Solicitation 20-17

Vitruvian Park Public Infrastructure - Phase 5, Block 200 B (Streetscape)

Bid Designation: Public

Town of Addison

Bid 20-17
Vitruvian Park Public Infrastructure - Phase 5, Block 200 B (Streetscape)

Bid Number	20-17
Bid Title	Vitruvian Park Public Infrastructure - Phase 5, Block 200 B (Streetscape)
Bid Start Date	Nov 13, 2019 1:58:38 PM CST
Bid End Date	Dec 3, 2019 2:00:00 PM CST
Question & Answer End Date	Nov 22, 2019 8:00:00 AM CST
Bid Contact	Wil Newcomer Purchasing Manager
Bid Contact	Michele Griffin Accounting Specialist Finance
Pre-Bid Conference	**Nov 19, 2019 2:00:00 PM CST** **Attendance is optional** **Location: Addison Service Center** **16801 Westgrove Rd** **Addison, TX 75001**

Addendum # 1

New Documents **20-17 Pre-Bid Attendance Sheet.pdf**

Changes were made to the following items:
Vitruvian Park Public Infrastructure - Phase 5, Block 200 B (Streetscape)

Addendum # 2

New Documents **VW2SI_Addendum1.pdf**

Changes were made to the following items:
Vitruvian Park Public Infrastructure - Phase 5, Block 200 B (Streetscape)

Description
VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS*
*NO FAX OR EMAIL SUBMITTALS ACCEPTED.
Added on Nov 22, 2019:
ADDED PRE-BID ATTENDANCE SHEET ON 11/22/2019
Added on Nov 25, 2019:
ADDED ADDENDUM 1

Addendum # 1

Addendum # 2

SPECIFICATIONS AND CONTRACT DOCUMENTS

FOR THE CONSTRUCTION OF

VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS

FOR

VITRUVIAN PARK

PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200 B

TOWN OF ADDISON, TEXAS

Public Works & Engineering Project Number 2019-01C
Bid Number 20-17

October 30, 2019

PREPARED BY:

icon Consulting Engineers, Inc.
Civil Engineers - Designers - Planners
Engineering Firm Registration Number F-9007

2840 W. Southlake Blvd., Suite 110
Southlake, Texas 76092
(817) 552-6210

TOWN OF ADDISON, TEXAS

MAYOR

Joe Chow

COUNCIL MEMBERS

Paul Walden

Tom Braun

Ivan Hughes

Guillermo Quintanilla

Lori Ward

Marlin Willesen

CITY MANAGER

Wesley S. Pierson

DIRECTOR OF PUBLIC WORKS & ENGINEERING

Lisa A. Pyles

TABLE OF CONTENTS

SECTION AB

ADVERTISEMENT FOR BIDS

ADVERTISEMENT FOR BIDS

1. Sealed bids addressed to the Town of Addison, Texas, for **Vitruvian West 2 Streetscape Improvements** for **Vitruvian Park Public Infrastructure – Phase 5, Block 200 B** in the Town of Addison, Texas, hereinafter called "City" or "Owner" in accordance with specifications and contract documents prepared by **Icon Consulting Engineers, Inc.** will be received at the office of the Purchasing Department, 5350 Belt Line Road, Dallas, Texas until **2:00 p.m. on Tuesday, December 3, 2019**. Bids received by the appointed time will be opened and read aloud. Any bids received after closing time will be returned unopened.

2. The Contractor shall identify his bid on the outside of the envelope by writing the words **PUBLIC WORKS & ENGINEERING PROJECT NUMBER 2019-01C AND BID NUMBER 20-17, VITRUVIAN PARK PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200 B.**

3. Paper bids shall be required and accompanied by a bid bond in an amount not less than five percent (5%) of the total maximum bid price payable without recourse to the Town of Addison. The bid bond shall be from a reliable surety company licensed by the State of Texas to act as a Surety and be listed on the current U.S. Treasury Listing of Approved Sureties, or a Binder of Insurance executed by a surety company licensed by the State of Texas to act as a surety or its authorized agent as a guarantee that the bidder will enter into a contract and execute a Performance Bond within ten (10) days after notice of award of contract to him.

4. Plans, specifications and bidding documents may be downloaded from www.bidsync.com. The Town of Addison is a "free buyer", meaning that prospective bidders need only a free registration to sign up for plan updates. Bidders assume all risk for acquiring plans and/or specs from third party sites and plan rooms, as only Bidsync.com will be directly updated by Addison.

5. The right is reserved by the Mayor and the City Council as the interests of the City may require to reject any or all bids and to waive any informality in bids received and to select the proposal deemed most advantageous to the Town.

6. The Bidder (Proposer) must supply all the information required by the Proposal Form.

7. A Performance Bond, Labor and Material Payment Bond, and Maintenance Bond will be required by the Owner; each Bond shall be in the amount of 100% of the total contract amount. Bonds shall be issued by a surety company licensed by the State of Texas to act as a Surety and be listed on the current U.S. Treasury Listing of Approved Sureties.

8. All questions regarding this bid shall be asked through www.bidsync.com. Questions will be answered in a timely manner. If you have questions regarding Bidsync, please call Will Newcomer, Purchasing Manager, Town of Addison (972) 450-7091.

9. The project consists of installing proposed public water, wastewater, paving and other related improvements in accordance with the plans and specifications.

10. Pre-Bid Conference will be held at 2:00 p.m., on Tuesday, November 19, 2019 in the Conference Room of the Town of Addison's Service Center, 16801 Westgrove Dr., Addison, Texas 75001.

TOWN OF ADDISON, TEXAS

SECTION IB

INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

A. PROJECT: **VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS** for **VITRUVIAN PARK PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200 B**, in the Town of Addison.

The bids will be evaluated as stated in Section "P" of the instructions to Bidders.

B. PROJECT DESCRIPTION: This project consists of furnishing and installing streetscape improvements consisting of landscape and irrigation in accordance with the plans and specifications.

C. PROPOSALS: Proposals must be in accordance with these instructions in order to receive consideration.

D. DOCUMENTS: Documents include the Bidding Requirements, including the Advertisement for Bids, these Instructions to Bidders, Proposal Forms, Contract Agreement, Bid Bond, Performance Bond, Payment Bond, Maintenance Bond, Contractor's Affidavit of Bills Paid, General Provisions, Special Provisions, Technical Specifications, Waiver of Lien, Drawings, and Addenda which may be issued by the Town of Addison during the bidding period. Bidding Documents may be viewed and/or obtained under the terms and conditions set forth in the Advertisement for Bids, Section AB of this Project Manual.

E. EXAMINATION OF DOCUMENTS AND SITE: Bidders shall carefully examine the Bidding Documents and the construction site to obtain first-hand knowledge of the scope and the conditions of the Work. Each Contractor, Subcontractor and Sub-subcontractor, by submitting a proposal to perform any portion of the Work, represents and warrants that he has examined the Drawings, Specifications (Project Manual) and the site of the Work, and from his own investigation has satisfied himself as to the scope, accessibility, nature and location of the Work; the character of the equipment and other facilities needed for the performance of the Work; the character and extent of other work to be performed; the local conditions; labor availability, practices and jurisdictions and other circumstances that may affect the performance of the Work. No additional compensation will be allowed by the Owner for the failure of such Contractor, Subcontractor or Sub-subcontractor to inform himself as to conditions affecting the Work. **A Pre-Bid Meeting will be held at 2:00 P.M. on Tuesday, the 19th day of November, 2019** at the Addison Service Center, 16801 Westgrove Drive, Addison, Texas 75001.

F. INTERPRETATION OF DOCUMENTS: If any person contemplating submitting a bid for the proposed Contract is in doubt as to the meaning of any part of the Drawings, Specifications (Project Manual) or other proposed Contract Documents, he may submit to the Town of Addison, not later than seven (7) calendar days prior to the date set for opening bids, a written request for an interpretation or clarification. Bidders should act promptly and allow sufficient time for a reply to reach them before preparing their bids. Any interpretation or clarification will be in the form of an Addendum duly issued. No alleged verbal interpretation or ruling will be held binding upon the Owner.

G. SUBSTITUTIONS: Conditions governing the submission of substitutions for specific materials, products, equipment and processes are in the Special Provisions. Requests for substitutions must be received by the Town of Addison seven (7) calendar days prior to the established bid date.

H. ADDENDA: Interpretations, clarifications, additions, deletions and modifications to the Documents during the bidding period will be issued in the form of Addenda and a copy of such Addenda will be released through www.bidsync.com. It is the responsibility of each person who has been issued a set of bid documents to obtain addenda through www.bidsync.com. Addenda will be a part of the Bidding Documents and the Contract Documents, and receipt of them shall be acknowledged in the Bid Form. All such interpretations and supplemental instructions will be in the form of written addenda to the contract documents which, if issued, will be sent by telegram, certified or registered mail, facsimile, email or hand delivered to all prospective bidders (at the respective addresses furnished for such purposes) not later than three (3) calendar days prior to the date fixed for the opening of bids. If any bidder fails to acknowledge the receipt of such addenda in the space provided in the bid form, his bid will nevertheless be construed as though the receipt of such addenda had been acknowledged.

I. COMPLETION TIME: It is understood and agreed to between the Town of Addison and the Contractor that time is of the essence of this contract and that the time allocated for completion of this project will be **90 calendar days**. The time period shall commence ten (10) calendar days following written notification from the Town of Addison that the Contractor may begin work. Reference Special Provision 22 for Explanation of Contract Time. The completion date of the contract will be same date of the Town's final acceptance of the improvements.

J. FAILURE TO COMPLETE ON TIME: The time of completion is an essential element of this contract. For each day that any work shall remain uncompleted after the time specified in the proposal and the Contract, or the increased time granted by the Town of Addison, or as equitably increased by additional work or materials ordered after the Contract is signed, the sum of **$500 per day** shall be deducted from the monies due the Contractor. The sum of money thus deducted for such delay, failure or noncompletion is not to be considered as a penalty, but shall be deemed, taken and treated as reasonable liquidated damages, per day that the Contractor shall be in default after the time stipulated in the Contract for completing the work. The said amounts are fixed and agreed upon by and between the Town of Addison and Contractor because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Town of Addison would sustain and which shall be retained from the monies due, or that may become due, the Contractor under this Contract: and if said monies be insufficient to cover the amount owing, then the Contractor or its surety shall pay any additional amounts due. In the event that the actual damages incurred by the Town of Addison exceed the amount of liquidated damages, the Town of Addison shall be entitled to recover its actual damages.

K. PREPARATION OF BIDS: Prices quoted shall include all items of cost, expense, taxes, fees and charges incurred by, or arising out of, the performance of the work to be performed under the Contract. Bids shall be submitted in duplicate and shall be signed in ink. Any bid on other than the required form will be considered informal and may be rejected. Erasures or other changes in a bid must be explained or noted over the initials of the bidder. Bids containing any conditions, omissions, unexplained erasures and alterations, or irregularities of any kind may be rejected as informal. The prices should be expressed in words and figures or they may be deemed informal and may be rejected. In case of discrepancy between the prices written in the bid and those given in the figures, the price in writing will be considered as the bid. In the case of a discrepancy between a unit price and its extension, the unit price will govern. Failure to submit all requested information will make a bid irregular and subject to rejection. Bids shall be signed with name typed or printed below signature, and, if a partnership, give full name of all partners. Where bidder is a corporation,

bids must be signed with the legal name of the corporation followed by the name of the state of incorporation and the legal signature of an officer authorized to bind the corporation to a contract.

NOTE: AN ELECTRONIC SPREADSHEET IS POSTED ON BIDSYNC FOR THE CONTRACTORS CONVENIENCE. THIS SPREADSHEET MAY BE USED IN LIEU OF THE MANUAL HANDWRITTEN PROPOSAL FORM IN THE SPECIFICATIONS AND SHALL BE ATTACHED TO THE PROPOSAL AND MADE PART OF THE CONTRACT DOCUMENTS. USING THE SPREADSHEET OPTION SHALL NOT AMEND NOR MODIFY ANY WORDING IN THE PROPOSAL FORM OR THE PLANS AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING THAT THE SPREADSHEET ADEQUATELY CONVEYS THEIR BID.

L. SUBMITTAL OF BIDS: Sealed proposals will be received at the time, date and place stated in the Advertisement for Bids. Proposals shall be made on unaltered Proposal Forms furnished by the Town of Addison. Submit proposal in an opaque, sealed envelope addressed to the Owner and plainly mark on the outside of the envelope the project name, and the name and address of the bidder. The envelopes shall be marked with the following project names:

PUBLIC WORKS & ENGINEERING PROJECT NUMBER 2019-01C
AND
BID NUMBER 20-17

VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS
FOR
VITRUVIAN PARK PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200 B

The Bid Bond must be completed and signed by each bidder and submitted with the bid. Submit Bids by mail or in person prior to the time for receiving bids set forth in the Advertisement for Bids issued by the Town.

Electronic bidding on bidsycn.com will not be considered for this project. The Town of Addison uses bidsync to distribute bids and proposals. There will be NO COST to the contractor for standard bids or proposals. The project is considered a standard bid. For cooperative Bids and Reverse Auctions ONLY, the successful contractor/supplier agrees to pay bidsync a transaction fee of one percent (1%) of the total amount of all contracts for goods and/or services. Cooperative Bids and Reverse Auctions will be clearly marked on the bid documents. To assure that all contractors/suppliers are treated fairly, the fee will be payable whether the bid/proposal is submitted electronically, or by paper means. Refer to www.bidsync.com for further information.

M. MODIFICATION AND WITHDRAWAL OF BIDS: Prior to the time set for bid opening, bids may be withdrawn or modified. Bids may be modified only on the official bid form and must be signed by a person legally empowered to bind the bidder. No bidder shall modify, withdraw or cancel his bid or any part thereof for sixty (60) calendar days after the time agreed upon for the receipt of bids.

N. DISQUALIFICATION: The Owner reserves the right to disqualify proposals, before or after the opening, upon evidence of collusion with intent to defraud or other illegal practices relating to this proposal upon the part of the bidder.

O. SUBMISSION OF POST-BID INFORMATION: Upon notification of acceptance, the selected bidder shall, within five (5) calendar days, submit the following:

1. A designation of the portions of the Work proposed to be performed by the bidder with his own force.

2. A list of names of the subcontractors or other persons or organizations, including those who are to furnish materials and equipment fabricated to a special design proposed for such portions of the Work as may be designated in the Bidding Documents or as may be requested by the Town of Addison. The bidder will be required to establish to the satisfaction of the Owner the reliability and responsibility of the proposed Subcontractors and suppliers to furnish and perform the Work.

3. Other information as required.

P. AWARD: The Owner reserves the right to accept any or to reject any bids without compensation to bidders and to waive irregularities and informalities. The Town of Addison Public Works & Engineering Department, in making its recommendation, will consider the following elements:

1. Whether the bidder is a contractor with experience in the type of work involved.

2. Whether the bidder has adequate plant, equipment and personnel to perform the work properly and expeditiously.

3. Whether the bidder has a suitable financial status and reputation for meeting obligations incident to work of the kind specified.

4. Whether the bidder has complied with the terms and conditions of the A+B bidding.

Alternate items may or may not be awarded. Addition or deletion of other items or schedules will be governed by the *Standard Specifications for Public Works Construction – North Central Texas, 4th Edition*, (hereinafter called SSPWC) Item 104.2 "Change or Modification of Contract".

Q. EXECUTION OF THE CONTRACT: The successful bidder will be required to enter into a contract with the Owner within ten (10) days of notice by the Owner that his bid has been accepted. Failure to enter into a contract within the established time limit shall be considered grounds for forfeiture of the bid bond.

R. CONSTRUCTION SCHEDULE: It is the Owner's desire to have the project completed and operational in as short a time as possible. The number of calendar days for completion of the project will begin with the date specified in the Notice to Proceed. The Notice to Proceed will be issued in a manner to facilitate a smooth construction of the project. The Contractor shall begin construction within ten (10) calendar days of the issuance of the Notice to Proceed.

S. FORM OF CONTRACT: The contract for the construction of the project will be drawn up by the Owner. A sample form of agreement is included in the Contract Agreement Section.

T. BONDS: A Performance Bond, a Labor and Material Payment Bond and a Maintenance Bond will be required by the Owner. The performance and payment bonds shall name the

Town of Addison, and others as directed by the Town, as joint obligees. Sample forms have been included in the Performance Bond, Payment Bond and Maintenance Bond sections.

U. BID SECURITY: Bids shall be accompanied by a bid bond in an amount not less than five percent (5%) of the total maximum bid price payable without recourse to the Town of Addison. The bid bond shall be from a surety company licensed to do business in the State of Texas as a guarantee that the bidder will enter into a contract and execute a Performance Bond, Payment Bond and Maintenance Bond within ten (10) calendar days after notice of award of contract to him.

V. RESOLUTIONS: If the bidder is a corporation, a copy of the resolution empowering the person submitting the bid to bind the bidder must be included with the bid.

W. CONSTRUCTION STAKING: Construction staking and re-staking will not be provided by the Owner. Benchmarks and Horizontal Control are shown on the plans. There is no separate bid item for staking, therefore, the contractor must include value for staking in the various bid items as subsidiary to the contract. Any staking or re-staking that is required shall be the responsibility of the Contractor and shall be at no cost to the Owner.

X. FINAL PAYMENT: The general provisions for Final Payment shall be as stated in Item 1.09.5.4 of the North Central Texas Standard Specifications for Public Works Construction (4^{th} Edition) including all Amendments and Additions. Prior to final payment the Contractor shall provide the Owner with the following items:

1. A Contractor's Affidavit of Bills Paid in accordance with Section BP.
2. A Consent of Surety Company to Final Payment.
3. A complete set of record plans which indicate all construction variations from the original construction documents in accordance with Item 5 of the Special Provisions.
4. A two (2) year Maintenance Bond in accordance with Section MB.
5. Acknowledgement that the project has been reviewed and accepted by TDLR.

Y. PREVAILING WAGE RATES: Wage rates paid on this project shall not be less than specified in the schedule of general prevailing rates of per diem wages as shown in Davis-Bacon, Dallas County.

Z. PRIORITY OF CONTRACT DOCUMENTS: In case of conflict between contract documents, priority of interpretation shall be in the following order: signed agreement, performance and payment bonds, proposal, special provisions (or conditions), technical specifications, general provisions, advertisement for bids, project drawings, *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* adopted by the Texas Department of Transportation June 1, 2004; Standard Specifications for Public Works Construction – North Central Texas (NCTCOG, October 2004); Town of Addison Standard Drawings. This priority list shall take precedence over item 1.05.1 of the SSPWC.

SECTION PF

PROPOSAL FORM

PROPOSAL FORM

_____ , 2019

TO: The Honorable Mayor and Town Council
Town of Addison, Texas

Gentlemen:

The undersigned bidder, having examined the plans, specifications and contract documents, and the location of the proposed work, and being fully advised as to the extent and character of the work, proposes to furnish all equipment and to perform labor and work necessary for completion of the work described by and in accordance with the Plans, Specifications and Contract for the following prices, to wit:

Signed by: _____

ACKNOWLEDGMENT OF ADDENDA:

The Bidder acknowledges receipt of the following addenda:

Addendum No. 1 _____

Addendum No. 2 _____

Addendum No. 3 _____

VITRUVIAN PARK PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200 B
VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS
TOWN OF ADDISON PROJECT #2019-01C

BASE BID

ITEM NO.	APPROX QUANT.	UNIT	DESCRIPTION OF ITEMS BID PRICE WRITTEN IN WORDS	UNIT PRICE	TOTAL PRICE
1	1	L.S.	**For Mobilization (not to exceed 5% of total bid amount)** complete in place, the sum of _____ _____ Dollars and _____ Cents per Lump Sum		
2	1	L.S.	**For Installation and Maintenance of Barricades, Signage and Traffic Control Measures** complete in place, the sum of _____ _____ Dollars and _____ Cents per Lump Sum		
3	2	EA.	**For Furnishing and Installing Project Signs in Accordance with Sign Plan** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
4	1	L.S.	**For Compliance with Storm Water Pollution Prevention Plan Including Maintenance of Erosion Control Devices** complete in place, the sum of _____ _____ Dollars and _____ Cents per Lump Sum		

BASE BID

ITEM NO.	APPROX QUANT.	UNIT	DESCRIPTION OF ITEMS BID PRICE WRITTEN IN WORDS	UNIT PRICE	TOTAL PRICE
5	702	L.F.	**For Furnishing, Installation and Maintenance of Silt Fence Sediment Barrier** complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
6	5	EA.	**For Furnishing, Installation and Maintenance of Inlet Protection Devices** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
7	1,151	S.F.	**For Sawcutting, Removal & Recycling of Existing Concrete Sidewalk Pavement** complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Foot		
8	480	C.Y.	**For Unclassified Excavation and Stockpiling of Excess Materials** complete in place, the sum of _____ _____ Dollars and _____ Cents per Cubic Yard		
9	5,944	S.F.	**For Fine Grading and Subgrade Preparation** complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Foot		

BASE BID

ITEM NO.	APPROX QUANT.	UNIT	DESCRIPTION OF ITEMS BID PRICE WRITTEN IN WORDS	UNIT PRICE	TOTAL PRICE
10	105	C.Y.	**For Furnishing and Placement of Topsoil to a depth of 6" on all Disturbed Areas.** complete in place, the sum of _____ _____ Dollars and _____ Cents per Cubic Yard		
11	5,944	S.F.	**For Furnishing and Placing 5-inch thick Reinforced Concrete Enhanced Sidewalk Pavement** complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Foot		
12	1,162	S.F.	**For Furnishing and Installing Pavestone Concrete Paver, Running Bond Pattern, 2-3/8" Thickness, Bellows Brown Color** complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Foot		
13	4	EA.	**For Furnishing and Installation of ADA Dome Panel, Tekway, 24" x 36", Brown** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
14	1	EA.	**For Furnishing and Placing 4-inch thick Reinforced Concrete Pad for Fire Fydrant per Town of Addison Requirements** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

ITEM NO.	APPROX QUANT.	UNIT	DESCRIPTION OF ITEMS BID PRICE WRITTEN IN WORDS	UNIT PRICE	TOTAL PRICE
15	7	EA.	**For Furnishing and Installation of Street Light Pole, Type 1, Single 100W 240V MH Luminaire on 11'-8" Pole, Color Silver, complete in place** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
16	7	EA.	**For Concrete Drilled Shaft Foundation, Type 1, complete in place** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
17	435	L.F.	**For Furnishing and Installation of 1 1/4" Schedule 40 PVC Conduit** complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
18	926	L.F.	**For Furnishing and Installing Electric Conductor (No. 6 CU) XHHW-2 Insulated** complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
19	463	L.F.	**For Furnishing and Installing Electric Conductor (No. 10 CU) XHHW-2 Insulated** complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		

BASE BID

ITEM NO.	APPROX QUANT.	UNIT	DESCRIPTION OF ITEMS BID PRICE WRITTEN IN WORDS	UNIT PRICE	TOTAL PRICE
20	1	EA.	**For Connection to Existing Street Light Circuit** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
21	2	EA.	**For Connection to Existing Street Light Conduits** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
22	75	L.F.	**For Furnishing and Installation of 1 1/4" Schedule 40 PVC Conduit by Bore** complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
23	2	EA.	**For Connecting Proposed Tree Drain Line to Storm Drain Curb Inlet** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
24	422	L.F.	**For Furnishing and Installing 4" PVC (SDR-35) Tree Drain Line** complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		

BASE BID

ITEM NO.	APPROX QUANT.	UNIT	DESCRIPTION OF ITEMS BID PRICE WRITTEN IN WORDS	UNIT PRICE	TOTAL PRICE
25	168	L.F.	**For Furnishing and Installing Root Barrier** complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
26	7,042	S.F.	**For Furnishing and Installing Midiron Bermuda Sod** complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Foot		
27	1,216	EA.	**For Furnishing and Installing Liriope, 1 Gallon, Planted 12" O.C.** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
28	1,615	S.F.	**For Preparation of Planting Bed Areas including Topsoil, Soil Amendment Materials and Mulch** complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Foot		
29	19	EA.	**For Furnishing and Installing "High Rise" Live Oak, 6" Caliper, Single Trunk (See SP-85)** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

ITEM NO.	APPROX QUANT.	UNIT	DESCRIPTION OF ITEMS BID PRICE WRITTEN IN WORDS	UNIT PRICE	TOTAL PRICE
30	1	L.S.	**For Implementation of Landscape Maintenance Program for a Period of One (1) year from Date of Final Acceptance (Ref. Special Provisions 118)** complete in place, the sum of _____ _____ Dollars and _____ Cents per Lump Sum		
31	1	EA.	**For Connection to Existing Irrigation System** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
32	1	L.S.	**For Furnishing and Installing Streetscape Irrigation System along Vitruvian Way** complete in place, the sum of _____ _____ Dollars and _____ Cents per Lump Sum		
TOTAL AMOUNT OF BASE BID (Items 1 Through 32)					

VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200 B

BID SCHEDULE SUMMARY

Bid Schedule & Description	Total Amount Materials & Services

TOTAL AMOUNT OF BASE BID (Items 1 through 32) _____

WRITTEN IN WORDS: _____

NOTES:

1. All items, labor, materials, equipment, facilities, incidentals, and work required for construction of the project are to be provided and installed by the Contractor as part of the project and payment for the cost of such shall be included in the price bid.
2. Prices must be shown in words and figures for each item listed in this proposal. In the event of discrepancy, the words shall control.
3. It is understood that the Bid Security shall be collected and retained by the Owner as liquidated damages in the event a contract is made by the Owner based on this proposal within ninety (90) calendar days after receiving bids and the undersigned fails to execute the contract.
4. Materials, which are “tax exempt”, are those items which are physically incorporated into the facilities constructed for the Town of Addison, as set forth in the Special Provisions. Materials include, but are not limited to purchased items such as water pipe, sanitary sewer pipe, storm drain pipe, etc. Services, which are “not tax exempt”, are those items which are used by the Contractor but are not physically incorporated into the Town of Addison’s facility and/or items which are consumed by construction, as set forth in the Special Provisions. Services include, but are not limited to, items such as supplies, tools, skill and labor, the purchase, rental or lease of equipment, etc.

_____
Name of Person Signing Bid

_____
Signature of Person Signing Bid

_____
Address

_____
Telephone No. Fax No.

_____
Bidder's Tax I.D. No. or Employer No.

If BIDDER is:

AN INDIVIDUAL

By _____ (Seal)
(Individual's Name)

doing business as _____

Business address: _____

_____

_____

Phone No. _____

A PARTNERSHIP

By _____ (Seal)
(Firm Name)

_____
(General Partner)

doing business as _____

Business address: _____

_____

_____

Phone No. _____

A CORPORATION

By _____
(Corporation Name)

_____
(State of Incorporation)

By _____
(Name of Person Authorized to Sign)

_____
(Title)

(Corporate Seal)

Attest _____
(Secretary)

Business address: _____

_____

_____

Phone No. _____

A JOINT VENTURE

By _____
(Name)

_____
(Address)

By _____
(Name)

_____
(Address)

(Each joint venture must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above.)

SECTION IA

INDEMNIFICATION AGREEMENT

TOWN OF ADDISON
INDEMNIFICATION AGREEMENT

Contractor's Indemnity Obligation. Contractor covenants, agrees to, and shall DEFEND (with counsel reasonably acceptable to Owner), INDEMNIFY, AND HOLD HARMLESS Owner, its past, present and future elected and appointed officials, and its past, present and future officers, employees, representatives, and volunteers, individually or collectively, in both their official and private capacities (collectively, the "Owner Persons" and each being an "Owner Person"), from and against any and all claims, liabilities, judgments, lawsuits, demands, harm, losses, damages, proceedings, suits, actions, causes of action, liens, fees (including attorney's fees), fines, penalties, expenses, or costs, of any kind and nature whatsoever, made upon or incurred by Owner and/or Owner Person, whether directly or indirectly, (the "Claims"), that arise out of, result from, or relate to: (i) the services to be provided by Contractor pursuant to this Agreement, (ii) any representations and/or warranties by Contractor under this Agreement, (iii) any personal injuries (including but not limited to death) to any Contractor Persons (as hereinafter defined) and any third persons or parties, and/or (iv) any act or omission under, in performance of, or in connection with this Agreement by Contractor or by any of its owners, directors, officers, managers, partners, employees, agents, contractors, subcontractors, invitees, patrons, quests, customers, licensees, sub licensees, or any other person or entity for whom Contractor is legally responsible, and their respective owners, directors, officers, managers, partners, employees, agents, contractors, subcontractors, invitees, patrons, quests, customers, licensees, sub licensees (collectively, "Contractor Persons"). SUCH DEFENSE, INDEMNITY AND HOLD HARMLESS SHALL AND DOES INCLUDE CLAIMS ALLEGED OR FOUND TO HAVE BEEN CAUSED IN WHOLE OR IN PART BY THE NEGLIGENCE OR GROSS NEGLIGENCE OF OWNER OR ANY OTHER OWNER PERSON, OR CONDUCT BY OWNER OR ANY OTHER OWNER PERSON THAT WOULD GIVE RISE TO STRICT LIABILITY OF ANY KIND.

Contractor shall promptly advise Owner in writing of any claim or demand against any Owner Person related to or arising out of Contractor's activities under this Agreement and shall see to the investigation and defense without relieving Contractor of any of its obligations hereunder. This defense, indemnity, and hold harmless provision shall survive the termination or expiration of this Agreement.

The provisions in the foregoing defense, indemnity and hold harmless are severable, and if any portion, sentence, phrase, clause or word included therein shall for any reason be held by a court of competent jurisdiction to be invalid, illegal, void, or unenforceable in any respect, such invalidity, illegality, voidness, or unenforceability shall not affect any other provision hereof, and this defense, indemnity and hold harmless provision shall be considered as if such invalid, illegal, void, or unenforceable provision had never been contained in this Agreement. **In that regard, if the capitalized language included in the foregoing indemnity is so determined to be void or unenforceable, the parties agree that:**

(i) the foregoing defense, indemnity, and hold harmless obligation of Contractor shall be to the extent Claims are caused by, arise out of, or result from, in whole or in part, any act or omission of Contractor or any Contractor Persons; and

(ii) notwithstanding the provisions of the foregoing subparagraph (i), to the fullest extent permitted by law, Contractor shall INDEMNIFY, HOLD HARMLESS, and DEFEND Owner and Owner Persons from and against all Claims arising out of or resulting from bodily injury to, or sickness, disease or death of, any employee, agent or representative of Contractor or any of its subcontractors, regardless of whether such Claims are caused, or are alleged to be caused, in whole or in part, by the negligence, or any act or omission, of Owner or any Owner Persons, it being the expressed intent of Owner and Contractor that IN SUCH EVENT THE CONTRACTOR'S INDEMNITY, HOLD HARMLESS, AND DEFENSE OBLIGATION SHALL AND DOES INCLUDE CLAIMS ALLEGED OR FOUND TO HAVE BEEN CAUSED IN WHOLE OR IN PART BY THE NEGLIGENCE OR GROSS NEGLIGENCE OF OWNER OR ANY OTHER OWNER PERSON, OR CONDUTCT BY OWNER OR ANY OTHER OWNER PERSON THAT WOULD GIVE RISE TO STRICT LIABILITY OF ANY KIND. The indemnity obligation under this subparagraph (ii) shall not be limited by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor under workers compensation acts, disability benefit acts, or other employee benefit acts.

I understand that the indemnification provisions are required of all Town of Addison Contracts. I have read the provisions and agree to the terms of these provisions.

Project/Bid #: _____

Company Name: _____

Signature: _____ Date: _____

SECTION CA

CONTRACT AGREEMENT

CONTRACT AGREEMENT

STATE OF TEXAS

COUNTY OF DALLAS

THIS AGREEMENT is made and entered into this _____ day of _____**, 2019**, by and between the Town of Addison, of the County of Dallas and State of Texas, acting through its City Manager, thereunto duly authorized so to do, Party of the First Part, hereinafter termed the OWNER, and _____**,** of the City of _____**,** County of _____, State of Texas, Party of the Second Part, hereinafter termed CONTRACTOR.

WITNESSETH: That for and in consideration of the payment and agreement hereinafter mentioned, to be made and performed by the OWNER, the said CONTRACTOR hereby agrees with the said OWNER to commence and complete construction of certain improvements as follows:

Town of Addison Public Improvements
to be known as

VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS
For
VITRUVIAN PARK
PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200 B

and all extra work in connection therewith, under the terms as stated in the General and Specific Conditions of the AGREEMENT; and at his own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance and other accessories and services necessary to complete the said construction, in accordance with the conditions and prices stated in the Proposal attached hereto and in accordance with the Advertisement for Bids, Instructions to Bidders, General Provisions, Special Provisions, Plans, and other drawings and printed or written explanatory matter thereof, and the Technical Specifications and Addenda thereto, as prepared by the OWNER, each of which has been identified by the endorsement of the CONTRACTOR and the OWNER thereon, together with the CONTRACTOR's written Proposal and the General Provisions, all of which are made a part hereof and collectively evidence and constitute the entire AGREEMENT.

The CONTRACTOR hereby agrees to commence work within ten (10) calendar days after the date of written notice to do so shall have been given to him, to complete the work within Ninety **(90)** calendar days, after he commences work, subject to such extensions of time as are provided by the General Provisions.

The OWNER agrees to pay the CONTRACTOR _____ in current funds for the performance of the Contract in accordance with the Proposal submitted thereof, subject to additions and deductions, as provided in the General Provisions, and to make payments of account thereof as provided therein.

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

TOWN OF ADDISON, TEXAS (OWNER) **ATTEST:**

By: _____ By: _____
Wesley S. Pierson, City Manager Laura Bell, City Secretary

(CONTRACTOR) ATTEST:

By: _____ By: _____

The following to be executed if the CONTRACTOR is a corporation:

I, _____ certify that I am the secretary of the corporation named as CONTRACTOR herein; that _____, who signed this Contract on behalf of the CONTRACTOR is the _____ (official title) of said corporation; that said Contract was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

Signed: _____

Corporate Seal

No Boycott – Israel: Pursuant to Texas Government Code Chapter 2271, _____ execution of this Agreement shall serve as verification that _____ does not boycott Israel and will not boycott Israel during the term of this Agreement.

SECTION BB

BID BOND

BID BOND

Bidder shall submit a bid bond equal to five percent (5%) of the bid price. Failure to submit a bid bond when required may deem the bid non-responsive. Bid Bonds may be submitted electronically with the executed original provided immediately upon request.

SECTION PrB

PERFORMANCE BOND

STATUTORY PERFORMANCE BOND PURSUANT TO CHAPTER 2253 OF THE TEXAS GOVERNMENT CODE (PUBLIC WORKS)

(Penalty of this Bond must be 100% of Contract Amount)

KNOW ALL MEN BY THESE PRESENTS, That _____ (hereinafter called the Principal), as Principal, and _____ (hereinafter called the Surety), as Surety are held and firmly bound unto the **Town of Addison** (hereinafter called the Obligee), in the amount of _____ _____ Dollars ($ _____) for the payment whereof the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the _____ day of _____ , 2019 to

VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS
for
VITRUVIAN PARK
PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200 B

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 faithfully perform the work in accordance with the plans, specifications and contract documents, 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 Chapter 2253 of the Texas Government Code and all liabilities on this bond shall be determined in accordance with the provisions, conditions and limitations of said Chapter to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed this instrument this _____ day of _____ , 2019.

_____
(Principal)

_____ By: _____

_____
(Surety)

_____ By: _____
(Attorney-in-Fact)

SECTION PyB

PAYMENT BOND

STATUTORY PAYMENT BOND PURSUANT TO CHAPTER 2253 OF THE TEXAS GOVERNMENT CODE (PUBLIC WORKS)

(Penalty of this Bond must be 100% of Contract Amount)

KNOW ALL MEN BY THESE PRESENTS, That _____ (hereinafter called the Principal), as Principal, and _____ (hereinafter called the Surety), as Surety are held and firmly bound unto the **Town of Addison** (hereinafter called the Obligee), in the amount of _____ _____ Dollars ($ _____) for the payment whereof the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the _____ day of _____ , 2019 to

VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS
for
VITRUVIAN PARK
PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200 B

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 Chapter 2253 of the Texas Government Code and all liabilities on this bond shall be determined in accordance with the provisions, conditions and limitations of said Chapter to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed this instrument this _____ day of _____ , 2019.

_____
(Principal)

_____ By: _____

_____
(Surety)

_____ By: _____
(Attorney-in-Fact)

SECTION MB

MAINTENANCE BOND

MAINTENANCE BOND

STATE OF TEXAS

COUNTY OF DALLAS

That _____ as principal and _____ , a corporation organized under the laws of _____ and _____ as sureties, said sureties being authorized to do business in the State of Texas, do hereby expressly acknowledge themselves to be held and bound to pay unto the Town of Addison, a municipal corporation, chartered by virtue of a Special Act of Legislature of the State of Texas, as Addison, Dallas County, Texas, the sum of

_____

_____

_____

($_____) for the payment of which sum will and truly to be made unto said Town of Addison and 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 entered into a written contract with the said Town of Addison to build and construct the

VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS

For

VITRUVIAN PARK

PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200 B

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

WHEREAS, under the Plans, 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 startup, and to do all necessary backfilling that may arise on account of sunken conditions in ditches, or otherwise, and to do and perform all necessary work and repair any defective condition growing out of or arising from the improper joining of the same, or on account of any breaking of the same caused by the said Contractor in laying or building the same, or on account of any defect arising in any of said part 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 all defective conditions arising by reason of defective materials, work or labor performed by the said Contractor; and in case the said Contractor shall fail to do, 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 the 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 provisions 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 its contract to so maintain and repair said work, then these presents shall have full force and effect, and said Town of Addison shall have and recover from the Contractor and its sureties damages in the premises, as provided, and it is further understood and agreed that this obligation shall be a continuing one against the principal and sureties hereon and that successive recoveries may be had hereon for successive branches 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 _____ and the said _____ has hereunto set his hand this the _____ day of _____, 2019 ___

SURETY

_____

_____

By: _____
Attorney in Fact

By: _____
Surety

_____

_____
Agency and Address

PRINCIPAL

_____

By: _____

ATTEST

_____
Secretary

NOTE: Date of Maintenance Bond must be same as date of City acceptance.

SECTION BP

CONTRACTOR'S AFFIDAVIT OF BILLS PAID

CONTRACTOR'S AFFIDAVIT OF BILLS PAID

STATE OF TEXAS

COUNTY OF DALLAS

Personally, before me the undersigned authority, on this day appeared _____ who, being duly sworn, on oath, says that he is a legal representative of _____
(full name of Contractor as in contract)

and that the contract for the construction of the project, designated as

VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS
for
VITRUVIAN PARK
PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200 B

Public Works & Engineering Project Number 2019-01C

has been satisfactorily completed and that all bills for materials, apparatus, fixtures, machinery and labor used in connection with the construction of this project have, to the best of my knowledge and belief, been fully paid.

_____
Signature

_____
Title

Sworn to and subscribed before me this _____day of _____, 2019.

_____
Notary Public in and for

_____ County, Texas

Instructions:

If the contractor is an individual, he shall sign the affidavit. If the contractor is a partnership, any partner may sign the affidavit. If the contractor is a corporation, a person authorized by the by-laws or by the Board of Directors shall sign the affidavit. If the Contractor is a joint-venture of individuals, any of the individuals may sign the affidavit. If the Contractor is a joint-venture of partnerships, or of individuals and partnerships, the affidavit may be signed by the individual or any partner of any partnership. If the contractor is a joint-venture in which a corporation is a party, separate affidavits must be executed in the name of the joint-venture: one by each corporation and one by each individual or partnership. Signatures for corporations should be by a duly authorized officer. If signature is by another, a showing of authority to sign must accompany the affidavit.

SECTION GP

GENERAL PROVISIONS

GENERAL PROVISIONS

The General Provisions of the Contract shall be as stated in the Standard Specifications for Public Works Construction, North Central Texas Council of Governments 2004 Version, under Division 100, "General Provisions," as amended or supplemented and except as modified by the Special Provisions.

SECTION SP

SPECIAL PROVISIONS

SPECIAL PROVISIONS

TABLE OF CONTENTS

SPECIAL PROVISIONS

1. **SCOPE OF WORK**: The work to be performed under the provisions of these Contract Documents shall consist of furnishing all materials, labor, equipment, supplies and appurtenances; providing all construction, plant, equipment and tools; performing all necessary labor and supervision; and the construction complete, including all work appurtenant thereto, the proposed improvements for **Vitruvian West 2 Streetscape Improvements** for **Vitruvian Park Public Infrastructure – Phase 5, Block 200 B.**

2. **GENERAL:** This work shall conform to the requirements of the specifications and the details as shown on the Drawings. These Contract Documents are intended to be complementary. Requirements of any of the Contract Documents are as binding as if called for by all. In the event of conflict between the Drawings and the Specifications, the Contractor will be deemed to have assumed the more expensive way of doing the work unless, before submitting a bid, the Contractor shall have asked for and obtained (by addendum) a written decision as to which method or material is intended.

In cases of discrepancies, calculated dimensions shall govern over scaled dimensions; special provisions and special specifications shall govern over both general and standard specifications; and quantities shown on the plans shall govern over those shown in the proposal.

3. **EXAMINATION OF SITE**: The Contractor acknowledges that he has investigated and satisfied himself as to the conditions affecting the work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, or similar physical conditions at the site, conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the work. The Contractor acknowledges that he has inspected the site of the work and is familiar with the soil conditions to be encountered. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work. The Town of Addison assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Town and the Engineer.

4. **SPECIFICATIONS**: Construction improvements shall be governed by the following published specifications and details (except as modified by these Special Provisions):

Standard Specifications for Public Works Construction, North Central Texas - North Central Texas Council of Governments (latest edition);

Town of Addison Standard Specifications and Construction Details;

The Contractor shall keep copies of applicable specifications on the project site at all times.

Where reference is made to specifications compiled by other agencies, organizations or departments, such specifications referred to are hereby made a part of the project specifications.

5. **SUBSURFACE INVESTIGATION:** Subsurface exploration to ascertain the nature of soils, including the amount of rock, if any, is the responsibility of any and all prospective bidders. It shall be the responsibility of the bidders to make such subsurface investigations as he deems necessary to determine the nature of the material to be encountered. Some preliminary subsurface exploration has been performed by the Town of Addison and the Engineer, and is available to the contractor if requested. This information is provided only as preliminary and all bids shall be based on information obtained by the Contractor. The Town of Addison and the Engineer disclaim any responsibility for the accuracy, true location and extent of the soils information 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, soils stability and the presence, level and extent of underground water.

6. **COMPLIANCE WITH LAWS**: The Contractor shall familiarize himself with the nature and extent of the specifications, site conditions, traffic and safety requirements, and shall fully comply with all local, state and federal laws, including all codes, ordinances, rules and regulations applicable to this contract and the work to be done hereunder, which exist or which may be enacted later by governmental bodies having jurisdiction or authority for such enactment. The Contractor shall comply with all federal, state and local laws, rules and regulations of every kind and nature applicable to the performance of its Work hereunder, and shall hold the Town of Addison and the Engineer harmless therefrom.

7. **PERMITS, LICENSES AND REGULATIONS:** Permits and licenses for the prosecution of the Work shall be secured and paid for by the Contractor. Wherever the work under this contract requires the obtaining of permits from the Town of Addison or other public authorities, duplicate copies of such permits shall be furnished to the Engineer by the Contractor hereunder before the work covered thereby is started. NO WORK WILL BE ALLOWED TO PROCEED BEFORE SUCH PERMITS ARE OBTAINED.

8. **RIGHTS-OF-WAY AND EASEMENTS**: Rights-of-way and permanent easements, dedicated to the Town of Addison, have been secured for this project and made a part of thereto. The Contractor shall obtain a right-of-way permit from the Town of Addison prior to beginning work. When working within the public rights-of-way and easements, the Contractor shall at all times observe and comply with all Federal and State Laws, and Town of Addison ordinances and regulations which in any way affect the conduct of the work or his operations, and shall observe and comply with all orders, laws, ordinances and regulations which exist or which may be enacted later by bodies having jurisdiction or authority for such enactment. No plea of misunderstanding or ignorance thereof will be considered. The Contractor and his Sureties shall indemnify and save harmless the Town of Addison, the Engineer and all of their officers, agents, and employees against any and all claims or liability arising from or based on the violation of any such law, ordinance, regulation, or order, whether it be by himself or his employees.

It shall be the responsibility of the Contractor, prior to the initiation of construction on easements through private property, to inform the property Town of his intent to begin construction. Before beginning construction in areas of public dedication, the Contractor shall inform the agency having jurisdiction in the area forty-eight (48) hours prior to initiation of the Work. All easements shall be cleaned up after use and restored to their original conditions or better.

9. **RESTRICTED WORK HOURS:** Per the Town of Addison Building Regulations, "It shall be unlawful for a person, firm or corporation to excavate, erect, build, construct, alter, repair or demolish any building or structure which has been issued or which is required to be issued a building permit by the Town of Addison between the hours of 7:00 p.m. and 7:00 a.m. Monday through Friday, and between the hours of 7:00 p.m. and 8:00 a.m. on Saturday and Sunday, if such activity is performed within a residential, apartment, or townhouse zoned area, or within three hundred (300) feet of an occupied residence, except in cases of urgent necessity or in the interest of public safety and convenience, and then only by permit of the City Manager."

10. **COMPLIANCE WITH IMMIGRATION LAWS:** Contractor shall take all steps necessary to ensure that all of the Contractor's employees are authorized to work in the United States as required by the Immigration Reform and Control Act of 1986.

11. **NON-DISCRIMINATION POLICY:** It is the policy of the Town of Addison to afford all people an equal opportunity to bid on any contract being let by the Town. The Town of Addison has a policy that prohibits discrimination against any person because of race, color, sex, or national origin, in the award or performance of any contract. The Town of Addison will require its employees, agents, and contractors to adhere to this policy.

12. **ANTITRUST LAWS:** The Contractor hereby assigns to the Town of Addison any all claims for overcharges associated with this contract which arise under the antitrust laws of the United States 15 U.S.C.A. Sec. 1, et seq. (1973).

13. **ABANDONMENT:** The Town of Addison reserves the right to abandon, without obligation to the Contractor, any part of the project, or the entire project, at any time before the Contractor begins any construction work authorized by the Town of Addison. In case of total abandonment of the project, the contract becomes void. The Town of Addison may abandon portions of the project at any time during the project duration. In case of such partial abandonment, the Contractor shall not be due any payment for lost or unrealized profits on the abandoned portions of the project.

14. **DISCREPANCIES:** If the Contractor, in the course of the Work, finds any discrepancy between the Contract Documents and the physical conditions of the locality, or any errors or omissions in drawings or in the layout as given by survey points and instructions, or if it appears that any Plan, Specification or other Contract Document is or may not be in compliance with any building code or other requirement of any governmental body, he shall immediately inform the Town of Addison and the Engineer in writing, and the Town of Addison and the Engineer shall promptly verify the same. Any Work done after such discovery, until authorized, will be done at the Contractor's risk.

15. **PREVAILING WAGE RATES:** Wage rates paid on this project shall not be less than specified in the schedule of general prevailing rates of per diem wages as shown in Davis-Bacon, Dallas County.

16. **ADDENDA:** Bidders desiring further information, or interpretation of the Plans and Specifications, must make written request for such information to the Engineer (not later than three (3) working days prior to the date set for the Bid opening). Answers to all such requests will be released on www.bidsync.com 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, Specifications or Contract Documents, or should he be in doubt as to their meaning, he shall at once notify the Engineer in writing in order that a written addendum may be sent to all Bidders.

17. **PAY ITEMS:** Pay items provided are intended to be all-inclusive of the work required on this project. Work required by the plans or specifications but not provided with a specific pay item shall be considered incidental to other items of work. Final payment to the construction contractor shall not be made until all Work has been finally completed and verified in accordance with the construction contract, plans and specifications and have been finally accepted by the Town of Addison.

18. **INCREASE OR DECREASE IN QUANTITIES:** The quantities shown in the proposal are approximate. Final payment will be based on quantities determined by measurement methods described for each work item.

    When the quantity of work to be done or materials to be furnished under any major pay item or contract is more than 125% of the quantity stated in the contract, whether stated by Town of Addison or by Contractor, then either party to the contract, upon demand, shall be entitled to negotiate for revised consideration on the portion of work above 125% of the quantity stated in the contract.

    When the quantity of the work to be done or materials to be furnished under any major pay item of the contract is less than 75% of the quantity stated in the contract, whether stated by Town of Addison or by Contractor, then either party to the contract, upon demand, shall be entitled to negotiate for revised consideration on the portion of work below 75% of the quantity stated in the contract. This paragraph shall not apply in the event Town of Addison deletes a pay item in its entirety from this contract.

19. **SUBSIDIARY WORK:** Any and all work specifically governed by documentary requirements for the project, such as conditions imposed by the Plans or these Special Provisions, in which no specific item for bid has been provided for in the Proposal, shall be considered as a subsidiary item of work, the cost of which shall be included in the various bid items in the Proposal. Costs of permits, inspection fees, traffic control, construction staking, surface restoration and cleanup are general items of work which fall in the category of subsidiary work.

20. **QUALIFICATION OF BIDS:** The Town of Addison reserves the right to reject any and all Bids, to waive any and all informalities not involving price, time or changes in the Work, and the right to disregard all nonconforming, non-responsive, unbalanced, or conditional Bids. The Town reserves the right to reject the Bid of any Bidder if the Town believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the Town. Discrepancies in the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolve in favor of the correct sum.

21. **AWARD AND EXECUTION OF CONTRACT:** The Town of Addison reserves the right to withhold final action on the Proposal for a reasonable time, not to exceed forty-five (45) days after the date of opening Proposals, and in no event will an award be made until after investigations have been made as to the responsibility of the proposed awardee. The award of the contract, if an award is made, will be to the lowest and best responsible bidder. The award of the contract shall not become effective until the Town of Addison has notified the Contractor in writing of such award.

Within ten (10) days after the Town of Addison has by appropriate resolution, or otherwise, awarded the contract, the Contractor shall execute and file with the Town of Addison the Contract and such bonds as may be required in the Contract Documents.

22. **EXPLANATION OF CONTRACT TIME:** The term “Original Contract Time" as used in this Provision will mean the number of calendar days established in this Contract (**90 calendar days**) for completion of the work of the Contract from the date the Contract was executed. The term "calendar day" as used in this Article will mean every day shown on the calendar. Calendar days will be consecutively counted from commencement of Contract Time regardless of weather, weekends, holidays, suspensions of Contractor's operations, delays or other events as described herein. The Original Contract Time will not be adjusted for any reason, cause or circumstance whatsoever, regardless of fault, save and except in the instance of a catastrophic event (i.e., war, invasion, riot, declared state of emergency, national strike, or other situations as declared by the Town of Addison). The parties anticipate that delays may be caused by or arise from any number of events during the course of the Contract, including, but not limited to, work performed, disruptions, permitting issues, actions of suppliers, subcontractors or other contractors, actions by third parties, weather, weekends, holidays, or other such events, forces or factors sometimes experienced in roadway construction work. Such delays or events and their potential impacts on performance by the Contractor are specifically contemplated and acknowledged by the parties in entering into this Contract, and shall not extend the Original Contract Time. Further, any and all costs or impacts whatsoever incurred by the Contractor in accelerating the Contractor's work to overcome or absorb such delays or events in an effort to complete the Contract prior to expiration of the Original Contract Time, regardless of whether the Contractor successfully does so or not, shall be the sole responsibility of the Contractor in every instance. In the event the project is altered by work deleted, change orders, supplemental agreements, utility conflicts, design changes or defects, extra work, right of

way issues, or other situations which are not the fault of or a direct result of contractor negligence which may impact the critical path of the project construction schedule, the Town may choose to negotiate the extension or reduction of the Original Contract Time with the Contractor.

In the event of a catastrophic event (i.e., war, invasion, riot, declared state of emergency, national strike, or other situations as declared by the Town of Addison) directly and substantially affecting the Contractor's operations on the Contract, the Contractor and the Town shall agree as to the number of calendar days to extend the Original Contract Time. In the event the Contractor and Town are unable to agree to the number of calendar days to extend the Original Contract Time, the Town shall unilaterally determine the number of calendar days to extend the Original Contract Time reasonably necessary and due solely to such catastrophic event and the Contractor shall have no right whatsoever to contest such determination, save and except that the Contractor establishes that the number of calendar days determined by the Town were arbitrary or without any reasonable basis. The Contractor shall have no rights under the Contract to make any claim arising out of this incentive payment provision except as is expressly set forth in this Provision.

Should the Contractor fail to complete the Contract on or before expiration of the Allowable Contract Time, as adjusted in accordance with the provisions above, the Town shall deduct from the moneys due the Contractor the sum of **$500 per day** for each calendar day completion exceeds the Allowable Contract Time. The term "Allowable Contract Time" as used in this Article shall mean the Original Contract Time plus adjustments pursuant to the statements above. This deduction shall be the disincentive for the Contractor's failing to timely complete the Contract. **This shall be strictly enforced.**

23. **COPIES OF PLANS FURNISHED:** One (1) set of 11” x 17” plans and one (1) electronic version of the plans shall be furnished to the Contractor, at no charge, for construction purposes. Additional copies may be obtained at cost of $150 per set upon request.

24. **PRE-CONSTRUCTION CONFERENCE:** The successful Contractor, Engineer, and Town of Addison shall meet for a preconstruction conference before any of the work begins on this project. At this time, details of sequencing of the work, contact individuals for each party, testing requirements, submittals, and pay requests will be covered. Prior to the meeting, the Contractor shall prepare schedules showing the sequencing and progress of their work and its effect on others. A final composite schedule will be prepared during this conference to allow an orderly sequence of project construction.

25. **MOBILIZATION:** The work specified in this item consists of the preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, and for the establishment of temporary offices, utilities, and other facilities, if necessary, for the construction of proposed improvements. Maximum allowed will be 5% of the total bid.

26. **GENERAL SEQUENCE OF CONSTRUCTION:** Prior to the start of work, the contractor shall develop a detailed construction and sequence of construction schedule using the critical path method, to be submitted to the Town of Addison for approval, that shall cause minimum interference with traffic along, across and adjacent to the project during construction. If the schedule or sequence becomes unworkable or unsatisfactory as work proceeds, adjustments shall be made. During all phases of construction access to all existing residences and businesses must be maintained at all times unless otherwise authorized in writing by the Town of Addison. Erosion control devices must be properly installed and maintained during all stages of construction.

27. **PROJECT REPRESENTATIVE:** The Town of Addison, the Engineer, the Contractor(s), and any applicable public utilities shall designate a single individual within their organization to act as liaison for the project. This individual shall be aware of the day to day activities on the project, have authority to make decisions binding on the party, and serve as single point for coordination of activities with the other team members.

28. **COORDINATION WITH OTHERS:** In the event that other Contractors are doing work in the same area simultaneously with this project, the Contractor shall coordinate his proposed construction with that of the other Contractors. The Town of Addison and/or the Engineer shall mediate any disputes, and the Contractors shall comply with their decisions.

29. **INSURANCE:** Each insurance policy that the Contractor must furnish in accordance with these contract documents shall name the Town of Addison and the Engineer as additional insured. Contractor shall include in their bid package, a copy of their certificate of insurance showing compliance to the limits established by the Town of Addison.

1.0 The Contractor shall agree to furnish and maintain continuously during the period of this agreement, any renewals or extension, insurance coverage meeting all of the following requirements:

1.1 Commercial General Liability Insurance at minimum combined single limits of $1,000,000 per occurrence and $2,000,000 general aggregate for Bodily Injury and Property Damage, which coverage shall include Products/Completed Operations, and XCU Hazards. Coverage for product/completed operations must be maintained for at least two (2) years after the construction work has been completed. Coverage must be amended to provide for an each-project aggregate limit of insurance. Contractual Liability must be included.

1.2 Workers Compensation Insurance at statutory limits, including employer's liability coverage at minimum limits of $1,000,000 each occurrence-each accident, $1,000,000 by disease-each occurrence and $1,000,000 by disease aggregate (see attachment on Workers Compensation Commission rules).

1.3 Commercial Automobile Liability Insurance at minimum combined single limits of $1,000,000 per occurrence for bodily injury and property damage, including owned, non-owned, and hired car coverage.

1.4 Umbrella Liability at minimum limits of $1,000,000 each-occurrence $4,000,000 aggregate with respect to primary commercial general liability, automobile liability and employer's liability policies.

1.5 Any Subcontractor(s) hired by the Contractor shall maintain insurance coverage equal to that required by the Contractor. It is the responsibility of the Contractor to assure compliance with this provision. The Town accepts no responsibility arising from the conduct, or lack of conduct, of the Subcontractor.

1.6 A comprehensive general liability insurance form may be used in lieu of a commercial general liability form. In this event, coverage must be written on an occurrence basis, at limits of $1,000,000 each-occurrence, combined single limit and coverage must include a broad form comprehensive general liability endorsement, products/completed operations, XCU hazards and contractual liability.

2.0 With reference to the foregoing insurance requirements, Contractor shall specifically endorse applicable insurance policies as follows:

2.1 The Town shall be named as an additional insured with respect to general liability and automobile liability.

2.2 All liability policies shall contain no cross liability exclusions or insured versus insured restrictions.

2.3 A waiver of subrogation in favor of the Town of Addison shall be contained in the workers compensation and all liability policies.

2.4 All insurance policies shall be endorsed to require the insured to immediately notify the Town of Addison of any material changes in the insurance coverage.

2.5 All insurance policies shall be endorsed to the effect that the Town will receive at least thirty (30) days notice prior to cancellation or non-renewal of the insurance.

2.6 All certificates shall be mailed to Town of Addison, Purchasing Dept., P.O. Box 9010, Addison, Texas 75001.

2.7 All insurance policies, which name the Town as an additional insured, must be endorsed to read as primary coverage regardless of the application of other insurance.

2.8 Required limits may be satisfied by any combination of primary and umbrella liability insurances.

2.9 Contractor may maintain reasonable and customary deductibles, subject to approval by the Town.

3.0 All insurance shall be purchased from an insurance company who meets the following requirements:

3.1 Must be issued by a carrier, which is rated "A-" or better by A.M. Best's Key Rating Guide.

3.2 Licensed and admitted to do business in the State of Texas and is a subscriber to the Texas Guaranty Fund.

4.0 All insurance must be written on forms filed with and approved by the Texas State Board of Insurance. Certificates of insurance shall be prepared and executed by the insurance company or its authorized agent and shall contain provisions representing and warranting the following:

4.1 Set forth all endorsements and insurance coverages according to requirements and instruction contained herein.

4.2 Shall specifically set forth the notice-of-cancellation or termination provisions to the Town.

5.0 Upon request, Contractor shall furnish the Town of Addison with certified copies of all insurance policies.

30. <u>WORKERS' COMPENSATION INSURANCE COVERAGE:</u>

A. Definitions.

Certificate of Coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self insure issued by the Texas Workers' Compensation Commission (the "TWCC"), 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 governmental entity.

Persons Providing Services on the Project ("subcontractor" in Section 406.096 of the Texas Labor Code) - includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees.

This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, Town-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 property reporting of classification codes and payroll amounts and filing of any coverage agreement, which meets the statutory requirements of Texas Labor Code, 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 Town of Addison 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 Town of Addison, showing that the coverage has been extended.

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

(1) a certificate of coverage, prior to that person beginning work on the project, so that the Town of Addison 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 on file for the duration of the project and for one year thereafter.

G. The Contractor shall notify the Town of Addison 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 TWCC, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify current coverage and report failure to provide coverage.

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 Codes 401.011 (44) for all 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 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 the coverage period, 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 Town of Addison 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 other person with whom it contracts to perform as required by paragraphs (1) - (7) with the certificate of coverage to be provided to the person for whom they are providing services.

J. By signing this contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the Town of Addison that all employees of the Contractor who will provide services on the project will be covered by worker's 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 TWCC'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 Town of Addison to declare the contract void if the Contractor does not remedy the breach within ten days after receipt of notice of breach from the Town.

The following is the form of notice of workers' compensation coverage prescribed by the TWCC. Pursuant to Section 110.110 (d) (7), this notice must be printed with a title in at least 30-point bold type, and text in at least 19-point nominal type, and shall be in both English and Spanish and any other language common to the worker population.

REQUIRED WORKERS' COMPENSATION COVERAGE

"The law requires that each person working on this site or providing services related to this construction project must be covered by workers' compensation insurance. This includes persons providing, hauling or delivering equipment or materials, or providing labor or transportation or other service related to the project, regardless of the identity of their employer or status as an employee.

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

31. **CLEAN AIR ACT AND CLEAN WATER ACT:** Include in all construction contracts exceeding $100,000, the following requirement: "Contractor is responsible for compliance with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act, Section 505 of the Clean Water Act, Executive Order 11738, and Environmental Protection Agency regulations."

32. **RESOLUTION OF DISPUTES:** The parties hereby covenant and agree that in the event of any controversy, dispute, or claim, of whatever nature arising out of, in connection with or in relation to the interpretation, performance or breach of this agreement, including but not limited to any claims based on contract, tort or statute, before filing a lawsuit, the parties agree to submit the matter to Alternative Dispute Resolution pursuant to the laws of the State of Texas. The parties shall select a third party arbitrator or mediator from the current list of neutrals on file with the Alternative Dispute Resolution Administrator of the Dallas County District Courts. All forms of Alternative Dispute Resolution may be used except binding arbitration. The proceedings shall be conducted in accordance with the laws of the State of Texas.

33. **SHOP DRAWINGS:** The Contractor shall provide, review, approve and submit all shop drawings, product data and samples required by the Town of Addison, the Engineer and the Contract Documents in accordance with Item 1.28 of the Standard Specifications for Public Works Construction, North Central Texas Council of Governments. The Contractor shall furnish a minimum of four and a maximum of six copies of shop drawings for review by the Engineer, who will review, approve and forward to the Town of Addison for acceptance. Approved submittals will be returned as follows:

Two (2) – Town of Addison

One (1) – Contractor

One (1) – Icon Consulting Engineers, Inc.

Maximum size of submittals shall be 11 x 17 inch. No fax copies are acceptable. Shop drawings shall include all items to be installed in the project, including:

- Concrete Mix Designs
- Trench Safety Plan
- Steel Casing Pipe
- Conduit
- Traffic Control Plan
- Fittings
- Flex Base
- Embedment Materials
- Water Pipe
- Valves & Boxes
- Gradation
- Backfill Materials

34. **PROJECT VIDEO:** Prior to the start of construction, Contractor shall video the construction area and property adjacent to construction in the presence of the City Inspector. The format shall be DVD. The video shall be narrated. The Contractor shall furnish the Town of Addison a copy of the video in DVD format prior to commencement of project. This shall be subsidiary to project.

35. **TESTING REQUIREMENTS:** The Town of Addison shall designate and pay an independent testing laboratory to furnish testing for this project. Random testing will be provided by the independent lab as necessary for compliance with the specifications. The Contractor shall coordinate construction with the testing lab and the Town of Addison, and shall provide assistance to the testing labs by providing excavation, access, trench safety, materials for testing and any other work required to insure all testing requirements are met. Work performed to accommodate testing will be a subsidiary item and no extra payment will be authorized. All costs for the field quality control testing shall be paid for by the Town of Addison, except for any and all re-testing, which shall be paid by the Contractor and such cost shall be deducted from monthly pay requests. The Contractor shall be responsible for providing any test required by the specifications. All samples and tests shall be performed in accordance with the Standard Specifications for Public Works Construction, North Central Texas Council of Governments (Latest Edition) as amended or supplemented.

