *defective* Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. ENGINEER and ENGINEER's representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

Tests and Inspections:

13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.

13.4. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish ENGINEER the required certificates or inspection, testing or approval. CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with OWNER's or ENGINEER's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by OWNER (unless otherwise specified).

13.5. All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

13.6. If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation. Such uncovering shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.7. Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR's obligations to perform the Work in accordance with the Contract Documents.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and

equipment. If it is found that such Work is *defective*, CONTRACTOR shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges or engineers, architects, attorneys and other professionals), and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be *defective*, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Owner May Stop the Work:

13.10. If the Work is *defective*, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until and cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

Correction or Removal of Defective Work:

13.11. If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all *defective* Work, whether or not fabricated, installed or completed, or if the Work has been rejected by ENGINEER, remove it from the site and replace it with *nondefective* Work. CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

Two Year Correction Period:

13.12. If within Two years after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be *defective*, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions, either correct such *defective* Work, or, if it has been rejected by OWNER, remove it from the site and replace it with *nondefective* Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the *defective* Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier data if so provided in the Specifications or by Written Amendment.

Acceptance of Defective Work:

13.13. If, instead of requiring correction or removal and replacement of *defective* Work, OWNER (and, prior to ENGINEER's recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall bear all direct, indirect and consequential costs attributable to OWNER's evaluation of and determination to accept such *defective* Work (such costs to be approved by ENGINEER as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions

in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If the acceptance occurs after such recommendations, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

13.14. If CONTRACTOR fails within a reasonable time after written notice of ENGINEER to proceed to correct and to correct *defective* Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.11, or it CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provisions of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR in an amount approved as to reasonableness by ENGINEER, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's *defective* Work. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies hereunder.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values:

14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment:

14.2. At least twenty days before each progress payment is scheduled (but not more often than once a month). CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Document. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are

covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

CONTRACTOR's Warranty of Title:

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER, no later than the time of payment free and clear of all Liens.

Review of Applications for Progress Payment:

14.4. ENGINEER will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Ten days after presentation of the Application for Payment with ENGINEER's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by OWNER to CONTRACTOR.

14.5. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of the Work in progress as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of ENGINEER's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10, and to any other qualifications stated in the recommendation); and that CONTRACTOR is entitled to payment of the amount recommended. However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents or that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or OWNER to withhold payment to CONTRACTOR.

14.6. ENGINEER's recommendation of final payment will constitute an additional representation by ENGINEER to OWNER that the conditions precedent to CONTRACTOR's being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make such representations to OWNER. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

14.7.1. the Work is *defective*, or completed work has been damaged requiring correction or replacement,

14.7.2. the Contract Price has been reduced by Written Amendment or Change Order,

14.7.3. OWNER has been required to correct *defective* Work or complete Work in accordance with paragraph 13.14, or

14.7.4. of ENGINEER's actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.9 inclusive.

OWNER may refuse to make payment of the full amount recommended by ENGINEER because claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work or Liens have been filed in connection with the Work or there are other items entitling OWNER to a set-off against the amount recommended, but OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action.

Substantial Completion:

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization:

14.10. Use by OWNER of any finished part of the Work, which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER and ENGINEER that said part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR and ENGINEER shall make an

inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of the part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2. OWNER may at any time request CONTRACTOR in writing to permit OWNER to take over operation of any such part of the Work although it is not substantially complete. A copy of such request will be sent to ENGINEER and within a reasonable time thereafter OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If CONTRACTOR does not object in writing to OWNER and ENGINEER that such part of the Work is not ready for separate operation by OWNER, ENGINEER will finalize the list of items to be completed or corrected and will deliver such list to OWNER and CONTRACTOR together with a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, utilities, insurance, warranties and that part of the Work which will become binding upon OWNER and CONTRACTOR at the time when OWNER takes over such operation (unless they shall have otherwise agreed in writing and so informed ENGINEER). During such operation and prior to Substantial Completion of such part of the Work, OWNER shall allow CONTRACTOR reasonable access to complete or correct items on said list and to complete other related Work.

14.10.3. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.15 in respect of property insurance.

Final Inspection:

14.11. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or *defective*. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

Final Application for Payment:

14.12. After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents - all as required by the Contract Documents, and after ENGINEER has indicated that the Work is acceptable (subject to the provisions of paragraph 14.16), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance:

14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.16. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance, and with ENGINEER's recommendation and notice of acceptability, the amount recommended by ENGINEER will become due and will be paid by OWNER to CONTRACTOR.

14.14. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Contractor's Continuing Obligation:

14.15. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the issuance of a certificate of Substantial Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13, nor any correction of *defective* Work by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 14.16).

Waiver of Claims:

14.16. The making and acceptance of final payment will constitute:

14.16.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from *defective* Work appearing after final inspection pursuant to paragraph 14.11 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of CONTRACTOR's continuing obligations under the Contract Documents; and

14.16.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

Owner May Suspend Work:

15.1. OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

Owner May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency;

15.2.2. if a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of tiling, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

15.2.3. if CONTRACTOR makes a general assignment for the benefit of creditors;

15.2.4. if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR's creditors;

15.2.5. if CONTRACTOR admits in writing an inability to pay its debts generally as they become due;

15.2.6. if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9 as revised from time to time);

15.2.7. if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.8. if CONTRACTOR disregards the authority of ENGINEER; or

15.2.9. if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety, if there by one) seven day's written notice and

to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration

costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by ENGINEER and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.4. Upon seven days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

Contractor May Stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted, or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER and ENGINEER stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 6.29 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

ARTICLE 16 - ARBITRATION

16.1. All claims, disputes and other matters in question between OWNER and CONTRACTOR arising out of, or relating to the Contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.16) will be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining subject to the limitations of this Article 16. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing law of any court having jurisdiction.

16.2 No demand for arbitration of any claim, dispute or other matter that is required to be referred to ENGINEER initially for decision in accordance with paragraph 9.11 will be made until the earlier of (a) the date on which ENGINEER has rendered a decision or (b) the tenth day after the parties have presented their evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such claim, dispute or other matter will be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 9.11; and the failure to demand arbitration within said thirty days' period shall result in ENGINEER's decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is

acceptable to the parties concerned. No demand for arbitration of any written decision of ENGINEER rendered in accordance with paragraph 9.10 will be made later than ten days after the party making such demand has delivered written notice of intention to appeal as provided in paragraph 9.10.

16.3. Notice of the demand for arbitration will be filed in writing with the other party to the Agreement and with the American Arbitration Association, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the thirty-day or ten-day period specified in paragraph 16.2 as applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statue of limitations.

16.4. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder or in any other manner any other person or entity (including ENGINEER, ENGINEER's agents, employees or consultants) who is not a party to this contract unless:

16.4.1. the inclusion of such other person or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration,

16.4.2. such other person or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and

16.4.3. the written consent of the other person or entity sought to be included and of OWNER and CONTRACTOR has been obtained for such inclusion, which consent shall make specific reference to this paragraph; but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.

16.5. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and will not be subject to modification or appeal except to the extent permitted by Sections 10 and 11 of the Federal Arbitration Act (9 U.S.C.§§10,11).

ARTICLE 17 - MISCELLANEOUS

Giving Notice:

17.1. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Time:

17.2.1. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.2.2. A calendar day of twenty-four hours measured from midnight to the next midnight shall constitute a day.

General:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other

party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.30, 13.1, 13.12, 13.14, 14.3, and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

10) SUPPLEMENTARY CONDITIONS

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SUPPLEMENTARY CONDITIONS

SUPPLEMENTARY CONDITIONS

ARTICLE 1 - DEFINITIONS

The numbering system of this section corresponds to the numbering system of the General Conditions Agreement. The provisions of this section of the specifications shall govern in the event of any conflict between them and the General Conditions of the Agreement.

Delete existing definitions of these words and substitute the following:

OWNER - The word "OWNER" in these specifications shall be understood as referring to the City of Hurst, Texas acting through its duly authorized representatives.

ENGINEER - The word "Engineer" in these specifications shall be understood referring to the City Engineer, 1505 Precinct Line Rd., Tarrant County, Texas, or such other ENGINEER, Supervisor or Inspector as may be authorized by said OWNER to act in any particular position.

Add to the list of definitions the following:

OWNER, CONTRACTOR AND ENGINEER - The OWNER, the CONTRACTOR and the ENGINEER are those persons or organizations identified as such in the Agreement and are referred to throughout the Contract Documents as if singular in number and masculine in gender. Nothing contained in the Contract Documents shall create any contractual or agency relationship between the ENGINEER and the CONTRACTOR.

WORKING DAY - No work shall be allowed on this project except on "Working Days" unless prior approval is obtained from the ENGINEER. A "Working Day" is defined as any day, not including Saturdays, or Sundays or any holiday recognized by the City of Hurst, in which weather or other conditions, not under the control of the CONTRACTOR, will permit construction of the principle units of the work for a period of not less than seven (7) hours between 8:00 A.M. and 5:00 P.M.

1. New Year's Day ..... January 1
2. Good Friday ..... Friday Before Easter
3. Memorial Day ..... Last Monday in May
4. Independence Day ..... July 4
5. Labor Day ..... First Monday in September
6. Thanksgiving Day ..... Fourth Thursday in November
7. Thanksgiving Friday ..... Fourth Friday in November
8. Christmas Eve ..... December 24
9. Christmas Day ..... December 25
10. Such other days in lieu of holidays as the City Council may determine.

ARTICLE 2 - PRELIMINARY MATTERS

Delete Paragraph 2.2. and substitute the following:

2.2. The OWNER shall furnish the CONTRACTOR with five (5) sets of plans and specifications at no charge. Additional copies may be obtained at cost of reproduction upon request. The CONTRACTOR shall keep one copy of these plans and specifications constantly accessible on the work site, with the latest revisions noted thereon.

Add to paragraph 2.6. the following:

2.6.4. The CONTRACTOR shall, if requested by the OWNER, within fifteen (15) days after a Contract has been awarded to him, furnish to the OWNER satisfactory evidence that has made the purchases or binding commitments for the necessary material and equipment to do the work called for in the Contract.

Delete Paragraph 2.7. and substitute the following:

2.7. Before any work at the site is started, the CONTRACTOR shall deliver to the OWNER, with copy to the ENGINEER, certificates (and other evidence of insurance requested by the OWNER), which CONTRACTOR is required to purchase and maintain in accordance with Paragraphs 5.3. and 5.4.

Add to Article 2 the following:

2.10. If requested by the OWNER, the low apparent Bidder shall within five (5) days of the request, submit a Statement of Bidder's Qualifications, a blank copy of which will be provided by the OWNER. Statement will then be made a binding part of these Contract Documents.

2.11.1. The CONTRACTOR shall provide upon request by the OWNER, engineering data covering all materials and equipment in this Contract for approval by the ENGINEER. As applicable, the following types of data may be required:

(a) Fabrication and erection (or placement) drawings, list and schedules.
(b) Outline, dimensions, assembly and installation drawings.
(c) Catalog sheets.
(d) Specification sheets.
(e) Written statements.
(f) Laboratory, shop or mill test reports.
(g) Basis of design and design calculations.
(h) Experience and facilities brochures.
(i) Samples.
(j) Parts list.
(k) Instruction manuals.

The data submitted shall be adequate to determine:

(a) Conformance to Specifications, including kind, size, arrangement, finishes and operation of component materials and devices.
(b) Conformance to drawings, including dimensions, orientation, appearance, external connections and anchorage and installation clearances.
(c) Specific purpose or design conditions, and adequacy to meet the same, weights, dynamic loads, supports required, operating characteristics.
(d) Coordination with other work, including items needed by any trade, but furnished by others, and information needed by others to perform their part.
(e) Exception to or deviations from specified requirements, if any, and reasons for same.
(f) Delivery date. This should be stated as a firm date of delivery, not measured from approval of drawings to date of shipping. For this porous the time taken by the ENGINEER to process data may be taken as not exceeding seven (7) days. The ENGINEER does not assume responsibility for correctness or completeness of the data, however, The CONTRACTOR should determine that proposed delivery dates will not cause delay or result in failure to complete the project on time.

2.11.2. Approval data and routine correspondence should be routed as follows:

Supplier to CONTRACTOR for preliminary check.
CONTRACTOR to ENGINEER for review and approval or comment.
ENGINEER to CONTRACTOR.
CONTRACTOR to Supplier.

The CONTRACTOR shall submit five (5) copies (Department of Public Work's file, Engineer's file, Contractor's file copy, and Supplier's copy) of that data requiring approval.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT AMENDING, REUSE

Add to Paragraph 3.3. the following:

"The quantities shown are presented for information only."

ARTICLE 4 - AVAILABILITY OF THE LANDS: PHYSICAL CONDITIONS; REFERENCE POINTS

Add to Paragraph 4.2.1. the following:

4.2.1.1. In preparation of drawings and specifications, Engineer has relied upon:

Report dated: October 2022

Prepared by: CMJ Engineering, Inc.

Entitled: Geotechnical Engineering Study West Pipeline Road Reconstruction Phase 4 – Harrison Lane to Brown Trail, Hurst, Texas

Consisting of 46 pages.

The technical data contained in such report upon which CONTRACTOR may rely is: the boring method, plan and logs, level of subsurface water, laboratory test methods and results, all as of date made.

Copies of these reports and drawings that are not included with bidding documents may be examined at the office of the ENGINEER during regular business hours. These reports and drawings are not a part of the Contract Documents, but the technical data contained therein upon which CONTRACTOR is entitled to rely as provided in Paragraph 4.2. and identified and established above any incorporated therein by reference. Soils investigation data is provided only for information and convince of Bidders. The OWNER and ENGINEER disclaim any responsibility for accuracy, true location and extent of soils investigation that has been prepared by others. They further disclaim responsibility for interpretation of that data by Bidders; as in projecting soil-bearing values, rock profiles, soil stability and presence, level and intent of underground water.

ARTICLE 5 - BONDS AND INSURANCE

Delete Paragraph 5.1. and substitute the following:

5.1.1. The CONTRACTOR will execute separate performance, payment and maintenance bonds, each in the sum of one hundred percent (100%) of the total contract price, on standard forms provided by the City for this purpose, guaranteeing faithful performance of the work, guaranteeing maintenance on said work for a period of two (2) years from the date of final acceptance, and further guaranteeing payment to all persons supplying labor and materials or furnishing him any equipment in the execution of the Contract, and it is agreed that this Contract shall not be in effect until such performance, maintenance and payment bonds are furnished and approved by the OWNER. Payment, performance and maintenance bonds will not be required on contracts less than $25,000.00.

5.1.2. For each of these bonds, one recovery shall not exhaust it, but such bond shall be a continuing obligation against both principal and surety until the entire amount thereon shall be decreased on account of any recovery which may be obtained arising out of the violation of any condition of same, the City Council

shall require, upon notice to it of such fact, an additional bond be given in accordance with this section in an amount sufficient, when added to the non-exhausted amount of the original bond, to be at all times equal to the original cost of the construction, reconstruction or repair.

5.1.3. The maintenance shall be conditioned such that the principal (CONTRACTOR) shall maintain the work covered in the contract for a period of two years from the date of final acceptance of the work by the OWNER to the satisfaction of the Public Works Department of the City of Hurst. If, during this maintenance period the CONTRACTOR fails to correct any defects at his own expense within ten (10) days notice from the Public Works Department and to the satisfaction of the Public Works Department, then the OWNER may make necessary repairs and charge the CONTRACTOR with the actual cost of all labor and materials required. The opinion of the Public Works Department as to the necessity of such reconstruction and repair shall be binding on the parties thereto.

5.1.4. The Bonding Company providing the Performance, Payment and Maintenance Bonds shall provide a Certificate of Authority from the United States Treasury that reflects that said Bonding Company is an acceptable surety on Federal Bonds, Department Circular 570, in compliance with Texas Government Code, Section 2253.021 and Texas Insurance3 Code3, Article 7.19-1.

Add to Article 5 the following:

5.3.8. Contractors Liability Insurance.

(a) Worker's compensation as required by Texas Law, with the policy endorsed to provide a waiver of subjugating as to the OWNER: employer's liability insurance of not less than $100,000.00 for each accident.

(b) Comprehensive general liability insurance, including independent CONTRACTOR'S liability, completed operations and contractual liability, covering, but not limited to, the liability assumed under the indemnification provisions of this contract, fully insuring CONTRACTOR'S (or Subcontractor's) liability for injury to or death of OWNER'S employees and third parties, intended to include personal injury liability coverage, and for damage to property of third parties, with the following limits for each occurrence:

Injury or Death	$500,000
Property Damage	$500,000

The policy shall include broad form property damage extended to apply to completed operations, exclusions removed. The completed operations coverage must be obtained for a minimum of two (2) years after final completion and acceptance of the work, with evidence of same filed with OWNER. Where work is being performed in connection with an existing facility owned or leased by the OWNER, the policy shall include fire legal liability of not less than $100,000 per occurrence.

(c) Comprehensive automobile and truck liability insurance, covering owner, hired and non-owned vehicles, with minimum limits of $500,000, each occurrence, for bodily injury and $100,000, each occurrence, for property damage, such insurance to include coverage for loading and unloading hazards.

Delete Paragraph 5.5. and substitute the following:

5.5. The CONTRACTOR shall obtain, pay for and maintain at all times during the prosecution of the work under this contract, an OWNER'S protective liability insurance policy naming the OWNER as insured for property damage and bodily injury, including death, which may arise in the prosecution of the work or CONTRACTOR'S operations under the contract. Coverage shall be on the "occurrence" basis, and the policy shall be issued by the same insurance company that carries the CONTRACTOR'S liability insurance. Limits of liability shall be as follows:

Bodily Injury	$500,000

Property Damage $500,000

Delete Paragraphs 5.6. thru 5.13.

Delete Paragraph 5.14. except for the first sentence.

Add to Article 5 the following:

5.16. The CONTRACTOR shall obtain, pay for and maintain a "Umbrella" excess liability insurance policy during the contract term, insuring CONTRACTOR for an amount not less than $1,000,000 combined single limit, bodily injury and property damage liability insurance, including death, in excess of the preliminary coverage required herein above, OWNER and ENGINEER to be named as additional insured.

5.17.1. Each insurance policy to be furnished by CONTRACTOR shall include the following conditions by endorsement to the policy:

(a) Each policy shall require that 30 days prior to the cancellation or any material change in coverage, a notice thereof shall be given to OWNER by certified mail;
(b) The term "OWNER" shall include all authorities, boards, bureaus, commissions, divisions, departments and offices of the OWNER and the individual members, employees and agents thereof in their official capacities, and/or while acting on behalf of the OWNER; and
(c) The policy phrase "other insurance" shall not apply to the OWNER where the OWNER is an additional insured on the policy.
(d) Name the City of Hurst and its officers, employees and elected representatives as additional insured, (as the interest of each insured may appear) as to all applicable coverage.

5.17.2. Concerning insurance to be furnished by CONTRACTOR, it is a condition precedent to acceptability thereof that:

(a) Any policy submitted shall not be subject to limitations, conditions or restrictions deemed inconsistent with the intent of the insurance requirements to be fulfilled by CONTRACTOR. The OWNER'S decision thereon shall be final; and
(b) All policies are to be written through companies duly authorized to transact that class insurance in the State of Texas.

5.17.3. CONTRACTOR agrees to the following;

(a) CONTRACTOR hereby waives subrogation rights for loss or damage to the extent same are covered by insurance. Insurers shall have no right of recovery or subrogation against the OWNER, it being the intention that the insurance policies shall protect all parties to the contract and to be primary coverage for all losses covered by the polices;
(b) Companies issuing the insurance policies and CONTRACTOR shall have no recourse against the OWNER for payment of any premiums for any deductibles, as such premiums and deductibles are to be sole responsibility and risk of the CONTRACTOR;
(c) Approval, disapproval or failure to act by the OWNER regarding any insurance supplied by the CONTRACTOR (or any Subcontractor) shall not relieve the CONTRACTOR of full responsibility for damages and accidents as set forth in the contract documents, neither shall the bankruptcy, insolvency of denial of liability by the insurance company exonerate the CONTRACTOR from liability; and
(d) No special payments shall be made for any insurance that the CONTRACTOR and Subcontractors are required to carry; all are included in the contract price and the contract unit prices.

5.17.4. Any such insurance policies required under this section may be written in combination with any of the others, where legally permitted, but none of the specified limits may be lowered thereby.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

Add to Paragraph 6.5. the following:

Any materials delivered to the work site and judged to be defective by the Engineer or his representative shall be removed from the work site immediately. If defective materials are unloaded at the work site or storage site they shall be marked with paint for easy identification so they will not mistakenly be installed in the work.

Add to Paragraph 6.7.1. the following:
6.7.1.1. In considering any equipment offered as a substitute for equipment named in the specifications, proof of equality is the responsibility of the CONTRACTOR, and is not the responsibility of the ENGINEER to prove the equality of the proposed substitutions. Furthermore, the decision of the ENGINEER is final and incontestable. It shall be the responsibility of the CONTRACTOR to submit, seventy-two (72) hours prior to bid opening, with each request for approval of substitute material or equipment, sufficient data to show conclusively that it is equal to the material or equipment specified in the following respects:

1. Materials of construction.
2. Gauges, weights and size of all portions and component parts.
3. Design arrangements, methods of construction and good workmanship.
4. Coatings, finishes, durability of wearing parts.
5. Performance, according to rating codes specified by, acceptable to the ENGINEER.
6. National reputation of the manufacturer as a producer of first quality equipment of the type under consideration.
7. Availability of prompt, reliable and efficient service facilities franchised by or affiliated with the equipment manufacturer within the project locality.
8. Ability to meet schedules as shown on Contract Drawings and Specifications.

