



# Request for Bids

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## Blondy Jhune Road - Bridge Replacement Plans

West and East Bridges

in the City of Lucas, Collin County

**Due Date: 2:00 P.M., Wednesday, June 29, 2016**

City of Lucas, City Hall  
665 Country Club Road  
Lucas, TX – 75002



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### **Bid Response Checklist:**

- 1 Bid Bond or Cashier's Check
- 2 Bid Form
- 3 Company Profile Form
- 4 Joint Venture Certification, if applicable
- 5 Unit Bid Price/Basis for Bid
- 6 Insurance Agent/Bonding Agent, signed and notarized
- 7 City Terms & Conditions
- 8 Geotechnical Engineering Report

Return only the items above with your Bid. Do not return the entire document. Do not return your response in any type of binder. Arrange your Bid in the order listed above and limit to relevant issues. Responses will be evaluated on content rather than appearance, length or customization.

## Request for Bids

### City of Lucas

#### Blondy Jhune Road - Bridge Replacement Plans

The referenced project will consist of replacing the west and east bridges on Blondy Jhune Road along with their respective roadway approaches. The project is located between Country Club Road and Winningkoff Road in the City of Lucas Texas. Work will include Right of Way Preparation, Demolition of Existing Structures, Paving, Grading, Drainage, Bridge Structures, Retaining Walls, Signage and Pavement Markings, etc.

Please refer to the construction plans.

Bid packages may be secured from the Procurement Department office, City Hall, 665 Country Club Road, Lucas, Texas 75002, beginning at **1:00 P.M., Thursday, June 2, 2016**, upon payment of a non-refundable fee of One Hundred Dollars (\$100.00) per set.

A pre-bid conference will be held at **1:30 P.M., Wednesday, June 15, 2016**, in the Lucas City Hall. The City expects all potential bidders to visit the proposed project street and visually inspect the project. Failure to personally inspect the projects could be regarded as unresponsive and may result in removal from consideration.

Sealed bids will be received at City Hall, 665 Country Club Road, Lucas, Texas, until **Wednesday, June 29, 2016 at 2:00 P.M.** The bids will be opened and read aloud in the Lucas City Hall, 1 hour later that same day. Late bids will be returned unopened.

Cashier's check or acceptable bidder's bond payable to the City of Lucas, in the amount of not less than 5% of the total bid submitted must accompany the bid. Two copies of the bid must also accompany the original bid. The city reserves the right to reject any or all bids.

## Key Dates/Meetings/Information

PROJECT NAME: **Blondy Jhune Road – Bridge Replacement Plans**

SCOPE OF WORK: Replacing the west and east bridges on Blondy Jhune Road along with their respective roadway approaches within the City of Lucas

DOCUMENT  
AVAILABILITY: Bid packages may be secured from the Procurement Department office, City Hall, 665 Country Club Road, Lucas, Texas, beginning at **1:00 P.M. Thursday, June 2, 2016** upon payment of a non-refundable fee of One Hundred Dollars (\$100.00) per set.

PRE-BID  
CONFERENCE: **Wednesday, June 15, 2016, 1:30 P.M.**  
LUCAS CITY HALL  
665 COUNTRY CLUB ROAD  
LUCAS, TX 75002

DEADLINE DATE  
AND TIME: **Wednesday, June 29, 2016, 2:00 P.M.**

BID DELIVERY  
LOCATION: LUCAS CITY HALL  
665 COUNTRY CLUB ROAD  
LUCAS, TX 75002

AWARD BY CITY  
COUNCIL: **Thursday, July 7, 2016**

BID SECURITY: NOT LESS THAN 5% OF GREATEST AMOUNT BID

INSURANCE: REQUIRED AS STATED IN THE BID DOCUMENT



## **Project Contacts**

The City of Lucas as the Owner designates the contacts as shown in connection with this project:

Stanton Foerster, PE  
Director of Public Works

Linezka Maduro  
Purchasing Coordinator

City of Lucas  
665 Country Club Road  
Lucas, TX 75002  
(972) 727-8999

For technical questions, contact the City's Consulting Engineer:

Metropolitan Infrastructure, PLLC  
Louis Frisbie, PE  
10945 Estate Lane  
Suite E225  
Dallas, TX 75238  
Office: (214) 341-1501  
Fax: (214) 341-1640

## Bid Form

Bid from: \_\_\_\_\_  
(Name of Company)

To the Owner:       The City of Lucas  
                          665 Country Club Road  
                          Lucas, TX 75002

Project:       **Blondy Jhune Road - Bridge Replacement Plans**

The undersigned bidder, having carefully examined the Bid Documents, including but not limited to, Drawings, Specifications, and related documents and inspected the site of the proposed work and being familiar with all requirements and conditions affecting the referenced Project, including the availability of materials, and labor, hereby offers to furnish all equipment, labor materials, services, and supplies required in connection with or incidental to the Project, for the Bid Sum entered below (expressed in both words and figures), in strict conformance with the Bid Documents.

**BID SUM** \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**PRODUCT SUBSTITUTIONS.** Products listed herein are intended to be descriptive, but not restrictive unless expressly stated otherwise. Bidders quoting a substitute product to that specified in this solicitation, if applicable, **MUST** identify below the exact substitute product offered; otherwise, the City expects the quotation to be as specified. The final determination as to whether a substitute product is approved as equal to the specified product is solely that of the City.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**AGREEMENT.** Bidder acknowledges that time is of the essence for this project and, if awarded the contract, Bidder agrees to enter into a written agreement with the City within five calendar days following receipt of the signature copies of the Construction Services Agreement from the City.

**PAYMENT AND PERFORMANCE BOND.** If the contract exceeds \$25,000.00, Bidder will provide, on a form provided by the City, a Payment Bond from an approved Surety, in the full amount of the contract price. If the contract price exceeds \$100,000.00, Bidder will also provide, on a form provided by the City, a Performance Bond from an approved Surety, in the full amount of the contract price.

**CONTRACT TIME.** If awarded a contract, Bidder agrees to commence work on or before ten (10) calendar days following receipt of the City's notice to proceed, or as otherwise scheduled with the City's designated representatives, and to fully complete all work necessary to yield a completed project in accordance with the Bid Documents, within 183 calendar days from receipt of the City's notice to proceed.

**REFERENCES.** Bidder must provide five client references other than the City of Lucas for which projects of a comparable nature, value, scope and complexity have been completed by the Bidder. References must be for work done in the name of the company submitting the bid, work performed by the bidder representatives in the name of a former employer does not qualify as an acceptable reference. FAILURE TO PROVIDE ALL OF THE REQUESTED REFERENCE INFORMATION WITH YOUR INITIAL BID RESPONSE MAY RESULT IN THE DISQUALIFICATION OF YOUR BID.

	OWNER/CLIENT NAME PROJECT NAME	CONTACT PERSON	TELEPHONE NUMBER	CONTRACT VALUE	COMPLETION DATE
1					
2					
3					
4					
5					

**CITY'S RIGHTS:** Bidder understands and acknowledges the City's right to accept or reject any or all Bids or parts thereof, waive technicalities and award a contract to best serve the interest of the City.

**ADDENDA:** Bidder hereby acknowledges receipt of the following Addenda to the Specifications and Drawings, and the provisions and requirements of which have been taken into consideration in the preparation of this bid:

Addenda Numbers: (#\_\_\_\_) (#\_\_\_\_) (#\_\_\_\_) (#\_\_\_\_)

**BID SECURITY:** Bidder may satisfy the requirement to provide bid security in an amount not less than 5% of the greatest amount bid by submitting either a Bid Bond or a Cashier's Check.

Check to indicate which is included:      ☐ Bid Bond      ☐ Cashier's Check

**EXCEPTIONS:** In submitting a Bid, unless otherwise stipulated, Bidder affirms acceptance of the provisions and requirements of this RFB. Any variances or exceptions which Bidder wishes to note with respect to any of the provisions or requirements of this RFB must be stated in an attachment to the Bid Form and titled "Exceptions."

Check as applicable:      ☐ No Exceptions      ☐ Exceptions are attached

**BIDDER CERTIFICATION:** The undersigned hereby certifies that:

- yes   no   1. This bid is made without previous understanding, agreement or connection with any person, firm or corporation submitting a Bid on the same project, and is in all respects fair and without collusion, fraud, or unlawful acts.
- yes   no   2. The person whose signature appears below is legally empowered to bind the company in whose name the Bid is submitted.
- yes   no   3. The company submitting this Bid has reviewed the insurance and bonding requirements for this project and AGREES TO PROVIDE INSURANCE AND BONDING AS SPECIFIED if the Bidder is awarded a contract arising from this Bid.
- yes   no   4. The information provided on the Company Profile is complete, up-to-date, true, and accurate.
- yes   no   5. Joint Venture Certification form, is included where applicable.
- yes   no   6. As a condition of submitting a compliant response to this RFB, Bidder understands that it has made, or will make, as the case may be, a good faith effort to give certified M/WBE's a fair and equitable opportunity to be considered and selected as Subcontractors or suppliers for this project.

Submitted this  day of , 20, by and for the Company identified as follows:

Company:

Street Address:

City/State/ZIP Code:

Signature:

Printed Name:  Title:

Telephone:  Fax:  E-mail:

## Company Profile

Full Legal Name of Company \_\_\_\_\_

Contact/Title/ Telephone \_\_\_\_\_

Primary Contact/Title/Telephone \_\_\_\_\_

Business Classification ( ) Sole Proprietorship ( ) Partnership ( ) corporation

Year Established \_\_\_\_\_

Total Number of Full Time Employees \_\_\_\_\_

yes\_\_\_ no\_\_\_ Company has workers compensation, personal injury and property damage liability insurance.

yes\_\_\_ no\_\_\_ Have the owners or operators of the business entity been convicted of, or currently charged with a felony?

yes\_\_\_ no\_\_\_ Upon request, will you provide information that shows your financial and other resource capabilities?

yes\_\_\_ no\_\_\_ Is your company certified as being a minority or women owned business? If yes, attach a copy of your certification.

To the best of my knowledge, I certify to the City of Lucas that the information on this form is complete, up-to-date, true, and accurate.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

## Joint Venture Certification

The undersigned Primary and Secondary Companies hereby acknowledge and agree by this certification ("Certification") that they have entered into an agreement where they have formed a joint venture company named \_\_\_\_\_ ("JV") to provide Construction Work as provided in Bid between the JV and the City.

The company identified below as the Primary JV Company is hereby authorized to sign the referenced Agreement on behalf of the JV. In the event of a dispute between the Primary and Secondary Companies, the Primary Company shall, unless mutually agreed otherwise with approval by the City, be responsible for performance of all aspects of the referenced Agreement, including receipt of any payment due to the JV.

Notwithstanding the above, the Primary and Secondary Companies hereby agree that they are jointly and severally responsible and liable for providing the Work under the referenced Agreement.

This certification is effective \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
(Primary JV Company)

\_\_\_\_\_  
(Secondary JV Company)

By: \_\_\_\_\_

By: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_

Acknowledged By:  
City of Lucas

By: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_

## Unit Price Schedule/Basis for Bid

In case of variances of quantities from those shown or specified, the unit prices below will be used in adjusting the Contract Sum. Failure to quote all items listed below may be cause for disqualification of your bid.