36. **INSPECTION**: The Town of Addison and the Engineer reserve the right to inspect, test, measure or verify the construction work for this project as they deem necessary to ascertain that the Work is being accomplished in accordance with the standards and requirements set forth in the Contract Documents. Notwithstanding such reviews, the Contractor will be held responsible for the finished Work, and any acceptance of the Work by the Town or governmental agencies will not relieve the Contractor from responsibility for the Work. The Town reserves the right to place full-time construction inspectors at the site of the Work. Costs for inspection services will be paid by the Town of Addison. The Contractor shall provide assistance to the Town of Addison and the Engineer by providing excavation, trench safety, or other work necessary to facilitate inspection activities, and shall give sufficient notice well in advance of pending construction activities for scheduling of inspection services.

If the Specifications, the Town's instructions, laws, ordinances, or any public authority require any Work to be specially tested, the Contractor shall give the Town timely notice of its readiness for testing, and if the testing is by an authority other than the Town, of the date fixed for such testing. Tests by the Town shall be made promptly, and where practicable at the source of supply.

37. **ACCESS ROUTES, STAGING AREAS AND STORAGE AREAS:** All haul roads and access routes and the location of job site trailers, staging areas, and storage areas shall be

subject to the approval of the Town and the Engineer. The Contractor shall be responsible for maintaining and repairing all roads and other facilities used during construction. Upon completion of the project all existing roads and other disturbed areas shall be left in a condition equal to that at the time the Contractor commences work on this project.

38. **PROPERTY ACCESS:** Access to adjacent properties shall be maintained at all times unless otherwise directed by the Engineer and/or Town of Addison. Contractor shall block no more than one half of a driveway at any time. Contractor shall also maintain sufficient sidewalk access throughout the project limits to the existing apartment buildings during construction operations.

39. **PLANT, PROCEDURE, METHODS AND EQUIPMENT:** The Contractor shall determine the methods to be employed, the procedures to be followed, and equipment to be used on the work under this contract, subject to the requirements of these specifications and approval of the Engineer and Town of Addison. Only adequate and safe procedures, methods and equipment shall be used. The Contractor shall so arrange his work and provide such plant and equipment as is necessary in order to meet the progress requirements of the approved time schedule and to complete the work within the period of time as specified in the Construction Agreement. Only such materials and equipment as are necessary for the construction of the work under this contract shall be placed, stored or allowed to occupy any space at the site of the work.

It is expressly agreed that the acceptance or approval of any order of procedure, methods or equipment submitted or employed by the Contractor shall not in any manner relieve the Contractor of responsibility for the safety, maintenance and repairs of any work, or for the construction maintenance and safety of the work hereunder, or from any liability whatsoever on account of any procedure or method employed by the Contractor. Where the work under this contract requires permits from the Town of Addison, the State of Texas, or other public authorities, duplicate copies of such permits shall be furnished to the Engineer by the Contractor before the work covered thereby is started. NO WORK WILL BE ALLOWED TO PROCEED BEFORE REQUIRED PERMITS ARE OBTAINED AND DISTRIBUTED

40. **PARKING OF CONSTRUCTION EQUIPMENT:** At night and during all other periods of time when equipment is not being actively used on the construction work, the Contractor shall park the equipment at locations which are approved by the Town of Addison or the Engineer. The Contractor shall provide adequate barricades, markers and lights to protect the Town of Addison, the Engineer, the public and other work. All barricades, lights, and markers must meet the requirements of the Town of Addison, State and Federal regulations.

41. **ZONING REQUIREMENTS:** During the construction of this project, the Contractor shall comply with the present zoning requirements of the Town of Addison in the use of vacant property for storage purposes.

42. **CONSTRUCTION IN PUBLIC ROADS AND PRIVATE DRIVES:** No public road shall be entirely closed overnight. It shall be the responsibility of the Contractor to build and

maintain all weather bypasses and detours, if necessary, and to properly light, barricade and mark all bypasses and detours that might be required on and across the roads involved in the work included in this contract. No interference with traffic flow on city streets shall be permitted during the hours of 6:30 a.m. to 9:30 a.m. and 3:30 p.m. to 7:30 p.m., Mondays through Fridays.

The Contractor shall make every effort to complete construction and allow immediate access to adjacent property at driveway entrances located along the roadways. Towns or tenants of improvements where access and/or entrance drives are located shall be notified at least twenty-four (24) hours prior to the time the construction will be started at their driveways or entrances and informed as to the length of time driveways will be closed. Contractor shall at all times maintain at least one point of access into all properties, unless obtaining written permission from property Town to do otherwise with such written permission being provided to the Town's inspector.

The Contractor shall be responsible for all road and entrance reconstruction and repairs and maintenance of same for a period of two years from the date of such reconstruction. In the event the repairs and maintenance are not made immediately to the satisfaction of the Town, and it becomes necessary for the Town to make such repairs, the Contractor shall reimburse the Town for the cost of such repairs.

The Contractor shall, at all times, keep a sufficient width of the roadway clear of dirt and other material to allow the free flow of traffic. The Contractor shall assume any and all responsibility for damage, personal or otherwise, that may be caused by the construction along roads and private drives.

43. **HAULING ON TOWN OF ADDISON STREETS**: The Contractor shall receive approval of his haul routes and type of equipment to be used prior to beginning construction. The Contractor shall be responsible for maintaining the cleanliness of existing paved roadways and shall provide equipment and manpower for that purpose.

44. **EXISTING POWER POLES & GUY WIRES:** The Contractor shall have the responsibility of coordinating with the proper authorities for the bracing, replacing or relocating of all utility poles and guy wires which interfere with the construction of this project prior to beginning his construction operations. The Contractor will also be responsible for all damage to poles, guy wires, etc. that are damaged or destroyed by Contractor's operations.

45. **SAFETY RESTRICTIONS - WORK NEAR HIGH VOLTAGE LINES:** The following procedures shall be followed for work near high voltage lines on this contract:

a. A warning sign not less than five (5) inches by seven (7) inches, painted yellow with black letters that are legible at twelve (12) feet shall be placed inside and outside vehicles such as cranes, derricks, power shovels, drilling rigs, pile driver, hoisting equipment or similar apparatus. The warning sign shall read as follows: "Warning - Unlawful to Operate This Equipment Within Six Feet of High Voltage Lines."

b. Equipment that may be operated within ten (10) feet of high voltage lines shall have an insulating cage guard protecting the boom or arm, except backhoes or dippers, and insulator links on lift hook connections.

c. When necessary to work within six (6) feet of high voltage electric lines, notify the power company who will erect temporary mechanical barriers, de-energize the line, or raise or lower the line. All such work done by the power company shall be at the expense of the Contractor. The Contractor shall maintain an accurate log of all such calls to the power company.

d. The Contractor is required to make arrangements with the power company for the temporary relocation or raising of high voltage lines at the Contractor's sole expense.

e. No person shall work within six (6) feet of high voltage lines without protection measures having been taken as outlined in Paragraph c.

46. **PROTECTION OF EXISTING UTILITIES AND STRUCTURES**: The location and dimensions shown on the plans relative to existing utilities and subsurface structures are based on the best records and/or field information available and are not guaranteed by the Town of Addison or the Engineer to be accurate as to location and depth. It shall be the Contractor's responsibility to verify locations of adjacent and conflicting utilities sufficiently in advance of his activities in order that he may negotiate such restrictive locations with the Town of Addison of the conflicting utility and/or make local adjustments to provide adequate clearances. The Contractor shall take all necessary precautions in order to protect all utilities and services encountered, whether or not they are indicated on the plans. All damage to utilities resulting from Contractor's operations shall be restored at his expense. The Town of Addison and the Engineer assume no responsibility for failure to show any or all of these utilities or structures on the plans, or to show them in their exact locations. It is mutually agreed that such failure shall not be considered sufficient basis for claims for additional compensation for extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as to necessitate changes in the lines or grades, or requires the building of special work, provisions for which are not made in the plans, in which case, provisions in these specifications for extra work shall apply.

47. **PUBLIC UTILITIES AND OTHER PROPERTY TO BE CHANGED:** In case it is necessary to change or move the property of a public utility, such property shall not be moved or interfered with until authorized by the Town of Addison or the Engineer. The right is reserved for the Owner of public utilities to enter upon the limits of the project for the purpose of making such changes or repairs of their property that may be made necessary by performance of the Contract. The Contractor shall be responsible for coordination with the Town of Addison and the Engineer, and all utility companies whose utility lines or streets may be affected by the proposed improvements. The Contractor shall observe the following:

a. Prior to any excavation, the Contractor shall determine the locations of all existing water, gas, sewer, electric, telephone, telegraph, television, pipelines and other under ground utilities and structures.

b. After commencing work, the Contractor shall use every precaution to avoid interference with existing underground and surface utilities and structures, and protect them from damage.

c. Where the locations of existing underground and surface utilities and structures are indicated, these locations are generally approximate, and all items which may be encountered during the work are not necessarily indicated. The Contractor shall determine the exact locations of all items indicated, and the existence and locations of all items not indicated.

d. The Contractor shall repair or pay for all damage caused by his operations to all existing utility lines, public property, and private property, whether it is below ground or above ground, and he shall settle in total the cost of all damage suites which may arise as a result of his operations.

e. To avoid unnecessary interferences or delays, the Contractor shall coordinate all utility removals, replacements and construction with the appropriate utility company, and then request written authorization from the Town of Addison or the Engineer. The Town of Addison and the Engineer will not be liable for damages due to delay as a result of the above.

48. **MAINTENANCE AND REPAIRS:** The Contractor shall maintain and keep in good repair all work contemplated under these plans, specifications, and drawings which shall include the maintenance and repair of all existing streets, storm sewer crossings, utility crossings, temporary crossings for access to adjacent property, barricades, lights, and danger signals, and all work which is necessary for the well being of the general public. In the event the Contractor fails in his obligations to properly maintain the work, the Town of Addison shall make such repairs as are necessary and the cost of such repairs shall be deducted from payment due the Contractor.

49. **PROTECTION OF WORK:** During performance and up to date of final acceptance, the Contractor shall be under the absolute obligation to protect the finished work against damage, loss or injury. In the event of damage, loss or injury, the Contractor shall promptly replace or repair such work, whichever the Town of Addison shall determine to be preferable. The obligation to deliver finished work in strict accordance with the contract prior to final acceptance shall be absolute and shall not be affected by the Town of Addison's approval of or failure to prohibit means and methods of construction used by the Contractor. All risk of loss or damage to the work shall be borne solely by the Contractor until final acceptance of all work by the Town of Addison, as evidenced by the Town of Addison's issuance of a certificate of acceptance.

50. **PUBLIC CONVENIENCE AND SAFETY:** In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours.

Materials stored about the work site shall be so placed, and the work shall at all times be so conducted, as to cause no greater obstruction to the traveling public than is considered necessary by the Town of Addison. The materials excavated shall be placed so as not to endanger the work or prevent free access to all fire hydrants, water valves, gas valves, manholes (telephone, telegraph or electrical conduits, and sanitary sewers) and fire alarm or police call boxes in the vicinity.
The Town of Addison reserves the right to remedy any neglect on the part of the Contractor as regards to the public convenience and safety which may come to the Town of Addison's attention, after 24 hours notice in writing to the Contractor, save in cases of emergency, when the Town of Addison shall have the right to remedy any neglect without notice; and, in either case, the cost of such work done by the Town of Addison shall be deducted from the monies due or to become due the Contractor. The Contractor shall notify the Town of Addison and the Engineer when any street is to be closed or obstructed. The Contractor shall provide for emergency vehicle access at all times.

Where the work passes over or through private property, the Town of Addison shall provide such right-of-way. The Contractor shall notify the proper representatives of any public utility, corporation, company or individual, not less than 48 hours in advance of work which might damage or interfere with the operation of their property along or adjacent to the work. The Contractor shall be responsible for all damage or injury to property of any character (except such as may be required by the provisions of the Contract Documents, or caused by agents or employees or the Town of Addison) by reason of any negligent act or omission on the part of the Contractor, his employees, agents or subcontractors, or at any time due to defective work or materials, or due to his failure to reasonably or properly prosecute the work, and said responsibility shall not be released by the fact that the work shall have been completed and accepted.

When and where any such damage or injury is done to public or private property on the part of the Contractor, he shall restore or have restored at his own cost and expense such property to a condition similar or equal to that existing before such damage was done, by repairing, rebuilding or otherwise restoring as he may be directed, or he shall make good such damage or injury in a manner acceptable to the property Town of Addison and the Engineer. In case of failure on the part of the Contractor to restore such property or make good such damage or injury, the Town of Addison may, upon 48 hour written notice under ordinary circumstances, and without notice when a nuisance or hazardous condition results, proceed to repair, rebuild or otherwise restore such property as may be determined necessary, and the cost thereof shall be deducted from any monies due or to become due to the Contractor under this contract; or where sufficient contract funds are unavailable for this purpose, the Contractor or his surety shall reimburse the Town of Addison for all such costs.

51. **PROTECTION OF PERSONS AND PROPERTY:** The Contractor shall have the responsibility to provide and maintain all warning devices and take all precautionary measures required by law or otherwise necessary to protect persons and property while said persons or property are approaching, leaving or within the work site or any area adjacent to said work site. No separate compensation shall be paid to the Contractor for the installation

or maintenance of any warning devices, barricades, lights, signs, or any other precautionary measures required by law or otherwise necessary for the protection of persons or property.

The Contractor shall assume all responsibilities to the general public in connection with the general public's immediate approach to and travel through the work site and the area adjacent to said work site.

Where the work is in or adjacent to any street, alley, sidewalk, public right-of-way or public place, the Contractor shall at his own cost and expense provide such flagmen and watchmen and furnish, erect and maintain such warning devices, barricades, lights, signs, and other precautionary measures for the protection of persons or property as may be prudent or necessary, or as required by law. The Contractor's responsibility for providing and maintaining flagmen, watchmen, warning devices, barricades, signs and lights and other precautionary measures shall not cease until the project shall have been completed and accepted by the Town of Addison, and shall cease when the Town of Addison notifies the Contractor in writing of final project acceptance.

If the Town of Addison discovers that the Contractor has failed to comply with applicable federal or state laws (by failing to furnish the necessary flagmen, warning devices, barricades, lights, signs or other precautionary measures for the protection of persons or property), the Town of Addison may order the Contractor to take such additional precautionary measures as required by law to protect persons and property.
In addition, the Contractor shall be held responsible for all damages to the work and other public or private property due to the failure of warning devices, barricades, signs, lights or other precautionary measures in protecting said property; and whenever evidence is found of such damage, the Town of Addison may order the damaged portion immediately removed and replaced by and at the cost and expanse of the Contractor.

52. **TRAFFIC CONTROL**: It shall be the responsibility of the Contractor to provide traffic control during the construction as required by the State of Texas, the Town of Addison, and in accordance with the following additional requirements:

1. The Contractor shall be required to furnish barricades, flares, flagmen, etc., for the protection of the public, employees and the work.

2. The Contractor shall prosecute his work in such a manner as to create a minimum of interruption to traffic along adjacent roadways.

3. The unit price bid under the appropriate bid item of the proposal shall cover all cost for providing signage, markings, lighting, barricades, flagmen and other devices and personnel required for traffic control during construction of the project.

4. The Contractor shall not remove any regulatory sign, instructional sign, warning sign, street name sign or any other sign or signal which currently exists.

53. **BARRICADES, WARNING SIGNS, DETOURS AND SEQUENCE OF WORK:** Throughout the construction operations, streets and intersections will remain open to traffic

by constructing the work in stages. All streets, driveways, adjacent business and alleys shall remain open to traffic as far as is practicable.

A. General Construction: The Contractor shall plan his work sequence in a manner that will cause minimum interference with traffic during construction operations. Before beginning work on this project, the Contractor shall submit, for approval by the Town of Addison, a plan of construction operations outlining in detail a sequence of work to be followed; setting out the method of handling traffic on streets, roads and driveways along, across and adjacent to the work. If at any time during the construction, the Contractor's proposed plan of operation for handling traffic does not provide for safe comfortable movement, the Contractor shall immediately change his operations to correct the unsatisfactory conditions.

Ditches across the traffic lanes will be kept covered with a portable traffic-bearing surface at all times unless work in the ditch is in progress. Only one lane of traffic may be closed at a time when work is in progress in a ditch.

B. Safety: The Contractor shall provide, construct and maintain barricades and signs at locations set out in the plans and in the Special Provisions in accordance with the Texas Manual on "Uniform Traffic Control Devices for Streets and Highways". In addition, he shall provide and maintain such other barricades and signs as deemed necessary by the Town or the Engineer, and provide and maintain, between sunset and sunrise, a sufficient number of lights at barricades and points of danger for the protection of vehicular and pedestrian traffic.

Barricades shall be placed in such a manner as not to interfere with the sight distance of drivers entering the street from side streets.

The Contractor shall keep traveled surfaces used in his hauling operation clear and free of dirt or other material.

The Contractor shall provide and maintain qualified flagmen at such points and for such periods of time as may be required to provide for the safety and convenience of public travel and Contractor's personnel.

54. EXCAVATION SAFETY SYSTEMS

The work performed under this section of the specifications consists of providing trench safety systems consisting of shoring, sheeting, trench shield, and/or laid back slopes to meet the trench safety requirements of the Occupational Safety and Health Administration (O.S.H.A.), as required for this project and specified herein.

A. General: Trench safety systems shall be provided by the Contractor as provided in Subpart P - Excavation, Trenching and Shoring, Part 1926 of the Code of Federal Regulations which describes safety and health regulations as administered by the U.S. Department of Labor Occupational Safety and Health Administration (O.S.H.A.). The standards specified by the O.S.H.A. Regulations shall be the minimum allowed on this project. It shall be the responsibility of the Contractor to design and install adequate trench safety systems for all trenches excavated on this project.

The Contractor shall furnish to the Town for review, prior to beginning construction activity, a Trench Safety Plan for the entire project. The trench safety plan must be prepared and sealed by a Professional Engineer registered in the State of Texas. In addition, all trench safety systems utilized in this project must be designed by a Professional Engineer registered in the State of Texas. The Contractor shall be totally responsible for the safety of all persons involved in the construction of this project.

B. Core Borings: Any core borings and soil data furnished by the Town are for the convenience of the Contractor. The Contractor shall be responsible for any additional soil or geotechnical information required. The Contractor shall be responsible for properly designed trench safety systems to be utilized for any type of subsurface condition found on this project. The furnishing of soil information by the Town of Addison in no way relieves the Contractor of this obligation. If no core borings or soil data are furnished by the Town, it shall be the Contractor's responsibility to obtain whatever geotechnical information required for preparation of trench safety systems.

C. Inspections: In addition to the inspections of the trench and trench safety systems required of the Contractor by the O.S.H.A. Regulations, the Town may further inspect the work. The Town shall have the right to reject any trench safety systems which he finds to be inadequate, and the Contractor shall immediately improve the system to comply with this specification.

D. Measurement and Payment: Measurement and payment of Trench Safety Systems shall be based on the actual linear footage of the pipe installed on the project. The payment shall be full compensation for all planning, engineering, materials, equipment, fabrications, installation, recovery and all incidental work required. All excavation and backfill in addition to that specified elsewhere in these specifications shall be considered subsidiary to this bid item.

55. TRENCH EXCAVATION, BACKFILL AND COMPACTION: Trench excavation, backfill and compaction of storm drain and utility trenches shall be in accordance with Town of Addison Standards and with details shown on the Construction Drawings.

a. Trench Excavation: If the stated maximum trench widths are exceeded, either through accident or otherwise, and if the Engineer determines that the design loadings of the pipe will be exceeded, the Contractor will be required to support the pipe with an improved trench bottom. The expense of such remedial measures shall be entirely the Contractor’s own. All trenching operations shall be confined to the width of permanent rights-of-way, permanent easements and any temporary construction easements. All excavation shall be in strict compliance with the Trench Safety Systems Special Condition of this document.

b. Trench Backfill: Trenches shall be backfilled above the top of the embedment material with approved backfill material per Town of Addison Standards for the appropriate pipe size, pipe material, depth and soil condition.

c. Compaction: All trenches under proposed or existing pavement shall be compacted to within a range of 95% to 100% Standard Proctor Density. Trenches which lie outside limits of pavement shall be compacted to a minimum of 90% Standard Proctor Density (ASTM D-698).

56. **TRENCH WALLS:** The Contractor shall use shoring or a drag box in those areas where it is required to protect existing improvements. This shall be subsidiary to the linear foot cost of the pipe and not a separate pay item.

57. **PROPERTY LINES AND MONUMENTS:** The Contractor shall protect all property corner markers, and when any such markers or monuments are in danger of being disturbed, they shall be properly referenced and if disturbed shall be reset at expense of the Contractor.

58. **CONSTRUCTION STAKING:** Construction staking will not be provided by the Town of Addison or Engineer. This item will be performed by the Contractor and shall be subsidiary to other bid items. The Contractor will also be responsible for maintaining stakes. If re-staking is required for any reason, it will be the Contractor's responsibility, including associated costs.

All construction staking shall be done under the supervision of a Registered Professional Land Surveyor registered in the State of Texas. The Contractor shall submit copies of cut sheets and field books for the construction of all paving, water, wastewater, and stormwater improvements to the Town of Addison for review prior to construction of the improvements. The information on the cut sheets and field books shall include but not be limited to the following:

a. Heading to include date, contract number, project name, surveying firm, contractor, and construction plan sheet number.

b. Location, description of street/line and street/line name, number, letter, etc. designation.

c. Benchmark Data: Location, description, and elevation.

d. Slope or percent of grade of each curb line or utility line.

e. Stations at 50 foot intervals and including all PC, PT, PI, PVC, PVI, PVT, PRC, grade changes, etc.

f. Offset description including distance to center line or back of curb and direction of offset; left, right, east, west, etc,

g. Cut to subgrade, pavement, top of curb, or flowline of the street or utility being staked.

h. Clarifying remarks such as top of curb, gutter, pavement, subgrade, manhole, cleanout, valve, tee, cross, fire hydrant, wastewater lateral, water service, etc.

i. Cut sheets shall be signed by a Texas Registered Professional Land Surveyor.

59. **VENDOR'S CERTIFICATION**: All materials used in construction shall have a vendor's certified test report. Test reports shall be delivered to the Engineer before permission will be granted for use of the material. All vendors' test reports shall be subject to review by the Engineer, and shall be subject to verification by testing of samples of materials as received for use on the project. In the event additional tests are required, they shall be performed by an approved independent testing laboratory and shall be paid for by the Contractor.

60. **REMOVALS, ADJUSTMENTS AND REPLACEMENTS:** Existing pavements, driveways, curbs, gutters, sidewalks, etc., to be removed to facilitate the construction of the improvements shall be broken up and disposed of. Care shall be exercised to leave a neat, uniform edge or joint at the excavation limits or sections removed where only portions are to be removed. The Engineer will designate the limits to be removed. Where pavements, driveways, curbs, gutters, sidewalks, etc., shall be replaced, then said replacements shall be to the standard of the previously removed portion or better. Re-sawing of damaged edges will be at the Contractor's expense.

Existing structures such as manholes, inlets, cleanouts, valve boxes, etc. which are not the property of a private firm or company, or an individual required to move their own property, shall be adjusted, altered or reset to the required elevation and alignment. New materials and workmanship necessary shall conform to the requirements of these Specifications covering the particular Work. Salvaged materials in good condition may be used in rebuilding such structures, provided the materials are thoroughly cleaned before their use. These items shall be subsidiary to other bid items unless quantified in the proposal as a separate bid item.

All private obstructions which are indicated on the Plans to be moved, will be removed and replaced, or moved to new permanent locations by the Contractor, without additional payment to the Contractor. Any such additional item which the Contractor moves or causes to be moved for his own convenience shall be at his own expense.

61. **WATER FOR CONSTRUCTION:** The Contractor shall acquire a meter and make the necessary arrangements with the Town of Addison for securing and transporting all water required for construction, including water required for mixing of concrete, sprinkling, testing or flushing. There will be no separate pay item for connection into the existing water system and quantity of water required for construction purposes. The Town of Addison will furnish water for initial cleaning and sterilization of water lines. All additional water used by the Contractor for compaction or any other purpose incidental to this project may be obtained from existing hydrants along adjacent roadways. Note that the Contractor will be responsible for supplying chlorine gas or chlorinated lime (HTH) for water line sterilization.

62. **EXISTING STOCKPILES OF MATERIAL ON SITE:** An existing stockpile of material has been placed on the adjacent property and is available for use on this project if necessary to complete the project to the alignment, grades and cross sections indicated on the plans. This area of stockpiled material is not reflected in the topographic contours shown. The content and quality of this material within this stockpile is also unknown at this time. While the dirt in this stockpile should be good for fill material, the pile may contain large rock and

other construction debris or trash that is unsuitable for fill material. This Contractor shall separate and stockpile the unsuitable material at locations on-site as directed by the Engineer. If directed by the Town of Addison and/or the Engineer to remove and dispose of these materials at an authorized disposal site, the Contractor will be reimbursed as an extra to his contract based on actual invoiced costs.

63. **EXCESS MATERIAL**: Suitable excess material (if any) may be disposed of on this site at locations directed by the Engineer. Topsoil shall be stripped and stockpiled from locations where excess material is to be placed. The Contractor shall scarify the spoil area to a depth of 6 inches and shall place the spoil material in 6-inch lifts, compacted to ninety-five percent (95%) of the maximum density as determined by ASTM D-698 Standard Proctor Test Method at or slightly above optimum moisture content. Rock shall be broken or crushed so that the maximum dimension is 12". No rock larger than 4" will be allowed in the upper 12" of fill. After completion of filling, replace topsoil and smooth grade. Tree stumps and limbs, concrete debris, discarded materials and all unsuitable excess spoil material, including rock measuring larger than 12" in the largest dimension, shall become the property of the contractor and shall be removed from the site and disposed of by the Contractor at his expense. The Contractor shall also comply with all applicable laws governing spillage of debris while transporting to a disposal site, and shall indemnify and save harmless the Town of Addison and the Engineer from all suits, actions, or claims of any character resulting from his arrangements for the disposal of spoil.

64. **DURING CONSTRUCTION:** During construction of the work, the Contractor shall, at all times, keep the site of the work and adjacent premises as free from material, debris and rubbish as is practicable and shall remove same from any portion of the site if, in the opinion of the Town of Addison or the Engineer, such material, debris or rubbish constitutes a nuisance or is objectionable. In case of failure on the part of the Contractor to maintain a clean site, the Town of Addison may, upon 24 hour written notice, clean the site, and the cost thereof shall be deducted from any monies due or to become due to the Contractor under his contract; or where sufficient contract funds are unavailable for this purpose, the Contractor or his surety shall reimburse the Town of Addison for all such costs.

65. **CONSTRUCTION TRAFFIC OVER PIPE LINES:** The design of the new pipes and the design of the existing pipe have been taken into account and provided for highway live loads. It is apparent, however, that certain construction vehicles could exceed this highway load condition under shallow bury conditions. It will be the responsibility of the Contractor to protect both the new line and the existing lines from these possibly excessive loads. The Contractor shall not at any time cross the existing or new pipe with a truck delivering new pipe to the site. Any damage to the existing or new pipe will be repaired or replaced by the Contractor to the satisfaction of the Town of Addison.

In locations where it is not permissible to cross the existing or proposed pipes without additional protection, the Contractor may elect to provide additional protection of the pipes so that more frequent crossings of the pipes are allowed. It still is, however, the responsibility of the Contractor to repair any damage to the existing or proposed lines if the damage results from any phase of his construction operation.

66. **CONTRACTOR'S CONTINUING OBLIGATION**: 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 the Town of Addison, nor the issuance of a certificate of Substantial Completion, nor any payment by Town of Addison to Contractor under the Contract Documents, nor any use or occupancy of the Work or any part thereof by Town of Addison, nor any act of acceptance by Town of Addison 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 the Town of Addison pursuant to final payment nor any correction of defective Work by Town of Addison 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.

67. **WAIVER OF CLAIMS**: The making and acceptance of final payment will constitute:

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

b. A waiver of all claims by Contractor against Town of Addison other than those previously made in writing and still unsettled.

68. **IRRIGATION AND SPRINKLER REPAIR:** The contractor shall maintain all existing irrigation systems within the limits of the project during the duration of the contract. The contractor shall employ a licensed irrigator who is responsible for the repair or replacement of any damage to irrigation lines, valves, controllers, sprinklers, wiring and appurtenances which are damaged during construction. This repair is subsidiary to the various other items bid. The contractor will be responsible for any vegetation that dies as a result of damage to the irrigation system and replace it with equal vegetation at his own cost.

69. **REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK:** All work which has been rejected or condemned shall be repaired; or if it cannot be repaired satisfactorily, it shall be removed and replaced at the Contractor's expense. Defective materials shall be immediately removed from the work site. Work done without line and grade having been provided; work done beyond the line or not in conformity with the grades shown on the Drawings or as provided, work done without proper inspection; or any extra or unclassified work done without written authority and prior agreement in writing as to prices, shall be at the Contractor's risk and will be considered unauthorized, and at the option of the Town of Addison may not be measured and paid for and may be ordered removed at the Contractor's expense. Upon failure of the Contractor to repair satisfactorily or to remove and replace, if so directed, rejected, unauthorized or condemned work or materials immediately after receiving notice from the Town of Addison, the Town will, after giving written notice to the Contractor, have the authority to cause defective work to be remedied or removed and

replaced, or to cause unauthorized work to be removed and to deduct the cost thereof from any monies due or to become due the Contractor.

70. **DISPOSITION AND DISPOSAL OF MATERIALS**: All materials to be removed from the site including refuse and other debris shall become the property of the Contractor and shall be disposed of outside the limits of the project. Contractor shall also comply with all applicable laws governing the spillage of debris while transporting to a disposal site.

71. **CLEAN-UP FOR FINAL ACCEPTANCE**: The Contractor shall make a final cleanup of all parts of the work before acceptance by the Town of Addison. This cleanup shall include removal of all objectionable rock and other construction materials, and in general preparing the site of the work in an orderly manner and appearance.

72. **RECYCLING OF ASPHALT AND CONCRETE:** The existing asphalt pavement on Westgate Lane shall be recycled and reinstalled as base material beneath the new concrete road section. The existing pavement can be removed by cold planning where the material is pulverized, sized and mixed with an additive (asphalt emulsion or a recycling agent) to rejuvenate the existing asphalt. Ripping and crushing the asphalt, then combining the recycled asphalt with hot new aggregate and asphalt or a recycling agent at a central plant is also acceptable. If the amount of recycled asphalt material in insufficient to complete the required base course material required on this project, the Contract shall provide new hot mix asphaltic concrete material to complete the project. Recycling of the existing Marsh Lane concrete street pavement, curb and gutter, and sidewalks is also required. The crushed concrete shall be processed to meet TxDOT Item 247 Type A Grade 2. The recycled concrete meeting this requirement will be allowed in lieu of the crushed limestone flex base. If the amount of recycled concrete material in insufficient to complete the required flex base material required on this project, the Contractor shall provide new crushed limestone flex base material to complete the project. Proof of recycling of all asphalt and concrete from this project will be required from the Contractor.

73. **PHASING OF CONSTRUCTION:** Vitruvian West 2 Building construction will be ongoing, by others, in conjunction with the Phase 5, Block 200 B Public Streetscape Improvements construction. The close proximity of these two projects will require coordination and proper phasing and staging in order to complete both projects in the desired time frame. It will be very important that the contractors of each of these projects work together to meet the requirements of the Owner and the Town. The construction phasing plans have been developed with input from the site building contractor to coordinate construction access, staging and phasing for both projects. The building contractor will complete the initial demolition work before the infrastructure work begins. Note that infrastructure Phases 1 and 2 must commence immediately upon issuance of a notice to proceed. Phases 3 and 4 will need to be coordinated with the on-site building contractor.

74. **SILICONE JOINT SEALANT:** Silicone joint sealant must be used in all instances where joint sealing applies to Portland cement concrete pavement and curbs. Payment for the use of silicone joint sealant throughout this project will in all cases be subsidiary to this contract at no extra payment.

75. **CLAIMS FOR DAMAGES OR INJURY:** Item 1.24.3 - SMALL CLAIMS FOR DAMAGE OR INJURY is amended to read as follows:

If any person files a claim against the Town of Addison or Contractor for personal injury or property damage resulting from, arising out of, or caused by, the operations of the Contractor, or any work within the limits of the project, the Contractor must either submit to the Town of Addison, a duly executed full release within thirty (30) days from the date of written claim, or immediately report the claim to his liability insurance carrier for their action in adjusting the claim. If the Contractor fails to comply with this provision within the stipulated time limit, it will be automatically deemed that the Contractor has appointed the Town as it's irrevocably Attorney-In-Fact authorizing the Town to report the claim directly with the liability insurance carrier. This provision is in and of itself a Power-of-Attorney from the Contractor to the Town which authorizes the Town to take said action on behalf of the Contractor without the necessity of the execution of any other document. If the Contractor fails to comply with the provisions of this item the Town, at its own discretion, may terminate this contract or take any other actions it deems appropriate. Any payment or portion thereof due the Contractor, whether it is a final payment, progress payment, payment out of retainage or refund payment may be withheld by the Town as is authorized by Item 1.52. Bankruptcy, insolvency or denial of liability by the insurance carrier shall not exonerate the Contractor from liability.

As a result of the additional work created to Town of Addison due to un-responded claims for damages by Contractor to third parties, Contractor shall incur penalties for failure to abide by this Special Provision.

In accordance with the obligations set forth in Special Provision Item 1.24.3, Contractor shall respond to the claimant in writing regarding the status of the claim, including whether Contractor disputes the claim, wishes to settle, or will notify its liability insurance carrier regarding the claim. Contractor will be assessed a penalty by the Town of $75.00 per claim, for its failure to respond to the claimant as described above within thirty days of its written notice of claim by the Town.

To ensure Contractor compliance, the Town of Addison shall be notified, by copied correspondence of responses or settlement by Contractor.

76. **MECHANICS AND MATERIALMEN'S LIEN:** The Contractor shall be required to execute a release of mechanics and materialmen's liens upon receipt of payment.

77. **CONTRACTOR'S AFFIDAVIT OF BILLS PAID:** The Contractor shall be required to execute the form provided in Section BP prior to the acceptance of the project.

78. **PROJECT RECORD DOCUMENTS:** The Contractor shall maintain record drawings and legibly annotate shop drawings to record changes made after review. A red felt-tip marking pen shall be used for all recording.

Maintenance of Documents. The Contractor shall maintain at the job site one record copy of the Contract Drawings, Specifications, Shop Drawings, Change Orders, other modification to

the Contract, field test records and other documents submitted by Contractor in compliance with specification requirements. These documents shall be maintained at the job site apart from documents used for construction. These documents are not to be used for construction purposes. The documents shall be maintained in clean, legible condition. The documents shall be made available at all times for inspection by the Town.

Recording. Each document shall be labeled Project Record Copy in 2-inch high printed letters. The record documents shall be kept current. No work shall be covered until required information has been recorded.

Contract Drawings. The appropriate drawing shall be legibly marked to record, where applicable:

a. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.

b. Field changes of dimension and detail made during construction process.

c. Changes made by Change Order or Supplemental Agreement.

d. Details not on original Contract Drawings.

e. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.

f. Changes made by Change Order or Supplemental Agreement.

g. Other matters not originally specified.

Shop Drawing. The Contractor shall maintain the Shop Drawings as record drawings and legibly annotate shop drawings to record changes made after review.

Submittal. At the completion of the project, the Contractor shall deliver record drawings to the Town. The transmittal letter shall be accompanied, in duplicate, with:

a. Date, project title and number.

b. Contractor's name and address.

c. Title and number of each record document.

d. Certification that each document as submitted is complete and accurate.

e. Signature of Contractor or his authorized representative.

79. **TOWN OF ADDISON APPROVAL:** This project is subject to final approval and acceptance by the Town of Addison. Final approval acceptance will not be given until the punch list items are completed to the Town's satisfaction and as-built drawings are given to the Town of Addison.

SECTION PS

PROJECT SIGN

PROJECT SIGN

1. Scope

Project Designation signs will be constructed and installed on the project site as directed by the Owner. It will be the responsibility of the Contractor to maintain the sign in a presentable condition at all times during construction. Maintenance will include painting and repairs as directed by the City Engineer or his appointee. The locations of the signs will be given to the Contractor by the Town of Addison at the Pre-Construction Meeting.

2. Material

Sign shall be constructed of ¾-inch thick smooth finish fir plywood (Grade A-C, exterior or better).

Sign will be securely mounted to 6" x 6" square posts. Nuts and bolts will not protrude from face of sign. Posts will be mounted to a support system that will provide adequate stabilization to ensure the sign will not fall over in heavy winds. Sand bags or other techniques may be necessary to protect sign.

3. Dimensions

Size of sign will be four feet tall and six feet wide. The height and arrangement of the lettering shall be in accordance with the attached detail.

4. Paint

Sign will be one-sided and will have a white background. Text will be black, except for the word "ADDISON!" which will be a blue color approved by the City Engineer. The paint will be an outdoor paint and will be maintained throughout the project in proper order. The quality of the paint, painting, and lettering on the signs shall be approved by the City Engineer or his appointee.

5. Payment

Project Signs will be a separate pay item. This will include all labor, equipment, tools, and incidentals necessary to complete and install the work.

The Town of

PLEASE PARDON THE TEMPORARY INCONVENIENCE DURING THIS PROJECT

VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS

for

VITRUVIAN PARK

PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200 B

CONTRACTOR: _____

ESTIMATED COMPLETION DATE: July 2020

AN ADDISON PROJECT

FOR MORE INFORMATION, PLEASE CALL 972-450-2871

SECTION TS

TECHNICAL SPECIFICATIONS

SECTION LSIS

LANDSCAPE & IRRIGATION SPECIFICATIONS

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LANDSCAPE IRRIGATION

PART 1 -- GENERAL

1.1 SCOPE:

A. Furnish all work and materials, appliances, tools, equipment, facilities, transportation, and services necessary for and incidental to performing all operations in connection with the installation of underground sprinkler irrigation system complete, as shown on drawings and/or specified herein. When the term "Contractor" is used in this section, it shall refer to the irrigation Subcontractor.

1.2 QUALITY ASSURANCE:

A. The following Codes, Regulations, Reference Standards, and Specifications apply to work included in this section: ASTM: D2241, D2464, D2466, D2564, Town of Addison Irrigation Specifications, and all State and Federal regulations.

1.3 WARRANTY AND MAINTENANCE:

A. The Contractor shall warranty material and workmanship for one year after final acceptance including repair and replacement of defective materials, workmanship, and repair of backfill settlement.
B. Maintenance during warranty shall include, but not necessarily be limited to, the following:
   1. Adjustment of sprinkler height and plumb to compensate for settlement and/or plant growth.
   2. Backfilling of all trenches.
   3. Adjustment of head coverage (arc of spray) as necessary.
   4. Unstopping heads plugged by foreign material.
   5. Adjustment of controller as necessary to insure proper sequence and watering time.
   6. All maintenance necessary to keep the system in good operating order. Repair of damage caused by vandals, other contractors or weather conditions shall be considered extra to these specifications.
C. Warranty and maintenance after final acceptance does not include alterations as necessitated by re-landscaping, re-grading, addition of trees or the addition, and/or changes in sidewalks, walls, driveways, etc.
D. Maintenance shall continue for one year after final acceptance.

1.4 SUBMITTALS:

A. The Contractor shall submit shop drawings or manufacturer's "cut sheet" for each type of sprinkler head, pipe, controller, valves, check valve assemblies, valve boxes, wire, conduit, fittings, and all other types of fixtures and equipment proposed to install on the job. The submittal shall include the manufacturer's name, model number, equipment capacity, and manufacturer's installation recommendation, if applicable, for each proposed product.
B. No partial submittal will be accepted, and submittals shall be neatly bound into a brochure and logically organized. After the submittal has been approved, substitutions will not be allowed except by written consent of the Landscape Architect.
C. Shop drawings shall include dimensions, elevations, construction, details, arrangements, and capacity of equipment, as well as manufacturer's installation recommendations.

1.5 “APPROVED EQUAL" SUBSTITUTIONS:

A. Where items on the plans are specified by a manufacturer's brand name and catalog number, followed by the phrase "or approved equal". This is not intended to unduly restrict competitive procurements or bidding but is done to assure a minimum standard of quality which is believed to be best for the item specified and to match existing equipment.

1.6 CODES/PERMITS:

B. All work under this section shall comply with the provisions of these Specifications, as illustrated on the accompanying drawings, or as directed by the Owner and shall satisfy all applicable local codes, ordinances, or regulations of the governing bodies and all authorities having jurisdiction over this Project.
B. Installation of equipment and materials shall be done in accordance with requirements of the National Electrical Code, City Plumbing Code, and standard plumbing procedures. The drawings and these Specifications are intended to comply with all the necessary rules and regulations; however, some discrepancies may occur, the Contractor shall immediately notify the Landscape Architect in writing of the discrepancies and apply for an interpretation. Should the discovery and notification occur after the execution of a contract, any additional work required for compliance with the regulations shall be paid for as covered by these Contract documents.
C. The Contractor shall give all necessary notices, obtain all permits, and pay all costs in connection with his work; file with all governmental departments having jurisdiction; obtain all required certificates of inspection for his work and deliver to the Owner.
D. The Contractor shall include in the work any labor, materials, services, apparatus, or drawings in order to comply with all applicable laws, ordinances, rules, and regulations whether or not shown on the drawings and/or specified.
E. The installation of the irrigation system shall be made by an individual or firm duly licensed under Article No. 8751 VTCS, titled "Licensed Irrigators Act", S.B. No. 259 as passed by the 66th Texas Legislature.

1.7 EXISTING UTILITIES:

A. Locations and elevations of various utilities included with the scope of this work have been obtained from the most reliable sources available and should serve as a general guide without guarantee to accuracy. The Contractor shall examine the Site and verify to his own satisfaction the locations and elevation of all utilities and availability of utilities and services required. The Contractor shall inform himself as to their relation to the work and the submission of bids shall be deemed as evidence thereof. The Contractor shall repair at his own expense, and to the satisfaction of the Owner, for damage to any utility shown or not shown on the plans.
B. Should utilities not shown on the plans be found during excavations, Contractor shall promptly notify the Owner for instructions as to further action.
C. Contractor shall make necessary adjustments in the layout as may be required to connect to existing stub-outs, should such stub- outs not be located exactly as shown and as may be required to work around existing work, at no increase in cost to the Owner. All such work will be recorded on record drawings and turned over to the Owner prior to final acceptance.

1.8 RECORD DRAWINGS:

A. Record dimensioned locations and depths for each of the following:
    1. Point of connection.
    2. Sprinkler pressure line routing (provide dimensions for each 100 lineal feet (maximum) along

each routing, and for each change in directions).
3. Gate valves.
4. Sprinkler control valves (buried only).
5. Control wire routing.
6. Other related items as may be directed by the Landscape Architect.

B. Locate all dimensions from two permanent points (buildings, monuments, sidewalks, curbs, or pavements).
C. Record all changes which are made from the Contract drawings, including changes in the pressure and non-pressure lines.
D. Record all required information on a set of reproducible drawing files.
E. Maintain information daily. Keep Contract drawings at the Worksite at all times and available for review by the Owner's representative.

1.9 CONTROLLER CHARTS:

A. Do not prepare charts until record drawings have been approved by the Owner's representative.
B. Provide one controller chart for each automatic controller installed.
   1. Chart may be a reproduction of the record drawing, if the scale permits fitting within the controller door. If photo reduction prints are required, keep reduction to maximum size possible to retain full legibility.
   2. Chart shall be blackline print of the actual system, showing the area covered by that controller.
C. Identify the area of coverage of each remote-control valve, using a distinctly different pastel color, drawn over the entire area of coverage.
D. Following approval of charts by the Owner's representative, they shall be hermetically sealed between two layers of 20 mil. thick plastic sheet.
E. Charts must be completed and approved prior to final acceptance of the irrigation system.

1.10 OPERATING AND MAINTENANCE MANUALS:

A. Provide individual bound manuals detailing operating and maintenance requirements for irrigation systems.
B. Manuals shall be delivered to the Owner's representative for review and approval no later than 10 days prior to completion of work. Revise manual as required.
C. Provide descriptions of all installed materials and systems in sufficient detail to permit maintenance personnel to understand, operate, and maintain the equipment.
D. Provide the following in each manual:
   1. Index sheet, stating Irrigation Contractor's name, address, telephone number, and name of person to contact.
   2. Duration of guarantee period.
   3. Equipment list providing the following for each item:
      a. Manufacturer's name.
      b. Make and model number.
      c. Name and address of local manufacturer's representative.
      d. Spare parts list in detail.
      e. Detailed operating and maintenance instructions of major equipment.
   4. Recommended programs for watering by season.

1.11 CHECKLIST:

A. Provide a signed and dated checklist and deliver to the Owner's representative prior to final acceptance of the work.
B. Use the following format:
    1. Plumbing permits: if none required, so note.
    2. Material approvals: approved by and date.
    3. Pressure line tests: by whom and date.
    4. Record Drawings: received by and date.
    5. Controller charts: received by and date.
    6. Materials furnished: received by and date.
    7. Operation and maintenance manuals: received by and date.
    8. System and equipment operation instructions: received by and date.
    9. Manufacturer's warranties if required: received by and date.
    10. Written guarantee: received by and date.
    11. Lowering of heads in lawn areas: if incomplete, so state.

1.12 ELECTRIC POWER:

Electric power shall be provided within five feet of each controller location by the G.C. The irrigation contractor shall provide final hardwire connection.

1.14 BORINGS, SLEEVES AND ELECTRICAL CONDUITS:

Sleeves and electrical conduits are the responsibility of the Irrigation Contractor to install prior to paving or related construction and should be installed as noted on the drawings and specifications. Contractors shall be responsible for locating all sleeves and conduits at no additional cost to the Authority. Borings under existing paving will be required where noted on the drawings and shall be provided at no additional cost to the Owner. Borings shall be a minimum of 18-inch depth and new pipes shall be incased in Class 200 sleeves.

1.15 SPARE PARTS:

The Contractor shall supply the Owner with five spray heads, one for each head designated on the plan. The Contractor shall supply one additional key and hose swivel for the quick coupler.

PART 2 -- PRODUCTS

2.1 GENERAL:

Unless otherwise noted on the plans, all materials shall be new and unused. The irrigation equipment catalog numbers used for reference in these Specifications are to establish minimum quality standards and may be substituted with an "approved equal" as outlined in Paragraph 1.5 of this section.

2.2 POLYVINYL CHLORIDE PIPE (PVC PIPE):

PVC pipe manufactured in accordance with ASTM Standards noted herein.

A. Marking and Identification: PVC pipe shall be continuously and permanently marked with following information: Manufacturer's name, size, type of pipe, and material, SDR number, Product Standard number, and the NSF (National Sanitation Foundation) Seal.

B. PVC pipe fittings: Shall be of the same material as the PVC pipe specified and compatible with PVC pipe furnished. Solvent weld type shall be Schedule 40.
C. PVC Pipe: Shall be Class 200 solvent weld, SDR-21, PS 22-70 for all sizes 3/4 inch to 3 inches. Mainline pipe size 4" and larger shall be PVC o-ring gasket type with ductile iron fittings by Harco Industries.
D. Flexible PVC Risers (Nipples): All flexible PVC nipples shall be made from virgin PVC material, and shall comply with ASTM D2287, shall be tested at 200 P.S.I. static pressure for 2 hours and have a quick burst rating of a minimum 400 P.S.I. Flexible PVC pipe nipples shall be factory assembled only.
E. Pipe sleeves: Shall be Class 200 solvent weld, SDR-21, PSD 22-70 for all sizes 3/4 inch to 2 inches; all 1/2-inch pipe shall be solvent weld SDR-13.5, Class 315; and located as shown on drawings.

2.3 SWING JOINTS:

Refer to Town of Addison Specifications

2.4 WIRE AND SPLICES:

Refer to Town of Addison Specifications

2.5 QUICK COUPLING VALVES:

Refer to Town of Addison Specifications

2.6 MANUAL VALVES:

A. Manual valves 2-1/2 inches and smaller shall be all brass, globe type with composition disc rated at 150 pounds W.O.G. Manual valve size 4" and larger shall be Kennedy cast iron type.

B. All valves shall have wheel handles unless cross handles are called for on the plan.

2.7 VALVE BOXES:

A. A box shall be provided for all valves.

B. Valve boxes shall be made of high-strength plastic suitable for turf irrigation purposes.

C. Boxes shall be suitable in size and configuration for the operability and adjustment of the valve.

D. Extension sections will be used as appropriate to the depth of piping.

E. All valve box covers shall bolt down or have locking mechanisms and shall be colored green or black as selected by the Contracting Officer.

2.8 POP-UP SPRAY, BUBBLERS AND ROTARY HEADS:

A. Sprinkler heads are specified on the drawings. Spray heads shall have a minimum 4 inch pop-up.

B. The sprinkler body and all related parts shall be plastic cycolac or polycarbonate. They shall have a spring retraction for positive return action of the pop-up nozzle.

C. The spring for retraction and the adjustable nozzle screw shall be made of corrosion resistant materials.

2.9 DRIP TUBE WITH PRESSURE COMPENSATING EMITTERS

Drip tube shall be of nominal sized one-half (½") inch low density, ultra-violet-resistant, linear polyethylene tubing with internal pressure-compensating, continuous self-cleaning, integral drippers at a specified interval. The tubing shall be brown in color throughout and shall conform to an outside diameter (O.D.) of 0.66" and an inside diameter (I.D.) of 0.56". The dripperline shall be capable of a discharge rate of 0.4, 0.6, or 0.9 gallons per hour (GPH) between operating pressures of 7 - 70 psi for each individual dripper.

The individual continuous self-cleaning, pressure compensating drippers shall be welded to the inside of the tubing wall. The drippers shall be constructed of three individual pieces:

A. A black-colored dripper containing a filtration system on the inlet side, compensation cell, and recessed chamber with a water outlet,
B. A hard plastic diaphragm retainer with color denoting discharge rate, with chamfered edges and a recessed groove in the center extending the full length of the diaphragm and,
C. A flexible elastomer diaphragm that allows pressure to build up within the chamber to purge sediment or other debris that may not have been captured by the disc filter.

2.9.1 BARBED INSERT FITTINGS

All barbed insert fittings shall be constructed of molded, ultra-violet-resistant, black colored plastic having a nominal inside dimension (I.D.) of 0.24"

Each fitting shall have a minimum of two ridges or barbs per outlet with a raised barb nearest the fitting outlet. All fittings shall be of one manufacturer and shall be available in one of the following end configurations:

- barbed insert fittings,
- male pipe threads (MPT) with barbed insert fittings, or
- female pipe threads (FPT) with barbed insert fittings.

2.10 ELECTRIC CONTROLLER:

A. Electric irrigation controller shall be capable of operating the number of stations as indicated on the drawings. The system is designed to operate multiple section valves at a time, per controller unless otherwise noted. The controller is specified on the drawings.

B. Power source shall be 110v A.C. Output for operation of companion solenoid actuated valves

shall be 24 volts 60 Cycle AC.

C. Operation of the controller shall be fully automatic, incorporating one 24 hour clock and 14 day calendar per controlled number of electric valves shown on the plan to start the sprinkling cycle any hour or hours of the day or night of any day or days over a repeating 14 day period.

D. The controller shall be capable of repeating watering cycles as required with a maximum delay between the ending of one cycle and the beginning of the next not to exceed 2 hours. Control shall provide optional semi-automatic operation whereby the automatic cycle may be started independent of the clock and manual operation whereby any station may be operated by hand independent of all timing mechanism. The choice of automatic day or hour programming shall be available to the operator on the face of the control panel without the use of tools.

E. The automatic controller shall be equipped with rainproof housing.

2.11 ELECTRIC REMOTE-CONTROL VALVES:

A. Electric remote-control valves shall have plastic bodies and covers and shall be globe-type diaphragm valves of normally closed design. The valves are specified on the drawings.
B. Operation shall be accomplished by means of integrally mounted heavy-duty 24-V DC solenoid complying with National Electrical Code, Class II Circuit. Solenoid coil shall be potted in epoxy resin within a plastic-coated stainless-steel housing. Solenoids shall be completely waterproof, suitable for direct underground burial.
C. A flow stem adjustment shall be included in each valve.

2.12 BACKFLOW PREVENTER (DOUBLE CHECK VALVE):

A. A double gate valve, double check assembly shall be located and sized as shown on the plans. The double check valve is specified on the drawings.
B. Construction shall be all brass for sizes 3/4 inch to 2 inches.
C. This assembly shall be installed in a box and shall conform to the City Plumbing Codes.

2.13 TEMPERATURE SENSORS & RAIN SENSORS:

A. Rain and freeze sensors shall be provided and installed as noted on the plans.

PART 3 -- EXECUTION

3.1 INSTALLATION, GENERAL:

A. Design Pressure: This irrigation system has been designed to operate with a minimum static inlet water pressure as indicated on the drawings. The Contractor shall take a pressure reading prior to beginning construction. If the pressure reading is 5% less than above, the Contractor shall notify the Owner’s Representative.
B. Contractor Responsibility: The Contractor shall not willfully install the irrigation system as shown on the drawings when it is obvious in the field that obstructions, grade differences or discrepancies in equipment usage, area dimensions or water pressure exist that might not have been considered in the engineering. Such obstructions or differences shall be brought to the attention of the Owner’s Representative in writing. In the event this notification is not performed, the Contractor shall assume full responsibility for any revision necessary.

C. Staking: Before installation is started, place a stake or flag where each sprinkler is to be located, in accordance with drawing. Staking shall be approved by the Landscape Architect before proceeding.
D. Piping Layout: Piping layout is diagrammatic. Route piping around existing trees and root zones in such a manner as to avoid damage to plantings. Do not dig within the ball of newly planted trees or shrubs.
E. In areas where trees are present, trenches will be adjusted on site to provide a minimum clearance of four times the trunk diameter of the tree (at its base) between any tree and any trench.
F. All material and equipment shall be delivered to the Worksite in unbroken reels, cartons or other packaging to demonstrate that such material is new and of a quality and grade in keeping with the intent of these Specifications.

3.2 EXCAVATION AND TRENCHING:

A. The Contractor shall perform all excavation to the depth indicated in these Specifications and Contract drawings. The banks of trenches shall be kept as nearly vertical as practicable. Trenches shall be wide enough to allow a minimum of 4" between parallel pipelines or electrical wiring. Where rock excavation is required, or where stones are encountered in the bottom of the trench that would create a concentrated pressure on the pipe, the rock or stones shall be removed to a depth of six (6) inches minimum below the trench depth indicated. The over depth rock excavation and all excess trench excavation shall be backfilled with loose, moist earth or sand, thoroughly tamped. Whenever wet or otherwise unstable soil that is incapable of properly supporting the pipe is encountered in the trench bottom, such shall be removed to a depth and length required, and the trench backfilled to trench bottom grade as hereinafter specified, with course sand, fine gravel or other suitable material.
B. Bottom of trench grade shall be continued past ground surface deviations to avoid air pockets and low collection points in the line. The minimum cover specifications shall govern regardless of variations in ground surface profile and the occasional deeper excavation required at banks and other field conditions. Excavation shall be such that a uniform trench grade variation will occur in all cases where variations are necessary.
C. Trench excavation shall comprise the satisfactory removal and disposition of all materials and shall include all shoring and sheeting required to protect the excavation and to safeguard employees.
D. During excavation, material suitable for backfilling shall be stockpiled in an orderly manner a sufficient distance back from edge of trenches to avoid overloading and prevent slides or cave-ins. Material unsuitable for backfilling shall be wasted as directed by the Owner’s Representative. When excavated material is of a rocky nature and the topsoil or any other layer of excavated material is suitable for pipe bedding and backfill in the vicinity of the pipe, such material shall be separately stockpiled for use in such bedding and pipe backfill operations, unless satisfactory imported material is used.
E. All excavations and backfill shall be unclassified and covered in the basic bid. No additional compensation will be allowed for rock encountered.
F. Restore all surfaces, existing underground installations, etc., damaged or cut as a result of the excavations to their original conditions in a manner acceptable to the Owner’s Representative.

3.3 PIPE INSTALLATION:

A. Sprinkler Mains: Sprinkler mains are that portion of piping from water source to electric valves. This portion of piping is subject to surges since it is a closed portion of the sprinkler

system. Sprinkler mains shall be installed in a trench with a minimum of 18 inches of cover.

B. Lateral Piping: Lateral piping is that portion of piping from electrical valve to sprinkler heads. This portion of piping is not subject to surges since it is an "open end" portion of the sprinkler system. Lateral piping shall be installed in a trench with a minimum of 12 inches of cover.

3.4 PVC PIPE AND FITTING ASSEMBLY:

A. Solvent: Use only solvent recommended by manufacturer to make solvent-welded joints following standards noted herein. Thoroughly clean pipe and fittings of dirt, dust, and moisture with an approved PVC primer before applying solvent.

B. PVC to Metal Connection: Work metal connections first. Use a non-hardening pipe dope such as Permatex No. 2 or "Teflon" tape on threaded PVC to metal joints. Use only light wrench pressure.

C. Threaded PVC Connections: Where required, use threaded PVC adapters into which pipe may be welded

D. Remove lumber, rubbish, and rocks from trenches. Provide firm, uniform bearing for entire length of each pipeline to prevent uneven settlement. Wedging or blocking of pipe will not be permitted. Remove foreign matter or dirt from inside of pipe before welding, and keep piping clean during and after laying pipe.

E. PVC pipe shall not be installed where there is water in the trench, nor shall PVC pipe be laid when temperature is 40 deg. F or below or when rain is imminent. PVC pipe will expand and contract as the temperature changes. Therefore, pipe shall be snaked from side to side of trench bottom to allow for expansion and contraction.

3.5 HYDROSTATIC TESTS:

A. Pressure Test: After the pipe is laid, the joints completed, and the trench partially backfilled, leaving the joints exposed for examination, the newly laid piping or any valved section of main pressure line piping shall, unless otherwise specified, be subjected for four hours to a hydrostatic pressure test of normal city water pressure. Each valve shall be opened and closed during the test. Enclosed pipe, joints, fittings, and valves shall be carefully examined during the partially open trench test. Joints showing visible leakage shall be replaced or remade, as necessary. Cracked or defective pipe, joints, fittings, or valves discovered in consequence of this pressure test shall be repeated until the test results are satisfactory. All replacement and repair shall be at contractor's cost.

3.6 CONTROL WIRE INSTALLATION:

A. All control wire less than 500 feet in length shall be continuous without splices or joints from the controller to the valves. Connections to the electric valves shall be made within 18 inches of the valve using connectors specified in Paragraph 2.4 of this section, unless otherwise approved by the Owner’s Representative in writing.

B. All control wires shall be installed at least 18 inches deep. Contractor shall obtain the Owner’s Representative's approval for wire routing when installed in a separate ditch. Control wires may be installed in a common ditch with piping; however, wires must be installed a minimum of 4 inches below or to one side of piping.

C. All wire passing under existing or future paving, sidewalk, construction, etc., shall be encased in PVC Schedule 40 conduit extending at least 2 feet beyond edges of paving, sidewalks, or construction.

3.7 POP-UP SPRAY, BUBBLER HEADS:

A. Provide heads and nozzles as specified and install in locations as shown on the Contract Drawings.
B. Pop-up spray heads shall be installed on “flex” pvc as detailed on the Contract drawings. Rotary heads shall be installed on a double swing joint connected to the lateral pipe as detailed on the drawings.
C. Heads shall be installed with underside of flange flush with the finished grade.
D. Contractor will be required to adjust heads as necessary after establishment of grass or other plant material.

3.8 DRIP EQUIPMENT:

A. Drip tube can be installed in one of the four following methods:
    a. Over-excavation: Over-excavate the entire area to a depth of 2” to 4” below finish grade. Plant all specimen trees and shrubs 15-gallon size and larger, then place drip tube at the row spacing interval indicated on the plans.
    b. Pipe Pulling: Where ground disruption is to be minimized, pneumatic tire, pipe-pulling machinery shall be used. Potholes shall be used at the ends of each run for making connection to supply and exhaust headers of rigid PVC pipe or polyethylene pipe.
    c. Trenching: Hand or mechanically trench to the pipe depth indicated on the plans or in these specifications and backfill flush with finish grade. Avoid mechanically trenching within the dripline of existing trees. Hand-trench around existing tree roots when roots of 2” and larger are encountered. Remove all rock 1½” and larger when excavating and remove from site. Do not backfill trenches with rock that will come in direct contact with tubing or rigid PVC piping.
    d. Placement of Rigid PVC Piping: Install pipe in a serpentine (snaked) manner to allow for expansion and contraction in trench before backfilling. Install pipes at temperatures over 40° F. Pipe markings shall face upward out of the trench whenever possible.
B. Drip tube: Drip tube can be installed with the water outlets facing up, down, or sideways. In irregular areas, some water outlets could end up too close to fixed improvements and may have to be capped off with a dripper plug ring.
C. Cover: Install underground piping horizontally and as evenly as possible to a maximum depth of 4”, unless otherwise specified. (Typical pipe depth is 2” shrub beds, 4” in turf unless periodic aeration is anticipated, and then pipe depth should be lowered to 6”.)
D. Barbed Insert Fittings: Connect drip tube to barbed insert fittings by pushing the tubing on and over both barbs of the fitting until the tubing has seated against another piece of tubing or has butted against another portion of the barbed fitting. For water pressures in excess of the 30 psi, or the maximum stated system pressure for the drip tube, whichever is less, use stainless steel clamps as noted in paragraph 3.2.4, “Pipe Clamping” on all barbed fittings.
E. Clamping: When design-operating pressure exceeds 30 psi, or maximum stated system pressure for the drip tube, whichever is less, stainless steel pipe clamps shall be used. Slip clamps over tubing before slipping tubing over barbed insert fitting. Place clamp between the f first and second ridge of the barbed fittings and crimp the “ear” of the clamp tightly. Crimp the “ear” twice to ensure proper seating.

3.8 QUICK COUPLING VALVES:

A. Quick coupling valves shall be installed with the underside of flange flush with the finished grade.
B. Quick coupling valves shall be installed on a swing joint assembly as detailed on the drawings.
C. Under the warranty, the Contractor shall return after grass is established and adjust valves and valve boxes to proper grade.

3.9 MANUAL VALVES:

A. Manual valves shall be sized and located where shown on the Contract drawings.
B. Valve boxes shall be adjusted to be flush with finished grade. The Contractor will be required to adjust after establishment of grass.
C. Valve boxes shall be properly supported and of sufficient construction that tractors and mowers crossing over the boxes will not push boxes down and crush the pipe, valve, or box.

3.10 VALVE AND VALVE BOX PLACEMENT:

A. All manual, electric, and quick coupling valves shall be in boxes as specified in Paragraph 2.7 of this section and shall be set with a minimum of six (6) inches of space between their top surface and the bottom of the valve box. The base of the box shall be filled with pea gravel as
B. Valves shall be fully opened and fully closed to ensure that all parts are in operating condition.
C. Valve boxes shall be set plumb, vertical, and concentric with the valve stem.
D. Any valve box which has moved from this required position so as to prevent the use of the operating wheel of the valve shall be reset by the Contractor at his own expense.