6.7.1.2. No material, which has been used by the CONTRACTOR for any temporary purpose whatsoever, is to be incorporated in any permanent structure without written consent of the ENGINEER.

Add to Paragraph 6.8. the following:

6.8.3. The CONTRACTOR shall furnish to the OWNER a list of all Subcontractors, Suppliers or other persons who will perform work prior to starting the work.

Delete last sentence in Paragraph 6.11.

Add to Paragraph 6.13. the following:

6.13.1. Building permits will be secured and paid for by the OWNER, The CONTRACTOR shall secure all other permits licenses, pay all charges and fees, and give in writing all necessary notices before and during the performance of the work including to property owners.

Add the following sentence to Paragraph 6.14.1.:

No plea of misunderstanding or ignorance thereof will be considered.

Delete Paragraph 6.15. and replace with the following:

6.15. The OWNER qualifies as an exempt agency pursuant to the provisions of Article 20.04 (f) of the Texas Limited Sales, Excise, and Use Tax Act, an is not subject to any state or city taxes. The CONTRACTOR performing this Contract may purchase, rent or lease all materials, supplies, equipment used or consumed in the performance of this Contract by issuing to his supplier an exemption certificate in lieu of taxes, said

exemption certificate complying with the State Comptroller's Ruling No,95.0.09 as amended to be effective November 2, 1968.

Add to Paragraph 6.16. the following:

6.16.1 Unless prior approval is obtained from the ENGINEER, no materials shall be stored in the street, and when such permission is granted a twelve (12) foot traffic lane will be maintained free and clear. Materials shall not be stored on private property without the expressed approval of the property owner(s) so concerned. A letter of permission from the property owner(s) must be obtained and placed on file with the ENGINEER.

6.16.2. The safety of the public shall be regarded as prime importance during construction. Provisions for public safety and convenience shall be the responsibility of the CONTRACTOR and shall be provided at his expense.
6.16.3 When any section of a street is closed, the CONTRACTOR shall furnish and maintain at each end of the closed section and at all intersecting streets within the section adequate barricades, warning and directing signs, lights and red flags in accordance with City of Hurst Ordinance No. 552 Barricading Manual. All lights shall be kept burning between the hours of sunset and sunrise.

6.16.4. No direct payment will be made to the CONTRACTOR for any incidentals necessary for the proper direction, safety convenience of traffic during the contract prior as this work is considered subsidiary to the work for which unit prices are requested in the proposal.

Add to Paragraph 6.20. the following:

6.20.4. Unless stated otherwise in writing by the ENGINEER, explosives shall not be used within the City of Hurst on this project.

6.20.5. All work preformed in trenches shall be in accordance with Hurst City Ordinance No. 1225.

Add to Article 6 the following:

6.33. The CONTRACTOR shall be responsible for any utility services required for prosecution of the work or otherwise adequate facilities. Generally, water may be purchased from the OWNER provided such water is delivered through a working fire hydrant meter obtained from the OWNER upon payment of a refundable property deposit.

6.34. The CONTRACTOR shall establish and enforce among his employees such regulations regarding cleanliness and disposal of garbage and waste as will tend to prevent inception and spread of infection or contagious diseases and prevent effectively the creation of a nuisance about the work or any property, either public or private, and such regulations as are required by the ENGINEER shall be put into immediate force by the CONTRACTOR. Necessary sanitary conveniences for the use of laborers on the work, properly secluded from public observation, shall be constructed and maintained by the CONTRACTOR, in such a manner and at such points as are approved by the ENGINEER, and their use
shall be strictly enforced. All sanitary laws and regulations of the State of Texas and the City of Hurst shall be strictly complied with.

6.35. Preference of employment shall be given to resident citizens of the City of Hurst and Tarrant County where such persons are available and fully qualified to perform the work to which the employment relates.

6.36.1. The CONTRACTOR shall not discriminate against any employee or applicant for employment because of race, age, color, religion, sex, ancestry, national origin, or place of birth. The CONTRACTOR shall take affirmative action to insure that applicants are employed, and that employees are treated during employment, without regard to their race, age, color, religion, sex, ancestry, national origin, or place of birth. This action shall include, but not be limited to, the following: employment, upgrading, demotion, or termination; rates of pay or other forms of compensation; and selection for training, including

apprenticeship. The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants, notice setting forth provisions of this nondiscrimination clause.

6.36.2. The CONTRACTOR shall in all solicitations or advertisements for employees placed on behalf of the CONTRACTOR, state that all qualified applicants will receive consideration for employment without regard to race, age, color, religion, sex, ancestry, national origin, or place of birth.

6.36.3. The CONTRACTOR shall furnish all information and reports required by the OWNER or his design to investigate and personal records which pertain to current construction contracts with the OWNER for propose of ascertaining compliance with equal employment opportunity clause.

6.36.4. The CONTRACTOR shall file compliance with the ENGINEER as may be required by the OWNER or his designate. Compliance reports must be filed within the time, must contain information as to employment practices, policies, programs, and statistics of the CONTRACTOR, and must be in the form that the OWNER or his designate prescribes.

6.36.5. If the CONTRACTOR fails to comply with the equal employment opportunity provisions of this contract, it is agreed that the OWNER, at his option, may do either or both of the following:

1. Cancel, terminate, or suspend the contract in whole or in part;

2. Declare the CONTRACTOR ineligible for future contracts until he is determined to be in compliance.

6.37.1. Minimum wage rates to be paid the various classes of labor employed directly on this project are included in these specifications.

6.37.2. Attention is called to the fact that the inclusion of the minimum scale wages to be paid to employees engaged in the work under this contract does not release the CONTRACTOR from compliance with the State Wage Law that may be applicable. The CONTRACTOR shall abide by the Wage and Hour Laws of the state and must not pay less than the rates legally prescribed as set forth therein. The wage rates have been determined by the OWNER to be the prevailing rates applicable to the work to be done under this contract.

ARTICLE 7 - OTHER WORK

ARTICLE 8 - OWNERS RESPONSIBILITIES

Delete Paragraph 8.5.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

ARTICLE 10 - CHANGES IN THE WORK

ARTICLE 11 - CHANGE OF THE CONTRACT PRICE

ARTICLE 12 - CHANGE OF THE CONTRACT TIME

Add to Article 12 the following:

Add to Paragraph 12.2. of the “General Conditions of the Construction Contract” the following:

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

E=R – P where R > P and

E=extra precipitation days
P=average precipitation days
R=total precipitation days

Average Precipitation Days (P) are defined as those days 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	J	F	M	A	M	J	J	A	S	O	N	D
NO. OF DAYS	7	7	7	8	9	6	5	5	7	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) are defined as those days of rain, sleet, hail, snow, or any combination thereof, if determined by the Owner’s Project Representative/City Inspector that Contractor’s construction cannot progress substantially due to precipitation and thus be put in the Daily Inspection Log Book as a precipitation day. The sum of all the precipitation days 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.

12.4.1. The time set forth in the Contract for the completion of the work is an essential element of the Contract. A breach of contract as to completion time will cause damage to the OWNER; therefore, for each and every working day, the work, or any portion thereof, shall remain in complete after expiration of the time limit set by the Contract, the amount per working day given in the schedule, unless otherwise specified in the specifications, will be deducted from the money due or to become due to the CONTRACTOR, not as a penalty, but as agreed liquidated damages and added expense administrative and inspection costs:

Amount of Contract			Liquidated Damages Withheld Per Working Day
Less	than	$5,000.00	$60.00
$5,000.00	to	$14,999.99	$80.00
$15,000.00	to	$24,999.99	$100.00
$25,000.00	to	$49,999.99	$120.00
$50,000.00	to	$99,999.99	$160.00
$100,000.00	to	$1,000,000.00	$1000.00
More	than	$1,000,000.00	$1500.00

12.4.2. In consonance with this Article and with Paragraph 6.8. "Concerning Subcontractors, Suppliers and Others', the CONTRACTOR shall require each subcontractor to acknowledge, in writing, liability for liquidated damages arising from actions of the said subcontractor or his suppliers and Subcontractors which cause delay in completion of the project within the specified time.

ARTICLE 13 - WARRANTY AND GUARANTEE: TEST AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Add to Paragraph 13.4. the following:

13.4.1. The CONTRACTOR shall retain a professional commercial testing laboratory or organization under the direction of a Professional Engineer registered in the State of Texas, subject to approval of the OWNER, to perform all specified testing of soils, concrete, or other materials. The expense of such tests shall be borne by the CONTRACTOR. The CONTRACTOR shall direct the testing laboratory to send copies of lab reports as follows:

One copy to the CONSULTING ENGINEER (if applicable);
Two copies to the CONTRACTOR;
Two copies to the OWNER

Mill test will be acceptable when it is definite the test sheets apply to the material being delivered.

Change title of Paragraph 13.12. to the following:

Two-Year Correction Period:

Amendment to Paragraph 13.12. shall be following:

Amend the time period from one (1) year to two (2) years.

Add to Paragraph 13.12. the following:

13.12.1. Prior to the expiration of the two-year maintenance period, the ENGINEER will make a detailed inspection of the project and will advise the CONTRACTOR and his surety of the items that require correction. The ENGINEER will make a subsequent inspection and if the corrections have been properly preformed, the ENGINEER will issue a letter of acceptance with maintenance stipulations to the CONTRACTOR and his surety. If for any reason the CONTRACTOR has not made the required corrections before the expiration of the maintenance stipulations as provided for in the contract shall remain in effect until corrections have been properly performed and a letter of acceptance issued. If the contract time expires, liquidated damages shall be assessed against the CONTRACTOR.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

Delete the first sentence of Paragraph 14.2. and add the following:

CONTRACTOR'S application for payment shall be in a form acceptable to the OWNER. Payment application must be made by the tenth (10th) of the month in order to receive payment by the last day of the month.

Delete the second sentence in Paragraph 14.2. (The City of Hurst does not make payments for materials on hand)

Delete the last sentence in Paragraph 14.2. and add the following:

An amount equal to ten percent (10%), [five percent (5%) on projects over $400,000.00] of the payment or and amount set by the ENGINEER, as prescribed in Paragraph 14.7., will be held from each progress payment, which retainer shall be payable at time of final payment.
Delete the second sentence in Paragraph 14.7. and add the following:

ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or test, nullify any such payment previously recommended, to such extent as shall be necessary in ENGINEER'S opinion to protect the OWNER from loss if:
Delete Paragraph 14.7.4 and add the following:

14.7.4. ENGINEER has actual knowledge of the occurrence of any enumerated in Paragraphs 15.2.1. through 15.2.9 inclusive.

Add the following:

14.14.1. CONTRACTOR shall return, to the City, the "Bills Paid Affidavit" form completed and Notarized with the request for final payment. Final payment will not be made until the City receives the affidavit.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

Add to Article 15 the following:

Emergency Contract Termination:

15.6. Whenever, because of a national emergency, so declared by the President of the United States, or other lawful authority, it shall be impossible for the CONTRACTOR to obtain all the labor, materials and equipment necessary for the prosecution of the work with reasonable continuity, the CONTRACTOR shall notify the OWNER, IF the OWNER cannot, after reasonable effort obtain priorities for the material and equipment within a reasonable time, then the Contract shall be considered as terminated, and the CONTRACTOR shall be entitled to reimbursement for the necessary actual costs incurred in the prosecution of the work without profit.

ARTICLE 16 - ARBITRATION

Delete Article 16

ARTICLE 17 - MISC

ARTICLE 18 - JOB CLASSIFICATION AND PREVAILING AVERAGE WAGE RATE DETERMINATION INFORMATION
CHAPTER 2258 TEXAS GOVERNMENT CODE, TITLE 10
FOR
CITY OF HURST, TARRANT COUNTY, TEXAS
MARCH 1998

11) JOB CLASSIFICATION AND WAGE RATES

WAGE RATES

All bidders will be required to comply with Chapter 2258, Prevailing Wage Rates of Vernon's Texas Codes Annotated with respect to the payment of prevailing wage rates. This applies to the construction of a public work, including a building, highway, road, excavation, and repair work or other project development or improvement, paid for in whole or in part from public funds, without regard to whether the work is done under the public supervision or direction. A worker is employed on a public work if the worker is employed by the contractor or any subcontractor in the execution of the contract for the project.

A worker employed on a public work by or on behalf of the City shall be paid not less than the general prevailing rate of per diem wages for the work of a similar character in the locality in which the work is performed, and not less than the general prevailing rate of per diem wages for legal holiday and overtime work.

The State of Texas has adopted the Federal Davis-Bacon wage rates for the use in Texas and the City pursuant to and in accordance with the Texas Government Code, Section 2258.022. You may access the U. S. Department of Labor web site at the following web address to obtain these rates to be used in Tarrant County:

www.access.gpo.gov/davisbacon/index.html/

It shall be the responsibility of the successful bidder to obtain the proper wage rates from this site for Tarrant County for the type of work defined in these bid specifications.

12) SPECIAL SPECIFICATIONS

SPECIAL SPECIFICATIONS

Construction shall be in accordance with the *Construction Plans*, City of Hurst *Standard Construction Details*, and North Central Texas Council of Governments (NCTCOG) *Standard Specifications for Public Works Construction – Fifth Edition*, all of which are hereby made a binding part of these Contract Documents. Any reference to NCTCOG will designate the North Central Texas Council of Governments *Standard Specifications for Public Works Construction - Fifth Edition*, copies of which must be obtained from the NCTCOG offices. Any construction items not identified in the above-mentioned specifications or details shall be constructed in accordance with the NCTCOG construction standards.

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 fiber optic. It is the Contractor'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: PUBLIC NOTIFICATION PRIOR TO BEGINNING CONSTRUCTION

Prior to beginning construction on any block in the project, the contractor shall, on a block by block basis, prepare and deliver a notice or flyer of the pending construction to the front door of each residence or business that will be impacted by construction. The notice shall be prepared as follows:

The notification notice or flyer shall be posted seven (7) days prior to beginning any construction activity on each block in the project area. The flyer shall be prepared on the Contractor's letterhead and shall include the following information: Name of Project, Scope of Project (i.e. type of construction activity), actual construction duration within the block, the name of the contractor's

foreman and his phone number, the name of the City's inspector and his phone number and the City's after-hours phone number.

The contractor shall submit a schedule showing the construction start and finish time for each block of the project to the inspector. The contractor shall also distribute a flyer to all residents a min of 48 hours prior to any disruption in water service, driveway access or disruption of any other utility service due to construction on this project. Contractor shall describe the disruption and the approximate duration of interruption. In addition, a copy of all flyers shall be delivered to the City Inspector for his review prior to being distributed. The contractor will not be allowed to begin construction on any block until the flyer is delivered to all residents of the block.

All work involved with the pre-construction notification flyer shall be considered subsidiary to the contract price and no additional compensation shall be made.

NON-PAY ITEM: MOBILIZATION

The Contractor is responsible for delivering acceptable bonds and insurance certificates, and mobilizing all equipment, materials and personnel to the job site in a timely fashion. The quantities of each are at the contractor's discretion but shall be sufficient to maintain continuous progress toward a completed project. This bid item shall include all materials, equipment, gas, labor and incidentals necessary to provide an appropriate work force with the appropriate tools to complete the project. This item also includes all materials, equipment, gas, labor and incidentals necessary to remove all personnel and equipment from the site once construction is complete. This work shall be considered subsidiary to the "General Site Preparation" Pay Item.

NON-PAY ITEM: TESTING OF CONCRETE

Contractor shall be responsible for hiring a testing lab to take two (2) sets of cylinders per 25 cubic yards or each day's pour, whichever is less. However, street pours require two (2) sets per 100 cubic yards or each day's pour, whichever is less. This work shall be considered subsidiary to respective concrete construction bid items.

NON-PAY ITEM: TESTING OF HMAC

Contractor shall be responsible for hiring a testing lab to test the HMAC pavement in accordance with City standards. This work shall be considered subsidiary to the HMAC pavement bid items.

NON-PAY ITEM: TESTING OF WATER PIPE AND SANITARY SEWER PIPE

All water lines and sanitary sewer lines installed under this contract shall be tested in accordance with City of Hurst Specifications. This work shall be considered subsidiary to the respective bid items per linear foot of pipeline.

NON-PAY ITEM: TESTING AND TELEVISING OF SANITARY SEWER PIPE

All sanitary sewer lines installed under this contract shall be tested in accordance with City of Hurst Specifications. This work shall be considered subsidiary to the respective bid items for sewer pipe by pipe bursting, open-cut, and by other than open cut. The contractor is responsible for pre-televising

of the sanitary sewer mains to locate all services at no cost to the City. The contractor shall clean all pipe and assist the City in conducting a "post" televising of the lines. The first round of post televising the lines is conducted by the City at no cost to the contractor. If repairs or corrections are found to be needed, subsequent video inspections by the City will be at the Contractor's expense.

NON-PAY ITEM: SPRINKLING FOR DUST CONTROL

The sprinkling of water on exposed grade prior to subgrade preparation to prevent dust in the construction area shall be in accordance with NCTCOG Item 203.6 "Dust Control". This work shall be considered subsidiary to the bid item for Site Preparation.

NON-PAY ITEM: TRENCH SAFETY

This item is for the appropriate design and installation of shoring, sheeting, sloping, trench box or whatever method the Contractor deems appropriate to make the trench safe for installation of water, sewer, or storm drain pipe. The unit price bid per linear foot includes all compensation due for these items.

NON-PAY ITEM: CONSTRUCTION STAKING (AS OUTLINED IN THE GENERAL CONDITIONS, ARTICLE 4.4)

The Contractor shall be responsible for all construction staking and for establishing the lines and grades required for construction of the project. Control points as identified on the Plans shall be staked by a land surveyor under the direction and supervision of a Registered Professional Land Surveyor employed by the Engineer.

All Property Corners (I.R. - iron rods) disturbed shall be reinstalled by the Contractor at the exact same location as existing.

NON-PAY ITEM: ACCESS TO PRIVATE PROPERTIES AND INTERSECTING STREETS

During construction the Contractor shall maintain access to private driveways and intersecting streets **using at least 6 inches crushed stone base.** The access shall be maintained at all times unless the City Engineer has preapproved closure due to construction activities. All activities associated with maintaining access shall be considered subsidiary to the total contract price for the project.

NON-PAY ITEM: CONNECTION TO EXISTING FACILITIES

All connections of proposed utilities (water, sewer, storm drain, etc.) to existing utilities and facilities shall be made in accordance with the City of Hurst Specifications and shall be subsidiary to the total contract price unless a pay item is provided in the proposal.

NON-PAY ITEM: CURING COMPOUND

Impervious membrane curing compound shall be applied uniformly to the concrete promptly after the surface water sheen has disappeared. The membrane shall be in one application at a rate of not less than that recommended by the manufacturer. The concrete surface to which membrane-curing compound has applied shall be protected from abrasions or damage which result in perforation of the

membrane film during the first seventy-two (72) hours after application. No direct payment shall be made furnishing and applying the curing compound. Payment shall be included in the unit price bid for related items.

NON-PAY ITEM: RESTORATION AND REPAIR OF LANDSCAPE STRUCTURES

The Contractor will be responsible for the restoration and/or repair of all irrigation sprinkler heads and piping, wooden landscape timbers, brick pavers, concrete edging, mailboxes, landscape edging, landscape planting beds, etc. This work shall be considered subsidiary to the Project unless specifically defined as a Pay Item.

Any damage done to these items during the construction project shall be the responsibility of the Contractor to repair or replace to a condition equal or better than that which existed prior to construction.

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

Site clean-up 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 Engineer 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 Hurst and no separate payment shall be made for hauling and delivery of materials. This item additionally requires the contractor provide at no cost to the City the removal and legal disposal of all refuse, trash, garbage, debris, obstructions and objectionable materials necessary to perform all work under this contract, where not specifically provided for elsewhere in the plans and specifications.

PAY ITEMS

I. PAVING AND DRAINAGE ITEMS

PAY ITEM I-1: ATMOS COORDINATION

Atmos Energy will be installing a new gas pipeline parallel to the roadway improvements and within Right-of-Way. The construction of the pipeline is expected to take up to 60 calendar days. During that time, the Contractor shall continue traffic control and coordinate with Atmos Energy. The total calendar days for this project includes these 60 days. The Contractor, however, shall stop work within the roadway until such time as the Atmos Energy Contractor has finished their work and releases the site back to the Contractor. This pay item is for compensation for the delay caused by stopping and restarting work and shall be paid based on a per day of delay basis. It shall also be the Contractor's responsibility to record the location of the new pipeline and avoid damage of the pipeline during the remainder of this contract.

PAY ITEM I-2: CAPITAL IMPROVEMENT PROJECT SIGN

The Contractor shall install two (2) Capital Improvement Project Signs. The location of the signs shall be determined at the Preconstruction Meeting. Typical Capital Improvement Project Sign Example shown in Section 13.

These signs shall be installed within 15 calendar days from the date of the Preconstruction Meeting and before work begins. The signs 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. Payment for furnishing and installing signs complete in place will be at the contract unit price bid per each.

PAY ITEM I-3: JOINT STORM WATER POLLUTION PREVENTION PLAN

The provisions of NCTCOG Item 202 shall apply except as modified below:

A. The work under this item shall be as specified on the plans and as per N.C.T.C.O.G. Items 202 (Temporary Erosion, Sedimentation, and Water Pollution Prevention and Control) and 203.6 (Dust Control).