### Bid Items

ITEM CODE	DESC CODE	DESCRIPTION	QNTY	UNIT	UNIT PRICE	TOTAL (\$)
100	6002	PREPARING ROW	13	STA		
100	6016	PREP ROW (TREE) (GREATER THAN 36 TO 48 IN DIA)	2	EA		
100	6017	PREP ROW (TREE) (GREATER THAN 8 IN DIA)	34	EA		
104	6017	REMOVING CONC (DRIVEWAYS)	22	SY		
105	6070	REMOVING STAB BASE & ASPH PAV (6"-8")	2622	SY		
110	6001	EXCAVATION (ROADWAY)	225	CY		
132	6006	EMBANKMENT (FINAL) (DENS CONT) (TY C)	850	CY		
164	6027	CELL FBR MLCH SEED (PERM) (URBAN) (CLAY)	2475	SY		
260	6002	LIME (HYDRATED LIME (SLURRY))	69	TON		
260	6079	LIME TRT SUBGRADE (6")	3487	SY		
247	2094	FL BS (CMP IN PLC) (TY D GR 2)	520	TON		
340	6011	D - GR HMA (SQ) TY - B PG64 - 22	298	TON		
360	6002	CONC PVMT (CONT REINF - CRCP) (8")	1811	SY		
416	6004	DRILL SHAFT (36 IN)	336	LF		
420	6014	CL C CONC (ABUT)(HPC)	36	CY		
420	6123	CL K CONC (APPROACH SLAB)	67	CY		
422	6002	REINF CONC SLAB (HPC)	3150	SF		
423	6005	RETAINING WALL (SPREAD FOOTING)	3684	SF		
425	6035	PRESTR CONC GIRDER (TX28)	420	LF		
450	6012	RAIL (TY T411)	137	LF		
454	6001	SEALED EXPANSION JOINT (4 IN) (SEJ - A)	120	LF		
459	6001	GABIONS (PVC COATED) (Gravity Wall)	771	CY		
459	6007	GABION MATTRESSES (PVC COATED) (12 IN)	82	SY		
464	6003	RC PIPE (CL III) (18 IN)	122	LF		
467	6363	SET (TY II) (18 IN) (RCP) (6: 1) (P)	6	EA		
496	6004	REMOV STR (SET)	2	EA		
496	2007	REMOV STR (PIPE)	102	LF		
496	6041	REMOV STR (LARGE)	2	EA		
500	6001	MOBILIZATION (10%)	1	LS		
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	6	MO		
506	6002	ROCK FILTER DAMS (INSTALL) (TY 2)	96	LF		
506	6011	ROCK FILTER DAMS (REMOVE)	96	LF		
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	580	SY		
506	6024	CONSTRUCTION EXITS (REMOVE)	580	SY		
506	6042	BIODEG EROSN CONT LOGS (INSTL) (18")	1400	LF		
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	1400	LF		
530	6004	DRIVEWAYS (CONC)	301	SY		

540	6001	MTL W-BEAM GD FEN (TIM POST)	684	LF		
540	6002	MTL W - BEAM GD FEN (STEEL POST)	397	LF		
542	6001	REMOVE METAL BEAM GUARD FENCE	691	LF		
542	6002	REMOVE TERMINAL ANCHOR SECTION	6	EA		
544	6001	GUARDRAIL END TREATMENT (INSTALL)	8	EA		
550	6001	CHAIN LINK FENCE (INSTALL) (6') Tree Protection	70	LF		
550	6003	CHAIN LINK FENCE REMOVE	70	LF		
552	6003	WIRE FENCE (TY C)	225	LF		
560	6004	MAILBOX INSTALL-S (TWG-POST) TY 2	4	EA		
560		MAILBOX INSTALL (BRICK)	3	EA		
636	6002	ALUMINUM SIGNS (TY G)	252	SF		
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	18	EA		
644	6076	REMOVE SM RD SN SUP & AM	5	EA		
658	6008	INSTL DEL ASSM (D-SW)SZ 1(FLX)GF2(BI)	6	EA		
666	6287	REF PROF PAV MRK TY I (Y) 4" (SLD) (090MIL)	1960	LF		
666	6283	REF PROF PAV MRK TY I (W) 4" (SLD) (090MIL)	1664	LF		
672	6009	REFL PAV MRKR TY II-A-A	125	EA		
740	6005	ANTI-GRAFFITI COATING (PERMANENT - TY III)	3684	SF		
999		EROSION CONTROL MAINTENANCE	1	LS		
5971		48" DIA MANHOLE	1	EA		
					BID AMOUNT	

INCREASE OR DECREASE IN QUANTITIES: The quantities shown in the Proposal are approximate. **It is the Bidder's sole responsibility to verify all the pay item quantities prior to submitting a bid.** Final payment will be based upon field measurements. Compensation shall be for material installed based on unit prices provided.

The City reserves the right to alter the quantities of the work to be performed, or to extend or shorten the improvements at any time when and as found to be necessary. The Bidder shall perform the work as altered, increased or decreased at the unit prices as established by the Bidder in the Bid documents. No allowance will be made for any changes in anticipated profits, nor shall such changes be considered as waiving or invalidating any conditions or provisions of the Contract Documents.



## Insurance/Bonding Affidavit

To be completed by appropriate agent(s) and submitted with the Bid.

\_\_\_\_\_  
(Name of Bidder)

### **PART 1 - INSURANCE**

I, the undersigned INSURANCE AGENT, affirm that the above Identified Bidder  
( ) Currently has in place or ( ) has made arrangements to obtain the types of  
insurance in the respective amounts of coverage as specified in the noted  
Request for Bids.

Name of Insurance Agency: \_\_\_\_\_

Address of Agency: \_\_\_\_\_ City/State/Zip Code \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Fax Number \_\_\_\_\_

Agent (Print or Type): \_\_\_\_\_ e-mail: \_\_\_\_\_

Agent (Signature): \_\_\_\_\_ Date: \_\_\_\_\_

NOTE: The insurance must be obtained from a company or companies acceptable to the City, licensed to transact business in the State of Texas, and have minimum financial security rating by A.M. Best of "A minus", or the equivalent from any other rating system.

### **PART 1 - BONDING**

I, the undersigned BONDING AGENT, affirm that if the Named Bidder is awarded a contract by the City of LUCAS, I can provide Payment and/or Performance Bonds as specified in the noted Request for Bids.

Name of Insurance Agency: \_\_\_\_\_

Address of Agency: \_\_\_\_\_ City/State/Zip Code \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Fax Number \_\_\_\_\_

Agent (Print or Type): \_\_\_\_\_ e-mail: \_\_\_\_\_

Agent (Signature): \_\_\_\_\_ Date: \_\_\_\_\_

Notary for Insurance Agent:

Subscribed and Sworn to before me by the above  
named on this, the \_\_\_\_\_ day of \_\_\_\_\_, 2016

\_\_\_\_\_  
Notary Public in and for the State of \_\_\_\_\_  
My Commission expires: \_\_\_\_\_

Notary for Insurance Agent:

Subscribed and Sworn to before me by the above  
named on this, the \_\_\_\_\_ day of \_\_\_\_\_, 2016

\_\_\_\_\_  
Notary Public in and for the State of \_\_\_\_\_  
My Commission expires: \_\_\_\_\_

## Governing Specifications

All specifications applicable to this project are identified as follows:

*Standard Specifications for Construction and Maintenance of Highways Streets and Bridges as adopted by the Texas Department of Transportation (TxDOT), 2014 Edition*

Standard Specifications are incorporated into the contract by reference

Items include, General Requirement and Covenants

General: the above-listed specification items are those under which payment is to be made. These, together with such other pertinent items, if any, as may be referred to in the above listed Specification items, constitute the complete specifications for this project.

For contract "Terms & Conditions" refer to Attachment A.

### Bidder's acknowledgement:

I have read and understand all terms and conditions and agree to abide by these terms and conditions as part of this Bid.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

**City of Lucas  
Contract Terms & Conditions**

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## **City of Lucas, Texas**

This Agreement is made by and between the City of Lucas, Texas, a home-rule municipality (hereinafter referred to as the "City") and \_\_\_\_\_, (hereinafter referred to as the "Contractor") for construction of Blondy Jhune Road Bridge Replacement Plans, (hereinafter referred to as the "Project"), the City and the Contractor hereby agreeing as follows:

### **ARTICLE I**

#### **THE CONTRACT AND THE CONTRACT DOCUMENTS**

##### **1.1 THE CONTRACT**

1.1.1 The contract between the City and the Contractor, of which this agreement (sometimes referred to herein as the "Contract") is a part, consists of the Contract Documents. It shall be effective on the date this Agreement is executed by the last party to execute it.

##### **1.2. THE CONTRACT DOCUMENTS**

1.2.1 The Contract Documents consist of this agreement, the General Conditions, the Special Conditions, the Invitation to Bid, Requirements and Instructions to Bidders, the Specifications, the Drawings, the Shop Drawings, the Project Manual, all Change Orders and Field Orders issued hereafter, the addenda, exhibits and attachments thereto, any other amendments hereto executed by the parties hereafter, together with the following (if any):

##### **1.3 ENTIRE AGREEMENT**

1.3.1 This Contract, together with the Contractor's performance and payment bonds for the Project, all General Conditions, Special Conditions, Plans and Specifications, and Addenda attached thereto, constitute the entire and exclusive agreement between the City and the Contractor with reference to the Project. Specifically, but without limitation, this Contract supersedes any bid documents and all prior written or oral communications, representations and negotiations, if any, between the City and Contractor not expressly made a part hereof.

##### **1.4 NO PRIVACY WITH OTHERS**

1.4.1 Nothing contained in this Contract shall create, or be interpreted to create, privity or any other contractual agreement between the City and any person or entity other than the Contractor.

##### **1.5 INTENT AND INTERPRETATION**

1.5.1 The intent of this Contract is to require complete, correct and timely execution of the Work. Any Work that may be required, implied or inferred by the Contract Documents, or any one or more of them, as necessary to produce the intended result shall be provided by the Contractor for the Contract Price.

1.5.2 This Contract is intended to be an integral whole and shall be interpreted as internally consistent. What is required by any one Contract Document shall be considered as required by the Contract.

1.5.3 When a word, term or phrase is used in this Contract, it shall be interpreted or construed, first, as defined herein; second, if not defined, according to its generally accepted meaning in the construction industry; and third, if there is no generally accepted meaning in the construction industry, according to its common and customary usage.

1.5.4 The word "City" includes the City of Lucas, Texas, a municipal corporation, and its public officials, officers, employees, agents and employees. The word "Contractor" includes the Contractor and its officers, employees, agents and representatives. The word "include", "includes", or "including", as used in this subparagraph and in this Contract, shall be deemed to be followed by the phrase, "without limitation".

1.5.5 The specification herein of any act, failure, refusal, omission, event, occurrence or condition as constituting a material breach of this Contract shall not imply that any other, non-specified act, failure, refusal, omission, event, occurrence or condition shall be deemed not to constitute a material breach of this Contract.

1.5.6 Words or terms used as nouns in this Contract shall be inclusive of their singular and plural forms, unless the context of their usage clearly requires a contrary meaning.