3.11 ELECTRIC CONTROLLER:

A. Electric controller shall be located as shown on the plans and shall be capable of operating the number of stations indicated.
B. The system is designed to operate two sections at a time, per controller, unless otherwise noted on the plans in strict accordance with the manufacturer's published installation instructions.

3.12 ELECTRIC REMOTE-CONTROL VALVES:

A. Remote control valves shall be located and sized as shown on the plans. All electrical connections shall be made when the weather is dry with connection kits as specified in Paragraph 2.4 of this section in strict accordance with manufacturer's recommended procedures. All remote-control valves shall be installed in a horizontal position, in accordance to the manufacturer's published installation instructions.
B. It shall be the responsibility of the Contractor to furnish and install the proper size wire on each of the low voltage circuits from the master control center to the various electric remote-control valves.
C. Consideration shall be given to each circuit for allowance of voltage drop and economy consistent with accepted practices of electrical installation. Under no circumstances shall the voltage of any branch circuit be reduced more than proper due to length of run exceeding the maximum allowable for the wire size used.

3.13 BACKFILL AND COMPACTION:

A. After system is operating and required tests and inspections have been made, the trenches shall be carefully backfilled with the excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand, gravel, soft shale, or other approved materials, free from large clods of earth or stone. Rock, broken concrete, or pavement, and large boulders shall not be used as backfill material. The backfill shall be thoroughly compacted and evened with the adjacent soil level.
B. Compact trenches in areas to be planted by thoroughly flooding the backfill. Compact all other

areas by flooding or hand tamping. The jetting process may be used in areas when flooding.

C. Backfill for all trenches, regardless of the type of pipe covered, shall be compacted to a minimum of 90% density.
D. Any trenches improperly backfilled, or where settlement occurs, shall be reopened to the depth required for compaction, then refilled and compacted with the surface restored to the required grade and left in a completed surface condition as described above.
E. Specifically tamp backfill under heads and around the flange of heads for one foot (1') by a suitable means after trench backfill has dried from flooding to prevent heads loosening in the ground.

3.14 FINAL ADJUSTMENT:

A. After installation has been completed, make final adjustment of sprinkler system prior to Owner’s Representative's final inspection.
B. Completely flush system to remove debris from lines by removing nozzle from heads on ends of lines and turning on system.
C. Check sprinklers for proper operation and proper alignment for direction of throw.
D. Check each section for operating pressure and balance to other sections by use of flow adjustment on top of each valve.
E. Check nozzles for proper coverage. Prevailing wind conditions may indicate that arc or angle of spray should be other than as shown on drawings. In this case, change nozzles to provide correct coverage and furnish record data to Owner’s Representative with each change.
F. After system is thoroughly flushed and ready for operation, each section of sprinklers shall be adjusted to control pressure at heads. Use the following method, one section at a time:
    a. Remove last head on section and install a temporary riser above grade. Install tee with pressure gauge attached on top of riser and re-install head with nipple onto tee.
    b. Correct operating pressure at last head of each section as follows: Spray Heads - 30-35 psi.
    c. After replacing head, at grade, tamp thoroughly around head.
    d. Drip zone valve pressure regulating devices shall be set at not to exceed 40 psi.

3.15 CLEAN-UP:

A. The Worksite shall be thoroughly cleaned of all waste materials and all unused or salvaged materials, equipment, tools, etc.
B. After completion of the work, areas disturbed shall be leveled and the Worksite shall be raked clean and left in an orderly condition.

END OF SECTION

SECTION 32 91 19.16
TOPSOIL

PART 1- GENERAL

1.1 SUMMARY:

A. Section Includes
1. This section specifies all soil material designated as “Topsoil” on the drawings or in the specifications.

B. Related Documents
1. Drawings and General provisions of the Contract, including General and Supplementary Conditions and Divisions 1 Specification Sections, apply to this Section.
2. All other Divisions of the Contract Documents. Refer to each Division’s Specifications and drawings for all requirements, including but not limited to the following:
   a. Turf and Grasses – Section 32 92 00.
   b. Plants – 32 93 00.

1.2 SUBMITTALS:

A. Samples
1. Provide 1-quart samples for each soil unit making up the topsoil source.
2. Each sample to be a composite of five to seven (5-7) sub-samples taken the full depth of proposed source. On stockpiles, discard upper 6 inches of soil before sampling.
3. Place samples in plastic bags, seal, and place in second paper bag, and label.

B. Test Reports
1. Prior to starting work, submit 2 certified copies of soil test reports to the Architect for approval.
2. Costs of all tests to be borne by the Contractor.

1.3 QUALITY ASSURANCE:

B. All soil samples and testing shall comply with procedures specified in:
1. U.S.D.A. Ag. Handbook 60: Diagnosis and Improvement of Saline and Alkali Soils.

C. Testing Laboratories
1. Certified facilities normally engaged in agronomic soil testing shall be utilized.
2. Approval by the Owner’s representative.

D. Required Topsoil Tests
1. Chemical analysis indicating:
   a. Fertility: pH, nitrate nitrogen, ammonia nitrogen, phosphate phosphorous, potassium, calcium, magnesium, zinc, iron, and manganese.
   b. Suitability: total salinity, boron, sodium, potassium, calcium, magnesium, chloride, and sulfate.
2. Physical properties include:
   a. Organic content
   b. Particle size distribution

PART 2 - PRODUCTS

2.1 EXISTING TOPSOIL:

A. Topsoil for the work shall conform to the requirements included in this Section
1. A natural, friable, loamy soil, typical of local topsoil, which produces heavy vegetative growth, free from subsoil, weeds, sods, stiff clay, stones larger than ½ inch, toxic substances, debris, or other substances, which may by harmful to plant growth.

2. The pH range shall be 6.5 to 7.5.

B. Grading Analysis: Two-inch sieve, 100 percent passing. Number 4 sieves, 90 percent minimum passing. Number 10 sieves, 80 percent minimum passing.
B. All topsoil shall be free from all herbicides and insecticides which may adversely affect growth of lawn or planting, or which may contain toxic materials.
C. The Contractor shall not use materials, which do not conform to these criteria. At the discretion of the Landscape Architect, such material can either by amended to meet these requirements or will be removed from the site and replaced with suitable material as specified.

2.2 IMPORTED TOPSOIL (FOR SHRUBS & GROUNDCOVERS):

A. Enriched Topsoil
B. pH: 7.5-8.7
C. Grading Analysis:
98.5% will pass through a 1/2” screen / 99% will pass through a 3/4” screen
D. Composition Ratio:
25% Professional Compost / 75% Soil & Sand
E. Material shall be free of treated lumber, pallets, pine bark, raw manure, mushroom compost waste or herbicides.
F. Supplier: Soil Building Systems; www.soilbuildingsystems.com; (972) 831.8181.
G. Or approved equal.

2.3 IMPORTED TOPSOIL (FOR TREE PLANTING):

H. Deep Tree Mix
I. pH: 6.8-7.6
J. Grading Analysis:
a. 98.5% will pass through a 1/2” screen
b. 99% will pass through a 3/4” screen
K. Composition:
a. pH balanced compost
b. Expanded Shale
c. Washed Coarse Sand
L. Material shall be free of treated lumber, pallets, pine bark, raw manure, mushroom compost waste or herbicides.
M. Supplier: Soil Building Systems; www.soilbuildingsystems.com; (972) 831.8181.
N. Or approved equal.

PART 3 – EXECUTION

3.1 Not Used

END OF SECTION

SECTION 32 92 10
TURF AND GRASSES

PART 1 – GENERAL

1.1 SUMMARY:

A. Section includes:
   1. Furnish all labor, material, equipment related services and supervision necessary for or incidental to the installation of the lawns and grasses as shown or indicated on the Drawings and/or as specified.
   2. Work Included:
      a. Soil Preparation and Fine Grading.
      b. Fertilization.
      c. Grass Sodding.

B. Related Documents
   1. Drawings and General provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
   2. All other Divisions of the Contract documents. Refer to each Division 's specifications and drawings for all requirements, including but not limited to the following:
      a. Planting - Section 32 93 10.
      b. Planting Irrigation - Section 32 94 00.
      c. Planting Maintenance - Section 32 95 10.

1.2 SUBMITTALS:

A. Delivery Receipts and Invoices: Submit original delivery receipts and invoices for materials used.
B. Product Data: Submit sample label or specification of fertilizer.
C. Certificate: Submit State Certificate stating variety and purity of grass sod.
D. Soil Fertility Test Reports:
   1. Submit analysis, test results and corrective recommendations to Architect.
   2. Two tests required of existing soil taken at different locations on the project site as directed by the Architect.

1.3 PROTECTION:

A. Protect paving surfaces, curbs, utilities, plant materials, and other existing improvements from damage by heavy equipment.
B. Locate and stake irrigation heads, valve risers and equipment prior to beginning soil preparation work.
C. During work and maintenance period, maintain topsoil in place at established grades. Replace topsoil and grass losses due to erosion.
D. Protect in place work from damage by heavy equipment. Prepare, grade, level and replant damaged areas.

1.4 SUBSTANTIAL COMPLETION & PROJECT CLOSEOUT

A. A Certificate of Substantial Completion will be issued when the Work performed under the Contract has been reviewed and found, to the Architect's best knowledge, information and belief, to be substantially complete. Substantial Completion is the stage in

the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion thereof is also the date of commencement of applicable guarantees as specified.

B. A list of items to be completed or corrected will be attached to the Certificate or Substantial Completion. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract documents.
C. The Contractor will complete or correct the Work on the list of items within a specific number of days as shown on the Certificate of Substantial Completion.
D. Upon completion and re-inspection of all corrected items listed, the Architect will recommend to the Owner that the work of this Section is ready for final acceptance.

1.5 QUALITY ASSURANCE:

A. General: Comply with applicable Federal, State, County and local regulations governing landscape materials and work.
B. Personnel: Employ only experienced personnel who are familiar with the required work. Provide supervision by a qualified foreman.

1.6 GUARANTEE:

A. Guarantee lawns and grasses for one year after date of Final Acceptance which is described in paragraph 1.7.D. At the end of this guarantee period, all lawn and grass areas will have achieved coverage of the specified grass at a density of 100% coverage, free of weeds, undesirable grass species, disease and insects. Replace dead materials and materials not in vigorous, thriving condition as soon as weather permits and on notification by the Architect.
B. Replace lawns and grasses with same kind as originally planted, at no cost to the Owner. Protect irrigation system and other piping, conduit or other work during replacement. Repair damage immediately.

1.7 JOB CONDITIONS

A. Do not install sod on saturated or frozen soil.
B. Sod installation shall be subject to suitability of the weather and other conditions affecting sod growth.

1.8 PROGRESS MEETINGS

A. Contractor shall attend all progress meetings as requested by the Architect/Owner during installation.

1.9 QUANTITY VERIFICATION:

A. The bidding contractor is responsible for the inclusion of all materials, labor and equipment as outlined in the plans and specification. The plant list is provided to the bidding contractor as a convenience and the quantities are approximate. VERIFICATION OF ALL QUANTITIES IS THE SOLE RESPONSIBILITY OF THE BIDDING CONTRACTOR. Any discrepancies must be reported to the Architect prior to submittal of bid.

PART 2 – PRODUCTS

2.1 GRASS:

A. Bermuda Sod:
   1. Sod shall be nursery grown on cultivated agricultural soils. Sod shall have been mowed regularly and carefully and otherwise maintained from planting to harvest.
   2. Sod shall be of species indicated.
   3. Thickness of Cut: Sod shall be cut to the supplier's standard width and length. Maximum allowable deviation from standard widths and lengths shall be plus or minus .25 inches on width and plus or minus 5% on length.
   4. Broken strips and torn or uneven ends will not be accepted.
   5. Strength of Sod Strips: Sod strips shall be strong enough to support their own weight and retain their size and shape if suspended vertically when grasped in the upper 10% of the section.
   6. Moisture Content: Sod shall not be harvested or transplanted when moisture content (excessively wet or dry) may adversely affect its survival. Sod shall be stored in a compact group to prevent drying out or freezing.
   7. Time Limitations: Sod shall be harvested, delivered and transplanted within a 24-hour period unless a suitable preservation method is approved by the Architect prior to delivery. Sod not transplanted within this period shall be inspected for approval by the Landscape Architect prior to its installation.
   8. Thatch: Sod shall be free of thatch.
   9. Diseases, Nematodes and Insects: Sod shall be free of diseases, nematodes and soil-borne insects.
   10. Weeds: Sod shall be free of objectionable grassy and broadleaf weeds.

2.2 FERTILIZER:

A. Fertilizer shall be a product uniform in composition, free flowing, and suitable for application with approved equipment.
   1. Deliver fertilizer to site in fully labeled original containers.
      a. Fertilizer which has been exposed to high humidity and moisture has become caked or otherwise damaged, making it unsuitable for use, will not be acceptable.
   2. Application Rates:
      a. Sod Initial Application:
         1. Garden-Ville 7-2-2, GreenSense 6-2-4, Marshall Grain 7-2-2 or approved equal.
      b. Sod Second Application:
         1. Garden-Ville 7-2-2, GreenSense 6-2-4, Marshall Grain 7-2-2 or approved equal.

B. Vinegar – 20% Solution: GreenSense, Marshall Grain, Garden-Ville or equal.

2.3 EROSION BLANKET:

A. Curlex Blanket manufactured by American Excelsior Company (817 640-2161) or equal.

PART 3 – EXECUTION

3.1 GENERAL:

A. Execute grass planting operations across slope and parallel to finished grade contours.

3.2 PRE-PLANT WEED CONTROL:

A. Irrigated and non-irrigated Grass Areas:

1. If grassy or broadleaf weeds exist on site at the beginning of work, spray with a non-selective systemic contact herbicide, as recommended and applied by an approved licensed landscape pest control advisor and applicator. Leave sprayed plants intact for at least 15 days to allow systemic kill.
2. Clear and remove these existing weeds by mowing or grubbing off all plant parts at least .25 inches below the surface of the soil over the entire area to be planted.

B. Irrigated Grass Areas Only:
1. After irrigation system is operational, apply water for 5 to 10 days as needed to achieve weed germination. Apply contact herbicides and wait as needed before planting. Repeat as needed.
2. Maintain lawn and grass areas weed free until final acceptance by Owner utilizing mechanical and chemical treatment.

3.3 SOIL PREPARATION:

A. Tillage:
1. Tillage shall be accomplished to loosen all areas of compacted soil. When placement of topsoil is specified, till compacted areas prior to placement.
2. Till with heavy duty disc, rototiller, or chisel-type breaking plow, chisels set not more than 10 inches apart. Till to a depth of 1 to 3 inches.
3. Initial tillage shall be done in crossing pattern for double coverage then followed by a disc harrow.

B. Cleaning:
1. Remove debris, building materials, rubbish, weeds, and stones larger than 3/4 inch in diameter.
2. Use Rock Pick or other machinery to gather surface stones larger than 3/4 inch in diameter.

C. Fine Grading:
1. After tillage and placement of topsoil, level, fine grade, and drag with a weighted spike harrow or float drag.
2. Eliminate ruts, depressions, humps and objectionable soil clods.

3.4 FERTILIZING:

A. The fertilizer types and rates specified herein are applicable unless countermanded by the soil fertility test corrective recommendations, in which case they will be applicable.

B. Bermuda Grass Sodding:
1. Initial Application: Apply no more than 5 days prior to commencement of sodding operations at a rate of 20 pounds per 1,000 square feet. Incorporate into soil with a chain harrow.
2. Second and Third Applications: Apply every 25 days after sodding at a rate of 10 pounds per 1,000 square feet.
3. Irrigate the area with a minimum of .25 inches of water to properly incorporate the fertilizer into the turf.

3.5 PLANTING SOD

A. Weather Conditions:
1. Schedule work for periods of favorable weather.
2. Sod placement on days which, in the judgment of the Landscape Architect, are too hot, cold, sunny, dry or windy for optimal installation may be prohibited.

B. Placement Pattern:
1. The first row shall be laid in a straight line with subsequent rows parallel to the first row and tightly abutting each other.

2. Lateral joints shall be staggered. Care shall be exercised to ensure that the sod is neither stretched nor overlapped. Joints must be butted tightly to prevent voids that could permit air to dry out root.
3. Immediately after placing, sod shall be pressed firmly into contact with bed by tamping or rolling to eliminate air pockets. Following tamping, screened topsoil shall be used to fill all cracks and excess soil shall be worked into the sod with rakes or other suitable equipment. Sod shall not be smothered with excess fill soil.
4. On slopes steeper than 3 to 1, sod shall be secured by galvanized pins, wood pegs or other methods approved by the Landscape Architect.
5. Immediately after sodding operations have been completed, the entire surface shall be compacted with a roller or other approved equipment. The completed area after sodding shall be uniformly even, firm and true to finished grade lines.

C. Watering:
1. Initial Installation: Water must be applied within 2 hours of exposure of the sod to sun or wind. Water newly laid sod until saturation of the entire area is apparent. As a result of initial irrigation, standing water may be present and moderate to heavy run off may occur. Continue to irrigate on a daily basis in shorter durations so the entire area stays thoroughly wet but without standing water. The length of irrigation time and frequency of applications will vary at different locations due to weather conditions and individual site characteristics.
2. After 7 to 10 days: Check for new root growth by lifting corners of sod blocks. If consistent root growth over the entire site is observed, water applications can be reduced to once every other day.
3. After 12 to 14 days: Recheck for additional rooting. If sod blocks are difficult to pull up or additional new roots are present allow the area to dry to the extent that mowing can be performed.

3.6 GRADING:

A. Maintain existing established grades, protect true and even during operations.

3.7 EROSION CONTROL:

A. During work and maintenance period, maintain topsoil in place at established grades. Replace topsoil and turfgrass losses due to erosion.

3.8 CLEAN-UP:

A. Remove excess material and debris from site.

3.9 MAINTENANCE:

A. Until Final Acceptance, maintain lawn and grass areas by watering, mowing, weeding, spraying, cleaning and replacing as necessary to keep the turf and grass in a vigorous, healthy condition.
1. Watering: As necessary. Provide temporary above ground sprinklers over un-irrigated areas including temporary water meter if required. Water cost will be paid separately by the Owner or General Contractor unless noted differently on the drawings or bid form.
2. Mowing: Bermuda Grass Sod: Mow newly planted grass areas weekly after initial growth reaches 1.5 to 2 inches.
3. Weeding: Remove weeds and foreign grass over lawn and grass areas at least once a week. Herbicides may be used only when approved by the Owner and Architect.
4. Follow landscape maintenance procedures outlined in specification section 32 95 10 – Landscape Maintenance.

END OF SECTION

SECTION 32 93 10
PLANTING

PART 1 – GENERAL

1.1 SUMMARY:

A. Section includes:
   1. Furnish all labor, material, equipment, related services and supervision necessary for or incidental to the installation of the trees, plants, and groundcovers as shown or indicated on the Drawings and/or as specified.
   2. Work Included:
      a. Trees.
      b. Shrubs.
      c. Groundcovers.
      d. Mulching.
      e. Bed Preparation.

B. Related documents
   1. Drawings and General provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
   2. All other Divisions of the Contract Documents. Refer to each Division's specifications and drawings for all requirements, including but not limited to the following:
      b. Turf and Grasses - Section 32 92 10.
      c. Planting Irrigation - Section 32 94 00.
      d. Planting Maintenance - Section 32 95 10.

1.2 REFERENCE STANDARDS:

A. American Standard for Nursery Stock, Edition approved May 2, 1986 by American National Standards Institute, Inc. – plant material.

1.3 SUBMITTALS:

A. Delivery Receipts and Invoices: Submit original delivery receipts and invoices for materials used.

B. Product Data: Submit manufacturer's product data sheets for proprietary products in accordance with Section 01 33 00.

C. Photo Examples:
   1. Submit photos of all trees and shrubs for the Architect's approval. When approved, tag and maintain as representative samples for finally installed plant materials. Samples may be used to complete installation provided they remain tagged until final acceptance of entire installation.
   2. Submit photos of trees and source nursery information to the Architect for review prior to tree tagging. Architect or Owner may choose to tag trees at source nursery prior to project delivery.
   3. Submit for approval sufficient representative quantities of topsoils, composted organic material, steel edging, mulch, peat moss and crushed rock. Samples shall be approved by the Architect before use on project.

D. Soil Fertility Test Reports:
   1. Refer to 32.91.19.16 Topsoil for testing requirements

1.4 DELIVERY, STORAGE AND HANDLING:

A. Deliver packaged materials in containers showing weight, analysis and name of manufacturer.
B. Protect materials from deterioration during delivery and while stored at the site.

1.5 PROJECT CONDITIONS:

A. Site Inspection:
    1. It is the bidding contractor's responsibility to review all site conditions, as they relate to the proposed project, prior to submission of a bid. Any issues or concerns will be submitted to the Architect prior to bidding. Submission of a bid will indicate that the bidding contractor has made a site inspection.
B. Utilities:
    1. Determine locations of underground utilities and perform work in a manner which will avoid possible damage. Do not permit heavy equipment such as trucks to damage utilities. Hand excavate, as required to minimize possibility of damage to underground utilities. Maintain grade stakes until removal is directed.
    2. Coordinate with irrigation work to prevent damage to temporary risers of underground sprinkling system and obstruction of work located in landscape areas.
C. Protections:
    1. Do not move equipment over existing or newly placed structures without the Architect's approval.
    2. Provide board roading as required to protect paving and soft soil.
    3. Protect other improvements from damage, with protection boards, ramps and protective sheeting as required.
    4. Locate and stake irrigation heads, valve risers and equipment prior to beginning soil preparation work.
    5. During work and maintenance period, maintain topsoil and prepared soil in place at established grades. Replace topsoil, prepared soil and mulch due to erosion.
D. Delivery and Storage:
    1. Store materials in area covered with protective sheeting.
    2. If balled plants cannot be planted within 24 hours after delivery to site, protect root balls by heeling in with sawdust or other approved material.

1.6 SUBSTANTIAL COMPLETION & PROJECT CLOSEOUT:

A. A Certificate of Substantial Completion will be issued when the Work performed under the Contract has been reviewed and found, to the Architect's best knowledge, information and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion thereof is also the date of commencement of applicable guarantees as specified.
B. A list of items to be completed or corrected will be attached to the Certificate of Substantial Completion. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.
C. The Contractor will complete or correct the Work on the list of items within a specific number of days as shown on the Certificate of Substantial Completion.
D. Upon completion and re-inspection of all corrected items listed, the Architect will recommend to the Owner that the work of this Section is ready for final acceptance.

1.7 QUALITY ASSURANCE:

A. General: Comply with applicable Federal, state, county and local regulations governing landscape materials and work.

B. Installer Qualifications: The bidding company will specialize in landscape installation with 5 years documented experience. The contractor will staff the project with a competent superintendent and the necessary assistants as approved by the Architect. The superintendent will not be changed except with the consent of the Architect and Owner. The superintendent must have a minimum 5 years' experience with similar projects.
C. Personnel: Employ only experience personnel who are familiar with the required work. Provide adequate supervision by a qualified foreman.

1.8 GUARANTEE:

A. Guarantee plants and trees for one year after date of Final Acceptance which is described in paragraph 1.7.D. Replace dead materials and materials not in vigorous, thriving condition as soon as weather permits and on notification by the Architect. Replace plants, including trees, which have partially died thereby damaging shape, size or symmetry.
B. Replace plants and trees with same kind and sizes as originally planted, at no cost to the Owner. At direction of the Architect, trees may be replaced at start of next year's planting or digging season. In such cases, remove dead trees immediately. Protect irrigation system and other piping, conduit or other work during replacement. Repair damage immediately.

1.9 PROGRESS MEETINGS:

A. Contractor shall attend all progress meetings as requested by the Architect/Owner during installation.

1.10 QUANTITY VERIFICATION:

A. The bidding contractor is responsible for the inclusion of all materials, labor, and equipment as outlined in the plans and specification. The plant list is provided to the bidding contractor as a convenience and the quantities are approximate.
B. VERIFICATION OF ALL QUANTITIES IS THE SOLE RESPONSIBILITY OF THE BIDDING CONTRACTOR. Any discrepancies must be reported to the Landscape Architect prior to submittal of bid.
C. The Contractor is required to install the specified type and quantity of composted organic material purchased from the specified supplier. Soil Building Systems will e-mail the Architect, as orders are being placed, for verification that the specified material, quantity and supplier are being used.

PART 2 – PRODUCTS

2.1 PLANTS:

A. General: Plants shall be well-formed No. 1 grade or better nursery stock in accordance with requirements of reference standards, subject to the Architect's approval. Listed plant heights are from tops of plant balls to the nominal tops of plants.
B. Shrubs and Groundcovers: Nursery grown, healthy, vigorous, bushy, well branched, of normal habit of growth for species, free from disease, insects, eggs and larvae. Specified sizes shall be before pruning, and plants shall be measured with their branches in normal position. The Architect prior to installation will approve all plants.
C. Ornamental and Shade Trees: Healthy, vigorous, full branches, well-shaped, trunk diameter and height requirements as specified. Balls shall be firm, neat, slightly tapered and well burlaped. Trees with loose or broken balls at time of planting shall be rejected. Each tree will be approved by the Architect prior to installation. Balls shall be 10 inches in diameter for each 1 inch of caliper. All balled and burlaped trees and shrubs will be dug and stored for a minimum of 60 days prior to planting on this project. All trees shall have excess soil removed from the top of the rootball, so the root flare is exposed.

D. Caliper: Trees 4 inches and less are measured 6 inches above top of root ball. Trees over 4 inches are measured 12 inches above top of root ball.
E. Trees connected to stakes at the nursery are not acceptable and will be rejected.

2.2 SOIL PREPARATION MATERIALS:

A. Sandy Loam: Fertile, dark sandy loam free of rubble, stones, lumps, plant roots and reasonably free of weeds. Loam containing nut grass or Dallisgrass shall be rejected.
B. Commercial Fertilizer: Complete fertilizer, uniform in composition, dry and free flowing. Deliver to site in original unopened containers, each bearing manufacturer's guaranteed statement of analysis. Lesco 14-14-14 landscape and ornamental fertilizer with micronutrients.
C. Composted Organic Material: Soil Building Systems `Ph Balanced' Compost with a pH of 5.5 to 6.5 and shall be free of treated or used lumber, pine bark or mushroom compost waste. 97% Of the material shall pass through a .5-inch screen and 100% shall pass through a .75-inch screen.

2.3 MISCELLANEOUS MATERIALS:

A. Crushed Rock: Refer to Civil drawings and specifications
B. Tree Staking: Refer to drawings
C. Mulch: Super Fine Hardwood Mulch (Supplier: Soil Building Systems; (972) 831.8181, or approved equal
    1. 100% organic materials
    2. Ph: 6.5-8.5
    3. Particle Size:
        a. 99% + will pass through a 3/4" screen
        b. 80% + will pass through a 3/8" screen
        c. All material does not exceed 1.5" in length
        d. Free of man-made foreign matter, treated lumber, pallets, trash, grass and/or leaves.
D. Filter Fabric: Mirafi 140N by Celanese Fibers Marketing Co. or equal.
E. Fertilizer Tablets: BioPlex Planting Tablets, 15 grams, 12-8-8. BioPlex @ 1-800-441-3573
F. Steel Edging: Supplied by The J.D. Russell Company @ (800) 580-6872 or approved equal.
G. Water: Provided by Owner.
H. Technical Concentrate and Plant Enhancer: BioPlex @ 1-800-441-3573
I. Pre-Emergent Herbicide: Barracade or Pre-M.

PART 3 – EXECUTION

3.1 EXAMINATION AND PREPARATION:

A. Examine sub-grade and other related construction for defects that adversely affect Work.
B. Do not proceed until unsatisfactory conditions have been corrected.
C. Plant trees and shrubs during normal seasons for such work in the project location and only when weather conditions are suitable.
D. Plant trees and shrubs after final grades are established and prior to planting of lawns.
E. Additional soil amendments may be required per soil test results.

3.2 BED PREPARATION:

A. When grassy or broadleaf weeds are present, spray with Roundup, a non-selective systemic herbicide, for 100% control. When Nut Sedge is present, spray with Manage, a selective post emergent herbicide, for 100% control. Application of post emergent herbicides is to be performed by a licensed applicator.
B. Layout and stake beds for Architect's approval prior to installation of steel edging and planting.

C. Excavate existing soil from beds as needed to allow for installation of the specified organic compost and mulch. Excavated materials will be removed from the site as required by the Architect and Owner.
D. Provide 4 inches of composted organic material in shrub and groundcover beds.
E. Till to a depth of 8 inches.
F. Add commercial fertilizer at 7 pounds per 1,000 square feet of bed area and apply prior to application of mulch.
    1. The fertilizer type and rate specified herein is applicable unless countermanded by the soil fertility test corrective recommendations, in which case they will be applicable.
G. Grade beds to allow for free flow of surface water to the bed edge and away from buildings. Beds will be mounded 2 inches to 3 inches and tapered at the edges to meet existing grade.

3.3 SHRUB AND GROUNDCOVER SPACING:

A. Place plants in position on bed areas before containers have been removed. Obtain approval from Architect. Do not remove burlap from shrubs.
B. Plant where located, setting plants with tops of balls even with tops of beds, and compact soil carefully around each plant ball.
C. Remove binding materials (such as twine, nylon cord, and wire) from plant trunk.
D. Water each plant thoroughly with hoses to eliminate air pockets.
E. Carefully prune plants to remove dead or broken branches and hand-rake bed areas to smooth, uneven surfaces.
F. Architect reserves the right to interchange or shift locations of plants prior to planting.
G. Apply pre-emergent herbicide, at the recommended rate, three weeks after plant installation has been completed and prior to mulch installation.

3.4 PLANTING:

A. Large Shrubs:
    1. Plant shrubs in pits 3 times greater in diameter than root ball. Top 1/3 of backfill will be 20% compost mixed with 80% native soil. Bottom 2/3 of backfill will be 100% native soil. Carefully settle by watering to prevent air pockets.
    2. Add fertilizer tablets at the rate of four (4) per 1-inch caliper for trees and four (4) per 24 inches of height for large shrubs. Follow label directions for placement of tablets.
    3. Carefully prune trees to remove dead and broken branches.
    4. Place root ball in the center of the hole. Do not handle tree by the trunk to place in hole. Scarify and roughen sides of hole where glazed by mechanical excavation.
    5. Make sure the root flare is 2 inches higher than the adjacent soil elevation. The top of the terminal roots at the outer edge of the root ball should be even with or slightly higher than the adjacent soil elevation. Set root ball on undisturbed soil.
B. Shade Trees:
    1. Plant trees in pits 3 times greater in diameter than root ball. Carefully settle by watering to prevent air pockets.
    2. Add four (4) fertilizer tablets per caliper inch. Follow label directions for placement of tablets.
    3. Carefully prune trees to remove dead and broken branches.
    4. Place root ball in the center of the hole. Do not handle tree by the trunk to place in hole. Scarify and roughen sides hole where glazed by mechanical excavation.
    5. Make sure the root flare is 2 inches higher than the adjacent soil elevation. The top of the terminal roots at the outer edge of the root ball should be even with or slightly higher than the adjacent soil elevation. Set root ball on undisturbed soil.
C. Shrubs Outside of Beds:
    1. Plant shrubs in pits as sized below. Backfill mix will be 50% existing soil and 50% compost. Excess excavated material will be removed from the site as required by the Landscape Architect and Owner. Set root ball on undisturbed soil.

Container Size	Pit Size
1 Gallon	10” Diameter x 8” Depth
2 Gallon	14” Diameter x 10” Depth
3 Gallon	16” Diameter x 12” Depth
5 Gallon	20” Diameter x 14” Depth
7 Gallon	24” Diameter x 16” Depth

2. Add fertilizer tablets at the rate of four (4) tablets per 24 inches of plant height. Place tablets. Follow label directions for placement of tablets.
3. Carefully prune plants to remove dead and broken branches.

3.5 SUMMER DIGGING & TRANSPLANTING:

A. To minimize transplant shock, plant decline, defoliation or loss to all balled and burlaped plants.
   1. Apply Technical Concentrate and Plant Enhancer to plants 24 to 96 hours prior to digging or transplanting.
   2. Apply with both a foliar and root drench at identical dilutions of 1.0 fl. oz. (low stress conditions) to 3.0 fl. oz. (high stress conditions) per inch of trunk diameter or each 24 inches of plant height. Mix into 5 to 10 gallons of water for each 1 inch of trunk diameter and 24 inches of plant height.
   3. Re-apply in 15 to 30 days or sooner if extreme environmental stress requires
   4. Re-apply at either a rate of 1 to 3 fl. oz. per inch of trunk diameter or 5 to 7 fl. oz. per 5 to 10 gallons of water.

3.6 TREE SUMPS:

A. Perform percolation test for each tree pit and install sump detail only when satisfactory drainage does not occur within 24 hours.
B. Excavate sump pit to a minimum depth of 4 feet 6 inches below bottom of root ball and a minimum of 12-inch diameter.
C. Install 4-inch diameter PVC pipe and cap. The portion of pipe in crushed rock is to be perforated.
D. Place crushed rock per tree planting detail.
E. Place filter fabric over top of crushed rock and 12 inches upside of tree pit.
F. Paint PVC cap, color to be selected. Drill 5/8-inch diameter hole in top of cap.

3.7 GUYING TREES:

A. Guy trees immediately after planting as shown on planting details.
B. It will be the Landscape Contractor’s responsibility to maintain trees in a plumb position through the warranty period whether they are guyed or not.
C. The landscape contractor will remove and dispose of tree guying materials at the end of the one-year guarantee period.

3.8 MULCHING:

A. After planting has been completed and approved by Architect, cover all bare soil around plants. The depth shall vary depending on the plants being mulched. Large plants will receive a 2-inch depth and plants in 4-inch pots and smaller will receive a 1-inch depth. At no time will mulch come in contact with the stems of plants. Delay mulching in shrub beds until after application of pre-emergent herbicide and near substantial completion of the project.

3.9 STEEL EDGING:

A. Install steel edging. Anchor with steel stakes, 16 inches in length minimum, spaced not more than 30 inches on center and driven at least 1 inch below top of edging. The top of edging will be 1 inch above the adjacent turf elevation

3.10 CLEANUP:

A. During work, keep premises neat and orderly including organization of storage areas. Trash, including debris resulting from removing weeds or rocks from planting areas, preparing beds, or planting plants, shall be removed from site daily as work progresses.
B. Keep sidewalks, streets and courtyard areas clean by sweeping or hosing.

3.11 MAINTENANCE:

A. Water will be provided by the Owner. Provide necessary hoses and other watering equipment required to complete work.
B. Until Final Acceptance, maintain plantings and trees by watering, cultivating, weeding, spraying, cleaning and replacing as necessary to keep the landscape in a vigorous, healthy condition and rake bed areas as required.
C. Follow landscape maintenance procedures outlined in Specification Section 32.95.10 – Planting Maintenance.

3.12 PLANT SCHEDULE:

A. Refer to schedule on drawings.

END OF SECTION

SECTION 32 95 10
PLANTING MAINTENANCE

PART 1 - GENERAL

1.01 SUMMARY:

A. Section includes:
1. Landscape Maintenance Contractor shall furnish all labor, equipment, chemicals and fertilizer necessary to maintain newly planted landscaping leaving plants in a vigorous, healthy state through the end of the stated maintenance period. Maintenance shall consist of watering, weeding, fertilizing, disease and insect pest control, pruning, aerating, protective spraying and any other procedures consistent with good horticultural practice necessary to insure normal, vigorous and healthy growth of all landscape materials under this contract. Trash and debris will be removed from the project during each regular site visit. Maintenance shall begin following final acceptance of the landscape installation.
2. The Landscape Maintenance Contractor shall be responsible for the use of all his/her materials, labor and equipment. Injury to plant material caused by such maintenance, labor and equipment shall be corrected and repaired by the Landscape Maintenance Contractor at his/her expense. This includes both reseeding areas damaged by tractor treads when mowing is conducted at an inappropriate time, as determined by the Owner or his/her agent, and replacement of any plants, hardscape, or other amenities on the site when damaged by the Contractor's equipment, materials or agent.

1.02 RELATED DOCUMENTS:

a. Turf and Grasses – Section 32 92 10.
b. Planting – Section 32 93 10
c. Planting Irrigation - Section 32 94 00.

1.03 INSURANCE:

A. Contractor shall provide to the Owner, at his own expense, evidence of adequate Workman's Compensation, General Liability and Property Damage Liability, subject to approval of the Owner.

1.04 CLEAN UP:

A. All debris, tools, surplus materials, equipment, etc. shall be removed after each regular visit from the maintenance crew. The site shall be left in a neat, acceptable condition such as to meet the approval of the Owner.

1.05 LICENSE REQUIREMENTS:

A. Pesticide: The Contractor shall be a licensed pesticide applicator or employ a licensed certified pesticide applicator for the treatment of insects and diseases as required by the Texas Pesticide Laws and Regulations of the Texas Department of Agriculture. The Owner may require documentation of such certification as necessary for his record.

B. Herbicide: The Contractor shall possess a permit or employ a person who possesses a permit to apply herbicide as required b the Texas Herbicide Law of the Texas Department of Agriculture. The Owner may require documentation of such certification as necessary for his records.
C. Irrigation: The Contractor shall possess an irrigator's license issued by the State of Texas and the Texas Board of Irrigators or employ such a licensed irrigator to perform the irrigation system maintenance. The irrigation system shall be maintained under the supervision of the licensed irrigator who shall be on the site at all times during this work. The Owner may require documentation of such license for his records. The Contractor shall verify and adhere to the requirements and codes of any controlling utility authorities.

PART 2 - PRODUCTS

2.01 COMMERCIAL FERTILIZER:

A. Refer to Section 32 93 10

2.02 MULCH:

A. Refer to Section 32 93 10

2.03 WATER:

A. Water will be supplied by the Owner.

2.04 PLANT REPLACEMENT:

A. It will be the responsibility of the Landscape Maintenance Contractor to replace any and all plant material that is dead or damaged due to non-performance of the contracted scope of work, un-supervised personnel or un-supervised subcontractors.

2.05 PESTICIDES AND HERBICIDES:

A. Refer to Section 32 93 10

PART 3 - EXECUTION

3.01 TREE, SHRUB AND GROUNDCOVER MAINTENANCE:

A. The Scope of Work for plant maintenance includes all possible means required to preserve the plants and vegetative material existing within the site in a healthy and vigorous growing condition to insure their successful establishment. Plant maintenance shall include, as a minimum, the following items.
    1. Pruning: All trees and shrubs, within the limits of landscape maintenance, shall be pruned by the Contractor to the satisfaction of the Owner. Pruning shall be done in accordance with accepted pruning practices as set forth by the National Arborist Association in Pruning Standards for Shade Trees (current edition). Dead or damaged limbs on trees and shrubs, including sucker-growth on trunks of trees, are to be removed Crape Myrtles will be pruned in late winter to remove seed heads and dead wood. Suckers will be removed as needed throughout the year.

All pruned materials shall become the property of the Contractor and shall be disposed of in a manner acceptable to the Owner. Unless directed differently in the contract documents, pruning shall be accomplished once during the term of this contract.

2. Insect, Disease, and Animal Control: The Contractor shall inspect the plants and planted areas once each two (2) weeks or as approved by the Owner. The Contractor shall be required to notify the Owner in writing of problems with insects, diseases, or animals as such problems arise. The Contractor also shall recommend corrective measures in writing.
3. The Contractor shall treat the plants and/or the planted areas in accordance with accepted methods of horticultural practices and the Texas Department of Agriculture guidelines regarding the use of pesticides. The Contractor also shall follow the manufacturer's instructions for the use and application of any pesticides.
4. Bed Maintenance: The Contractor shall maintain the plant basins and beds free of weeds and grass or other material detrimental to the growth of the plants or appearance at the site. Herbicides, when used by the Contractor, will under no circumstances be used on days where the wind could cause drift hazard to desirable plants. The Contractor shall also follow the manufacturer's instructions for the use and application of any herbicide. Two pre-emergent herbicide applications will be made per year along with manual weeding and post emergent herbicide applications as required. All shrub and groundcover beds shall be fertilized two (2) times per year at a rate of 2 lbs. Per 1,000 square feet. Hardwood mulch shall be maintained to a minimum depth of two (2) inches, in all bed areas.
5. Re-staking, re-guying, and re-bracing of Plants: Any damaged or destroyed stakes, guys or braces shall be replaced by the Contractor. This shall include any adjustment to the staking or guying to prevent girdling of plants. Adjustment will be made to tighten wires and cables as required.
6. Tree Mulching and Fertilization:
    i. Maintain a 2" layer of shredded hardwood mulch over all tree root balls in turf areas. Add new mulch as required.
    ii. Deep root fertilize all trees with a combination of Injecto-Feed 32-7-7 and Agri-Plex 0-4-4 with 2 percent magnesium, 2 percent water soluble magnesium, 3 percent sulfur, .02 percent boron, 5 percent iron, .5 percent manganese and .5 percent zinc. Mix 20 pounds of Injecto-Feed and 1 gallon of Agri-Plex in 100 gallons of water. Apply this solution at the rate of 5 gallons per inch trunk diameter measured at breast height. Space injection points at 2.5-foot intervals starting 2 feet beyond the drip line. Apply .5 gallon of solution per injection site. Soil injections should be made 6 to 8 inches deep using an injector probe at 150 to 200 PSI. Keep fertilizer solution agitated during application. Where trees are closely spaced and have overlapping treatment areas, inject only once in those areas. Do not double inject these areas. For trees growing in wells surrounded by concrete, water or other hard surfaces, drench the top of the root ball with 10 to 15 gallons of fertilizer solution.

3.02 TURF AND GRASS MAINTENANCE:

A. Bermuda Grass:
    1. Mowing and Trimming: All lawns shall be mowed approximately every seven days April thru September, three (3) times per month in March and October and once monthly November thru February. All sidewalks and curbs shall be edged and trimming around all trees and other objects within turf areas shall occur in

concurrence with the maximum mowing cycles. The Contractor shall use power equipment as approved by the Owner. Nylon cord trimmers shall not be used inside plant basins or beds around plant material.

2. Fertilization: Bermuda Grass shall be fertilized in March, May, July and September for a total of four (4) applications. Approximately 1.5 to 2 lbs. nitrogen will be applied per 1,000 square feet per application. Various analyses and blends of fertilizers can be used based on soil tests results.

3. Weed Control: Bermuda Grass shall be treated with two (2) pre-emergent herbicide and four (4) post-emergent herbicide applications for a total of six (6) applications. Herbicide applications will only be required on established stands of grass.

4. Insect, Disease and Animal Control: The Contractor shall inspect all lawn areas once each two (2) weeks or as approved by the Owner. The Contractor shall be required to notify the Owner in writing of problems with insects, diseases, animals as such problems arise. The Contractor also shall recommend corrective measures in writing.

3.03 IRRIGATION SYSTEM OPERATION AND MAINTENANCE:

A. The scope of work for the operation and maintenance of the permanent irrigation system shall consist of the monitoring, adjustment, repair and proper operation of the existing irrigation system as required to ensure adequate moisture to the plant material existing on the project. The existing condition of the system and any known deficiencies will be corrected by the Contractor upon approval by the Owner. The Contractor shall insure that all irrigation zones, rain sensors and freeze sensors are operating correctly. Include seasonal draining and winterizing of irrigation system when required.

B. System repairs will include monitoring of the system on a year-round bi-weekly basis and reporting of all damaged or trouble areas to the Owner. The Contractors personnel shall repair any damage that may have occurred during the mowing cycle and set automatic systems to correct time requirements. Any damage not the fault of the Landscape Maintenance Contractor shall be assessed and brought to the attention of the Owner with an estimate of the subsequent costs to make the repairs. In the event the irrigation system fails due to the Contractor's actions or neglect, the Contractor shall furnish plant irrigation by a method and quantity approved by the Owner.

END OF SECTION

SECTION GR

GEOTECHNICAL REPORT

GEOTECHNICAL EXPLORATION

on

VITRUVIAN PARK
BUILDINGS 201, 202, AND 203
Off Vitruvian Way
Addison, Texas
ALPHA Report No. G152235

Prepared for:

UNITED DOMINION REALTY TRUST
3875 Ponte Avenue, Suite 400
Addison, Texas 75001
Attention: Ms. Deiadra Burns
October 21, 2015

Prepared By:

ALPHA TESTING, INC.
2209 Wisconsin Street, Suite 100
Dallas, Texas 75229

ALPHA TESTING
WHERE IT ALL BEGINS

Geotechnical
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October 21, 2015

United Dominion Realty Trust
3875 Ponte Avenue, Suite 400
Addison, Texas 75001
Attention: Ms. Deiadra Burns

Re: Geotechnical Exploration
Vitruvian Way
Buildings 201, 202, and 203
Addison, Texas
ALPHA Report No. G152235

Attached is the report of the geotechnical exploration performed for the project referenced above. This study was authorized by Mr. Harry G. Alcock and performed in accordance with the Abbreviated Agreement for Professional Services dated October 2, 2015 and ALPHA Proposal No. 48845 dated August 27, 2015.

This report contains results of field explorations and laboratory testing and an engineering interpretation of these with respect to available project characteristics. The results and analyses were used to develop recommendations to aid design and construction of foundations and pavement.

ALPHA TESTING, INC. appreciates the opportunity to be of service on this project. If we can be of further assistance, such as providing materials testing services during construction, please contact our office.

Sincerely,

ALPHA TESTING, INC.

Andrew M. Adams, E.I.T.
Project Manager

STATE OF TEXAS
MARK L. McKAY
91067
LICENSED
PROFESSIONAL ENGINEER
10/21/15

Mark L. McKay, P.E.
Senior Geotechnical Engineer
Geotechnical Department Manager

AMA/MLM
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On

ALPHA REPORT NO. G152235

1.0 PURPOSE AND SCOPE

The purpose of this geotechnical exploration is for ALPHA TESTING, INC. ("ALPHA") to evaluate for the "Client" some of the physical and engineering properties of subsurface materials at selected locations on the subject site with respect to formulation of appropriate geotechnical design parameters for the proposed construction. The field exploration was accomplished by securing subsurface samples from widely spaced test borings performed across the expanse of the site. Engineering analyses were performed from results of the field exploration and results of laboratory tests performed on representative samples.

Also included are general comments pertaining to reasonably anticipated construction problems and recommendations concerning earthwork and quality control testing during construction. This information can be used to evaluate subsurface conditions and to aid in ascertaining construction meets project specifications.

Recommendations provided in this report were developed from information obtained in test borings depicting subsurface conditions only at the specific boring locations and at the particular time designated on the logs. Subsurface conditions at other locations may differ from those observed at the boring locations, and subsurface conditions at boring locations may vary at different times of the year. The scope of work may not fully define the variability of subsurface materials and conditions that are present on the site.

The nature and extent of variations between borings may not become evident until construction. If significant variations then appear evident, our office should be contacted to re-evaluate our recommendations after performing on-site observations and possibly other tests.

2.0 PROJECT CHARACTERISTICS

It is proposed to construct a new apartment complex and parking garage structures (Vitruvian Park) on a site located generally north off Vitruvian Way east of Marsh Lane in Addison, Texas. A site plan illustrating the general outline of the property provided by the Client, with ALPHA's boring locations noted on it, is provided as Figure 1, titled "Boring Location Plan," in the Appendix of this report. At the time the field exploration was performed, the site was relatively open and vegetated with grass and scattered trees with a maintenance yard located in the north central portion of the site. According to online maps available from the North Central Texas Council of Governments (found at www.dfwmaps.com), the topography of the site generally slopes downward from the northeast towards the southwest with a maximum change in surface elevation of about 18 ft (about Elev. 568 to 550).

Present plans provide for the construction of new 5-story wood-framed apartment buildings and 5-story concrete parking garage structures. At least one level of the parking garage structures is planned partially below-grade. Based on the current available information, foundation loads for the parking garage structures could be on the order of 1,000 kips or less and it is anticipated these loads will be supported using a drilled pier foundation system. The apartment buildings are anticipated to create relatively light loads to be carried by the foundations. Pavement design recommendations for Portland cement concrete (PCC) are also provided in this report.

The finished floor elevations for the partial below-grade levels are assumed to be about 6 ft below existing grade and slab-on-grade foundations for the apartment buildings are assumed to be within about 2 ft of existing grade.

3.0 FIELD EXPLORATION

Subsurface conditions on the site were explored by drilling a total of twenty-three (23) test borings in general accordance with ASTM D 420 using standard rotary drilling equipment. Borings 1 through 6 were drilled in the parking garage areas to depths of about 70 ft each. Borings 7 through 23 were drilled in the proposed apartment building areas to a depth of 20 ft each. The approximate location of each test boring is shown on the Boring Location Plan, Figure 1, enclosed in the Appendix of this report. Details of drilling and sampling operations are briefly summarized in Methods of Field Exploration, Section A-1 of the Appendix.

Subsurface types encountered during the field exploration are presented on Log of Boring sheets included in the Appendix of this report. The boring logs contain our Field Technician's and Engineer's interpretation of conditions believed to exist between actual samples retrieved. Therefore, these boring logs contain both factual and interpretive information. Lines delineating subsurface strata on the boring logs are approximate and the actual transition between strata may be gradual.

4.0 LABORATORY TESTS

Selected samples of the subsurface materials were tested in the laboratory to evaluate their engineering properties as a basis in providing recommendations for foundation design and earthwork construction. A brief description of testing procedures used in the laboratory can be found in Methods of Laboratory Testing, Section B-1 of the Appendix. Individual test results are presented on Log of Boring sheets or on summary data sheets also enclosed in the Appendix.

5.0 GENERAL SUBSURFACE CONDITIONS

Based on the Geological Atlas of Texas, Dallas Sheet, available from the Texas Bureau of Economic Geology, published by the University of Texas at Austin, as well as the boring results and our experience at the Vitruvian site, the project site is generally located on the contact between the Austin Chalk Formation and the underlying Eagle Ford Formation. The Austin Chalk consists of massive gray unweathered limestone, overlain by tan weathered limestone. Near-surface residual soils associated with the Austin Chalk generally consist of high plasticity clays and/or low to moderate plasticity calcareous clays. The Eagle Ford Formation is composed predominantly of shale with occasional platy beds of sandstone and limestone. Residual overburden soils associated with the Eagle Ford Formation generally consist of clay and shaly clay with very high shrink/swell potential. In full section the Eagle Ford Formation should be over 200 ft thick at this site.

Subsurface materials consist generally of clay (CH), calcareous clay (CL), and/or shaly clay (CH) extending to depths of about 11 to 26 ft in Borings 1 through 6, 8, 12, 13, 14, 15, and 16, underlain by clay shale and deeper gray shale. The clay shale extended to depths of about 29 to 34 ft underlain by gray shale extending to the boring termination depths (70 ft). Shaly limestone

was encountered in Boring 14 at a depth of about 2 ft below existing grade and extended to a depth of about 11 ft underlain by clay shale. The upper 2 to 4 ft of material encountered in Borings 2, 4, 6, 11, 12, 13, 15, 16, 17, and 20 was visually classified as fill material. The letters in parenthesis represent the soils' classification according to the Unified Soil Classification System (ASTM D 2488). More detailed stratigraphic information is presented on the Log of Boring Sheets attached to this report.

Most of the subsurface materials are relatively impermeable and are anticipated to have a relatively slow response to water movement. Therefore, several days of observation will be required to evaluate actual groundwater levels within the depths explored. Also, the groundwater level at the site is anticipated to fluctuate seasonally depending on the amount of rainfall, prevailing weather conditions and subsurface drainage characteristics.

During the field explorations, free groundwater was encountered in the open boreholes upon completion of Borings 1 through 6 and 22 at depths of about 13 to 68 ft below the existing ground surface. No free groundwater was encountered in the other borings. It is common to detect seasonal groundwater from fill materials, from natural fractures within the clayey matrix, near the soil/rock (shale) interface or from fractures in the rock, particularly during or after periods of precipitation. If more detailed groundwater information is required, monitoring wells or piezometers can be installed.

Further details concerning subsurface materials and conditions encountered can be obtained from the Log of Boring sheets provided in the Appendix of this report.

6.0 DESIGN RECOMMENDATIONS

The following design recommendations were developed on the basis of the previously described Project Characteristics (Section 2.0) and General Subsurface Conditions (Section 5.0). If project criteria should change, including structure locations on the site, our office should conduct a review to determine if modifications to the recommendations are required. Further, it is recommended our office be provided with a copy of the final plans and specifications for review prior to construction.

Review of historical aerial photographs indicates the site was previously covered with apartment buildings which have since been removed. Any soil disturbed due to removal of the structures, foundations or pavements should be re-compacted in accordance with recommendations provided in Section 6.3 where moisture conditioned soil is required or Section 7.3 where general fill is required. All elements of the removed structures and pavement should be removed or cut off at least 1 ft below finished grade or 1 ft below the new structural elements, whichever is deeper. All abandoned utility lines should be either removed or positively sealed to prevent possible water seepage into subgrade soils.

The following design criteria given in this report were developed assuming the parking garage levels are about 6 ft below existing grade and slab-on-grade foundations for the apartment buildings are within 2 ft of existing grade. Cutting and filling on the site more than described

above can alter the recommended foundation design parameters. Therefore, it is recommended our office be contacted once detailed site grading plans are available to verify appropriate design parameters are utilized for final foundation design.

6.1 Existing Fill

As discussed in Section 5.0 of this report, existing fill was encountered to depths of about 2 to 4 ft below the existing ground surface in Borings 2, 4, 6, 11, 12, 13, 15, 16, 17, and 20. If compaction records for this fill cannot be obtained, the existing fill should be considered as uncontrolled fill. Uncontrolled fill is not suitable for direct support of slab foundations. Considering the soil improvements required to reduce potential seasonal movements of floor slabs (as discussed below in Section 6.3), it is expected most of the existing fill soil would be over-excavated and replaced in the building pad areas. Any existing fill encountered below the depth of moisture conditioning in the building pad areas should be removed to expose suitable firm native soils, and the resulting excavation filled to the building pad grade with controlled, engineered fill as described in Section 7.3 below. Pavement areas should be properly prepared and tested as discussed in Section 7.1 of this report.

Excavated materials can be utilized as engineered fill provided they are free of boulders, concrete, organics, debris, or other unsuitable materials. ALPHA TESTING should observe undercut excavations and monitor and test fill placement to verify conditions are as anticipated and that new fill is placed per the recommendations in this report.

6.2 Drilled Pier Foundation System

The structural frame and walls for the planned parking garages could be supported using a system of drilled, straight-shaft piers bearing in the gray shale. These piers should bear at least 3 ft into the underlying gray shale. Gray shale was encountered at depths of about 20 to 34 ft below existing grade in Borings 1 through 6. Based on the conditions encountered in the borings, laboratory testing and our area experience, the following allowable design values in Table A are recommended for the proposed structure. Deeper penetrations will be necessary to develop skin friction and/or uplift resistance.

TABLE A
ALLOWABLE END BEARING AND SKIN FRICTION VALUES

Material	End Bearing (ksf)	Skin Friction [Gravity Loads] (ksf)
All Existing Fill Material and Native Clay Soils to a Depth of 15 ft Below Final Grade	NA	Neglect
Native Clay Soils below a Depth of 15 ft from Final Grade	NA	0.5
Clay Shale and Upper 3 ft of Shale	NA	1.5
Shale Below a Minimum 3 ft of Penetration	18	2.5

Please note, the following special conditions apply to drilled pier foundations bearing in the gray shale at this site:

1. *Gray clay shale was encountered overlying the gray shale bearing stratum in Borings 1, 2, 3, and 6 at depths of about 21 to 26 ft and is estimated to be about 7 to 13 ft thick. The clay shale has relatively softer strength characteristics compared to the deeper gray shale. The clay shale is visually similar to the shale, and care should be taken to verify the pier shafts extend through the relatively softer clay shale to bear in the competent gray shale. Pier shaft excavations should be monitored by ALPHA geotechnical personnel to verify penetration into the shale stratum.*
2. *Varying amounts of hard limestone and/or sandstone seams and layers were encountered within the shale stratum at some of the borings. In addition, hard limestone layers were encountered at varying depths in test borings drilled for previous phases and during pier installation for previous structures. These layers are generally hard and could cause obstruction to pier installation. Rock excavation equipment (rock teeth and/or core barrels) may be required during pier installation. The contractor selected should have experience drilling piers in shale containing limestone seams and layers . The pier installation contract should contain provisions for penetrating these hard materials and other obstructions. Additionally, ALPHA Testing, Inc. should verify piers penetrate any clay layers and seams and bear in competent gray shale during installation.*

The minimum clear spacing between adjacent piers should be at least two (2) shaft diameters (based on the largest pier diameter) to develop the full skin friction resistance to gravity loads and uplift loads. Closer spacing will result in reduced skin friction resistance. We should be contacted to review closer pier spacing on a case-by-case basis.

The above bearing capacity contains a factor of safety of at least three (3) considering a general bearing capacity failure and the skin friction values have a factor of safety of at least two (2). Skin friction values in the gray shale are applicable only for the portion of the shaft in gray shale below the bottom of any temporary casing used. Normal elastic settlement of piers under loading is estimated at less than about 1 inch.

Each pier should contain sufficient full length reinforcing steel and should be embedded a sufficient distance into the gray shale to resist the uplift pressure (soil-to-pier adhesion) due to potential soil swell along the shaft from post-construction heave and other uplift forces applied by structural loadings. The magnitude of uplift adhesion due to soil swell along the pier shaft cannot be defined accurately and can vary according to the actual in-place moisture content of the soils during construction. It is estimated this uplift adhesion will not exceed about 2.2 kips per sq ft. This soil adhesion is approximated to act uniformly over the upper 12 ft of the pier shaft in contact with clayey soils. The uplift adhesion due to soil swell can be neglected over the portion of the shaft in contact with non-expansive material used to grade the building pads.

The uplift resistance of each pier can be computed using an allowable uplift skin friction values in Table B below. These uplift skin friction values can be assumed to act uniformly over the respective portions of the shaft in the clayey soils, clay shale, and shale. Skin friction values are applicable only for the portion of the shaft below the bottom of any temporary casing used. These uplift resistance values have a factor of safety of at least two (2).

TABLE B
ALLOWABLE UPLIFT SKIN FRICTION VALUES

MATERIAL	ALLOWABLE UPLIFT SKIN FRICTION (ksf)
All Existing Fill Material and Native Clay Soils to a Depth of 15 ft Below from Final Grade	Neglect
Native Clay Soils below a Depth of 15 ft from Final Grade	0.3
Clay Shale and Upper 3 ft of Shale	1.0
Shale Below a Minimum 3 ft of Penetration	1.8

All grade beams connecting piers should be formed and not cast in earthen trenches. Grade beams should be formed with a nominal 12-inch void at the bottom if constructed within about 2 ft of existing grade. Alternatively, a nominal 6-inch void should be provided below the bottom of grade beams in below-grade areas (assumed to be about 6 ft below final grade). Commercially available cardboard box forms (cartons) are made for the purpose of forming the void. The cardboard cartons should extend the full length and width of the grade beams. Prior to concrete placement, cartons should be inspected to verify they are firm, properly placed, and capable of supporting wet concrete. Some type of permanent soil retainer, such as pre-cast concrete panels, must be provided to prevent soils adjacent to grade beams from sloughing into the void space at the bottom of the grade beams. Additionally, backfill soils placed adjacent to grade beams must be compacted as outlined in Section 7.3 of this report.

Lateral analysis for drilled piers constructed at the site can be performed using the following design parameters (L-Pile) provided for the site soils in Tables C-1 and C-2. The lateral resistance of the top portion of the pier shafts (the portion within 12 ft of final grade) should be neglected due to disturbance and potential soil shrinkage.

TABLE C-1 L-PILE DESIGN PARAMETERS FOR CLAY SOILS AND CLAY SHALE					
Material	**Unit Weight, pci**	**Soil Modulus Parameter, pci**	**Shear Strength, psi**	**Strain at 50% Max Stress**	**Angle of Internal Friction, deg.**
Native Clay/Shaly Clay Deeper than 12 ft Below Existing Grade at Piers	0.069	500	7	0.007	0
Clay Shale and Upper 3 ft of Shale	0.075	6,000	20	0.005	0

TABLE C-2 L-PILE DESIGN PARAMETERS FOR SHALE				
Material	**Unit Weight, pci**	**Young's Modulus (Rock Condition), psi**	**Shear Strength, psi**	**K_{rm}**
Shale Below 3 ft Penetration	0.075	25,000	60	0.0005

Note: Rock Quality Designation (RQD) for shale is generally in the range of 40 to 80 percent. *Please Note*: Rock coring was not performed for this project. RQD values provided above are typical for the material encountered based on our area experience and from information obtained from field Texas Cone Penetration tests.

6.3 Potential Seasonal Movements and Subgrade Improvement

It is planned to construct the parking garage levels about 6 ft below existing grade and floor slabs for the apartment buildings within 2 ft of existing grade. Based on the subsurface stratigraphy encountered in the test borings performed at this site, the parking garage and apartment floor slabs will be supported on clayey soils. Our finding indicate the floor slab for the parking garage level could experience soil-related potential seasonal movements of about 4 inches if constructed at about 6 ft below existing and adjacent final grade. Alternatively, the slab-on-grade foundations for the apartment buildings could experience soil-related potential seasonal movements in excess of 5 ½ to 6 inches if constructed within 2 ft of existing grade. Once final grades are established and the locations of any ramps to below grade areas are located, ALPHA should be contacted to verify the subsequent PVR values and recommendations provided below.

These potential seasonal movements were estimated using results of absorption swell tests, in general accordance with methods outlined by Texas Department of Transportation (TxDOT) Test Method Tex-124-E and engineering judgment and experience. Estimated movements were calculated assuming the moisture content of the in-situ soil within the normal zone of seasonal moisture content change varies between a "dry" condition and a "wet" condition as defined by Tex-124-E. Also, it was assumed a 1 psi surcharge load from the slab acts on the subgrade soils. Movements exceeding those predicted above could occur if positive drainage of surface water is not maintained

or if soils are subject to an outside water source, such as leakage from a utility line or subsurface moisture migration from off-site locations.

In view of these potential seasonal movements, the most positive floor system for the buildings supported by drilled piers is a slab suspended completely above the existing highly expansive soils. A 12-inch or 6-inch void space should be provided between the bottom of the slab (or lowest suspended fixture) and top surface of the underlying expansive clays if the floor slab is constructed within about 2 ft of existing grade or about 6 ft below existing/adjacent final grade, respectively. Cardboard carton forms or a deeper crawl space can be used to create the minimum void space. A ventilated crawl space is preferred. Provisions should be made for (a) adequate drainage of the under-floor space and (b) differential movement of utility lines, including areas where the utility penetrates through the grade beam and/or where the utility penetrates below grade areas. If a crawl space is utilized, periodic inspections for plumbing line leaks, ponding water etc. should be performed with necessary repairs made.

If some floor slab movement is tolerable (about 2 inches or 1 inch), the concrete slab can be designed to bear uniformly on improved soils. The extent and depth of these subgrade improvement methods for the planned structures are summarized below in Tables D and E. These subgrade improvement procedures are discussed in Sections 6.3.1 and 6.3.2 below. Non-expansive material could consist of select fill, flexible base, or lime-treated on-site clayey soils as described in Section 7.3. The thickness of any gravel drainage layer below the slab (see Section 6.5 below) can also be counted as part of the thickness of non-expansive material. In choosing these methods of floor slab movement reduction, the Owner is accepting some post construction seasonal movement of the floor slab (2 inches or 1 inch).