B. No work shall be allowed to commence until the stormwater pollution prevention plan has been approved by the City.

C. The contractor shall provide a Joint Storm Water Pollution Prevention Plan (SWPPP). An Erosion Control Plan shall be prepared by a Licensed Civil Engineer in the State of Texas. Contractor shall prepare on behalf of all primary operators the Notice of Intent (NOI) and file Notice of Intent (NOI) to the appropriate authorities prior to beginning construction (if required by EPA or TCEQ.) The SWPPP must describe and ensure the implementation of best management practices that will be used to reduce, to the maximum extent possible, the pollutants and storm water discharges associated with the construction activity and ensure compliance with the terms and conditions of the permit. The SWPPP must clearly indicate which operator is responsible for satisfying each shared requirement of the SWPPP. The SWPPP shall be subject to approval by the Owner and must be retained on-site during the term of construction. Notice must be posted if the SWPPP is retained off-site. The City shall be copied on all NOI's and Construction Site Notices required by the General Permit.

D. This pay item is intended to include all materials, labor, and maintenance necessary to complete and file with the Texas Commission for Environmental Quality (TCEQ) a Storm Water Pollution Prevention Plan (SWPPP), inspect the project in accordance with the SWPPP and TCEQ General Permit and maintain the SWPPP document current during the construction until the site is stabilized

E. The contractor shall post copies of the NOI's for all Primary Operators and copy of the construction site notice as required by the General Permit and maintain all erosion and Storm Water Pollution Prevention appurtenances during the duration of the project.

F. The contractor shall file the proper notice of completion with the Texas Commission for Environmental Quality when the project nears completion.

G. Contractor shall conform activities to the SWPPP and to the approved erosion control plan included in the plans, including installing, maintaining inspections of pollution controls, conducting and documenting inspections of pollution controls, sprinkling for dust control, maintaining spill response equipment on-site, and "good housekeeping". Pollution controls

include silt fences (or erosion control mats), stabilized construction entrance, establishing grass, sprinkling for dust control.

H. Contractor shall be solely responsible for any and all damage which might be occasioned by the Contractor's failure to follow the SWPPP and "good housekeeping" practices.

I. Locations without specific SWPPP, shall adopt the same procedures as shown on the SWPPP sheets, or as follows (if no SWPPP sheet) silt fence installation around project's perimeter, inlet protection and rock filter berms at inlets and/or entrance to channels, creeks, etc. and as required and directed by the Engineer.

J. A Texas Registered Professional Engineer must sign and seal the Erosion Control Plan (ECP) submitted as part of the SWPPP. The Contractor shall submit a Notice of Termination for City and Contractor upon completion of the project.

K. This work shall also include the provision, installation, maintenance and removal of:
   a) Silt fence
   b) Inlet Protection
   c) Any additional erosion control measures required by the SWPPP

L. Measurement and payment for this item shall be made on the basis of the price bid per lump sum for storm water pollution prevention plan & erosion control, complete in place, maintenance & removal. This includes any necessary revisions to the Erosion Control Plan throughout the term of construction and the installation, sequencing, and maintenance of structural control measures throughout the duration of construction. Payment shall be total compensation for furnishing all labor, materials tools, and equipment necessary to complete the work. Payment shall be evenly prorated throughout the term of construction on a monthly basis, based on the amount bid and time bid.

PAY ITEM I-4: <u>SOLID SOD</u>

The provisions of NCTCOG Item 204.5.3.2 shall apply except as modified below:

A. This item shall govern for the installation of block sodding at locations designated on the plans. Block sod shall match the type of grass to be replaced. For areas such as medians where no grass existed before construction, sod shall be Bermuda.

B. The Contractor shall water, fertilize, mow and protect the sodded areas until acceptance. Acceptance will not be made until grass has reached 85% coverage and is to the satisfaction of the ENGINEER.

C. The cost of topsoil, fertilizer, watering and mowing shall be incidental to the unit cost of furnishing and installing solid sod.

D. The Contractor shall be paid by the square yard of solid sod installed, complete in place, including all materials and labor needed to accomplish the installation as outlined above.

PAY ITEMS I-5: GENERAL SITE PREPARATION

The provisions of NCTCOG Item 203.1 shall apply except as modified below:

A. Contractor shall utilize a staging area at a location agreed upon during the preconstruction meeting. All disturbed areas in the staging areas shall be re-graded and sodded upon completion of project subsidiary to this bid item. Each staging area shall have a perimeter fence and construction entrance/exit. Any existing irrigation system components disturbed by equipment or material storage, or due to staging area location shall be repaired in equal or better condition by the Contractor prior to project acceptance at no additional cost to the Owner. Staging areas are to be used for construction trailer, water line, storm drain line, sanitary sewer line and equipment storage only. No fill dirt or stockpiles of any kind shall be stored. Watering to establish replaced sod until 85% coverage and to the satisfaction of the ENGINEER, all labor, material, equipment and other incidentals necessary for staging area shall be subsidiary to this pay item.

B. Any temporary gravel and/or asphalt pavement necessary for traffic control or to maintain access to all existing side streets, alleys, and driveways shall be subsidiary to this pay item.

C. The Contractor shall locate, verify working condition and protect all existing French drains, sprinkler systems lines and heads. Remove, adjust, and reinstall in good condition equal to or better than existing condition; replace, if in direct conflict, with the same or better quality material and appurtenances. The Contractor shall perform this work at no additional cost to the Owner.

D. The Contractor shall take precautions to avoid damage to adjacent landscaping. Any landscape disturbed by construction activities, including but not limited to pavestones, shrubs, edging, plants, and bedding shall be returned to equal or better condition at no additional compensation.

E. Contractor shall provide a construction schedule at or prior to the pre-construction meeting. An overall project construction schedule shall be generated along with a shop drawing schedule. Monthly updates shall be provided to the City until the project is complete. See Section 2.6 and 2.9 in the City of Hurst General Conditions.

F. Measurement and payment for these items shall be made on the basis of the price bid per lump sum for general site preparation and shall include all labor, material, equipment and other incidentals to satisfactorily prepare the project site for the proposed improvements. Progress payments shall be commensurate with project completion.

PAY ITEMS I-6: RIGHT-OF-WAY PREPARATION

The provisions of NCTCOG Item 203.1 shall apply except as modified below:

A. This item shall consist of the sawcutting, removal and disposal of existing pavements, curbs, driveways, alleys, sidewalks, concrete-lined channels and riprap. This item shall also consist of the removal and haul off of existing storm drain pipe and structures of various size and dimension. This item shall also consist of the removal and disposal of commercials signs noted in the plans. This item shall also consist of the complete removal and disposal of wheel stops,

including anchors, noted in the plans. This item shall also consist of the removal and disposal of all trees designated for removal in the plans, regardless of size, stumps, brush, roots, vegetation, logs, rubbish and other objectionable matter from the designated area. This item shall also consist of the removal and disposal of commercials signs noted in the plans. This item shall also consist of the complete removal and disposal of existing retaining or sidewalk walls, regardless of height or material, guardrails, posts, and concrete anchors. This item also includes the removal and disposal of asphalt pavement, piping, structures, wood posts, rock riprap, and other improvements, where required by the plans and/or the specifications and not covered by other pay items.

B. Any temporary gravel and/or asphalt pavement necessary for traffic control or to maintain access to all existing side streets, alleys, and driveways shall be subsidiary to this pay item.

C. Measurement and payment for these items shall be made on the basis of the price bid per lump sum for general site preparation and shall include all labor, material, equipment and other incidentals to satisfactorily prepare the project site for the proposed improvements. Progress payments shall be commensurate with project completion.

PAY ITEM I-7: REMOVE & REPLACE STREET LIGHT AND PEDESTAL

The provisions of NCTCOG Item 203.1 shall apply except as modified below:

A. This item will govern for the complete removal and replacement of street lights, bases, wiring, foundations and associated pedestals that are designated for removal and replacement on the plans.

B. Street lights and pedestals shall be replaced to equal or better condition as existing and shall match material and color.

C. Measurement and payment shall be made for each street light and pedestal removed and replaced and shall include excavation, debris removal and disposal, installation, foundations, wiring, pole, luminaire, backfill, re-compaction and all labor and materials necessary to remove and replace the light poles and pedestals.

PAY ITEMS I-8 AND I-9: UNCLASSIFIED STREET AND CHANNEL EXCAVATION

The provisions of NCTCOG Item 203.2 shall apply except as modified below:

A. This item consists of the unclassified street excavation required to grade the streets, parkways, and adjacent property outside the limits of the right-of-way to the proposed grades and unclassified channel excavation required to grade the channel bottom and side slopes including compaction as per City specifications and in accordance with the Geotechnical Report. Excavation shall be to the lines and grades shown on the plans and in accordance with City of Hurst and N.C.T.C.O.G. standards for excavation.

B. Excess material suitable for use as fill material or topsoil shall be placed within the areas where fill material is required for this project. On-site material is suitable for use on the project provided it is free roots, rocks, and debris. Surplus material and material unsuitable for use as

fill shall be disposed off-site by the Contractor.

C. The Contactor shall be satisfied as to the amount of work involved prior to submitting the bid.

D. Please also refer to Geotechnical Report.

E. When hauling dirt, the contractor shall use truck-approved routes.

F. Measurement and payment for these bid items shall be made on the basis of the price per lump sum of unclassified excavation in place to the limits of construction as shown on the grading plans and the cross sections provided with the Bid documents.

PAY ITEM I-10 AND I-11: CEM-LIME STABILIZED SUBGRADE

The provisions of NCTCOG Item 301.3 shall apply except as modified below:

A. Cem-Lime material shall be placed at the rate of 30 lbs. per square yard, per Geotechnical Report, by slurry method.

B. Measurement and payment for 6-inch Cem-Lime Stabilized Subgrade Treatment shall be by the square yard. Cem-Lime material shall be paid for separately, by the ton, under the item "Furnish Cem-Lime Material".

PAY ITEM I-12: 9-INCH THICK, 3,600 PSI PORTLAND CEMENT REINFORCED CONCRETE PAVEMENT

The provisions of NCTCOG Item 303 shall apply except as modified below:

A. See provisions of Item 302.9.5 for batch plant requirements. If a plant cannot be permitted, no increase in unit cost prices for concrete will be incurred by the Owner for the use of ready mix concrete on this project.

B. Concrete for pavement shall have a minimum compressive strength of 3,600 psi at 28 days.

C. Concrete pavement shall be constructed in accordance with Standard Specifications and the City of Hurst pavement details.

D. The cost of all expansion, construction and dummy joints shall be subsidiary to this item.

E. 6-inch curbs will not be paid separately, unless otherwise noted in the plans, and are considered incidental to the unit cost of pavement.

F. Monolithic Median Noses shall be constructed on medians equal to or less than 4 feet in width per details provided on the City of Hurst Standard Details. Monolithic Median Noses shall be paid under this bid item as measured by the square yard. Curbs and keyed construction joints shall not be paid separately.

G. Machine Finished: A Slip-form paving machine shall be used for all public streets and alleys unless otherwise approved by the City Engineer. Hand finished: Hand finished pavement is

permitted for turn lanes, deceleration lanes, driveway approaches, or panel replacement of public streets or alleys.

H. The use of slip-form paving equipment or mechanical screed is required for paving operations of local streets. Unless otherwise permitted, all other street classifications shall use slip-form paving equipment. Hand finishing is permitted only at intersections, drive approaches and other areas not accessible to paving equipment and machines.

I. Contractor is responsible for ensuring all pedestrian work meets or exceeds the current American with Disabilities Act Accessibility Guidelines (ADAAG) and the Texas Accessibility Standards (TAS). The Contractor shall remove and replace any constructed or installed items not meeting the current ADAAG and TAS requirements at no additional cost to the City.

J. Measurement and payment for 9-inch Thick, 3,600 psi Reinforced Portland Cement Concrete Pavements shall be by the square yard and shall include reinforcing steel, jointing, curing compound and sealing materials.

PAY ITEM I-13 AND I-19: 4-INCH THICK, 3,600 PSI PORTLAND CEMENT CONCRETE FOR SIDEWALKS AND BARRIER-FREE RAMPS

The provisions of NCTCOG Item 305.2 shall apply except as modified below:

A. Concrete for barrier-free ramps and sidewalks shall have a minimum compressive strength of 3,600 psi at 28 days.

B. Accessible ramps and sidewalks shall be constructed in accordance with City of Hurst sidewalk details and TxDOT standard details for pedestrian facilities / curb ramps (PED-18).

C. Barrier-free ramps and detectable warning surfaces shall meet all local, state and federal requirements. Barrier-free ramps shall be constructed with concrete paver units having a truncated dome top surface for detectable warning to pedestrians. Concrete paver unit color for the ramp shall be a contrasting color (red) that provides a light reflective value that significantly contrasts with the adjacent surfaces. Payment for detectable warning surfaces on ramps shall be subsidiary to barrier-free ramp bid items.

D. Anchorage joints shall be installed in each location where proposed concrete pavements, sidewalks, driveways and alleys are joined to existing, for the purpose of providing shear transfer. The cost of drilling holes, grouting, and installing dowel bars as shown on the details and at the locations specified on the plans shall be considered incidental to the unit cost of sidewalks and ramps.

E. Contractor is responsible for ensuring all pedestrian work meets or exceeds the current American with Disabilities Act Accessibility Guidelines (ADAAG) and the Texas Accessibility Standards (TAS). The Contractor shall remove and replace any constructed or installed items not meeting the current ADAAG and TAS requirements at no additional cost to the City.

F. Payment for barrier-free ramps and sidewalks shall include excavation, sand cushion embedment, reinforcing steel, and all incidental items. Measurement and payment for sidewalk shall be based on square feet of sidewalk placed. Measurement and payment for barrier-free ramps shall be made per each based on the number of ramps constructed, regardless of type or length. Pay limits for ramps shall extend up to and include the landing at the top of each ramp.

PAY ITEM I-14: 6-INCH THICK, 3,600 PSI PORTLAND CEMENT CONCRETE FOR DRIVEWAY APPROACHES

The provisions of NCTCOG Item 305.2 shall apply except as modified below:

A. If a batch plant is utilized, the contractor will have to obtain all appropriate planning and zoning approval for plant. If a batch plant cannot be permitted, no increase in unit cost prices will be incurred by the City for the use of Ready Mix concrete on this project.

B. Concrete for driveway approaches and pavements shall have a minimum compressive strength of 3,600 psi at 28 days. Testing lab and testing reports shall be paid for and furnished by the contractor subsidiary to this bid item.

C. Concrete driveway approach and pavements shall be constructed in accordance with the standard pavement details and specifications.

C. Anchorage joints shall be installed in each location where proposed concrete pavements, sidewalks, driveways and alleys are joined to existing, for the purpose of providing shear transfer. The cost of drilling holes, grouting, and installing dowel bars as shown on the details and at the locations specified on the plans shall be considered incidental to the unit cost of pavement.

D. Concrete pavement headers shall be installed in each location where proposed concrete driveway pavements are joined to asphalt. The cost of drilling holes, grouting, and installing dowel bars as shown on the details and at the locations specified on the plans shall be considered incidental to the unit cost of driveway pavement.

E. Machine Finished: A Slip-form paving machine shall be used for all public streets and alleys unless otherwise approved by the City Engineer. Hand finished: Hand finished pavement is permitted for turn lanes, deceleration lanes, driveway approaches, or panel replacement of public streets or alleys.

F. The use of slip-form paving equipment or mechanical screed is required for paving operations of local streets. Unless otherwise permitted, all other street classifications shall use slip-form paving equipment. Hand finishing is permitted only at intersections, drive approaches and other areas not accessible to paving equipment and machines.

G. Contractor is responsible for ensuring all pedestrian work meets or exceeds the current American with Disabilities Act Accessibility Guidelines (ADAAG) and the Texas Accessibility Standards (TAS). The Contractor shall remove and replace any constructed or

installed items not meeting the current ADAAG and TAS requirements at no additional cost to the City.

H. Concrete driveway approaches and pavements shall be measured and paid for by the square foot of driveway placed.

PAY ITEM I-15: 2-INCH ASPHALT TYPE "D" HMAC

The provisions of NCTCOG Item 302 shall apply except as modified below:

A. Asphaltic concrete shall meet the requirements for Type "D" of Item 340 of Standard Specifications for Construction of Highways, Streets and Bridge, latest edition and shall be installed per NCTCOG Item 302.9.

B. The thickness of hot-mix asphaltic concrete surface course shall be 2 inches.

C. A tack coat shall be applied to the base course before placement of the surface course. Tack coat shall be in accordance with TxDOT Items 340 and 300. Tack coat must achieve uniform coverage over 100% of the base course asphalt prior to placing the Type D asphalt.

D. Connections to existing asphalt pavement in accordance with details provided in the plans are subsidiary to this bid item. This includes, but is not limited to, the 12-inch overlap of new surface course on existing underlying pavement.

E. Asphaltic concrete base shall be measured and paid for by the square yard and shall include tack coat, and all labor, materials, and incidentals necessary to complete the work.

PAY ITEM I-16: 4-INCH ASPHALT TYPE "B" HMAC

The provisions of NCTCOG Item 302 shall apply except as modified below:

A. Asphaltic concrete shall meet the requirements for Type "B" of Item 340 of Standard Specifications for Construction of Highways, Streets and Bridge, latest edition and shall be installed per NCTCOG Item 302.9.

B. The thickness of hot-mix asphaltic concrete base shall be 4 inches.

C. A prime coat shall be applied to the prepared subgrade before placing the first lift of the base. Prime coat shall be in accordance with TxDOT Item 310 requirements. Prime coat must achieve uniform coverage over 100% of the prepared subgrade surface prior to placing Type B asphalt.

D. Asphaltic concrete base shall be measured and paid for by the square yard and shall include prime coat, and all labor, materials, and incidentals necessary to complete the work.

PAY ITEM I-17 AND I-18: STAINED AND STAMPED CONCRETE

The provisions of NCTCOG Item 303 shall apply except as modified below:

A. Stained and Stamped medians and crosswalks shall be constructed in accordance with the lengths and widths as shown on the plans. Concrete for medians shall be poured 6-inches thick with #3 bars on 24" centers. Concrete for crosswalks shall be poured 10-inches thick with #4 bars on 24" centers.

B. This item includes the cost of installing concrete median pavement and crosswalk pavement with a stamped and patterned surface with integral coloring in accordance with the following:

1. In addition to the requirements of the standard specifications, median and crosswalk pavement shall be in accordance with either "Patterned Concrete Industries, Inc" or "Bomanite Corporation" specifications, or approved equal. This includes their requirements for expansion joints, joint filler board, and concrete mix.
2. Median Pavement shall be stamped and patterned to one of the following, or approved equal:
    i. Per "Patterned Concrete Industries, Inc."
    Pattern: "Old English Brick Running Bond"
    Color: Brick Red from Paletter Crete/Argos or Approved Equal

    ii. Per "Bomanite Corporation"
    Pattern: "Running Bond"
    Color: Brick Red from Paletter Crete/Argos or Approved Equal
3. Crosswalk Pavement shall be stamped and patterned to one of the following, or approved equal:
    i. Per "Patterned Concrete Industries, Inc."
    Pattern: "Old English Brick Herringbone"
    Color: Platinum
    ii. Per "Bomanite Corporation"
    Pattern: "Herringbone"
    Color: Natural Gray
4. All work performed must be of the same manufacturer and all materials used, including concrete mix, must be the same for the entire project. Color hardeners and release agents as recommended by the tooling manufacturer shall be used.

C. Machine Finished: A Slip-form paving machine shall be used for all public streets and alleys unless otherwise approved by the City Engineer. Hand finished: Hand finished pavement is permitted for turn lanes, deceleration lanes, driveway approaches, or panel replacement of public streets or alleys.

D. The use of slip-form paving equipment or mechanical screed is required for paving operations of local streets. Unless otherwise permitted, all other street classifications shall use slip-form paving equipment. Hand finishing is permitted only at intersections, drive approaches and other areas not accessible to paving equipment and machines.

E. Contractor is responsible for ensuring all pedestrian work meets or exceeds the current American with Disabilities Act Accessibility Guidelines (ADAAG) and the Texas Accessibility Standards (TAS). The Contractor shall remove and replace any constructed or

installed items not meeting the current ADAAG and TAS requirements at no additional cost to the City.

F. Measurement and payment for stained and stamped concrete shall be by the square foot and shall include thickened edge, integral colored concrete, patterning, reinforcing, steel, jointing, curing compound, sealing materials, labor, equipment, and incidentals necessary to complete the work.

PAY ITEM I-20: 6-INCH CONCRETE CURB AND GUTTER

The provisions of NCTCOG Item 305.1 shall apply except as modified below:

A. Concrete Curb and Gutter shall be constructed at locations identified in the plans and in accordance with City of Hurst standard paving details.

B. Pay limit for concrete curb and gutter shall extend to 24 inches as measured from the back of curb in accordance with standard details.

C. Connection to existing or proposed asphalt is subsidiary to this bid item.

D. Measurement and payment for this item shall be at the contract unit price per linear foot, complete in place and include all concrete, reinforcing steel, form work, required joint work, expansion material, joint seal material, curing compound and all incidentals necessary to complete the work.

PAY ITEM I-21: INTEGRAL SIDEWALK WALL

The provisions of NCTCOG Item 802.3.2 shall apply except as modified below:

A. This item is for reinforced concrete retaining wall integrally constructed with the sidewalks as shown on the standard detail sheet.

B. The bid quantity was established for bidding purposes only. Exact lengths and locations shall be determined in the field by City Inspectors during sidewalk construction. Actual quantities will be based on the length of integral sidewalk retaining wall actually installed.

C. Concrete shall be 4,000 psi at 28 days. Sidewalk shall be paid under a separate pay item.

D. Wall shall be backfilled and compacted to 95% Standard Proctor Density at no additional compensation.

E. This item shall only be used for walls up to and including 1 foot tall. Walls taller than 1 foot shall be paid under Item “Integral Retaining Wall.”