1.5.7 The Contractor shall have a continuing duty to read, carefully study and compare each of the Contract Documents, the Shop Drawings, the Product Data, and any Plans and Specifications, and shall give written notice to the City of any inconsistency, ambiguity, error or omission which the Contractor may discover with respect to these documents before proceeding with the affected Work. The issuance, or the express or implied approval by the City or the Engineer of the Contract Documents, Shop Drawings or Product Data, shall not relieve the Contractor of the continuing duties imposed hereby, nor shall any such approval be evidence of the Contractor's compliance with this Contract. The City has requested the Engineer to only prepare documents for the Project, including the Drawings, Plans and Specifications for the Project, which are accurate, adequate, consistent, coordinated and sufficient for construction. HOWEVER, THE CITY MAKES NO REPRESENTATION OR WARRANTY OF ANY NATURE WHATSOEVER TO THE CONTRACTOR CONCERNING SUCH DOCUMENTS. THE CONTRACTOR ASSUMES ALL RISK OF ERRORS, AMBIGUITIES AND INACCURACIES. By the execution hereof, the Contractor acknowledges and represents that it has received, reviewed and carefully examined such documents, has found them to be complete, accurate, adequate, consistent, coordinated and sufficient for construction, and that the Contractor has not, does not, and will not rely upon any representation or warranties by the City concerning such documents as no such representation or warranties have been or are hereby made. Further, the Contractor represents and warrants that it has had a sufficient opportunity to inspect the Project site and assumes any and all responsibility for inadequacies or ambiguities in the plans, drawings or specifications as well as for latent conditions of the site where the work is to be performed.

1.5.8 As between numbers and scaled measurements on the Drawings and in the Design, the numbers shall govern, as between larger scale and smaller scale drawings, the larger scale shall govern.

1.5.9 Neither the organization of any of the Contract Documents into divisions, sections, paragraphs, articles, (or other categories), nor the organization or arrangement of the Design, shall control the Contractor in dividing the Work or in establishing the extent or scope of the Work to be performed by Subcontractors.

## **1.6 OWNERSHIP OF CONTRACT DOCUMENTS**

1.6.1 The Contract Documents, and each of them individually and collectively, shall remain the property of the City. The Contractor shall have the right to keep one record set of the Contract Documents upon completion of the Project; provided, however, that in no event shall Contractor use, or permit to be used, any or all of such Contract Documents on other projects without the City's prior written authorization.

## **ARTICLE II**

### **THE WORK**

2.1 The Contractor shall perform all of the Work required, implied or reasonably inferable from this Contract.

## **2.2 WORK**

2.2.1 The term "Work" shall mean whatever is done by or required of the Contractor to perform and complete its duties under this Contract, including the following: construction of the whole or a designated part of the Project; furnishing of any required surety bonds and insurance, and the provision or furnishing of labor, supervision, services, materials, supplies, equipment, fixtures, appliances, facilities, tools, transportation, storage, permits and licenses required of the Contractor, power, water, fuel, heat, light, cooling and all other utilities as required by this Contract. The Work to be performed by the Contractor is generally described as follows:

Approximate quantities for Blondy Jhune Road Bridge Replacement Plans include Right of Way Preparation, Demolition of Existing Structures, Paving, Grading, Drainage, Bridge Structures, Retaining Walls, Signage and Pavement Markings; and other miscellaneous improvements as shown on the plans and in accordance with the specifications.

2.2.2 The Contractor shall be responsible for paying for and procuring all materials and labor and furnishing all services necessary or appropriate for the full performance of the Work and the for the full completion of the Project. All materials shall be new and materials and workmanship shall be of good quality. Upon request, the Contractor shall furnish satisfactory proof of the type, kind, and quality of materials.

## **ARTICLE III**

### **CONTRACT TIME**

#### **3.1 SUBSTANTIAL COMPLETION**

3.1.1 "Substantial Completion" shall mean that stage in the progression of the Work when the Work is sufficiently complete in accordance with this Contract that the City can enjoy beneficial use or occupancy of the Work and can utilize the Work for its intended purpose, even though minor miscellaneous work and/or adjustment may be required.

#### **3.2 TIME**

3.2.1 The Contractor shall commence the Work within 10 days of receipt of a written Notice to Proceed, and shall achieve Substantial Completion of the Work no later than 183 calendar days from the date specified in the Notice to Proceed. The term "calendar days" shall mean any and all days of the week or month, no days being excepted. The number of calendar days from the date on which the Work is permitted to proceed, through the date set forth for Substantial Completion, shall constitute the Contract Time" and the "scheduled completion date." The execution of this Contract by the Contractor constitutes an agreement that adequate time has been allotted for this Contract, given the Contract Price.

3.2.2 Work may proceed on any day of the week, including weekends, and at any time of the day. However, work shall not occur on such days or at such times as, in the City's or Engineer's discretion, may be a violation of noise or environmental regulations or ordinances, or when the presence of workers, equipment or materials may create an abnormally hazardous condition.

3.2.3 The Contractor shall submit and comply with construction schedules establishing completion timelines and deadlines for each component of the Project. Construction schedules shall be submitted to and approved by the Engineer and the City on a regular basis as required by the Contract Documents. If no reference is made to construction schedules in the Contract Documents, then construction schedules shall be submitted with each Application for Payment.



### **3.3 TIME IS OF THE ESSENCE**

3.3.1 The scheduled completion date is based on public necessity. The scheduled completion date is factored into and is a material component of the Contract Price. All limitations of time set forth in the Contract Documents are of the essence of this Contract.

3.3.2 TIME IS OF THE ESSENCE IN THE PERFORMANCE OF THE WORK AND THE COMPLETION OF THE PROJECT ON OR BEFORE THE SCHEDULED COMPLETION DATE. THE SCHEDULED COMPLETION DATE IS A DEADLINE. THE CITY EMPLOYS A ZERO-TOLERANCE POLICY REGARDING THE TIME FOR COMPLETION. The time for completion is an essential and material term of this Contract and the Contractor's failure to achieve substantial completion on the date stated herein, to comply with work schedules, or achieve milestones in approved construction schedules, shall be a material breach and default of this Contract.

3.3.3 The City will assess liquidated damages for late or untimely performance and may, at the City's sole option, elect to allow Contractor to continue with the Work, or may declare Contractor to be in breach and default of the Contract and order Contractor to remove all equipment and personnel from the work site. All remedies for Contractor's late performance shall be nonexclusive and cumulative without waiver of any other, and the City's election of one shall not preclude the City from pursuing any other.

3.3.4 It is contemplated by the parties that the progress of the Work may be delayed by certain conditions beyond the control of the parties; these delays have been contemplated by the parties and considered in the time allotted for performance specified herein and in the contract price and includes, but is not limited to delays occasioned on account of adverse weather, temporary unavailability of materials, shipment delays, and the presence and potential interference of other contractors or of utilities that may be performing work at the Project site unrelated to this Contract. These delays have been considered and included in the determination of the scheduled completion date and the Contract Price.

### **3.4 LIQUIDATED DAMAGES; EARLY COMPLETION BONUS**

3.4.1 The Contractor shall pay the City the sum of **\$2,500.00** per day for each and every calendar day of unexcused delay in achieving Substantial Completion beyond the date set forth herein for Substantial Completion of the Work. Any sums due and payable hereunder by the Contractor shall be payable, not as a penalty, but as liquidated damages representing an estimate of delay damages likely to be sustained by the City, estimated at or before the time of executing this Contract. When the City reasonably believes that Substantial Completion will be inexcusably delayed, the City shall be entitled, but not required, to withhold from any amounts otherwise due the Contractor an amount then believed by the City to be adequate to recover liquidated damages applicable to such delays. If and when the Contractor overcomes the delay in achieving Substantial Completion, or any part thereof, for which the City has withheld payment, the City shall promptly release to the Contractor those funds withheld, but no longer applicable, as liquidated damages. If the Contractor has submitted a Statement of Delay with the appropriate Application for Payment as required by Subparagraph 5.2.3, and/or has complied with the notice and Change Order requirements of this Contract, the Engineer shall have sole discretion to determine whether a delay is excused or unexcused and the Engineer's determination thereof shall be final and binding on the parties.

3.4.2 In the event that the Contractor achieves certification by the Engineer of Final Completion prior to N/A Calendar days from the date specified in the Notice to Proceed, the City shall pay to the Contractor the sum of **\$0** per day for each calendar day that Final Completion is certified in advance of the scheduled Final Completion date, as that date may be modified by written change order. However, early completion bonuses shall not, in the aggregate, exceed the total sum of **\$0**. Any reduction in the scope of work, evidenced by written change order, shall commensurately reduce the Contract Time.

### **3.5 NO DAMAGES FOR DELAY; NO BACK-CHARGES; DAMAGE WAIVER**

3.5.1 No claim shall be made by the Contractor to the City, and no damages, costs or extra compensation shall be allowed or paid by the City to the Contractor for any delay or hindrance from any cause in the progress or completion of the Work or this Contract. The Contractor's sole remedy in the event of any delay or hindrance,



regardless of cause, shall be to request time extensions by written change orders as provided for hereinafter. The failure to seek or obtain a change order for time extension shall be deemed a waiver thereof and Contractor shall be regarded as having made a determination that the delay will not affect the completion of the Work. Should the Contractor be delayed by an act of the City, or should the City order a stoppage of the Work for sufficient cause unrelated to any act or omission of the Contractor, an extension of time shall be granted by the City by Change Order upon written application, which extension shall not be unreasonably denied, to compensate for the delay.

3.5.2 The City shall have the authority to suspend the Work wholly or in part for such period or periods of time as it may deem appropriate due to unsuitable conditions considered unfavorable for the proper prosecution of the Work or for the failure of the Contractor to carry out instructions from the City or City's representative. During any period in which the Work is stopped or during which any of the Work is not actively in progress for any reason, Contractor shall properly protect the site and the Work from damage, loss or harm. The Contractor shall not be compensated for periods of delay caused by a suspension of the work by the City. If work is suspended due to unsuitable conditions through no fault of the Contractor, an extension of time shall be granted by the City by Change Order upon written application, which extension shall not be unreasonably denied, to compensate for the delay.

3.5.3 The Contractor shall not have or assert any claim against the City for damages or back-charges of any kind for any reason, including but not limited to claims for Extra Work, damages, economic loss, additional costs, unknown latent site conditions, and refusals by the City to grant extensions of time, unless supported and authorized by a written Change Order or separate agreement signed by all parties. The Contractor, in entering into this Contract, hereby waives, releases, quitclaims, discharges and holds harmless the City from and against any and all claims, damages, liabilities and losses, save and except those arising under Paragraph 12.1 of this Contract.

## **ARTICLE IV**

### **CONTRACT PRICE**

#### **4.1 THE CONTRACT PRICE**

4.1.1 The City shall pay, and the Contractor shall accept, as full and complete payment for all of the Work required herein, the fixed sum of

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The sum set forth in this Paragraph 4.1 shall constitute the Contract Price which shall not be modified except by written Change Order as provided in this Contract, or the assessment of liquidated damages or the award of an early completion bonus.

## **ARTICLE V**

### **PAYMENT OF THE CONTRACT PRICE**

#### **5.1 SCHEDULE OF VALUES**

5.1.1 The Schedule of Values, submitted to and accepted by the City and Engineer at the time of the Contractor's bid, allocates the Contract Price to the various portions of the Work. The Contractor's Schedule of Values shall have been prepared, or at the City's or Engineer's request shall be amended prior to the commencement of construction, in such form, with such detail, and supported by such data as the Engineer or the City may require to substantiate its accuracy. The Contractor shall not imbalance its Schedule of Values nor artificially inflate any element thereof. The violation of this provision by the Contractor shall constitute a material breach of this Contract. The Schedule of Values shall be used only as a basis for the Contractor's Applications for Payment and shall only constitute such basis after it has been acknowledged and accepted in writing by the Engineer and the City.