TABLE D
SUBGRADE IMPROVEMENT RECOMMENDATIONS
FOR PARKING GARAGE FLOOR SLAB CONSTRUCTED
ABOUT 6 FT BELOW EXISTING/ADJACENT FINAL GRADE

Potential Seasonal Movement, inches	Subgrade Improvement Method
3	2 ft of Moisture Conditioned Soil
2	4 ft of Moisture Conditioned Soil
1	6 ft of Moisture Conditioned Soil

TABLE E SUBGRADE IMPROVEMENT RECOMMENDATIONS *FOR APARTMENT SLAB-ON-GRADE FOUNDATIONS CONSTRUCTED WITHIN ABOUT 2 FT OF EXISTING GRADE*	
Potential Seasonal Movement, inches	**Subgrade Improvement Method**
2	1 ft of Non-Expansive Fill Material, in Conjunction with either 9 ft of Moisture-Conditioned Soil or 10 ft of Water Pressure Injection below Slab
1	2 ft of Non-Expansive Fill Material, in Conjunction with either 10 ft of Moisture-Conditioned Soil or 10 ft of Water Pressure Injection below Slab

If a soil-supported floor slab is utilized for the planned building, a "floating" (fully ground supported, and not structurally connected to walls or foundations) floor slab is preferred. This reduces the risk of cracking and displacement of the floor slab due to differential movements between the slab and foundations. A floor slab doweled into perimeter grade beams can develop a plastic hinge (crack) parallel to and approximately 5 to 10 ft inside the building perimeter. The structural engineer should determine the need for connections between the slab and structural elements and determine if control joints to limit cracking are needed. A properly designed and constructed moisture barrier should be placed between the slab and subgrade soils to retard moisture migration through the slab.

6.3.1 Subgrade Improvement Utilizing Moisture-Conditioned Soil

Movements of the floor slabs for parking garage below-grade levels constructed about 6 ft below existing/adjacent final grade can be reduced to about 3 inches, 2 inches, or 1 inch by over excavating the existing clay soils and placing 2 ft, 4 ft, or 6 ft of moisture conditioned soils below the bottom of the floor slabs (See Table D).

Movements of apartment and amenity center building foundations constructed within about 2 ft of existing grade can be reduced to about 2 inches or 1 inch by placing at least 1 ft or 2 ft of non-expansive fill material, respectively, (See Table E) between the bottom of the slab and the top surface of 8 ft and 10 of moisture-conditioned soil, respectively. Non-expansive fill material could consist of select fill, flexible base, or lime-treated on-site clayey soils as described in Section 7.3.

Note: *Limestone was encountered about 2 ft below existing grade in Boring 14. It is not necessary to excavate shallow limestone to install moisture conditioned soils. ALPHA should be present to observe any areas where the full subgrade treatment depth is not achieved.*

Moisture conditioning consists of processing and compacting the specified minimum thickness of on-site soil at a “target” moisture content approximated to be at least 5 percentage points (with an upper limit of 7 percentage points) above the material’s optimum moisture content as determined by the standard Proctor method (ASTM D

698). Relatively lower plasticity soils may need to be placed at a moisture content closer to optimum moisture to allow for compaction of these materials. The moisture-conditioned soil should be placed in 8-in thick loose lifts and compacted to a dry density of 93 to 97 percent of standard Proctor maximum dry density. Moisture conditioning of the on-site soil should extend throughout the entire building pad area and at least 5 ft beyond the perimeter of the building. In entrance areas and adjoining flatwork, the moisture conditioning process should extend at least 10 ft beyond the perimeter of the building. However, non-expansive fill material should not extend beyond the building limits. Moisture-conditioned soils should be maintained in a moist condition prior to placement of the required thickness of non-expansive material. *Non-expansive fill material should not be placed above the plastic sheeting.*

The resulting estimated potential seasonal movements (3 inches, 2 inches or 1 inch, depending on the level of subgrade improvement implemented) were calculated assuming the moisture content of the moisture-conditioned soil varies between the “target” moisture content and the “wet” condition while the deeper undisturbed in-situ soil within the normal zone of seasonal moisture content change varies between the "dry" condition and the "wet" condition as defined by methods outlined in TxDOT Test Method Tex-124-E.

Please note, it is the intent of the moisture-conditioning process described above to reduce the free swell potential of the moisture-conditioned soil to 1 percent or less. Additional laboratory tests (i.e., standard Proctors, absorption swell tests, etc.) should be conducted during construction to verify the “target” moisture content for moisture-conditioning (estimated at 5 percentage points above the material’s optimum moisture content as defined by ASTM D 698) is sufficient to reduce the free swell potential of the processed soil to 1 percent or less. In addition, it is recommended samples of the moisture-conditioned material be routinely obtained during construction to verify the free swell of the improved material is 1 percent or less.

Installation of moisture-conditioned soils should be monitored and tested on a full-time basis by a representative of ALPHA TESTING, INC., to verify the soils tested were placed with the proper lift thickness, moisture content, and degree of compaction.

6.3.2 Subgrade Improvement Utilizing Water Pressure Injection (WPI)

An alternate subgrade improvement method to reduce movement utilizes the procedures of Water Pressure Injection (WPI) in conjunction with placement of non-expansive fill material. Prior to water pressure injection, all remaining existing fill material should be removed and replaced as recommended in Section 7.3. The improvement procedures outlined below will not eliminate future movement of the slabs. Recommended specifications for WPI are attached to this report in the appendix.

Note: *Limestone was encountered about 2 ft below existing grade in Boring 14. It is not practical nor necessary to inject beyond the limestone to perform the required injection depths. ALPHA should be present to verify the limestone in areas where injection refusal terminates above the full subgrade treatment depth.*

For 2-inch Slab Foundation Movement: Following removal of the necessary thickness of on-site expansive soils to allow for placement of at least 1 ft of non-expansive material, the exposed subgrade of the building pad should be water pressure injected (WPI) to a depth of 10 ft below the bottom of the non-expansive material.

For 1 inch Slab Foundation Movement: Following removal of the necessary thickness of on-site expansive soils to allow for placement of at least 2 ft of non-expansive fill material, the exposed subgrade of the building pad should be water pressure injected (WPI) to a depth of 10 ft below the bottom of the non-expansive material.

The water pressure injection should extend throughout the entire building pad area and at least 5 ft beyond the perimeter of each building. In entrance areas and adjoining flatwork, WPI should extend at least 10 ft beyond the perimeter of the building. The non-expansive fill material should preferably not extend beyond the building limits. Where exterior flatwork does not adjoin the building pad, (i.e. above the water injected soils), a moisture barrier consisting of a minimum of 10 mil plastic sheeting with 8 to 12 inches of soil cover should be provided above the water injected soils. Injected soils should be maintained in a moist condition prior to placement of the required thickness of non-expansive fill material, plastic sheeting or flatwork.

Performance of post-injection swell testing and moisture content determinations should be employed as final acceptance criteria in engineering analysis to examine accomplishment of intended objectives of the injection treatment. Maximum benefit of these movement reduction procedures can be achieved by employing ALPHA TESTING, INC. to observe, monitor and test the entire process. Construction specifications for the water pressure injection process are provided in the Appendix of this report.

The purpose of the above procedure is to pre-swell the existing soils. Satisfactory completion of the injection process is achieved when the desired moisture content and abatement of swell in the injected subgrade clay soils are reached. Acceptance criteria for water pressure injection should be based upon obtaining an average free swell of 1 percent or less in the injected zone. Performance of post-injection swell testing and moisture content determinations should be employed as final acceptance criteria in engineering analysis to examine accomplishment of intended objectives of the injection treatment.

The resulting estimated potential seasonal movements were calculated assuming the average free swell of the injected soils does not exceed 1 percent. Further, it is assumed the moisture content of the soil below the injected zone and within the normal zone of seasonal moisture content change varies between a "dry" condition and a "wet" condition as defined by Tex-124-E.

6.4 Slab-on-Grade Foundations for Apartment and Amenity Center Buildings

We understand it is presently planned to support the apartment and amenity center buildings using a slab-on-grade foundation system designed for potential seasonal movements of either 2 inches or 1 inch. As discussed in Section 6.3 above, slab foundations on existing clays under current conditions will be subject to potential soil-related movements up to about 6 inches. Subgrade improvements (non-expansive fill material and moisture conditioning or water pressure injection) as described in Section 6.3 can be used to reduce slab foundation movements to 2 inches or 1 inch.

A slab-on-grade foundation should be designed with exterior and interior grade beams adequate to provide sufficient rigidity to the foundation system. A net allowable bearing pressure of 1.5 kips per sq ft may be used for design of all grade beams bearing subgrade improved soils placed as outlined in Section 6.3. Grade beams should bear a minimum depth of 18 inches below final grade and should have a minimum width of 10 inches.

It is common to experience some minor cosmetic distress to structures with slab-on-grade foundation systems due to normal ground movements. To reduce cracking as normal movements occur in subgrade soils, all grade beams and the floor slab should be adequately reinforced with steel (conventional reinforcing steel and/or post-tensioned reinforcement). A properly designed and constructed moisture barrier should be placed between the slab and subgrade soils to retard moisture migration through the slabs.

6.5 Post-Tensioning Institute, Design of Post-Tensioned Slabs-on-Ground

Provided below is information for the design of post-tensioned, slab-on-grade foundations. Design parameters provided below were evaluated based on the conditions encountered in the borings and using information and correlations published by PTI Third Edition and VOLFLO 1.5 computer program provided by Geostructural Tool Kit, Inc. (GTI).

TABLE F
Potential Seasonal Movement of 2 inches
Following Subgrade Improvement as Outlined in Section 6.3

	EDGE LIFT	CENTER LIFT
Edge Moisture Distance, ft (e_m)	4.3	7.0
Differential Soil Movement, inches (y_m)	1.6	1.2

TABLE G
Potential Seasonal Movement of 1 inch
Following Subgrade Improvement as Outlined in Section 6.3

	EDGE LIFT	CENTER LIFT
Edge Moisture Distance, ft (e_m)	4.3	7.5
Differential Soil Movement, inches (y_m)	1.4	1.1

6.6 Subgrade Improvement for Swimming Pool and Pool Decks

Potential movements for the swimming pool deck slabs could be reduced to about 1 inch by improving the subgrade soils beneath these structures as generally recommended in Section 6.3.1 and 6.3.2 of this report (placing 10 ft of moisture conditioned soil or 10 ft of water injected soils in conjunction with 2 ft of non-expansive material beneath the pool deck slab). However, the soil improvements for the pool should extend to a depth that matches the elevation of the adjoining deck slab subgrade treatment. Therefore, for a 5-ft deep pool, moisture conditioning should extend to a depth of at least 7 ft beneath the bottom of the pool. Select fill is not required beneath the pool where the pool is at least 2 ft deep. Subgrade improvement referenced above should extend at least 5 ft beyond the pool deck slab area. Following subgrade improvement as recommended above, the pool and pool deck slabs constructed on-grade could experience potential movements of about 1 inch.

6.7 Lateral Earth Pressures for Below-Grade Levels

Below grade walls of up to about 6 ft below grade are planned for the parking garage structures. The magnitude of lateral earth pressure against below-grade walls is dependent on the method of backfill placement, type of backfill soil, drainage provisions, and type of wall (rigid or yielding) after placement of the backfill. Experience demonstrates when a wall is held rigidly against horizontal movement (restrained at the top), the lateral pressure (at-rest lateral earth pressure) against the wall is greater than the normally assumed active pressure. Yielding walls (rotation at the top of the wall on the order of 0.1 to 0.4 percent of the wall height) can be designed for active earth pressures (k_a) but rigid walls associated with the apartment building structure should be designed for higher at-rest lateral earth pressures (k_o). Walls should be designed using the equivalent fluid pressures provided in Table H below, considering a triangular stress distribution and assuming a horizontal ground surface extending back from the top of the wall. The equivalent fluid pressures provided do not include a factor of safety.

TABLE H LATERAL EARTH PRESSURES			
		Equivalent Fluid Pressure, pcf	
Material	**Condition**	**Drained**	**Undrained including Hydrostatic Pressure**
Free Draining Granular Soil Φ=35˚, γ_T =125 pcf	At-Rest, k_o=0.42	53	89
	Active, k_a=0.27	34	79
Site Clay Soil Φ=15˚, γ_T =120 pcf	At-Rest, k_o=0.74	---	105
	Active, k_a=0.59	---	96

Φ – Internal friction and γt – Effective Total Unit Weight

Free draining granular material should be a clean, non-plastic, relatively well-graded granular soil consisting of sand, gravel, or a sand and gravel mixture with less than 5 percent finer than the No. 200 sieve size. To reduce surface water seepage into the free draining backfill, the top 2-ft of the backfill should consist of on-site clay soil with a plasticity index of at least 25. To utilize the lateral earth pressures associated with free draining granular material, the free draining granular backfill should extend outward at least 2 ft from the base of the wall and then extend upward on a 1 (horizontal) to 2 (vertical) slope. The free draining granular backfill should be separated from the adjacent native soils using a filter fabric (Mirafi 140N, or equivalent) to prevent intrusion of native soils into the free draining granular.

Complete drainage of the free draining material should be provided to prevent the development of hydrostatic pressures behind the wall. A typical drainage system could consist of perforated plastic PVC pipes placed in filter trenches excavated parallel to the base of the walls for their entire length. Septic field drain pipe is **not** acceptable for this purpose. The drain pipes should be positioned at a depth lower than the bottom elevation of the wall and should also be wrapped with filter fabric (Mirafi 140N, or equivalent). A drainage system is beneficial regardless of the type of backfill used. As a minimum, weep-holes should be provided for free-standing exterior walls. Subsurface drains are recommended behind below-grade areas such as walls associated with the structure. Such drains should drain by gravity or be connected to suitable sump pits and pumps.

The effects of surcharge loading must also be considered. Surcharge loads should be multiplied by the applicable coefficient of earth pressure from Table H above, and the resulting pressure should be applied as a uniform lateral pressure over the full height of the wall. The lateral earth pressure recommendations in Table H above assume a horizontal ground surface extending backward from the top of the wall. If sloping backfill is used, the lateral earth pressure on the below-grade wall will be higher. We should be contacted for additional lateral earth pressure recommendations if sloping backfill is used behind a wall.

Lightweight, hand-controlled vibrating plate compactors are recommended for compaction of backfill adjacent to walls to reduce the possibility of increases in lateral pressures due to over-compaction. Heavy compaction equipment should not be operated near the walls. Also, compaction of backfill soils behind walls should not exceed 100 percent standard Proctor maximum dry density (ASTM D 698) to further limit lateral earth pressures against walls.

Below-grade walls associated with the structure should be waterproofed, and keyed joints and waterstops should be provided at all construction joints.

Settlement of backfill behind the walls should be anticipated. Even though backfill is properly compacted as recommended in Section 7.3 of this report, the wall backfill is still subject to settlements over time of up to about 1 to 2 percent of the total fill thickness.

6.8 Below-Grade Drainage for Parking Garage Slab

Consideration should be given to utilizing a sub-floor drainage system for below-grade areas that are susceptible to potential groundwater infiltration. The sub-floor drainage system should be sloped to drain to suitable sump pits. Consideration should also be given to providing multiple sump pits with an emergency power source. Depending on the tolerance for occasional wet spots, consideration can be given to deleting the sub-floor drainage, especially in parking areas, and rely on the perimeter wall drainage systems for collection of seepage. The need for a sub-floor drainage system should be reviewed during construction.

If a sub-floor drainage system is utilized it should be situated a minimum of 12 inches below the bottom of the slab. The drain system could consist of collector pipes (minimum 6 inches in diameter, perforated and wrapped with filter fabric - Mirafi 140N, or equivalent) in shallow trenches or bearing on top of rock connected to a uniform drainage layer at least 12 inches thick. Spacing of the drain pipes should not exceed 25 ft.

The drainage layer should consist of free-draining gravel material with a maximum nominal particle size of 2 inches and not more than 5 percent passing the No. 200 sieve. Gravel meeting the gradation requirements of ASTM C-33 Size No. 57 is an example of a commercially available material suitable for this purpose. The sub-floor drainage system should be sloped to drain to suitable sump pits. Consideration should also be given to providing multiple sump pits with an emergency power source.

6.9 Site Retaining Walls

Low-level (maximum 4 ft in height) site retaining walls should be designed to resist the expected lateral earth pressures as recommended above in Section 6.7. These walls can be supported using drilled straight shaft piers as recommended in Section 6.2. As an alternate to drilled piers, site retaining walls (those not structurally associated with the building) could be supported by shallow spread footing foundations bearing in clayey soils if some level of foundation movement is tolerable (up to about 6 inches).

The proposed retaining walls supported using shallow footings bearing in native undisturbed soils can be designed using a net allowable bearing pressure of 2 ksf. Foundations should bear at a depth of at least 2 ft below the final ground surface as measured at the toe of the wall. The recommended footing depth is required for bearing capacity purposes only. The structural engineer should review the recommended bearing depth to verify the walls are sufficiently designed for global stability and to resist sliding, overturning, etc. Wall footings should have a least dimension of 18 inches for bearing capacity considerations.

Careful monitoring during construction is necessary to locate any pockets or seams of unsuitable material, which might be encountered in excavations for footings. Unsuitable materials encountered at the foundation bearing level should be removed and replaced with lean concrete (about 2,000 psi strength at 28 days).

Resistance to sliding will be developed by friction along the base of the footing and passive earth pressure acting on the vertical face of a key installed in the base of the footing, if required. We recommend an allowable coefficient of friction of 0.3 along the bottom of the footings bearing in clayey soils. The available passive earth resistance on the vertical face of a key installed in the base of the footing may be calculated using an allowable passive earth pressure of 500 psf for a key bearing against undisturbed native clay soils or cohesive fill soils placed as recommended in Section 7.3. Passive resistance on the vertical face of the footing within 2 ft of the final site grade should be neglected.

6.10 Flatwork

Flatwork, pavement and any other soil-supported building elements will be subjected to the same level of movement as discussed in Section 6.3 above. In any areas where post-construction movements of flatwork would be critical, flatwork should be structurally supported, or subgrade improvements as discussed in Section 6.3 should be considered.

6.11 Seismic Considerations

The Site Class for seismic design is based on several factors that include soil profile (soil or rock), shear wave velocity, and strength, averaged over a depth of 100 ft. Since our borings did not extend to 100-foot depths, we based our determinations on the assumption that the subsurface materials below the bottom of the borings were similar to those encountered at the termination depth. Based on Section 1613.3.2 of the 2012 International Building Code and Table 20.3-1 in the 2010 ASCE-7, we recommend using Site Class C (very dense soils and soft rock) for seismic design at this site.

6.12 New Area Pavement

Clay fill soils encountered at the borings, or similar materials used as engineered fill for grading the site could be encountered as subgrade material for the parking and drive areas. These materials should be improved and prepared prior to construction of pavements as recommended below in Section 7.1. To permit correlation between

information from test borings and actual subgrade conditions exposed during construction, a qualified Geotechnical Engineer should be retained to provide subgrade monitoring and testing during construction. If there is any change in project criteria, the recommendations contained in this report should be reviewed by our office.

Calculations used to determine the required pavement thickness are based only on the physical and engineering properties of the materials and conventional thickness determination procedures. Pavement joining the buildings should be constructed with a curb and the joint between the building and curb should be sealed. Related civil design factors such as subgrade drainage, shoulder support, cross-sectional configurations, surface elevations, reinforcing steel, joint design and environmental factors will significantly affect the service life and must be included in preparation of the construction drawings and specifications, but were not included in the scope of this study. Normal periodic maintenance will be required for all pavement to achieve the design life of the pavement system.

The recommended pavement sections provided below are considered the minimum necessary to provide satisfactory performance based on the expected traffic loading. In some cases, City minimum standards for pavement section construction may exceed those provided below.

6.12.1 Pavement Subgrade Preparation

In areas where clayey soils are exposed after final subgrade elevation is achieved, the exposed surface of the pavement subgrade soil should be scarified to a depth of 6 inches and mixed with a minimum 8 percent hydrated lime (by dry soil weight) in conformance with TxDOT Item 260. Assuming an in-place unit weight of 100 pcf for the pavement subgrade soils, this percentage of lime equates to about 36 lbs of lime per sq yard of treated subgrade. The actual amount of lime required should be confirmed by additional laboratory tests (ASTM C 977 Appendix XI) prior to construction. The soil-lime mixture should be compacted to at least 95 percent of standard Proctor maximum dry density (ASTM D 698) and at least 3 percentage points above the mixture's optimum moisture content. In all areas where hydrated lime is used to stabilize subgrade soil, routine Atterberg-limit tests should be performed to verify the resulting plasticity index of the soil-lime mixture is at/or below 15.

Please note, the on-site soils can contain a sufficient quantity of soluble sulfates that can adversely react with hydrated lime added during the mechanical lime stabilization process. Therefore, before committing to mechanical lime stabilization, samples of the pavement subgrade soil should be tested for the quantity of soluble sulfates. Our office should be contacted regarding evaluation of the quantity of soluble sulfates detected and any special processing/design features that may be applicable due to the soluble sulfate concentrations measured.

It is recommended that pavement subgrade stabilization procedures extend at least 1 ft beyond the edge of the pavement to reduce effects of seasonal shrinking and swelling upon the extreme edges of pavement.

Lime stabilization of the pavement subgrade soil will not prevent normal seasonal movement of the underlying untreated materials. Pavement and other flatwork will have the same potential for movement as slabs constructed directly on the existing undisturbed soils. Therefore, good perimeter surface drainage with a minimum slope of 2 percent away from the pavement is recommended. The use of sand as a leveling course below pavement supported on expansive clays should be avoided. Normal maintenance of pavement should be expected over the life of the structures.

6.12.2 Portland Cement Concrete (PCC) Pavement

Following subgrade improvement as recommended in Section 6.12.1 above, the following PCC (reinforced) pavement sections are recommended.

TABLE I
RECOMMENDED PCC PAVEMENT SECTIONS

Paving Areas and/or Type	PCC Thickness, Inches
**Parking Areas Subjected Exclusively to Passenger Vehicle Traffic	5
Drive Lanes, Fire Lanes, Areas Subject to Light Volume Truck Traffic	6
Dumpster Traffic Areas	7

****Note:** Lime treatment of the pavement subgrade is not necessary for pavements subjected *exclusively* to passenger vehicle traffic, although lime treatment in these areas would be generally beneficial to the long-term performance of the pavement and improve constructability. Prior to construction of pavement on untreated clay subgrade soil, the exposed subgrade should be scarified to a depth of at least 6 inches and compacted to at least 95 percent of standard Proctor maximum dry density (ASTM D 698) and within the range of 1 percentage point below to 3 percentage points above the material's optimum moisture content.

Portland-cement concrete should have a minimum compressive strength of 3,000 lbs per sq inch (psi) at 28 days in parking areas subjected exclusively to passenger vehicle traffic. We recommend a minimum compressive strength of 3,500 per sq inch (psi) at 28 days for the street, drive lanes, fire lanes, and truck areas. Concrete should be designed with 5 $\pm$ 1 percent entrained air. Joints in concrete paving should not exceed 15 ft. Reinforcing steel should consist of No. 3 bars placed at 18 inches on-center in two directions.

Alternately, mechanical lime stabilization of the pavement subgrade could be eliminated by increasing the PCC thickness in the pavement sections presented above by 1 inch. Prior to construction of pavement on untreated clay subgrade soil, the exposed subgrade should be scarified to a depth of at least 6 inches and compacted to at least 95 percent of standard Proctor maximum dry density (ASTM D 698) and within the range of 1 percentage point below to 3 percentage points above the material's optimum moisture content.

6.13 Drainage and Other Considerations

Adequate drainage should be provided to reduce seasonal variations in the moisture content of foundation soils. All pavement and sidewalks within 5 ft of the structures should be sloped away from the buildings to prevent ponding of water around the foundations. Final grades within 5 ft of the structures should be adjusted to slope away from the structures at a minimum slope of 2 percent. **Maintaining positive surface drainage throughout the life of the structures is essential.**

In areas with pavement or sidewalks adjacent to the new structures, a positive seal must be maintained between the structure and the pavement or sidewalk to minimize seepage of water into the underlying supporting soils. Post-construction movement of pavement and flat-work is common. Normal maintenance should include examination of all joints in paving and sidewalks, etc. as well as re-sealing where necessary.

Several factors relate to civil and architectural design and/or maintenance, which can significantly affect future movements of the foundation and floor slab system:

1. Preferably, a complete system of gutters and downspouts should carry runoff water a minimum of 5 ft from the completed structures.

2. Large trees and shrubs should not be allowed closer to the foundations than a horizontal distance equal to roughly one-half of their mature height due to their significant moisture demand upon maturing.

3. Moisture conditions should be maintained “constant” around the edge of the slabs. Ponding of water in planters, in unpaved areas, and around joints in paving and sidewalks can cause slab movements beyond those predicted in this report.

4. Planter box structures placed adjacent to buildings should be provided with a means to assure concentrations of water are not available to the subsoil stratigraphy.

5. Architectural design of the floor slabs should avoid additional features such as wing walls as extensions of the slabs.

6. The root systems from existing or recently removed trees at this site will have dried and desiccated the surrounding clay soils, resulting in soil with near-maximum swell potential. Clay soils surrounding tree root mats in building pad and flatwork areas (including but not limited to sidewalks, driveways and patios) should be removed to a minimum depth of 3 ft and compacted in-place with moisture and density control as described in Section 7.3 of this report, below.

Trench backfill for utilities should be properly placed and compacted as outlined in Section 7.3 of this report and in accordance with requirements of local City standards. Since granular bedding backfill is used for most utility lines, the backfilled trench should not become a conduit and allow access for surface or subsurface water to travel toward the new structures. Concrete cut-off collars or clay plugs should be provided where utility lines cross building lines to prevent water from traveling in the trench backfill and entering beneath the structures.

7.0 GENERAL CONSTRUCTION PROCEDURES AND RECOMMENDATIONS

Variations in subsurface conditions could be encountered during construction. To permit correlation between test boring data and actual subsurface conditions encountered during construction, it is recommended a registered Professional Engineering firm be retained to observe construction procedures and materials.

Some construction problems, particularly degree or magnitude, cannot be anticipated until the course of construction. The recommendations offered in the following paragraphs are intended not to limit or preclude other conceivable solutions, but rather to provide our observations based on our experience and understanding of the project characteristics and subsurface conditions encountered in the borings.

7.1 Site Preparation and Grading

All areas supporting floor slabs, slab foundations, pavement, flatwork, or areas to receive new fill should be properly prepared.

After completion of the necessary stripping, clearing, and excavating and prior to placing any required fill, the exposed soil subgrade should be carefully evaluated by probing and testing. Any undesirable material (organic material, wet, soft, or loose soil) still in place should be removed.

The exposed soil subgrade should be further evaluated by proof-rolling with a heavy pneumatic tired roller, loaded dump truck or similar equipment weighing approximately 20 tons to check for pockets of soft or loose material hidden beneath a thin crust of possibly better soil.

Proof-rolling procedures should be observed routinely by a Professional Engineer, or his designated representative. Any undesirable material (organic material, wet, soft, or loose soil) exposed during the proofroll should be removed and replaced with well-compacted material as outlined in Section 7.3.

Prior to placement of any fill, the exposed soil subgrade should then be scarified to a minimum depth of 6 inches and recompacted as outlined in Section 7.3.

If fill is to be placed on existing slopes (natural or constructed) steeper than six horizontal to one vertical (6:1), the fill materials should be benched into the existing slopes in such a manner as to provide a minimum bench-key width of five (5) ft. This should provide a good contact between the existing soils and new fill materials, reduce potential sliding planes, and allow relatively horizontal lift placements.

Slope stability analysis of embankments (natural or constructed) was not within the scope of this study.

The contractor is responsible for designing any excavation slopes, temporary sheeting or shoring. Design of these structures should include any imposed surface surcharges.

Construction site safety is the sole responsibility of the contractor, who shall also be solely responsible for the means, methods and sequencing of construction operations. The contractor should also be aware that slope height, slope inclination or excavation depths (including utility trench excavations) should in no case exceed those specified in local, state and/or federal safety regulations, such as OSHA Health and Safety Standard for Excavations, 29 CFR Part 1926, or successor regulations. Stockpiles should be placed well away from the edge of the excavation and their heights should be controlled so they do not surcharge the sides of the excavation. Surface drainage should be carefully controlled to prevent flow of water over the slopes and/or into the excavations. Construction slopes should be closely observed for signs of mass movement, including tension cracks near the crest or bulging at the toe. If potential stability problems are observed, a geotechnical engineer should be contacted immediately. Shoring, bracing or underpinning required for the project (if any) should be designed by a professional engineer registered in the State of Texas.

Due to the nature of the clayey soils found near the surface at the borings, traffic of heavy equipment (including heavy compaction equipment) may create pumping and general deterioration of shallow soils. Therefore, some construction difficulties should be anticipated during periods when these soils are saturated.

7.2 Foundation Excavations

All foundation excavations should be monitored to verify foundations bear on suitable material. The bearing stratum exposed in the base of all foundation excavations should be protected against any detrimental change in conditions. Surface runoff water should be drained away from excavations and not allowed to collect. All concrete for foundations should be placed as soon as practical after the excavation is made. Drilled piers should be excavated and concrete placed the same day.

Prolonged exposure of the bearing surface to air or water will result in changes in strength and compressibility of the bearing stratum. Therefore, if delays occur, straight shaft drilled piers should be slightly widened and deepened to provide a fresh penetration surface, or a new (deeper) full penetration should be provided. Grade beam excavations for slab foundations should be slightly deepened and cleaned, in order to provide a fresh bearing surface.

All pier shafts should have a diameter of at least $1/30^{th}$ of the shaft length or 1.5 ft, whichever is greater, to facilitate clean-out of the base and proper monitoring. Concrete placed in pier holes should be directed through a tremie, hopper, or equivalent. Placement of concrete should be vertical through the center of the shaft without hitting the sides of the pier or reinforcement to reduce the possibility of segregation of aggregates. Concrete placed in piers should have a minimum slump of 5 inches (but not greater than 7 inches) to avoid potential honey-combing.

Observations during pier drilling should include, but not necessarily be limited to, the following items:

Verification of proper bearing strata and consistency of subsurface stratification with regard to boring logs,

Confirmation the minimum required penetration into the bearing strata is achieved,

Complete removal of cuttings from bottom of pier holes,

Proper handling of any observed water seepage and sloughing of subsurface materials,

No more than 2 inches of standing water should be permitted in the bottom of pier holes prior to placing concrete, and

Verification of pier diameter, and steel reinforcement.

Groundwater was noted at depths of about 13 to 68 ft in Borings 1 through 6 and 22 immediately upon completion of drilling. From our experience, groundwater seepage could also be encountered at shallow depths at the site during pier installation, and the risk of encountering seepage is increased during or after periods of precipitation. Submersible pumps, bailing tools, and/or temporary casing may be required to control groundwater seepage encountered during the pier drilling. The casing should be properly seated into clay or shale below the depth of seepage and groundwater should be removed prior to beginning the design penetration. As casing is extracted, care should be taken to maintain a positive head of plastic concrete and minimize the potential for intrusion of sloughing of fill soils. It is recommended a separate bid item be provided for casing on the contractor's bid schedule. Pier drilling contractors experienced in similar soil and groundwater conditions should be utilized for this project.

Groundwater can also occur within fractures in the bearing stratum and this may require extending the casing and deepening the piers. From our experience with similar soil and rock conditions, sometimes groundwater cannot be controlled by the use of casing, and underwater placement of pier concrete may be required. Special mix designs are usually required for tremied or pumped concrete. Proper concreting procedures should include placement of concrete from the bottom to the top of the pier using a sealed tremie or pumped concrete. The tremie should be maintained at least 5 ft into the wet concrete during placement. It is recommended a separate bid item be provided for casing and underwater concrete placement on the contractor's bid schedule. Pier drilling contractors experienced in similar soil and groundwater conditions should be utilized for this project.

Although not encountered at the borings, fill materials can contain debris which can cause obstruction to pier installation. The pier installation contract should contain provisions for penetration or removal of obstructions.

Hard limestone seams and layers were encountered at various depths within the gray shale bearing stratum for drilled piers. *Further, hard limestone layers were encountered at varying depths during pier installation for structures in other phases of development.*

These limestone layers within the shale are often discontinuous and can occur randomly with depth. Some of these materials are very hard and could cause obstruction to pier installation. Rock teeth and/or core barrels may be required during excavation for drilled pier foundations. The drilled pier contract should contain provision for the penetration or removal of obstructions.

7.3 Fill Compaction

Select, Non-Expansive Fill: Materials used as select, non-expansive fill should have a liquid limit less than 35, a plasticity index (PI) not less than 5 nor greater than 15. All select, non-expansive fill should contain no deleterious material and should be compacted to a dry density of at least 98 percent standard Proctor maximum dry density (ASTM D 698) and within the range of 1 percentage point below to 3 percentage points above the material's optimum moisture content. (Note: The plasticity index and liquid limit of material used as select, non-expansive fill should be verified during fill placement using laboratory tests. Visual observation and classification should not be relied upon to confirm the material to be used as select, non-expansive fill satisfies the above Atterberg-limit criteria.).

Flexible Base Material: Flexible Base material used as non-expansive fill for the building pad area should meet the requirements of TxDOT Item 247, Type A, Grade 1 or 2. Processed concrete meeting TxDOT Item 247, Grade 1 or 2, Type D is also acceptable for as non-expansive material. The material should be compacted to a minimum 95 percent of standard Proctor maximum dry density (ASTM D 698) and within 3 percentage points of the material's optimum moisture content.

The following recommendations pertain to fill soils placed for general site grading as follows:

- *Outside* the designated building pad areas *if* moisture conditioning will be used as the method for subgrade improvement. Where moisture conditioning is utilized for subgrade improvement, all fill within the designated building pad areas, plus at least 5 ft outside the limits of the building pad areas, should meet the requirements of Section 6.3 discussed earlier.
- For general grading *including* building areas *if* water pressure injection will be used as the method for subgrade improvement.

Clay and shaly clay soils with a plasticity index equal to or greater than 25 should be compacted to a dry density between 93 and 98 percent of standard Proctor maximum dry density (ASTM D 698). The compacted moisture content of the clays during placement should be within the range of 2 to 6 percentage points above optimum.

Clay fill should be processed and the largest particle or clod should be less than 6 inches prior to compaction.

Compaction should be accomplished by placing fill in about 8-inch thick loose lifts and compacting each lift to at least the specified minimum dry density. Field density and moisture content tests should be performed on each lift.

In cases where either mass fills or utility lines are more than 10 ft deep, the fill/backfill below 10 ft should be compacted to at least 98 percent of standard Proctor maximum dry density (ASTM D-698) and within 2 percentage points of the material's optimum moisture content. The portion of the fill/backfill shallower than 10 ft should be compacted as outlined above.

Even if fill is properly compacted, fills in excess of about 10 ft are still subject to settlements over time of up to about 1 to 2 percent of the total fill thickness. This should be considered when designing utility lines under pavements and/or wall backfill.

7.4 Groundwater

Groundwater was encountered in Borings 1 through 6 and 22 at depths of about 13 to 68 ft below the existing ground surface immediately following completion of drilling. From our experience with similar soils, groundwater seepage could be encountered in excavations for grade beams, foundations, utility conduits and other general excavations. The risk of encountering seepage increases with depth of excavation and during or after periods of precipitation. Standard sump pits and pumping may be adequate to control minor seepage on a local basis.

In any areas where cuts made to establish final grades, attention should be given to possible seasonal water seepage that could occur through natural cracks and fissures in the newly exposed stratigraphy. In these areas subsurface drains may be required to intercept seasonal groundwater seepage. The need for these or other dewatering devices should be carefully addressed during construction. Our office could be contacted to visually observe final grades to evaluate the need for such drains.

8.0 LIMITATIONS

Professional services provided in this geotechnical exploration were performed, findings obtained, and recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. The scope of services provided herein does not include an environmental assessment of the site or investigation for the presence or absence of hazardous materials in the soil, surface water or groundwater. ALPHA, upon written request, can be retained to provide these services.

ALPHA TESTING, INC. is not responsible for conclusions, opinions or recommendations made by others based on this data. Information contained in this report is intended for the exclusive use of the Client (and their designated design representatives), and is related solely to design of the specific structures outlined in Section 2.0. No party other than the Client (and their designated design representatives) shall use or rely upon this report in any manner whatsoever unless such party shall have obtained ALPHA's written acceptance of such intended use. Any such third party using this report after obtaining ALPHA's written acceptance shall be bound by the limitations and limitations of liability contained herein, including ALPHA's liability being limited to the fee paid to it for this report. Recommendations presented in this report should not be used for design of any other structures except those specifically described in this report. In all areas of this report in which ALPHA may provide additional services if requested to do so in writing, it is presumed that such requests have not been made if not evidenced by a written document accepted by ALPHA. Further, subsurface conditions can change with passage of time. Recommendations contained herein are not considered applicable for an extended period of time after the completion date of this report. It is recommended our office be contacted for a review of the contents of this report for construction commencing more than one (1) year after completion of this report. Non-compliance with any of these requirements by the Client or anyone else shall release ALPHA from any liability resulting from the use of, or reliance upon, this report.

Recommendations provided in this report are based on our understanding of information provided by the Client about characteristics of the project. If the Client notes any deviation from the facts about project characteristics, our office should be contacted immediately since this may materially alter the recommendations. Further, ALPHA TESTING, INC. is not responsible for damages resulting from workmanship of designers or contractors. It is recommended the Owner retain qualified personnel, such as a Geotechnical Engineering firm, to verify construction is performed in accordance with plans and specifications.

APPENDIX

SOIL MODIFICATION
WATER PRESSURE INJECTION (WPI)
GUIDELINE SPECIFICATIONS

Purpose

The purpose of this specification is to provide a procedural basis for using water pressure injection as a method to obtain a relatively uniform, moist, pre-swelled zone of soil beneath the floor slab. Specifically, the intent of this procedure is to reduce the average free swell potential of soils within the injected zone to 1 percent or less.

Material

1. Only potable water shall be used during the entire injection process.

2. A non-ionic surfactant (wetting agent) will be added to the water according to manufacturer's recommendations, but, in no case will proportions be less than one part (undiluted) per 3,500 gallons of water.

Application

1. The water pressure injection work shall be accomplished after the site has been brought to near final subgrade elevation and prior to installation of any plumbing, trenches and utilities.

2. The injection vehicle will have a minimum gross weight of 5 tons and shall be capable of making straight vertical penetrations to minimize pressure loss around the injector rods to at least 10 ft.

3. Injections will be continued to "REFUSAL" (until the maximum reasonable quantity of water has been injected into the soil and water is flowing freely at the surface, either out of previous injection holes or from areas where the surface soils have fractured. The amount of water flowing from the areas described above will be approximately equivalent to the volume of water being pumped into the soil. As a minimum, injections should be at least 30 seconds at each injection interval unless altered by the Geotechnical Engineer).
   Note: Loss of water or blow-back around injector pipes does not constitute refusal. Continued loss of water in this manner may indicate inadequate injection equipment or techniques, or in some instances, surficial soils that will not form an adequate seal to contain the water. In either instance, the owner's representative should be contacted and an on-site observation made to determine appropriate steps to achieve adequate injection.

   After completion of water injection, the injection contractor will submit records which reflect the total quantity of water used. The injection contractor will be totally responsible for determining the means and methods of injecting the on-site soils such that the average free swell of soils within the injected zone does not exceed 1 percent.

4. Injection pipe(s) will penetrate the soil in approximately 12 to 18-inch intervals, injecting to refusal at each interval for a total depth of 10 ft or impenetrable material, whichever occurs first. If a seemingly impenetrable layer is encountered, ALPHA TESTING, INC. must be contacted to evaluate the significance of the lack of penetration with the injector tubes or provide alternate recommendations. A minimum of seven (7) injection intervals will be provided for the 10-ft injection depth. The lower portion of the injection pipe will consist of a hole pattern that will uniformly disperse water throughout the entire depth.

5. Spacing for the injections will not exceed 5 feet on-center each way. Subsequent injections will be offset laterally at one-half the distance in both directions between the original injection centers.

6. Injection pressures should be adjusted to inject the greatest quantity of water possible within a pressure range of 50 - 200 psi pump pressure.

7. After a minimum curing time of 48 hours, the water injected pad shall be tested for moisture content and swell abatement to determine if additional injections with water are necessary. Subsequent water injections will be 5 feet on-center each way and spaced 2½ feet offset in two orthogonal directions from the initial injection.

8. Upon completion of the final water pressure injection, the top surface of the injected pad should be scarified to a depth of at least 6 inches and re-compacted to between 93 and 98 percent of the optimum density, at a moisture content between 2 and 4 percentage points above the optimum values, as defined by ASTM D-698. Compaction tests should be performed at a frequency of 1 test per 5,000 sq ft with a minimum of three (3) tests per pad.

9. The moisture content of the injected soils will be maintained until the floor slab is placed. Loss of moisture from the surface or sides of the building pad must be prevented by watering or use of a membrane. Any open trenches should be sealed or kept wet to prevent loss of moisture. All trenches should be backfilled with the excavated material. The moisture content of the backfill should be maintained in the range of 2 to 4 percentage points above optimum.

Special Considerations

Several water injections may be required to achieve the desired final moisture content and corresponding soil swell abatement. Due to variations in the subsurface soils, the number of injection passes required to reduce the swell potential of the injected soils to 1 percent or less is unknown. Hence, the Client should allow for extra construction time on the site considering the time frame required to achieve the desired reduction in swell potential is unknown. Further, the contract with the Injection Contractor should address the situation where more injection passes than predicted are required to achieve the desired result.

Between the time the subgrade is water pressure injected and either the select fill material or plastic sheeting is placed, the upper surface of the injected soil should not be allowed to dry. To allow for adequate pre-swelling of the soils from the injection procedure, concrete for slabs should not be placed above injected areas until at least two (2) weeks following the final water injection. During this two-week period, the surface of the injected soil must be kept moist or covered with plastic sheeting to prevent moisture loss. About 3 to 4 inches or more of heave can be expected in building pad during and shortly after completion of the injection process.

Additionally, experience indicates injection adjacent to existing structures supported at or near the existing ground surface (such as, but not limited to, buildings, roads, and utility conduits) can result in swelling of soil in the injected zone as well as those beneath existing nearby structures. Swelling of soil supporting existing floor slabs can result in distress (movement) to existing buildings. Therefore, if an existing building or other structure is located within 30 ft of the proposed water injection area, it is recommended a temporary vertical moisture barrier be installed longitudinally between the existing structure and the injected pad to prevent injected water from entering the subgrade of the existing structure. The moisture barrier could consist of a 12 ft deep trench, about 1 ft wide, backfilled with lean concrete or other suitable relatively impermeable material.

Monitoring

A full-time ALPHA TESTING, INC. technician should be retained and present throughout the injection operations. Moisture content and free swell samples should be taken at 1-foot intervals to the total depth injected from a minimum of one test boring per each 4,000 sq feet of injected area (minimum two borings per pad). The moisture content and shear strength (using a pocket-penetrometer) will be determined for each sample. One-dimension free swell tests (ASTM D 4546-85 Method B) will be performed on selected samples at a frequency of at least two three (3) free swell tests per test boring for the 10 ft injection depth. The free swell tests will be performed with a surcharge equal to the overburden pressure anticipated upon completion of the new structure. Based upon the test results, the current swell potential of the injected soils should be determined by the project Geotechnical Engineer. Acceptance criteria for water pressure injection will be based upon achieving the potential movements indicated in the Geotechnical Exploration. As a guide, an average free swell of 1 percent or less in the injected zone could be used for planning. However, due to variations in the soils across the site, an average free swell of more than 1 percent may be allowable in some areas. Acceptance of soils with average free swells of more than 1 percent should be evaluated by ALPHA TESTING, INC. Depending upon the moisture content and the potential swell remaining in the existing injected soils, additional injections with water containing surfactant may be required until these requirements are met.

Wet and soft surface conditions resulting from the water injection procedures will require the contractor to provide access to drilling equipment used to obtain the soil samples which verify the injection process. Special track equipment may be required to provide the required access. The contractor will be responsible for providing and operating suitable equipment to permit sampling of the injected soils (test borings) with a standard truck-mounted drilling rig.

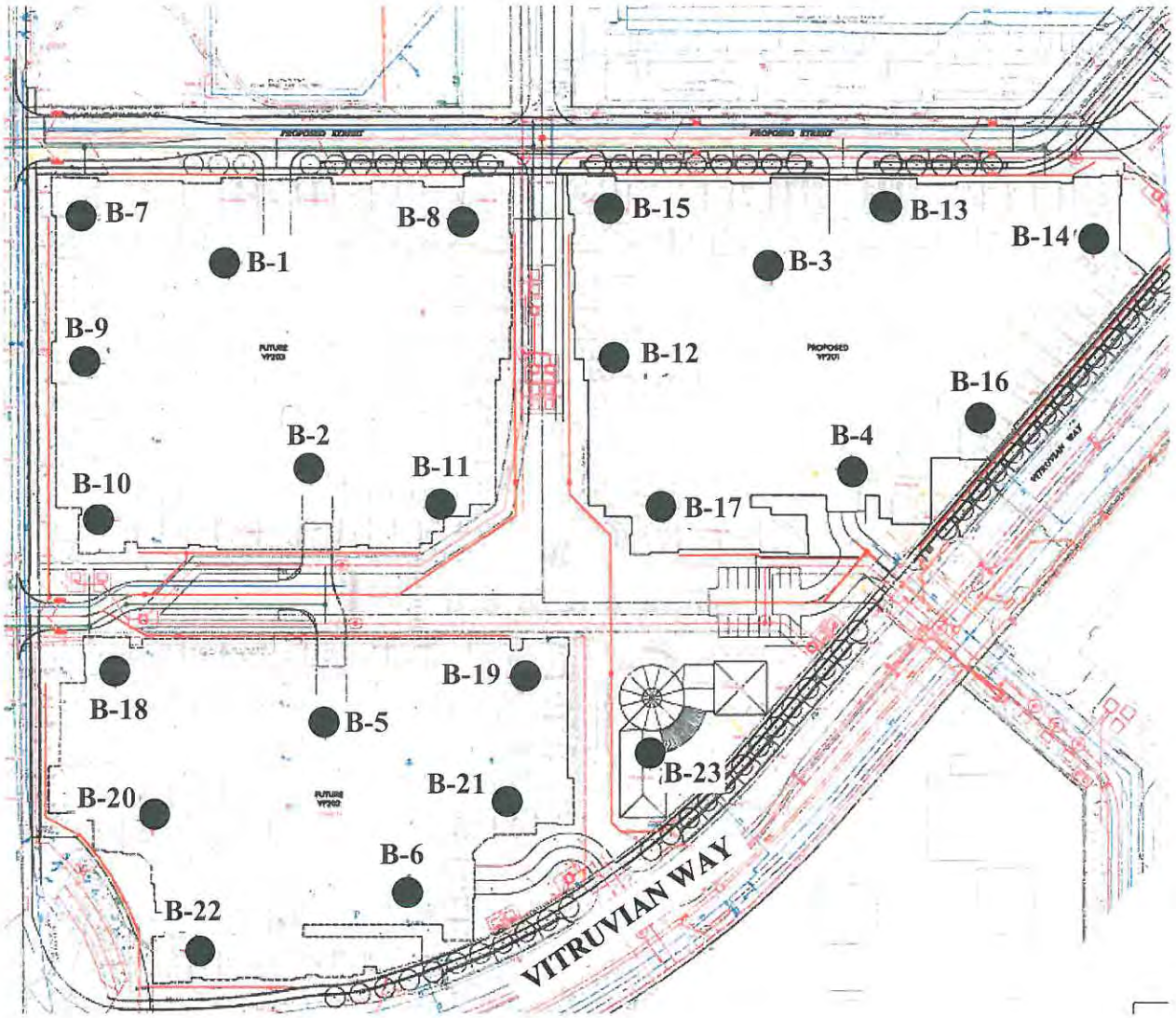
A-1 METHODS OF FIELD EXPLORATION

Using standard rotary drilling equipment, a total of twenty-three (23) test borings were performed for this geotechnical exploration at the approximate locations shown on the Boring Location Plan, Figure 1. The test boring locations were located by using a handheld GPS device or by pacing or taping and estimating right angles from landmarks which could be identified in the field and as shown on the site plan provided during this study. The locations of the test borings shown on the Boring Location Plan are considered accurate only to the degree implied by the method used to locate the borings.

Relatively undisturbed samples of the cohesive subsurface materials were obtained by hydraulically pressing 3-inch O.D. thin-wall sampling tubes into the underlying soils at selected depths (ASTM D 1587). These samples were removed from the sampling tubes in the field and examined visually. One representative portion of each sample was sealed in a plastic bag for use in future visual examinations and possible testing in the laboratory.

Texas Cone Penetration (TCP) tests were used to assess the apparent in-place strength characteristics of the materials encountered at the borings. The tests were conducted in accordance with TxDOT Test Method TEX 132-E. A 3-inch diameter steel cone driven by a 170-pound hammer dropped 24 inches is the basis for Texas Department of Transportation (TxDOT) strength correlations. Depending on the resistance (strength) of the materials, either the number of blows of the hammer required to provide 12 inches of penetration, or the inches of penetration of the cone due to 100 blows of the hammer are recorded on the field logs and are shown on the Drilling Logs.

Logs of all borings are included in the Appendix of this report. The logs show visual descriptions of subsurface strata encountered using the Unified Soil Classification System. Sampling information, pertinent field data, and field observations are also included. Samples not consumed by testing will be retained in our laboratory for at least 14 days and then discarded unless the Client requests otherwise.



● **Approximate Boring Locations**

Geotechnical Exploration Vitruvian Park - Buildings 201, 202 and 203 Off Vitruvian Way Addison, Texas Alpha Project No. G152235	ALPHA TESTING WHERE IT ALL BEGINS	Boring Location Plan Figure 1

B-1 METHODS OF LABORATORY TESTING

Representative samples were examined and classified by a qualified member of the Geotechnical Division and the boring logs were edited as necessary. To aid in classifying the subsurface materials and to determine the general engineering characteristics, natural moisture content tests (ASTM D 2216), Atterberg-limit tests (ASTM D 4318), and dry unit weight determinations were performed on selected samples. In addition, unconfined compression tests (ASTM D 2166) and pocket-penetrometer tests were conducted on selected soil samples to evaluate soil shear strength. Results of all laboratory tests described above are provided on the accompanying Log of Boring sheets.

In addition to the Atterberg-limit tests, the expansive properties of the clay soils were further analyzed by absorption swell tests. The swell test is performed by placing a selected sample in a consolidation machine and applying either the approximate current or expected overburden pressure and then allowing the sample to absorb water. When the sample exhibits very little tendency for further expansion, the height increase is recorded and the percent free swell and total moisture gain calculated. Results of the absorption swell test are provided on the Swell Test Data sheet, Figure 2 included in this appendix.

SWELL TEST DATA

Boring No.	1	2	3	4	5
Average Depth, ft	14	14	9	14	14
Dry Unit Weight, pcf	106	105	98	89	102
Liquid Limit	66	69	71	79	67
Plastic Limit	22	23	24	30	23
Plasticity Index	44	46	47	49	44
Initial Moisture Content	18%	23%	26%	34%	25%
Final Moisture Content	24%	26%	29%	37%	27%
Free Swell	0.8%	1.5%	0.0%	0.0%	0.3%

Boring No.	6	7	8	10	12
Average Depth, ft	9	9	3	5	7
Dry Unit Weight, pcf	107	103	110	97	103
Liquid Limit	41	76	72	70	76
Plastic Limit	17	26	24	24	25
Plasticity Index	24	50	48	46	51
Initial Moisture Content	20%	21%	20%	26%	25%
Final Moisture Content	23%	24%	25%	30%	28%
Free Swell	0.0%	0%	4.4%	0%	1.5%

Boring No.					
Average Depth, ft	13	15	16	17	18
Dry Unit Weight, pcf	5	9	5	14	3
Liquid Limit	92	100	110	86	103
Plastic Limit	62	66	73	89	70
Plasticity Index	21	22	26	28	24
Initial Moisture Content	41	44	47	61	46
Final Moisture Content	26%	26%	19%	39%	23%
Free Swell	29%	29%	23%	39%	29%
	0%	1.5%	2.8%	0%	4.7%

Boring No.	19	20	21	22	23
Average Depth, ft	7	3	5	9	3
Dry Unit Weight, pcf	102	98	95	108	99
Liquid Limit	35	70	79	56	71
Plastic Limit	18	24	24	21	25
Plasticity Index	17	46	55	35	46
Initial Moisture Content	19%	27%	25%	21%	24%
Final Moisture Content	24%	30%	32%	24%	32%
Free Swell	0%	0.8%	1.6%	0.7%	3.7%

Geotechnical Exploration
Vitruvian Park - Buildings 201, 202 and 203
Off Vitruvian Way
Addison, Texas
Alpha Project No. G152235

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Swell Test Data
Figure 2

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LOG OF BORING NO.: 1

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/6/2015 **End Date:** 10/6/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
▽ On Rods (ft): 15
▼ After Drilling (ft): Dry
▼ After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
0		Dark Brown CLAY				2.0							
						2.5				29			
5						3.0				28			
		6.0											
		Tan and Gray CLAY				3.0				31			
10						4.0				33			
		13.0											
15		▽ Tan and Gray SHALY CLAY				4.5+				24	66	22	44
		-gray below 18'				4.5+				18			
20		22.0											
		Gray CLAY SHALE			100/ 7.5"								
25													
		29.0											
30		Gray SHALE with limestone seams			100/ 6"								
35					100/ 6"								
40					100/ 3.5"								
45					100/ 4"								
50					100/ 5.5"								
55					100/ 3"								
60					100/ 6"								
65					100/ 5"								
70		70.0			100/ 2.5"								
		TEST BORING TERMINATED AT 70 FT											
75													

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LOG OF BORING NO.: 2

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/6/2015 **End Date:** 10/6/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
▽ On Rods (ft): 30
▼ After Drilling (ft): 68
▽▼ After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Dark Brown and Gray CLAY with traces of fragments-FILL				3.5							
5						3.5				29			
		5.0											
		Tan and Gray CLAY				2.0				33			
						2.0				33			
10						2.5				34			
		13.0											
		Tan and Gray SHALY CLAY				4.5+				25	69	23	46
15													
		-gray below 18'				4.5+				25			
20													
		23.0											
		Gray CLAY SHALE			100/ 8"								
25													
	▽				100/ 8"								
30													
		34.0											
35		Gray SHALE with limestone seams			100/ 6"								
		-limestone seams at 35'											
40					100/ 4"								
45					100/ 5"								
50					100/ 5.5"								
55					100/ 4.75"								
60					100/ 4"								
65					100/ 4"								
	▼												
70		70.0			100/ 3.5"								
		TEST BORING TERMINATED AT 70 FT											
75													

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LOG OF BORING NO.: 3

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/2/2015 **End Date:** 10/2/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
▽ On Rods (ft): 15
▼ After Drilling (ft): 68
▽▼ After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
0		Dark Brown CLAY				4.5+							
						4.5+				21			
5						4.5+				21			
		-brown below 6'				4.25				25			
		8.0											
10		Tan and Gray CLAY				3.5				28	71	24	47
		13.0											
15		▽ Tan and Gray SHALY CLAY				4.0				27			
		-gray below 18'				4.5+				21			
20		21.0											
		Gray CLAY SHALE											
25		-3" thick limestone seams at 24'			99/ 10.5"								
30					100/ 10"								
		34.0											
35		Gray SHALE with limestone seams and layers			100/ 5.5"								
40					100/ 5.5"								
45					100/ 4.75"								
		-1' thick limestone layer at 47'											
50					100/ 4.5"								
55					100/ 5.25"								
60					100/ 4.5"								
65		-1.5' thick limestone layers at 64.5'			100/ 3.5"								
		▼											
70		70.0			100/ 6"								
		TEST BORING TERMINATED AT 70 FT											
75													

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LOG OF BORING NO.: 4

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/2/2015 **End Date:** 10/2/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
▽ On Rods (ft): 21
▼ After Drilling (ft): Dry
▼ After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Brown CLAY with sand and gravel-FILL				4.5+							
		2.0											
		Dark Brown CLAY				4.5+				21			
5						4.5+				25			
		6.0											
		Tan and Gray CLAY				3.5				21			
10						4.0				31			
		13.0											
		Tan and Gray SHALY CLAY				4.5+				32	79	30	49
15													
		-gray below 18'				4.5+				15			
20		20.0											
		▽ Gray SHALE			100/ 5.75"								
25													
					100/ 5								
30													
					100/ 5								
35													
					100/ 6"								
40													
					100/ 4.75"								
45													
					100/ 5.25"								
50													
					100/ 3.5"								
55													
		-3" thick layer limestone seam			100/ 3.5"								
60													
					100/ 4.25"								
65													
		70.0			100/ 4.5"								
70		TEST BORING TERMINATED AT 70 FT											
75													

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LOG OF BORING NO.: 5

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/5/2015 **End Date:** 10/5/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
▽ On Rods (ft): 40
▼ After Drilling (ft): 68
▽▼ After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
0		Dark Brown CLAY				3.5							
						2.5				29			
5						4.5+				25			
		-brown below 6'				4.5+				28			
		8.0											
10		Tan and Gray CLAY				3.5				31			
		13.0											
15		Tan and Gray SHALY CLAY				4.0				21	67	23	44
20						4.5+				24			
		22.0											
25		Gray SHALY CLAY				4.5+				19			
		26.0											
		Gray SHALE with limestone seams			100/ 5"								
30													
35					100/ 5"								
40		▽			100/ 6"								
45					100/ 5"								
50		-8" thick limestone seam at 48'			100/ 4"								
55					100/ 5"								
60					100/ 4.5"								
65					100/ 4"								
70		▼ -7" thick limestone seam at 68'			100/ 3.5"								
		70.0											
		TEST BORING TERMINATED AT 70 FT											
75													

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LOG OF BORING NO.: 6

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/5/2015 **End Date:** 10/5/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
▽ On Rods (ft): 20
▼ After Drilling (ft): 36
▼ After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Dark Brown and Gray CLAY with some sand-FILL				4.0							
		2.0											
5		Dark Brown CLAY				3.0				31			
						4.5				29			
		6.0											
		Light Brown CLAY with calcareous nodules				4.5+				26			
		8.0											
10		Tan CALCAREOUS CLAY				4.5+				21	41	17	24
15		-limestone seams and layers below 13'				4.0				17			
		18.0											
20		▽ Tan and Gray SHALY CLAY				4.5				26			
25		-gray below 23'				4.5+				21			
		26.0											
		Gray CLAY SHALE			90/ 12"								
30													
		34.0											
35		▼ Gray SHALE with limestone seams			100/ 5"								
40					100/ 5.5"								
45					100/ 5"								
50					100/ 4.5"								
55					100/ 4.25"								
60					100/ 4.5"								
65		-6" thick limestone layer at 64.5'			100/ 4.5"								
70		70.0			100/ 5.5"								
		TEST BORING TERMINATED AT 70 FT											
75													

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LOG OF BORING NO.: 7

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/7/2015 **End Date:** 10/7/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
On Rods (ft): None
After Drilling (ft): Dry
After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
0		Dark Brown CLAY				3.5							
						2.5	1.1		91	31			
4.0													
5		Tan and Gray CLAY				2.0				31			
						3.25				33			
10						4.5+				33	76	26	50
13.0													
15		Tan and Gray SHALY CLAY				4.5+				25			
20						4.5+							
20.0		TEST BORING TERMINATED AT 20 FT											
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

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LOG OF BORING NO.: 8

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/7/2015 **End Date:** 10/7/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
On Rods (ft): None
After Drilling (ft): Dry
After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Light Brown CLAY				3.0							
		2.0											
5		Tan and Gray CLAY				4.5+				21	72	24	48
						4.5+				20			
						4.5+				23			
		8.0											
10		Tan and Gray SHALY CLAY				4.5+				27			
		11.0											
		Gray SHALY CLAY											
15						4.5+				21			
		16.0											
		Gray SHALE with limestone seams											
20		20.0			100/ 5.5"								
		TEST BORING TERMINATED AT 20 FT											
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

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LOG OF BORING NO.: 9

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/7/2015 **End Date:** 10/7/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
On Rods (ft): None
After Drilling (ft): Dry
After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
5		Dark Brown CLAY				2.5							
						2.5				31			
		6.0				2.25				33			
10		Tan and Gray CLAY				3.25				33			
						4.5+				33			
		13.0											
15		Tan and Gray SHALY CLAY				4.5+				25			
20		-gray below 18'				4.5+							
		20.0											
		TEST BORING TERMINATED AT 20 FT											
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

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LOG OF BORING NO.: 10

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/7/2015 **End Date:** 10/7/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
On Rods (ft): None
After Drilling (ft): Dry
After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
0		Dark Brown CLAY				3.5							
						3.25	1.8		92	32			
5						4.5+				28	70	24	46
		8.0				4.5+				27			
10		Tan and Gray CLAY				3.25				27			
		13.0											
15		Tan and Gray SHALY CLAY				3.25				19			
		20.0				4.5+							
20		TEST BORING TERMINATED AT 20 FT											
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

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LOG OF BORING NO.: 11

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/8/2015 **End Date:** 10/8/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
On Rods (ft): None
After Drilling (ft): Dry
After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION		Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Tan CLAY with rock fragments-FILL	2.0				4.5+							
5		Dark Brown CLAY					4.5+				23	69	23	46
			6.0				4.5+				25			
		Tan and Gray CLAY	8.0				3.0				23			
10		Tan and Gray SHALY CLAY					2.75				30			
15							4.5+				29			
20			20.0				4.5+							
		TEST BORING TERMINATED AT 20 FT												
25														
30														
35														
40														
45														
50														
55														
60														
65														
70														
75														

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LOG OF BORING NO.: 12

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/8/2015 **End Date:** 10/8/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
▽ On Rods (ft): None
▼ After Drilling (ft): Dry
▼ After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION		Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Tan and Brown CLAY with rock fragments-FILL	2.0				4.5+							
		Tan CLAY with calcareous nodules	4.0				3.0	3.7		104	21			
5		Tan and Gray CLAY	6.0				3.0				30			
		Tan and Gray SHALY CLAY					4.5+				28	76	25	51
10							4.5+				31			
			11.0											
		Gray CLAY SHALE with limestone seams				100/ 9"								
15														
20			20.0			100/ 8"								
		TEST BORING TERMINATED AT 20 FT												
25														
30														
35														
40														
45														
50														
55														
60														
65														
70														
75														

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LOG OF BORING NO.: 13
Sheet 1 of 1
PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/8/2015 **End Date:** 10/8/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
▽ On Rods (ft): None
▼ After Drilling (ft): Dry
▼ After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION		Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Dark Brown and Tan CLAY with some sand-FILL	2.0				4.5+							
		Dark Brown CLAY	4.0				3.5				32			
5		Tan CLAY with calcareous nodules	6.0				4.5+				30	62	21	41
		Tan and Gray CLAY					3.0				28			
10							3.0				34			
			12.0											
		Gray CLAY SHALE with limestone seams				98/ 10"								
15														
20			20.0			100/ 9.5"								
		TEST BORING TERMINATED A T20 FT												
25														
30														
35														
40														
45														
50														
55														
60														
65														
70														
75														