F. Measurement and payment shall be made on a linear foot basis and shall include excavation, form work, concrete, reinforcing steel, aggregate, select fill, filter fabric, weepholes, curing compound and all labor, materials and incidentals necessary to complete the work.

PAY ITEM I-22: ANCHORAGE JOINT

The provisions of NCTCOG Item 303 shall apply except as modified below:

A. This item shall include the cost of drilling holes, grouting, and installing dowel bars as shown on the details and at locations specified on the plans.

B. No sawcutting shall be performed in streets until temporary traffic measures are in place.

C. Anchorage joints shall be installed in each location where proposed concrete street pavements and alleys are joined to existing, for the purpose of providing shear transfer, in accordance with details provided in the plans (Sheet 22).

D. Measurement and payment for anchorage joints shall be made by the linear foot as measured along the joined edge of street pavement and alley.

PAY ITEM I-23: CONCRETE PAVEMENT HEADER

The provisions of NCTCOG Item 303 shall apply except as modified below:

A. This item shall include the cost of concrete pavement headers installed at rigid to flexible pavement connections.

B. Concrete pavement headers shall be installed in accordance with details provided in the plans (Sheet 22) and shall include the cost for thickened edge, reinforcement, tack coat, and 24 inches of surface course asphalt meeting the requirements of Type "D" asphalt included in these documents.

C. Concrete pavement headers shall be installed in each location where proposed concrete pavements are joined to asphalt.

D. Machine Finished: A Slip-form paving machine shall be used for all public streets and alleys unless otherwise approved by the City Engineer. Hand finished: Hand finished pavement is permitted for turn lanes, deceleration lanes, driveway approaches, or panel replacement of public streets or alleys.

E. The use of slip-form paving equipment or mechanical screed is required for paving operations of local streets. Unless otherwise permitted, all other street classifications shall use slip-form paving equipment. Hand finishing is permitted only at intersections, drive approaches and other areas not accessible to paving equipment and machines.

F. Contractor is responsible for ensuring all pedestrian work meets or exceeds the current American with Disabilities Act Accessibility Guidelines (ADAAG) and the Texas Accessibility Standards (TAS). The Contractor shall remove and replace any constructed or installed items not meeting the current ADAAG and TAS requirements at no additional cost to the City.

G. Measurement and payment for concrete pavement headers shall be made by the linear foot as measured along the joined edge of pavement.

PAY ITEM I-24: MISCELLANEOUS PAVING ALLOWANCE

Work Zones within established neighborhoods sometimes encounter construction items that could not be easily foreseen and identified prior to construction. This item was established to be used for reimbursement to the Contractor for items of this nature. This item will not be used unless deemed necessary by the Owner. Compensation for this bid item will be in accordance with Section 11.4 - Cost of Work, Section 11.6 - Contractors Fee, and paragraph 11.7 in the General Conditions section of the Contractor documents.

PAY ITEM I-25: INTEGRAL RETAINING WALL

The provisions of NCTCOG Item 802.2 shall apply except as modified below:

A. Integral retaining walls shall be constructed as per the structural details and at locations and heights shown in the plans. Greater concrete sidewalk depth and reinforcing steel size and amounts to be integrally constructed with the retaining wall shall be considered subsidiary to this pay item.

B. Concrete for retaining walls shall be 4,000 psi minimum compressive strength when tested at 28 days.

C. Walls shall be backfilled and compacted to 95% Standard Proctor Density at no additional compensation.

D. Measurement and payment shall be made per square foot of exposed vertical face retaining wall (measured from bottom of wall to top of wall) constructed, complete in place including excavation, form work, concrete, curing compound, reinforcing steel, aggregate, select fill, weepholes, filter fabric and all labor, materials and incidentals necessary to complete the work.

PAY ITEM I-26 THROUGH I-31: REINFORCED CONCRETE STORM DRAIN, ASTM C76

The provisions of NCTCOG Item 508.3 shall apply except as modified below:

A. All pipe shall be Class III unless noted otherwise on the plans.

B. All proposed storm sewer connections shall be pre-fabricated. Concrete collars per detail in the plans are to be used for connections to existing lines. Any necessary temporary collar connections to existing lines shall be considered subsidiary to this pay item. If temporary connections occur in paved street or driveway areas open to traffic, the Contractor shall provide for a temporary 6-inches crushed stone with 3-inch hot mix asphalt surface material pavement, to be placed over the ditch area until final improvements are made at a cost subsidiary to this pay item.

C. Pipe collars shall be installed at all pipe size and grade changes and shall be subsidiary to unit cost of pipe regardless of pipe material.

D. Installation shall be in accordance with the City of Hurst standard storm drain details. The cost of trench excavation, embedment, and backfill is incidental to this Bid Item.

E. All ditchlines shall be mechanically tamped with the cost incidental to this Bid Item. Backfill should be placed in 6" – 8" loose lifts and shall be compacted to 95% of the maximum dry density as defined by ASTM D-698 (Standard Proctor) procedures. The moisture content of the fill at the time of compaction should be near optimum to four percentage points above the proctor optimum value. Densities shall be taken every one (1) lift at staggered hundred feet increments.

F. Pipe joints shall be sealed with Ram-Nek (flexible mastic strip gasket) joint sealant material, or approved equal, to be submitted and approved by the City at no extra pay.

G. This item shall include post-construction television inspection, plugs, plugging existing lines, tapping, collars, fittings, wyes, supporting and protecting existing utilities and connections to adjacent structures necessary for complete installation.

H. Measurement and payment shall be made per linear foot of pipe installed of the various sizes. The unit price for this bid item shall consist of all excavation, embedment, backfill, equipment, labor, tools, and incidentals necessary to complete the work.

PAY ITEM I-32 AND I-33: SQUARE STORM DRAIN MANHOLE

The provisions of NCTCOG Item 502.1 shall apply except as modified below:

A. Storm Drain Manholes shall be constructed as per City of Hurst Storm Drain Standard Details.

B. All manholes shall be poured in place. Precast manholes are not allowed.

C. Concrete for manholes shall be Class "C" with a minimum of 5 sacks per cubic yard cement content and a 3,600 psi minimum compressive strength when tested at 28 days.

D. Measurement and payment shall be made for each size storm drain manhole at all depths, complete in place including excavation, form work, concrete, reinforcing steel, and labor to perform the work.

PAY ITEM I-34, I-36 AND I-37: STANDARD CURB INLET

The provisions of NCTCOG Item 702 shall apply except as modified below:

A. The Contractor shall construct the proposed standard curb inlets as per City of Hurst Storm Drain Standard Details and specifications shown on the plans. Where applicable the depth shall be adjusted as per the plan elevations. Existing curb removal and replacement where applicable is incidental to this bid item.

B. Concrete for inlets shall be Class "C" with a minimum of 5 sacks per cubic yard of cement content and a 3,600 psi minimum compressive strength when tested at 28 days.

C. Measurement and payment shall be for each inlet constructed at all depths and lengths and complete in place including excavation, form work, concrete, reinforcing steel, and labor to perform the work.

PAY ITEM I-35 AND I-38: SPECIAL CURB INLET

The provisions of NCTCOG Item 702 shall apply except as modified below:

A. The Contractor shall construct the proposed special curb inlets as per TxDOT storm drain and special standard details and specifications shown on the plans. Where applicable the depth shall be adjusted as per the plan elevations. Existing curb removal and replacement where applicable is incidental to this bid item.

B. Concrete for inlets shall be Class "C" with a minimum of 5 sacks per cubic yard of cement content and a 3,600 psi minimum compressive strength when tested at 28 days.

C. Measurement and payment shall be for each inlet constructed at all depths and lengths and complete in place including excavation, form work, concrete, reinforcing steel, and labor to perform the work.

PAY ITEM I-39: CONCRETE FLUME

The provisions of NCTCOG Item 702.5 shall apply except as modified below:

A. Concrete flume shall be constructed as per the City of Hurst Standard Details, flume details and specifications shown on the plans.

B. Surfaces adjacent to flume shall be graded to provide positive drainage.

C. Concrete for flume shall be Class "C" with a minimum of 5 sacks per cubic yard cement content and a 3,600 psi minimum compressive strength when tested at 28 days.

D. Measurement and Payment shall be for square yard concrete flume constructed, complete in place including excavation, form work, concrete, reinforcing steel, connection to existing concrete, monolithic curb, and labor to perform the work.

PAY ITEM I-40: MISCELLANEOUS DRAINAGE ALLOWANCE

Work Zones within established neighborhoods sometimes encounter construction items that could not be easily foreseen and identified prior to construction. This item was established to be used for reimbursement to the Contractor for items of this nature. This item will not be used unless deemed necessary by the Owner. Compensation for this bid item will be in accordance with Section 11.4 - Cost of Work, Section 11.6 - Contractors Fee, and paragraph 11.7 in the General Conditions section of the Contractor documents.

PAY ITEM I-41: BARRICADES, WARNING AND DETOUR SIGNS

The provisions of NCTCOG Item 801.1 shall apply except as modified below:

A. Contractor shall submit Traffic Control Plan to the City of Hurst prior to beginning work. Traffic Control Plan shall be signed and sealed by a Texas Registered Professional Engineer.

B. All temporary traffic control devices and layouts shall be in accordance with the Texas Department of Transportation "Manual on Uniform Traffic Control Devices" latest edition, and City of Hurst Barricade Manual.

C. Any temporary gravel and/or asphalt pavement necessary for traffic control or to maintain access to all existing side streets, alleys, and driveways shall be subsidiary to the General Site Preparation pay item.

D. The Contractor shall be paid under this item on a lump sum basis and shall include all labor and materials to assure proper traffic and pedestrian safety and flow during construction. Payment shall be made monthly based on the percentage of contract complete.

PAY ITEM I-42: PAVEMENT MARKINGS AND SIGNAGE

Pavement markings and signage shall be installed in accordance with the Standard Details except as modified below:

A. Pavement markings shall be installed in accordance with TxDOT Standard Specifications and the Manufacturer recommendations.

B. Pavement markings include paint striping, thermoplastic striping and markings, and raised pavement markers.

C. Signage shall be installed in accordance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD), latest revision. All City signage shall be placed on breakaway bases conforming to TxDOT detail "Sign Mounting Details – Large Roadside Signs Foundation and Stub (SMD 2-2 -08)

D. Signage includes removing and re-installing existing signs to their permanent location, removing and salvaging existing signs, installation of new signs, temporary relocation of existing signs, and replacement of existing damaged signs. The City of Hurst reserves the salvage rights on surplus/replaced signage.

E. All pavement markings and signage shall be measured and paid for on a lump sum basis to the limits of construction shown on the plans and shall be full compensation for all labor, materials, equipment, and incidentals necessary to complete the work, including removal of existing markings, surface preparation, sealing, etc., as called for on the plans and in the TxDOT specifications. Any damage to existing facilities, markings, sod, etc., as a result of this project will be subsidiary to the cost of this Bid Item.

PAY ITEM I-43: TxDOT PR-11 PEDESTRIAN RAIL

The provisions of NCTCOG Item 801.1 shall apply except as modified below:

A. TxDOT predestrian handrail shall be constructed per the TxDOT Pedestrian Rail Type PR-11 standard details provided in the plans. Contractor shall submit Traffic Control Plan to the City of Hurst prior to beginning work. Traffic Control Plan shall be signed and sealed by a Texas Registered Professional Engineer.

B. All steel components shall be galvanized and are to be powder coated. Contractor shall submit color samples to the City of Hurst for approval prior to manufacturing.

C. Measurement and Payment shall be made per linear foot of rail installed and shall include all hardware as well as equipment, labor, tools, and incidentals necessary to complete the work.

II. WATER ITEMS

PAY ITEM II-44 THROUGH II-46: GATE VALVE

The provisions of NCTCOG Item 502.6.6.1 shall apply except as modified below:

A. Valves shall conform to the General Notes and City of Hurst Water Standard Details.

B. The Contractor shall be paid for each valve installed at all sizes, including box and lid. Unit price shall include all materials, labor, materials, and incidentals necessary to complete the work.

PAY ITEM II-47: FIRE HYDRANT ASSEMBLY

The provisions of NCTCOG Item 502.3 shall apply except as modified below:

A. Fire hydrants assemblies shall be installed in accordance with City of Hurst Water Standard Details.

B. Fire Hydrants shall be installed a minimum distance of 3 feet from the back of curb or edge of pavement unless specified otherwise on the plans.

C. Payment for “Install Fire Hydrant Assembly” shall be per each assembly installed and shall include fire hydrant, barrel extension (if required), 6-inch lead line and valve, concrete splash pads, concrete valve block, traffic button marker, thrust blocking, and all other materials, equipment, labor, tools, and incidentals necessary to complete the work.

PAY ITEM II-48: FIRE SERVICE CONNECTION

The provisions of NCTCOG Item 506 shall apply except as modified below:

A. Refer to City of Hurst Water Standard Details. The costs of saddle, corporation stop, curb stop, all fittings, and connections to existing service are incidental to this bid item.

B. All fire service connections shall be installed per the plans.

C. Measurement and Payment shall be made on a "per each" basis and shall include removal of the old service line, excavation and backfill, as well as all labor, materials, and equipment necessary to reconnect the service line to the private service line.

PAY ITEM II-49: RELOCATE EXISTING WATER METER

The provisions of NCTCOG Item 203.1 shall apply except as modified below:

A. This item includes complete removal and relocation of existing water meters where specified on the plans, and reconnection to existing service line.

B. Any damage to the existing water meter shall be replaced to equal or better condition at no additional compensation.

D. Measurement and payment shall be made for each water meter removed and relocated and shall include excavation, debris removal and disposal, backfill, re-compaction and all labor and materials necessary to remove and relocate the water meter.

PAY ITEM II-50: INSTALL NEW WATER METER BOX

The provisions of NCTCOG Item 502.10.2.4 shall apply except as modified below:

A. Refer to Hurst Water Standard Details as to the type of meter box to be installed.

B. Water meter boxes installed within concrete flatwork shall be precast with ductile iron lid per City details.

C. Existing water meters shall be salvaged, re-used, and moved and/or raised to locations meeting City of The Colony standards. In locations where bull-head meters are present in one box, both meters shall be reinstalled in one box at no additional cost.

D. Measurement and payment shall be made for each meter box installed and shall include moving and/or raising meter locations.

PAY ITEM II-51: CONCRETE ENCASEMENT FOR WATER LINES

The provisions of NCTCOG Item 504.5.2.13 shall apply except as modified below:

A. Refer to City of Hurst Water Standard Detail Sheets for concrete encasement detail. Encasement minimum thickness 6" and Class "C" concrete, 3600 psi compressive strength at 28 days.

B. Measurement and Payment for "Concrete Encasement of Water Lines" shall be by the linear foot and shall include supporting pipe and furnishing and installing concrete.

PAY ITEM II-52 THROUGH II-57: WATER LINE

The provisions of NCTCOG Item 506 shall apply except as modified below:

A. Water Lines 4-inch through 12-inch diameter shall be AWWA C900-07, Pressure Class 235 psi, DR 18, blue in color.

B. Refer to the City of Hurst Water Standard Details. The cost of trench excavation, embedment, and backfill is incidental to this bid item.

C. All ditchlines shall be mechanically tamped with the cost incidental to this bid item. Backfill should be placed in 6" – 8" loose lifts and shall be compacted to 95% of the maximum dry density as defined by ASTM D-698 (Standard Proctor) procedures. Densities shall be taken every one (1) lift at staggered hundred feet increments.

D. The cost of fittings and thrust blocking is incidental to the unit cost of pipe. The cost of cutting, plugging, and abandoning existing water lines is incidental to the unit cost of pipe. The ends of all abandoned lines shall be plugged with gasketed plug or cap and an adequate quantity of concrete to form a tight seal.

E. Water line proposed for concrete encasement shall be installed at locations noted in the plans and constructed per the City of Hurst Water Standard Details. The cost for concrete encasement, including concrete, reinforcing steel, and all incidentals shall be paid for by separate pay item.

F. The provisions of Item 503 shall apply to installation of pipe by other than open cut. The cost for steel casing shall be subsidiary to the appropriate water line installed in steel casing bid item.

G. Skids shall be used to prevent damage to the pipe and bell during installation. PVC pipe should not rest on bells. Plastic spacers, such as RACII L150 or approved equal, shall be installed to anchor the pipe to avoid movement in any direction.

H. Casing pipe for 12-inch Water Line shall be new steel conforming to ANSI B36.10 and the following:

Field Strength: 35,000 psi minimum.

Wall thickness: 3/8"

Diameter: 24-inch (minimum size requirements).

Joints: Continuous circumferential weld in accordance with AWS D1.1.

I. The Contractor shall be paid only for the length of casing pipe by other than open cut indicated on the plans.

J. It is the Contractor's responsibility to prevent damage to streets, driveways, walkways, culverts, and other structures during and after pipe installation by other than open cut. Contractor shall repair any such damage at no extra pay.

K. All steel encasement pipes shall have smooth walls. No corrugated pipe shall be permitted.

L. Proposed steel encasement pipe shall be installed at various depths as indicated on the Plans. Any compensation for extra depth shall be covered under this Pay Item.

M. The cost of installing concrete plugs at the upper and lower ends of the encasement pipe shall be covered under this Pay Item.

N. This pay item includes the cost of the casing pipe, grouting, and all incidental labor and materials necessary for a complete installation in accordance with the Plans and Specifications.

O. It is the Contractor's responsibility to verify all existing utilities (location and depth) prior to commencing installation of pipe by other than open cut. The Contractor shall not be compensated for any additional attempts needed to perform boring operations or for removing obstacles necessary to complete the pipe installation by other than open cut.

P. Water pipe installed by other than open cut joints shall be integral bell or restrained type conforming to ASTM D3139 with gaskets conforming to ASTM F477. All water pipes shall have ANSI/NSF 61 Certification.

Q. Bracing of utility poles or adjacent structures if necessary, shall be subsidiary to this bid item.

R. All trench widths for water, sanitary sewer and storm drain pipe installation shall be kept to a minimum where possible. If working in paved street and driveway areas open to traffic the Contractor shall provide for a temporary 6-inches crushed stone with 3-inch hot mix asphalt surface material pavement, to be placed over the ditch area until the final improvements are made. This work shall be incidental to General Site Preparation and Water, Sanitary Sewer and Storm Drain Bid Items.

T. Measurement and payment shall be made per linear foot of pipe installed of the various sizes. The unit price bid for this item shall consist of all materials, equipment, labor, tools, and incidentals necessary to complete the work.

PAY ITEM II-58 AND II-57: <u>WATER SERVICE LINES (LONG AND SHORT)</u>

The provisions of NCTCOG Item 506 shall apply except as modified below:

A. Refer to City of Hurst Water Standard Details. The costs of saddle, corporation stop, curb stop, all fittings, and meter boxes/mini vaults are incidental to this bid item.

B. All water service lines shall be Type "K" copper.

C. Existing water meters shall be salvaged, re-used, and moved and/or raised to locations meeting City of Hurst standards. At locations where bull-head meters are present in one box, both meters shall be reinstalled in one box at no additional cost.

D. Long 1-inch copper service lines shall include bored 3-inch Schedule 40 PVC casing pipe, including any miscellaneous open trench, at no additional cost.

E. At locations where the existing water main is to remain in place, the new service line shall be installed with new double brass saddle at the existing corporation stop location. No new taps shall be made.

F. Measurement and payment shall be made on a "per each" basis (short or long) and shall include removal of the old service line, excavation and backfill, as well as all labor, materials, and equipment necessary to reconnect the service line to the meter and private service line, including meter box.

PAY ITEM II-60: REMOVE EXISTING WATER LINE PIPE (VARIOUS SIZES)

The provisions of NCTCOG Item 203.1 shall apply except as modified below:

A. This item will govern for those sections of existing water lines that are designated for removal on the plans.

B. The CONTRACTOR shall be responsible for locating lines to be removed.

C. The CONTRACTOR shall be paid only for existing lines actually removed.

D. The CONTRACTOR shall endeavor to keep water line removals to a minimum.

E. Measurement and payment shall be on a lump sum basis and shall include excavation, pipe removal and disposal, pipe cutting and plugging, backfill and all labor and materials necessary to remove the existing line.

PAY ITEM II-61: REMOVE AND SALVAGE GATE VALVE (VARIOUS SIZES)

The provisions of NCTCOG Item 203.3 shall apply except as modified below:

A. This item will govern removal and salvage of valves, on main lines and fire hydrant leads, at the locations indicated on the plans.

B. Measurement and payment shall be made for each water valve removed and shall include excavation, removal, backfill, and transporting the valve to a location specified by the City of Hurst.

PAY ITEM II-62: REMOVE AND SALVAGE FIRE HYDRANT

The provisions of NCTCOG Item 203.3 shall apply except as modified below:

A. This item will govern removal and salvage of fire hydrants at the locations indicated on the plans.

B. Measurement and payment shall be made for each fire hydrant removed and shall include excavation, removal, concrete splash pad removal, backfill, and transporting the fire hydrant to a location specified by the City of Hurst.

PAY ITEM I-63: MISCELLANEOUS WATER ALLOWANCE

Work Zones within established neighborhoods sometimes encounter construction items that could not be easily foreseen and identified prior to construction. This item was established to be used for reimbursement to the Contractor for items of this nature. This item will not be used unless deemed necessary by the Owner. Compensation for this bid item will be in accordance with Section 11.4 - Cost of Work, Section 11.6 - Contractors Fee, and paragraph 11.7 in the General Conditions section of the Contractor documents.