## 5.2 PAYMENT PROCEDURE

5.2.1 The City shall pay the Contract Price to the Contractor as provided below.

5.2.2 PROGRESS PAYMENTS - Based upon the Contractor's Applications for Payment submitted to the Engineer and upon Certificates for Payment subsequently issued to the City by the Engineer, the City shall make progress payments to the Contractor on account of the Contract Price.

5.2.3 APPLICATION FOR PAYMENT - On or before the 25th day of each month after commencement of the Work, the Contractor shall submit an Application for Payment for the period ending the 15th day of the month to the Engineer in such form and manner, and with such supporting data and content, as the City or the Engineer may require. The Contractor may request payment for that portion of the Contract Price properly allocable to Contract requirements properly provided and to labor, materials and equipment properly incorporated in the Work, less retainage and less the total amount of previous payments received from the City. Such Application for Payment shall be signed by the Contractor and shall constitute the Contractor's representation that the Work has progressed to the level for which payment is requested in accordance with the Schedule of Values, that the Work has been properly installed or performed in full compliance with this Contract, and that the Contractor knows of no reason why payment should not be made as requested. Thereafter, the Engineer will review the Application for Payment and may also review the Work at the Project site or elsewhere to determine whether the quantity and quality of the Work is as represented in the Application for Payment and is as required by this Contract. The Engineer shall determine and certify to the City the amount properly owing to the Contractor. The City shall make partial payments on account of the Contract Price to the Contractor within thirty (30) days following the Engineer's receipt and approval of each Application for Payment. The amount of each partial payment shall be the amount certified for payment by the Engineer less such amounts, if any, otherwise owing by the Contractor to the City or which the City shall have the right to withhold as authorized by this Contract. The Engineer's certification of the Contractor's Application for Payment shall not preclude the City from the exercise of any of its rights as set forth in Paragraph 5.3 herein below.

5.2.4 STATEMENT OF DELAY - Each Application for Payment shall include a Statement of Delay showing the number of days lost due to inclement weather, conflicts with other City contractors, utilities, or design specifications, or other proper reasons. The failure to submit the Statement of Delay shall be a waiver of any claim for additional days or extensions of the scheduled completion date.

5.2.5 RETAINAGE - If the Contract Price set forth in Subparagraph 4.1.1 exceeds \$400,000, the City shall withhold retainage of ten (10) percent from each progress payment to secure performance of the Contract and shall deposit in an interest-bearing account that portion of the retainage withheld that exceeds five (5) percent of the progress payment. If a different percentage is set forth in the Invitation to Bid, then that percentage shall apply.

5.2.6 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the City when installed at the Project site, regardless of the time of payment. The Contractor further warrants that upon submittal of an Application for Payment, all Work for which payments have been received from the City shall be free and clear of liens, claims, security interest or other encumbrances in favor of the Contractor or any other person or entity whatsoever.

5.2.7 The Contractor shall promptly pay each Subcontractor out of the amount paid to the Contractor on account of such Subcontractor's Work, the amount to which such Subcontractor is entitled. In the event the City becomes informed that the Contractor has not paid a Subcontractor as herein provided, the City shall have the right, but not the duty, to issue future checks in payment to the Contractor of amounts otherwise due hereunder naming the Contractor and such Subcontractor as joint payees. Such joint check procedure, if employed by the City, shall create no rights in favor of any person or entity beyond the right of the named payees to payment of the check and shall not be deemed to commit the City to repeat the procedure in the future.

5.2.8 No progress payment, nor any use or occupancy of the Project by the City, shall be interpreted to constitute an acceptance of any Work not in strict compliance with this Contract.

### **5.3 WITHHELD PAYMENT**

5.3.1 The City may decline to make payment, may withhold funds, and, if necessary, may demand the return of some or all of the amounts previously paid to the Contractor, to protect the City from loss because of:

- (a) defective Work not remedied by the Contractor or, in the opinion of the City, likely to be remedied by the Contractor;
- (b) claims of third parties against the City or the City's property;
- (c) failure by the Contractor to pay Subcontractors or others in a prompt and proper fashion;
- (d) evidence that the balance of the Work cannot be completed in accordance with the Contract for the unpaid balance of the Contract Price,
- (e) evidence that the Work will not be completed in the time required for substantial or final completion (final completion meaning the full and final completion of all work called for by this Contract and final acceptance by the Engineer and the City);
- (f) persistent failure to carry out the Work in accordance with the Contract;
- (g) damage to the City or a third party to whom the City is, or may be, liable.
- (h) failure to submit an updated project schedule in accordance with Subparagraph 3.2.3.
- (i) failure to submit record drawings in accordance with Subparagraph 7.9.1.

In the event that the City makes written demand upon the Contractor for amounts previously paid by the City as contemplated in this Subparagraph 5.3.1, the Contractor shall promptly comply with such demand. The City shall have no duty to third parties to withhold payment to the Contractor and shall incur no liability for a failure to withhold funds.

### **5.4 UNEXCUSED FAILURE TO PAY**

5.4.1 If within twenty (20) days after the date established herein for payment to the Contractor by the City, the City, without cause or basis hereunder, fails to pay the Contractor any amount then due and payable to the Contractor, then the Contractor may after ten (10) additional days' written notice to the City and the Engineer, and without prejudice to any other available rights or remedies it may have, stop the Work until payment of those amounts due from the City have been received. Late payments shall not accrue interest or other late charges.

### **5.5 CERTIFICATE OF SUBSTANTIAL COMPLETION**

5.5.1 When the Contractor believes that the Work is substantially complete, the Contractor shall submit to the Engineer a list of items to be completed or corrected. When the Engineer and the City on the basis of an inspection determine that the Work is in fact substantially complete, the Engineer will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall state the responsibilities of the City and the Contractor for Project security, maintenance, heat, utilities, damage to the Work, and insurance, and shall fix the time within which the Contractor shall complete the items listed therein. In no event, however, shall the date of Final Completion be delayed. Guarantees required by the Contract shall commence on the date of Substantial Completion of the Work; however, the maintenance bond required herein, and the assurances given thereunder, shall commence on and from the date of final acceptance of the work by the City. The Certificate of Substantial Completion shall be submitted to the City and the Contractor for their written acceptance of the responsibilities assigned to them in such certificate.

Upon Substantial Completion of the Work, and execution by both the City and the Contractor of the Certificate of Substantial Completion, the City shall pay the Contractor for all work completed to date, less retainage.

## **5.6 COMPLETION AND FINAL PAYMENT**

5.6.1 When all of the Work is finally complete and the Contractor is ready for a final inspection, it shall notify the City and the Engineer thereof in writing. Thereupon, the Engineer will make final inspection of the Work and, if the Work is complete in full accordance with this Contract and this Contract has been fully performed, the Engineer will promptly issue a final Certificate for Payment certifying to the City that the Project is complete and the Contractor is entitled to the remainder of the unpaid Contract Price (including retainage and the interest accrued on the retainage in excess of five (5) percent if the Contract Price is in excess of \$400,000), plus an early completion bonus, if any, less any amount withheld pursuant to this Contract. If the Engineer is unable to issue its final Certificate for Payment and is required to repeat its final inspection of the Work, the Contractor shall bear the cost of such repeat final inspection(s) which cost may be deducted by the City from the Contractor's final payment.

5.6.1.1 If the Contractor fails to achieve final completion within the time fixed therefor by the Engineer in its Certificate of Substantial Completion, the Contractor shall pay the City the sum set forth hereinabove as liquidated damages per day for each and every calendar day of unexcused delay in achieving final completion beyond the date set forth herein for final completion of the Work. Any sums due and payable hereunder by the Contractor shall be payable, not as a penalty, but as liquidated damages representing an estimate of delay damages likely to be sustained by the City, estimated at or before the time of executing this Contract. When the City reasonably believes that final completion will be inexcusably delayed, the City shall be entitled, but not required, to withhold from any amounts otherwise due the Contractor an amount then believed by the City to be adequate to recover liquidated damages applicable to such delays. If and when the Contractor overcomes the delay in achieving final completion, or any part thereof, for which the City has withheld payment, the City shall promptly release to the Contractor those funds withheld, but no longer applicable, as liquidated damages. Liquidated damages shall be deducted first from any earned early completion bonus, then from any sums otherwise due to the Contractor.

5.6.2 The Contractor shall not be entitled to final payment unless and until it submits to the Engineer its affidavit that all payrolls, invoices for materials and equipment, and other liabilities connected with the Work for which the City, or the City's property might be responsible, have been fully paid or otherwise satisfied; releases and waivers of lien from all Subcontractors of the Contractor and of any and all other parties required by the Engineer or the City; consent of Surety, if any, to final payment. If any third party fails or refuses to provide a release of claim or waiver of lien as required by the City, the Contractor shall furnish a bond satisfactory to the City to discharge any such lien or indemnify the City from liability.

5.6.3 The City shall make final payment of all sums due the Contractor within thirty (30) days of the Engineer's execution of a final Certificate for Payment.

5.6.4 Acceptance of final payment shall constitute a waiver of all claims against the City by the Contractor except for those claims previously made in writing against the City by the Contractor, pending at the time of final payment, and identified in writing by the Contractor as unsettled at the time of its request for final payment.

5.6.5 Other than interest on retainage in excess of 5% under Paragraph 5.2.5, under no circumstances shall Contractor be entitled to receive interest on any payments or monies due Contractor by the City, whether the amount on which the interest may accrue is timely, late, wrongfully withheld, or an assessment of damages of any kind.

## **ARTICLE VI**

### **THE CITY**

#### **6.1 INFORMATION, SERVICES AND THINGS REQUIRED FROM CITY**

6.1.1 The City shall furnish to the Contractor, at the time of executing this Contract, any and all written and tangible material in its possession concerning conditions below ground at the site of the Project. Such written and tangible material is furnished to the Contractor only in order to make complete disclosure of such material and for no other purpose. By furnishing such material, the City does not represent, warrant, or guarantee its accuracy either in whole, in part, implicitly or explicitly, or at all, and shall have no liability therefor. The City shall also furnish surveys, legal limitations and utility locations (if known), and a legal description of the Project site.

6.1.2 Excluding permits and fees normally the responsibility of the Contractor, the City shall obtain all approvals, easements, and the like required for construction and shall pay for necessary assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

6.1.3 The City shall furnish the Contractor, free of charge, two copies of the Contract Documents for execution of the Work.

## **6.2 RIGHT TO STOP WORK**

6.2.1 If the Contractor persistently fails or refuses to perform the Work in accordance with this Contract, if the Contractor fails to meet milestones set forth in approved construction schedules, if the City has sufficient reason to believe that the Contractor is not and will not complete the Project by the scheduled completion date, or if the best interests of the public health, safety or welfare so require, the City may order the Contractor to stop the Work, or any described portion thereof, until the cause for stoppage has been corrected, no longer exists, or the City orders that Work be resumed. In such event, the Contractor shall immediately obey such order.