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LOG OF BORING NO.: 14

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PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/8/2015 **End Date:** 10/8/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
On Rods (ft): None
After Drilling (ft): Dry
After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Brown and Tan CALCAREOUS CLAY with limestone seams and layers				4.5+							
2.0					100/ 3"								
5		Tan Weathered SHALY LIMESTONE with clay seams and layers			100/ 2"								
8.0					100/ 3.5"								
10		Gray SHALY LIMESTONE											
11.0					100/ 1.5"								
		Gray CLAY SHALE with limestone seams											
15					91/ 10.75"								
20.0					100/ 8"								
20		TEST BORING TERMINATED AT 20 FT											
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

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LOG OF BORING NO.: 15

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PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/8/2015 **End Date:** 10/8/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
On Rods (ft): None
After Drilling (ft): Dry
After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Brown and Tan CLAY-FILL				2.5							
		2.0											
5		Light Brown CLAY				2.75	1.1		97	28			
		6.0				3.0				28			
		Tan and Gray CLAY				3.0				25			
10						3.25				28	66	22	44
15										32			
		17.0											
		Gray CLAY SHALE with limestone seams											
20		20.0			100/ 7.5"								
		TEST BORING TERMINATED AT 20 FT											
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

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LOG OF BORING NO.: 16

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PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/8/2015 **End Date:** 10/8/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
On Rods (ft): None
After Drilling (ft): Dry
After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Dark Brown and Tan CLAY with rock fragments-FILL 2.0											
5		Tan CLAY with calcareous nodules				4.5+				13			
		6.0				2.5				20	73	26	47
		Tan and Gray SHALY CLAY				2.0				31			
10						4.5				23			
		-gray below 12'											
15						4.5+				20			
		16.0 Gray CLAY SHALE											
20		20.0			66/ 12"								
		TEST BORING TERMINATED AT 20 FT											
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

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LOG OF BORING NO.: 17

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PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/8/2015 **End Date:** 10/8/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
On Rods (ft): None
After Drilling (ft): Dry
After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION		Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Dark Brown CLAY with rock fragments-FILL	2.0				4.5+							
5		Brown CLAY					2.25				21			
							3.0				23			
							3.0				19			
10							3.0				25			
			13.0											
15		Tan and Gray SHALY CLAY					3.0				39	89	28	61
		-gray below 18'												
20			20.0				4.5+							
		TEST BORING TERMINATED AT 20 FT												
25														
30														
35														
40														
45														
50														
55														
60														
65														
70														
75														

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LOG OF BORING NO.: 18

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PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/7/2015 **End Date:** 10/7/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
On Rods (ft): None
After Drilling (ft): Dry
After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
0		Dark Brown CLAY				4.25							
						4.5+				25	70	24	46
5						2.5				25			
		-brown below 6'				2.5				28			
		8.0											
10		Tan and Gray CLAY				3.5				31			
		13.0											
15		Tan and Gray SHALY CLAY				4.25				29			
20		20.0				4.5+							
		TEST BORING TERMINATED AT 20 FT											
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

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LOG OF BORING NO.: 19

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PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/7/2015 **End Date:** 10/7/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
▽ On Rods (ft): None
▼ After Drilling (ft): Dry
▼ After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
0		Dark Brown CLAY with traces of limestone fragments				4.0							
		4.0				4.5+	3.8		98	29			
5		Tan CALCAREOUS CLAY with weathered limestone				4.5+				16			
		8.0				4.5+				18	35	18	17
10		Tan and Gray CLAY with calcareous nodules				3.0				33			
		13.0											
15		Tan and Gray SHALY CLAY				4.5+				29			
		20.0				4.5+							
20		TEST BORING TERMINATED AT 20 FT											
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

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LOG OF BORING NO.: 20

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PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/7/2015 **End Date:** 10/7/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
On Rods (ft): None
After Drilling (ft): Dry
After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION		Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Dark Brown, Tan, and Gray CLAY-FILL	2.0				3.25							
5		Dark Brown CLAY					3.5				29	70	24	46
							2.5				32			
			8.0				2.75				31			
10		Tan and Gray CLAY					3.5				28			
			13.0											
15		Tan and Gray SHALY CLAY					4.5				28			
20			20.0				4.5+							
		TEST BORING TERMINATED AT 20 FT												
25														
30														
35														
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75														

ALPHA TESTING
WHERE IT ALL BEGINS
2209 Wisconsin Street
Suite 100
Dallas, Texas
75229
Phone: 972-620-8911
Fax: 972-620-1302
www.alphatesting.com

LOG OF BORING NO.: 21

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/7/2015 **End Date:** 10/7/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
On Rods (ft): None
After Drilling (ft): Dry
After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
5		Dark Brown CLAY				3.75							
						4.25				32			
						4.25				27	79	24	55
		-light brown below 6'				3.5				29			
			8.0										
10		Tan CLAY with calcareous nodules				4.0				29			
			13.0										
15		Tan and Gray CLAY				4.5+				23			
20			20.0			4.5+							
		TEST BORING TERMINATED AT 20 FT											
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

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LOG OF BORING NO.: 22

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/7/2015 **End Date:** 10/7/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
▽ On Rods (ft): 13
▼ After Drilling (ft): 12
▽▼ After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
5		Dark Brown CLAY				3.0 3.75 3.75	1.8		91	32 30			
		6.0											
10		Light Brown to Tan CLAY with calcareous nodules				3.75 4.0				25 23	56	21	35
	▼▽	13.0											
15		Tan and Gray CLAY with gravel and calcareous nodules				2.0				21			
20		20.0				4.5+							
		TEST BORING TERMINATED AT 20 FT											
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

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LOG OF BORING NO.: 23

Sheet 1 of 1

PROJECT NO.: G152235

Client: DCO Realty, Inc.
Project: Vitruvian Park - Buildings 201, 202 and 203
Start Date: 10/7/2015 **End Date:** 10/7/2015
Drilling Method: CONTINUOUS FLIGHT AUGER

Location: Addison, Texas
Surface Elevation:
West:
North:
Hammer Drop (lbs / in): 170 / 24

GROUND WATER OBSERVATIONS
▽ On Rods (ft): None
▼ After Drilling (ft): Dry
▼ After ____ Hours (ft):

Depth, feet	Graphic Log	MATERIAL DESCRIPTION	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft,in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
		Dark Brown CLAY with calcareous nodules				4.5+							
		4.0				4.5+				24	71	25	46
5		Light Brown to Tan CLAY				3.0				30			
		6.0											
		Tan and Gray CLAY				3.0				31			
10						2.25				32			
		13.0											
15		Tan and Gray SHALY CLAY				4.5+				28			
		-gray below 18'											
20		20.0				4.5+							
		TEST BORING TERMINATED AT 20 FT											
25													
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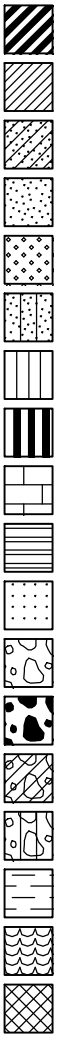
ALPHA TESTING
WHERE IT ALL BEGINS

KEY TO SOIL SYMBOLS AND CLASSIFICATIONS

SOIL & ROCK SYMBOLS



(CH), High Plasticity CLAY
(CL), Low Plasticity CLAY
(SC), CLAYEY SAND
(SP), Poorly Graded SAND
(SW), Well Graded SAND
(SM), SILTY SAND
(ML), SILT
(MH), Elastic SILT
LIMESTONE
SHALE / MARL
SANDSTONE
(GP), Poorly Graded GRAVEL
(GW), Well Graded GRAVEL
(GC), CLAYEY GRAVEL
(GM), SILTY GRAVEL
(OL), ORGANIC SILT
(OH), ORGANIC CLAY
FILL

SAMPLING SYMBOLS

SHELBY TUBE (3" OD except where noted otherwise)
SPLIT SPOON (2" OD except where noted otherwise)
AUGER SAMPLE
TEXAS CONE PENETRATION
ROCK CORE (2" ID except where noted otherwise)

RELATIVE DENSITY OF COHESIONLESS SOILS (blows/ft)

VERY LOOSE	0 TO 4
LOOSE	5 TO 10
MEDIUM	11 TO 30
DENSE	31 TO 50
VERY DENSE	OVER 50

SHEAR STRENGTH OF COHESIVE SOILS (tsf)

VERY SOFT	LESS THAN 0.25
SOFT	0.25 TO 0.50
FIRM	0.50 TO 1.00
STIFF	1.00 TO 2.00
VERY STIFF	2.00 TO 4.00
HARD	OVER 4.00

RELATIVE DEGREE OF PLASTICITY (PI)

LOW	4 TO 15
MEDIUM	16 TO 25
HIGH	26 TO 35
VERY HIGH	OVER 35

RELATIVE PROPORTIONS (%)

TRACE	1 TO 10
LITTLE	11 TO 20
SOME	21 TO 35
AND	36 TO 50

PARTICLE SIZE IDENTIFICATION (DIAMETER)

BOULDERS	8.0" OR LARGER
COBBLES	3.0" TO 8.0"
COARSE GRAVEL	0.75" TO 3.0"
FINE GRAVEL	5.0 mm TO 3.0"
COURSE SAND	2.0 mm TO 5.0 mm
MEDIUM SAND	0.4 mm TO 5.0 mm
FINE SAND	0.07 mm TO 0.4 mm
SILT	0.002 mm TO 0.07 mm
CLAY	LESS THAN 0.002 mm

PLANS FOR THE CONSTRUCTION OF

VITRUVIAN WEST 2 STREETSCAPE IMPROVEMENTS

FOR

VITRUVIAN PARK PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

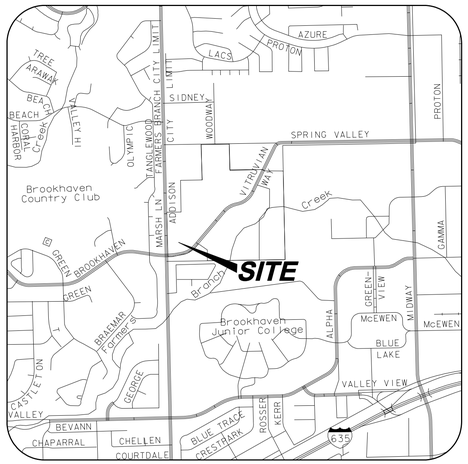
TOWN OF ADDISON, TEXAS

TOWN PROJECT # 2019-01C

JOE CHOW
MAYOR

PAUL WALDEN
TOM BRAUN
IVAN HUGHES
GUILLERMO QUINTANILLA
LORI WARD
MARLIN WILLESEN
COUNCIL MEMBERS

WESLEY S. PIERSON
CITY MANAGER
LISA A. PYLES
DIRECTOR OF PUBLIC WORKS & ENGINEERING



VICINITY MAP

NOT TO SCALE
(MAPSCO GRID 13 & 14)

SHEET INDEX

CIVIL ENGINEER:
ICON CONSULTING ENGINEERS, INC.
2840 W. SOUTHLAKE BLVD., SUITE 110
SOUTHLAKE, TEXAS 76092
PH: (817) 552-6210

CONTACT: BRUCE F. DUNNE, P.E.

LANDSCAPE ARCHITECT:
STUDIO OUTSIDE
824 EXPOSITION AVE., SUITE 5
DALLAS, TEXAS, 75226
PH: (214) 954-7160

CONTACT: BRAD GOODMAN, LEED, AP

SURVEYOR:
KADLECK & ASSOCIATES,
A DIVISION OF WESTWOOD
2740 NORTH DALLAS PKWY., SUITE 280
PLANO, TEXAS,75093
PH: (214) 473-4640
CONTACT: LYNN KADLECK, R.P.L.S.

icon Consulting Engineers, Inc.
Civil Engineers- Designers- Planners
ENGINEERING FIRM REGISTRATION NUMBER F-9007

OCTOBER 30, 2019 - ISSUED FOR BID 20-17

PROJECT NO. 5029-06

icon Consulting Engineers, Inc.
Civil Engineers - Designers - Planners

VW2 STREETSCAPE - VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B - PROJECT NO. 5029-06

GENERAL CONSTRUCTION NOTES

1. STANDARDS AND SPECIFICATIONS: ALL MATERIALS, CONSTRUCTION METHODS, WORKMANSHIP, EQUIPMENT, SERVICES AND TESTING FOR ALL PUBLIC IMPROVEMENTS SHALL BE IN ACCORDANCE WITH THE GOVERNING AUTHORITIES' ORDINANCES, REGULATIONS, REQUIREMENTS, STATUTES, SPECIFICATIONS AND DETAILS, LATEST PRINTING AND AMENDMENTS THERETO. THE GOVERNING AUTHORITIES' INFRASTRUCTURE AND WATER DEPARTMENT REQUIREMENTS, PLUMBING CODES, AND FIRE DEPARTMENT REGULATIONS SHALL TAKE PRECEDENT FOR ALL PUBLIC IMPROVEMENTS WHERE APPLICABLE. ALL OTHER PUBLIC CONSTRUCTION, NOT REGULATED BY THE GOVERNING AUTHORITY, SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, NORTH CENTRAL TEXAS – NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, LATEST PRINTING AND AMENDMENTS THERETO, EXCEPT AS MODIFIED OR AMENDED BY THE PROJECT CONTRACT DOCUMENTS.

2. EXAMINATION OF SITE: THE CONTRACTOR ACKNOWLEDGES THAT HE HAS INVESTIGATED AND SATISFIED HIMSELF AS TO THE CONDITIONS AFFECTING THE WORK, INCLUDING BUT NOT RESTRICTED TO THOSE BEARING UPON TRANSPORTATION, DISPOSAL, HANDLING AND STORAGE OF MATERIALS, AVAILABILITY OF LABOR, WATER, ELECTRIC POWER, ROADS AND UNCERTAINTIES OF WEATHER, OR SIMILAR PHYSICAL CONDITIONS AT THE SITE, CONDITIONS OF THE GROUND, THE CHARACTER OF EQUIPMENT AND FACILITIES NEEDED PRELIMINARY TO AND DURING PERFORMANCE OF THE WORK. THE CONTRACTOR ACKNOWLEDGES THAT HE HAS INSPECTED THE SITE OF THE WORK AND IS FAMILIAR WITH THE SOIL CONDITIONS TO BE ENCOUNTERED. ANY FAILURE BY THE CONTRACTOR TO ACQUAINT HIMSELF WITH THE AVAILABLE INFORMATION WILL NOT RELIEVE HIM FROM RESPONSIBILITY FOR ESTIMATING PROPERLY THE DIFFICULTY OR COST OF SUCCESSFULLY PERFORMING THE WORK. THE TOWN OF ADDISON ASSUMES NO RESPONSIBILITY FOR ANY CONCLUSIONS OR INTERPRETATIONS MADE BY THE CONTRACTOR ON THE BASIS OF THE INFORMATION MADE AVAILABLE BY THE TOWN OF ADDISON.

3. SUBSURFACE INVESTIGATION: SUBSURFACE EXPLORATION TO ASCERTAIN THE NATURE OF SOILS, INCLUDING THE AMOUNT OF ROCK, IF ANY, IS THE RESPONSIBILITY OF THE CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE SUCH SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO DETERMINE THE NATURE OF THE MATERIAL TO BE ENCOUNTERED. SOME SUBSURFACE EXPLORATION HAS BEEN PERFORMED BY THE GEOTECHNICAL ENGINEER OF RECORD ON THE PROJECT AND IS PROVIDED FOR INFORMATIONAL PURPOSES. THE TOWN OF ADDISON AND ENGINEER DISCLAIM ANY RESPONSIBILITY FOR THE ACCURACY, TRUE LOCATION AND EXTENT OF THE SOILS INFORMATION THAT HAS BEEN PREPARED BY OTHERS. THEY FURTHER DISCLAIM RESPONSIBILITY FOR INTERPRETATION OF THAT DATA BY THE CONTRACTOR, AS IN PROJECTING SOIL BEARING VALUES, ROCK PROFILES, SOILS STABILITY AND THE PRESENCE, LEVEL AND EXTENT OF UNDERGROUND WATER.

4. TOPOGRAPHIC SURVEY: TOPOGRAPHIC SURVEY INFORMATION SHOWN ON THE PLANS IS PROVIDED FOR INFORMATIONAL PURPOSES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE INFORMATION SHOWN IS CORRECT, AND SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY ERRORS, DISCREPANCIES OR OMISSIONS TO THE SURVEY INFORMATION PROVIDED. ANY COSTS INCURRED AS THE RESULT OF NOT CONFIRMING THE ACTUAL SURVEY SHALL BE BORNE BY THE CONTRACTOR.

5. COMPLIANCE WITH LAWS: THE CONTRACTOR SHALL FULLY COMPLY WITH ALL LOCAL, STATE AND FEDERAL LAWS, INCLUDING ALL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS CONTRACT AND THE WORK TO BE DONE THEREUNDER, WHICH EXIST OR MAY BE ENACTED LATER BY GOVERNMENTAL BODIES HAVING JURISDICTION OR AUTHORITY FOR SUCH ENACTMENT. ALL WORK REQUIRED UNDER THIS CONTRACT SHALL COMPLY WITH ALL REQUIREMENTS OF LAW, REGULATION, PERMIT OR LICENSE. IF THE CONTRACTOR FINDS THAT THERE IS A VARIANCE, HE SHALL IMMEDIATELY REPORT THIS TO THE TOWN OF ADDISON FOR RESOLUTION.

6. PUBLIC CONVENIENCE AND SAFETY: IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

MATERIALS STORED ON THE WORK SITE SHALL BE SO PLACED, AND THE WORK SHALL AT ALL TIMES BE SO CONDUCTED, AS TO CAUSE NO GREATER OBSTRUCTION TO THE TRAVELING PUBLIC THAN IS CONSIDERED ACCEPTABLE BY THE GOVERNING AUTHORITIES. THE MATERIALS EXCAVATED SHALL BE PLACED SO AS NOT TO ENDANGER THE WORK OR PREVENT FREE ACCESS TO ALL FIRE HYDRANTS, WATER VALVES, GAS VALVES, MANHOLES, AND FIRE ALARM OR POLICE CALL BOXES IN THE VICINITY.

THE TOWN OF ADDISON RESERVES THE RIGHT TO REMEDY ANY NEGLECT ON THE PART OF THE CONTRACTOR WITH REGARDS TO THE PUBLIC CONVENIENCE AND SAFETY WHICH MAY COME TO THE TOWN OF ADDISON'S ATTENTION, AFTER 24 HOURS NOTICE IN WRITING TO THE CONTRACTOR, SAVE IN CASES OF EMERGENCY, WHEN THE TOWN OF ADDISON SHALL HAVE THE RIGHT TO REMEDY ANY NEGLECT WITHOUT NOTICE; AND, IN EITHER CASE, THE COST OF SUCH WORK DONE BY THE TOWN OF ADDISON SHALL BE DEDUCTED FROM THE MONIES DUE OR TO BECOME DUE THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE TOWN OF ADDISON AND THE GOVERNING AUTHORITIES WHEN ANY STREET IS TO BE CLOSED OR OBSTRUCTED; SUCH NOTICE SHALL IN THE CASE OF MAJOR THOROUGHFARES OR STREETS UPON WHICH TRANSIT BY THE GOVERNING AUTHORITIES, KEEP ANY STREET OR STREETS IN CONDITION FOR UNOBSTRUCTED USE BY EMERGENCY SERVICES. WHERE THE CONTRACTOR IS REQUIRED TO CONSTRUCT TEMPORARY BRIDGES OR TO MAKE OTHER ARRANGEMENTS FOR CROSSING OVER DITCHES OR STREAMS, HIS RESPONSIBILITY FOR ACCIDENTS SHALL INCLUDE THE ROADWAY APPROACHES AS WELL AS THE STRUCTURES OF SUCH CROSSINGS.

7. STORM WATER POLLUTION PREVENTION PLAN (SW3P): THE CONTRACTOR SHALL COMPLY WITH THE CONDITIONS OF THE SW3P WHILE CONDUCTING HIS ACTIVITIES ON THE PROJECT. IN ADDITION TO CONSTRUCTING THOSE ITEMS INDICATED ON THE PLAN SHEETS, COMPLIANCE WITH THE SW3P INCLUDES CONFORMANCE TO CERTAIN PRACTICES AND PROCEDURES (IDENTIFIED IN THE SW3P) DURING PROJECT CONSTRUCTION.

8. PERMITS AND LICENSES: THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND LICENSES NECESSARY FOR THE EXECUTION OF THE WORK AND SHALL FULLY COMPLY WITH ALL THEIR TERMS AND CONDITIONS. WHENEVER THE WORK UNDER THIS CONTRACT REQUIRES THE OBTAINING OF PERMITS FROM THE GOVERNING AUTHORITIES, THE CONTRACTOR SHALL FURNISH DUPLICATE COPIES OF SUCH PERMITS TO THE ENGINEER BEFORE THE WORK COVERED THEREBY IS STARTED. NO WORK WILL BE ALLOWED TO PROCEED BEFORE SUCH PERMITS ARE OBTAINED.

9. BONDS: PERFORMANCE, PAYMENT AND MAINTENANCE BONDS WILL BE REQUIRED FROM THE CONTRACTOR FOR ALL WORK CONSIDERED TO BE "PUBLIC" IMPROVEMENTS. BONDS SHALL BE IN THE FORM AND IN THE AMOUNTS AS REQUIRED BY THE GOVERNING AUTHORITIES.

10. VENDOR'S CERTIFICATION: ALL MATERIALS USED IN CONSTRUCTION SHALL HAVE A VENDOR'S CERTIFIED TEST REPORT. TEST REPORTS SHALL BE DELIVERED TO THE ENGINEER BEFORE PERMISSION WILL BE GRANTED FOR USE OF THE MATERIAL. ALL VENDOR'S TEST REPORTS SHALL BE SUBJECT TO REVIEW BY THE ENGINEER, AND SHALL BE SUBJECT TO VERIFICATION BY TESTING OF SAMPLES OF MATERIALS AS RECEIVED FOR USE ON THE PROJECT. IN THE EVENT ADDITIONAL TESTS ARE REQUIRED, THEY SHALL BE PERFORMED BY AN APPROVED INDEPENDENT TESTING LABORATORY AND SHALL BE PAID FOR BY THE CONTRACTOR.

11. TESTING: THE TESTING AND CONTROL OF ALL MATERIALS USED IN THE WORK SHALL BE DONE BY AN INDEPENDENT TESTING LABORATORY, EMPLOYED AND PAID DIRECTLY BY THE TOWN OF ADDISON. IN THE EVENT THE RESULTS OF INITIAL TESTING DO NOT COMPLY WITH THE PLANS AND SPECIFICATIONS, SUBSEQUENT TESTS NECESSARY TO DETERMINE THE ACCEPTABILITY OF MATERIALS OR CONSTRUCTION SHALL BE FURNISHED AND PAID BY THE CONTRACTOR AS DIRECTED BY THE TOWN OF ADDISON. PAYMENT WILL BE MADE BY DEDUCTION FROM PAYMENT DUE THE CONTRACTOR.

12. INSPECTION: INSPECTION OF THE PROPOSED CONSTRUCTION WILL BE PROVIDED BY AND PAID FOR BY THE TOWN OF ADDISON. THE CONTRACTOR SHALL PROVIDE ASSISTANCE BY PROVIDING EXCAVATION, TRENCH SAFETY, OR OTHER WORK NECESSARY TO FACILITATE INSPECTION ACTIVITIES, AND SHALL GIVE SUFFICIENT NOTICE WELL IN ADVANCE OF PENDING CONSTRUCTION ACTIVITIES TO THE TOWN OF ADDISON FOR SCHEDULING OF INSPECTION SERVICES.

13. SHOP DRAWINGS: THE CONTRACTOR SHALL PROVIDE, REVIEW, APPROVE AND SUBMIT ALL SHOP DRAWINGS, PRODUCT DATA AND SAMPLES REQUIRED BY THE GOVERNING AUTHORITIES AND THE PROJECT CONTRACT DOCUMENTS IN ACCORDANCE WITH ITEM 1.28 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, NORTH CENTRAL TEXAS – NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS.

14. SURVEYING: ALL SURVEYING REQUIRED FOR CONSTRUCTION STAKING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL EMPLOY A REGISTERED PROFESSIONAL LAND SURVEYOR TO PREFORM ALL SURVEY, LAYOUT AND MEASUREMENT WORK NECESSARY FOR THE COMPLETION OF THE PROJECT.

15. PROTECTION OF PROPERTY CORNERS AND BENCHMARKS: THE CONTRACTOR SHALL PROTECT ALL PROPERTY CORNER MARKERS AND BENCHMARKS, AND WHEN ANY SUCH MARKERS OR MONUMENTS ARE IN DANGER OF BEING DISTURBED, THEY SHALL BE PROPERLY REFERENCED AND IF DISTURBED SHALL BE RESET BY A REGISTERED PUBLIC SURVEYOR AT THE EXPENSE OF THE CONTRACTOR.

16. EXISTING STRUCTURES: THE PLANS SHOW THE LOCATION OF ALL KNOWN SURFACE AND SUBSURFACE STRUCTURES, HOWEVER, THE TOWN OF ADDISON AND ENGINEER ASSUME NO RESPONSIBILITY FOR FAILURE TO SHOW ANY OR ALL OF THESE STRUCTURES ON THE PLANS, OR TO SHOW THEM IN THEIR EXACT LOCATION. SUCH FAILURE SHALL NOT BE CONSIDERED SUFFICIENT BASIS FOR CLAIMS FOR ADDITIONAL COMPENSATION FOR EXTRA WORK OR FOR INCREASING THE PAY QUANTITIES IN ANY MANNER WHATSOEVER, UNLESS THE OBSTRUCTION ENCOUNTERED IS SUCH AS TO REQUIRE CHANGES IN THE LINES OR GRADES, OR REQUIRE THE CONSTRUCTION OF SPECIAL WORK, FOR WHICH PROVISIONS ARE NOT MADE IN THE PLANS.

17. PROTECTION OF EXISTING UTILITIES: AS REQUIRED BY "THE TEXAS UNDERGROUND FACILITY DAMAGE PREVENTION AND SAFETY ACT", TEXAS ONE CALL SYSTEM (800–245–4545) MUST BE CONTACTED AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION OPERATIONS BEING PERFORMED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT TEXAS ONE CALL SYSTEM.

THE LOCATION AND DIMENSIONS SHOWN ON THE PLANS RELATIVE TO EXISTING UTILITIES ARE BASED ON THE BEST RECORDS AND/OR FIELD INFORMATION AVAILABLE AND ARE NOT GUARANTEED BY THE TOWN OF ADDISON OR ENGINEER TO BE ACCURATE AS TO LOCATION AND DEPTH. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS OF ADJACENT AND/OR CONFLICTING UTILITIES SUFFICIENTLY IN ADVANCE OF HIS ACTIVITIES IN ORDER THAT HE MAY NEGOTIATE SUCH LOCAL ADJUSTMENTS AS NECESSARY IN THE CONSTRUCTION PROCESS TO PROVIDE ADEQUATE CLEARANCES.

THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS IN ORDER TO PROTECT ALL EXISTING UTILITIES, SERVICES AND STRUCTURES ENCOUNTERED, WHETHER OR NOT THEY ARE INDICATED ON THE PLANS. ANY DAMAGE TO UTILITIES RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED AT HIS EXPENSE. TO AVOID UNNECESSARY INTERFERENCE'S OR DELAYS, THE CONTRACTOR SHALL COORDINATE ALL UTILITY REMOVALS, REPLACEMENTS AND CONSTRUCTION WITH THE APPROPRIATE GOVERNING AUTHORITIES, THEN REQUEST WRITTEN AUTHORIZATION FROM THE ENGINEER. THE TOWN OF ADDISON WILL NOT BE LIABLE FOR DAMAGES DUE TO DELAY AS A RESULT OF THE ABOVE.

18. DAMAGE TO EXISTING FACILITIES: ALL UTILITIES, PAVEMENT, SIDEWALKS, WALLS, FENCES, ETC. NOT DESIGNATED TO BE REMOVED BUT THAT ARE DAMAGED DURING CONSTRUCTION ACTIVITIES SHALL BE REPLACED TO A CONDITION AS GOOD AS OR BETTER THAN THE CONDITIONS PRIOR TO STARTING THE WORK, SOLELY AT THE EXPENSE OF THE CONTRACTOR.

19. FIRE AND LIFE SAFETY SYSTEMS: CONTRACTOR SHALL NOT REMOVE, DISABLE OR DISRUPT EXISTING FIRE OR LIFE SAFETY SYSTEMS WITHOUT WRITTEN PERMISSION FROM THE GOVERNING AUTHORITY.

20. TRENCH SAFETY: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AND MAINTAIN A VIABLE TRENCH SAFETY SYSTEM AT ALL TIMES DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR IS DIRECTED TO BECOME KNOWLEDGEABLE AND FAMILIAR WITH THE STANDARDS AS SET BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND THE STATE OF TEXAS LAW CONCERNING TRENCHING AND SHORING. THE CONTRACTOR SHALL PROVIDE TRENCH SAFETY SYSTEM PLANS, PREPARED AND SEALED BY A PROFESSIONAL ENGINEER, LICENSED IN THE STATE OF TEXAS, FOR THE IMPLEMENTATION OF SAFETY CONTROL MEASURES, MEETING THE REQUIREMENTS OF THE GOVERNING AUTHORITIES, THAT WILL BE IN EFFECT DURING THE PERIOD OF CONSTRUCTION OF THE PROJECT.

21. SAFETY RESTRICTIONS – WORK NEAR HIGH VOLTAGE LINES: THE FOLLOWING PROCEDURES WILL BE FOLLOWED REGARDING THE SUBJECT ITEM ON THIS CONTRACT:

A. A WARNING SIGN NOT LESS THAN FIVE INCHES BY SEVEN INCHES PAINTED YELLOW WITH BLACK LETTERS THAT ARE LEGIBLE AT 12 FEET SHALL BE PLACED INSIDE AND OUTSIDE VEHICLES SUCH AS CRANES, DERRICKS, POWER SHOVELS, DRILLING RIGS, PILE DRIVER, HOISTING EQUIPMENT OR SIMILAR APPARATUS. THE WARNING SIGN SHALL READ AS FOLLOWS: "WARNING – UNLAWFUL TO OPERATE THIS EQUIPMENT WITHIN SIX FEET OF HIGH VOLTAGE LINES."

B. EQUIPMENT THAT MAY BE OPERATED WITHIN TEN FEET OF HIGH VOLTAGE LINES SHALL HAVE AN INSULATING CAGE–TYPE OF GUARD ABOUT THE BOOM OR ARM, EXCEPT BACKHOES OR DIPPERS, AND INSULATOR LINKS ON THE LIFT HOOK CONNECTIONS.

C. WHEN NECESSARY TO WORK WITHIN SIX FEET OF HIGH VOLTAGE ELECTRIC LINES, NOTIFY THE POWER COMPANY WHO WILL ERECT TEMPORARY MECHANICAL BARRIERS, DE–ENERGIZE THE LINE OR RAISE OR LOWER THE LINE. THE WORK DONE BY THE POWER COMPANY SHALL BE AT THE EXPENSE OF THE CONTRACTOR. THE NOTIFYING DEPARTMENT SHALL MAINTAIN AN ACCURATE LOG OF ALL SUCH CALLS TO THE POWER COMPANY AND SHALL RECORD ACTION TAKEN IN EACH CASE.

D. THE CONTRACTOR IS REQUIRED TO MAKE ARRANGEMENTS WITH THE POWER COMPANY FOR THE TEMPORARY RELOCATION OR RAISING OF HIGH VOLTAGE LINES AT THE CONTRACTOR'S SOLE COST AND EXPENSE.

E. NO PERSON SHALL WORK WITHIN SIX FEET OF A HIGH VOLTAGE LINE WITHOUT PROTECTION HAVING BEEN TAKEN AS OUTLINED IN PARAGRAPH C. ABOVE.

22. TRAFFIC CONTROL: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DEVELOP AND SUBMIT FOR APPROVAL BY THE GOVERNING AUTHORITIES, A TRAFFIC CONTROL PLAN, PREPARED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS, OUTLINING TRAFFIC MANAGEMENT PROCEDURES TO BE PROVIDED DURING CONSTRUCTION. TRAFFIC CONTROL MEASURES SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING ADDITIONAL REQUIREMENTS:

A. CONSTRUCTION SIGNING AND BARRICADES SHALL CONFORM WITH THE "2003 TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, PART 6", AS CURRENTLY AMENDED, TEXAS DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION.

B. THE CONTRACTOR SHALL BE REQUIRED TO FURNISH BARRICADES, FLARES, FLAGMEN, ETC., FOR THE PROTECTION OF THE PUBLIC, EMPLOYEES AND THE WORK.

C. THE CONTRACTOR SHALL PERFORM HIS WORK IN SUCH A MANNER AS TO CREATE A MINIMUM OF INTERRUPTION TO ALL TRAFFIC ALONG ADJACENT ROADWAYS INCLUDING PEDESTRIAN. TWO WAY TRAFFIC MUST BE MAINTAINED ON ALL ROADWAYS AT ALL TIMES THROUGHOUT CONSTRUCTION UNLESS WRITTEN PERMISSION IS GRANTED BY THE GOVERNING AUTHORITIES.

D. ALL SIGNAGE, MARKINGS, LIGHTING, BARRICADES, FLAGMEN AND OTHER DEVICES AND PERSONNEL REQUIRED FOR TRAFFIC CONTROL DURING CONSTRUCTION OF THE PROJECT WILL BE INCLUDED IN THE CONTRACT AMOUNT.

E. ALL TRAFFIC CONTROL DEVICES USED DURING NIGHTTIME SHALL BE REFLECTORIZED, ILLUMINATED FROM WITHIN OR EXTERNALLY ILLUMINATED.

F. THE CONTRACTOR SHALL NOT REMOVE ANY REGULATORY SIGN, INSTRUCTIONAL SIGN, WARNING SIGN, STREET NAME SIGN OR ANY SIGNAL, WHICH CURRENTLY EXISTS, WITHOUT THE CONSENT OF THE GOVERNING AUTHORITIES.

G. THE CONTRACTOR SHALL MAINTAIN AND REPLACE WHERE NECESSARY ALL SIGNS, LIGHTS, MARKINGS AND TEMPORARY PAVEMENT THROUGHOUT THE CONSTRUCTION PERIOD.

H. THE CONTRACTOR SHALL REMOVE ALL TRAFFIC CONTROL MEASURES AT THE END OF CONSTRUCTION AND RESTORE UNIMPROVED PAVEMENT AND OTHER DISTURBED AREAS TO THEIR ORIGINAL CONDITION.

23. ACCESS TO ADJACENT PROPERTIES: ACCESS TO ADJACENT PROPERTIES SHALL BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE DIRECTED BY THE GOVERNING AUTHORITIES. THIS INCLUDES VEHICULAR AND PEDESTRIAN ACCESS.

24. ACCESS ROUTES, STAGING AREAS AND STORAGE AREAS: ALL PRIVATE HAUL ROADS AND ACCESS ROUTES AND THE LOCATION OF ALL STAGING AREAS AND STORAGE AREAS SHALL BE SUBJECT TO THE APPROVAL OF THE TOWN OF ADDISON. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND REPAIRING ALL ROADS AND OTHER FACILITIES USED DURING CONSTRUCTION. UPON COMPLETION OF THE PROJECT, ALL HAUL ROADS, ACCESS ROADS, STAGING AREAS AND STORAGE AREAS SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN THAT AT THE TIME THE CONTRACTOR COMMENCES WORK ON THE PROJECT.

25. PARKING OF CONSTRUCTION EQUIPMENT: AT NIGHT AND DURING ALL OTHER PERIODS OF TIME WHEN EQUIPMENT IS NOT BEING ACTIVELY USED FOR THE CONSTRUCTION WORK, THE CONTRACTOR SHALL PARK THE EQUIPMENT AT LOCATIONS, WHICH ARE APPROVED BY THE TOWN OF ADDISON. DURING THE CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL COMPLY WITH THE PRESENT ZONING REQUIREMENTS OF THE GOVERNING AUTHORITIES IN THE USE OF VACANT PROPERTY FOR STORAGE PURPOSES. THE CONTRACTOR SHALL ALSO PROVIDE ADEQUATE BARRICADES, MARKERS AND LIGHTS TO PROTECT THE TOWN OF ADDISON, THE GOVERNING AUTHORITIES, THE PUBLIC AND THE OTHER WORK. ALL BARRICADES, LIGHTS, AND MARKERS MUST MEET THE REQUIREMENTS OF THE GOVERNING AUTHORITIES' REGULATIONS.

26. WATER FOR CONSTRUCTION: THE CONTRACTOR SHALL MAKE THE NECESSARY ARRANGEMENTS FOR PURCHASING WATER FROM THE GOVERNING AUTHORITY FOR HIS USE ON THE PROJECT SITE. COSTS ASSOCIATED WITH THIS SERVICE SHALL BE INCLUDED IN THE CONTRACT AMOUNT. LANDSCAPE SHALL NOT BE INSTALLED UNTIL THE AUTOMATIC IRRIGATION SYSTEM IS FULLY OPERATIONAL.

27. TEMPORARY ELECTRIC AND COMMUNICATIONS FOR CONSTRUCTION: THE CONTRACTOR SHALL MAKE THE NECESSARY ARRANGEMENTS FOR INSTALLATION AND PURCHASING OF TEMPORARY ELECTRIC AND COMMUNICATIONS SERVICES FROM THE GOVERNING AUTHORITIES FOR HIS USE ON THE PROJECT SITE. COSTS ASSOCIATED WITH THESE SERVICES SHALL BE INCLUDED IN THE CONTRACT AMOUNT.

28. FENCES: ALL FENCES ENCOUNTERED AND REMOVED DURING CONSTRUCTION, EXCEPT THOSE DESIGNATED TO BE REMOVED OR RELOCATED, SHALL BE RESTORED TO THE ORIGINAL OR BETTER THAN CONDITION UPON COMPLETION OF THE PROJECT. WHERE WIRE FENCING, EITHER WIRE MESH OR BARBED WIRE, IS TO BE CROSSED, THE CONTRACTOR SHALL SET CROSS–BRACED POSTS ON EITHER SIDE OF THE CROSSING. TEMPORARY FENCING SHALL BE ERECTED IN PLACE OF THE FENCING REMOVED WHENEVER THE WORK IS NOT IN PROGRESS, AND WHEN THE SITE IS VACATED OVERNIGHT AND/OR AT ALL TIMES TO PREVENT PERSONS AND/OR LIVESTOCK FROM ENTERING THE CONSTRUCTION AREA. THE COST OF FENCE REMOVAL, TEMPORARY CLOSURES AND REPLACEMENT SHALL BE INCLUDED IN THE CONTRACT.

29. DRAINAGE CHANNELS: WHERE EXISTING DRAINAGE CHANNELS ARE TEMPORARILY DISTURBED OR BLOCKED DURING CONSTRUCTION, A SUITABLE BYPASS SHALL BE PROVIDED AND THE ORIGINAL CHANNEL RESTORED TO THE ORIGINAL CONDITION, GRADE AND CROSS SECTION AFTER CONSTRUCTION IS COMPLETED.

30. COORDINATION WITH OTHERS: IN THE EVENT THAT OTHER CONTRACTORS ARE DOING WORK IN THE SAME AREA SIMULTANEOUSLY WITH THE PROJECT, THE CONTRACTOR SHALL COORDINATE HIS PROPOSED CONSTRUCTION WITH THAT OF THE OTHER CONTRACTORS.

31. CONDITION OF SITE DURING CONSTRUCTION: DURING CONSTRUCTION OF THE WORK, THE CONTRACTOR SHALL, AT ALL TIMES, KEEP THE SITE OF THE WORK AND ADJACENT PREMISES AS FREE FROM MATERIAL, DEBRIS AND RUBBISH AS IS PRACTICABLE AND SHALL REMOVE SAME FROM ANY PORTION OF THE SITE IF, IN THE OPINION OF THE TOWN OF ADDISON, SUCH MATERIAL, DEBRIS OR RUBBISH CONSTITUTES A NUISANCE OR IS OBJECTIONABLE. IN CASE OF FAILURE ON THE PART OF THE CONTRACTOR UNDER HIS CONTRACT, OR WHERE SUFFICIENT CONTRACT FUNDS ARE UNAVAILABLE FOR THIS PURPOSE, THE CONTRACTOR OR HIS SURETY SHALL REIMBURSE THE TOWN OF ADDISON FOR ALL SUCH COSTS.

32. EXISTING ROADWAYS & MEDIANS: THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE CLEANLINESS OF EXISTING PAVED ROADS. ALL COSTS ASSOCIATED WITH MAINTAINING THE CLEANLINESS OF EXISTING ROADS SHALL BE INCLUDED IN THE CONTRACT AMOUNT. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO MEDIANS/MEDIAN LANDSCAPING FROM DELIVERY VEHICLES, UTILITY EXCAVATIONS, ETC.

33. DUST CONTROL: THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO CONTROL DUST ON THE PROJECT SITE BY SPRINKLING OF WATER, OR ANY OTHER METHODS APPROVED BY THE GOVERNING AUTHORITIES, AND SHALL PROVIDE ALL EQUIPMENT AND PERSONNEL REQUIRED TO PREVENT DUST FROM BECOMING A NUISANCE TO THE ADJACENT PROPERTIES.

34. CLEAN–UP FOR FINAL ACCEPTANCE: THE CONTRACTOR SHALL MAKE A FINAL CLEAN UP OF ALL PARTS OF THE WORK BEFORE ACCEPTANCE BY THE TOWN OF ADDISON. THIS CLEAN UP SHALL INCLUDE REMOVAL OF ALL OBJECTIONABLE MATERIALS AND, IN GENERAL, PREPARING THE SITE OF THE WORK IN AN ORDERLY MANNER OF APPEARANCE.

35. REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK: ALL WORK WHICH HAS BEEN REJECTED OR CONDEMNED SHALL BE REPAIRED, OR IF IT CANNOT BE REPAIRED SATISFACTORILY, IT SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. DEFECTIVE MATERIALS SHALL BE IMMEDIATELY REMOVED FROM THE WORK SITE. WORK DONE BEYOND THE LINE OR NOT IN CONFORMITY WITH THE GRADES SHOWN ON THE DRAWINGS OR AS PROVIDED, WORK DONE WITHOUT REQUIRED INSPECTION, OR ANY EXTRA OR UNCLASSIFIED WORK DONE WITHOUT WRITTEN AUTHORITY AND PRIOR AGREEMENT IN WRITING AS TO PRICES, SHALL BE AT THE CONTRACTOR'S RISK, AND WILL BE CONSIDERED UNAUTHORIZED, AND AT THE OPTION OF THE TOWN OF ADDISON MAY NOT BE MEASURED AND PAID FOR AND MAY BE ORDERED REMOVED AT THE CONTRACTOR'S EXPENSE. UPON FAILURE OF THE CONTRACTOR TO REPAIR SATISFACTORILY OR TO REMOVE AND REPLACE, IF SO DIRECTED, REJECTED, UNAUTHORIZED OR CONDEMNED WORK OR MATERIALS IMMEDIATELY AFTER RECEIVING NOTICE FROM THE TOWN OF ADDISON. THE TOWN OF ADDISON WILL, AFTER GIVING WRITTEN NOTICE TO THE CONTRACTOR, HAVE THE AUTHORITY TO CAUSE DEFECTIVE WORK TO BE REMEDIED OR REMOVED AND REPLACED, OR TO CAUSE UNAUTHORIZED WORK TO BE REMOVED AND TO DEDUCT THE COST THEREOF FROM ANY MONIES DUE OR TO BECOME DUE THE CONTRACTOR.

36. DISPOSITION AND DISPOSAL OF EXCESS AND UNSUITABLE MATERIALS: ALL MATERIALS TO BE REMOVED FROM THE SITE INCLUDING BUT NOT LIMITED TO EXCESS MATERIAL AND UNSUITABLE MATERIALS SUCH AS LARGE ROCKS, REFUSE, AND OTHER DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OUTSIDE THE LIMITS OF THE PROJECT AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL ALSO COMPLY WITH ALL APPLICABLE LAWS GOVERNING SPILLAGE OF DEBRIS WHILE TRANSPORTING TO A DISPOSAL SITE.

37. SODDING: THE CONTRACTOR SHALL PROVIDE SODDING, WATERING, FERTILIZING AND REQUIRED MAINTENANCE FOR THE GRASSING OF ALL UNPAVED AREAS OF DEDICATED RIGHT–OF–WAY, EASEMENTS, AND ALL OTHER DISTURBED AREAS OF CONSTRUCTION FOR THE PROJECT. SODDING SHALL ALSO BE PROVIDED IN CONFORMANCE WITH THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN IN ORDER TO ESTABLISH A GRASS COVER ON DISTURBED AREAS SUBJECTED TO THE EROSION OF THE SOIL SURFACE.

38. RECORD DRAWINGS: THE CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD OF THE INSTALLATION OF ALL MATERIALS AND SYSTEMS COVERED BY THE PROJECT CONTRACT DOCUMENTS. THESE RECORD PRINTS WILL BE REVIEWED BY THE ENGINEER EACH MONTH PRIOR TO THE PRELIMINARY REVIEW OF CONTRACTOR'S REQUEST FOR PAYMENT. IF THE DRAWINGS ARE NOT COMPLETE, ACCURATE AND UP–TO DATE, THE ENGINEER WILL NOT ACCEPT THE PAYMENT REQUEST. THE COMPLETED SET OF "RECORD" DRAWINGS MUST BE DELIVERED TO THE ENGINEER BEFORE REQUESTING FINAL PAYMENT.

39. PEDESTRIAN ACCESS: THE CONTRACTOR SHALL PLACE SIGNS INFORMING PEDESTRIANS OF SIDEWALK CLOSURES WITHIN THE CONSTRUCTION LIMITS. SIGNS ALONG MARSH LANE SHALL BE PLACED AT VITRUVIAN WAY, JUST NORTH OF WESTGATE LANE AND AT SPRING VALLEY ROAD. IN ADDITION TO SIDEWALK CLOSURE, THE MARSH LANE SIGNS SHALL INCLUDE VITRUVIAN WAY AS AN ALTERNATE ROUTE.

ABBREVIATIONS

APPROX	APPROXIMATELY	G	GAS	R	RADIUS
ASPH	ASPHALT	GI	GRATE INLET	RCB	REINFORCED CONCRETE BOX
BC	BACK OF CURB	GM	GAS METER	RCI	RECESSED CURB INLET
B–B	BACK TO BACK OF CURB	HDPE	HIGH DENSITY POLYETHYLENE PIPE	RCP	REINFORCED CONCRETE PIPE
BM	BENCHMARK	HDWL	HEADWALL	RCCP	REINFORCED CONCRETE CYLINDRICAL PIPE
BW	BOTTOM OF WALL	HMAC	HOT MIX ASPHALTIC CONCRETE	REC	RECESSED
CATV	CABLE TV	HORIZ	HORIZONTAL	REINF	REINFORCED
CFS	CUBIC FEET PER SECOND	HP	HIGH POINT	RL	RIDGE LINE
CI	CURB INLET	HVAC	HEATING, VENTILATION AND AIR CONDITIONING	ROW	RIGHT OF WAY
CMP	CORRUGATED METAL PIPE	IRR	IRRIGATION	RT	RIGHT
CO	CLEANOUT	JB	JUNCTION BOX	SF	SQUARE FEET
CONC	CONCRETE	JT	JOINT	SD	STORM DRAIN
CONST	CONSTRUCT	LF	LINEAR FEET	SQ	SQUARE
CL	CENTER LINE	LP	LOW POINT	SS	SANITARY SEWER
DCO	DOUBLE CLEANOUT	LT	LEFT	STA	STATION
DIA	DIAMETER	MH	MANHOLE	SY	SQUARE YARD
DIP	DUCTILE IRON PIPE	N/A	NOT APPLICABLE	T	TELEPHONE
DW	DOMESTIC WATER	NG	NATURAL GROUND (EXISTING)	TC	TOP OF CURB
EL	ELEVATION	PC	POINT OF CURVATURE	TDUCT	TOP OF DUCT
EMH	ELECTRIC MANHOLE	PCC	POINT OF COMPOUND CURVATURE	TG	TOP OF GROUND
EP	EDGE OF PAVEMENT	PI	POINT OF INTERSECTION	TMH	TELEPHONE MANHOLE
EX	EXISTING	PIV	POST INDICATOR VALVE	TOB	TOP OF BANK
FC	FACE OF CURB	PL	PROPERTY LINE	TOS	TOE OF SLOPE
F–F	FACE TO FACE OF CURB	PP	POWER POLE	TP	TOP OF PAVEMENT
FFE	FINISHED FLOOR ELEVATION	PRC	POINT OF REVERSE CURVATURE	TPIPE	TOP OF PIPE
FH	FIRE HYDRANT	PR	PROPOSED	TW	TOP OF WALL
FM	FORCE MAIN	PT	POINT OF TANGENCY	TYP	TYPICAL
FO	FIBER OPTICS	PVC	POLYVINYL CHLORIDE PIPE	UGE	UNDERGROUND ELECTRIC
FP	FINISHED PAD	PVMT	PAVEMENT	VCP	VITRIFIED CLAY PIPE
FPS	FEET PER SECOND	OCEW	ON CENTER EACH WAY	W	WATER
FL	FLOW LINE	OHE	OVERHEAD ELECTRIC	WV	WATER VALVE
FUT	FUTURE				
FW	FIRE WATER				

LEGEND

	EXISTING	PROPOSED	FUTURE
PROPERTY LINE			N/A
BUILDING			
FINISH FLOOR ELEVATION	FFE=650.00	FFE=650.00	N/A
SPOT ELEVATION	x 650.50	x 650.50	N/A
CURB			
ASPHALT PAVEMENT			N/A
RIDGE LINE	N/A	RL	N/A
SWALE or VALLEY GUTTER			N/A
CONTOUR LINE	675	675	674
STORM DRAIN	21"SD	21"SD	
STORM DRAIN MANHOLE			
CURB INLET	CI		
RECESSED CURB INLET	CI		
GRATE INLET	GI		N/A
WATER LINE	8"W	8"W	8"W
FIRE HYDRANT			N/A
WATER VALVE			N/A
WATER METER BOX		W	N/A
IRRIGATION METER	N/A	I	N/A

	EXISTING	PROPOSED	FUTURE
SANITARY SEWER LINE	8"SS	8"SS	8"SS
SANITARY SEWER MANHOLE	SSMH		
CLEANOUT	CO		
LIGHT POLE			N/A
POWER POLE	PP		N/A
DOWN GUY			N/A
SIGN			N/A
ACCESSIBLE PARKING			N/A
RETAINING WALL			N/A
WOOD FENCE			N/A
SCREEN WALL FENCE			N/A
CHAIN LINK FENCE			N/A
WIRE FENCE			N/A
TREE		N/A	N/A
OVERHEAD WIRES	OHW	N/A	N/A
OVERHEAD ELECTRIC LINE	OHE	OHE	N/A
OVERHEAD TELEPHONE LINE	OHT	OHT	N/A
UNDERGROUND ELECTRIC LINE	UGE	UGE	N/A
UNDERGROUND TELEPHONE LINE	UGT	UGT	N/A
UNDERGROUND CABLE LINE	CATV	CATV	N/A
ELECTRIC METER	EM	EM	N/A

	EXISTING	PROPOSED	FUTURE
ELECTRIC TRANSFORMER	T	T	N/A
GAS METER	GM	GM	N/A
GAS LINE	G	G	N/A
AIR CONDITIONING UNIT			N/A

NO.	REVISION	BY	DATE

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VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

GENERAL CONSTRUCTION NOTES, LEGEND & ABBREVIATIONS

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
ICE	ICE	OCT 30, 2019	AS NOTED		2

VW2 STREETSCAPE – VP PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200B – PROJECT NO. 5029–06

FUTURE
VP WEST 3

FUTURE
VW3
STREETSCAPE

EXISTING
VP WEST 1

EXISTING
POOL

CP XC
N 8065. 33
E 10660. 78

CP XC
N 8053. 82
E 9815. 77

EXISTING
AMENITY
CENTER

VP WEST 2
UNDER
CONSTRUCTION

EXISTING
STREETSCAPE

PROPOSED STREETSCAPE

MARSH LANE

VITRUVIAN WAY

PROPOSED STREETSCAPE

BM #1

CP XC
N 7702. 83
E 10384. 36

CP XC
N 7589. 78
E 9815. 23

BM #1 REF. ELEVATION = 547.84
SQUARE CUT IN TOP OF CURB, NORTH MEDIAN END NOSE,
AT INTERSECTION OF VITRUVIAN WAY AND MARSH LANE.

BM #2 REF. ELEVATION = 559.47
SQUARE CUT IN TOP OF CURB, SOUTH MEDIAN END
NOSE, MARSH LANE 1127' NORTH OF VITRUVIAN WAY.

NORTH

0 15 30 45 60
GRAPHIC SCALE IN FEET
SCALE: 1"=30'

STATE OF TEXAS
BRUCE F. DUNNE
62654
LICENSED
PROFESSIONAL ENGINEER
10/30/19

NO.	REVISION	BY	DATE

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VW2 STREETSCAPE IMPROVEMENTS

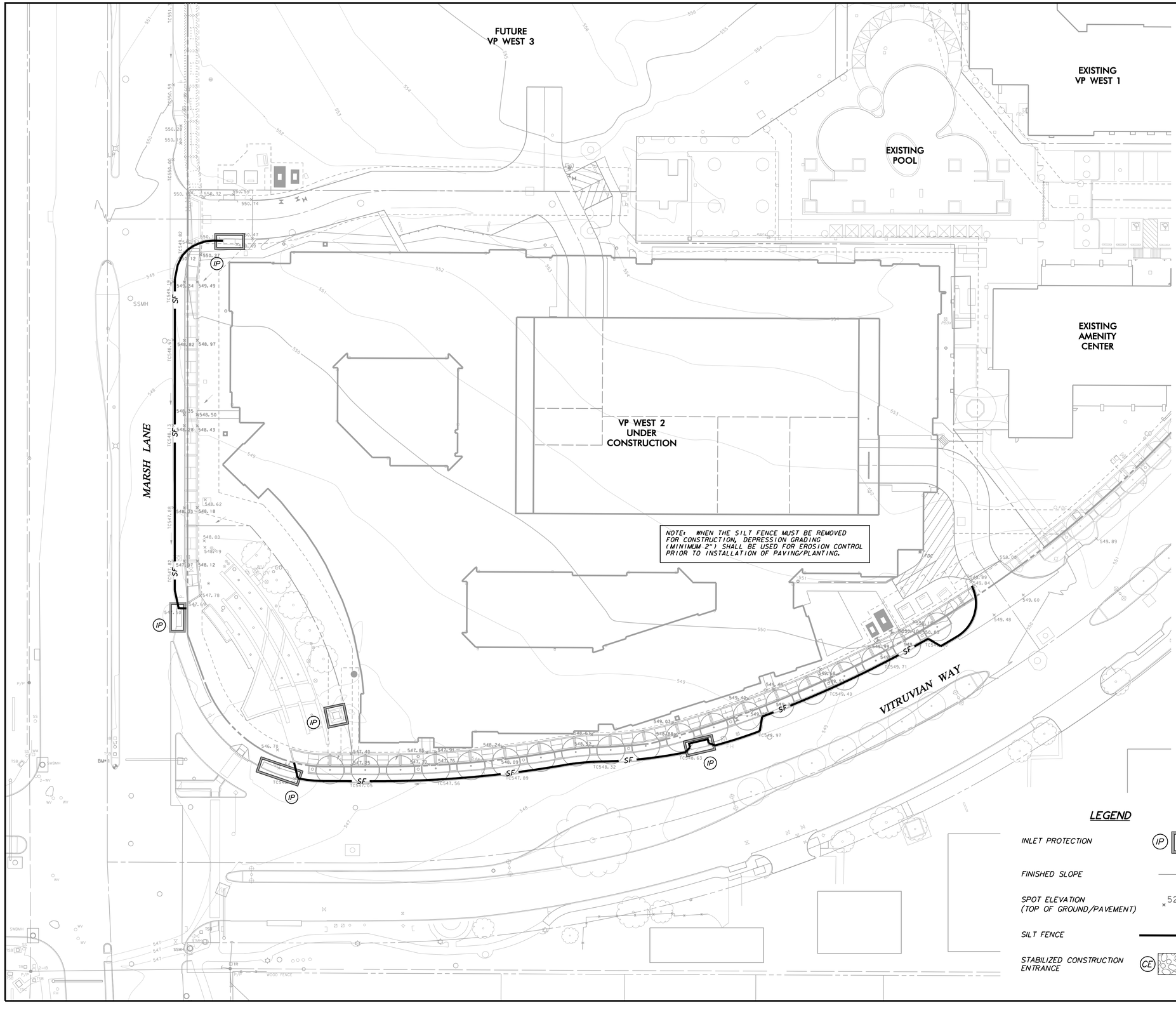
VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

OVERALL LAYOUT & PROJECT CONTROL

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
ICE	ICE	OCT 30, 2019	AS NOTED		3

VW2 STREETSCAPE – VP PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200B – PROJECT NO. 5029-06



EROSION CONTROL NOTES

1. **GENERAL CONSTRUCTION NOTES:** REFER TO SHEET 3 "GENERAL CONSTRUCTION NOTES, LEGEND AND ABBREVIATIONS" FOR THE GENERAL CONSTRUCTION NOTES FOR THE PROJECT.

2. **SWPPP COMPLIANCE:** THE CONTRACTOR SHALL BE REQUIRED TO COMPLY WITH THE CONDITIONS OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) WHILE CONDUCTING HIS ACTIVITIES ON THIS PROJECT. IN ADDITION TO CONSTRUCTING THOSE ITEMS INDICATED ON THE PLAN SHEETS, COMPLIANCE WITH THE SWPPP INCLUDES CONFORMANCE TO CERTAIN PRACTICES AND PROCEDURES (IDENTIFIED IN THE (SWPPP) DURING PROJECT CONSTRUCTION. THE SWPPP PLANS AND DOCUMENTS ARE PROVIDED FOR THE SOLE BENEFIT OF THE CONTRACTOR AS A PLANNING TOOL FOR COMPLYING WITH THE ENVIRONMENTAL REGULATIONS OF THIS PROJECT. THE CONTRACTOR IS EXPECTED TO PROVIDE, EXPAND, SUBMIT AND MONITOR A FULL COMPREHENSIVE SWPPP BEYOND WHAT IS HEREIN PROVIDED.

3. **BMP INSTALLATION:** PRIOR TO COMMENCING GRADING OPERATIONS, THE CONTRACTOR SHALL INSTALL ALL SWPPP MEASURES AND DEVICES AS INDICATED ON THE EROSION & SEDIMENT CONTROL PLAN. ALL SWPPP MEASURES AND DEVICES SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND DETAILS SHOWN IN THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS CONSTRUCTION "BEST MANAGEMENT PRACTICES" (BMP) MANUAL, OR AS MODIFIED BY THE CONTRACT DOCUMENTS.

4. **CLEANING, REPAIR AND MAINTENANCE:** THE CONTRACTOR SHALL REFER TO THE SWPPP FOR SEQUENCING OF CONSTRUCTION, INSTALLATION OF NEW EROSION CONTROL DEVICES AND CLEANING, REPAIR AND MAINTENANCE OF EXISTING EROSION CONTROL DEVICES. THE CONTRACTOR SHALL REVISE, RELOCATE AND/OR ADD DEVICES TO REFLECT ACTUAL SITE CONDITIONS AND TO ACCOMMODATE LOCATIONS FOR CONSTRUCTION TRAILER AREAS, STORAGE AREAS, FUELING AREAS, TOILETS, TRASH RECEPTACLES AND WASHOUT AREAS. ANY ACCIDENTAL RELEASE OF SEDIMENT OR POLLUTANTS FROM THE SITE SHALL BE CLEANED BY THE CONTRACTOR.

5. **SITE ENTRY/EXIT LOCATIONS:** SITE ENTRY AND EXIT LOCATIONS SHALL BE MAINTAINED BY THE CONTRACTOR IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAYS MUST BE REMOVED IMMEDIATELY. WHEN WASHING OF VEHICLES IS REQUIRED TO REMOVE SEDIMENT PRIOR TO ENTRANCE TO A PUBLIC ROADWAY, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN. ALL FINES IMPOSED FOR TRACKING ONTO PUBLIC ROADS SHALL BE PAID BY THE CONTRACTOR.

6. **PROTECTION OF ADJACENT PROPERTY:** CONTRACTOR SHALL ASSUME FULL LIABILITY FOR DAMAGE TO ADJACENT PROPERTIES AND/OR PUBLIC RIGHT-OF-WAY RESULTING FROM FAILURE TO FULLY IMPLEMENT AND EXECUTE ALL EROSION CONTROL METHODS AND PROCEDURES SHOWN AND NOTED IN THE PLANS AND SWPPP.

7. **RE-VEGETATION:** AT THE COMPLETION OF PAVING AND FINAL GRADING OPERATIONS, ALL DISTURBED AREAS SHALL BE VEGETATED IN ACCORDANCE WITH THE LANDSCAPE ARCHITECTS' PLANS. IN AREAS NOT COVERED BY LANDSCAPE PLAN, THE CONTRACTOR SHALL PROVIDE HYDROMULCH SEEDING AND/OR SODDING FOR ALL DISTURBED AREAS (NOT DESIGNATED TO BE PAVED) IN ACCORDANCE WITH ALL GOVERNING AUTHORITIES' SPECIFICATIONS.

8. **BMP REMOVAL:** THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL SEDIMENT BARRIERS AND INLET PROTECTION AFTER VEGETATION HAS BEEN COMPLETED AND ALL AREAS OF THE SITE HAVE BEEN STABILIZED AND ACCEPTED BY THE GOVERNING AUTHORITIES AND THE DEVELOPER.

9. **ADDITIONAL:** AS NEW FACILITIES COME ONLINE, ADD ADDITIONAL BMP/SCM. CONTRACTOR TO COORDINATE WITH THE BUILDING CONTRACTOR TO ENSURE ALL BMP DEVICES ARE SECURE AND ALL PROPER PROTECTIONS ARE BEING TAKEN BETWEEN THE TWO SITES.

NOTE: THIS AREA IS HIGHLY SENSITIVE TO EROSION AND ALL REQUIRED PRECAUTIONS, SHOWN OR NOT SHOWN, MUST BE STRICKLY ADHERED TO AND MAINTAINED AT ALL TIMES

BM #1 REF. ELEVATION = 547.84
SQUARE CUT IN TOP OF CURB, NORTH MEDIAN END NOSE, AT INTERSECTION OF VITRUVIAN WAY AND MARSH LANE.

BM #2 REF. ELEVATION = 559.47
SQUARE CUT IN TOP OF CURB, SOUTH MEDIAN END NOSE, MARSH LANE 1127' NORTH OF VITRUVIAN WAY.