III. SANITARY SEWER ITEMS

PAY ITEM III-64: SANITARY SEWER MAINS (BY OTHER THAN OPEN CUT) WITH STEEL ENCASEMENT

The provisions of Item NCTCOG 503 shall apply except as modified below:

A. All sanitary sewer pipe shall be PVC SDR-26, IPS and pressure-rated 160 psi.

B. Should the existing sanitary sewer main be disrupted, the Contractor shall use bypass sewage pumping to avoid disrupting sewer flow during construction of the new sewer main.

C. The cost of sewage pumping shall be covered under these bid items. There will be no separate pay for sewage pumping.

E. The Contractor shall have pumps on the job site capable of handling the flow.

F. Skids shall be used to prevent damage to the pipe and bell during installation. PVC pipe should not rest on bells. Plastic spacers, such as RACII L150 or approved equal, shall be installed to anchor the pipe to avoid movement in any direction.

G. Casing pipe for 8-inch Sanitary Sewer Line shall be new steel conforming to ANSI B36.10 and the following:

Field Strength: 35,000 psi minimum.

Wall thickness: 5/16”

Diameter: 16-inch (minimum size requirements).

Joints: Continuous circumferential weld in accordance with AWS D1.1.

H. The Contractor shall be paid only for the length of casing pipe by other than open cut indicated on the plans.

I. It is the Contractor's responsibility to prevent damage to streets, driveways, walkways, culverts, and other structures during and after pipe installation by other than open cut. Contractor shall repair any such damage at no extra pay.

J. All steel encasement pipes shall have smooth walls. No corrugated pipe shall be permitted.

K. Proposed steel encasement pipe shall be installed at various depths as indicated on the Plans. Any compensation for extra depth shall be covered under this Pay Item.

L. The cost of installing concrete plugs at the upper and lower ends of the encasement pipe shall be covered under this Pay Item.

M. This pay item includes the cost of the casing pipe, grouting, and all incidental labor and materials necessary for a complete installation in accordance with the Plans and Specifications.

O. The cost of cutting, plugging, and abandoning existing sanitary sewer lines is incidental to the unit cost of pipe. The ends of all abandoned lines shall be plugged with and plug and an adequate quantity of concrete to form a tight enclosure.

P. Connections to existing sanitary sewer lines shall be performed in a neat workmanlike manner and made watertight. Cleaning and bypass pumping will be performed as necessary to permit connection. All work deemed necessary for the connection shall be subsidiary to this bid item.

Q. It is the Contractor's responsibility to verify all existing utilities (location and depth) prior to commencing installation of pipe by other than open cut. The Contractor shall not be compensated for any additional attempts needed to perform boring operations or for removing obstacles necessary to complete the pipe installation by other than open cut.

R. Sewer pipe installed by other than open cut joints shall be integral bell or restrained type conforming to ASTM D3139 with gaskets conforming to ASTM F477. All water pipes shall have ANSI/NSF 61 Certification.

S. Bracing of utility poles or adjacent structures if necessary, shall be subsidiary to this bid item.

T. Measurement and payment shall be made per linear foot of pipe installed of the various sizes. The unit price bid for this item shall consist of all materials, equipment, labor, tools, and incidentals necessary to complete the work.

PAY ITEM III-65 AND III-69: SANITARY SEWER MAINS (OPEN CUT)

The provisions of Item NCTCOG 507.2 shall apply except as modified below:

A. All sanitary sewer pipe shall be PVC SDR-26, IPS and pressure-rated 160 psi.

B. Should the existing sanitary sewer main be disrupted, the Contractor shall use bypass sewage pumping to avoid disrupting sewer flow during construction of the new sewer main.

C. The cost of sewage pumping shall be covered under these bid items. There will be no separate pay for sewage pumping.

D. The Contractor shall have pumps on the job site capable of handling the flow.

E. Sewer line proposed for concrete encasement shall be installed at locations noted in the plans and constructed per the City of Hurst Water Standard Details. The cost for concrete encasement, including concrete, reinforcing steel, and all incidentals shall be paid by separate pay item.

F. All ditch lines shall be mechanically tamped with the cost incidental to this bid item. Backfill shall be placed in 6" – 8" loose lifts and shall be compacted to 95% of the maximum dry density as defined by ASTM D-698 (Standard Proctor) procedures. Densities shall be taken every one (1) lift at staggered hundred feet increments.

G. The cost of cutting, plugging, and abandoning existing sanitary sewer lines is incidental to the unit cost of pipe. The ends of all abandoned lines shall be plugged with and plug and an adequate quantity of concrete to form a tight enclosure.

H. All trench widths for water, sanitary sewer and storm drain pipe installation shall be kept to a minimum where possible. If working in paved street and driveway areas open to traffic the Contractor shall provide for a temporary 6-inches crushed stone with 3-inch hot mix asphalt surface material pavement patch, to be placed over the ditch area until the final improvements are made. This work shall be no separate pay item.

I. Connections to existing sanitary sewer lines shall be performed in a neat workmanlike manner and made watertight. Cleaning and bypass pumping will be performed as necessary to permit connection. All work deemed necessary for the connection shall be subsidiary to this bid item

J. Measurement and payment shall be made per linear foot of pipe installed of the various sizes. The unit price bid for this item shall consist of all materials, equipment, labor, tools, and incidentals necessary to complete the work.

PAY ITEM III-70 THROUGH III-74: STANDARD SANITARY SEWER MANHOLE (VARIOUS DIAMETERS) AND EXTRA DEPTH

The provisions of NCTCOG Item 502.1 shall apply except as modified below:

A. This item shall govern for the construction of standard and drop sanitary sewer manholes.

B. Refer to City of Hurst Sanitary Sewer Standard Detail Sheet - Manhole & Service. All cast-in-place manholes shall be placed on a 6-inch thick, ¾-inch crushed stone embedment and

geotextile. All precast manholes shall be placed on a 12-inch thick, ¾-inch crushed stone embedment and geotextile.

C. Sanitary sewer manholes shall be encased in 1 foot of cement stabilized sand with at least 160 pounds of cement for every cubic yard of sand on the side adjacent to proposed water line.

D. The cost of all manhole tie-ins is subsidiary to the bid item.

E. All sewage pumping, if necessary, during manhole construction shall be covered under this bid item.

F. **This bid item shall include new manhole construction at existing mains and/or new mains.**

G. Contractor shall locate existing main prior to constructing new manholes.

H. Payment for each standard and drop manhole shall include excavation, embedment, backfill, concrete base, manhole sections, cones, rims and cover, and drop fittings if required for manholes to 6-foot depth. Extra depth in excess of 6 feet shall be measured and paid as "extra depth for manholes" on a per vertical foot basis.

PAY ITEM II-75: CONCRETE ENCASEMENT FOR SANITARY SEWER LINES

The provisions of NCTCOG Item 504.5.2.13 shall apply except as modified below:

A. Refer to City of Hurst Sanitary Sewer Standard Detail Sheets for concrete encasement detail. Encasement minimum thickness 6" and Class "C" concrete, 3600 psi compressive strength at 28 days.

C. Measurement and Payment for "Concrete Encasement of Sanitary Sewer Lines" shall be by the linear foot and shall include supporting pipe and furnishing and installing concrete.

PAY ITEM III-76: REMOVE EXISTING SANITARY SEWER LINE

The provisions of NCTCOG Item 203.1 shall apply except as modified below:

A. This item will govern for those sections of existing sanitary sewer lines that are designated for removal on the plans. This item does not include removal of sanitary sewer service lines, unless specifically call out on the plans.

B. The CONTRACTOR shall be responsible for locating sewer lines to be removed.

C. Measurement and payment shall be on a lump sum basis and shall include excavation, pipe removal and disposal, pipe cutting and plugging, backfill and all labor and materials necessary to remove the existing line.

PAY ITEM III-77: REMOVE EXISTING SANITARY SEWER MANHOLE

The provisions of NCTCOG Item 203.3 shall apply except as modified below:

A. This item includes complete removal and disposal of manholes, cleanouts, manhole lids, rings, concrete cones, concrete walls, concrete bases, piping, and plugging the ends of the sanitary sewer mains to be abandoned with a plug and an adequate quantity of concrete to form a tight closure where specified, then backfilling the remaining hole to match surrounding grades or as specified.

B. Measurement and payment shall be made for each manhole and for each cleanout removed and shall include excavation, concrete removal and disposal, pipe plugging, backfill and all labor and materials necessary to remove the manhole and/or cleanout.

PAY ITEM I-78: MISCELLANEOUS SANITARY SEWER ALLOWANCE

Work Zones within established neighborhoods sometimes encounter construction items that could not be easily foreseen and identified prior to construction. This item was established to be used for reimbursement to the Contractor for items of this nature. This item will not be used unless deemed necessary by the Owner. Compensation for this bid item will be in accordance with Section 11.4 - Cost of Work, Section 11.6 - Contractors Fee, and paragraph 11.7 in the General Conditions section of the Contractor documents.

IV. STREET LIGHTS & IRRIGATION ITEMS

PAY ITEM IV-79: PEDESTRIAN STREET LIGHT AND FOUNDATION

The following work shall be performed under this item:

A. Pedestrian light foundations shall be installed in accordance with the plan details, ordinances, codes and specifications per NCTCOG Item 702.

B. Concrete for streetlight foundations shall have a minimum compressive strength of 3,000 psi at 28 days. Top of foundation shall be 3 inches above the finished grade unless otherwise shown on drawings.

C. Contractor shall verify subsurface conditions prior to drilling foundations at a cost subsidiary to this bid item. If a conflict is present, the Contractor shall notify the Engineer for a revised location at no additional pay.

D. Foundations shall not be drilled within 3 feet of a water line or fire hydrant. Foundations shall not be placed in sidewalks or accessible ramps.

E. Any and all conduit splices and adjustments as necessary for connection to the new foundation shall be subsidiary to this bid item. Trenching to the hand holes is subsidiary to this bid item.

F. Pedestrian lights shall be Antique Street Lamps, or approved equal, as specified in the illumination plans and details and shall be purchased and installed by the Contractor. Lamps shall be a LED 4000K, Type 3 distribution light. Shop drawings shall be provided for approval prior to purchasing.

G. The Contractor shall be paid for each pedestrian streetlight and foundation installed, including all hardware, labor, materials, equipment, and incidentals necessary for a complete and functional installation.

PAY ITEM IV-80: STREET LIGHT FOUNDATION

The following work shall be performed under this item:

A. Street light foundations shall be installed in accordance with the plan details, ordinances, codes and specifications per NCTCOG Item 702.

B. Concrete for street light foundations shall have a minimum compressive strength of 3,000 psi at 28 days. Top of foundation shall be 3 inches above the finished grade unless otherwise shown on drawings.

C. Contractor shall verify subsurface conditions prior to drilling foundations at a cost subsidiary to this bid item. If a conflict is present, the Contractor shall notify the Engineer for a revised location at no additional pay.

D. Foundations shall not be drilled within 3 feet of a water line or fire hydrant. Foundations shall not be placed in sidewalks or accessible ramps.

E. Any and all conduit splices and adjustments as necessary for connection to the new foundation shall be subsidiary to this bid item. Trenching to the hand holes is subsidiary to this bid item.

F. Street lights shall be supplied and installed by Oncor.

G. The Contractor shall be paid for each foundation installed, including all hardware, labor, materials, equipment, and incidentals necessary for a complete and functional installation.

PAY ITEM IV-81: 2-INCH PVC SCHEDULE 40 CONDUIT

The provisions of NCTCOG Item 805 shall apply except as modified herein:

A. Conduit for street lights and electrical service shall be Schedule 40 PVC and shall be installed a minimum of 24 inches below grade.

B. Conduit shall be installed with pull rope.

C. Conduit shall be installed by open cut or by bore as indicated on the plans.

D. 2-Inch PVC Schedule 40 Conduit shall be measured and paid on the linear foot of conduit installed.

PAY ITEM IV-82: 1.25-INCH PVC SCHEDULE 80 CONDUIT

The provisions of NCTCOG Item 805 shall apply except as modified herein:

A. Conduit for pedestrian street lights shall be Schedule 80 PVC and shall be installed a minimum of 24 inches below grade.

B. Conduit shall be installed with pull rope.

C. Conduit shall be installed by open cut or by bore as indicated on the plans.

D. 1.25-Inch PVC Schedule 80 Conduit shall be measured and paid on the linear foot of conduit installed.

PAY ITEM IV-83 and IV-84: INSULATED ELECTRICAL CONDUCTOR

The provisions of NCTCOG Item 805 shall apply except as modified herein:

A. Conductor for pedestrian street lights and electrical service shall be installed inside conduit as indicated on the plans.

B. Conductor gauge shall be as shown on the plans.

C. The Contractor shall coordinate with Oncor and verify that the designated source will be available to connect to at the Contractor's schedule time.

D. Insulated Electrical Conductors shall be measured and paid on the linear foot of conductor installed and shall include all materials, supplies, labor, tools and incidentals necessary to supply electrical power from the source to the lamps.

PAY ITEM IV-85: CONTACT ENCLOSURE

The provisions of NCTCOG Item 805 shall apply except as modified herein:

A. This item will govern for the purchase and installation of contact enclosures at locations provided in the plans along the street light conduit.

B. Contact Enclosures shall be "120-240 Volt Single Phase Transocket Meter Pedestal" by Electrical Systems, Inc., or approved equal, as shown in the plan details.

C. Concrete Pad Mount shall be provided per City of Hurst requirements subsidiary to this pay item.

D. The Contractor shall coordinate with Oncor to verify location of the transformer providing power to the pedestrian street lights. The Contractor will need to extend power from the transformer to the contact enclosure and connect the appropriate conductor as shown on the plans.

E. Measurement and payment shall be made per each contact enclosure installed and shall be full compensation for all necessary accessories, concrete pad, rebar, conduit elbows, anchor bolts, labor, materials, excavation, backfill, equipment, and incidentals necessary to complete the work per plan details.

PAY ITEM IV-86: GROUND BOXES

The following work shall be performed under this item:

A. This item will govern for the installation of ground boxes at locations provided in the plans along the street light conduit.

B. Ground boxes shall be Type "B" boxes and shall meet the dimensions and requirements of the plan details.

C. Ground boxes located within paved sections shall be AASHTO H-20 Load rated or approved equal.

D. Measurement and payment shall be made per each ground box installed and shall be full compensation for all necessary accessories, concrete apron, rebar, conduit elbows, bedding, box cover, labor, materials, excavation, backfill, equipment, and incidentals necessary to complete the work per plan details.

PAY ITEM I-87: MISCELLANEOUS LIGHTING ALLOWANCE

Work Zones within established neighborhoods sometimes encounter construction items that could not be easily foreseen and identified prior to construction. This item was established to be used for reimbursement to the Contractor for items of this nature. This item will not be used unless deemed necessary by the Owner. Compensation for this bid item will be in accordance with Section 11.4 - Cost of Work, Section 11.6 - Contractors Fee, and paragraph 11.7 in the General Conditions section of the Contractor documents.

V. BRIDGE & CHANNEL IMPROVEMENTS

PAY ITEM V-88: REMOVE EXISTING BRIDGE

The provisions of TxDOT Item 496 shall apply except as modified herein:

A. This item shall govern for the complete, phased removal of the existing bridge structure, including all concrete, rebar, abutment, drilled shafts, columns, and all other incidentals integral to the existing bridge.

B. Phasing of removals shall be per the plans.

C. All bracing, sheeting and shoring necessary shall be subsidiary to this pay item.

D. Remove Existing Bridge bid item shall be measured and paid on the basis of lump sum of shall include all materials, supplies, labor, tools and incidentals necessary for the complete removal of the bridge.

PAY ITEM V-89: TXDOT CEMENT STABILIZED BACKFIL

The provisions of TxDOT Item 400 shall apply except as modified herein:

A. Cement stabilized backfill shall be installed per the structural details and at locations as indicated in the plans.

B. Measurement and Payment shall be made per cubic yard, installed complete in place and shall be full compensation for all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-90: TXDOT DRILLED SHAFTs (24 IN)

The provisions of TxDOT Item 416 shall apply except as modified herein:

A. 24-inch drilled shafts shall be installed per the structural details and at locations as indicated in the plans.

B. Measurement and Payment shall be made per linear foot, installed complete in place and shall be full compensation for all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-91: TXDOT CLASS "C" CONCRETE (HPC)

The provisions of TxDOT Item 420 shall apply except as modified herein:

A. Class "C" concrete (HPC) shall be installed per the structural details and at locations as indicated in the plans.

B. Measurement and Payment shall be made per cubic yard, installed complete in place and shall be full compensation for all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-92: TXDOT REINFORCED CONCRETE SLAB (HPC)

The provisions of TxDOT Item 422 shall apply except as modified herein:

A. Reinforced Concrete Slabs (HPC) shall be installed per the structural details and at locations as indicated in the plans.

B. Measurement and Payment shall be made per square foot, installed complete in place and shall be full compensation for all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-93: TXDOT APPROACH SLAB (HPC)

The provisions of TxDOT Item 422 shall apply except as modified herein:

A. Approach slabs (HPC) shall be installed per the structural details and at locations as indicated in the plans.

B. Measurement and Payment shall be made per cubic yard, installed complete in place and shall be full compensation for all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-94: TXDOT BRIDGE SIDEWALK (HPC)

The provisions of TxDOT Item 422 shall apply except as modified herein:

A. Bridge sidewalks (HPC) shall be installed per the structural details and at locations as indicated in the plans.

B. Measurement and Payment shall be made per cubic yard, installed complete in place and shall be full compensation for all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-95: TXDOT PRESTRESSED CONCRETE BEAM (4SB15)

The provisions of TxDOT Item 425 shall apply except as modified herein:

A. Prestressed Concrete Beams (4SB15) shall be installed per the structural details and at locations as indicated in the plans.

B. Measurement and Payment shall be made per cubic yard, installed complete in place and shall be full compensation for all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-96: TXDOT PRESTRESSED CONCRETE BEAM (5SB15)

The provisions of TxDOT Item 425 shall apply except as modified herein:

A. Prestressed Concrete Beams (5SB15) shall be installed per the structural details and at locations as indicated in the plans.

B. Measurement and Payment shall be made per cubic yard, installed complete in place and shall be full compensation for all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-97: TXDOT STRUCTURAL STEEL (MISC) (BS-EJCP)

The provisions of TxDOT Item 442 shall apply except as modified herein:

A. Structural steel (MISC) (BS-EJCP) shall be installed per the structural details and at locations as indicated in the plans.

B. Measurement and Payment shall be made per pound, installed complete in place and shall be full compensation for all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-98: TXDOT RAIL (HPC) (TY C223)

The provisions of TxDOT Item 450 shall apply except as modified herein:

A. Type C223 rail (HPC) shall be installed per the structural details and at locations as indicated in the plans.

B. Measurement and Payment shall be made per linear foot, installed complete in place and shall be full compensation for all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-99: TXDOT TYPE A JOINT

The provisions of TxDOT Item 454 shall apply except as modified herein:

A. Type A Joint shall be installed per the structural details and at locations as indicated in the plans.

B. Measurement and Payment shall be made per linear foot, installed complete in place and shall be full compensation for all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-100: TXDOT TRINITY HIGHWAY CRASH CUSHION ATTENUATOR (TRACC(W)-16)

The provisions of TxDOT Item 545 shall apply except as modified herein:

A. TRACC system shall be installed per the TxDOT details and at locations as indicated in the plans.

B. Measurement and Payment shall be made per each, installed complete in place and shall be full compensation for all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-101: TXDOT CONCRETE RIPRAP (TYPE RR8)

The provisions of TxDOT Item 432 shall apply except as modified herein:

A. Concrete shall be Class “C” with a minimum of 5 sacks per cubic yard of cement content and a 3,600 psi minimum compressive strength when tested at 28 days.

B. Riprap shall be installed per the TxDOT details and at locations as specified in the plans.

C. Measurement and Payment shall be made per square yard, installed complete in place and shall be full compensation including washed rock, filter fabric, weep holes, connections to existing concrete, all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-102: 6-INCH CONCRETE RIPRAP

The provisions of NCTCOG Item 803.3 shall apply except as modified herein:

D. Concrete shall be Class "C" with a minimum of 5 sacks per cubic yard of cement content and a 3,600 psi minimum compressive strength when tested at 28 days.

E. Measurement and Payment shall be made per square yard, installed complete in place and shall be full compensation including washed rock, filter fabric, weep holes, connections to existing concrete, all materials, supplies, labor, tools and incidentals necessary to complete the work.

PAY ITEM V-103: REMOVE EXISTING CONCRETE CHANNEL RIPRAP

The provisions of NCTCOG Item 203.1 shall apply except as modified below:

A. This item shall include the cost of sawcutting existing pavements, curbs, driveways, alleys, sidewalks, concrete-lined channel and riprap.

B. Any removal beyond what is shown on the plans shall be at the Contractor's expense unless authorized by the Engineer.

C. Any necessary dewatering and/or bypass pumping shall be subsidiary to this bid item.

D. Riprap shall be neatly sawcut along straight lines as shown on the plans and to the nearest joint.

E. Measurement and payment shall be made on the basis of square yard. This item shall include the sawcut, demolition, removal, haul off and disposal of concrete channel riprap and associated flatwork along with all incidentals, materials, supplies, labor, and equipment necessary to complete the work.

ADDED ALTERNATE BID ITEMS

PAY ITEM A1: FINAL PROJECT COMPLETION 30 CALENDAR DAYS EARLY

The Contractor shall be paid on the basis of the price bid per lump sum for final project completion, as defined in the General Conditions, Articles 14.11-14.13, 30 calendar days earlier than the defined contract scheduled days, pending the inclusion of any Atmos work "I-1: Atmos Coordination" in the within the project limits.