## **6.3 CITY'S RIGHT TO PERFORM WORK**

6.3.1 If the Contractor's Work is stopped by the City under Paragraph 6.2, and the Contractor fails within seven (7) days of such stoppage to provide adequate assurance to the City that the cause of such stoppage will be eliminated or corrected, then the City may, without prejudice to any other rights or remedies the City may have against the Contractor, proceed to carry out the subject Work. In such a situation, an appropriate Change Order shall be issued deducting from the Contract Price the cost of correcting the subject deficiencies, plus compensation for the Engineer's additional services and expenses necessitated thereby, if any. If the unpaid portion of the Contract Price is insufficient to cover the amount due the City, the Contractor shall pay the difference to the City.

# **ARTICLE VII**

## **THE CONTRACTOR**

### **7.1 MUST FOLLOW CONTRACT**

7.1.1 The Contractor shall perform no part of the Work at any time without adequate Contract Documents or, as appropriate, approved Shop Drawings, Product Data or Samples for such portion of the Work. If the Contractor performs any of the Work knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Engineer, the Contractor shall bear responsibility for such performance and shall bear the cost of correction. The Contractor shall perform the Work strictly in accordance with this Contract

### **7.2 PROSECUTION OF WORK**

7.2.1 The Contractor shall supervise and direct the Work using the Contractor's best skill, effort and attention. The Contractor shall be responsible to the City for any and all acts or omissions of the Contractor, its employees and others engaged in the Work on behalf of the Contractor.



7.2.2 The Contractor shall give adequate attention to the faithful prosecution of the Work and the timely completion of this Contract, with authority to determine the manner and means of performing such Work, so long as such methods insure timely completion and proper performance.

7.2.3 The Contractor shall exercise all appropriate means and measures to insure a safe and secure jobsite in order to avoid and prevent injury, damage or loss to persons or property.

7.2.4 The City will not interfere with the Contractor's manner and means of performing the Work. However, the City's insistence on strict compliance with the Contract shall not be regarded as an interference with the Contractor's manner and means. In the event that any part of the Work is not in strict compliance with the Contract, the Contractor is and shall be estopped from claiming any interference by the City or Engineer with the Contractor's manner and means of performing that part of the Work.

### **7.3 WARRANTY**

7.3.1 The Contractor warrants to the City that all labor furnished to progress the Work under this Contract will be competent to perform the tasks undertaken, that the product of such labor will yield only first-class results, that materials and equipment furnished will be of good quality and new unless otherwise permitted by this Contract, and that the Work will be of good quality, free from faults and defects and in strict conformance with this Contract. All Work not conforming to these requirements may be considered defective. THE CONTRACTOR WARRANTS AND GUARANTIES THAT IT SHALL COMPLETE THE WORK AND ACHIEVE SUBSTANTIAL COMPLETION BY THE SCHEDULED COMPLETION DATE, STRICTLY IN ACCORDANCE WITH THIS CONTRACT. DEFECTIVE WORK OR MATERIALS SHALL BE FIXED, REPAIRED OR REPLACED FREE OF CHARGE OR COST TO THE CITY.

### **7.4 PERMITS; FEES; LICENSES**

The Contractor shall obtain and pay for all permits, fees and licenses necessary and ordinary for the Work. The Contractor shall comply with all lawful requirements applicable to the Work and shall give and maintain any and all notices required by applicable law pertaining to the Work.

### **7.5 SUPERVISION**

7.5.1 The Contractor shall employ and maintain at the Project site only competent supervisory personnel. Absent written instruction from the Contractor to the contrary, the superintendent shall be deemed the Contractor's authorized representative at the site and shall be authorized to receive and accept any and all communications from the City or the Engineer.

7.5.2 Key supervisory personnel assigned by the Contractor to this Project are as follows:

NAME	FUNCTION
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

So long as the individuals named above remain actively employed or retained by the Contractor, they shall perform the functions indicated next to their names unless the City agrees to the contrary in writing. In the event one or more

individuals not listed above subsequently assume one or more of those functions listed above, the Contractor shall be bound by the provisions of this Subparagraph 7.6.2 as though such individuals had been listed above.

## **7.6 WORK SCHEDULE**

7.6.1 At the pre-construction meeting, the Contractor shall submit to the City and the Engineer for their information, the Contractor's schedule for completing the Work (also referred to herein as the construction schedule). The Contractor's schedule shall be revised no less frequently than monthly (unless the parties otherwise agree in writing) and shall be revised to reflect conditions encountered from time to time and shall be related to the entire Project. Each such revision shall be furnished to the City and the Engineer.

7.6.2 The Contractor's schedule for completing the Work and any revised schedules, shall demonstrate achievement of substantial completion by the scheduled completion date. Failure by the Contractor to strictly comply with the provisions of this Paragraph 7.7 shall constitute a default and a material breach of this Contract.

## **7.7 ON-SITE DRAWINGS**

7.7.1 The Contractor shall continuously maintain at the site, for the benefit of the City and the Engineer, one record copy of this Contract marked to record on a current basis changes, selections and modifications made during construction. Additionally, the Contractor shall maintain at the site for the City and Engineer the approved Shop Drawings, Product Data, Samples and other similar required submittals. Upon final completion of the Work, all of these record documents shall be delivered to the City.

## **7.8 RECORD DRAWINGS/PLANS, AS-BUILT PLANS, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES**

7.8.1 The Contractor shall submit, with each Application for Payment, As-Built plans for any and each part or portion of the Project that varies from the Engineer's plans and specifications and the Contract Documents.

7.8.2 Shop Drawings, Product Data, Samples and other submittals from the Contractor do not constitute Contract Documents. Their purpose is merely to demonstrate the manner in which the Contractor intends to implement the Work in conformance with information received from the Contract Documents.

7.8.3 The Contractor shall not perform any portion of the Work requiring submittal and review of Shop Drawings, Product Data or Samples unless and until such submittal shall have been approved by the Engineer. Approval by the Engineer, however, shall not be evidence that Work installed pursuant thereto conforms to the requirements of this Contract.

## **7.9 CLEANING THE SITE AND THE PROJECT**

7.9.1 The Contractor shall keep the site reasonably clean during performance of the Work. The Contractor shall clean the site and the Project and remove all waste, rubbish, temporary structures, and other materials during construction and, upon completion of construction, shall clean the site and remove all such material together with all of the Contractor's property therefrom. Contractor shall dispose of all refuse at a landfill approved by the Texas Commission on Environmental Quality. The Contractor shall further restore all property damaged during the prosecution of the Work and shall leave the site in a clean and presentable condition. No additional payment shall be made by the City for this work, the compensation having been considered and included in the contract price.

## **7.10 ACCESS TO WORK AND INSPECTIONS**

7.10.1 The City and the Engineer shall have access to the Work at all times from commencement of the Work through final completion. The Contractor shall take whatever steps necessary to provide access when requested. When reasonably requested by the City or the Engineer, the Contractor shall perform or cause to be performed such testing as may be necessary or appropriate to insure suitability of the jobsite or the Work's compliance with the Contract requirements.

## **7.11 INDEMNITY AND DISCLAIMER**

7.11.1 CITY SHALL NOT BE LIABLE OR RESPONSIBLE FOR, AND SHALL BE INDEMNIFIED, DEFENDED, HELD HARMLESS AND RELEASED BY CONTRACTOR FROM AND AGAINST ANY AND ALL SUITS, ACTIONS, LOSSES, DAMAGES, CLAIMS, OR LIABILITY OF ANY CHARACTER, TYPE, OR DESCRIPTION, INCLUDING ALL EXPENSES OF LITIGATION, COURT COSTS, AND ATTORNEY'S FEES, FOR INJURY OR DEATH TO ANY PERSON, INJURY OR LOSS TO ANY PROPERTY, OR ECONOMIC LOSS, RECEIVED OR SUSTAINED BY ANY PERSON OR PERSONS, INCLUDING THE CONTRACTOR, OR PROPERTY, DIRECTLY OR INDIRECTLY ARISING OUT OF, OR OCCASIONED BY THE PERFORMANCE OF CONTRACTOR UNDER THIS CONTRACT, INCLUDING CLAIMS AND DAMAGES ARISING IN WHOLE OR IN PART FROM THE NEGLIGENCE OF CITY, WITHOUT WAIVING THE CITY'S GOVERNMENTAL, SOVEREIGN OR OTHER IMMUNITIES OR DEFENSES AVAILABLE TO THE CITY UNDER TEXAS LAW AND WITHOUT WAIVING ANY DEFENSES OF THE PARTIES UNDER TEXAS LAW. IT IS THE EXPRESS INTENT OF THE PARTIES TO THIS CONTRACT THAT THE INDEMNITY PROVIDED FOR HEREIN IS AN INDEMNITY EXTENDED BY CONTRACTOR TO INDEMNIFY AND PROTECT CITY FROM THE CONSEQUENCES OF THE CONTRACTOR'S AS WELL AS THE CITY'S NEGLIGENCE, WHETHER SUCH NEGLIGENCE IS THE SOLE OR PARTIAL CAUSE OF ANY SUCH INJURY, DEATH, OR DAMAGE.

The provisions of this indemnification are solely for the benefit of the parties hereto and not intended to create or grant any rights, contractual or otherwise, to any other person or entity.

7.11.2 The Contractor will secure and maintain contractual liability insurance to cover this indemnification agreement that will be primary and non-contributory as to any insurance maintained by the City for its own benefit, including self-insurance. In addition, Contractor shall obtain and file with City a standard form Certificate of Insurance evidencing the required coverage.

7.11.3 In claims against any person or entity indemnified under this Paragraph 7.12 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Paragraph 7.12 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

## **7.12 NONDISCRIMINATION**

7.12.1 The Contractor shall not discriminate in any way against any person, employee or job applicant on the basis of race, color, creed, national origin, religion, age, sex, or disability where reasonable accommodations can be effected to enable the person to perform the essential functions of the job. The Contractor shall further insure that the foregoing nondiscrimination requirement shall be made a part and requirement of each subcontract on this Project.

## **7.13 PREVAILING WAGE RATES**

7.13.1 The Contractor shall comply in all respects with all requirements imposed by any laws, ordinances or resolutions applicable to the Project with regard to the minimum prevailing wage rates for all classes of employees, laborers, subcontractors, mechanics, workmen and persons furnishing labor and services to the Project. The City has adopted a Prevailing Wage Rate Schedule, available to the Contractor by request (or attached to this contract as a part of the exhibits), which specifies the classes and wage rates to be paid to all persons. The Contractor shall pay not less than the minimum wage rates established thereby for each class, craft or type of labor, workman, or



mechanic employed in the execution of this Contract. The failure of the Contractor to comply with this requirement shall result in the forfeiture to the City of a sum of not less than Sixty Dollars (\$60.00) for each person per day, or portion thereof, that such person is paid less than the prevailing rate. Upon request by the City, Contractor shall make available for inspection and copying its books and records, including but not limited to its payroll records, account information and other documents as may be required by the City to insure compliance with this provision.

#### **7.14 JOB SITE SAFETY PRECAUTIONS**

7.14.1 The Contractor shall at all times exercise reasonable precautions for the safety of its employees, laborers, subcontractors, mechanics, workmen and others on and near the jobsite and shall comply with all laws, ordinances, regulations, and standards of federal, state and local safety laws and regulations. The Contractor shall provide such machinery guards, safe walk-ways, ladders, bridges, and other safety devices as may be necessary or appropriate to insure a safe and secure jobsite and shall require its subcontractors to comply with this requirement. The Contractor shall immediately comply with any and all safety requirements imposed by the Engineer during the progress of the Work.