NORTH

0 15 30 45 60
GRAPHIC SCALE IN FEET
SCALE: 1"=30'

LEGEND

- INLET PROTECTION (IP)
- FINISHED SLOPE
- SPOT ELEVATION (TOP OF GROUND/PAVEMENT) × 525.80
- SILT FENCE SF
- STABILIZED CONSTRUCTION ENTRANCE (CE)

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VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

EROSION & SEDIMENT CONTROL PLAN

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
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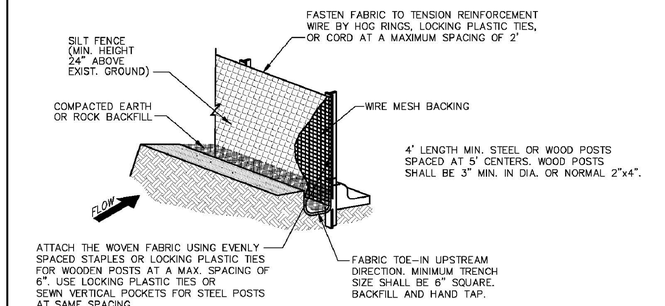
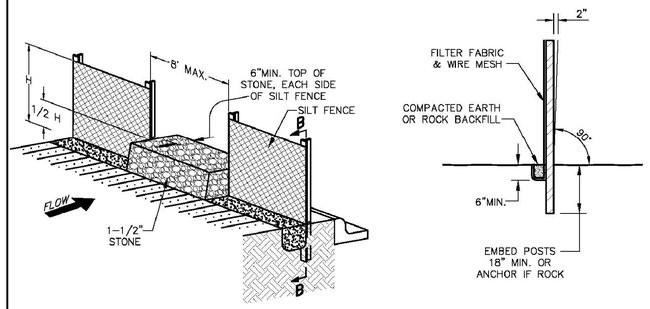
VW2 STREETSCAPE - VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B - PROJECT NO. 5029-06



ISOMETRIC PLAN VIEW

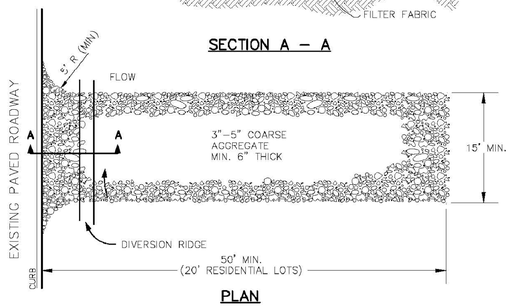
N.T.S.



SILT FENCE
STONE OVERFLOW STRUCTURE

N.T.S.

SECTION A – A



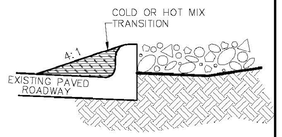
PLAN

TEMPORARY STONE CONSTRUCTION ENTRANCE/EXIT

N.T.S.

STABILIZED CONSTRUCTION ENTRANCE GENERAL NOTES:

1. WHEN NECESSARY, VEHICLES SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO A PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AREA STABILIZED WITH CRUSHED STONE WITH DRAINAGE FLOWING AWAY FROM BOTH THE STREET AND THE STABILIZED ENTRANCE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
2. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PAVED SURFACES. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES MUST BE REMOVED IMMEDIATELY.
3. THE ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.
4. WHEN SEDIMENT HAS SUBSTANTIALLY CLOGGED THE VOID AREA BETWEEN THE ROCKS, THE AGGREGATE MAT MUST BE WASHED DOWN OR REPLACED. PERIODIC RE-GRADING AND TOP DRESSING WITH ADDITIONAL STONE MUST BE DONE TO KEEP THE EFFICIENCY OF THE ENTRANCE FROM DIMINISHING.



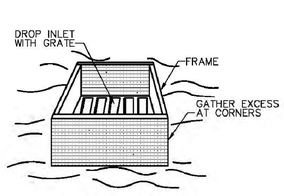
TRANSITION

EROSION CONTROL PLAN NOTES

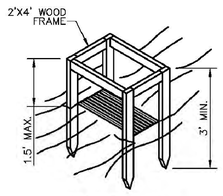
1. ALL OPERATORS AND/OR CONTRACTORS SHALL CONFORM TO THE TERMS AND CONDITIONS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ), TPDES GENERAL PERMIT NO. TXR 150000 ISSUED AND DATED MARCH 5, 2003.
2. THE NOTICE OF INTENT (NOI), AS REQUIRED BY THE GENERAL PERMIT, MUST BE PROPERLY DISPLAYED ON SITE AT ALL TIMES BY EACH OPERATOR.
3. ALL RELEASES OF THE REPORTABLE QUANTITIES OF HAZARDOUS SUBSTANCES SHALL BE REPORTED IMMEDIATELY TO THE FACILITY OPERATOR, EPA AND TCEQ.
4. QUALIFIED OPERATOR PERSONNEL MUST INSPECT THE SITE AT LEAST ONCE EVERY 14 DAYS AND WITHIN 24 HOURS OF A STORM EVENT OF 0.5 INCHES OR GREATER. AS AN ALTERNATIVE, AN INSPECTION CAN BE CONDUCTED ONCE EVERY SEVEN (7) CALENDAR DAYS ON A DEFINED DAY. A DECISION ON WHICH METHOD TO USE MUST BE DECIDED BEFORE WORK BEGINS AND MUST BE FOLLOWED THROUGHOUT THE PROJECT.
5. MODIFICATIONS TO THE STORM WATER POLLUTION PREVENTION PLAN SHALL BE IMPLEMENTED AND BE IN-PLACE WITHIN A SEVEN CALENDAR DAY PERIOD.
6. IF ANY CONTRACTOR SEES A VIOLATION BY AN OPERATOR OR ANOTHER CONTRACTOR, THAT OPERATOR OR CONTRACTOR IN VIOLATION SHALL BE NOTIFIED AS WELL AS THE FACILITY OPERATOR.
7. EROSION CONTROL SHALL BE INSTALLED PRIOR TO GRADING.
8. ACCUMULATED SILT DEPOSITS SHALL BE REMOVED FROM SILT FENCES AND HAY BALE DIKES WHEN SILT DEPTH REACHES THREE INCHES OR 25%.
9. THE CONTRACTOR SHALL ADD OR DELETE EROSION PROTECTION AT THE REQUEST AND DIRECTION OF THE OPERATOR OR TOWN.
10. AFTER INSTALLATION OF PAVEMENT, FINAL LOT BENCHING AND GENERAL CLEANUP, THE CONTRACTOR SHALL ESTABLISH GRASS GROUNDCOVER IN ALL STREET PARKWAYS, LOT AND ALL OTHER DISTURBED AREAS. SODDING SHALL BE DONE AS SPECIFIED BY SECTION 202.5 AND SEEDING AS SPECIFIED BY SECTION 202.6 OF THE OCTOBER 2004 OR LATEST EDITION OF NCTCOG STANDARD SPECIFICATION.
11. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTROL AND LIMIT SILT AND SEDIMENT LEAVING THE SITE. SPECIFICALLY, THE CONTRACTOR SHALL PROTECT ALL PUBLIC STREETS, ALLEYS, STREAMS AND STORM DRAINAGE SYSTEMS FROM EROSION DEPOSITS.
12. A DRAINAGE AREA MAP WILL BE INCLUDED WITH THE EROSION CONTROL PLAN.
13. CONSTRUCTION WASTE DISPOSAL CONTAINERS SHALL BE PROVIDED ON THE SITE FOR DISPOSAL OF ALL NON-HAZARDOUS CONSTRUCTION WASTE MATERIALS. THE CONTAINERS SHALL BE HAULED TO LANDFILL BY THE CONTRACTOR.
14. ALL HAZARDOUS MATERIALS SHALL BE HANDLED AND DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

SILT FENCE NOTES

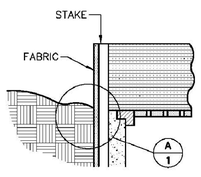
1. POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. THE POST MUST BE EMBEDDED A MINIMUM OF 18 INCHES.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G. PAVEMENT), WEIGHT FABRIC FLAP WITH WASHED GRAVEL ON THE UPHILL SIDE TO PREVENT FLOW UNDER FENCE.
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE SHALL BE SECURELY FASTENED TO EACH SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE SUPPORT POST. THERE SHALL BE A 6 INCH DOUBLE OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
5. INSPECTION SHALL BE MADE EVERY TWO WEEKS OR AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHALL BE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 3 INCHES. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.



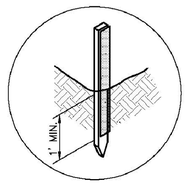
PERSPECTIVE VIEW



PERSPECTIVE VIEW



ELEVATION OR STAKE AND FABRIC ORIENTATION

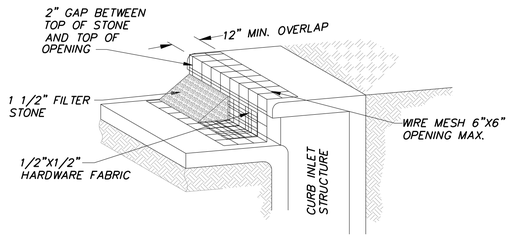


DETAIL 'A'

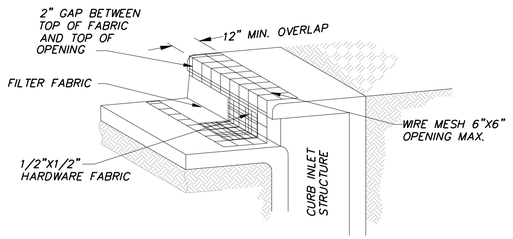
GRATE AND WYE INLET PROTECTION

SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPE NO GREATER THAN 5%) WHERE THE INLET SHEET OR OVER-LAND FLOWS (NOT TO EXCEED 1 C.F.S.) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS SUCH AS IN STREETS OR HIGHWAY MEDIANS.



ISOMETRIC PLAN VIEW
RECESSED INLET
NOT TO SCALE



ISOMETRIC PLAN VIEW
STANDARD INLET
NOT TO SCALE

CURB INLET PROTECTION
NOT TO SCALE

NOTES:

1. MATERIAL SPECIFICATIONS:
A. CONCRETE BLOCK–ASTM C 139, CONCRETE MASONRY UNIT FOR CONSTRUCTION.
B. WIRE FABRIC–STANDARD GALVANIZED HARDWARE FABRIC WITH 1/2" BY 1/2" OPENINGS.
C. FILTER STONE–NCTCOG SPECIFICATION 2.1.B.(E).
D. WIRE MESH–WELDED WIRE FABRIC CONFORMING TO NCTCOG SPECIFICATION 2.2.7 MAXIMUM OPENING 6"x6".

2. MAINTENANCE REQUIREMENTS: CURB INLET PROTECTION SHOULD BE INSPECTED WEEKLY AND AFTER MAJOR RAIN EVENTS TO ENSURE THAT THE DEVICE IS FUNCTIONING PROPERLY. REMOVE SEDIMENT FROM THE STORAGE AREA WHEN THE DEPTH OF SEDIMENT HAS BUILT UP TO ONE-HALF OF THE STORAGE DEPTH. IF DE-WATERING OF THE STORAGE VOLUME IS NOT OCCURRING, CLEAN OR REPLACE THE FILTER STONE. CLEAN THE FILTER STONE SURFACE THE FIRST FEW TIMES BY RAKING. REPEATED SEDIMENT BUILD-UP WILL REQUIRE FILTER STONE REPLACEMENT.

3. DO NOT USE A SEDIMENT FILTER TO CONTROL EROSION AROUND "Y" INLETS, UTILIZE SEDIMENT FENCES.

4. EXTEND MESH, FABRIC AND FILTER STONE 12" BEYOND END OF INLET ON BOTH ENDS.

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icon Consulting Engineers, Inc. 2840 W. Southlake Blvd., Suite 110
Civil Engineers - Designers - Planners Southlake, Tx 76092 (817) 552-6210
Engineering Firm Registration Number F-9007

VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

EROSION & SEDIMENT CONTROL DETAILS

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
ICE	ICE	OCT 30, 2019	AS NOTED		5

VW2 STREETSCAPE – VP PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200B – PROJECT NO. 5029-06

FUTURE
VP WEST 3

NOTE: "SIDEWALK CLOSED AHEAD" SIGNS SHALL BE INSTALLED AT THE SOUTHEAST CORNER OF THE SPRING VALLEY ROAD AND MARSH LANE INTERSECTION DIRECTING PEDESTRIAN TRAFFIC TO THE EAST.

EXISTING
VP WEST 1

EXISTING
POOL

EXISTING
AMENITY
CENTER

VP WEST 2
UNDER
CONSTRUCTION

SAWCUT TYP

MARSH LANE

REMOVE & DISPOSE OF CONC PAD AROUND VALVE BOX

SAWCUT TYP

EXIST SIDEWALK ALONG VITRUVIAN WAY TO BE REMOVED & DISPOSED OF BY THE BUILDING CONTRACTOR PRIOR TO CONSTRUCTION

VITRUVIAN WAY

NOTE: "SIDEWALK CLOSED" SIGNS SHALL BE INSTALLED AT THE NORTHEAST CORNER OF THE VITRUVIAN WAY AND MARSH LANE INTERSECTION DIRECTING PEDESTRIAN TRAFFIC TO THE EAST ON THE SOUTH SIDE OF VITRUVIAN WAY.

LEGEND

REMOVE & DISPOSE OF EXISTING CONC PAVEMENT

BM #1 REF. ELEVATION = 547.84
SQUARE CUT IN TOP OF CURB, NORTH MEDIAN END NOSE, AT INTERSECTION OF VITRUVIAN WAY AND MARSH LANE.

BM #2 REF. ELEVATION = 559.47
SQUARE CUT IN TOP OF CURB, SOUTH MEDIAN END NOSE, MARSH LANE 1127' NORTH OF VITRUVIAN WAY.

NORTH

0 15 30 45 60
GRAPHIC SCALE IN FEET
SCALE: 1"=30'

STATE OF TEXAS
BRUCE F. DUNNE
62654
LICENSED
PROFESSIONAL ENGINEER
10/30/19

NO.	REVISION	BY	DATE

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Civil Engineers - Designers - Planners Southlake, Tx 76092 (817) 552-6210
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VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

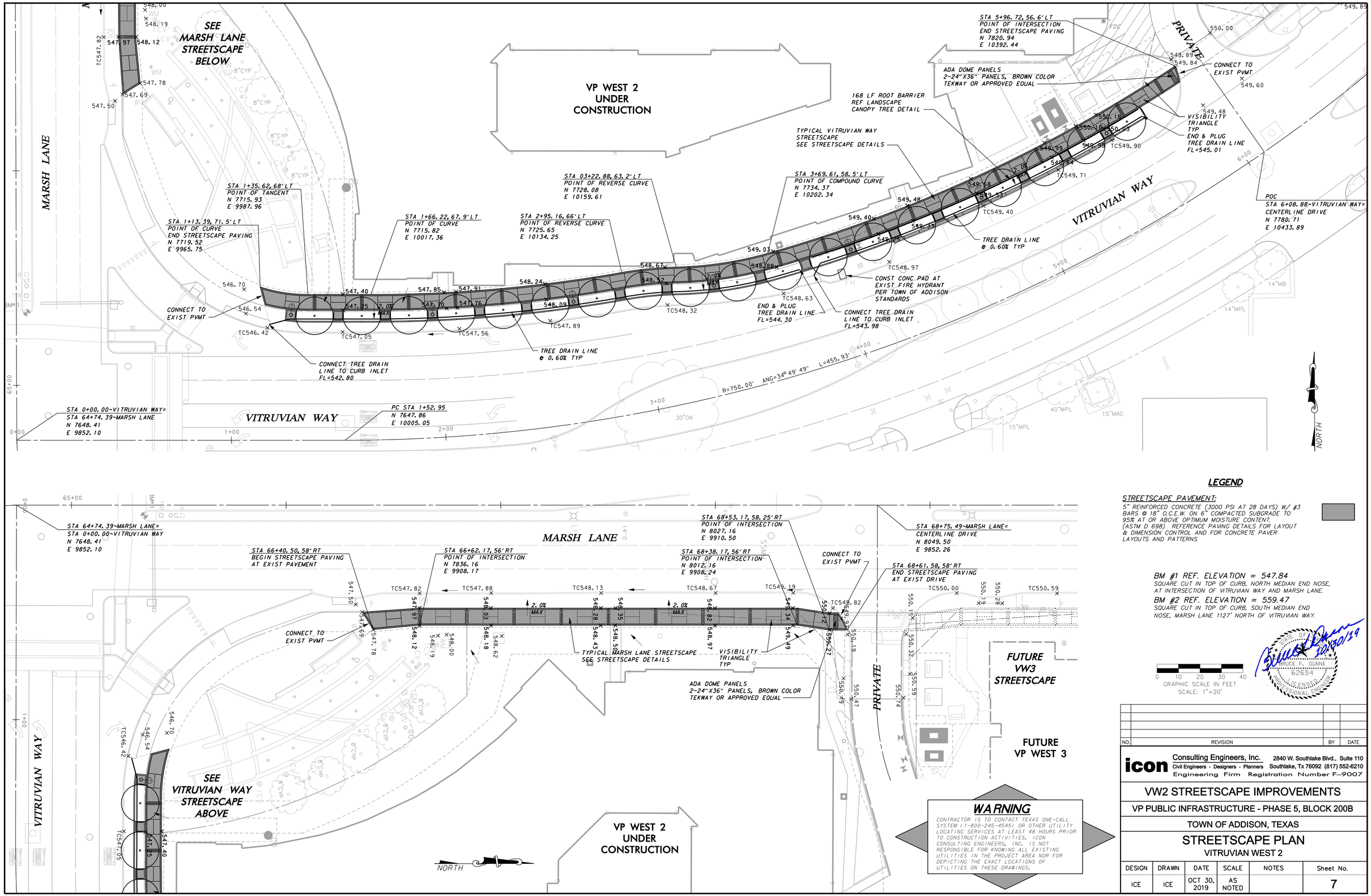
TOWN OF ADDISON, TEXAS

DEMOLITION PLAN

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
ICE	ICE	OCT 30, 2019	AS NOTED		6

VW2 STREETSCAPE – VP PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200B – PROJECT NO. 5029-06

TOWN PROJECT # 2019-01C



LEGEND

STREETSCAPE PAVEMENT:
5" REINFORCED CONCRETE (3000 PSI AT 28 DAYS) W/ #3 BARS @ 18" O.C.E.W. ON 6" COMPACTED SUBGRADE TO 95% AT OR ABOVE OPTIMUM MOISTURE CONTENT. (ASTM D 698) REFERENCE PAVING DETAILS FOR LAYOUT & DIMENSION CONTROL AND FOR CONCRETE PAVER LAYOUTS AND PATTERNS

BM #1 REF. ELEVATION = 547.84
SQUARE CUT IN TOP OF CURB, NORTH MEDIAN END NOSE, AT INTERSECTION OF VITRUVIAN WAY AND MARSH LANE.

BM #2 REF. ELEVATION = 559.47
SQUARE CUT IN TOP OF CURB, SOUTH MEDIAN END NOSE, MARSH LANE 112' NORTH OF VITRUVIAN WAY.

GRAPHIC SCALE IN FEET
SCALE: 1"=20'

STATE OF TEXAS BRUCE F. DUNN 62654 LICENSED PROFESSIONAL ENGINEER
10/30/19

NO.	REVISION	BY	DATE

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2840 W. Southlake Blvd., Suite 110
Southlake, Tx 76092 (817) 552-6210

WARNING
CONTRACTOR IS TO CONTACT TEXAS ONE-CALL SYSTEM (1-800-245-4545) OR OTHER UTILITY LOCATING SERVICES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITIES. ICON CONSULTING ENGINEERS, INC. IS NOT RESPONSIBLE FOR KNOWING ALL EXISTING UTILITIES IN THE PROJECT AREA NOR FOR DEPICTING THE EXACT LOCATIONS OF UTILITIES ON THESE DRAWINGS.

VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

STREETSCAPE PLAN

VITRUVIAN WEST 2

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
ICE	ICE	OCT 30, 2019	AS NOTED		7

VW2 STREETSCAPE – VP PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200B – PROJECT NO. 5029-06

GENERAL GRADING AND PAVING NOTES:

1. *REFER TO SHEET 3 "GENERAL CONSTRUCTION NOTES, LEGEND AND ABBREVIATIONS" FOR THE GENERAL CONSTRUCTION NOTES FOR THIS PROJECT.*

2. *ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH STANDARD SPECIFICATIONS AS PUBLISHED BY NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, AND ANY AND ALL AMENDMENTS BY THE TOWN OF ADDISON, AS WELL AS STANDARD CONSTRUCTION DETAILS OF THE TOWN OF ADDISON.*

3. *PRIOR TO COMMENCING CONSTRUCTION, THE TOWN OF ADDISON, THE CONSULTING ENGINEERS, THE SUCCESSFUL CONTRACTOR, UTILITY COMPANIES, AND ANY OTHER AFFECTED PARTIES, SHALL CONVENE FOR A PRE-CONSTRUCTION CONFERENCE AT LEAST 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.*

4. *THE CONTRACTOR SHALL OBTAIN A RIGHT-OF-WAY PERMIT FROM THE TOWN OF ADDISON PRIOR TO WORKING WITHIN THE PUBLIC RIGHT-OF-WAY.*

5. *IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ANY PUBLIC UTILITY COMPANIES FOR LOCATION OF EXISTING FACILITIES IN OR NEAR THE WORK AREAS. THESE INCLUDE, BUT ARE NOT LIMITED TO THE FOLOWING:*

TOWN OF ADDISON (WATER, SEWER, SIGNALS)	*ATMOS ENERGY (GAS)*
ONCOR ELECTRIC DELIVERY	*VERIZON / MCI*
AT&T (SOUTHWESTERN BELL)	*TIME-WARNER CABLE*
CHARTER CABLE	

6. *THE CONTRACTOR SHALL PROVIDE SUBMITTALS TO THE ENGINEER (SIX SETS EACH), FOR APPROVAL OF ALL MATERIALS TO BE ADDED TO THE PUBLIC INFRASTRUCTURE, PRIOR TO INCORPORATING MATERIALS INTO THE JOB.*

7. *THE CONTRACTOR SHALL EXECUTE A "PAYMENT, PERFORMANCE AND MAINTENANCE BOND' PRIOR TO WORKING WITHIN THE PUBLIC RIGHT-OF-WAY.*

8. *THE CONTRACTOR SHALL PROVIDE A MAINTENANCE BOND FOR PUBLIC INFRASTRUCTURE WORK IN THE FOLLOWING AMOUNTS:*

   - *100% FOR VALUATIONS LESS THAN OR EQUAL TO $5,000.*
   - *$5,000 FOR VALUATION GREATER THAN $5,000. AND LESS THAN $50,000.*
   - *10% FOR VALUATIONS GREATER THAN $50,000.*

   BONDS SHALL BE FOR A PERIOD OF TWO YEARS BEGINNING WITH THE DATE OF FINAL ACCEPTANCE BY THE TOWN.

9. *THE CONTRACTOR SHALL FULLY COMPLY WITH, AND SUPPLEMENT AS NECESSARY, THE CONDITIONS OF THE STORM WATER POLLUTION PREVENTION PLAN WHILE CONDUCTING HIS ACTIVITIES ON THIS PROJECT.*

10. *THE TOWN OF ADDISON INFRASTRUCTURE DEPARTMENT WILL APPROVE AND/OR DETERMINE THE TRAFFIC CONTROL PLAN AND WORKING HOURS. CONTACT THE CITY ENGINEER AT (972) 450-2849 OR THE INFRASTRUCTURE INSPECTOR AT (972) 450-2847. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMPLEMENT, AND SUPPLEMENT AS NECESSARY, THE TRAFFIC CONTROL MEASURES ON THIS PROJECT, INCLUDING PROVIDING ADEQUATE FLAGMEN, SIGNAGE, STRIPING AND WARNING DEVICES, ETC., DURING CONSTRUCTION IN ACCORDANCE WITH THE*

    TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD). THE CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OF TRAFFIC IN EACH DIRECTION DURING WORKING HOURS OR PROVIDE AN ALL-WEATHER DETOUR AROUND THE CONSTRUCTION SITE, INCLUDING PUBLIC NOTIFICATION AND SIGNING.

11. *TEMPORARY OR PERMANENT BARRICADES SHALL REMAIN AT ALL POINTS OF INGRESS OR EGRESS TO PREVENT PUBLIC USE UNTIL THE WORK RECEIVES FINAL ACCEPTANCE.*

12. *THE TOWN OF ADDISON WILL PROVIDE A GEOTECHNICAL LABORATORY TO PERFORM APPROPRIATE TESTING DURING CONSTRUCTION ACTIVITIES. ALL EARTHWORK OPERATIONS SHALL BE OBSERVED AND TESTED ON A CONTINUING BASIS BY THE GEOTECHNICAL ENGINEER FOR CONFORMANCE WITH THE REQUIREMENTS SET FORTH IN THE GEOTECHNICAL STUDY WHICH IS MADE A PART OF THESE CONSTRUCTION DOCUMENTS. ANY TEST THAT FAILS TO MEET CITY REQUIREMENTS SHALL BE RETESTED AT THE CONTRACTOR'S EXPENSE.*

13. *THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE DRAINAGE AT ALL TIMES DURING CONSTRUCTION, INCLUDING PROVIDING ALL TEMPORARY STRUCTURES OR IMPROVEMENTS AS NESCESSARY FOR THE SAFETY OF THE PUBLIC.*

14. *ANY ADJACENT PROPERTIES AFFECTED BY THE CONTRACTOR'S CONSTRUCTION OPERATIONS SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS, OR BETTER. THIS INCLUDES MEDIANS IN THE TOWN RIGHT OF WAY.*

15. *AREAS TO BE PAVED AND ALL AREAS THAT ARE TO RECEIVE FILL MATERIAL SHALL BE STRIPPED OF VEGETATION, TREES, ROOTS, STUMPS, DEBRIS, AND OTHER ORGANIC MATERIAL. THE DEPTH OF STRIPPING IS ESTIMATED TO BE ON THE ORDER OF SIX (6) INCHES IN ORDER TO REMOVE THE SURFACE SOIL CONTAINING ORGANIC MATERIAL. THE ACTUAL STRIPPING DEPTH SHALL BE BASED ON FIELD OBSERVATIONS. STRIPPED TOPSOIL SHALL BE STOCKPILED IN A LOCATION ON-SITE APPROVED BY THE ENGINEER. ALL TREES, INCLUDING STUMPS AND ROOT SYSTEMS, VEGETATION, DEBRIS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OFF-SITE. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS GOVERNING SPILLAGE OF DEBRIS WHILE TRANSPORTING TO A DISPOSAL SITE. ALL COSTS ASSOCIATED WITH DISPOSAL OF MATERIAL SHALL BE INCLUDED IN THE CONTRACT AMOUNT.*

16. *BURNING SHALL NOT BE PERMITTED ON THE PROJECT SITE UNLESS APPROVED IN WRITING BY THE GOVERNING AUTHORITIES.*

17. *UPON COMPLETION OF STRIPPING OPERATIONS, AND PRIOR TO PLACEMENT OF ANY FILL MATERIALS, THE STRIPPED AREAS SHOULD BE OBSERVED TO DETERMINE IF ADDITIONAL EXCAVATION IS REQUIRED TO REMOVE WEAK OR OTHERWISE OBJECTIONABLE MATERIALS THAT WOULD ADVERSELY AFFECT THE FILL PLACEMENT. THE SUBGRADE SHOULD BE FIRM AND ABLE TO SUPPORT CONSTRUCTION EQUIPMENT WITHOUT DISPLACEMENT. SOFT OR YIELDING SUBGRADE SHOULD BE CORRECTED AND MADE STABLE BEFORE CONSTRUCTION PROCEEDS. PROOF ROLLING SHOULD BE PERFORMED USING A HEAVY PNEUMATIC TIRE ROLLER, LOADED DUMP TRUCK, OR SIMILAR PIECE OF EQUIPMENT WEIGHING 25 TONS. THE PROOF ROLLING OPERATIONS SHOULD BE OBSERVED BY THE GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE.*

18. *WHEN CLAY OR OTHER UNSTABLE MATERIAL IS PRESENT IN AREAS OF PROPOSED PAVED AREAS, THE GEOTECHNICAL ENGINEER SHALL OBSERVE THE STABILITY OF ANY EXISTING CLAY OR WEATHERED MATERIAL THAT IS PRESENT IN THE SUBBASE, AND SHALL DETERMINE WHETHER ADDITIONAL EXCAVATION OF THESE MATERIALS WILL BE REQUIRED. IF THIS MATERIAL IS DEEMED SUITABLE FOR SUBBASE MATERIAL, THE SUBGRADE SHALL BE SCARIFIED TO A DEPTH OF SIX (6) INCHES, ITS MOISTURE CONTENT ADJUSTED AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER, AND THEN RE-COMPACTED TO BETWEEN NINETY-FIVE (95) PERCENT TO ONE HUNDRED (100) PERCENT OF THE OPTIMUM DENSITY DETERMINED BY THE STANDARD PROCTOR TEST, ASTM D - 698 PRIOR TO PLACEMENT OF FILL MATERIALS.*

19. *ALL SOILS USED FOR CONTROLLED FILL SHOULD BE FREE OF ROOTS, VEGETATION, AND OTHER DELETERIOUS OR UNDESIRABLE MATTER. ROCKS LESS THAN 3 INCHES IN LARGEST DIMENSION WILL BE ALLOWED AS ACCEPTABLE FILL MATERIAL. SOILS IMPORTED FROM OFF-SITE FOR USE AS FILL SHOULD BE APPROVED BY THE GEOTECHNICAL ENGINEER. THE FILL MATERIAL SHOULD BE PLACED IN LEVEL, UNIFORM LIFTS, WITH EACH LIFT COMPACTED TO THE MINIMUM DRY DENSITY WITHIN THE COMPACTION SOIL MOISTURE RANGES RECOMMENDED. THE LOOSE LIFT THICKNESS SHOULD NOT EXCEED 10 INCHES. EACH LAYER SHOULD BE PROPERLY PLACED, MIXED, SPREAD, AND COMPACTED TO BETWEEN NINETY-FIVE (95) AND ONE HUNDRED (100) PERCENT OF STANDARD PROCTOR DENSITY AT 0% TO 3% OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D 698.*

20. *THE PROPOSED CONTOURS INDICATED ON THE GRADING PLAN ARE FINISHED GRADES AND ARE SHOWN AT ONE-FOOT INTERVALS. SPOT ELEVATIONS SHOWN IN PAVED AREAS ARE TOP OF PAVEMENT, UNLESS NOTED OTHERWISE.*

21. *THE CONTRACTOR SHALL BE RESPONSIBLE FOR MASS GRADING OF THE SITE TO THE FOLLOWING ELEVATIONS:*

    - *10" BELOW FINISHED GRADE FOR ALL STREET PAVEMENT AREAS*
    - *5" BELOW FINISHED GRADE FOR ALL SIDEWALK PAVEMENT AREAS*
    - *6" BELOW FINISHED GRADE FOR ALL LANDSCAPE AREAS*

    A TOLERANCE OF +/- 0.10 FEET OF THE FINISHED GRADE WILL BE ALLOWED FOR ALL AREAS UNDER PROPOSED PAVEMENT. ALL LANDSCAPE AREAS ARE TO BE GRADED WITHIN +/- 0.30 FEET OF THE FINISHED GRADE.

22. *ALL LANDSCAPE AREAS AND OTHER DISTURBED AREAS WITHIN THE LIMITS OF THE PROPERTY NOT DESIGNATED TO BE PAVED SHALL RECEIVE SIX (6) INCHES OF TOPSOIL. REFER TO THE EROSION AND SEDIMENT CONTROL PLANS AND/OR LANDSCAPE PLANS FOR LIMITS OF TOPSOIL PLACEMENT.*

23. *THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALCULATING THE EARTHWORK QUANTITIES BASED ON THE EXISTING AND PROPOSED CONTOURS AND SPOT ELEVATIONS SHOWN ON THESE PLANS. ALL EARTHWORK SHALL BE CONSIDERED UNCLASSIFIED EXCAVATION AND BID ON A LUMP SUM BASIS, UNLESS NOTED OTHERWISE.*

24. *THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS FOR THE SUPPORT AND PROTECTION OF ALL UTILITY POLES, FENCES, TREES, SHRUBS, UTILITY SERVICES, BUILDING FOUNDATIONS AND ALL OTHER UTILITIES AND STRUCTURES BOTH ABOVE AND BELOW THE GROUND, THE COST OF WHICH SHALL BE INCLUDED IN THE CONTRACT AMOUNT.*

25. *THE CONTRACTOR SHALL VERIFY THE ELEVATION, CONFIGURATION, AND ANGULATION OF EXISTING PAVEMENT PRIOR TO CONSTRUCTION OF TIE-IN MATERIALS. WHERE PROPOSED CONCRETE PAVEMENT TO EXISTING CONCRETE PAVEMENT IS TO BE CONSTRUCTED BY THE CONTRACTOR, THE CONTRACTOR SHALL PROVIDE HORIZONTAL DOWEL BARS PER THE DETAILS.*

26. *NO PERSON SHALL OPEN, TURN OFF, INTERFERE WITH, ATTACH ANY HOSE TO, OR TAP ANY WATER MAIN BELONGING TO THE TOWN OF ADDISON UNLESS DULY AUTHORIZED TO DO SO BY THE TOWN OF ADDISON INFRASTRUCTURE DEPARTMENT (972-450-2871).*

27. *ALL EXISTING AND PROPOSED IMPROVEMENTS (MANHOLE RIMS, CLEAN-OUTS, FIRE HYDRANTS, VALVE BOXES, WATER METERS AND VAULTS, ETC.) SHALL BE ADJUSTED TO FINAL FINISHED GRADE BY THE CONTRACTOR AT THE TIME OF PAVING.*

28. *PREPARATION OF SUBGRADE UNDER PAVED AREAS SHALL BE PERFORMED IN ACCORDANCE WITH THE TOWN OF ADDISON SPECIFICATIONS OR THE GEOTECHNICAL REPORT. THE MORE RESTRICTIVE REQUIREMENTS SHALL APPLY. PREPARATION OF THE SUBGRADE FOR PAVING WITHIN RIGHT-OF-WAY, STREET USE EASEMENTS AND/OR FIRE LANES SHALL NOT BE INITIATED UNTIL ALL TESTING OF UNDERGROUND UTILITIES HAS BEEN COMPLETED AND VERIFIED TO MEET THE SPECIFICATIONS AND AUTHORIZATION TOPROCEED HAS BEEN RECEIVED FROM THE INSPECTOR.*

29. *ALL FILL UNDER PAVEMENT AREAS SHALL BE COMPACTED TO A DENSITY OF AT LEAST NINETY-FIVE (95) PERCENT STANDARD PROCTOR AS PER ASTM D698 AT OR ABOVE OPTIMUM MOISTURE CONTENT (+-3%). LIFTS SHALL BE AS SPECIFIED IN THE GEOTECHNICAL REPORT AND AS APPROVED BY THE TOWN OF ADDISON. ALL FILL MATERIAL SHALL BE TESTED AS INSTALLED AND CERTIFIED BY AN APPROVED SOILS LABORATORY.*

30. *THE SUBGRADE SHALL BE PROOF-ROLLED WITH HEAVY PNEUMATIC EQUIPMENT. ANY SOFT OR PUMPING AREAS SHALL BE EXCAVATED TO FIRM SUBGRADE AND BACKFILLED AND RE-COMPACTED IN CONFORMANCE WITH THE GEOTECHNICAL REPORT. PAVEMENT SUBGRADE SHOULD NOT BE ALLOWED TO RETAIN WATER. WET MATERIAL SHALL BE REMOVED TO DRY, SOUND MATERIAL AND APPROPRIATE DENSITY ACHIEVED PRIOR TO PAVING OPERATIONS.*

31. *CONCRETE SHOULD BE PORTLAND CEMENT CONCRETE, CONFORMING TO THE REQUIREMENTS OF TxDOT ITEM 421, PORTLAND CEMENT CONCRETE CLASS "P".*

32. *HYDRATED LIME (IF REQUIRED) SHALL MEET THE REQUIREMENTS OF TxDOT ITEM 260, LIME TREATMENT USED AS SUBGRADE. LIME SHALL BE APPPLIED AT THE RATE AND THICKNESS AS RECOMMENDED IN THE GEOTECHNICAL REPORT, THOROUGHLY MIXED AND BLENDED WITH THE SUBGRADE AND UNIFORMLY COMPACTED TO A MINIMUM OF 100 PERCENT OF STANDARD PROCTOR (ASTM D698) DETERMINED BY THAT TEST. LIME STABILIZATION SHALL EXTEND ONE (1) FOOT OUTSIDE THE LIMITS OF THE PAVED AREA. IT SHOULD BE PROTECTED AND MAINTAINED IN A MOIST CONDITION UNTIL THE PAVEMENT IS PLACED.*

33. *THE CONTRACTOR SHALL SCHEDULE AND COORDINATE HIS WORK WITH TRENCHING OPERATIONS FOR OTHER UTILITIES INCLUDING GAS, TELEPHONE, AND ELECTRIC SERVICES, LANDSCAPE IRRIGATION CONDUITS, LIGHTING CONDUITS, STREETSCAPE IMPROVEMENTS, ETC. AND SHALL PROVIDE BLOCKOUTS AND/OR FINAL ADJUSTMENT TO FINISH GRADE FOR ALL IMPROVEMENTS, EXISTING AND PROPOSED, WITHIN THE LIMITS OF THE PAVING WORK.*

34. *ALL CURB SHOWN IS TO BE SIX (6) INCHES HIGH.*

35. *EXPANSION JOINT MATERIAL SHALL EXTEND COMPLETELY THROUGH THE CURB.*

36. *ALL REINFORCING BARS SHALL BE GRADE 40 KSI DEFORMED REINFORCING STEEL. SIZE AND SPACING SHALL BE IN ACCORDANCE WITH THE DETAILS. WHERE BARS ARE SPLICED, A 30' DIAMETER LAP SHALL BE USED.*

37. *ALL REINFORCING STEEL AND DOWEL BARS IN PAVEMENT SHALL BE SUPPORTED AND MAINTAINED AT THE CORRECT CLEARANCES BY THE USE OF BAR CHAIRS OR OTHER APPROVED SUPPORTS.*

38. *THE CONTRACTOR SHALL PROCEED WITH PAVING NO MORE THAN SEVENTY-TWO (72) HOURS AFTER DENSITY/MOISTURE TESTS HAVE BEEN TAKEN AND PASSED BY THE TESTING FIRM. COPIES OF THE TEST RESULTS SHALL BE FURNISHED TO THE CITY. IN THE EVENT PAVING OPERATIONS HAVE NOT COMMENCED WITHIN THE SEVENTY-TWO (72) HOUR LIMIT, A RETEST SHALL BE REQUIRED AT THE CONTRACTOR'S EXPENSE.*

39. *CONCRETE SHALL NOT BE PLACED WHEN THE TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT AND FALLING, BUT MAY BE PLACED WHEN THE TEMPERATURE IS ABOVE 35 DEGREES AND RISING. THE TEMPERATURE READING SHALL BE TAKEN IN THE SHADE AND AWAY FROM ARTIFICIAL HEAT.*

40. *CONSTRUCTION OF SIDEWALKS, WHEELCHAIR RAMPS AND ACCESSIBLE ROUTES SHALL BE IN ACCORDANCE WITH THE TEXAS ACCESSIBILITY STANDARDS (TAS), THE AMERICANS DISIBILITY ACT (ADA) AND THE PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG). ALL CONCRETE FOR HANDICAP RAMPS SHALL HAVE TRUNCATED DOMES.*

41. *PAVEMENT MARKINGS SHALL BE PROVIDED IN ACCORDANCE WITH THE TEXAS "UNIFORM TRAFFIC MANUAL FOR PAVEMENT MARKINGS": FIRE LANES SHALL BE STRIPED IN ACCORDANCE WITH THE TOWN OF ADDISON'S REQUIREMENTS. ALL HANDICAP SYMBOLS, SIGNAGE AND PAVEMENT MARKINGS SHALL COMPLY WITH TAS AND/OR ADA AND/OR PROWAG STANDARDS.*

42. *MEMBRANE CURING TYPE 2, WHITE PIGMENTED, SHALL BE USED FOR CURING ALL CONCRETE SURFACES IMMEDIATELY AFTER FINISHING OF SURFACES AND SHALL BE IN ACCORDANCE WITH THE TxDOT ITEM #526.*

43. *THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR REPAIRS TO ALL EXISTING FACILITIES DAMAGED BY HIS ACTIVITIES.*

44. *THE CONTRACTOR SHALL PROVIDE PAVEMENT JOINTING IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:*

    A. *SAW CUTTING SHALL BE DONE WITHIN EIGHT (8) HOURS OF POUR OR AS SOON AS CONCRETE CAN SUPPORT WEIGHT. PROVIDE A NEAT CUT WHICH IS TRUE IN ALIGNMENT.*

    B. *CONTRACTOR SHALL MARK JOINT LOCATIONS AT THE CENTERLINE OF DOWEL LENGTH DURING HIS PAVING OPERATIONS.*

    C. *ALL JOINTS ARE TO CONTINUE THROUGH THE CURB AT A 90° ANGLE.*

    D. *RADIAL JOINTS SHALL BE NO SHORTER THAN EIGHTEEN (18) INCHES.*

    E. *ALL CONSTRUCTION JOINTS SHALL BE SAWN, CLEANED OF DEBRIS, BLOWN DRY AND IMMEDIATELY SEALED.*

    F. *ODD SHAPED PANELS SHALL BE REINFORCED WITH #3 BARS AT 18" EACH WAY. AN ODD SHAPED PANEL IS CONSIDERED TO BE ONE IN WHICH THE SLAB TAPERS TO A SHARP ANGLE WHEN THE LENGTH TO WIDTH RATIO EXCEEDS 3 TO 1 OR WHEN A SLAB IS NEITHER SQUARE NOR RECTANGULAR.*

    G. *THE CONTRACTOR SHALL SUBMIT HIS DESIRED JOINT LAYOUT PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO BEGINNING WORK.*

45. *THE CONTRACTOR SHALL PROVIDE VERIFICATION OF COMPLETION AND COMPLIANCE OF ANY AND ALL REQUIRED TESTS TO THE TOWN OF ADDISON.*

46. *THE CONTRACTOR SHALL CALL (972) 450-2847 TO REQUEST A FINAL WALK-THROUGH INSPECTION OF THE PUBLIC INFRASTRUCTURE WORK.*

STATE OF TEXAS
BRUCE F. DUNNE
62654
LICENSED
PROFESSIONAL ENGINEER
10/30/19

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2840 W. Southlake Blvd., Suite 110
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VW2 STREETSCAPE IMPROVEMENTS

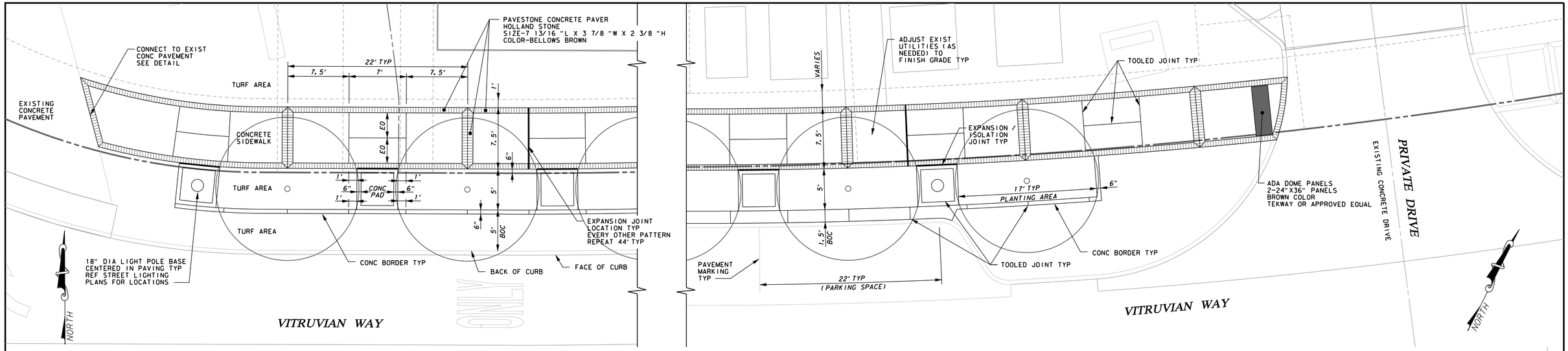
VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

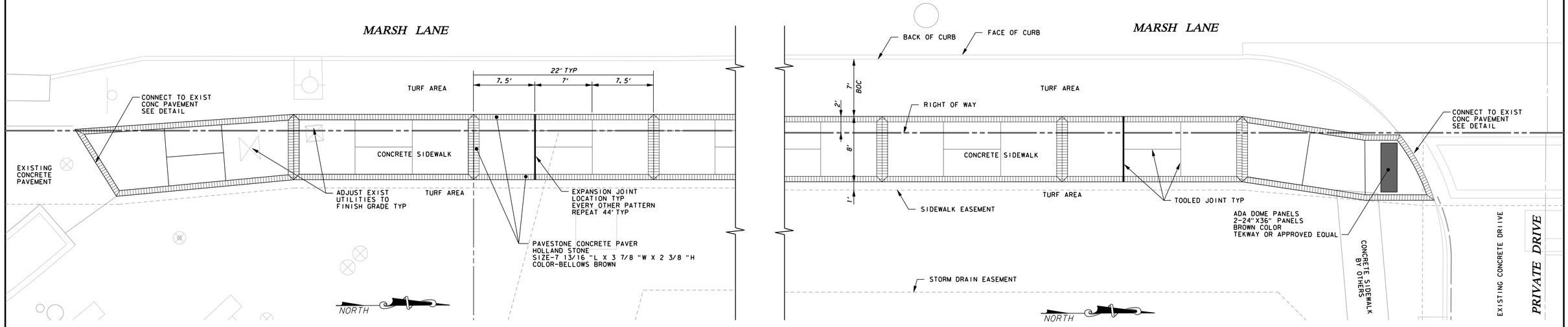
STREETSCAPE PAVING NOTES & DETAILS

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
ICE	ICE	OCT 30, 2019	AS NOTED		8

VW2 STREETSCAPE – VP PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200B – PROJECT NO. 5029-06



TYPICAL STREETSCAPE PLAN - VITRUVIAN WAY
SCALE: 1"-6'



TYPICAL STREETSCPAE PLAN - MARSH LANE
SCALE: 1"-6'

0 3 6 9 12
GRAPHIC SCALE IN FEET
SCALE: 1"=6'

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VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

STREETSCAPE PAVING DETAILS

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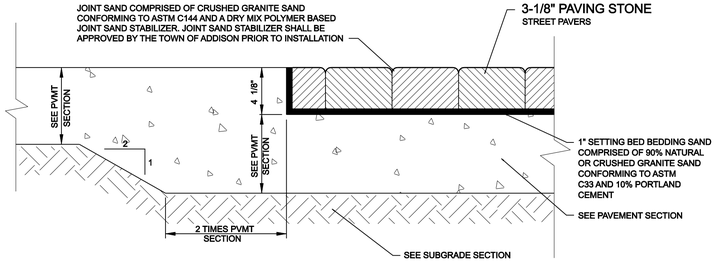
VW2 STREETSCAPE – VP PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200B – PROJECT NO. 5029-06

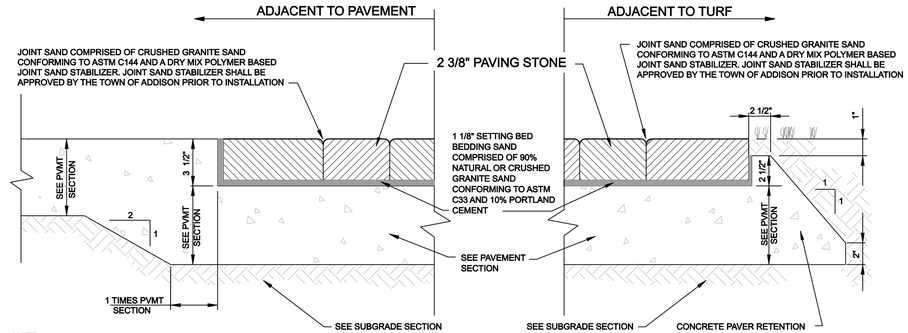
TOWN PROJECT # 2019-01C



NOTE:
CONTRACTOR SHALL CONFIRM THICKNESS OF FINAL PAVER SELECTION PRIOR TO POURING DROP SLABS IN THE SIDEWALKS OR STREETS

STREET PAVERS ON CONCRETE DROP SLAB

NOT TO SCALE

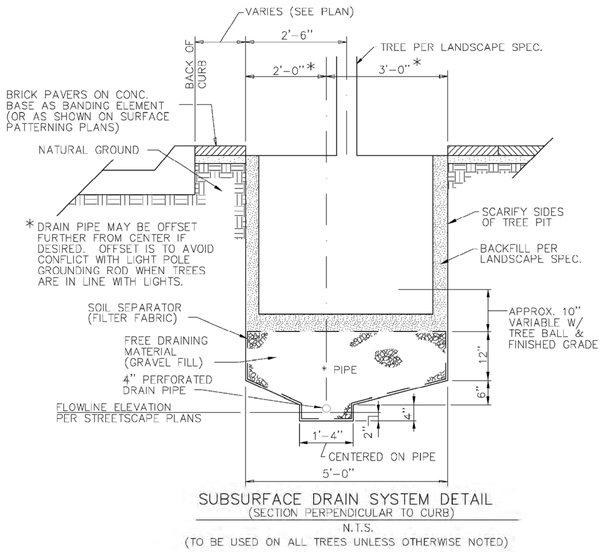


NOTE:
CONTRACTOR SHALL CONFIRM THICKNESS OF FINAL PAVER SELECTION PRIOR TO POURING DROP SLABS IN THE SIDEWALKS

NOTE:
CONTRACTOR SHALL CONFIRM THICKNESS OF FINAL PAVER SELECTION PRIOR TO POURING DROP SLABS IN THE SIDEWALKS OR STREETS

PAVERS ON CONCRETE DROP SLAB

NOT TO SCALE

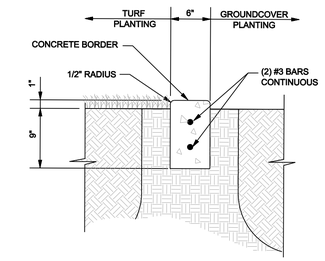


SUBSURFACE DRAIN SYSTEM DETAIL

(SECTION PERPENDICULAR TO CURB)

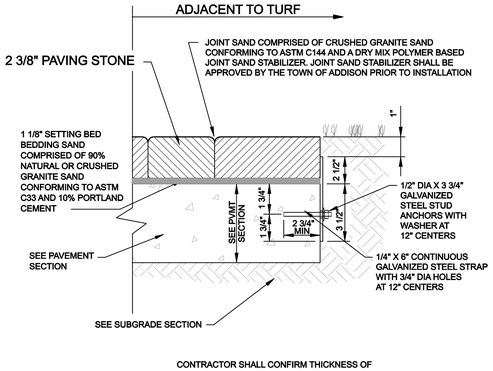
N.T.S.

(TO BE USED ON ALL TREES UNLESS OTHERWISE NOTED)



CONCRETE BORDER

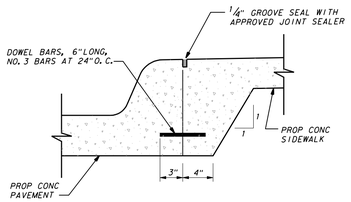
NOT TO SCALE



CONTRACTOR SHALL CONFIRM THICKNESS OF FINAL PAVER SELECTION PRIOR TO POURING DROP SLABS IN THE SIDEWALKS OR STREETS

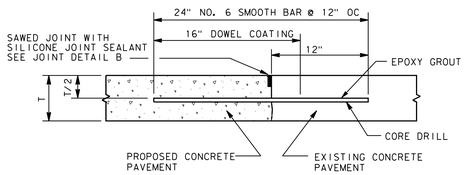
ALTERNATE PAVER RETENTION ON CONCRETE DROP SLAB

NOT TO SCALE



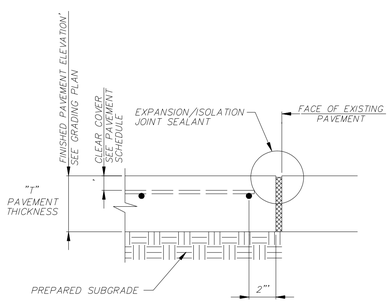
JOINT DETAIL FOR SIDEWALK ADJACENT TO CURB

NOT TO SCALE



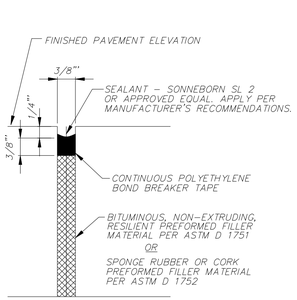
PROPOSED TO EXISTING CONCRETE PAVEMENT

NOT TO SCALE



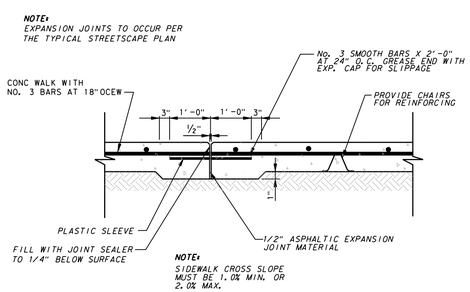
EXPANSION / ISOLATION JOINT

NOT TO SCALE



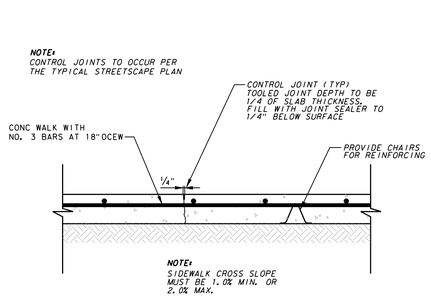
EXPANSION / ISOLATION JOINT SEALANT

NOT TO SCALE



STREETSCAPE SIDEWALK EXPANSION JOINT

NOT TO SCALE



STREETSCAPE SIDEWALK CONTROL JOINT

NOT TO SCALE

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VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

STREETSCAPE PAVING DETAILS

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VW2 STREETSCAPE – VP PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200B – PROJECT NO. 5029-06

TOWN PROJECT # 2019-01C

PROPOSED
VP WEST 2

MARSH LANE

VITRUVIAN WAY

MATCHLINE 5+35

STA 1+97.75, 57.4' LT
LIGHT POLE BASE NO. VS11
SL TYPE 1

STA 1+27.76, 58.4' LT
LIGHT POLE BASE NO. VS12
SL TYPE 1

STA 2+68.56, 56.4' LT
LIGHT POLE BASE NO. VS10
SL TYPE 1

STA 3+39.29, 50.5' LT
LIGHT POLE BASE NO. VS09
SL TYPE 1

STA 4+09.78, 48.1' LT
LIGHT POLE BASE NO. VS08
SL TYPE 1

STA 4+79.81, 47.4' LT
LIGHT POLE BASE NO. VS07
SL TYPE 1

5.5' BOC TYP

2-#6, 1-#10 IN
1 1/4" SCH40 PVC

4.5' TYP

VARIES

STA 0+00.00~VITRUVIAN WAY=
STA 64+74.39~MARSH LANE
N 7648.41
E 9852.10

PC STA 1+52.95
N 7647.86
E 10005.05

R=750.00' ANG=49° 00' 01" L=641.41'

LEGEND

- PULL BOX (GROUND BOX)
- PVC CONDUIT (LIGHTING)
- TRANSFORMER ON PAD *
- STREET LIGHT – TYPE 1
- STREET LIGHT – FUTURE TYPE 1
- * PROVIDED BY POWER COMPANY

NORTH

EXISTING
AMENITY
CENTER

EXISTING
VP WEST 1

STA 5+49.77, 46.9' LT
LIGHT POLE BASE NO. VS06
SL TYPE 1

STA 5+86.63, 46' LT
CONNECT TO EXIST
1 1/4" CONDUIT

STA 6+66.28, 46' LT
EXIST STREET LIGHT NO. VS05

EXIST STREET LIGHTING

CONNECT TO
EXIST STREET
LIGHT CIRCUIT
IN EXIST POLE

PT STA 7+94.37
N 7903.81
E 10572.00

STA 9+83.04~VITRUVIAN WAY=
STA 0+00.00~PARK ROAD
N 8045.76
E 10696.28

EXIST ELECTRIC SERVICE PEDESTAL

PARK ROAD

WARNING

CONTRACTOR IS TO CONTACT TEXAS ONE-CALL SYSTEM (1-800-245-4545) OR OTHER UTILITY LOCATING SERVICES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITIES. ICON CONSULTING ENGINEERS, INC. IS NOT RESPONSIBLE FOR KNOWING ALL EXISTING UTILITIES IN THE PROJECT AREA NOR FOR DEPICTING THE EXACT LOCATIONS OF UTILITIES ON THESE DRAWINGS.

BM #1 REF. ELEVATION = 547.84
SQUARE CUT IN TOP OF CURB, NORTH MEDIAN END NOSE, AT INTERSECTION OF VITRUVIAN WAY AND MARSH LANE.

BM #2 REF. ELEVATION = 559.47
SQUARE CUT IN TOP OF CURB, SOUTH MEDIAN END NOSE, MARSH LANE 1127' NORTH OF VITRUVIAN WAY.

GRAPHIC SCALE IN FEET
0 10 20 30 40
SCALE: 1"=20'

STATE OF TEXAS
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LICENSED
PROFESSIONAL ENGINEER
10/30/19

STREET LIGHTING & CONDUIT NOTES

1. REFER TO SHEET 3 "GENERAL CONSTRUCTION NOTES, LEGEND AND ABBREVIATIONS" FOR THE GENERAL CONSTRUCTION NOTES FOR THE PROJECT.
2. REFER TO SHEET ED(1)-03 FOR ELECTRIC DETAILS – CONDUIT. RIGID METAL CONDUIT ELBOWS ARE NOT REQUIRED.
3. REFER TO SHEET ED(2)-03 FOR ELECTRIC DETAILS – CONDUCTORS.
4. REFER TO SHEET ED(3)-03 FOR ELECTRIC DETAILS – GROUND BOXES. RIGID METAL CONDUIT ELBOWS ARE NOT REQUIRED. CONCRETE APRON IS NOT REQUIRED.
5. REFER TO SHEET ED(8)-03 FOR ELECTRIC DETAILS – ELECTRICAL SERVICE SUPPORT PEDESTAL SERVICE TYPE PS. PEDESTAL SERVICE SHALL BE ALUMINUM, COLOR LIGHT GRAY. RIGID METAL ELBOWS ARE NOT REQUIRED.
6. WATER, SANITARY SEWER, AND STORM DRAIN LINES ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL LOCATE ALL UTILITY LINES IN THE AREA PRIOR TO DIGGING.
7. INSTALL SCHEDULE 40 PVC UNDERGROUND (24" MIN COVER) . ALL STREET AND DRIVEWAY CROSSINGS (36" MIN COVER). ALL BENDS TO BE LONG RADIUS.
8. ALL CONDUIT AT POLE BASES TO BE WITHIN THE DRILLED SHAFT FOUNDATION. NO EXPOSED CONDUIT AT POLE BASES WILL BE ALLOWED
9. SL TYPE 1 – SINGLE 100W 240V MH LUMINARE ON 11'-8" POLE, COLOR SILVER- REFERENCE SPECIAL PROVISIONS
10. CONNECTION TO POWER COMPANY CIRCUITS TO BE MADE ONLY BY POWER COMPANY.
11. UNLESS OTHERWISE INDICATED ALL WORK SHALL CONFORM TO THE 2008 NATIONAL ELECTRICAL CODE (NFPA 70) AND THE 2007 NATIONAL ELECTRICAL SAFETY CODE (ANSI C2).
12. ALL EMPTY CONDUIT INSTALLED FOR FUTURE EXTENSION SHALL BE TURNED UP AND EXTENDED UP TO FINISHED GRADE. CAP ENDS OF ALL CONDUITS. ALL EMPTY CONDUIT SHALL CONTAIN A PULL LINE – 200 LB TEST NYLON.
13. REFER TO REFERENCED SHEETS FOR STREET LIGHTING DETAILS.
14. IRRIGATION SLEEVES "IRR" SHALL CONSIST OF 1-6" SCH 40 PVC AND 1-2" SCH 40 PVC INSTALLED WITH MINIMUM 24" COVER AND EXTENDING 2' BEYOND THE BACKS OF CURB OR EDGE OF PAVEMENT AND UP TO FINISHED GRADE. CAP ENDS OF ALL CONDUITS.
15. STREET LIGHTING BASE AND CONDUIT LOCATIONS ARE CRITICAL FOR COORDINATION WITH FUTURE STREETSCAPE AND ADJACENT PRIVATE IMPROVEMENTS. INSTALL ONLY AT SPECIFIC LOCATIONS PROVIDED.

NO.	REVISION	BY	DATE

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VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

STREET LIGHTING & CONDUIT PLAN

VITRUVIAN WAY STA 6+30.83 TO 13+70.78

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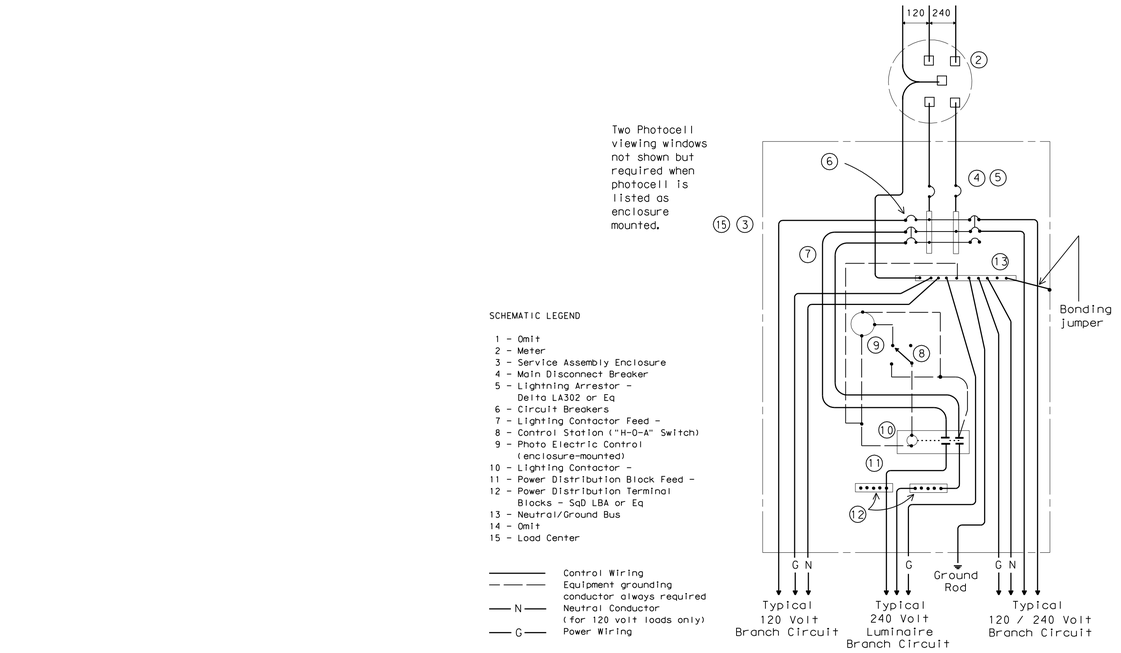
TOWN PROJECT # 2019-01C

VW2 STREETSCAPE – VP PUBLIC INFRASTRUCTURE – PHASE 5, BLOCK 200B – PROJECT NO. 5029-06



SCHEMATIC LEGEND

1 - Omit
2 - Meter
3 - Service Assembly Enclosure
4 - Main Disconnect Breaker
5 - Lightning Arrestor - Delta LA302 or Eq
6 - Circuit Breakers
7 - Lighting Contactor Feed -
8 - Control Station ("H-O-A" Switch)
9 - Photo Electric Control (enclosure-mounted)
10 - Lighting Contactor -
11 - Power Distribution Block Feed -
12 - Power Distribution Terminal Blocks - SqD LBA or Eq
13 - Neutral/Ground Bus
14 - Omit
15 - Load Center

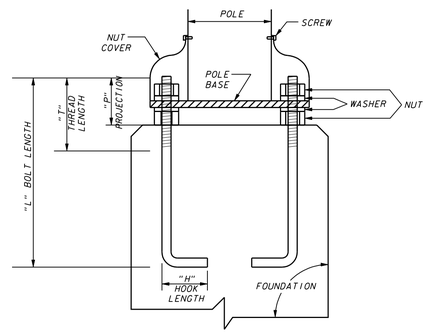
———— Control Wiring
— — — Equipment grounding conductor always required
—— N —— Neutral Conductor (for 120 volt loads only)
—— G —— Power Wiring

SCHEMATIC TYPE D
120/240 VOLTS - THREE WIRE

TYPE D SERVICE NOTES

Photocell and lighting contactor shall be located in the same UL type 3R enclosure with load center. There shall be a window on each side of enclosure to allow operation of photocell. Both photocell, contactor and breaker area shall have dead front trim. Type D load center with lighting controls shall have power distribution blocks for a minimum of 10, #4 conductors.