PAY ITEM A2: FINAL PROJECT COMPLETION 60 CALENDAR DAYS EARLY

The Contractor shall be paid on the basis of the price bid per lump sum for final project completion, as defined in the General Conditions, Articles 14.11-14.13, 60 calendar days earlier than the defined contract scheduled days, pending the inclusion of any Atmos work "I-1: Atmos Coordination" in the within the project limits.

13) CAPITAL IMPROVEMENTS PROJECT SIGN

CITY OF HURST

Project Funded by the City of Hurst and the Tarrant County Commissioners Court Through the 2021 Tarrant County Bond Program

W. Pipeline Road Phase IV

Contractor's
Company
Phone Number

Public Works
Engineering Dept.
817-788-7076

Project Completion - Spring, 2028

APPENDIX A - ADDENDA

APPENDIX B - GEOTECHNICAL ENGINEERING STUDY REPORT

GEOTECHNICAL ENGINEERING STUDY
WEST PIPELINE ROAD RECONSTRUCTION
PHASE 4
HARRISON LANE TO BROWN TRAIL
HURST, TEXAS

Presented To:

Halff Associates, Inc.

October 2022

PROJECT NO. 1117-22-322

CMJ Engineering

October 28, 2022
Report No. 117-22-322

Halff Associates, Inc.
4000 Fossil Creek Blvd.
Fort Worth, Texas 76137-2720

Attn: Mr. Kevin Gronwaldt, P.E.

GEOTECHNICAL ENGINEERING STUDY
WEST PIPELINE ROAD RECONSTRUCTION
PHASE 4
HARRISON LANE TO BROWN TRAIL
HURST, TEXAS

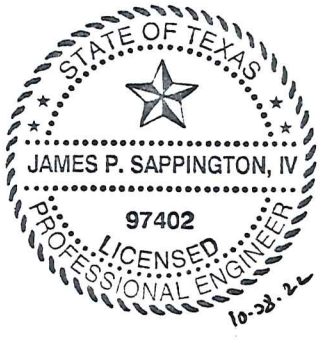
Dear Mr. Gronwaldt:

Submitted here are the results of a geotechnical engineering study for the referenced project. This study was performed in general accordance with CMJ Proposal 22-8550 dated March 15, 2022. Formal authorization to initiate the geotechnical services was provided via Standard Subcontract for Subsurface Services with Halff Associates, Inc., Project Number 046801.001 dated July 18, 2022 and executed by Mr. David M. Smith, P.E.

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 Halff Associates, Inc. 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.
President
Texas No. 97402

copies submitted: (2) Mr. Kevin Gronwaldt, P.E.; Halff Associates, Inc. (by mail and email)

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Fort Worth, TX 76118
www.cmjengr.com

TABLE OF CONTENTS

APPENDIX A

1.0 INTRODUCTION

1.1 General

The project, as currently planned, consists of the total reconstruction of West Pipeline Road from Harrison Lane to Brown Trail in Hurst, Texas. The approximate total project length is 2,150 linear feet. New pavement surfacing may consist of either Portland cement concrete or Hot-Mix Asphalt (HMAC) concrete. Planned improvements also include relatively low height retaining walls. In addition, the existing bridge over Valley View Branch may be replaced. Plate A.1, Plan of Borings, depicts the project vicinity and approximate locations of the exploration borings.

1.2 Purpose and Scope

The purpose of this geotechnical engineering study has been to determine the general subsurface conditions, evaluate the engineering characteristics of the subsurface materials encountered, develop recommendations for the type or types of foundations suitable for the project, provide pavement design guidelines, and earthwork recommendations.

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 structures could change. The recommendations contained in this report are based on data supplied by Halff Associates, Inc. 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 9. 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 six (6) vertical soil borings. Borings B-3 and B-4 were drilled to depths of 35 to 40 feet in the area of the potential bridge replacement. The remaining borings were drilled to a depth of 8 feet along the existing roadway. The borings were drilled using continuous and intermittent sampling with 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.9 and keys to classifications and symbols used on the log 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 log of boring. 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 log. When the capacity of the penetrometer is exceeded, the value is tabulated as 4.5+.

Disturbed samples of the noncohesive granular or stiff to hard cohesive materials were obtained utilizing a nominal 2-inch O.D. split-barrel (split-spoon) sampler in conjunction with the Standard Penetration Test (ASTM D 1586). This test employs a 140-pound hammer that drops a free fall vertical distance of 30 inches, driving the split-spoon sampler into the material. The number of blows required for 18 inches of penetration is recorded and the value for the last 12 inches, or the

penetration obtained from 50 blows, is reported as the Standard Penetration Value (N) at the appropriate depth on the logs of borings.

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 logs. Upon completion of the borings, the bore holes were backfilled with sand and plugged at the surface with asphalt.

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 percent passing the No. 20 sieve), 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.

Free swell tests were conducted on selected soil samples recovered from the borings. The swell testing was conducted to help identify the expansive potential of the soils. The result of the swell tests are presented on Plate A.10.

Soluble sulfate testing was accomplished to check for the potential of lime-induced heaving. Plate A.11 presents the soluble sulfate test results.

An Eades and Grim Lime Series test was performed on a selected sample to identify the appropriate concentration of lime to add to soils for stabilization purposes. The results of the lime series test are presented on Plate A.12.

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

3.0 SUBSURFACE CONDITIONS

3.1 Site Geology

According to the Dallas Sheet of the Geologic Atlas of Texas, the project is geologically located in the Woodbine Formation of the Upper Cretaceous Age. The Woodbine formation consists of highly variable soils ranging from sands, clayey sands, sandy clays to clays. The parent material consists of sandy shale with occasionally very hard/dense cemented sands and sandstones present above the sandy shales. Ground water is typically present in the formation perched in the more permeable granular materials above or along the contact with the sandy shale.

3.2 Soil Conditions

Specific types and depths of subsurface strata encountered at the boring location are shown on the boring log in Appendix A. The generalized subsurface stratigraphy encountered in the boring are discussed below. Note that depths on the boring 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.

Borings B-1 through B-6 were drilled in the existing street. Pavement encountered consists of 3¾ to 9¾ inches of asphalt. No base material was observed beneath the asphalt paving in Boring B-5. Gravel base material was observed beneath the paving in all other borings, with thicknesses of 6 to 9 inches.

Fill and possible fill materials consisting of light brown clayey sands are present beneath the paving structure in Borings B-2 and B-6. These fills contain asphalt fragments, gravel, glass fragments, and calcareous nodules.

Natural soils encountered consist of brown, light brown, reddish brown, light reddish brown, gray, and light gray clayey sands, sands, and sandy clays containing ironstone nodules, iron stains, and occasional iron seams, pebbles, and calcareous nodules. Gravel seams are noted from 4 to 6 feet in Boring B-2. In addition, shaly clay seams are present within the sandy clays and clayey sands below 13 feet in Boring B-3. The various sands and clayey sands were generally medium dense, with Standard Penetration (N) values of 10 to 17 blows per foot of penetration. Reddish brown cemented sand is next present below 5 feet in Boring B-5. The cemented sand is very dense, with a Standard Penetration (SPT) test value of 5¼ inches of penetration for 50 hammer blows.

The various clay soils encountered are generally very stiff to hard in consistency (soil basis), with pocket penetrometer values of 4.0 to over 4.5 tsf. The various soils encountered in the borings had tested Liquid Limits (LL) ranging from 17 to 42 with Plasticity Indices (PI) ranging from 6 to 28 and are classified as SP, SC, and CL by the USCS. Tested unit weight values were 99 to 125 pcf and unconfined compressive strengths varied from 1,960 to 5,930 psf. Select lower pocket penetrometer readings and strength test values reflect more granular soils, indicating higher in-situ strengths than the tested value.

Gray sandy shale is present in Borings B-3 and B-4 at depths of 15 to 19 feet below existing grade and continues through boring termination at depths of 35 to 40 feet. The gray sandy shale contains sandstone seams and layers and varies from moderately hard to very hard (sedimentary rock basis) with Texas Cone Penetrometer values of ¾ to 2 inches per 100 blows.

3.3 Ground-Water Observations

The borings were drilled using continuous flight augers in order to observe ground-water seepage during drilling. Ground-water seepage was encountered at 15 feet during drilling in Boring B-3 while all other borings were dry during drilling. All borings were dry at completion of drilling operations.

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 boring was performed. Ground-water can occur atop harder, less-permeable materials (e.g., clay or shale) 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 BRIDGE FOUNDATION RECOMMENDATIONS

4.1 General Foundation Considerations

Two independent design criteria must be satisfied in the selection of the type of foundation to support the proposed replacement bridge structure. First, the ultimate bearing capacity, reduced by a sufficient factor of safety, must not be exceeded by the bearing pressure transferred to the foundation soils. Second, due to consolidation or expansion of the underlying soils during the operating life of the structures, total and differential vertical movements must be within tolerable limits. The recommended foundation for the proposed bridge structure is discussed below. Foundation construction considerations are presented in Section 4.2.4.

4.2 Straight Shaft Pier Design Parameters

4.2.1 *Design Criteria*

Recommendations and parameters for the design of cast-in-place straight-shaft drilled piers are outlined below. Specific recommendations for the construction and installation of the drilled piers are included in the following section, and shall be followed during construction.

Bearing Stratum	Gray SANDY SHALE, w/ sandstone seams and layers
Depth of Bearing Stratum:	Approximately 15 to 19 feet below existing grades
Required Penetration/Depth:	All piers should penetrate into the bearing stratum a minimum of 3 feet. Deeper penetrations may be required to develop additional skin friction and/or uplift resistance.
Allowable End Bearing Capacity:	25,000 psf
Allowable Skin Friction:	Applicable below a minimum penetration of 3 feet into the gray sandy shale and below any temporary casing; 4,200 psf for compressive loads and 3,200 psf for tensile loads.

The above values contain a safety factor of three (3). Penetrations greater than the minimum penetration may be required to develop additional skin friction and/or uplift resistance.

It should be anticipated that ground-water seepage will be encountered during installation of selected straight shafts. Temporary casing may be required for proper installation of the shafts; however, in the event the casing cannot seal off the ground-water, underwater concrete (or slurry) placement techniques could be necessary to properly install the shafts. Seepage is possible in the sandy shale. Where seepage occurs in the sandy shale, extension of the temporary casing may be required to case through the water bearing zone resulting in deeper penetrations than would be designed. In underwater concrete (or slurry) placement techniques end bearing is neglected and the shaft design is based entirely on skin friction. This will require also require deeper penetrations.

In order to develop full load carrying capacity in skin friction, adjacent shafts (both new and existing) should have a minimum center to center spacing of 3 times the diameter of the larger shaft. Closer spacing may require some reductions in skin friction and/or changes in installation sequences. Closely spaced shafts should be examined on a case by case basis. As a general guide, the design skin friction will vary linearly from the full value at a spacing of 3 diameters to 50 percent of the design value at 1.0 diameter.

Settlements for properly installed and constructed straight shafts in the gray sandy shale will be primarily elastic and are estimated to be 1 inch or less. Differential settlement between adjacent piers is estimated at ½ inch or less.

4.2.2 *Lateral Load Design Values*

Drilled shaft design parameters for use with LPile based on our laboratory test results are presented in the table below together with our recommended design stratigraphy. The design depth interval is referenced from present existing grades. The upper 10 feet of soils should be neglected in calculations. This reduction is because of the potential for shrinkage cracks forming along the sides of the drilled shafts.

RECOMMENDED LATERAL LOAD DESIGN VALUES

Soil Type	Depth Interval (ft.)	Design Total Unit Weight (pcf)	Design Strength		Design ε50 or k_{rm}	k-value (pci)	E (psi)
Sandy Clays / Clayey Sands	10-19	130	Cohesion (psi)	Friction Angle (degrees)	0.007	500	-
			13	30			
Sandy Shale	19+	140	Uniaxial Compressive Strength (psi)		0.0005	-	16,000
(Estimated RQD <30%)			180				

4.2.3 *Soil Induced Uplift Loads*

The drilled shafts could experience tensile loads as a result of post construction heave in the site soils. The magnitude of these loads varies with the shaft diameter, soil parameters, and particularly the in-situ moisture levels at the time of construction. For design purposes, an uplift load of 1,100 psf over a shaft length of 10 feet is estimated. This load must be resisted by the dead load on the shaft, continuous vertical reinforcing steel in the shaft, and a shaft adhesion developed within the bearing strata. In order to aid in the structural design of the reinforcement, minimum reinforcing should be equal to 0.5 percent of the shaft area.

4.2.4 *Drilled Shaft Construction Considerations*

A drilling rig of sufficient size and weight will be necessary for drilling and/or coring through the hard layers to reach the desired bearing stratum and achieve the required penetration. Extremely hard sandstone layers can be present in this geologic formation. This sandstone can complicate installation of the shafts and require special drilling techniques such as rock coring. Where such extremely hard sandstones are encountered, shaft penetrations cannot be reduced. As a point of reference, unconfined compression strength tests in this material typically ranges from 100 to well over 500 tsf.

Drilled pier construction should be monitored on a full-time basis by a representative of the geotechnical engineer to observe, among other things, the following items:

- Identification of bearing material
- Adequate penetration of the shaft excavation into the bearing layer
- The base and sides of the shaft excavation are clean of loose cuttings

- If seepage is encountered, whether it is of sufficient amount to require the use of temporary steel casing. If casing is needed it is important that the field representative observe that a high head of plastic concrete is maintained within the casing at all times during their extraction to prevent the inflow of water

Excavations for the shafts should be maintained in the dry. It should be anticipated that ground-water seepage will be encountered during shaft installation of select straight shafts penetrating the gray sandy shale and that temporary casing may be required for select straight shafts for proper shaft installation. The casing should be seated below the zone of seepage with all water and most loose material removed prior to beginning the design penetration. No more than 2 inches of water should be present at the bottom of the shaft prior to concrete placement. Care must then be taken that a sufficient head of plastic concrete is maintained within the casing during extraction. Test shafts are recommended to determine if temporary casing will be sufficient to seal off the ground-water seepage or if underwater (or slurry if required) concrete techniques are required, as discussed below.

If the water cannot be controlled, we recommend slurry/underwater concrete placement techniques be used. The concrete should be placed by a tremie or by using a concrete pump. If this method is utilized, end bearing should be neglected and the shaft design based entirely on skin friction. The properties of the slurry (if required) including the density, viscosity, and pH should be in accordance with TxDOT Specification Item 416.

The bottom of the shaft should be cleaned as well as practical just prior to concreting to remove the cuttings. Tremied or pumped-in concrete for shafts should take place as continuously as possible until the concrete placement is complete. The bottom of the discharge pipe should always be kept below the surface of the concrete. The tremie should be equipped with a one-way valve to prevent slurry from entering the pipe. A surface casing may be required in addition to the slurry for shaft installation if sloughing of the surficial soils occurs. Where casing is used, removal of the casing should be performed with due care.

Precautions should be taken during the placement of reinforcing steel and concrete to prevent loose, excavated soil from falling into the excavation. Concrete should be placed as soon as practical after completion of the drilling, cleaning, and observation. Excavation for a drilled pier should be filled with concrete before the end of the workday, or sooner if required to prevent deterioration of the bearing material. Prolonged exposure or inundation of the bearing surface with

water will result in changes in strength and compressibility characteristics. Slurry left in place for long periods of time will build up on the sides of the shaft causing a reduction in skin friction. If delays occur, the drilled pier excavation should be deepened as necessary and cleaned, in order to provide a fresh bearing surface.

The concrete should have a slump of 6 inches plus or minus 1 inch. Concrete for use in slurry placements may have a maximum slump of 8 inches. The concrete should be placed in a manner to prevent the concrete from striking the reinforcing cage or the sides of the excavation. Concrete should be tremied to the bottom of the excavation to control the maximum free fall of the plastic concrete to less than 10 feet, or focus concrete in the middle of the reinforcing cage to prevent segregation.

A drilling rig of sufficient size and weight will be necessary for drilling and/or coring through the hard layers to reach the desired bearing stratum and achieve the required penetration. It should be anticipated that hard to very hard zones can be present in the gray sandy shale or if sandstone seams or layers occur. The hard to very hard layers can complicate pier drilling operations.

In addition to the above guidelines, the specifications from the Association of Drilled Shaft Contractors Inc. "Standards and Specifications for the Foundation Drilling Industry" as Revised 1999 or other recognized specifications for proper installation of drilled shaft foundation systems should be followed.

4.3 Abutment Erosion Protection

Where applicable, erosion protection such as 6- to 12-inch size riprap should be provided on the slope below and beside the abutment structure to limit undermining. The exact size riprap should be based on flow velocities. The rip-rap section should be at least 2 times the thickness of the average stone size (D_{50}) and should extend at least 3 times the thickness of the average stone size deeper than the thalweg of the creek at the toe. A toe width of 5 times the average stone size is recommended. The rip rap section should be underlain by a properly design sand bedding layer and filter fabric.

5.0 RETAINING WALLS

5.1 General Retaining Wall Considerations

Five geotechnical design criteria must be satisfied in the selection of the type and configuration of the retaining walls. These criteria are; the wall must have an acceptable factor of safety with respect to (1) overturning failure, (2) a sliding (translation) failure, (3) a bearing capacity failure, and (4) a global (deep-seated) slope failure. In addition, (5) the deformation of the wall caused by deflection from earth pressure, and from settlement or heave of the foundation soils or backfill soils, must be within tolerable limits during the functional life of the structures.

5.2 Retaining Wall Foundations

5.2.1 *Design Criteria*

Footings situated in the natural soils a minimum of 2 feet below finished grade may be proportioned using a maximum allowable bearing pressure of 2,000 psf. Soils existing in a soft to firm state should be evaluated on a case-by-case basis. Close inspection of soils strength should be conducted by a geotechnical engineer to allow designation and removal of very soft soils not meeting the bearing capacity stated above. The base of all excavated footings should be inspected by a geotechnical engineer or geotechnician under his or her supervision to assure that the bottom is firm, level and free of loose soil material and/or debris. In the areas of existing fills, the exposed subgrade in the footing excavation should be proofrolled as follows: the subgrade should be proof rolled using a heavy pneumatic tired or small width drum roller making several passes over the subgrade. Any soft or spongy areas should be overexcavated to firm materials and backfilled following the recommendations provided in report Section 7.0, Earthwork. The proof rolling operations should also be observed by the project geotechnical engineer or his/her representative.

It should be noted that retaining wall foundations are typically subjected to non-uniform pressure across the foundation, and possibly negative pressure (separation of foundation from soil) under a portion of the foundation, due to the overturning moment induced by the lateral earth pressures. The allowable foundation pressures given above are for the maximum pressure induced by the foundation loads, and not the average pressure under the foundation base.

The horizontal bases of the footings will develop resistance to sliding by means of a combination of friction and adhesion (for cohesive foundation materials). Given the nature of the foundation

materials, an ultimate friction factor of 0.35 may be used to calculate sliding resistance of the footings bearing on site soils. Only long-term dead loads should be considered in calculating the available friction on the foundation base.

Foundations for the retaining walls designed in accordance with these recommendations will have a minimum factor of safety of 3 with respect to a bearing capacity failure, and should experience a total settlement of 1 inch or less and a differential settlement of ½ inch or less, after construction.

5.2.2 *Foundation Construction*

Mat type or spread foundation construction should be monitored by a representative of the geotechnical engineer to observe, among other things, the following items:

- Identification of bearing material
- Adequate penetration of the foundation excavation into the bearing layer
- The base and sides of the excavation are clean of loose cuttings
- When seepage is encountered, whether it is sufficient amount to require the use of excavation dewatering methods

Precautions should be taken during the placement of reinforcing steel and concrete to prevent loose, excavated soil from falling into the excavation. Concrete should be placed as soon as practical after completion of the excavating, cleaning, reinforcing steel placement and observation. Excavation for a shallow foundation should be filled with concrete before the end of the workday, or sooner if required, to prevent deterioration of the bearing material. Prolonged exposure or inundation of the bearing surface with water will result in changes in strength and compressibility characteristics. If delays occur, the excavation should be deepened as necessary and cleaned, in order to provide a fresh bearing surface. If more than 24 hours of exposure of the bearing surface is anticipated in the excavations, a "mud slab" should be used to protect the bearing surfaces. If a mud slab is used, the foundation excavations should initially be over-excavated by approximately 4 inches and a lean concrete mud slab of approximately 4 inches in thickness should be placed in the bottom of the excavations immediately following exposure of the bearing surface by excavation. The mud slab will protect the bearing surface, maintain more uniform moisture in the subgrade, facilitate dewatering of excavations if required, and provide a working surface for the placement of formwork and reinforcing steel.

The concrete should be placed in a manner that will prevent the concrete from striking the reinforcing steel or the sides of the excavation in a manner that would cause segregation of the concrete.

5.3 Lateral Earth Pressures

5.3.1 *General*

The retaining walls must be designed for lateral pressures including, but not necessarily limited to, earth, water, surcharge, swelling, and vibration. In addition, the lateral pressures will be influenced by whether the backfill is drained or undrained, and above or below the ground-water table.

5.3.2 *Equivalent Fluid Pressures*

Lateral earth pressures on below grade and retaining walls will depend on a variety of factors, including the type of soils behind the wall, the condition of the soils, and the drainage conditions behind the wall. Recommended lateral earth pressures expressed as equivalent fluid pressures, per foot of wall height, are presented in Table 5.3.2-1 for a wall with a level backfill behind the top of the wall. The equivalent fluid pressure for an undrained condition should be used if a drainage system is not present to remove water trapped in the backfill and behind the wall. Pressures are provided for at-rest and active earth pressure conditions. Rigid walls are not anticipated to develop enough movement to mobilize active earth pressures. In order to allow for an active condition the top of the wall(s) must deflect on the order of 0.4 percent.