#### **7.15 WARNING DEVICES AND BARRICADES**

7.15.1 The Contractor shall furnish and maintain such warning devices, barricades, lights, signs, pavement markings, and other devices as may be necessary or appropriate or required by the Engineer to protect persons or property in, near or adjacent to the jobsite. No separate compensation shall be paid to the Contractor for such measures. Where the Work is being conducted in, upon or near streets, alleys, sidewalks, or other rights-of-way, the Contractor shall insure the placement, maintenance and operation of any and all such warning devices as may be required by the City and shall do so until no longer required by the City. Such devices shall be in compliance with and conform to the manual and specifications for the uniform system of traffic control devices adopted by the Texas Department of Transportation.

#### **7.16 PROTECTION OF UTILITIES AND OTHER CONTRACTORS**

7.16.1 The Contractor shall use best efforts to leave undisturbed and uninterrupted all utilities and utility services provided to the jobsite or which presently exists at, above or beneath the location where the Work is to be performed. In the event that any utility or utility service is disturbed or damaged during the progress of the Work, the Contractor shall forthwith repair, remedy or restore the utility at Contractor's sole expense. The Contractor shall coordinate any utility conflicts with the owner of the utility and no extension of time will be requested or given if adequate coordination is not provided by Contractor.

7.16.2 The Contractor understands and acknowledges that other contractors of the City or of other entities may be present at the jobsite performing other work unrelated to the Project. The Contractor shall use best efforts to work around other contractors without impeding the work of others while still adhering to the scheduled completion date. In the event that the Contractor's work is or may be delayed by any other person, the Contractor shall immediately give notice thereof to the Engineer and shall request a written Change Order in accordance with the procedures set forth by this Contract. The Contractor's failure to provide such notice and to request such Change Order shall constitute a waiver of any and all claims associated therewith.

### **ARTICLE VIII**

#### **CONTRACT ADMINISTRATION**

##### **8.1 THE ENGINEER**

8.1.1 When used in this Contract the term "Engineer" does not necessarily denote a duly licensed, trained or certified engineer; as used herein, the term shall be used interchangeably and shall mean a designated Engineer, Engineer, or Contract Administrator (who may not be an architect or engineer) for the City, said person to be

designated or re-designated by the City prior to or at any time during the Work hereunder. The Engineer may be an employee of the City or may be retained by the City as an independent contractor but, in either event, the Engineer's duties and authority shall be as set forth hereinafter. The Contractor understands and agrees that it shall abide by the decisions and instructions of the Engineer notwithstanding the contractual relationship between the City and Engineer, the title of Contract Administrator, or the fact that the Engineer is an employee of the City.

In the event the City should find it necessary or convenient to replace the Engineer, the City shall retain a replacement Engineer and the status of the replacement Engineer shall be that of the former Engineer.

## **8.2 ENGINEER'S ADMINISTRATION**

8.2.1 The Engineer, unless otherwise directed by the City in writing, will perform those duties and discharge those responsibilities allocated to the Engineer as set forth in this Contract. The Engineer shall be the City's representative from the effective date of this Contract until final payment has been made.

8.2.2 The City and the Contractor shall communicate with each other in the first instance through the Engineer.

8.2.3 The Engineer shall be the initial interpreter of the requirements of the drawings and specifications and the judge of the performance thereunder by the Contractor. The Engineer shall render written or graphic interpretations necessary for the proper execution or progress of the Work with reasonable promptness on request of the Contractor.

8.2.4 The Engineer will review the Contractor's Applications for Payment and will certify to the City for payment to the Contractor, those amounts then due the Contractor as provided in this Contract.

8.2.5 The Engineer shall have authority to reject Work which is defective or does not conform to the requirements of this Contract. If the Engineer deems it necessary or advisable, the Engineer shall have authority to require additional inspection or testing of the Work for compliance with Contract requirements.

8.2.6 The Engineer will review and approve, or take other appropriate action as necessary, concerning the Contractor's submittals including Shop Drawings, Product Data and Samples. Such review, approval or other action shall be for the sole purpose of determining conformance with the design concept and information given through the Contract Documents.

8.2.7 The Engineer will prepare Change Orders and may authorize minor changes in the Work by Field Order as provided elsewhere herein.

8.2.8 The Engineer shall, upon written request from the Contractor, conduct inspections to determine the date of Substantial Completion and the date of final completion, will receive and forward to the City for the City's review and records, written warranties and related documents required by this Contract and will issue a final Certificate for Payment upon compliance with the requirements of this Contract.

8.2.9 The Engineer's decisions in matters relating to aesthetic effect shall be final if consistent with the intent of this Contract.

## **8.3 CLAIMS BY THE CONTRACTOR**

8.3.1 The Engineer shall determine all claims and matters in dispute between the Contractor and City with regard to the execution, progress, or sufficiency of the Work or the interpretation of the Contract Documents, including but not limited to the plans and specifications. Any dispute shall be submitted in writing to the Engineer within seven (7) days of the event or occurrence or the first appearance of the condition giving rise to the claim or dispute and the Engineer shall render a written decision within a reasonable time thereafter. The Engineer's decisions shall be final and binding on the parties. In the event that either party objects to the Engineer's determination as to any submitted dispute, that party shall submit a written objection to the Engineer and the opposing party within ten (10) days of receipt of the Engineer's written determination in order to preserve the objection. Failure to so object shall constitute a waiver of the objection for all purposes.

8.3.2 Pending final resolution of any claim of the Contractor, the Contractor shall diligently proceed with performance of this Contract and the City shall continue to make payments to the Contractor in accordance with this Contract.

8.3.3 CLAIMS FOR CONCEALED, LATENT OR UNKNOWN CONDITIONS - The Contractor expressly represents that it has been provided with an adequate opportunity to inspect the Project site and thoroughly review the Contract Documents and plans and specifications prior to submission of its bid and the City's acceptance of the bid. Subject to the conditions hereof, Contractor assumes full responsibility and risk for any concealed, latent or unknown condition which may affect the Work. No claims for extra work or additional compensation shall be made by Contractor in connection with concealed, latent or unknown conditions except as expressly provided herein. Should concealed, latent or unknown conditions encountered in the performance of the Work (a) below the surface of the ground or (b) in an existing structure be at variance with the conditions indicated by this Contract, or should unknown conditions of an unusual nature differing materially from those ordinarily encountered in the area and generally recognized as inherent in Work of the character provided for in this Contract, be encountered, the Contract Price shall be equitably adjusted by Change Order upon the written notice and claim by either party made within seven (7) days after the first observance of the condition. As a condition precedent to the City having any liability to the Contractor for concealed or unknown conditions, the Contractor must give the City and the Engineer written notice of, and an opportunity to observe, the condition prior to disturbing it. The failure by the Contractor to make the written notice and claim as provided in this Subparagraph shall constitute a waiver by the Contractor of any claim arising out of or relating to such concealed, latent or unknown condition and the Contractor thereby assumes all risks and additional costs associated therewith.

#### **8.4 EXTRA WORK**

8.4.1 The Contractor shall not claim, request or demand any sum from the City for Extra Work or for additional costs, and hereby waives all such claims, requests and demands and any right to assert same, unless the conditions of this subparagraph are strictly complied with. "Extra Work" is defined herein to mean any labor, service, materials, equipment, supplies or charges that are directly or indirectly related to the Work, the Project or the Project site, that is not necessarily or fairly required or implied by the Contract Documents.

8.4.2 The parties acknowledge and agree that there shall be no payment made by the City to the Contractor without a written agreement (either a separate contract or a written Change Order) signed by the parties. Should the Contractor perform Extra Work or be requested to perform Extra Work by the Engineer or City, it shall be the Contractor's obligation and duty to first apply for and obtain a written Change Order, approved by the Engineer and executed by the City. The Contractor's failure to obtain a written, signed Change Order prior to commencement of Extra Work shall constitute a complete and final waiver of any right for compensation for the Extra Work.

#### **8.5 CLAIMS FOR ADDITIONAL COSTS OR TIME; CONTRACT PRICE INCREASE**

8.5.1 If the Contractor wishes to make a claim for an increase in the Contract Price, as a condition precedent to any liability of the City therefor, the Contractor shall give the Engineer written notice of such claim within seven (7) days after the occurrence of the event, or the first appearance of the condition, giving rise to such claim. Such notice shall be given by the Contractor before proceeding to execute any additional or changed Work. The failure by the Contractor to give such notice and to give such notice prior to executing the Work shall constitute a waiver of any right to or claim for additional compensation.

8.5.2 In connection with any claim by the Contractor against the City for compensation in excess of the Contract Price, any liability of the City for the Contractor's costs shall be strictly limited to direct costs incurred by the Contractor and shall in no event include indirect costs or consequential damages of the Contractor. The City shall not be liable to the Contractor for claims of third parties, including Subcontractors. The City shall not be liable to the Contractor for any claims based upon delay to the Contractor for any reason whatsoever including any act or neglect on the part of the City.

8.5.3 If the Contractor is delayed in progressing any task which at the time of the delay is then critical or which during the delay becomes critical, as the sole result of any act or neglect to act by the City or someone acting in the City's behalf, or by changes ordered in the Work, unusual delay in transportation, unusually adverse weather

conditions not reasonably anticipated, fire or any causes beyond the Contractor's control, then the date for achieving Substantial Completion of the Work shall be extended upon the written notice and claim of the Contractor to the City and the Engineer, for such reasonable time as the Engineer may determine. Any notice and claim for an extension of time by the Contractor shall be made not more than seven (7) days after the occurrence of the event or the first appearance of the condition giving rise to the claim and shall set forth in detail the Contractor's basis for requiring additional time in which to complete the Project. In the event the delay to the Contractor is a continuing one, only one notice and claim for additional time shall be necessary. If the Contractor fails to make such claim as required in this Subparagraph, any claim for an extension of time shall be waived. The procedures and remedies provided by this provision shall be the sole remedy of Contractor and Contractor shall not assert nor be entitled to any additional delays or damages associated therewith.

## **8.6 FIELD ORDERS**

8.6.1 The Engineer shall have authority to order minor changes in the Work not involving a change in the Contract Price or in Contract Time and not inconsistent with the intent of the Contract. Such changes shall be effected by Field Order and shall be binding upon the Contractor. The Contractor shall carry out such Field Orders promptly.

## **8.7 MEDIATION**

8.7.1 In the event that a dispute arises under the terms of this Contract, following an adverse determination by the Engineer and proper preservation of the issue as required herein, the parties agree to submit to mediation. In such event, the parties shall agree to a designated person to serve as mediator and each party shall be responsible for payment of one-half of the total mediation fees. The parties shall submit the dispute to mediation as soon as practical and in no event later than one (1) year after the Engineer's written decision on the matter. At least one designated representative of each party must attend and participate in good faith in an effort to resolve the matters in dispute.

8.7.2 In no event shall the foregoing provision justify or authorize any delay in the progress of the Work; the parties shall abide by the decision of the Engineer in accomplishing the timely completion of the Project.