EXISTING ELECTRIC SERVICE PEDESTAL SCHEMATIC

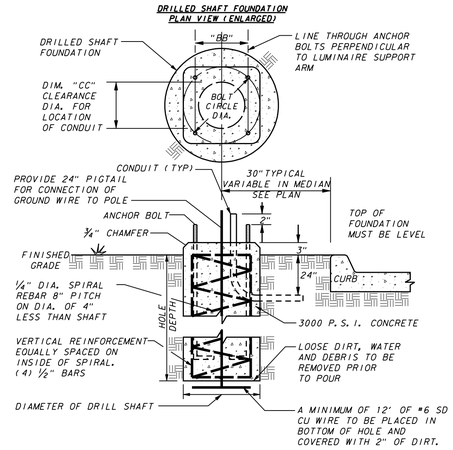


NOTES:
1. USE ANCHOR BOLT TEMPLATE FURNISHED BY POLE MANUFACTURER FOR ANCHOR BOLT ALIGNMENT.
2. ALL EXPOSED HARDWARE TO BE STAINLESS STEEL.

TYPE NO.	BOLT DIA. (IN.)	LENGTH "L" (IN.)	HOOK "H" (IN.)	THREAD "T" (IN.)	PROJECTION "P" (IN.)
45	¾	17	3 ½	5 ½	3 ½
47	1	36	4	6	4

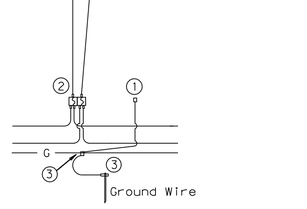
SUPPLY 2 NUTS & 2 WASHERS WITH EACH BOLT

ANCHOR BOLT DETAIL

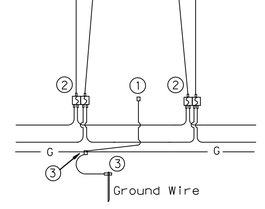


TYPE NO.	SHAFT DEPTH	SHAFT DIA.	BOLT CIRCLE DIA.	ANCHOR TYPE NO.	CONDUIT CLEARANCE DIM. "CC"	DISTANCE ACROSS BOLTS DIM "BB"
1	60"	18"	9 ½"	45	4 ½"	6 ¾"
2	60"	18"	9 ½"	45	4 ½"	6 ¾"
3	72"	24"	11 ½"	47	7 ½	8 ⅜"
4	72"	24"	11 ½"	47	7 ½	8 ⅜"

DRILLED SHAFT FOUNDATION



FOR THREE-WIRE CIRCUIT-CENTER GROUNDED
LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE
SINGLE FIXTURE



FOR THREE-WIRE CIRCUIT-CENTER GROUNDED
LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE
DOUBLE FIXTURE

NOTES:

1. Use threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors.
2. Double-Pole inline fuse and connector, sized appropriately for conductors. Bussmann TRON HEY with 2A0660 & 2A0661 Insulating Boots and LIMITRON KTK-R fast acting fuses or equal - 100W fixture use 1 amp fuses, 400 W fixture use 4 amp fuses.
3. Split Bolt or other connector.

ELECTRICAL CONNECTION DETAIL

STATE OF TEXAS
BRUCE F. DUNNE
62654
LICENSED
PROFESSIONAL ENGINEER
10/30/19

NO.	REVISION	BY	DATE

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VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

STREET LIGHT DETAILS

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VW2 STREETSCAPE - VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B - PROJECT NO. 5029-06

I. GENERAL REQUIREMENTS FOR ALL ELECTRICAL WORK

The location of all conductors, conduits, junction boxes, ground boxes, and electrical services is diagrammatic only and may be shifted by the Engineer to accommodate local conditions.

Materials shall be new and unused. Materials and installation shall comply with the applicable provisions of the National Electrical Code (NEC), National Electrical Manufacturers Association (NEMA) standards, and shall be Underwriters Laboratories (UL) Listed unless otherwise shown on the plans or specifications or approved by the Engineer in writing. Faulty fabrication or poor workmanship in any material, equipment, or installation shall be justification for rejection. When reference is made to UL, it can be considered to mean a Nationally Recognized Independent Testing Lab (NRTL). Comparable standards of Canadian Standard Association, Electrical Testing Laboratories or Factory Mutual can be equal to the referenced UL standard. Where reference is made to NEMA listed devices, IEC listed devices shall not be considered to be an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing.

With the exception of high strength bolts, miscellaneous nuts, bolts and hardware may be stainless steel when plans specify galvanized, provided that bolts are 1/2 inch or less in diameter. The Contractor shall provide the following electrical test instruments as required by the Engineer to confirm compliance with the contract and the NEC. Those test instruments are voltmeter, amp probe, megger (1000 volt DC) and torque wrenches. All meters shall have been properly calibrated within one year. Calibration certification shall be provided to the Engineer upon request. Calibration certification tag shall also be applied to the meter. The Contractor shall operate meters during inspection as requested by the Engineer. Grounding shall be as shown on the plans and in accordance with the NEC. Metallic conduit, light poles, luminaires on bridge structures, and all metal enclosures shall be bonded to the system-grounding conductor. The ground rod in each ground box or junction box at the bridge ends, and in each ground box installed for underpass lighting will also be bonded to the system grounding conductor. The grounding conductor shall be bare or, if insulated, shall be green. Ground rods, connectors, and bonding jumpers will not be paid for separately, but will be subsidiary to the various bid items.

SUBMITTALS:

The contractor shall submit for approval six (6) copies of catalog cut sheets for each of the following three (3) categories.
Category 1. Electrical services including photocell.
Catagory 2. Breakaway disconnects, heat shrink tubing, heat shrink filler tape, GelCaps and ground boxes which will include loading capacity certification.
Category 3. Highmast assembly kits, when applicable. See Item 614 "Highmast Illumination Assemblies". Submittals shall be legible and shall be marked to indicate which product on a cut sheet is to be supplied. Where manufacturers provide warranties and guarantees as a customary trade practice, the Contractor shall furnish to the State such warranties and guarantees.
Any deviation from plans or specifications, including deviations due to plan error shauld be prominently displayed on the submittal. Any changes not prominently noted in submittal and incorporated into the work without proper authorization will constitute grounds for rejection of that portion of the work.

II. CONDUIT

A. MATERIALS

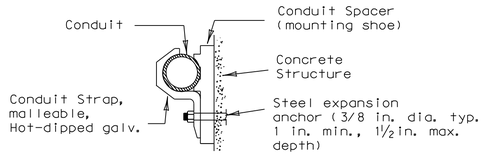
1. Conduit and fittings shall be UL Listed for the intended use shown on plan sheets.
2. Conduit shall be the type shown by descriptive code or shown elsewhere on the plans. Substitution of the various types of conduits will not be permitted. All flexible conduit in rigid metallic conduit (RMC) systems shall be Liquidtight Flexible Metal (LFMC) conduit. All flexible conduit in PVC systems shall be Liquidtight Flexible Non-metallic conduit (LFNC).
3. All exposed conduits shall be RMC, unless otherwise specifically shown on the plans. All metal conduit shall be properly grounded.
4. Couplings, connectors, conduit bodies, grounding bushings, and offset nipples for RMC shall be electro-zinc plated steel or hot dipped galvanized malleable iron, threaded or threadless compression type, rain-tight and shall be UL listed for the intended use.
5. Expansion joints for metal conduit shall be provided with an internal or external bonding jumper and shall be UL listed.
6. Unless otherwise shown on the plans, junction box minimum sizes shall be in accordance with the following table which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes are present, the conductors shall be counted as if all are of the larger size. Situations not applicable to the table shall be sized in accordance with NEC 370-28.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

7. RMC system junction boxes equal to or smaller, in any dimension, than 12 x 12 x 6 (HxWxD), surface mounted and containing conductors #8 or larger, shall be hot dipped galvanized cast iron with minimum wall thickness of 3/16 inch, shall have external mounting lugs, and shall be UL listed Crouse-Hinds Type WAB, OZ/Gedney Type YS or approved equal. Unless otherwise shown elsewhere on the plans, RMC system junction boxes larger than the aforementioned boxes but equal to or smaller, in any dimension, than 18 x 18 x 6 (HxWxD) shall be 14-ga. stainless steel; RMC system junction boxes larger than 18 x 18 x 6 (HxWxD) shall be 12-ga. stainless steel. All metal junction boxes shall be equipped with a threaded hole or lug for grounding. Stainless steel boxes 12 x 12 x 6 and larger need not be UL Listed but shall meet the other requirements of the NEC and shall have ribs, stiffeners, or thicker metal and shall have external mounting feet. Junction boxes with an internal volume of more than 100 cu. in. may be supported by connection of two or more rigid metal conduits, where specifically shown on the plans or where approved by the Engineer.
8. Junction boxes containing only #10 or #12 AWG conductors shall be Crouse Hinds Type GRFX, Appleton Type JBOX, two-gang FD, or similar approved cast iron box. Boxes shall be sized according to NEC Table 370-16(a).
9. IMC and EMT conduit shall not be used unless specifically required by the plan layout sheets. Junction boxes in EMT conduit systems shall be made from galvanized sheeting and shall be UL listed and approved for outdoor use, unless otherwise noted on the plans. Sheet metal junction boxes shall be sized in accordance with the NEC. Junction boxes for IMC conduit systems shall meet the requirements of boxes used with RMC systems.
10. Junction boxes in PVC conduit systems shall be PVC, intended for outdoor use, unless otherwise noted on the plans.
11. Elbows in PVC conduit systems one inch and larger shall be rigid metal, with the exception of traffic signal systems which may have PVC elbows instead of rigid. If any part of the rigid metal elbow is buried less than 18 inches underground the elbow and rigid metal extension shall be grounded. Grounding shall be accomplished by means of a grounding bushing installed on the extension. Unless specifically shown on the plans, rigid metal elbows containing, or entering ground boxes containing only communications conductors, loop detectors, or other low voltage power limited circuits need not be grounded unless a ground wire is present in the conduit or ground box. The rigid metal elbows located in concrete foundations may be extended with PVC conduit and need not be grounded provided that the end of the elbow nearest the end of the conduit run exiting the foundation is at least 2 inches below the concrete. RMC elbows will not be eliminated. RMC elbows will not be paid for directly, but will be subsidiary to various bid items.
12. High-Density Polyethylene (HDPE) conduit shall meet the requirements of Item 622, Duct Cable, except that the HDPE conduit, when bid under Item 618, Conduit, shall not contain factory installed conductors. Fittings for HDPE conduit shall be UL listed as an electrical conduit connector or shall be thermally fused using an electrically heated wound wire resistance welding method. HDPE conduit may be substituted for bored schedule 40 or schedule 80 PVC conduit. When such substitution is made, bored HDPE shall be schedule 40 of the size PVC being replaced. The HDPE conduit shall transition to PVC (or RMC elbow when required) at the bore pit. Size and schedule shall be as shown on the plans. Substituted conduit may not be extended to ground boxes or foundations; RMC elbows shall be installed at ground boxes and foundations. RMC elbows will not be eliminated.
13. All conduit support hardware including straps, nuts, bolts, screws, retaining anchors and washers shall be hot dipped galvanized or stainless steel. Strut type conduit straps shall be stainless steel or hot dipped galvanized. Strut type straps need not be made of malleable type material. Stamped-cadmium plated straps will not be allowed. Straps having only one mounting hole shall not be allowed for use on conduits 2 inches and larger with the exception of electrical service poles where stainless steel standoff straps will be allowed. Two piece conduit straps designed to be used with a mounting shoe shall be installed only with the correctly sized shoe.

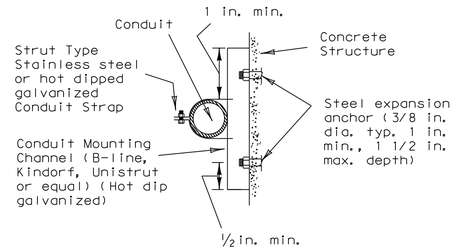
B. CONSTRUCTION METHODS

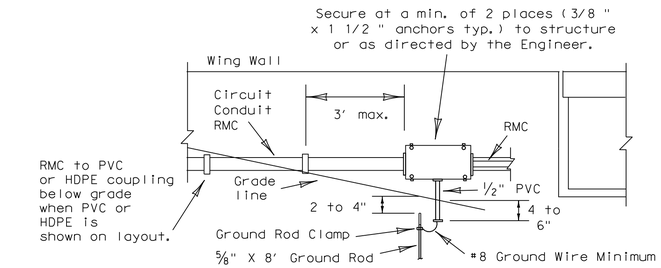
1. Conduit in structures shall have expansion fittings at structure expansion joints. All straight runs of RMC conduit exposed on structures such as bridges shall have expansion joints installed at maximum intervals of 150 feet. Expansion joints shall be installed so they allow for movement of the conduit. Installation of the joint in such a manner that will not allow for movement shall be repaired at no expense to the state. The method of determining the final setting length of the expansion joint shall be provided to the Engineer upon request.
2. Conduit supports shall be spaced at maximum intervals of 5 feet. Conduit spacers shall be used with metal conduit placed on surfaces of concrete structures (See conduit mounting options).
3. Conduit supports shall not be attached directly to prestressed concrete beams except as shown specifically in the plans and approved by the Engineer.
4. Unless otherwise shown on the plans, conduit placed beneath existing roadways, driveways, or sidewalks, or after the base or surfacing operation has begun, shall be accomplished by jacking or boring. The Contractor shall back fill and compact the bore pits to the bottom of the conduit prior to installing connecting conduit or duct cable to prevent bending of the connection.
5. Conduit trenched in the subgrade of new roadways shall be backfilled with excavated material, unless otherwise noted on the plans. Conduit trenched in the sub-base of new roadways shall be backfilled with cement-stabilized base.
6. Open ends of all conduit and raceways shall be fitted with temporary caps or plugs to prevent entry of dirt, debris and rodents during construction. The temporary cap may be constructed of duct tape, but in all cases shall be tightly fixed to the conduit and shall be durable. The contractor shall clean out the conduit and prove it clear in accordance with Standard Specifications Item 618.3 prior to installing any conductors.
7. Conduit entry into the top of enclosures such as safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes shall be made weatherproof using conduit sealing hubs, or threaded bosses.
8. A bonding jumper shall be installed from each grounding bushing to the nearest grounding rod, grounding lug, and/or equipment grounding conductor. All jumpers shall be the same size as equipment grounding conductor. Conduit used as casing under roadways for duct cable need not be grounded if duct extends full length through the casing. At electrical services, grounding electrode conductor shall be a solid Copper #6 AWG.
9. Metal junction boxes shall be bonded to the grounding conductor in accordance with the NEC.
10. Conduits entering ground boxes shall be placed so that the conduit ends shall be not less than 3 inches nor more than 6 inches from bottom of box (See ground box detail on sheet ED(3).
11. Conduit ends shall be sealed with heat shrink boots with waterproof sealant, urethane foam, or by other methods approved by the Engineer. Sealing shall be done after completion of any required pull tests. Duct tape shall not be used as a permanent conduit sealant. Silicone caulking shall not be used as a sealant.
12. All strut mounting material and hardware shall be hot-dip galvanized or shall be stainless steel. The cut ends of strut and non-galvanized rigid metal conduit threads shall be coated with a zinc rich paint (90% or more zinc content). Zinc rich paint may only be used to touch up galvanized material as allowed under item 445.6 galvanizing. The painting of non-galvanized material with a zinc rich paint shall not be considered as an approved alternative for galvanized materials.
13. All PVC conduit terminations shall be fitted with bushings or bell ends. All metal conduit terminations shall be fitted with a grounding type bushing.



CONDUIT MOUNTING OPTIONS

(Attachment to concrete surfaces)
(See para. II.B.2)

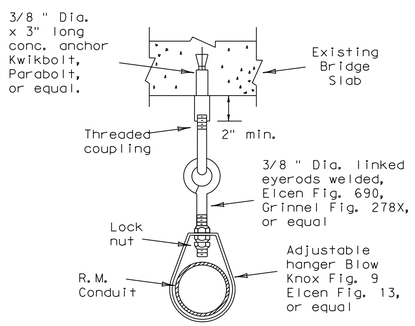




TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL

NOTES

1.) Ground rod clamp to be UL listed for direct burial.
2.) For conduit placed in structure, use flush-mounted box.
3.) Bond junction box and metal conduits to equipment grounding conductor and grounding electrode conductor using listed connector.
4.) Seal all conduits entering the junction box from underground.
5.) Install bell end or bushing on 1/2 " PVC conduit both ends.
6.) Ground rod to be driven within 8 inches of 1/2 inch PVC conduit end.



CONDUIT HANGER DETAIL

(Attachment to horizontal surfaces)
Hangers need not be UL listed for electrical use
ie: plumber pipe hangers are acceptable

5/03 Revision

1 Revised notes.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

ELECTRICAL DETAILS-CONDUIT

ED(1)-03

© TxDOT January 1992	DN-KB	CK-JW	DW-DN	CK-GC	NEG NO.
REVISIONS 4-98 12-00 3-03 5-03	STATE DISTRICT	FEDERAL REGION 6	FEDERAL AID PROJECT		SHEET 13
	COUNTY		CONTROL	SECTION	JOB / HIGHWAY

71A

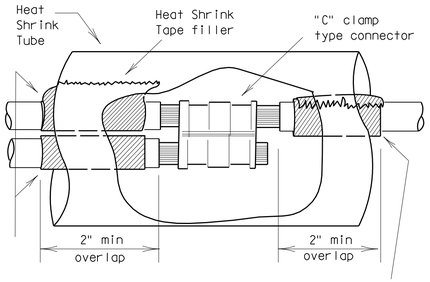
I. ELECTRICAL CONDUCTORS

A. MATERIALS

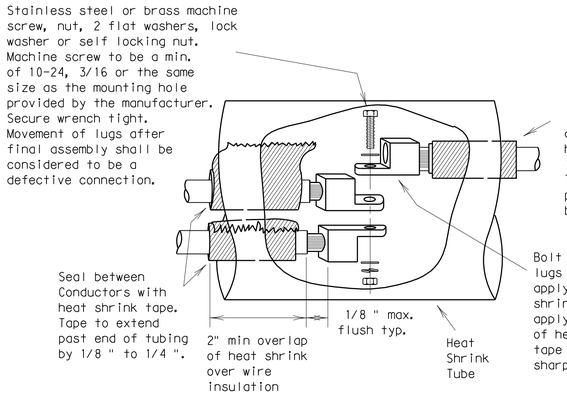
1. Insulated conductors shall be NEC Type XHHW. Insulated conductors shall be color coded in accordance with the NEC, articles 200, 250, and 310; i.e. insulation of grounded conductors (neutrals) shall be white. Grounding conductors (ground wires) shall be bare or insulation shall be green. Insulation of ungrounded conductors (hots) shall be any color except green, white, or gray. Identification of conductors #6 American Wire Guage (AWG) and smaller shall be by continuous jacket color. Color coding of electrical conductors #4 AWG and larger shall be either by continuous color jacket or by colored tape. Colored tape marker shall consist of a half-lap of tape covering a 6-inch length of conductor.
2. Where two or more circuits are present in one conduit or enclosure, the conductors of each circuit shall be identified by a permanent non-metallic tag at each accessible location. The tag shall be fastened to the conductors by two plastic straps. Each tag shall indicate circuit number, letter, or other identification shown in the plans.
3. Grounding electrode conductor #6 AWG for bonding to ground rod at electrical service, shall be solid. Connection of conductor to ground rod shall be made using UL Listed connectors designed for such purposes.
4. Heat Shrink Tape filler shall be used to seal the ends of heat shrink tubing around two or more conductors that are insulated with heat shrink tubing. Tape material shall have a minimum dielectric strength of 225 volts per mil and shall be cross-linked butyl rubber. Tape shall be supplied in rolls and shall have a backing (release paper) to prevent the tape from sticking to itself.
5. Heat shrink tubing shall be heavy wall, UL listed for 600 volts or greater and shall have factory applied internal sealant.
6. GelCaps shall be UL listed for 600-volt applications. GelCap shall have see-through elastomer molded cover. Cover shall be filled with high dielectric insulating gel silicone sealant to provide waterseal. Cover shall be held in place by snap-lock, molded clamp made of UV stable polypropylene.
7. Splicing materials, insulating materials, breakaway disconnects, GelCaps and fuse holders will not be paid for directly but shall be subsidiary to various bid items.

B. CONSTRUCTION METHODS

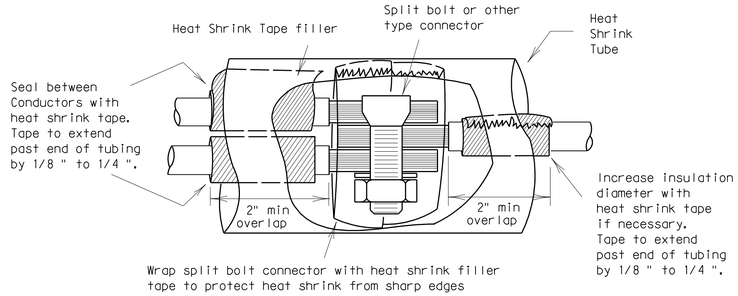
1. After conductors have been installed in conduit, a pull test shall be made on conductors. When any length of conductor cannot be freely pulled, the Contractor shall make any needed alterations or repairs at no expense to the State.
2. The Contractor shall perform insulation resistance tests in accordance with Item 620, "Electrical Conductors." The Contractor shall coordinate with the Engineer to witness the tests.
3. A sufficient length of conductor for making up connections shall be left in ground boxes (2 feet minimum, 3 feet maximum, to point of splice, 3 feet minimum, 4 feet maximum, when conductor is pulled through with no splice), enclosures, weatherheads and pole bases (1 foot minimum, 1.5 feet maximum).
4. Splices shall be made only in junction boxes, ground boxes, pole bases, or electrical enclosures and shall be made with listed compression or screw type pressure connectors, terminal blocks, bolted lugs, or split bolt connectors. Splices shall be insulated with heavy wall heat shrink tubing or GelCaps and shall be made so as to provide a watertight splice. Heat shrink sleeve shall overlap conductor insulation a minimum of 2 inches on both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, the Contractor shall increase the diameter of the conductors insulation using heat shrink filler tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Tape shall be visible after completion of all splices. Where filler tape is used but not visible, the Engineer shall approve each individual splice by conducting a physical inspection of each splice. When it appears the tubing has been burned, or overheated the tubing shall be considered to be defective and shall be replaced.
5. GelCaps when used in place of heat shrink method of splicing, shall be sized and installed according to manufacturer's specifications. (Raychem GelCap and GelCap SL or equal.)
6. Wire nuts may be used for #8 AWG or smaller conductors in above-ground junction boxes, but not in pole bases or ground boxes. Wire nuts shall be positioned upright to prevent the accumulation of water. Wire nuts used at these locations shall have factory applied waterproof sealant.
7. Conductors in illumination poles shall be supported by a J-hook in the top of the pole.
8. All conductors bid under Item 620 "Electrical Conductors" shall have breakaway electrical disconnects installed anytime conductors pass through a break-away support device.
9. For terminating the conductors, insulation-jacketing material shall be removed in such a manner as to not nick any of the individual strands of the conductor. When individual conductor strands are removed, the conductor shall be considered to be damaged.
10. When a conductor or cable has been damaged, or fails to pass an insulation resistance test, the conductor shall be replaced.
11. Duct tape, black electrical tape, or wire nuts shall not be used in the repair of a damaged conductor.
12. For terminations, no more than one wire may be installed under a single pressure connector, unless the device is listed for more than one wire.
13. Conductors connected to break-away in line fuse holders must be installed in accordance with the specific manufacturer's installation instructions. Where threaded connections are made, they shall be properly torqued. Where crimp type connections are made, crimps shall be made using properly sized crimping pliers. Proper conductor terminations are critical to the safe operation of break-away devices.
14. Waterproofing boots shall be properly trimmed to fit snugly around the conductor so as to provide a water proof connection. No more than one wire may enter a single opening in any one boot. Water proofing boots must provide the correct number of openings. Where only one wire is to be connected to a boot, the boot may not be a two wire type.



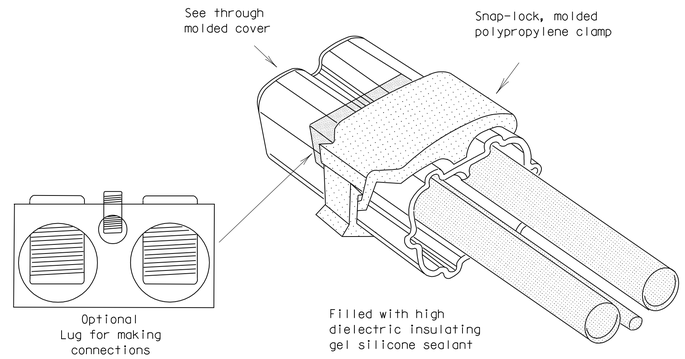
SPLICE OPTION 1
C-CLAMP



SPLICE OPTION 2
BOLTED WIRE LUGS



SPLICE OPTION 3
SPLIT BOLT



SPLICE OPTION 4
GELCAP

GelCap shall be sized and installed according to manufacturers specifications

15. All conduits that contain circuit wiring of 50 volts or more shall contain an equipment grounding conductor (EGC). Conduit for traffic signals shall have an EGC, with a minimum size of #8 AWG stranded. Unless otherwise shown on the plans, the EGC for all other conduits shall be the same AWG size as the largest current carrying conductor contained in that conduit. The EGC shall be paid for item 620-Electrical Conductors.

C. TEMPORARY WIRING

1. Temporary conductors and electrical equipment to provide power for utilization equipment, shall be installed in accordance with the NEC article 305. All temporary wiring materials and methods shall comply with the standard sheets. All power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade, supplied from a utility power source, shall be provided with a ground fault circuit interrupter.
2. Residual current protective devices (GFCI) may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Where wire nuts are approved for temporary wiring, they shall be of the self-sealing type.
4. All conductor splices must be contained within a listed enclosure, ground box or the splices will be more than ten feet above grade vertically and more than five feet horizontally from any metal structure. Where temporary conductors are installed in any area that is likely to be subjected to vehicle traffic, or mobile construction equipment, the vertical clearance to ground shall be at least 18 feet when measured at the lowest point. Where power conductors are to be supported by a span wire, the span wire shall be properly grounded.
5. Existing conduit containing service conductors uncovered during the construction process shall be repaired in a timely manner in accordance with the NEC. Existing non-metallic conduit exposed during construction shall not be left exposed above grade, or with less than eighteen inches of cover, without protective methods approved by the Engineer.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

ELECTRICAL DETAILS-CONDUCTORS

ED(2)-03

DN-KB	CK-JW	DW-DN	CK-GC	NEG NO.#

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
10-93		6		14
4-98	COUNTY		CONTROL / SECTION / JOB	HIGHWAY
12-00				
3-03				

71B

II. GROUND RODS

A. MATERIALS

1. All ground rods installed at electrical services, including supplemental lightning protection ground rods specified by the plans in other locations such as pole bases, shall be copper clad and UL listed. Rods shall be a minimum diameter of 5/8 inch. The length shall be a minimum of 8 feet. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets.
2. Ground rod clamps shall be listed to be in direct contact with the soil. Where concrete encasement is required, the clamp shall be listed for concrete encasement.

B. CONSTRUCTION METHODS

1. Ground rods installed in locations such as pole bases, to provide supplemental lightning protection need not be totally in contact with the soil. Where called for in the plans, rods may be encased in soil or concrete or any combination of soil and concrete. When concrete encased, the connection of the conductor to the rod shall be readily accessible for inspection or repairs. When driven into the soil the upper end shall be between 2 to 4 inches below finished grade. Ground rods shall not be placed in the same drilled hole as a timber pole.
2. Ground rods shall be installed such that the end imprinted with the rod's part number is installed as being the upper end.
3. Non-conductive coatings such as concrete splatter shall be removed from the rod at the clamp location.
4. Routing of lightning protection ground rod wires shall be run as short and straight as possible. Where bends are required they shall have a minimum radius of four inches.
5. Unless specifically called for by the plans, conduits used for ground rod wires shall be non-metallic. Where metal conduits are specified, a grounding bushing and properly sized bonding jumper shall be provided and properly installed on each end.
6. Where rocky soil or a solid rock bottom is encountered when driving a ground rod and the horizontal trench placement method is the only viable solution, written authorization from the Engineer must be obtained.

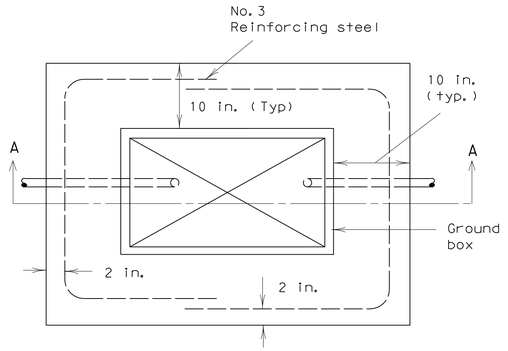
III. GROUND BOX

A. MATERIALS

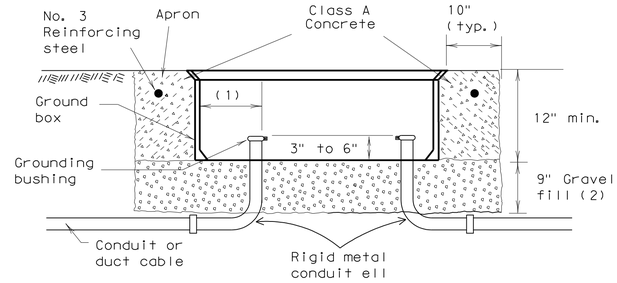
1. Ground boxes 16x30x24 inches (WxLxD) or smaller shall be polymer concrete of the type required by the descriptive code shown elsewhere. Larger ground boxes shall be as shown elsewhere in the plans.
2. All ground boxes and covers shall be permanently marked either by impress or by permanent ink, with manufacturer's model number and manufacturer's name or logo.
3. Covers shall be bolted down, and bolt holes in the box shall be arranged to drain dirt.
4. Ground box Types A, B, C, D & E shall meet the following requirements:
   a. Ground boxes and covers be manufactured from polymer concrete reinforced with continuous strands of woven or stitched borosilicate fiberglass cloth. The polymer concrete shall be made from catalyzed polyester resin, sand and aggregate, and shall have a minimum compressive strength of 11,000 psi. Polymer concrete containing chopped fiberglass or fiberglass reinforced plastic is not acceptable.
   b. Minimum inside dimensions shall be as follows (width x length x depth):
      Type A shall be 11.5 inches x 21 inches x 10 inches, (122311)
      Type B shall be 11.5 inches x 21 inches x 20 inches, (122322)
      Type C shall be 15.25 inches x 28.25 inches x 10 inches, (162911)
      Type D shall be 15.25 inches x 28.25 inches x 20 inches, (162922)
      Type E shall be 11.5 inches x 21 inches x 16 inches, (122317)
   c. Bottom edge of box or extension shall be footed with a minimum 1 1/4 inch flange.
   d. Ground boxes shall withstand 600 lbs. per sq. ft. applied over the entire sidewall with less than 1/4 inch deflection per foot length of box. Ground boxes and covers shall withstand a test loading of 20,000 lbs. over a 10 inch by 10 inch area centered on the cover with less than 1/2 inch deflection. Ground boxes and covers shall meet Western Underground Standards 3.6. Manufacturer shall supply certification by an independent laboratory or sealed by a Texas-Licensed Professional Engineer.
   e. Covers shall be 2 inch (nominal) thick polymer concrete. All hardware shall be stainless steel. Cover shall be secured with two 1/2 inch stainless steel bolts. Bolts shall be self-retaining and shall withstand a minimum of 70 ft-lbs. torque and shall have a minimum 750 lbs. straight pull out strength. Nuts shall be floating and shall provide a minimum of 1/2 inch movement from the center of the nut. Covers shall be skid resistant, minimum 0.5 coefficient of friction. Covers shall be interchangeable between manufacturers and shall conform to the dimensions shown herein. Unless otherwise approved by the Engineer, cover shall be legibly imprinted with the following words in minimum 1 inch letters:
      Ground Boxes containing wiring for traffic signals shall be labeled, Danger High Voltage Traffic Signal.
      Ground boxes containing wiring for illumination systems shall be labeled, Danger High Voltage Illumination.
      Ground boxes containing wiring for traffic management systems shall be labeled, Danger High Voltage Traffic Management.
      Ground boxes containing wiring for sign illumination systems shall be labeled, Danger High Voltage Sign Illumination.
      Ground boxes containing wiring for traffic signals that also contain illumination, powered by the signal electrical service, shall be labeled, Danger High Voltage Traffic Signal.

B. CONSTRUCTION METHODS

1. Ground boxes shall be set on a 9 inch (minimum) bed of aggregate from 3/4 " up to 2" in size. Aggregate shall be in place prior to setting box and conduits shall be capped. Any gravel or dirt in conduit shall be removed.
2. When required by item descriptive code, construction of an apron encasing a ground box including concrete and reinforcing steel shall not be paid for directly but shall be subsidiary to the ground box. Reinforcing steel may be field bent. Concrete for aprons shall be considered miscellaneous concrete for testing purposes. Aprons shall be cast in place.
3. Conduit holes may be cut in the walls of type B & D boxes at least 18 inches beneath the cover.
4. If, within the limits of this project, the Contractor must utilize an existing ground box equipped with a metal cover, the Contractor shall bond the cover to the grounding conductor with a 3 foot long flexible stranded jumper the same size as the grounding conductor. Connection of bonding jumper to metal ground cover shall not be paid for directly but shall be subsidiary to various bid items. The box(es) must be clearly shown on the plans with plan notes fully describing the work required.
5. If there are other ground boxes with metal Covers within the project limits but not involved in the contract, the Engineer may direct the Contractor to ground the covers, designating and identifying the specific boxes in writing. This work will be paid for separately.
6. Termination to metal ground box covers shall be made using a tank ground type lug.



PLAN VIEW



SECTION A - A

APRON FOR GROUND BOXES

(Where required)

(1) Final position of end of conduit shall not exceed one-half the distance to the side of box opposite the conduit entry.
(2) Place gravel "under" the box. not "in" the box. Gravel should not encroach on the interior volume of the box.
(3) Install bushing on the upper end of all ells.
(4) Where a ground rod is present in the ground box, connect it to any and all equipment grounding conductors using a listed connector.
(5) Maintain sufficient space between all conduits so as to allow for proper installation of bushings.
(6) All conduits shall be installed in a neat and workmanlike manner.
(7) All conduits installed in the ground box shall be sealed after completion of conductor installation and any required pull tests. Silicone shall not be used as sealant.

PLAN VIEW

END

SIDE

GROUND BOX COVER

GROUND BOX COVER DIMENSIONS								
BOX	DIMENSIONS (INCHES)							
SIZE	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2

5/03 Revision

1 Revised notes.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

ELECTRICAL DETAILS- GROUND BOXES

ED(3)-03

© TxDOT January 1992	DN-KB	CK-JW	DW-DN	CK-GC	MEG NO.=

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
4-98				
12-00		6		15
3-03	COUNTY		CONTROL SECTION JOB	HIGHWAY
5-03				

GENERAL NOTES:

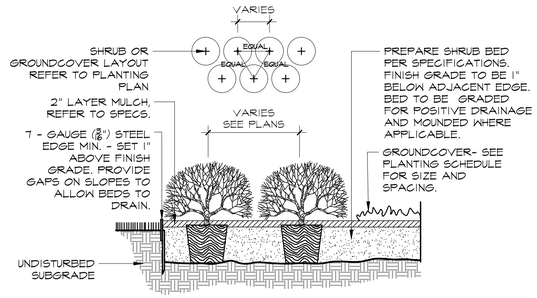
1. WARNING!!!!!!!!! CALL BEFORE YOU DIG!!!!!! TOLL FREE 811
2. WRITTEN DIMENSIONS PREVAIL OVER SCALED DIMENSIONS. NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES.
3. THE CONTRACTOR BEARS ALL RESPONSIBILITY FOR VERIFYING ALL UNDERGROUND UTILITIES, PIPES, STRUCTURES, AND LINE RUNS IN THE FIELD PRIOR TO CONSTRUCTION. ANY DAMAGE TO UTILITIES THAT ARE TO REMAIN SHALL BE REPAIRED IMMEDIATELY AT NO EXPENSE TO THE OWNER. LANDSCAPE ARCHITECT ASSUMES NO RESPONSIBILITY FOR ANY NOT SHOWN ON PLANS.
4. THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.
5. ALL PROPOSED AND FINISHED GRADES ARE BASED ON INFORMATION PROVIDED BY THE OWNER'S SURVEY AND/OR CIVIL ENGINEER. ANY DISCREPANCIES IN ACTUAL FIELD MEASUREMENTS ARE TO BE REPORTED TO THE LANDSCAPE ARCHITECT IMMEDIATELY.
6. CONTRACTOR IS RESPONSIBLE FOR ALL QUANTITIES PER DRAWINGS AND SPECIFICATIONS. ANY QUANTITIES PROVIDED BY LANDSCAPE ARCHITECT ARE PROVIDED FOR CONVENIENCE ONLY CONTRACTORS ARE TO BID THEIR OWN VERIFIED QUANTITIES. NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES.
7. EASEMENTS SETBACKS, BUILDING, CURB AND GUTTER, UNDERGROUND UTILITIES HAVE BEEN SUPPLIED TO LANDSCAPE ARCHITECT BY THE PROJECT CIVIL ENGINEER. REFER TO CIVIL ENGINEERS DRAWINGS FOR ADDITIONAL INFORMATION.
8. STUDIO OUTSIDE ASSUMES NO RESPONSIBILITY FOR DAMAGES. LIABILITIES, OR COST RESULTING FROM CHANGES OR ALTERATIONS MADE TO THE PLAN WITHOUT THE EXPRESS WRITTEN CONSENT OF STUDIO OUTSIDE.

PLANTING NOTES:

1. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL UNDERGROUND UTILITIES, PIPES, STRUCTURES, AND LINE RUNS IN THE FIELD PRIOR TO THE INSTALLATION OF ANY PLANT MATERIAL.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ADVISE THE LANDSCAPE ARCHITECT OF ANY CONDITION FOUND ON THE SITE WHICH PROHIBITS INSTALLATION AS SHOWN ON THESE DRAWINGS.
3. ALL PLANT MATERIAL SHALL BE MAINTAINED IN A HEALTHY AND GROWING CONDITION AND MUST BE REPLACED WITH PLANT MATERIAL OF SAME VARIETY AND SIZE IF DAMAGED, DESTROYED, OR REMOVED.
4. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR FINE GRADING AND REMOVAL OF DEBRIS PRIOR TO PLANTING IN ALL AREAS.
5. FINAL FINISH GRADING SHALL BE REVIEWED BY THE LANDSCAPE ARCHITECT. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL TOPSOIL REQUIRED TO CREATE A SMOOTH CONDITION PRIOR TO PLANTING.
6. ALL PLANT QUANTITIES LISTED ARE FOR INFORMATION ONLY. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE FULL COVERAGE IN ALL PLANTING AREAS AS SPECIFIED IN THE PLANT SCHEDULE AND VERIFY ALL QUANTITIES.
7. LANDSCAPE CONTRACTOR TO PROVIDE STEEL EDGING (REFER TO MATERIALS PAGE) BETWEEN ALL PLANTING BEDS AND LAWN AREAS.
8. ALL PLANT MATERIAL SHALL CONFORM TO THE SPECIFICATIONS AND SIZES GIVEN IN THE PLANT LIST AND SHALL BE NURSERY GROWN IN ACCORDANCE WITH THE AMERICAN STANDARD FOR NURSERY STOCK. LATEST EDITION AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS. ANY PLANT SUBSTITUTION SHALL BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO PURCHASE.
9. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR ANY COORDINATION WITH OTHER CONTRACTOR'S ON SITE AS REQUIRED TO ACCOMPLISH ALL PLANTING OPERATIONS.
10. ALL NEW PLANTING AREAS TO BE AMENDED PER SPECIFICATIONS.
11. ANY PLANT MATERIAL THAT DOES NOT SURVIVE SHALL BE REPLACED WITH AN EQUIVALENT SIZE AND SPECIES WITHIN THIRTY (30) DAYS.
12. PLANT MATERIAL SHALL BE PRUNED AS NECESSARY TO CONTROL SIZE BUT NOT TO DISRUPT THE NATURAL GROWTH PATTERN OR CHARACTERISTIC FORM OF THE PLANT EXCEPT AS NECESSARY TO ACHIEVE HEIGHT CLEARANCE FOR VISIBILITY AND PEDESTRIAN PASSAGE OR TO ACHIEVE A CONTINUOUS OPAQUE HEDGE IF REQUIRED.
13. LANDSCAPED AREAS SHALL BE KEPT FREE OF TRASH, WEEDS, DEBRIS, AND DEAD PLANT MATERIAL
14. ALL LIME STABILIZED SOIL & INORGANIC SELECT FILL MUST BE REMOVED FROM PLANTING AREAS TO A DEPTH OF 24" & REPLACED WITH ORGANIC IMPORTED TOPSOIL FILL. IMPORTED TOPSOIL MUST BE CLEAN, FRIABLE & NATIVE TO THE AREA.
15. REFER TO SPECIFICATIONS FOR BED PREPARATION REQUIREMENTS.
16. LANDSCAPING MUST NOT BE INSTALLED UNTIL AUTOMATIC IRRIGATION SYSTEM IS FULLY OPERATIONAL.
17. TREES SHOULD NOT BE DELIVERED TO THE SITE UNLESS THEY CAN PLANTED THE SAME DAY.

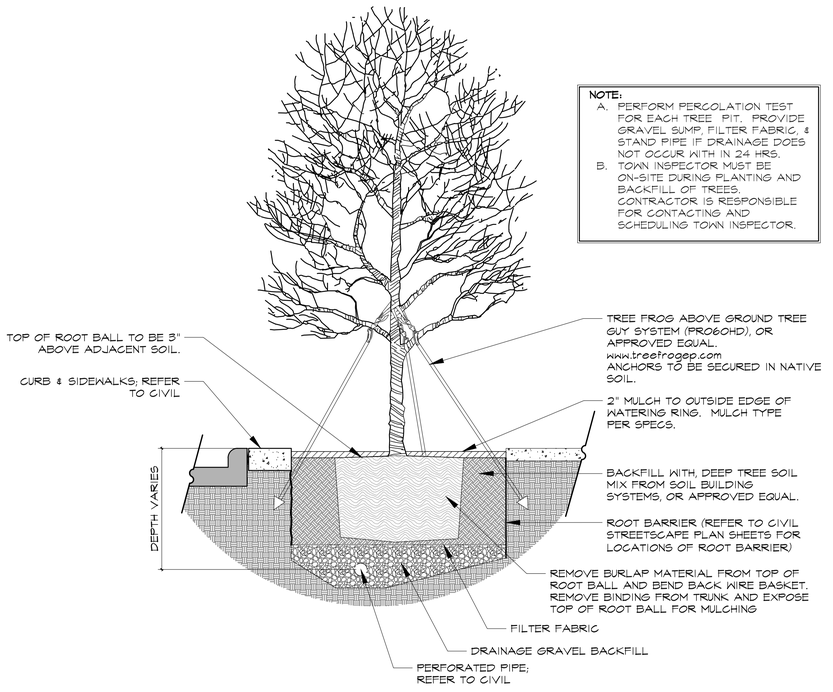
PLANT SCHEDULE

PLANT QUANTITY	PLANT ID	COMMON NAME BOTANICAL NAME	SIZE MIN.	HEIGHT MIN.	SPREAD MIN.	COMMENTS
		TREES				
19		HIGHRISE or CATHEDRAL LIVE OAK *Quercus virginiana 'Highrise' or Quercus virginiana "SDLN'*	6" CAL.	16'-18'	8'-10'	NURSERY GROWN, STRAIGHT LEADER, FULL AND WELL ROOTED Do not intermix cultivars' Purchase either Highrise or Cathedral
		GROUNDCOVERS				
1,610 sf		LIRIOPE *Liriope muscari*	1 GAL.	6"	12"	NURSERY GROWN, FULL AND WELL ROOTED PLANT. PLANT SPACING 12" O.C.
1,930 sf		BERMUDA *Cynodon dactylon*	SOD	-	-	NURSERY GROWN, FULL AND WELL ROOTED PLANT, WEED FREE AND NO BROWN SPOTS



Shrubs & Groundcover | B

Scale: 1/2" = 1' - 0"



NOTE:
A. PERFORM PERCOLATION TEST FOR EACH TREE PIT. PROVIDE GRAVEL SUMP, FILTER FABRIC, & STAND PIPE IF DRAINAGE DOES NOT OCCUR WITH IN 24 HRS.
B. TOWN INSPECTOR MUST BE ON-SITE DURING PLANTING AND BACKFILL OF TREES. CONTRACTOR IS RESPONSIBLE FOR CONTACTING AND SCHEDULING TOWN INSPECTOR.

Ball and Burlap Canopy Tree 6" Caliper or Smaller (planted in ROW) | A

SCALE: 1/2" = 1'-0"

REGISTERED LANDSCAPE ARCHITECT STATE OF TEXAS

09.10.2019

0 10 20 30 40
GRAPHIC SCALE IN FEET
SCALE: 1"=20'

NO.	REVISION	BY	DATE

studioOutside
824 Exposition Avenue, Ste. 5
Dallas, Texas 75226
o214.954.7160
f214.954.7162

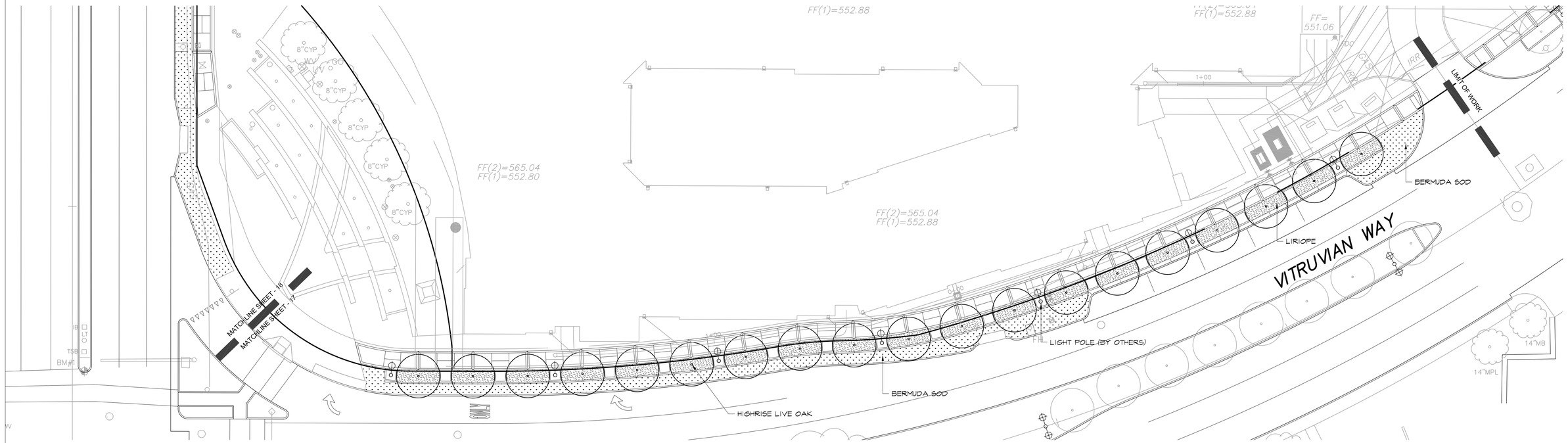
VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

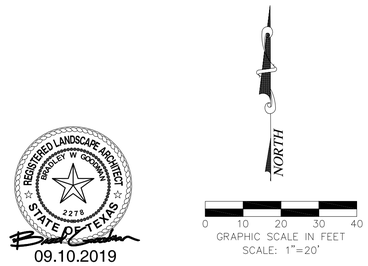
LANDSCAPE LEGEND & DETAILS

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
BG	LZ	SEPT 10, 2019	AS NOTED		16



Landscape Plan - Vitruvian Way **A**

Scale: 1"=20'



NO.	REVISION	BY	DATE

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f214.954.7162

VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

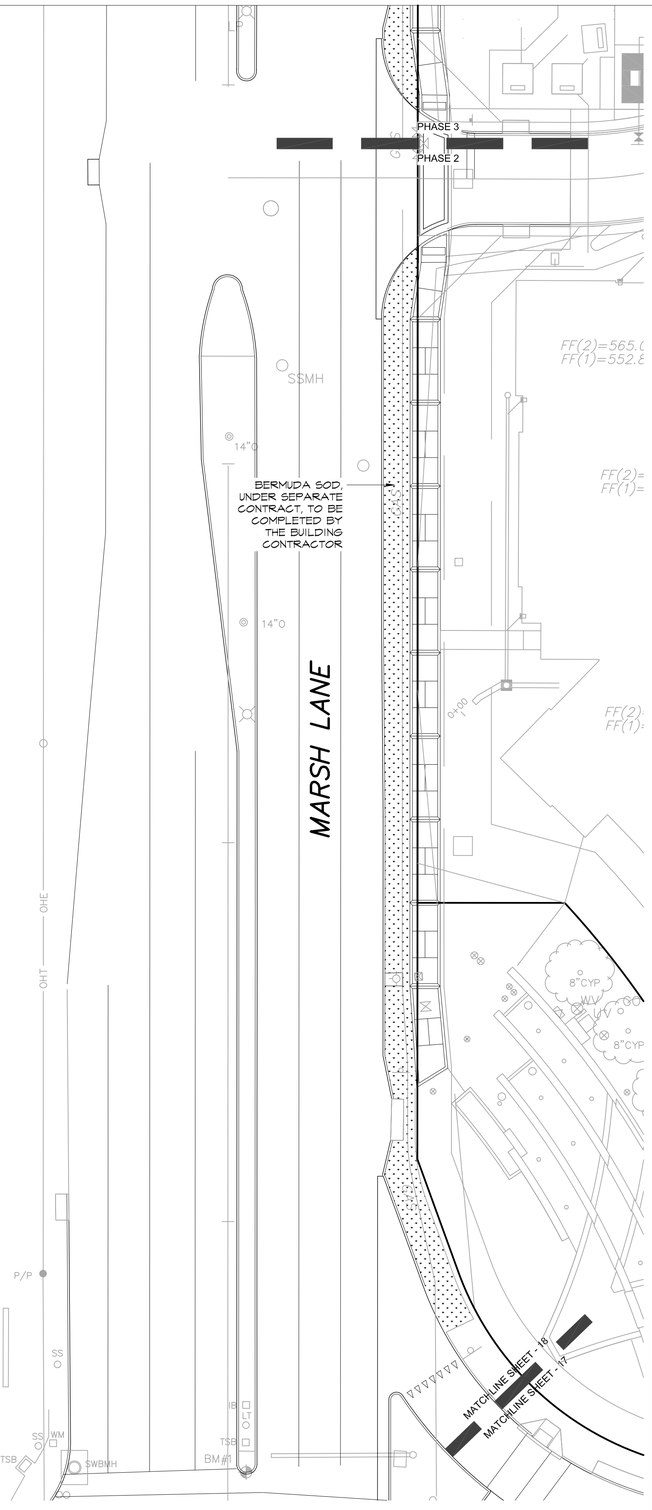
TOWN OF ADDISON, TEXAS

LANDSCAPE PLAN

VITRUVIAN WAY

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
BG	LZ	SEPT 10, 2019	AS NOTED		17

TOWN PROJECT # 2019-01C



Landscape Plan - Marsh Lane | A

Scale: 1"=20'

REGISTERED LANDSCAPE ARCHITECT
BRADLEY W. GOODWIN
3278
STATE OF TEXAS

09.10.2019

NORTH

0 10 20 30 40
GRAPHIC SCALE IN FEET
SCALE: 1"=20'

NO.	REVISION	BY	DATE
-			

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824 Exposition Avenue, Ste. 5
Dallas, Texas 75226
o214.954.7160
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VW2 STREETSCAPE IMPROVEMENTS

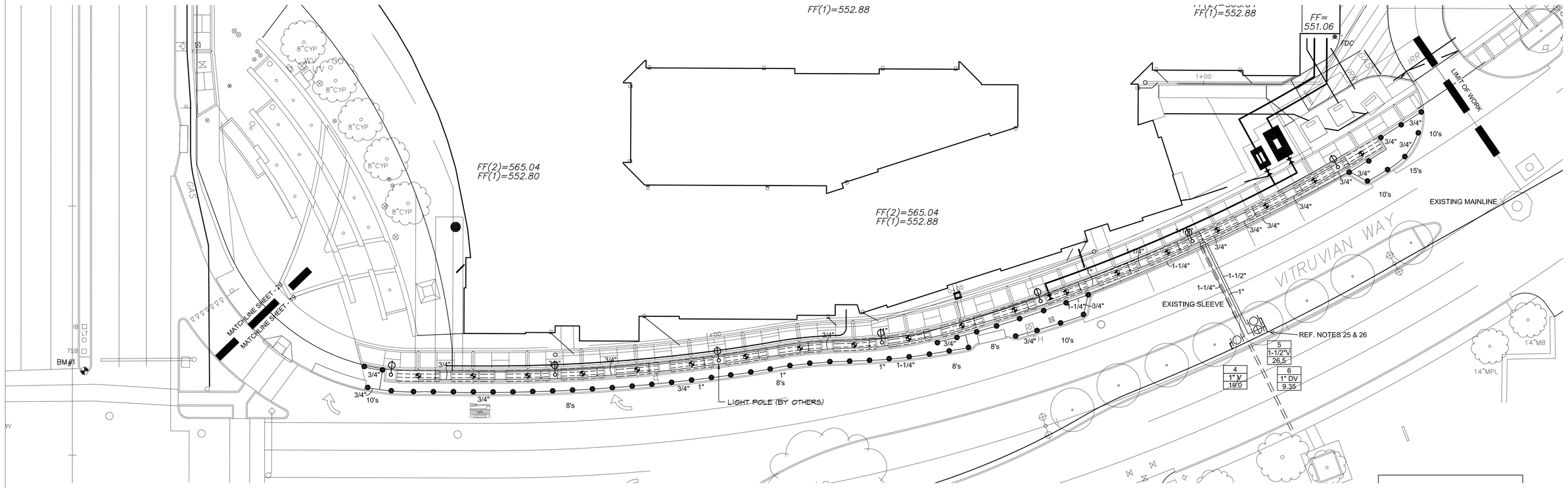
VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

LANDSCAPE PLAN

MARSH LANE

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
BG	LZ	SEPT 10, 2019	AS NOTED		18



Irrigation Plan - Vitruvian Way | A

Scale: 1"=20'

SETH A. HEIDMAN
5881
LICENSED IRRIGATOR
9-10-2019

NORTH

0 10 20 30 40
GRAPHIC SCALE IN FEET
SCALE: 1"=20'

SETH HEIDMAN
IRRIGATION DESIGN & CONSULTING, LLC
6009 W. Parker Rd. #149-221, Plano, Texas 75093 Tel: 972-814-5141

NO.	REVISION	BY	DATE

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Dallas, Texas 75226
o214.954.7160
f214.954.7162

VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

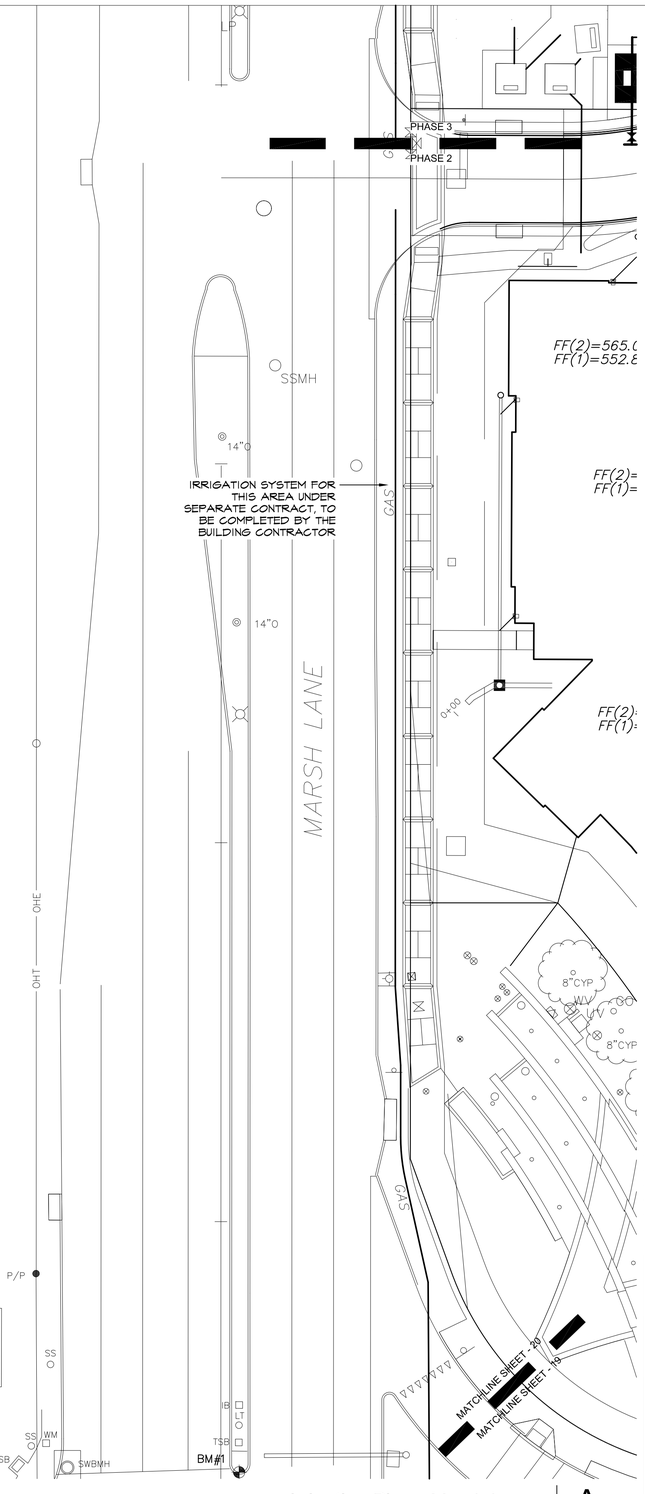
TOWN OF ADDISON, TEXAS

IRRIGATION PLAN

VITRUVIAN WAY

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
SAH	SAH	SEPT 10, 2019	AS NOTED		19

TOWN PROJECT # 2019-01C



Irrigation Plan - Marsh Lane | A

Scale: 1"=20'

Irrigation in Texas is regulated by the Texas Commission of Environmental Quality (TCEQ), MC-178, P.O. Box 13087, Austin, Texas, 78711-3087. TCEQ website is: www.tceq.state.tx.us

SETH A. HEIDMAN
5881
LICENSED IRRIGATOR
STATE OF TEXAS
9-10-2019

SETH HEIDMAN
IRRIGATION DESIGN & CONSULTING, LLC
6009 W. Parker Rd. #149-221, Plano, Texas 75093 Tel: 972-814-5141

NORTH

0 10 20 30 40
GRAPHIC SCALE IN FEET
SCALE: 1"=20'

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VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

IRRIGATION PLAN

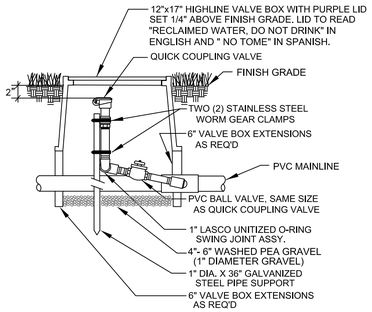
MARSH LANE

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
SAH	SAH	SEPT 10, 2019	AS NOTED		20

TOWN PROJECT # 2019-01C

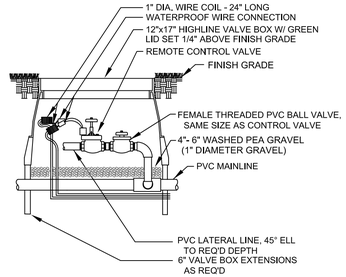
VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B - PROJECT NO. 5029-06