TABLE 5.3.2-1 – Equivalent Fluid Pressures

Backfill Material	At-Rest Equivalent Fluid Pressure (pcf)		Active Equivalent Fluid Pressure (pcf)	
	Drained	Undrained	Drained	Undrained
Excavated on-site clay or clay fill material	100	110	90	100
Select fill or on-site soils meeting material specifications	75	100	55	90
Free draining granular backfill material	55	90	35	80

For the select fill or free draining granular backfill, these values assume that a “full” wedge of the material is present behind the wall. The wedge is defined where the wall backfill limits extend

outward at least 2 feet from the base of the wall and then upward on a 1H:2V slope. For narrower backfill widths of granular or select fill soils, the equivalent fluid pressures for the on-site soils should be used.

5.3.3 *Additional Lateral Pressures*

The location and magnitude of permanent surcharge loads (if present) should be determined, and the additional pressure generated by these loads such as the weight of construction equipment and vehicular loads that are used at the time the structures are being built must also be considered in the design. The effect of this or any other surcharge loading may be accounted for by adding an additional uniform load to the full depth of the side walls equivalent to one-half of the expected vertical surcharge intensity for select backfill materials, or equal to the full vertical surcharge intensity for clay backfill. The equivalent fluid pressures, given here, do not include a safety factor. Analysis of surcharge loads (if any) should be performed on a case-by-case basis. This is not included in the scope of this study. These services can be provided as additional services upon request.

5.4 Wall Backfill Material Requirements

On-Site Clay Backfill: For wall backfill areas with site-excavated materials or similar imported materials, all oversized fragments larger than four inches in maximum dimension should be removed from the backfill materials prior to placement. The backfill should be free of all organic and deleterious materials, and should be placed in maximum 8-inch compacted lifts at a minimum of 95 percent of Standard Proctor density (ASTM D 698) within a moisture range of plus to minus 3 percentage points of optimum moisture. Compaction within five feet of the walls should be accomplished using hand compaction equipment, and should be between 90 and 95 percent of the Standard Proctor density.

Select Fill Backfill: All wall select backfill should consist of clayey sand and/or sandy clay material with a Plasticity Index of 16 or less, with a Liquid Limit not exceeding 35. The select fill should be placed in maximum 8-inch lifts and compacted to between 95 and 100 percent of Standard Proctor density (ASTM D 698) within a moisture range of plus to minus 3 percentage points of the optimum moisture. Compaction within five feet of the walls should be accomplished using hand compaction equipment and should be compacted between 90 and 95 percent of the Standard Proctor density.

Free Draining Granular Backfill: All free draining granular wall backfill material should be a crushed stone, sand/gravel mixture, or sand/crushed stone mixture. The material should have less than 3 percent passing the No. 200 sieve and less than 30 percent passing the No. 40 sieve. The minus No. 40 sieve material should be non-plastic. Granular wall backfill should not be water jetted during installation.

5.5 Below-Grade Drainage Requirements

The design recommendations presented above assume hydrostatic pressure will not develop behind the retaining walls. In order to achieve the "drained" condition for lateral earth pressure for low-permeability walls (concrete, masonry, etc.), a vertical drainage blanket or geocomposite drainage member must be installed adjacent to the wall on the backfill side. Drainage could be provided using a collector pipe or weep holes near the base of the retaining wall. Drains should be properly filtered to minimize the potential for erosion through these drains, and /or the plugging of drain lines. Design or specific recommendations for drainage members is beyond the scope for this study. These services can be provided as an additional service upon request. In order to achieve the "drained" condition, the entire backfill material must be free draining. It is recommended the backfill-wall geometry be such that the backfill will not become saturated from rainfall, ground water, adjacent water courses, or other sources.

6.0 PAVEMENTS

6.1 Pavement Subgrade Considerations

The performance of the pavement for this project depends upon several factors including: the characteristics of the supporting soil; the magnitude and frequency of wheel load applications; the quality of construction materials; the contractor's placement and workmanship abilities; and the desired period of design life. The success of the pavement subgrade is subgrade soil strength and control of water. Adequate subgrade performance can be achieved by modifying or stabilizing the existing soils used to construct the pavement subgrade.

Pavement sections are susceptible to edge distress as edge support deteriorates over time. Therefore, care must be taken to provide and maintain proper edge support. In conjunction with a stabilized subgrade underlying the pavement, it is recommended that the stabilized subgrade extend a minimum of 12 inches beyond the riding surface on each side of the proposed pavement. Maintenance should be provided when edge support deteriorates.

Subgrade materials are anticipated to be variable across the project site. However, the majority of subgrade soils are anticipated to consist of more granular sandy clays and clayey sands. Several options exist for preparing the subgrade for the new pavement surfacing. More granular materials are normally best stabilized using Portland cement while more clayey soils are normally treated with hydrated lime. The most appropriate stabilization agent and concentration will depend directly on the type of subgrade soil. Based on the borings, the majority of the soils appear to be more sandy materials, more amenable to Portland cement as the stabilization agent. Portland cement also can be used to stabilize clay soils, but it should be planned that to cement modify/moisten/compact a clayey subgrade using Portland cement requires a short period of time in order to attain the initial set of the cement modified material.

6.2 Potential Vertical Movements

On-site soils are subject to expansive movement with wetting and drying. Estimates of expansive movement potential have been estimated using TxDOT Test Method Tex 124-E. Potential vertical movements on the order of 1 inch are estimated. Movements in excess of the estimated value can occur if poor drainage, excessive water collection, leaking pipelines, etc. occur. Any such excessive water conditions should be rectified as soon as possible. In order to minimize rainwater infiltration through the pavement surface, and thereby minimizing future upward movement of the pavement slabs, all cracks and joints in the pavement should be sealed on a routine basis after construction.

6.3 Sulfate-Induced Heaving

Soluble sulfate testing was conducted to check for sulfate-induced heaving potential. Sulfate-induced heaving is caused when calcium-based stabilizer is added to a soil with high sulfate concentration. They react with the sulfates to cause potentially large volumetric changes in the soil.

Soluble sulfate levels in soils on the order of 2,000 parts-per-million (ppm) or less are usually of low concern and warrant only observation of the subgrade during the stabilization process. Soluble sulfate levels in excess of 2,000 ppm usually warrant a modified stabilization process consisting of either removal of existing high sulfate containing materials and replacement with either a material suitable for stabilization or a suitable flexible base.

Recovered samples were tested for soluble sulfate levels and these results are presented on Plate A.11. Tested soluble sulfate levels were less than 100 ppm. As these levels are less than 2,000 ppm, a typical treatment process is recommended at this time. The typical treatment is described in Section 6.4. We recommend once the subgrade is established, additional sulfate testing should be performed on the actual subgrade to verify low soluble sulfate concentration and any special measures identified on a case-by-case basis. In addition, it is recommended that during the curing period of the cement treatment, the subgrade be supplied with ample moisture and it should be checked for any volumetric changes that may indicate a sulfate-induced heaving condition.

6.4 Pavement Subgrade Preparation Using Portland Cement

Treatment of the anticipated subgrade soils with Portland cement will improve their subgrade characteristics to support overlying paving.

Prior to cement stabilization, the subgrade should be proofrolled with heavy pneumatic equipment. Any soft or pumping areas should be undercut to a firm subgrade and properly backfilled as described in the Earthwork section.

It is recommended a minimum of 4 percent Portland cement be used to modify the subgrade soils. The estimated amount of cement required to stabilize the subgrade should be on the order of 20 pounds per square yard for a 6-inch depth based on a soil dry unit weight of 110 pcf. The cement should be thoroughly mixed and blended with the upper 6 inches of the subgrade (TxDOT Item 275). The Portland cement should meet the requirements of Item 275 in the Texas Department of Transportation (TxDOT) Standard Specifications for Construction of Highways, Streets and Bridges, 2014 Edition.

As an alternative to cement treatment, consideration can be given to substituting a suitable flexible base on an equal basis and placed atop a properly compacted subgrade. A 6-inch thick flex base meeting the requirements of TxDOT Item 247, Type A, Grade 1 or 2 is recommended. This also relieves soluble sulfate heaving concerns.

The stabilized subgrade should be scarified to a minimum depth of 6 inches and uniformly compacted to a minimum of 98 percent of ASTM Standard Test Method for Moisture-Density Relations of Soil-Cement Mixtures (ASTM D558), to minus 3 to plus 1 percentage points of the optimum moisture content determined by that test. It should then be protected and maintained in a

moist condition until the pavement is placed via curing compound or sprinkling. Proper curing is crucial in reducing shrinkage cracking of the cement-treated subgrade.

The Texas Transportation Institute has performed studies to reduce "block cracks" common to cement-treated base materials. Microcracking is the application of several vibratory roller passes to an FDR base after a short curing stage, typically after one to three days, to create a fine network of cracks. Microcracking is one technique to help reduce the risk of cracks in the FDR reflecting through the pavement surfacing. The goal of microcracking is to form a network of fine cracks and prevent the wider, more severe cracks from forming.

After placement and satisfactory compaction of the cement stabilized base, the base should be moist cured by sprinkling for 48 to 72 hours before microcracking. If performing construction during winter months when average daily temperatures are 60° F or below, moist cure the base at least 96 hours before microcracking. Microcracking should be performed with the same (or equivalent tonnage) steel wheel vibratory roller used for compaction. A minimum 12-ton roller should be used. Typically three full passes (one pass is down and back) with the roller operating at maximum amplitude and traveling approximately 2 to 3 mph will satisfactorily microcrack the section. After satisfactory completion of microcracking, the base should be moist cured by sprinkling to a total cure time of at least 72 hours from the day of placement.

6.5 Pavement Sections

At the time of this investigation, site paving plans or vehicle traffic studies were not available. Pavement analyses were performed using methods outlined in the AASHTO Guide for Design of Pavement Structures, 1993 Edition, published by the American Association of State Highway and Transportation Officials. The design equations were solved using AASHTO Pavement Analysis Software. In the AASHTO method, traffic loads are expressed in Equivalent 18-kip Single Axle Loads (ESAL) over the design life of the pavement structure.

Both asphalt concrete and Portland cement concrete (PCC) sections are provided in the sections below, but these pavement types are not considered equal in performance. Over the life of the pavement, PCC sections would be expected to require less maintenance.

We assume Pipeline Road is classified as an arterial or primary street facility. Based on the results of the field and laboratory investigation, soil plasticity properties, and our experience with similar

projects, the following design parameters were used in our thickness design calculations for the roadway reconstruction. If the street classification or actual values are different than assumed, our office should be contacted to review the recommended sections.

Subgrade Soils	Sandy Clay/ Clayey Sand
Design Life	20 and 30 years
Initial Serviceability	4.5 (rigid), 4.2 (flexible)
Terminal Serviceability	2.5
Reliability	90%
Overall Deviation	0.39 (rigid) 0.45 (flexible)
Load Transfer Coefficient	3.0 (w/ curb and gutter)
Drainage Coefficient	1.0
Assumed CBR value of subgrade soil:	3
Assumed CBR value for cement treated soil:	20
Loss of Support Value:	0
Concrete Modulus of Elasticity	4,000,000 psi
Concrete Modulus of Rupture	620 psi

The following alternative pavement sections are provided for a range of traffic volumes. The traffic loadings are based on the daily frequency of fully-loaded, 80-kip, five-axle tractor semi-trailers over a 20- and 30-year service period. Tractor semi-trailers were assumed for calculations as 2.4 ESAL's each. These sections are suitable for the previously mentioned assumptions. Any deviation from these assumptions should be brought to our attention immediately in order to assess their impact on our recommendations.

Rigid Pavement Section		**Design ESAL**	**Allowable Daily Truck Repetitions (20-year life)**	**Allowable Daily Truck Repetitions (30-year life)**
Thickness (in.)	**Material**			
9* 6*	PCC Cement-Stabilized Subgrade or Flexible Base	5,419,100	300	200
10 6	PCC Cement-Stabilized Subgrade or Flexible Base	10,367,400	590	390

* City of Hurst minimum pavement section for Arterial/Primary Street facility

Flexible Pavement Sections		Design ESAL	Allowable Daily Truck Repetitions (20-yr life)	Allowable Daily Truck Repetitions (30-yr life)
Thickness (in.)	Material			
2*	HMAC Type D	3,391,400	190	120
7*	HMAC Type B			
6*	Cement-Stabilized Subgrade or Flexible Base			
2	HMAC Type D	6,089,700	340	230
8	HMAC Type B			
6	Cement-Stabilized Subgrade or Flexible Base			

* City of Hurst minimum pavement section for Arterial/Primary Street facility

Proper surface drainage in the shoulders is also critical to long-term performance of the pavement. Water allowed to pond adjacent to the pavement will be detrimental resulting in loss of edge and subgrade support and an increase in post-construction heave of the pavement.

The above sections should be considered minimum pavement thicknesses and higher traffic volumes and heavy trucks may require thicker pavement sections and configurations. Periodic maintenance should be anticipated for minimum pavement thickness. This maintenance should consist of sealing cracks and timely repair of isolated distressed areas.

6.6 Pavement Material Requirements

Material and process specifications developed by the Texas Department of Transportation (TxDOT) have been utilized. These specifications are outlined in the TxDOT Standard Specifications for Construction of Highways, Streets and Bridges, 2014 Edition. Specific construction recommendations for rigid pavements are given below.

Reinforced Portland Cement Concrete: Reinforced Portland cement concrete pavement should consist of Portland cement concrete having a 28-day compressive strength of at least 3,000 psi in accordance with the City of Hurst standard details. The mix should be designed in accordance with the ACI Code 318 using 3 to 6 percent air entrainment. The pavement should be adequately reinforced with temperature steel and all construction joints or expansion/contraction joints should be provided with load transfer dowels. The spacing of the joints will depend primarily on the type

of steel used in the pavement. We recommend using No. 4 steel rebar spaced at 18 inches on center in both the longitudinal and transverse direction. Control joints formed by sawing are recommended every 12 to 15 feet in both the longitudinal and transverse direction. The cutting of the joints should be performed as soon as the concrete has "set-up" enough to allow for sawing operations.

Hot Mix Asphaltic Concrete Surface Course: Item 340, Type D, Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, 2014 Edition.

Hot Mix Asphaltic Concrete Base Course: Item 340, Type B, Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, 2014 Edition.

Cement Stabilized Subgrade: Cement treatment for base course (road mix) - Item 275, Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, 2014 Edition.

Flexible Base: Crushed Stone Flexible Base – Item 247, Type A, Grades 1 or 2, Texas Department of Transportation Standard Specifications for Construction of Maintenance of Highways, Streets, and Bridges, 2014 Edition.

6.7 General Pavement Construction and Considerations

The design of the pavement drainage and grading should consider the potential for differential ground movement due to future soil swelling on the order of 1 inch. In order to minimize rainwater infiltration through the pavement surface, and thereby minimizing future upward movement of the pavement slabs, all cracks and joints in the pavement should be sealed on a routine basis after construction.

Proper surface drainage in the shoulders is also critical to long-term performance of the pavement. Water allowed to pond adjacent to the pavement will result in loss of edge and subgrade support and an increase in post-construction heave of the pavement.

7.0 EARTHWORK

7.1 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.

It is noted that some of the surficial soils consisted of more granular clayey sands and sands. This type of material is difficult to compact, and can be difficult from a trafficability standpoint, particularly when wet. It may be desirable to blend them with more clayey soils during site grading in building or pavement areas, mix with low percentages of Portland cement, or in some cases to remove them entirely.

7.2 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 on-site soils are suitable for use in site grading. Imported fill material should be a clean soil with a Liquid Limit less than 45 and no rock greater than 4 inches in maximum dimension. The fill materials should be free of vegetation and debris.

The fill material should be compacted to a minimum of 95 percent of the maximum dry density determined by the Standard Proctor test, ASTM D698. 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.

7.3 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.

7.4 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.

7.5 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.

8.0 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 boring. 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.

9.0 REPORT CLOSURE

The boring locations 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, the 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 the 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 Halff Associates, Inc. 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.

* * * *

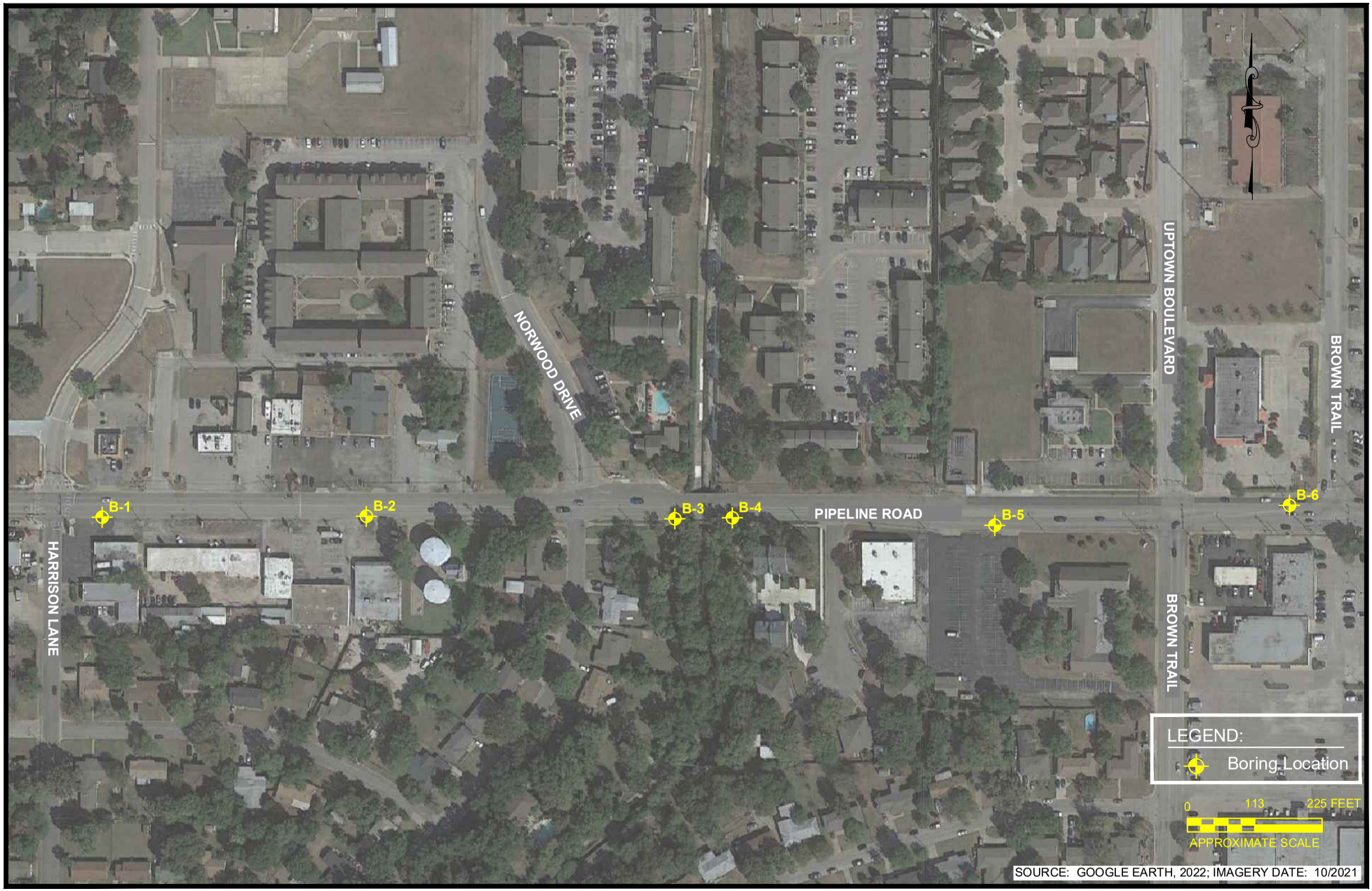


PLATE A.1

PLAN OF BORINGS

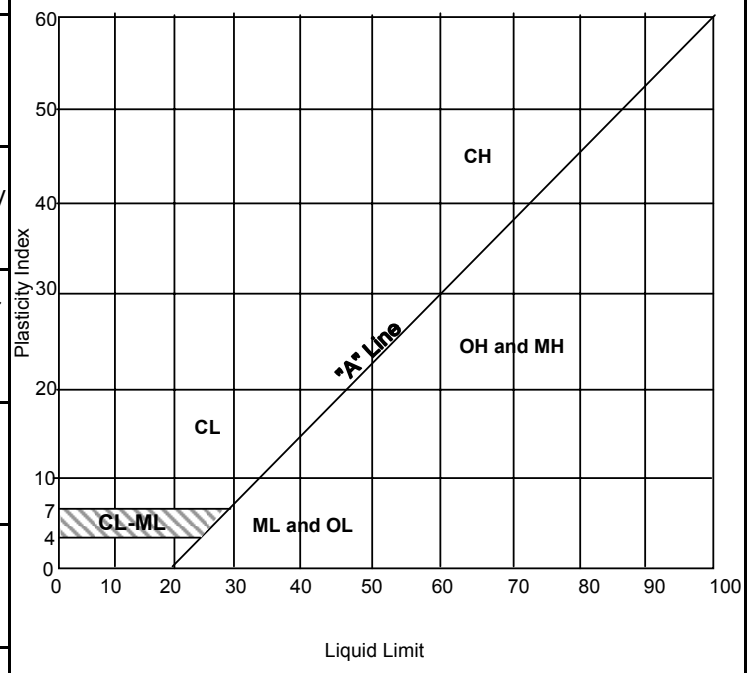
WEST PIPELINE ROAD IMPROVEMENTS
PHASE 4
HURST, TEXAS

CMJ ENGINEERING, INC.