# **ARTICLE IX**

## **SUBCONTRACTORS**

### **9.1 DEFINITION**

9.1.1 A Subcontractor is a person or entity that has a direct contract with the Contractor to perform a portion of the Work. No Subcontractor shall be in privity with the City.

### **9.2 AWARD OF SUBCONTRACTS**

9.2.1 Upon execution of the Contract, the Contractor shall furnish the City, in writing, the names of persons or entities proposed by the Contractor to act as a Subcontractor on the Project. The City shall promptly reply to the Contractor, in writing, stating any objections the City may have to such proposed Subcontractor. The Contractor shall not enter into a subcontract with a proposed Subcontractor with reference to whom the City has made timely objection. The Contractor shall not be required to subcontract with any party to whom the Contractor has objection.

9.2.2 All subcontracts shall afford the Contractor rights against the Subcontractor which correspond to those rights afforded to the City against the Contractor herein, including those rights afforded to the City by Subparagraph 12.2.1 below. All subcontracts shall incorporate by reference the provisions hereof and shall provide that no claims, causes or demands shall be made by any Subcontractor against the City.

9.2.3 The Contractor shall indemnify, defend and hold harmless the City from and against any and all claims, demands, causes of action, damage, and liability asserted or made against the City by or on behalf of any Subcontractor.

## **ARTICLE X**

### **CHANGES IN THE WORK**

#### **10.1 CHANGES PERMITTED**

10.1.1 Changes in the Work within the general scope of this Contract, consisting of additions, deletions, revisions, or any combination thereof, may be ordered without invalidating this Contract, by Change Order or by Field Order.

10.1.2 Changes in the Work shall be performed under applicable provisions of this Contract and the Contractor shall proceed promptly with such changes.

#### **10.2 CHANGE ORDER DEFINED**

10.2.1 Change Order shall mean a written order to the Contractor executed by the City and the Engineer, issued after execution of this Contract, authorizing and directing a change in the Work or an adjustment in the Contract Price or the Contract Time, or any combination thereof. The Contract Price and the Contract Time may be changed only by written Change Order.

#### **10.3 CHANGES IN THE CONTRACT PRICE**

10.3.1 Any change in the Contract Price resulting from a Change Order shall be determined as follows: (a) by mutual agreement between the City and the Contractor as evidenced by (1) the change in the Contract Price being set forth in the Change Order, (2) such change in the Contract Price, together with any conditions or requirements related thereto, being initialed by both parties, and (3) the Contractor's execution of the Change Order, or (b) if no mutual agreement occurs between the City and the Contractor, then, as provided in Subparagraph 10.3.2 below.

10.3.2 If no mutual agreement occurs between the City and the Contractor as contemplated in Subparagraph 10.3.1 above, the change in the Contract Price, if any, shall then be determined by the Engineer on the basis of the reasonable expenditures or savings of those performing, deleting or revising the Work attributable to the change, including, in the case of an increase or decrease in the Contract Price, a reasonable allowance for direct job site overhead and profit. In such case, the Contractor shall present, in such form and with such content as the City or the Engineer require, an itemized accounting of such expenditures or savings, plus appropriate supporting data for inclusion in a Change Order. Reasonable expenditures or savings shall be limited to the following: reasonable costs of materials, supplies, or equipment including delivery costs, reasonable costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance, reasonable rental costs of machinery and equipment exclusive of hand tools whether rented from the Contractor or others, reasonable costs of premiums for all bonds and insurance, permit fees, and sales, use or other taxes related to the Work, and reasonable cost of direct supervision and jobsite field office overhead directly attributable to the change. In no event shall any expenditure or savings associated with the Contractor's home office or other non-jobsite overhead expense be included in any change in the Contract Price. Pending final determination of reasonable expenditures or savings to the City, payments on account shall be made to the Contractor on the Engineer's Certificate for Payment.

10.3.3 If unit prices are provided in the Contract, and if the quantities contemplated are so changed in a proposed Change Order that application of such unit prices to the quantities of Work proposed will cause substantial inequity to the City or to the Contractor, the applicable unit prices shall be equitably adjusted.



#### **10.4 MINOR CHANGES**

10.4.1 The Engineer shall have authority to order minor changes in the Work not involving a change in the Contract Price or an extension of the Contract Time and not inconsistent with the intent of this Contract. Such minor changes shall be made by written Field Order, and shall be binding upon the City and the Contractor. The Contractor shall promptly carry out such written Field Orders.

#### **10.5 EFFECT OF EXECUTED CHANGE ORDER**

10.5.1 The execution of a Change Order by the Contractor shall constitute conclusive evidence of the Contractor's agreement to the ordered changes in the Work, this Contract as thus amended, the Contract Price and the Contract Time. The Contractor, by executing the Change Order, waives and forever releases any claim against the City for additional time or compensation for matters relating to or arising out of or resulting from the Work included within or affected by the executed Change Order.

#### **10.6 NOTICE TO SURETY; CONSENT**

10.6.1 The Contractor shall notify and obtain the consent and approval of the Contractor's surety with reference to all Change Orders if such notice, consent or approval are required by the Contractor's surety or by law. The Contractor's execution of the Change Order shall constitute the Contractor's warranty to the City that the surety has been notified of and consents to, such Change Order and the surety shall be conclusively deemed to have been notified of such Change Order and to have expressly consented thereto.

### **ARTICLE XI**

#### **UNCOVERING AND CORRECTING WORK**

##### **11.1 UNCOVERING WORK**

11.1.1 If any of the Work is covered contrary to the Engineer's request or to any provisions of this Contract, it shall, if required by the Engineer or the City, be uncovered for the Engineer's inspection and shall be properly replaced at the Contractor's expense without change in the Contract Time or Contract Price.

11.1.2 If any of the Work is covered in a manner consistent with the Engineer's request or the provisions of this Contract, it shall, if required by the Engineer or City, be uncovered for the Engineer's inspection. If such Work conforms strictly to this Contract, costs of uncovering and proper replacement shall by Change Order be charged to the City. If such Work does not strictly conform to this Contract, the Contractor shall pay the costs of uncovering and proper replacement.

##### **11.2 CORRECTING WORK**

11.2.1 The Contractor shall immediately proceed to correct Work rejected by the Engineer as defective or failing to conform to this Contract. The Contractor shall pay all costs and expenses associated with correcting such rejected Work, including any additional testing and inspections, and reimbursement to the City for the Engineer's services and expenses made necessary thereby.

11.2.2 If within four (4) years after Substantial Completion of the Work any of the Work is found to be defective or not in accordance with this Contract, the Contractor shall correct it promptly upon receipt of written notice from the City. This obligation shall survive final payment by the City and termination of this Contract. With respect to Work first performed and completed after Substantial Completion, this four year obligation to specifically correct defective and nonconforming Work shall be extended by the period of time which elapses between Substantial Completion and completion of the subject Work.

11.2.3 Nothing contained in this Paragraph 11.2 shall establish any period of limitation with respect to other obligations which the Contractor has under this Contract. Establishment of the four year time period in Subparagraph 11.2.2 relates only to the duty of the Contractor to specifically correct the Work.

### **11.3 CITY MAY ACCEPT DEFECTIVE OR NONCONFORMING WORK**

11.3.1 If the City chooses to accept defective or nonconforming Work, the City may do so at its sole discretion. In such event, the Contract Price shall be reduced by the greater of (a) the reasonable cost of removing and correcting the defective or nonconforming Work, and (b) the difference between the fair market value of the Project as constructed and the fair market value of the Project had it not been constructed in such a manner as to include defective or nonconforming Work. If the remaining portion of the unpaid Contract Price, if any, is insufficient to compensate the City for its acceptance of defective or nonconforming Work, the Contractor shall, upon written demand from the City, pay the City such remaining compensation for accepting defective or nonconforming Work.

## **ARTICLE XII**

### **CONTRACT DEFAULT AND TERMINATION**

#### **12.1 TERMINATION BY THE CONTRACTOR**

12.1.1 If the Work is stopped for a period of ninety (90) days by an order of any court or other public authority, or as a result of an act of the Government, through no fault of the Contractor or any person or entity working directly or indirectly for the Contractor, the Contractor may, upon fifteen (15) days' written notice to the City and the Engineer, terminate performance under this Contract and recover from the City payment for the actual reasonable expenditures of the Contractor (as limited in Subparagraph 10.3.2 above) for all Work executed and for materials, equipment, tools, construction equipment and machinery actually purchased or rented solely for the Work, less any salvage value of any such items.

12.1.2 If the City shall persistently or repeatedly fail to perform any material obligation to the Contractor for a period of fifteen (15) days after receiving written notice from the Contractor of its intent to terminate hereunder, the City shall have fifteen (15) days to remedy its failure and if not so cured, the Contractor may terminate performance under this Contract by written notice to the Engineer and the City. In such event, the Contractor shall be entitled to recover from the City as though the City had terminated the Contractor's performance under this Contract for convenience pursuant to Subparagraph 12.2.1 hereunder.

#### **12.2 TERMINATION BY THE CITY**

##### **12.2.1 FOR CONVENIENCE**

12.2.1.1 The City may for any reason whatsoever terminate performance under this Contract by the Contractor for convenience. The City shall give written notice of such termination to the Contractor specifying when termination becomes effective.

12.2.1.2 The Contractor shall incur no further obligations in connection with the Work and the Contractor shall stop Work when such termination becomes effective. The Contractor shall also terminate outstanding orders and subcontracts. The Contractor shall settle the liabilities and claims arising out of the termination of subcontracts and orders. The City may direct the Contractor to assign the Contractor's right, title and interest under terminated orders or subcontracts to the City or its designee.

12.2.1.3 The Contractor shall transfer title and deliver to the City such completed or partially completed Work and materials, equipment, parts, fixtures, information and Contract rights as the Contractor has.

- 12.2.1.4 (a) The Contractor shall submit a termination claim to the City and the Engineer specifying the amounts due because of the termination for convenience together with costs, pricing or other data required by the Engineer. If the Contractor fails to file a termination claim within one (1) year from the effective date of termination, the City shall pay the Contractor, an amount derived in accordance with subparagraph (c) below.
- (b) The City and the Contractor may agree to the compensation, if any, due to the Contractor hereunder.
- (c) Absent agreement to the amount due to the Contractor, the City shall pay the Contractor the following amounts:
- (i) Contract prices for labor, materials, equipment and other services accepted under this Contract;
- (ii) Reasonable costs incurred in preparing to perform and in performing the terminated portion of the Work, and in terminating the Contractor's performance, plus a fair and reasonable allowance for overhead and profit thereon (such profit shall not include anticipated profit or consequential damages), provided however, that if it appears that the Contractor would have not profited or would have sustained a loss if the entire Contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss, if any;
- (iii) Reasonable costs of settling and paying claims arising out of the termination of subcontracts or orders pursuant to Subparagraph 12.2.1.2 of this Paragraph. These costs shall not include amounts paid in accordance with other provisions hereof.

12.2.1.5 The total sum to be paid the Contractor under this Subparagraph 12.2.1 shall not exceed the total Contract Price, as properly by amounts withheld by the City and reduced by the amount of payments otherwise made, and shall in no event include duplication of payment.