12/3/2019 1:31 PM



QUICK COUPLING VALVE W/ BALL VALVE

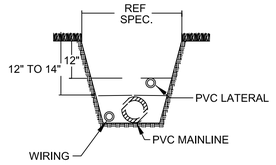
NOT TO SCALE SHBDC



REMOTE CONTROL VALVE W/ BALL VALVE

NOT TO SCALE SHBDC

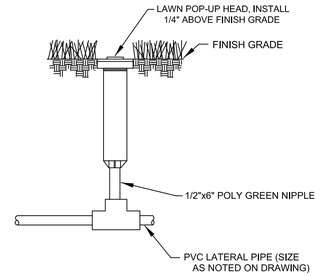
MAINLINE, LATERAL, AND WIRING



1. TAPE & BUNDLE WIRING AT 10'-0" INTERVALS.

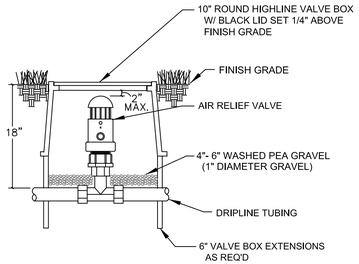
TRENCHING DETAIL

NOT TO SCALE SHBDC



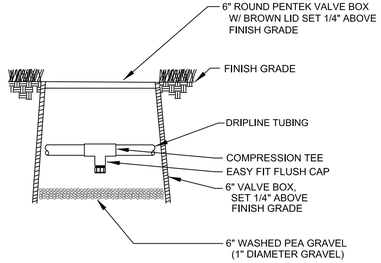
LAWN SPRAY HEAD

NOT TO SCALE SHBDC



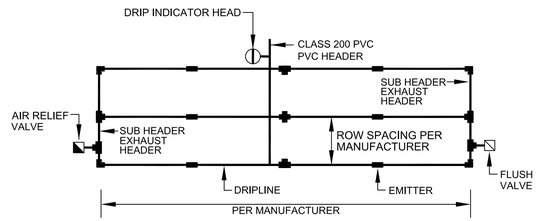
AIR RELIEF VALVE

NOT TO SCALE SHBDC



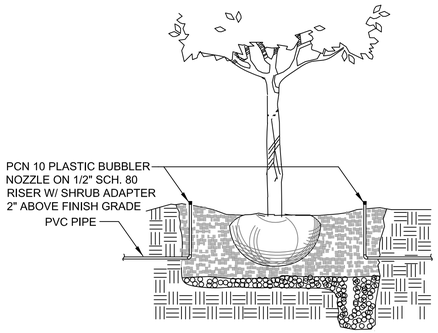
DRIP FLUSH VALVE

NOT TO SCALE SHBDC



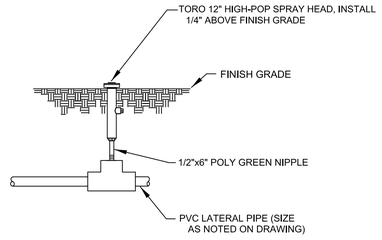
TYPICAL DRIPLINE LAYOUT

NOT TO SCALE SHBDC



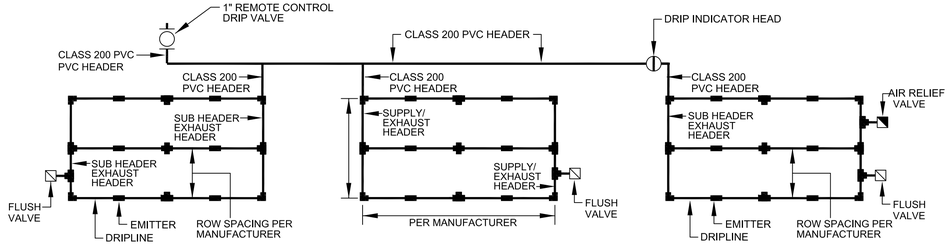
TREE BUBBLER

NOT TO SCALE SHBDC



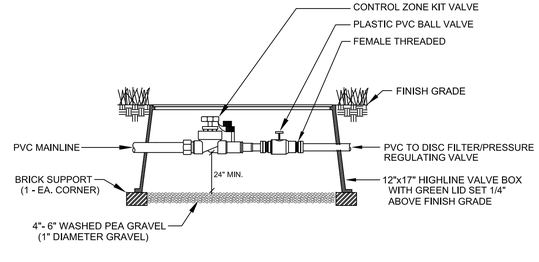
DRIP INDICATOR HEAD

NOT TO SCALE SHBDC



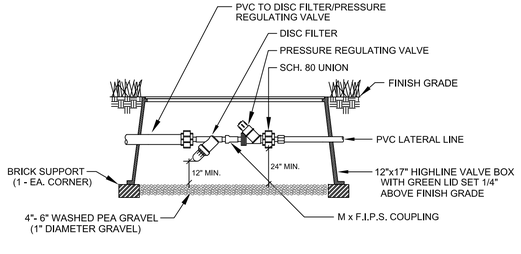
TYPICAL DRIPLINE LAYOUT

NOT TO SCALE SHBDC



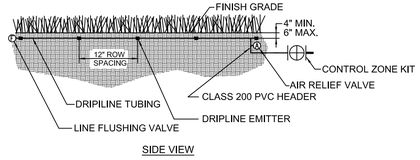
REMOTE CONTROL DRIP ZONE

NOT TO SCALE SHBDC



FILTER/ REGULATING VALVE

NOT TO SCALE SHBDC



SIDE VIEW

TYPICAL SUBSURFACE DRIPLINE LAYOUT

NOT TO SCALE SHBDC

SETH A. HEIDMAN
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LICENSED IRRIGATOR
STATE OF TEXAS
9-10-2019

SETH HEIDMAN
IRRIGATION DESIGN & CONSULTING, LLC
6909 W. Parker Rd. #149-231, Plano, Texas 75093 Tel: 972-814-3141

0 10 20 30 40
GRAPHIC SCALE IN FEET
SCALE: 1"=20'

NO.	REVISION	BY	DATE

studioOutside
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Dallas, Texas 75226
o214.954.7160
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VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

IRRIGATION DETAILS

MARSH LANE

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
SAH	SAH	SEPT 10, 2019	AS NOTED		21

NOTES:

1. ALL STATE OF TEXAS LAWS/RULES AND ALL LOCAL CODES/ORDINANCES ARE MADE PART OF THESE PLANS AND SPECIFICATIONS WHETHER SHOWN OR NOT. THESE LAWS AND ORDINANCES WILL SUPERCEDE THE PLANS, DETAILS, AND/OR SPECIFICATIONS FOR THIS PROJECT. CONTRACTOR IS CAUTIONED THAT HE IS TO INCLUDE ANY AND ALL COST NECESSARY TO MEET OR EXCEED THE LAWS OF THE STATE OF TEXAS OR LOCAL CODES CONCERNING LANDSCAPE IRRIGATION.
2. ALL 24 VOLT LEAD AND COMMON VALVE WIRING SHALL BE A MINIMUM OF UF-14 GA. SINGLE CONDUCTOR. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR PROPER WIRE SIZE. CONNECTORS SHALL BE 3M-DBY PERMANENT AND WATERPROOF FOR ALL FIELD WIRE SPLICES ONLY. CONNECTORS SHALL BE KING ONE STEP TAN PERMANENT AND WATERPROOF FOR ALL STATION VALVES ONLY.
3. COORDINATE INSTALLATION OF IRRIGATION SYSTEM WITH LANDSCAPE CONTRACTOR TO ENSURE ALL PLANT MATERIAL WILL BE WATERED IN ACCORDANCE WITH THE INTENT OF THE PLANS AND SPECIFICATIONS. DO NOT INSTALL THE LANDSCAPE UNTIL THE AUTOMATIC IRRIGATION SYSTEM IS FULLY OPERATIONAL PER TOA.
4. PIPING AND VALVES IN PAVING SHOWN FOR CLARITY, INSTALL IN ADJACENT PLANTING BED OR LAWN AREA.
5. LATERAL PIPING SHALL HAVE A MINIMUM OF 12" OF COVER. MAINLINE AND PIPING UNDER PAVING SHALL HAVE A MINIMUM OF 12" AND A MAXIMUM OF 14" OF COVER. ALL FITTINGS TO BE SCHEDULE 40 PVC. USE TURFTITE SOLVENT WELD FLEXIBLE PIPE GLUE AND WELD ON #P-68 PRIMER ON THESE CONNECTIONS PER THE SPECIFICATIONS.
6. ALL MAINLINE TO BE 2-1/2" CLASS 200 PVC. SIZE ALL LATERAL PIPING PER MANUFACTURER'S RECOMMENDATIONS OF NOT EXCEEDING 5 FPS. REFERENCE PIPE SIZE CHART. NO 1/2" PIPE ALLOWED
7. CONNECT DRIP INDICATOR HEADS TO LATERAL PIPING WITH 1/2" TORO FUNNY PIPE WITH TORO BARBED FITTINGS AS REQUIRED, PER DETAIL SHOWN.
8. INSTALL QUICK COUPLING VALVES IN TWELVE BY SEVENTEEN (12"x17") INCH HIGHLINE VALVE BOX. CONNECT QUICK COUPLING VALVES TO MAINLINE PIPE WITH LASCO "UNITIZED", #T722-212 O-RING SWING JOINTS. SUPPLY OWNER WITH THREE (3) COUPLER KEYS WITH SWIVEL HOSE BIBB EACH, #33DK-10 AND #SH-0 RESPECTIVELY. VALVES TO BE INSTALLED SO THAT TOP OF QUICK COUPLER IS 2" BELOW BOTTOM OF VALVE BOX TOP. PURPLE LID READS "NON-POTABLE, NOT SAFE FOR DRINKING" IN ENGLISH AND SPANISH. INSTALL EVERY 150'-0" ON CENTER ALONG ENTIRE LENGTH OF MAINLINE.
9. INSTALL REMOTE CONTROL VALVES WITH FEMALE THREADED PLASTIC LASCO OR SPEARS BALL VALVE AND WIRE SPLICES IN TEN (10") INCH ROUND HIGHLINE VALVE BOXES.
10. DESIGN PRESSURE IS 62.0 PSI. STATIC PRESSURE IS 70 PSI. TEN DAYS PRIOR TO START OF CONSTRUCTION, VERIFY STATIC PRESSURE. IF STATIC PRESSURE IS LESS THAN STATED DO NOT START WORK UNTIL NOTIFIED TO PROCEED BY OWNER.
11. MINIMUM DISTANCE BETWEEN MAIN LINE AND LATERAL LINE FITTINGS (EXCEPT FOR REDUCER BUSHINGS) TO BE EIGHTEEN (18") INCHES AND MINIMUM HORIZONTAL DISTANCE OF TWENTY-FOUR (24") INCHES BETWEEN ANY VALVES THAT ARE INSTALLED SIDE BY SIDE.
12. STAKE TREE BUBBLER LOCATIONS AND RECEIVE APPROVAL FROM OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
13. INSTALL REMOTE CONTROL DRIP VALVE AND PLASTIC PVC BALL VALVE IN TWELVE BY SEVENTEEN (12"x17") INCH HIGHLINE VALVE BOX AND DISC FILTER WITH PRESSURE REGULATING VALVE IN SECOND TWELVE BY SEVENTEEN (12"x17") INCH HIGHLINE VALVE BOX.
14. INSTALL DRIPLINE MINIMUM OF 2" AND A MAXIMUM OF 4" FROM HARDSCAPE SURFACES. STAKE DRIPLINE AND RECEIVE APPROVAL FROM OWNER'S REPRESENTATIVE BEFORE INSTALLATION. DO NOT EXCEED MANUFACTURER'S RECOMMENDATIONS OF 5'-0" PER SECOND IN DRIPLINE.
15. PROVIDE AND INSTALL DISTRIBUTION TUBING, STAKES, EMITTERS, TRANSFER FITTINGS, DIFFUSER BUG CAP, CONTROL ZONE KITS, ETC. NECESSARY FOR PROPER INSTALLATION OF THE BEDS. ALL PVC HEADER PIPING TO BE CLASS 200 PVC SOLVENT WELD PIPE. INSERT ALL RAINBIRD XF DRIPLINE INSERT FITTINGS PER MANUFACTURER'S RECOMMENDATIONS.
16. INSTALL ONE DRIP INDICATOR HEAD FOR EACH DRIP ZONE. INDICATOR HEAD TO BE A TORO 12" HIGH-POP-UP SPRAY WITH NOZZLE TURNED TO OFF POSITION.
17. AIR RELIEF VALVE TO BE NETAFIM 1/2" AIR RELIEF VALVE INSTALLED IN A TEN-INCH (10") HIGHLINE ROUND VALVE BOX WITH BLACK LID AND 6" OF GRAVEL SUMP. FLUSH VALVES TO BE NETAFIM AUTOMATIC FLUSH VALVE INSTALLED IN A TEN-INCH (10") HIGHLINE ROUND VALVE BOX WITH BLACK LID AND 6" OF GRAVEL SUMP.
18. ALL PLANTING BED XFD DRIPLINE AND DISTRIBUTION TUBING TO BE INSTALLED AT GRADE BELOW MULCH LAYER PER MANUFACTURER'S RECOMMENDATIONS. ALL DRIPLINE TO BE INSTALLED 12" ON CENTER ROW SPACING UNLESS INSTRUCTED OTHERWISE. L.I.C. IS RESPONSIBLE TO VERIFY THE EXACT EMITTER FLOW, EMITTER SPACING, AND ROW SPACING WITH MANUFACTURER PRIOR TO INSTALLING TO PROVIDE PROPER PRECIPITATION RATE BASED ON PLANT MATERIAL AND SOIL TYPE. TUBING TO BE STAKED WITH HEAVY DUTY JUTE NETTING PINS FROM DALLAS BAG AND BURLAP OR APPROVED EQUAL. INSTALL STAKES EVERY 3'-0" ALONG ENTIRE LENGTH OF TUBING AND A MINIMUM OF 24" FROM ANY FITTINGS.
19. ALL TURF SOD XFS DRIPLINE AND DISTRIBUTION TUBING TO BE INSTALLED BELOW FINISH GRADE APPROXIMATELY 3" TO 4" PER MANUFACTURER'S RECOMMENDATIONS. ALL TURF DRIPLINE TO BE INSTALLED 12" ON CENTER ROW SPACING UNLESS INSTRUCTED OTHERWISE. L.I.C. IS RESPONSIBLE TO VERIFY THE EXACT EMITTER FLOW, EMITTER SPACING, AND ROW SPACING WITH MANUFACTURER PRIOR TO INSTALLING TO PROVIDE PROPER PRECIPITATION RATE BASED ON TURF AND SOIL TYPE. TUBING TO BE STAKED WITH RAINBIRD 12 GA. GALVANIZED TIE DOWNS. INSTALL STAKES EVERY 3'-0" ALONG ENTIRE LENGTH OF TUBING AND A MINIMUM OF 24" FROM ANY FITTINGS.
20. INCLUDE THE FOLLOWING ALLOWANCES FOR PROVIDING AND INSTALLING AIR RELIEF VALVES AND FLUSH VALVES FOR THE DRIP SYSTEM. EXACT QUANTITY AND LOCATION OF THESE DEVICES WILL BE DETERMINED AT THE TIME OF INSTALLATION. IN GENERAL, ALL AIR RELIEF VALVES WILL BE INSTALLED AT THE HIGH POINTS AND FLUSH VALVES WILL BE INSTALLED AT THE LOW POINTS OF EXHAUST HEADER. ALLOW FOR APPROXIMATELY ONE (1) AIR RELIEF VALVE AND APPROXIMATELY ONE (1) FLUSH VALVE FOR EACH DRIP ZONE KIT.
21. WHERE POSSIBLE LOCATE ALL MAINLINES, VALVES, OR CONTROL WIRES SHALL BE LOCATED AND INSTALLED OUTSIDE RIGHT-OF-WAY.
22. PROVIDE ALL LABOR AND MATERIAL NECESSARY TO HAND DIG WITHIN ALL EXISTING TREE ROOT ZONES. CONTRACTOR MUST STAKE DITCHES AND RECEIVE APPROVAL FROM LANDSCAPE ARCHITECT PRIOR TO ANY TRENCHING OR DIGGING.
23. PROVIDE TEMPORARY IRRIGATION TO ALL DISTURBED AREAS THAT DO NOT HAVE PERMANENT IRRIGATION. PROVIDE ALL MATERIAL AND LABOR NECESSARY TO INSTALL AND OPERATE THE TEMPORARY SYSTEM. TEMPORARY SYSTEM TO BE LEFT IN PLACE UNTIL PLANT MATERIAL IS ESTABLISHED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. SHOULD IT BECOME NECESSARY TO REMOVE AND REPLACE THE TEMPORARY SYSTEM FOR MOWING AND MAINTENANCE OPERATIONS, THE LANDSCAPE IRRIGATION CONTRACTOR SHALL CONSIDER THIS PART OF HIS SCOPE OF WORK. EXACT METHOD OF PROVIDING AND OPERATING THE TEMPORARY SYSTEM WILL BE THE LANDSCAPE IRRIGATION CONTRACTOR'S RESPONSIBILITY. OPERATION OF THE TEMPORARY SYSTEM MUST BE COORDINATED WITH THE PERMANENT SYSTEM TO INSURE PROPER HYDRAULIC OPERATION OF BOTH SYSTEMS. CONTRACTOR IS RESPONSIBLE TO REFERENCE THE LANDSCAPE PLANS FOR THE SCOPE OF THIS WORK.
24. PROVIDE ALL LABOR AND MATERIAL NECESSARY TO REPAIR THE EXISTING IRRIGATION SYSTEM IN THIS AREAS SO THAT IT IS 100% OPERABLE AND AUTOMATED UPON COMPLETION OF THE PROJECT. THIS WORK TO INCLUDE BUT NOT LIMITED TO CUTTING AND CAPPING, ADJUSTING, BLENDING, ADDING COMPONENTS TO ACHIEVE THIS WORK. REVIEW THE EXISTING IRRIGATION PLANS FOR ANY QUESTIONS REGARDING THE EXISTING IRRIGATION. CONTRACTOR MUST COORDINATE THIS WORK WITH ALL DISCIPLINES PRIOR TO BIDDING AND INSTALLATION.
25. PROVIDE ALL LABOR AND MATERIAL NECESSARY TO CONNECT THE PROPOSED REMOTE CONTROL VALVES TO THE EXISTING IRRIGATION MAINLINE AT THIS APPROXIMATE LOCATION. VERIFY EXACT SIZE AND LOCATION OF EXISTING MAINLINE. CONTRACTOR MUST COORDINATE THIS WORK WITH ALL DISCIPLINES PRIOR TO BIDDING AND INSTALLATION. REFERENCE NOTES 1 AND 26 FOR THIS WORK.
26. PROVIDE ALL LABOR AND MATERIAL NECESSARY TO CONNECT THE PROPOSED IRRIGATION WIRES TO THE EXISTING FOUR (4) IRRIGATION WIRES AT THIS APPROXIMATE LOCATION. VERIFY EXACT NUMBER AND LOCATION OF EXISTING WIRES. CONTRACTOR MUST COORDINATE THIS WORK WITH ALL DISCIPLINES PRIOR TO BIDDING AND INSTALLATION.
27. A LICENSED IRRIGATOR OR LICENSED IRRIGATION TECHNICIAN SHALL BE ON-SITE AT ALL TIMES WHILE THE LANDSCAPE IRRIGATION SYSTEM IS BEING INSTALLED PER CITY OF ADDISON REQUIREMENTS.
28. IT IS THE INTENT OF THESE PLANS TO PROVIDE THE OWNER WITH A FULLY AUTOMATED AND OPERATIONAL IRRIGATION SYSTEM UPON COMPLETION OF THE PROJECT. COTNRACTOR MUST READ AND FOLLOW THE TOWN OF ADDISON IRRIGATION SPECIFICATIONS 06/14/19 FOR THIS PROJECT.

IRRIGATION LEGEND:

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL NO,
●	LAWN SPRAY HEAD	TORO (30 PSI)	570Z-40-XF WITH MPR PLASTIC NOZZLE ON 1/2" POLY GREEN NIPPLE
◔	(2) BUBBLER HEADS	HUNTER (30 PSI)	PCN-10 (1 GPM) NOZZLE ON 1/2" SCH. 80 RISER WITH SHRUB ADAPTER
▲	QUICK COUPLING VALVE	RAINBIRD	#33-DNP WITH LASCO BALL VALVE, PURPLE LID READS "RECLAIMED WATER, DO NOT DRINK" IN ENGLISH AND "NO TOME" IN SPANISH.
|O|	REMOTE CONTROL VALVE	WEATHERMATIC	#11000 SERIES WITH BALL VALVE, REFER TO PLANS FOR SIZE
———	EXISITNG MAINLINE	REFER TO SPEC.	REFER TO PLANS
—— ——	MAINLINE PIPING	REFER TO SPEC.	2-1/2" CLASS 200 BELLED PVC
———	LATERAL PIPING	REFER TO SPEC.	3/4" & LARGER - CLASS 200 PVC
= = = =	EXISTING SLEEVES	SCHEDULE 40 PVC	REF REFERENCE ORIGINAL DESIGN
|⊖|	REMOTE CONTROL DRIP VALVE	WEATHERMATIC	#11000 SERIES WITH PRESSURE REDUCER AND WYE STRAINER, REFER TO PLAN FOR SIZE
———	DRIP HEADER PIPING	REFER TO SPEC.	CLASS 200 PVC UNLESS OTHERWISE NOTED
⊏ ⊏ ⊏ ⊏	PLANTING BED DRIPLINE TUBING	NETAFIM	XFD-06-12 AT 12" ROW SPACING W/ 17MM BARBED FITTINGS, GALVANIZED TUBING STAKES, AND DRIP INDICATOR HEAD
▭	STATION NUMBER VALVE SIZE GPM (APPROX.)		

STATE OF TEXAS
SETH A. HEIDMAN
5881
LICENSED IRRIGATOR
9-10-2019

SETH HEIDMAN
IRRIGATION DESIGN & CONSULTING, LLC
6009 W. Parker Rd. #149-221, Plano, Texas 75093 Tel: 972-814-5141

0 10 20 30 40
GRAPHIC SCALE IN FEET
SCALE: 1"=20'

NO.	REVISION	BY	DATE

studioOutside
824 Exposition Avenue, Ste. 5
Dallas, Texas 75226
o214.954.7160
f214.954.7162

VW2 STREETSCAPE IMPROVEMENTS

VP PUBLIC INFRASTRUCTURE - PHASE 5, BLOCK 200B

TOWN OF ADDISON, TEXAS

IRRIGATION DETAILS

DESIGN	DRAWN	DATE	SCALE	NOTES	Sheet No.
SAH	SAH	SEPT 10, 2019	AS NOTED		22

Irrigation in Texas is regulated by the Texas Commission of Environmental Quality (TCEQ), MC-178, P.O. Box 13087, Austin, Texas, 78711-3087. TCEQ website is: www.tceq.state.tx.us

TOWN PROJECT # 2019-01C

Town of Addison
GENERAL TERMS AND CONDITIONS

By submitting an Offer in response to the Solicitation, the Contractor/Seller (hereafter called Seller) agrees the Contract/Purchase Order shall be governed by the following terms and conditions for goods and services.

1. Applicability: These General Terms and Conditions and the Terms and Conditions, Specifications, Drawings and other requirements included in the Town of Addison's Request for Bid (collectively, "Terms and Conditions") are applicable to Contracts/Purchase Orders issued by the Town of Addison (hereinafter referred to as the "Town" or "Buyer") and the Seller (herein after referred to as the "Seller"). Any deviations must be in writing and signed by a representative of the Town's Purchasing Department and the Seller. No terms and conditions contained in the Seller's Proposal, Invoice or Statement shall modify the Terms and Conditions. If there is a conflict between the Terms and Conditions and Seller's response to the Town's request for bids or proposals documents (including the provisions of the Seller's form of contract/purchase order), the Terms and Conditions will take precedence and control.

2. Official Solicitation Notification: The Town utilizes the following for official notifications of solicitation opportunities: www.bidsync.com and the Dallas Morning News of Dallas County. These are the only forms of notification authorized by the Town for notifications of solicitation opportunities. The Town is not responsible for receipt of notifications or information from any source other than those listed. It shall be the Seller's responsibility to verify the validity of all solicitation information received from any source other than the Town. There will be NO COST to the Seller for using BidSync to respond to Town of Addison solicitations.

3. Seller to Package Goods: Seller shall package goods in accordance with good commercial practice. Each shipping container, shall be clearly and permanently marked as follows: (a) Seller's name and address: (b) consignee's name, address and purchase order or purchase change order number; (c) container number and total number of containers, e.g., "box 1 of 4 boxes"; and (d) number of the container bearing the packing slip. Seller shall bear cost of packaging unless otherwise provided and agreed to in writing by Buyer. Goods shall be suitably packed to secure lowest transportation costs and to conform to requirements of common carriers and any applicable specifications. Town's count or weight shall be final and conclusive on shipments not accompanied by packing list. Unless otherwise stated in the Town's solicitation, all goods will be new, not used, rebuilt, reconditioned or recycled, will be in first class condition, and will be in containers suitable for site.

4. Shipment Under Reservation Prohibited: Seller is not authorized to ship the goods under reservation and no tender of a bill of lading will operate as a tender of goods.

5. Title and Risk of Loss: Title and risk of loss of the goods will not pass to the Town until the Town actually receives, takes possession of, and inspects and accepts the goods at the point or points of delivery.

6. Delivery Terms and Transportation Charges: Goods shall be shipped F.O.B. point of delivery; prices bid and quoted shall be F.O.B. point of delivery, and shall include all freight, delivery and packaging costs. Town shall have the right to designate what method of transportation shall be used to ship the goods. Town assumes and shall have no liability for goods damaged while in transit and or delivered in a damaged condition or that otherwise don't conform to the Terms and Conditions. Seller shall be responsible for and handle all claims with carriers, and in case of damaged or non-conforming goods shall ship replacement goods immediately upon notification by the Town of the same, and the Town may return such damaged or non-conforming goods at Seller's sole cost and expense, including costs and expense for freight, delivery, packaging, and shipping.

7. Right of Inspection and Rejection; Backorders: The Town shall have the right, and expressly reserves all rights under law, including, but not limited to the Uniform Commercial Code, to inspect the goods at delivery before accepting them, and to reject defective or non-conforming goods. Backorders delayed beyond a reasonable period of time, as determined by the Town Purchasing Manager, may be cancelled by the Town without liability of any kind whatsoever, and payment will not be made for such cancellations.

8. Acceptance of Incomplete or Non-Conforming Goods: If, instead of requiring immediate correction or removal and replacement of defective or non-conforming goods, Town prefers to accept such goods, Town may do so. Seller shall pay all claims, costs, losses and damages attributable to Town's evaluation of and determination to accept such defective or non-conforming deliverables. If any such acceptance occurs prior to final payment, Town may deduct such amounts as are necessary to compensate Town for the diminished value of the defective or non-conforming deliverables. If the acceptance occurs after final payment, such amount will be refunded to Town by Seller.

9. Substitution: Every delivery of goods by the Seller must comply with all provisions of this bid including the specifications, delivery schedule, quantity and quality, and the Terms and Conditions. Any delivery which does not conform to the Buyer's requirements shall constitute a breach of contract. Seller does not have authorization to make or tender substitute goods unless it is agreed to in writing by the Buyer and signed by an authorized representative of Buyer.

10. Payment:

(a) All proper invoices received by the Town will be paid within thirty (30) days of the Town's receipt and acceptance of the goods or of the invoice, whichever is later, unless other terms are specified on the face of the purchase order in the original printing. If payment is not timely made, interest shall accrue on the unpaid balance at the lesser of one percent per month or the maximum lawful rate; except, if payment is not timely made for a reason for which the Town may withhold payment hereunder, interest shall not accrue until ten (10) days after the grounds for withholding payment have been resolved.

(b) If partial shipments or deliveries are authorized by the Town, Seller will be paid for the partial shipment or delivery, as stated above, provided that the invoice matches the shipment or delivery.

(c) The Town may withhold or set off the entire payment or part of any payment otherwise due Seller to such extent as may be necessary on account of: (i) delivery of defective or non-conforming goods by Seller, or (ii) failure of the Seller to submit proper invoices with all required attachments and supporting documentation, or (iii) failure of Seller to deliver quantity of goods ordered (payment will be made for actual quantities delivered).

(d) The Town's payment obligations are payable only and solely from funds appropriated, budgeted, and available for the purpose of this purchase. The absence of appropriated and budgeted or other lawfully available funds shall render the Contract/Purchase Order null and void to the extent funds are not appropriated and budgeted or available and any goods delivered but unpaid shall be returned to Seller. The Town shall provide the Seller written notice of the failure of the Town to make an adequate appropriation and budget for any fiscal year to pay the amounts due under the Contract/Purchase Order, or the reduction of any appropriation to an amount insufficient to permit the Town to pay its obligations under the Contract/Purchase Order.

11. Invoicing: Send ORIGINAL INVOICE to address indicated on the purchase order. If invoice is subject to cash discounts the discount period will begin on the day invoices are received. So that proper cash discount may be computed, invoice should show amount of freight as a separate item, if applicable; otherwise, cash discount will be computed on total amount of invoice.

12. Taxes - Exemption: All quotations are required to be submitted LESS Federal Excise and State Sales Taxes. Tax Exemption Certificate will be provided by the Town for the successful Seller

13. Warranty - Price:

(a) Seller warrants the prices quoted in its bid are no higher than Seller's current prices on orders by others for like goods under similar terms of purchase.

(b) Seller certifies that the prices in Seller's bid have been arrived at independently without consultation, communication, or agreement for the purpose of restricting competition, as to any matter relating to such fees with any other firm or with any competitor.

(c) In the event of any breach of this warranty, the prices of the items will be reduced to Seller's current prices on orders by others, or in the alternative, the Town may cancel this Contract/Purchase Order without liability to Seller of any kind whatsoever. In addition to any other remedy available, the Town may deduct from any amounts owed to Seller, or otherwise recover, any amounts paid for items in excess of Seller's current prices on orders by others for like goods under similar terms of purchase.

14. Warranty – Title: Without limiting any provision of law, Seller warrants that it has good and indefeasible title to all goods furnished hereunder, and that the goods are free and clear of all liens, claims, security interests and encumbrances. **Seller shall indemnify and hold the Town harmless from and against all adverse title claims to the goods.**

15. Warranty (goods): If goods are sold and furnished to Seller in connection with these Terms and Conditions, Seller represents and warrants that the goods sold and furnished to the Town will be (i) free from defects in design, manufacture, materials and workmanship, (ii) be of merchantable quality and fit for ordinary use, (iii) be in full conformance with Buyer's specifications, drawings and data, with Seller's samples or models furnished in connection herewith, with Seller's express warranties, and with the terms and conditions of the Town's solicitation, and (iv) conform to all applicable Federal, State, and local laws, ordinances, rules, regulations, codes, and to all applicable standards and industry codes and standards. These warranties are in addition to all others given to the Buyer by the Seller or by law. Seller shall not limit, disclaim, or exclude these warranties or any implied warranties, and any attempt to do so shall render this Contract/Purchase Order voidable at the option of the Buyer, and any such limitations, disclaim, or exclusions shall be void and without force or effect.

Unless otherwise specified in a Contract/Purchase Order and approved by the Town in writing, the warranty period shall be at least one year from the date of acceptance of the goods or from the date of acceptance of any replacement goods. If during the warranty period, one or more of the above warranties are breached, Seller shall promptly upon receipt of demand either repair the defective or non-conforming goods, or replace the non-conforming or defective goods with fully conforming and non-defective goods, at the Town's option and at no additional cost to the Town. All costs incidental to such repair or replacement, including but not limited to, any packaging and shipping costs, shall be borne exclusively by Seller. The Town shall endeavor to give Seller written notice of the breach of warranty within thirty (30) days of discovery of the breach of warranty, but failure to give timely notice shall not impair the Town's rights hereunder.

If Seller is unable or unwilling to repair or replace defective or non-conforming goods as required by Town, then in addition to any other available remedy, Town may reduce the quantity of goods it may be required to purchase under the Contract/Purchase Order from Seller, and purchase conforming goods from other sources. In such event, Seller shall pay to Town upon demand the increased cost, if any, incurred by the Town to procure such goods from another source.

If Seller is not the manufacturer, and the goods are covered by a separate manufacturer's warranty, Seller shall transfer and assign such manufacturer's warranty to Town. If for any reason the manufacturer's warranty cannot be fully transferred to Town, Seller shall assist and cooperate with Town to the fullest extent to enforce such manufacturer's warranty for the benefit of Town.

16. Warranty (services): If services are provided to Seller in connection with these Terms and Conditions, Seller represents and warrants that all services to be provided to the Town will be fully and timely performed in a good and workmanlike manner in accordance with generally accepted industry standards and practices, the terms, conditions, and covenants of this Contract/Purchase Order, and all applicable Federal, State and local laws, ordinances, rules, regulations and codes. These warranties are in addition to all others given to the Buyer by the Seller or by law. Seller shall not limit, disclaim, or exclude these warranties or any implied warranties, and any attempt to

do so shall render this Contract/Purchase Order voidable at the option of the buyer, and any such limitations, disclaim, or exclusions shall be void and without force or effect.

Unless otherwise specified in the Contract/Purchase Order, the warranty period shall be at least one year from the date of final acceptance of the services by the Town. If during the warranty period, one or more of the above warranties are breached, Seller shall promptly upon receipt of demand perform the services again in accordance with above standard at no additional cost to the Town. All costs incidental to such additional performance shall be borne by the Seller. The Town shall endeavor to give the Seller written notice of the breach of warranty within thirty (30) calendar days of discovery of the breach warranty, but failure to give timely notice shall not impair the Town's rights under this section.

If the Seller is unable or unwilling to perform its services in accordance with the above standard as required by the Town, then in addition to any other available remedy, the Town may reduce the amount of services it may be required to purchase under the Contract/Purchase Order from the Seller, and purchase conforming services from other sources. In such event, the Seller shall pay to the Town upon demand the increased cost, if any, incurred by the City to procure such services from another source.

17. Right to Assurance: Whenever one party to the Contract/Purchase Order in good faith has reason to question the other party's intent to perform, demand may be made to the other party for written assurance of the intent to perform. In the event that no assurance is given within the time specified after demand is made, the demanding party may treat this failure as an anticipatory repudiation of this Contract/Purchase Order.

18. Default: Seller shall be in default under this Contract/Purchase Order if Seller (a) fails to fully, timely and faithfully perform any of its material obligations under this Contract/Purchase Order (whether or not an obligation is "material" shall be determined by the Town), (b) fails to provide adequate assurance of performance as provided for herein, (c) becomes insolvent or seeks relief under the bankruptcy laws of the United States, or (d) makes a material misrepresentation in Seller's offer or response to Buyer's solicitation, or in any report or deliverable required to be submitted by Seller to the Town.

19. Termination for Cause or Convenience: The Town, at any time, by 30 days written notice to the Seller, has the absolute right to terminate this Contract/Purchase Order, in whole or in part, for cause or for convenience (that is, for any reason or for no reason whatsoever). "Cause" means the Seller's refusal or failure to perform or complete its obligations under this Contract/Purchase Order within the time specified and to the Town's satisfaction, or failure to meet the specifications, quantities, quality and/or other requirements specified in the Contract/Purchase Order. If the Town terminates this Contract/Purchase Order for cause, the Seller shall be liable for any damages suffered by the Town. If the agreement is terminated for convenience, the Seller has no further obligation under this Contract/Purchase Order. Upon receipt of a notice of termination, Seller shall promptly cease all further work pursuant to the Contract/Purchase Order, with such exceptions, if any, specified in the notice of termination. Payment shall be made to cover the cost of goods delivered and services performed and obligations incurred prior to the date of termination in accordance with the terms hereof.

20. Delay: Town may delay scheduled delivery or other due dates by written notice to Seller if the Town deems it is in its best interest. If such delay causes an increase in the cost of the work under the Contract/Purchase Order, the Town and the Seller shall negotiate an equitable adjustment for costs incurred by Seller in the Contract/Purchase Order price and execute an amendment to the Contract/Purchase Order. Seller must assert its right to an adjustment within thirty (30) days from the date of receipt of the notice of delay. Failure to agree on any adjusted price shall be handled under the Dispute Resolution process specified herein. However, nothing in this provision shall excuse Seller from delaying the delivery as notified. For purposes of these Terms and Conditions, "days" means calendar days.

21. **SELLER'S INDEMNITY OBLIGATION;** INSURANCE: See attached Town of Addison minimum requirements.

22. Gratuity: Town may, by written notice to Seller, cancel this Contract/Purchase Order without liability to Town if it is determined by Town that any gratuity, in the form of entertainment, gifts, or otherwise, was offered or given by Seller, or any officer, employee, agent or representative of Seller, to any officer, employee, or representative of Town with a view toward securing a contract or securing favorable treatment with regard to the awarding or amending, or the making or any determinations with respect to the performance of, a contract. In the event this Contract/Purchase Order is canceled by the Town pursuant to this provision, the Town shall be entitled, in addition to any other rights and remedies, to recover or withhold the amount of the cost incurred by the Seller in providing such gratuities.

23. Notices: Unless otherwise specified, all notices, requests, or other communications required or appropriate to be given under this Contract/Purchase Order shall be in writing and shall be deemed delivered upon being hand-delivered or upon three (3) business days after postmarked if sent by U.S. Postal Service certified or registered mail, return receipt requested. Notices to Seller shall be sent to the address as specified by Seller. Notices to the Town shall be addressed to Town at 5300 Belt Line Road, Dallas, Texas 75254 and marked to the attention of the Town Finance Director.

24. No Warranty By Town Against Infringement: Seller represents and warrants to the Town that: (i) Seller shall provide the Town good and indefeasible title to all goods being sold and/or supplied to the Town, and (ii) such goods in accordance with the specifications in this Contract/Purchase Order will not infringe, directly or indirectly, any patent, trademark, copyright, trade secret, or any other intellectual property right of any kind of any third party; that no claims have been made by any person or entity with respect to the ownership or operation of such goods and the Seller does not know of any valid basis for any such claims. The Town's specifications regarding the goods shall in no way diminish Seller's warranties or obligations under this paragraph, and the Town makes no warranty that the production, development, or delivery of goods according to the specifications will not give rise to such a claim or will not will not impact such warranties of Seller, and in no event will Town be liable to Seller, its officers, employees, or agents (together, "Seller Parties") for indemnification or otherwise if Seller Parties or any of them is sued on the grounds of infringement or the like. If Seller is of the opinion that an infringement or the like will or may result, Seller shall promptly notify Town of that opinion. If Seller in good

faith ascertains, prior to production of the goods, that production of the goods according to the specifications will result in infringement or the like, this Contract/Purchase Order will be null and void, and neither Town nor Seller shall have any liability one to the other.

25. Assignment and Successors: The successful Seller shall not assign, transfer, pledge, subcontract, or otherwise convey (collectively, "assign" or "assignment"), in any manner whatsoever, any rights, duties, obligations, or responsibilities of Seller under or in connection with this Contract/Purchase Order, in whole or in part, without the prior written consent of the Town of Addison (and any such assignment without the prior written consent of the Town shall be null and void). Any person or entity to whom Seller assigns any right, duty or obligation shall, as a condition of such assignment, agree to comply with and abide by all provisions of this Contract/Purchase Order, and Seller shall promptly give the Town a true and correct copy of such agreement.

This Contract/Purchase Order shall be binding upon and inure to the benefit of the City and the Seller and their respective successors and authorized assigns, provided however, that no right or interest in the Contract/Purchase Order shall be assigned and no obligation shall be delegated by the Contractor without the prior written consent of the City. This Contract/Purchase Order does not and is not intended to confer rights or benefits on any person, firm or entity not a party hereto; it being the intention of the parties that there be no third party beneficiaries to this Contract/Purchase Order.

26. Waiver; Rights, Remedies: All waivers must be in writing and signed by the waiving party. The rights or remedies under this Agreement are cumulative to any other rights or remedies, which may be granted by law.

27. Modifications: This contract can be modified or amended only by a writing signed by both parties. No pre-printed or similar terms on any Seller invoice, order or other document shall have any force or effect to change the terms, covenants, and conditions of this Contract/Purchase Order.

28. Independent Contractor: Seller shall operate hereunder as an independent contractor and not as an officer, agent, servant or employee of the Town. Seller shall have exclusive control of, and the exclusive right to control, the details of its operations hereunder, and all persons performing same, and shall be solely responsible for the acts and omissions of its officers, agents, employees, contractors, subcontractors and consultants.

29. Interpretation: This Contract/Purchase Order is intended by the parties as a final, complete and exclusive statement of the terms of their agreement. No course of prior dealing between the parties or course of performance or usage of the trade shall be relevant to supplement or explain any term used in this Contract/Purchase Order. Although the Contract/Purchase Order may have been substantially drafted by one party, it is the intent of the parties that all provisions be construed in a manner to be fair to both parties, reading no provisions more strictly against one party or the other. Whenever a term defined by the Uniform Commercial Code, as enacted by the State of Texas, is used in this contract, the UCC definition shall control, unless otherwise defined in this Contract/Purchase Order.

30. Competitive Pricing: It is the intent of the Town to consider Interlocal Cooperative Agreements and State/Federal contracts in determining the best value for the Town.

31. Interlocal Agreement: Successful bidder (Seller) agrees to extend prices for the goods and/or services to be provided by Seller described in this Contract/Purchase Order to all entities that have entered into or will enter into joint purchasing interlocal cooperation agreements with the Town. The Town is a participating member of several interlocal cooperative purchasing agreements. As such, the Town has executed interlocal agreements, as permitted by law, including under Chapter 791 of the Texas Government Code, with certain other political subdivisions, authorizing participation in a cooperative purchasing program. The successful bidder (Seller) may be asked by the Town to provide products/services based upon the bid price to any other participant to a cooperative purchasing agreement, and the Seller agrees to do so (such provision will be pursuant to an agreement between Seller and such other participant, and the Town will have no liability or responsibility in connection therewith).

32. Right to Audit: The city shall have the right to examine and audit after reasonable notice any and all books and records. in any form or format whatsoever (including electronic), of Seller that may relate to this Contract/Purchase Order including, without limitation, the performance of Seller, its employees, agents, and subcontractors. Such books and records will be maintained in accordance with generally accepted accounting principles and shall, upon request and at the Town's request, be made available at a location designated by the Town. Seller shall, except for copying costs, otherwise bear all costs of producing such records for examination and copying by the Town. Unless otherwise agreed by the Town, such books and records must be made available to the Town within five business days after the Seller's receipt of a written notice from the Town requesting the same. The provisions of this paragraph shall survive the termination of this agreement. Seller shall retain all such books and records for a period of three (3) years after final payment on this Contract/Purchase Order or until all audit and litigation matters that the Town has brought to the attention of the Seller are resolved, whichever is longer. The Seller agrees to refund to the Town any overpayments disclosed by any such audit. The Seller shall include a similar audit right on behalf of the Town in all subcontractor agreements entered into in connection with this Contract/Purchase Order.

33. Correspondence: The Bid number must appear on all correspondence and inquiries pertaining to the Request for Bid or to quotes. The Purchase Order number must appear on all invoices or other correspondence relating to the Contract/Purchase Order.

34. Easement Permission: The contractor shall not enter or use private property except as allowed by easements shown on the contract documents or if the contractor obtains specific written permission from the property owner.

35. Alternates - Samples: If bidding on other than the item solicited by the Town, Seller's bid must identify the item's Trade Name, Manufacturer's Name and/or Catalog Number, and certify the item offered is equivalent to the item solicited by the Town. Descriptive literature must be submitted with alternate brands. Samples shall be furnished free of expense to the Town and if requested, may be returned at bidder's expense.

36. Error - Quantity: Bids must be submitted in units of quantity specified, extended, and totaled. In the event of discrepancies in extension, the unit prices shall govern.

37. Acceptance: The right is reserved to the Town to accept or reject all or part of the bid, and to accept the offer considered most advantageous to the Town by line item or total bid.

38. Term Contracts: Except as otherwise provided herein, prices must remain firm for the entire Contract/Purchase Order period, including any periods of extension or renewal. At the time of any renewal or extension of the Contract/Purchase Order, the Town or the Seller may request a price adjustment based upon the economy. All requests for a price adjustment must include detailed documentation and rationale to support the requested adjustment. The party to whom a request for price adjustment is made may, in its sole discretion, accept or reject the request. Any price adjustment must be mutually agreed upon in writing by the parties, and shall be effective for the applicable renewal term.

39. Term Contract Quantities: The quantities (if any) in the request for bid are estimated requirements and the Town reserves the right to increase or decrease the quantities or cancel any item to be furnished. The successful bidder (Seller) shall have no claim against the Town for anticipated profits for quantities diminished or deleted.

40. Term Contract Shipments: The Seller will make shipments under this Contract/Purchase Order only when requested and only in the quantities requested. Seller shall comply with minimum shipments or standard packaging requirements (if any) included in the Contract/Purchase Order.

41. Contract Renewal Options: In the event a clause for option to renew for an additional period is included in the request for bid, all renewals will be based solely upon the option and agreement between the Town and the Seller. Either party dissenting will terminate the Contract/Purchase Order in accordance with its initial specified term.

42. Electronic Signature – Uniform Electronic Transactions Act: The Town adopts Texas Business and Commerce Code Chapter 322, Uniform Electronic Transactions Act, allowing individuals, companies, and governmental entities to lawfully use and rely on electronic signatures.

43. Funding Out Clause: This Contract/Purchase Order may be terminated by the Town without notice and without penalty or liability in the event that (1) the Town lacks sufficient funds for this Contract/Purchase Order; (2) funds for this Contract/Purchase Order are not appropriated and/or budgeted by the City Council of the Town; and (3) funds for this Contract/Purchase Order that are or were to be provided by grant or through a third party are withheld, denied or are otherwise not available to the Town.

44. Dispute Resolution: Pursuant to subchapter I, Chapter 271, Texas Local Government Code, Seller agrees that, prior to instituting any lawsuit or other proceeding arising from any dispute or claim of breach under this Contract/Purchase Order (a “Claim”), the parties will first attempt to resolve the Claim by taking the following steps: (i) A written notice substantially describing the factual and legal basis of the Claim shall be delivered by the Seller to the Town within one-hundred eighty (180) days after the date of the event giving rise to the Claim, which notice shall request a

written response to be delivered to the Seller not less than fourteen (14) business days after receipt of the notice of Claim; (ii) if the response does not resolve the Claim, in the opinion of the Seller, the Seller shall give notice to that effect to the Town whereupon each party shall appoint a person having authority over the activities of the respective parties who shall promptly meet, in person, in a effort to resolve the Claim; (iii) if those persons cannot or do not resolve the Claim, then the parties shall each appoint a person from the highest tier of managerial responsibility within each respective party, who shall then promptly meet, in person, in an effort to resolve the Claim.

45. Disclosure of Certain Relationships: Chapter 176 of the Texas Local Government Code requires that any person, as defined in the statute, considering doing business with a local government entity disclose in the Questionnaire Form CIQ, the person's affiliation or business relationship that might cause a conflict of interest with a local government entity. By law, this questionnaire must be filed with the Records Administrator of the Town not later than the 7th business day after the later of (a) the date the person (i) begins discussions or negotiations to enter into a contract with the local governmental entity, or (b) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity, or (b) the date the person becomes aware (i) of an employment or other business relationship with a local government officer, or a family member of the officer, described by the statute, or (ii) that the person has given one or more gifts described in the statute. See Section 176.006, Local Government Code. A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor. The questionnaire may be found at www.ethics.state.tx.us/forms/CIQ.pdf By submitting a response to this request, Seller represents that it is in compliance with the requirements of Chapter 176 of the Texas Local Government Code.

46. Force Majeure: To the extent either the Town or Seller shall be wholly or partially prevented or delayed from the performance of this Contract/Purchase Order or of any obligation or duty under this Contract/Purchase Order placed on such party, by reason of or through work strikes, stoppage of labor, riot, fire, flood, acts of war, insurrection, court judgment, act of God, or other specific cause reasonably beyond the party's control and not attributable to its malfeasance, neglect or nonfeasance, then in such event, such party shall give notice of the same to the other party (specifying the reason for the prevention) and the time for performance of such obligation or duty shall be suspended until such disability to perform is removed.

47. BAFO: During evaluation process Town reserves the right to request a best and final offer upon completion of negotiations.

48. Silence of Specifications: The apparent silence of these specifications as to any detail or to the apparent omission from it of a detailed description concerning any point, shall be regarded as meaning that only the best commercial practices are to prevail. All interpretations of these specifications shall be made on the basis of this statement.

49. Applicable Law: This agreement shall be governed by the laws of the State of Texas, including, when applicable, the Uniform Commercial Code as adopted by the State of Texas (excluding any rule or principle that would refer to and apply the substantive law of another state or jurisdiction), as effective and in force on the date of this Contract/Purchase Order, without regard

to its conflict of laws rules or the conflict of law rules of any other jurisdiction. The foregoing, however, shall not be construed or interpreted to limit or restrict the right or ability of the City to seek and secure injunctive or any other relief from any competent authority as contemplated herein.

50. Venue: This Contract/Purchase Order is performable in Dallas County, Texas, and venue for any suit, action, or legal proceeding under or in connection with this Contract/Purchase Order shall lie exclusively in Dallas County, Texas. Seller submits to the exclusive jurisdiction of the courts in Dallas County, Texas for purposes of any such suit, action, or proceeding hereunder, and waives any claim that any such suit, action, or legal proceeding has been brought in an inconvenient forum or that the venue of that proceeding is improper.

51. Cost of Response: Any cost incurred by the Seller in responding to the Request for Proposal is the responsibility of the Seller and cannot be charged to the Town.

52. Prohibition Against Personal Interest in Contracts: No Town of Addison officer or employee shall have a direct or indirect financial interest in any contract with the Town, or be directly or indirectly financially interested in the sale of land, materials, supplies or services to the Town.

53. Prior or Pending Litigation or Lawsuits: Each Seller must include in its proposal a complete disclosure of any alleged significant prior or ongoing contract failures, any civil or criminal litigation or investigation pending which involves the Seller or in which the Seller has been judged guilty or liable.

54. Severability: The invalidity, illegality, or unenforceability of any provision of this Contract/Purchase Order shall in no way affect the validity or enforceability of any other portion or provision of this Contract/Purchase Order. Any void or invalid provision shall be deemed severed from this Contract/Purchase Order and the balance of the Contract/Purchase Order shall be construed and enforced as if the Contract/Purchase Order did not contain the particular portion or provision held to be void. The parties further agree to reform the Contract/Purchase Order to replace any stricken provision with a valid provision that comes as close as possible to the intent of the stricken provision. The provisions of this section shall not prevent this entire Contract/Purchase Order from being void should a provision which is the essence of the Contract/Purchase Order be determined to be void.

55. Headings; "Includes": The headings of this Contract/Purchase Order are for convenience of reference only and shall not affect in any manner any of the terms and conditions hereof. The words "includes" and "including" are terms of enlargement and not of limitation or exclusive enumeration, and use of the terms does not create a presumption that components not expressed are excluded.

56. Conflict: When there is a conflict between the this purchase order (including, without limitation, these Terms and Conditions) and the Seller's invoice, this purchase order shall prevail.

57. Response Contractual Obligation; **Waiver**: This response, submitted documents, and any negotiations, when properly accepted by the Town, shall constitute a contract equally binding

between the successful Seller and the Town. No different or additional terms will become part of this Contract/Purchase Order except as properly executed in an addendum or change order. **By submitting a bid, Seller waives any claim it has or may have against the Town, its officials, officers, employees, and agents, arising out of or in connection with the administration, evaluation, or recommendation of any bid, acceptance or rejection of any bid, and the award of a contract.**

58. No Waiver of Immunity. Notwithstanding any other of this Contract/Purchase Order, nothing in this Contract/Purchase Order shall or may be deemed to be, or shall or may be construed to be, a waiver or relinquishment of any immunity, defense, or tort limitation to which the Town, its officials, officers, employees, representatives, and agents are or may be entitled, including, without limitation, any waiver of immunity to suit.

59. No Boycotting Israel. The entity contract with the Town of Addison does not boycott Israel and will not boycott Israel during the term of the contract. Reference HB 89 as it relates to Chapter 2270 of the Texas Government Code. 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.

Interested Parties

In 2015, the Texas Legislature adopted House Bill 1295, which added section 2252.908 of the Government Code. The law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency. The law applies only to a contract of a governmental entity or state agency that either (1) requires an action or vote by the governing body of the entity or agency before the contract may be signed or (2) has a value of at least $1 million. The disclosure requirement applies to a contract entered into on or after January 1, 2016.

The Texas Ethics Commission was required to adopt rules necessary to implement that law, prescribe the disclosure of interested parties form, and post a copy of the form on the commission's website. The commission adopted the Certificate of Interested Parties form (Form 1295) on October 5, 2015. The commission also adopted new rules (Chapter 46) on November 30, 2015, to implement the law.

Filing Process

On January 1, 2016, the commission made available on its website a new filing application that must be used to file Form 1295. A business entity must use the application to enter the required information on Form 1295 and print a copy of the completed form, which will include a certification of filing that will contain a unique certification number. An authorized agent of the business entity must sign the printed copy of the form and have the form notarized. The completed Form 1295 with the certification of filing must be filed with the governmental body or state agency with which the business entity is entering into the contract.

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

Information regarding how to use the filing application will be available on this site by January 1, 2016. https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm, please follow Instructional Video for Business Entities.

Information and Instruction Form

RESPONSES THAT DO NOT CONTAIN THIS COMPLETED FORM MAY NOT BE COMPLIANT

Section I Company Profile

Name of Business:

Business Address:

Contact Name:

Phone#:

Fax#:

Email:

Name(s) Title of Authorized Company Officers:

Federal ID #: W-9 Form: A W-9 form will be required from the successful bidder.

DUN #:

Remit Address: If different than your physical address:

Section II Instructions to Bidders

Electronic Bids: The Town of Addison uses BidSync to distribute and receive bids and proposals. There will be **NO COST** to the Contractor/Supplier for Standard bids or proposals. For **Cooperative Bids and Reverse Auctions ONLY**, the successful contractor/supplier agrees to pay BidSync a transaction fee of one percent (1%) of the total amount of all contracts for goods and/or services. **Cooperative Bids and Reverse Auctions** will be clearly marked on the bid documents. To assure that all contractors/suppliers are treated fairly, the fee will be payable whether the bid/proposal is submitted electronically, or by paper means. Refer to www.bidsync.com for further information.

Contractor/Supplier Responsibility: It is the contractor/suppliers responsibility to check for any addenda or questions and answers that might have been issued before bid closing date and time. Contractors/Suppliers will be

notified of any addenda and Q&A if they are on the invited list, they view the bid, or add themselves to the watch list.

Acknowledgement of Addenda: #1 #2 #3 #4 #5

Delivery of Bids: For delivery of paper bids our physical address is:

Town of Addison

5350 Beltline Road

Dallas, TX 75254

Attn: Purchasing Department

Contractor/Supplier Employees: No Contractor/Supplier employee shall have a direct or indirect financial interest in any contract with the town, or be directly or indirectly financially interested in the sale of land, materials, supplies or services to the town.

Deliveries: All deliveries will be F.O.B. Town of Addison. All Transportation Charges paid by the contractor/supplier to Destination.

Payment Terms: A Prompt Payment Discount of % is offered for Payment Made Within Days of Acceptance of Goods or Services. If Prompt Payments are not offered or accepted, payments shall be made 30 days after receipt and acceptance of goods or services or after the date of receipt of the invoice whichever is later.

Delivery Dates: Delivery Dates are to be specified in Calendar Days from the Date of Order.

Bid Prices: Pre-Award bid prices shall remain Firm and Irrevocable for a Period of _____ Days.

☐ Exceptions: Contractor/Supplier does not take Exception to Bid Specifications or Other Requirements of this Solicitation. If neither exceptions box is checked, default shall be "No Exceptions"

☐ Contractor/Supplier take the following Exception(s) to the Bid Specifications or Other Requirements of this Solicitation (Explain in Detail). If box checked but no exceptions are listed, default shall be "No Exceptions"

Historically Underutilized Business (HUB): It is the policy of the Town of Addison to involve HUBs in the procurement of goods, equipment, services and construction projects. Prime Contractors/Suppliers are encouraged to provide HUBs the opportunity to compete for sub-contracting and other procurement opportunities. A listing of HUBs in this area may be accessed at the following State of Texas Website. http://www.window.state.tx.us/procurement/cmbl/cmblhub.html.

HUB Owned Business Yes No Include a current copy of your HUB certification with your response or insert Certification number _____ and expire date _____.

Other Government Entities: Would bidder be willing to allow other local governmental entities to participate in this contract, if awarded under the same Terms and Conditions? Yes ☐ No ☐

Bid Bond: Is Bid Bond attached if applicable? ☐Yes ☐No

Termination: The town at any time after issuance of this agreement, by 30 days written notice, has the absolute right to terminate this agreement for cause or convenience. Cause shall be the contractor/supplier's refusal or failure to satisfactorily perform or complete the work within the time specified, or failure to meet the specifications, quantities, quality and/or other requirements specified in the contract/purchase order. In such case the supplier shall be liable for any damages suffered by the town. If the agreement is terminated for convenience, the supplier has no further obligation under the agreement. Payment shall be made to cover the cost of material and work in process or "consigned" to the town as of the effective date of the termination.

Bidder Compliance: Bidder agrees to comply with all conditions contained in this Information and Instruction Form and the additional terms and conditions and specifications included in this request. The undersigned hereby agrees to furnish and deliver the articles or services as specified at the prices and terms herein stated and in strict accordance with the specifications and conditions, all of which are made a part of your offer. Your offer is not subject to withdrawal after the award is made.

The Town of Addison reserves the right to reject all or part of the offer and to accept the offer considered most advantageous to the town by item or total bid.

The Town of Addison will award to the lowest responsible bidder or to the bidder who provides goods or services at the best value for the Town.

I hereby certify that all of the information provided in sections I and II are true and accurate to the best of my knowledge.

Signature: Date:

Title:

Signature certifies no changes have been made to the content of this solicitation as provided by the Town of Addison.

10/17/17

Bid #20-17 Vitruvian Park Public Infrasturcture - Phase 5, Block 200 B (Streetscape)
2:00 PM Local Time
Addison Service Center
11/19/2019
Attendance Sheet

Please print clearly. If attending on behalf of someone else who will be the primary contact for your company's bid, please also provide that person's name and contact information.

	Name	Title	Entity
1	Billy Brown	Project Manager	Groves Electrical Service, Inc
2	CHASE WISE	Business Dev.	Alpha Testing
3	Kurt Hunter	Director of Preconstruction	CB&B Building Co.
4	Seamus Downing	~~Assistant~~ Superintendant	North Star Const.
5	JOEL MASSEY	PROJECT MANAGER	ICON CONSULTING ENGINEERS
6	Joel Brown joel@joelbrownco.com	Manager 972-515-3646	J. B. + CO. LLC
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ADDENDUM No. 1

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**

INSTRUCTIONS:

Acknowledge receipt of Addendum on the Proposal Form (PF-2) and Acknowledge Addendum on outer envelope of bid.

**

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Town of: **Addison, Texas**

Project Name: **Vitruvian West 2 Streetscape Improvements**
Vitruvian Park Public Infrastructure – Phase 5, Block 500B

Addendum No. **1** Total # of Pages: **4**

Vitruvian West 2 Streetscape Improvements
Vitruvian Park Public Infrastructure – Phase 5, Block 500B

Addendum No. 1

1. **Bid Item 26 – Midiron Bermuda Sod. Quantity has been corrected. Corrected quantity is 1,930 SF. Replace Proposal Form page PF-8 into the Base Bid Form to include the corrected bid item 26 quantity.**

2. **Drawing revision on Sheet 11 – In the "STREET LIGHTING & CONDUIT NOTES", Note No. 9 has been revised to include the "SL TYPE 1" specifications. See attached.**

BASE BID

ITEM NO.	APPROX QUANT.	UNIT	DESCRIPTION OF ITEMS BID PRICE WRITTEN IN WORDS	UNIT PRICE	TOTAL PRICE
25	168	L.F.	**For Furnishing and Installing Root Barrier** complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
26	1,930	S.F.	**For Furnishing and Installing Midiron Bermuda Sod** complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Foot		
27	1,216	EA.	**For Furnishing and Installing Liriope, 1 Gallon, Planted 12" O.C.** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
28	1,615	S.F.	**For Preparation of Planting Bed Areas including Topsoil, Soil Amendment Materials and Mulch** complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Foot		
29	19	EA.	**For Furnishing and Installing "High Rise" Live Oak, 6" Caliper, Single Trunk (See SP-85)** complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

STREET LIGHTING & CONDUIT NOTES

1. REFER TO SHEET 3 "GENERAL CONSTRUCTION NOTES, LEGEND AND ABBREVIATIONS" FOR THE GENERAL CONSTRUCTION NOTES FOR THE PROJECT.
2. REFER TO SHEET ED(1)-03 FOR ELECTRIC DETAILS - CONDUIT. RIGID METAL CONDUIT ELBOWS ARE NOT REQUIRED.
3. REFER TO SHEET ED(2)-03 FOR ELECTRIC DETAILS - CONDUCTORS.
4. REFER TO SHEET ED(3)-03 FOR ELECTRIC DETAILS - GROUND BOXES. RIGID METAL CONDUIT ELBOWS ARE NOT REQUIRED. CONCRETE APRON IS NOT REQUIRED.
5. REFER TO SHEET ED(8)-03 FOR ELECTRIC DETAILS - ELECTRICAL SERVICE SUPPORT PEDESTAL SERVICE TYPE PS. PEDESTAL SERVICE SHALL BE ALUMINUM, COLOR LIGHT GRAY. RIGID METAL ELBOWS ARE NOT REQUIRED.
6. WATER, SANITARY SEWER, AND STORM DRAIN LINES ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL LOCATE ALL UTILITY LINES IN THE AREA PRIOR TO DIGGING.
7. INSTALL SCHEDULE 40 PVC UNDERGROUND (24" MIN COVER) . ALL STREET AND DRIVEWAY CROSSINGS (36" MIN COVER). ALL BENDS TO BE LONG RADIUS.
8. ALL CONDUIT AT POLE BASES TO BE WITHIN THE DRILLED SHAFT FOUNDATION. NO EXPOSED CONDUIT AT POLE BASES WILL BE ALLOWED
9. SL TYPE 1-SINGLE 100W 240V MH LUMINARE ON 11'-8" POLE, COLOR BEGA OLD SILVER
   BEGA FIXTURE 9701 MH-V240-BEGA OLD SILVER OR APPROVED EQUAL
   BEGA POLE 1108HR-BEGA OLD SILVER OR APPROVED EQUAL, LAMP MP 100/U/MED
10. CONNECTION TO POWER COMPANY CIRCUITS TO BE MADE ONLY BY POWER COMPANY.
11. UNLESS OTHERWISE INDICATED ALL WORK SHALL CONFORM TO THE 2008 NATIONAL ELECTRICAL CODE (NFPA 70) AND THE 2007 NATIONAL ELECTRICAL SAFETY CODE (ANSI C2).
12. ALL EMPTY CONDUIT INSTALLED FOR FUTURE EXTENSION SHALL BE TURNED UP AND EXTENDED UP TO FINISHED GRADE. CAP ENDS OF ALL CONDUITS. ALL EMPTY CONDUIT SHALL CONTAIN A PULL LINE - 200 LB TEST NYLON.
13. REFER TO REFERENCED SHEETS FOR STREET LIGHTING DETAILS.
14. IRRIGATION SLEEVES "IRR" SHALL CONSIST OF 1-6" SCH 40 PVC AND 1-2" SCH 40 PVC INSTALLED WITH MINIMUM 24" COVER AND EXTENDING 2' BEYOND THE BACKS OF CURB OR EDGE OF PAVEMENT AND UP TO FINISHED GRADE. CAP ENDS OF ALL CONDUITS.
15. STREET LIGHTING BASE AND CONDUIT LOCATIONS ARE CRITICAL FOR COORDINATION WITH FUTURE STREETSCAPE AND ADJACENT PRIVATE IMPROVEMENTS. INSTALL ONLY AT SPECIFIC LOCATIONS PROVIDED.

Question and Answers for Bid #20-17 - Vitruvian Park Public Infrastructure - Phase 5, Block 200 B (Streetscape)

Overall Bid Questions

Question 1

What is the engineer's estimate for this project? **(Submitted: Nov 14, 2019 1:32:54 PM CST)**

Answer

- N/A **(Answered: Nov 14, 2019 1:43:14 PM CST)**

Question 2

Would you please post the pre-bid meeting sign in sheet?

Thanks **(Submitted: Nov 21, 2019 8:04:41 AM CST)**

Answer

- Posted the pre-bid meeting sign in sheet. Thank you. **(Answered: Nov 22, 2019 7:59:44 AM CST)**