CMJ PROJECT NO. 117-22-322

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	$C_u = \frac{D_{60}}{D_{10}}$ 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		
			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		

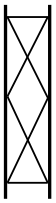
Determine percentages of sand and gravel from grain size curve.
Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:
Less than 5 percent.....GW, GP, SW, SP
More than 12 percent.....GM, GC, SM, SC
5 to 12 percent.....*Borderline* cases requiring dual symbols



Plasticity Chart

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.

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

KEY TO CLASSIFICATION AND SYMBOLS **PLATE A.3**

CMJ ENGINEERING INC.

Project No.	Boring No.	Project
117-22-322	B-1	West Pipeline Road Improvements - Phase 4 Harrison Lane to Brown Trail - Hurst, Texas

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

Completion Depth	Completion Date
8.0'	8-12-22

Surface Elevation

Type: B-53, 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.
			ASPHALT, 5 inches thick										
			GRAVEL BASE, 8 inches thick				21				4		
			CLAYEY SAND, brown			4.5+	44	32	13	19	15	110	
			SANDY CLAY / CLAYEY SAND, light brown, w/ ironstone nodules, iron stains, and calcareous nodules, very stiff to hard			4.5+					14	116	5930
5			-w/ light gray below 6'			4.0					14		

LOG OF BORING 117-22-322.GPJ CMJ.GDT 10/28/22

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

PLATE A.4

CMJ ENGINEERING INC.

Project No.	Boring No.	Project
117-22-322	B-2	West Pipeline Road Improvements - Phase 4 Harrison Lane to Brown Trail - Hurst, Texas

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

Completion Depth	Completion Date
8.0'	8-12-22

Surface Elevation

Type: B-53, 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.
			ASPHALT, 4 inches thick										
			GRAVEL BASE, 6 inches thick			3.0	32	17	11	6	6	119	
			CLAYEY SAND, light brown, w/ gravel, glass fragments, and calcareous nodules (FILL)			4.25					16		
			SANDY CLAY, light brown and reddish brown, w/ ironstone nodules and iron stains, very stiff to hard			4.5+					16	112	4700
5			-w/ gravel seams, 4' to 6'										
			-w/ light gray below 6'			4.5+					14		

LOG OF BORING 117-22-322.GPJ CMJ.GDT 10/28/22

LOG OF BORING NO. **B-2** **PLATE A.5**

CMJ ENGINEERING INC.

Project No.	Boring No.	Project
117-22-322	B-3	West Pipeline Road Improvements - Phase 4 Harrison Lane to Brown Trail - Hurst, Texas

Location	Water Observations
See Plate A.1	Seepage at 15' during drilling; dry at completion

Completion Depth	Completion Date
35.0'	8-12-22

Surface Elevation

Type: B-53, 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.
			ASPHALT, 5 inches thick										
			GRAVEL BASE, 6 inches thick			4.5+		18	11	7	5	110	1960
			CLAYEY SAND, brown to light brown, w/ pebbles, lightly cemented			4.5+					7		
			-w/ ironstone nodules below 4'			4.5+	37	26	12	14	7	119	
5			**SAND / CLAYEY SAND**, brown, w/ iron seams and pebbles										
							26				12		
			SANDY CLAY / CLAYEY SAND, light brown and light gray, w/ ironstone nodules and sand seams and layers, very stiff to hard			4.25					10	125	5500
10													
			-w/ shaly clay seams below 13'			4.5+		27	12	15	9		
15			**SANDY SHALE**, gray, w/ sandstone seams and layers, moderately hard to hard										
						100/2"					12		
20													
						100/1.25"					10		
25			-hard to very hard below 25'										
						100/1.5"							
30													
						100/0.75"							
35													

LOG OF BORING 117-22-322.GPJ CMJ.GDT 10/28/22

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

PLATE A.6

CMJ ENGINEERING INC.

Project No.	Boring No.	Project
117-22-322	B-4	West Pipeline Road Improvements - Phase 4 Harrison Lane to Brown Trail - Hurst, Texas

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

Completion Depth	Completion Date
40.0'	8-12-22

Surface Elevation

Type: B-53, 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.
			ASPHALT, 3.75 inches thick								4		
			GRAVEL BASE, 9 inches thick			4.5+	28	31	13	18	5	106	
			CLAYEY SAND, light brown, w/ pebbles, lightly cemented								3		
			SAND / CLAYEY SAND, light brown, w/ iron seams, medium dense			17	33				4		
5													
											7		
			SANDY CLAY / CLAYEY SAND, reddish brown and gray, w/ ironstone nodules, iron stains, and pebbles, hard			4.5+	46	34	14	20	15	114	
10													
						4.5+					14	106	4420
15													
			SANDY SHALE, gray, w/ sandstone seams, moderately hard to very hard			100/2"					11		
20													
						100/1.75"							
25													
						100/1"							
30													
						100/0.75"							
35													
						100/0.75"							
40													

LOG OF BORING 117-22-322.GPJ CMJ.GDT 10/28/22

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

PLATE A.7

CMJ ENGINEERING INC.

Project No.	Boring No.	Project
117-22-322	B-5	West Pipeline Road Improvements - Phase 4 Harrison Lane to Brown Trail - Hurst, Texas

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

Completion Depth	Completion Date
8.0'	8-12-22

Surface Elevation

Type: B-53, 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.
			ASPHALT, 9.75 inches thick										
			CLAYEY SAND, reddish brown to light reddish brown, w/ iron stains, medium dense				13	42	14	28	6		
						4.25					12	99	
						10					13		
5			**CEMENTED SAND**, reddish brown, very dense										
						50/5.25"					9		

LOG OF BORING 117-22-322.GPJ CMJ.GDT 10/28/22

LOG OF BORING NO. **B-5**

PLATE A.8

CMJ ENGINEERING INC.

Project No.	Boring No.	Project
117-22-322	B-6	West Pipeline Road Improvements - Phase 4 Harrison Lane to Brown Trail - Hurst, Texas

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

Completion Depth	Completion Date
8.0'	8-12-22

Surface Elevation

Type: B-53, 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.
			ASPHALT, 9 inches thick										
			GRAVEL BASE, 6 inches thick				15				4		
			SAND / CLAYEY SAND, light brown, w/ asphalt fragments and gravel (FILL)			4.5+		33	12	21	19	110	4810
			SANDY CLAY / CLAYEY SAND, reddish brown to light reddish brown, w/ ironstone nodules and iron stains, hard			4.5+					13		
5			**CLAYEY SAND**, light brown and reddish brown, w/ iron stains			1.0					9		

LOG OF BORING NO. **B-6**

PLATE A.9

LOG OF BORING 117-22-322.GPJ CMJ.GDT 10/28/22

FREE SWELL TEST RESULTS

Project: West Pipeline Road Improvements - Phase 4
Harrison Lane to Brown Trail - Hurst, Texas

Project No.: 117-22-322

Boring No.	Depth Interval (ft.)	Sample Description	Liquid Limit LL	Plastic Limit PL	Plasticity Index PI	Moisture Content %		Percent Swell (%)
						Initial	Final	
B-3	3–5	Clayey Sand	26	12	14	6.9	14.1	0.0
B-4	9–10	Sandy Clay / Clayey Sand	34	14	20	14.9	-	0.1

Free swell tests performed at approximate overburden pressure

SOLUBLE SULFATE TEST RESULTS

Project: West Pipeline Road Improvements - Phase 4
Harrison Lane to Brown Trail - Hurst, Texas

Project No.: 117-22-322

Boring No.	Depth (ft.)	Material	Soluble Sulfates (ppm)
B-1	2–4	Sandy Clay / Clayey Sand	<100
B-2	10”–2	Clayey Sand	<100
B-3	11”–2	Clayey Sand	<100
B-4	12¾”–2	Clayey Sand	<100
B-5	9¾”–2	Clayey Sand	<100
B-6	15”–2	Sand / Clayey Sand	<100

Note: Test Method TxDOT Tex 145-E.

LIME SERIES TEST RESULTS

Project: West Pipeline Road Improvements - Phase 4
Harrison Lane to Brown Trail - Hurst, Texas

Project No.: 117-22-322

Boring No.: B-2	Depth: 10” to 2’
Material: Clayey Sand	
Percent Lime	pH
0	8.71
2	11.91
4	12.42
6	12.48
8	12.48
10	12.50

CMJ Engineering

May 4, 2023

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

Attn: Mr. Kevin Gronwaldt, P.E.

RE: ADDENDUM #1 TO CMJ REPORT 117-22-322
SLOPE STABILITY ANALYSIS AT VALLEY VIEW BRANCH
WEST PIPELINE ROAD RECONSTRUCTION - PHASE 4
HARRISON LANE TO BROWN TRAIL
HURST, TEXAS

Dear Mr. Gronwaldt:

INTRODUCTION

CMJ Engineering, Inc. (CMJ) previously presented a geotechnical investigation for the above referenced project and presented the results in CMJ Report No. 117-22-322 dated October 28, 2022. Supplemental analyses have been requested for the planned 1H:1V concrete lined channel section for Valley View Branch at the bridge crossing. The planned 1H:1V section matches the existing geometry of the concrete-lined channel at and beyond the project limits.

SLOPE STABILITY ANALYSIS

Analyses/Input Parameters

Plates 1 and 2 depict the planned 1H:1V channel as derived from cross section information provided by Halff Associates. The typical cross section depicted has an overall height of approximately 7¼ feet (maximum) with a side slope of 1H:1V. In addition, an assumed dead load of 200 psf was assumed for vehicle traffic and bridge paving/approach at the top of slope.

The assumed soil properties utilized for analysis are denoted in the table in the upper left on Plates 1 and 2. The soil type below each profile line is denoted with a color 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 referenced geotechnical study at Borings B-3 and B-4. Water levels were assumed to be similar to similar as encountered in the borings and for a post-flood (rapid drawdown) for analyses.

Long-term acceptable factors of safety for slope stability are considered to be 1.5 or above. In other words, the resisting forces to failure are 50 percent greater than the driving forces. For the case of rapid drawdown, a short-term safety factor on the order of 1.1 or greater is required. A factor of safety of 1.0 indicates impending failure.

Slope Stability Results and Comments

Multiple analyses were performed in order to obtain the factors of safety for the proposed channel slope geometry. The analyses utilized circular arc failure and sliding block failure with the Spencer Method with random failure surface search, and resulted in a factor of safety equal to 1.5 (Plate 1). For the fully saturated slope (rapid drawdown) case which may occur after a prolonged period of flooding rains, the factor of safety was on the order of 1.1 (Plate 2). Slope stability analyses resulted in acceptable factors of safety, of 1.5 for the long-term case and 1.1 for the rapid drawdown analyses. The results of these analyses indicate the planned 1H:1V concrete-lined channel geometry has acceptable factors of safety with respect to deep seated slope stability, particularly with the erosion protection which will be provided by the concrete. The existing channel concrete sidewalls mostly appear in reasonable condition for their apparent age; therefore, slope slippage on excess horizontal forces acting on the sidewalls does not appear to be problematic.

Although the above analyses indicates that a satisfactory safety factor exists regarding slope stability for the planned concrete-lined channel geometry, it is imperative that trained personnel in the field be vigilant to observing anomalies that may occur in the subsurface conditions during the excavation and placement of this concrete-lined channel. Any anomalous conditions should be brought to the attention of the engineers on this project for evaluation and potential remediation, as necessary. Onsite materials are known to vary in soil type and consistency. Isolated zones of loosely packed or soft materials can exist and their potential should be carefully observed by trained construction personnel.

The analyses generally considered global-type failure planes. Near surface skin slides also can occur in isolated locations, are considered minor, and relate more closely to surface soil creep. Proper erosion control measures such as planned with the concrete lining should alleviate most potential surface slides.

CLOSURE

CMJ Engineering, Inc. appreciates the opportunity to provide these analyses and results of slope stability for the proposed channel cross section. Should questions arise concerning the information contained herein, please contact us. The following plates are attached and complete this report:

Plates 1 – 2 – Slope Stability Analyses

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

James P. Sappington IV, P.E.
President
Texas No. 97402

copies submitted: (1) Mr. Kevin Gronwaldt, P.E.; Halff Associates, Inc. (by e-mail)

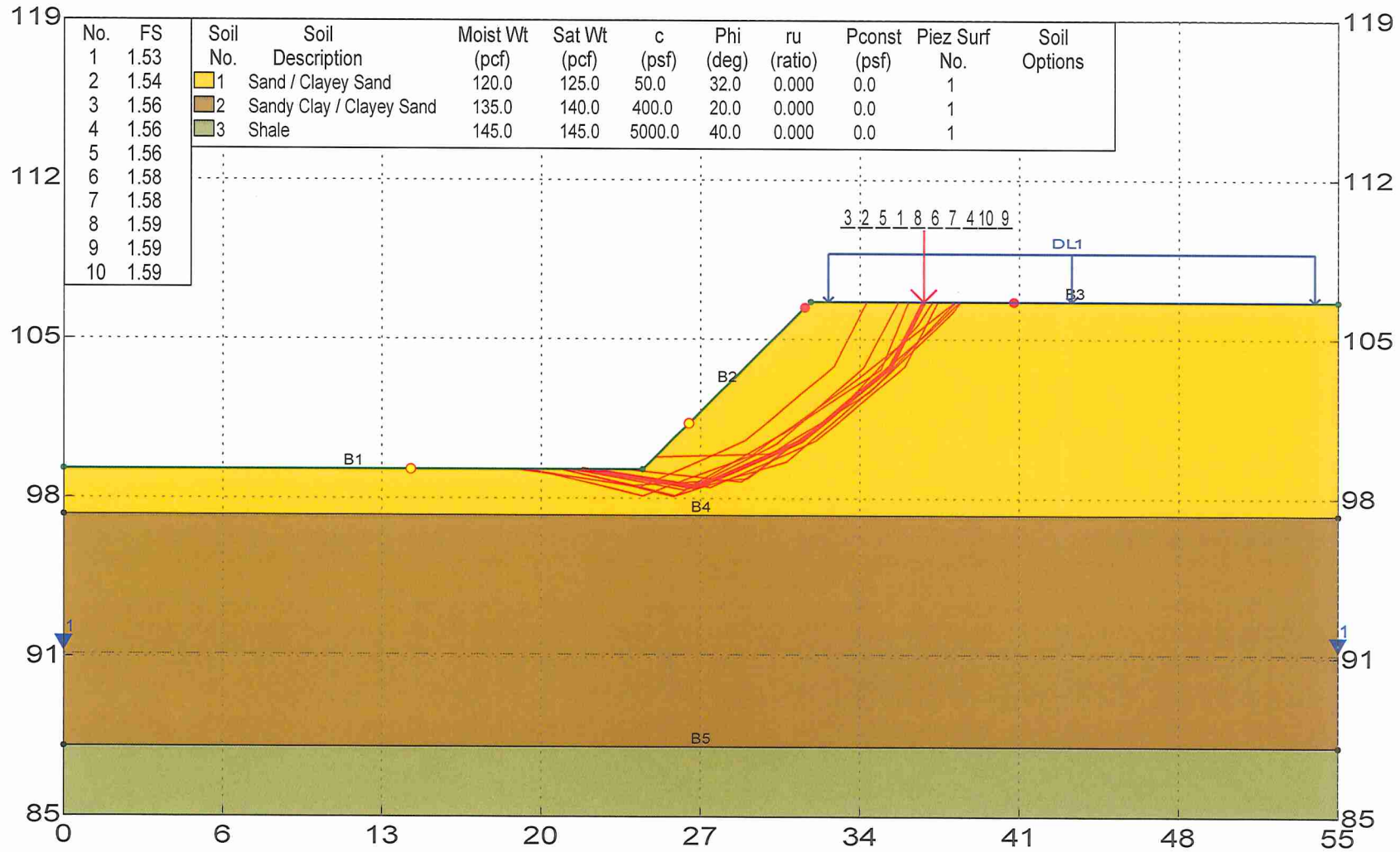
1:1 Slope
Bridge at Valley View Branch

CMJ Engineering

C:\Users\jsappington\Desktop\Geostase\117-22-322.gsd

No.	FS
1	1.53
2	1.54
3	1.56
4	1.56
5	1.56
6	1.58
7	1.58
8	1.59
9	1.59
10	1.59

Soil No.	Soil Description	Moist Wt (pcf)	Sat Wt (pcf)	c (psf)	Phi (deg)	ru (ratio)	Pconst (psf)	Piez Surf No.	Soil Options
1	Sand / Clayey Sand	120.0	125.0	50.0	32.0	0.000	0.0	1	
2	Sandy Clay / Clayey Sand	135.0	140.0	400.0	20.0	0.000	0.0	1	
3	Shale	145.0	145.0	5000.0	40.0	0.000	0.0	1	



GEOSTASE FS = 1.53

Spencer Method

PLATE 1

GEOSTASE
Slope Stability Analysis

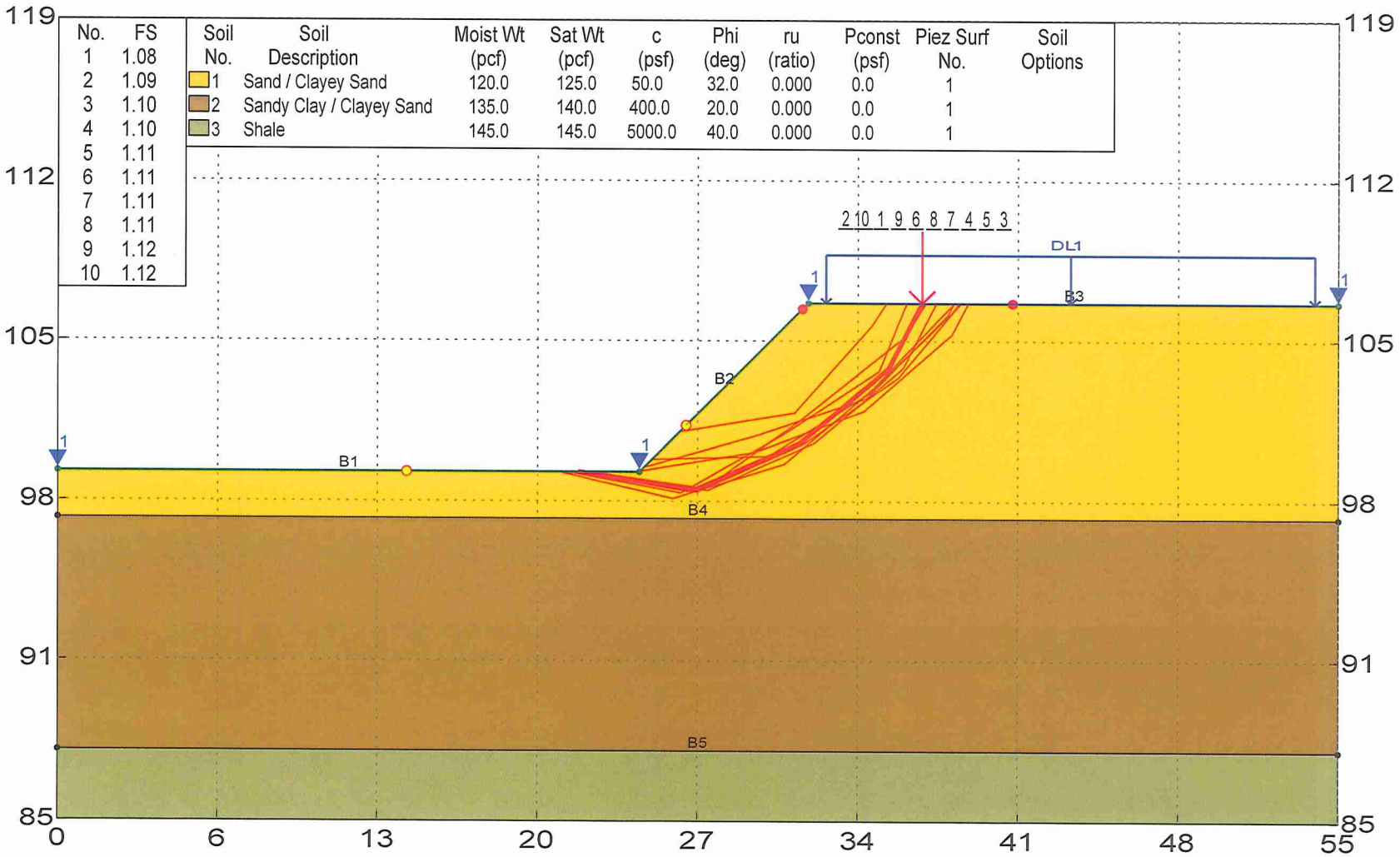
1:1 Slope
Bridge at Valley View Branch

CMJ Engineering

\117-22-322 High Water.gsd

No.	FS
1	1.08
2	1.09
3	1.10
4	1.10
5	1.11
6	1.11
7	1.11
8	1.11
9	1.12
10	1.12

Soil No.	Soil Description	Moist Wt (pcf)	Sat Wt (pcf)	c (psf)	Phi (deg)	ru (ratio)	Pconst (psf)	Piez Surf No.	Soil Options
1	Sand / Clayey Sand	120.0	125.0	50.0	32.0	0.000	0.0	1	
2	Sandy Clay / Clayey Sand	135.0	140.0	400.0	20.0	0.000	0.0	1	
3	Shale	145.0	145.0	5000.0	40.0	0.000	0.0	1	



GEOSTASE FS = 1.08

Spencer Method

PLATE 2

GEOSTASE
Slope Stability Analysis

APPENDIX C - ROW ACQUISITION DOCUMENTATION