## 12.2.2 FOR CAUSE

12.2.2.1 The following constitute grounds for termination of this Contract by the City:

- (a) the Contractor's failure or refusal to prosecute the Work in a timely manner;
- (b) The Contractor abandons the jobsite and fails to resume work within five (5) days of written notice thereof by the City;
- (c) the Contractor fails to meet milestones or comply with approved construction schedules;
- (d) the Contractor fails to grant or allow access to the jobsite by the City or Engineer;
- (e) the Contractor fails to supply enough properly skilled workers, supervisory personnel or proper equipment or materials;
- (f) the Contractor fails to make prompt payment to Subcontractors or for materials or labor;
- (g) the Contractor persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction; or,
- (h) the Contractor is otherwise guilty of a violation of a material provision of this Contract.

In the event of the occurrence of any one or more of the above events, the City may by written notice to the Contractor, without prejudice to any other right or remedy, terminate the employment of the Contractor, exclude the Contractor from the job site, and take possession of the site and of all materials, equipment, tools, construction



equipment and machinery thereon owned by the Contractor and may finish the Work by whatever methods it may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finished.

12.2.2.2 If the unpaid balance of the Contract Price does not exceed the cost of finishing the work, including compensation for the Engineer's additional services and expenses made necessary thereby, such difference shall be paid by the Contractor to the City. This obligation for payment shall survive the termination of the Contract.

12.2.2.3 In the event the employment of the Contractor is terminated by the City for cause pursuant to Subparagraph 12.2.2 and it is subsequently determined by a Court of competent jurisdiction that such termination was without cause, such termination shall thereupon be deemed a Termination for Convenience under Subparagraph 12.2.1 and the provisions of Subparagraph 12.2.1 shall apply.

### **12.3 USE OF THIRD-PARTY OVERSIGHT OR CONSTRUCTION MANAGER**

12.3.1 Should the City allow the Contractor to continue its performance of Work notwithstanding an event of default specified in Subparagraph 12.2.2.1, or should there be an imminent potential of default, the City, at its sole option and within its sole discretion, may retain a third-party construction manager to document the events of default and oversee further progress of the Work. The use of a third-party construction manager shall not prevent the City from declaring the Contractor to be in default and the City may, at its sole option and within its sole discretion, terminate this Contract at any time. Should the City retain a third-party construction manager, the costs thereof shall be withheld from any amounts due Contractor upon termination. The City's exercise of this option shall be without prejudice to any other right or remedy available to the City by law or under this Contract.

## **ARTICLE XIII**

### **INSURANCE**

#### **13.1 CONTRACTOR SHALL MAINTAIN INSURANCE**

13.1.1 The Contractor at its own expense shall purchase, maintain and keep in force during the life of this contract, adequate insurance that will protect the Contractor and/or any Additional Insured from claims which may arise out of or result from operations under this Contract. The insurance required shall provide adequate protections from all claims, whether such operations be by the Contractor or by any Additional Insured or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone whose acts of any of them may be liable and from any special hazards, such as blasting, which may be encountered in the performance of this contract in the amounts as shown below in Paragraph 13.2.1.

13.1.2 The Contractor shall not commence work on any Contract in the City until the Contractor has obtained all the insurance required under this paragraph and such insurance has been approved by the City.

#### **13.2 TYPES AND AMOUNTS OF CONTRACTOR'S INSURANCE**

13.2.1. The Contractor shall furnish and maintain during the life of the contract adequate Worker's Compensation and Commercial General Liability (Public) Insurance in such amounts as follows:

<b><u>Type of Insurance</u></b>	<b><u>Amount</u></b>
Worker's Compensation	As set forth in the Worker's Compensation Act.
Commercial General	\$1,000,000 Each Accident/Occurrence.
Liability (Public)	\$1,000,000 Aggregate \$1,000,000 Products &

	Completed Operations Aggregate.
City's Protective Liability Insurance	\$600,000 per occurrence \$1,000,000 aggregate
Excess/Umbrella Liability	\$1,000,000 per occurrence w/drop down coverage
Endorsement CG 2503	Amendment Aggregate Limit of Insurance per Project or City's and Contractor's Protective Liability Insurance for the Project.
Automobile Liability	\$500,000 Combined single limit per occurrence.

### **13.3 ADDITIONAL INSURED**

13.3.1 The City and the Engineer shall be named as an additional insured on the Commercial General Liability (Public), City's Protective Liability, and Excess/Umbrella Liability Insurance Policies furnished by the Contractor.

### **13.4 WRITTEN NOTIFICATION**

13.4.1 Each insurance policy shall contain a provision requiring that thirty (30) days prior to expiration, cancellation, non-renewal or any material change in coverage, a notice there of shall be given by certified mail to the City of Lucas, Attention: Director of Public Works, 665 Country Club Road, Lucas, TX 75002-7561.

### **13.5 PREMIUMS AND ASSESSMENTS; SUBROGATION**

13.5.1 Companies issuing the insurance policies shall have no recourse against the City for payment of any premiums or assessments for any deductibles which are at the sole responsibility and risk of the Contractor. Insurance Companies shall have no right of subrogation against the City or the Engineer.

### **13.6 CERTIFICATE OF INSURANCE**

13.6.1 Proof that the insurance is in force shall be furnished to the City on Standard Certificate of Insurance Forms. In the event any insurance policy shown on the Certificate of Insurance has an expiration date that is prior to the completion and final acceptance of the project by the City, the contractor shall furnish the City proof of identical continued coverage no later than thirty (30) days prior to the expiration date shown on the Certificate of Insurance.

### **13.7 PRIMARY COVERAGE**

13.7.1 The coverages provided herein shall be primary and noncontributory with any other insurance maintained by the City, for its benefit, including self-insurance.

### **13.8 WORKER'S COMPENSATION INSURANCE COVERAGE**

13.8.1 The Contractor shall:

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

- (2) provide a certificate of coverage showing workers' compensation coverage to the governmental entity prior to beginning work on the project;
- (3) provide the governmental entity prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the contractor's current certificate of coverage ends during the duration of the project;
- (4) obtain from each person providing services on a project, and provide to the governmental entity:
  - (A) a certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and
  - (B) no later than seven 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;
- (5) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;
- (6) notify the governmental entity in writing by certified mail or personal delivery, within 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;
- (7) post a notice on each project site informing all persons providing services on the project that they are required to be covered, and stating how a person may verify current coverage and report failure to provide coverage. This notice shall comply with the requirements established by the Division of Workers Compensation of the Texas Department of Insurance, or its successor agency.

and

- (8) contractually require each person with whom it contracts to provide services on a project, to:
  - (A) provide coverage based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements for all of its employees providing services on the project, for the duration of the project;
  - (B) provide a certificate of coverage to the contractor prior to that person beginning work on the project;
  - (C) 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;
  - (D) obtain from each other person with whom it contracts, and provide to the Contractor:
    - (i) a certificate of coverage, prior to the other person beginning work on the project; and
    - (ii) prior to the end of the coverage period, a new certificate of coverage showing extension of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
  - (E) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

- (F) notify the governmental entity 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
- (G) contractually require each other person with whom it contracts, to perform as required by subparagraphs (A) - (G) of this paragraph, with the certificate of coverage to be provided to the person for whom they are providing services.

## **ARTICLE XIV**

### **MISCELLANEOUS**

#### **14.1 LAWS AND ORDINANCES**

14.1.1 The Contractor shall at all times and in all respects observe and comply with all federal, state and local laws, ordinances, and regulations applicable to the Project and Work. The Contractor shall further insure that all Subcontractors observe and comply with said laws, ordinances and regulations.

#### **14.2 GOVERNING LAW**

14.2.1 The Contract shall be governed by the laws of the State of Texas. Exclusive venue for any causes of action arising under the terms or provisions of this Contract or the Work to be performed hereunder shall be in the state courts of Collin County, Texas.

#### **14.3 SUCCESSORS AND ASSIGNS**

14.3.1 The City and Contractor bind themselves, their successors, assigns and legal representatives to the other party hereto and to successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in this Contract. The Contractor shall not assign this Contract without written consent of the City.

#### **14.4 SURETY BONDS**

14.4.1 The Contractor shall furnish separate performance and payment bonds to the City, according to the requirements set out in the bid documents and state statutes to guaranty full and faithful performance of the Contract by the Contractor and the full and final payment of all persons supplying labor or materials to the Project. Each bond required by the bid documents or state statute shall set forth a penal sum in an amount not less than the full Contract Price. Each bond furnished by the Contractor shall incorporate by reference the terms of this Contract as fully as though they were set forth verbatim in such bonds. In the event the Contract Price is adjusted by Change Order executed by the Contractor, the penal sum of both the performance bond and the payment bond shall be deemed increased by like amount. The performance and payment bonds furnished by the Contractor shall be in form suitable to the City and shall be executed by a surety, or sureties, reasonably suitable to the City and authorized to do business in the State of Texas.

14.4.2 If the Contract Price exceeds the sum of \$25,000.00, the Contractor, upon execution of the Contract and prior to commencement of the Work, shall furnish to the City a two-year maintenance bond in the amount of one hundred percent (100%) of the Contract Price covering the guaranty and maintenance prescribed herein, written by an approved surety authorized and duly licensed to conduct business in the State of Texas. The cost of said maintenance bond shall be included in the Contractor's unit bid prices and shall be paid by the Contractor.

#### **14.5 FORCE MAJEURE**

14.5.1 As used herein, "force majeure" means an incident, situation, or act of a third party that is beyond a party's reasonable control such as an act of God, an act of the public enemy, strikes or other labor disturbances (other than strikes within such party's own labor force), hurricanes, earthquakes, fires, floods, epidemics, embargoes, war, and riots. The Contractor will not be liable or responsible for its failure to perform any obligation under this Contract because of an event of Force Majeure, provided, however, that the Contractor submits notice thereof to the City and Engineer within seven (7) days of such an event, obtains a written Change Order, signed by all parties, that allows an extension of the scheduled completion date, and identifies the specific causes and number of days in the Statement of Delay submitted with the next ensuing Application for Payment. Notwithstanding, if the Contractor's failure to perform continues for more than twenty (20) calendar days, the City may at its option terminate this Agreement immediately and pursue such rights and remedies as may be allowed under Subparagraph 12.2.2 of this Contract.

#### **14.6 IMMUNITIES; DEFENSES**

14.6.1 Nothing in this Contract shall be deemed to waive any immunity, sovereign, governmental, official, qualified or otherwise, from liability or suit, which the City may have or assert, except as may be provided by law, all such immunities being hereby expressly retained.

#### **14.7 NO RIGHTS IN THIRD PARTIES**

14.7.1 The indemnification provisions of this Contract and the rights and remedies afforded herein are solely for the benefit of the parties to this Contract. Nothing in this Contract is intended nor shall be construed to grant, create or confer any right, benefit, interest or cause of action in any person not a party to this Contract, or to the public in general.

#### **14.8 SEVERABILITY**

14.8.1 The provisions of this Contract are herein declared to be severable; in the event that any term, provision or part hereof is determined to be invalid, void or unenforceable, such determination shall not affect the validity or enforceability of the remaining terms, provisions and parts, and this Contract shall be read as if the invalid, void or unenforceable portion had not been included herein.

#### **14.9 AMENDMENTS; NO WAIVER**

14.9.1 This Contract may be amended by the parties only by a written agreement duly executed by both parties. The failure of the City to object to any nonperformance or nonconforming work or to enforce any provision hereof shall in no event be regarded as or construed to be a waiver, release or modification of any term or provision in this Contract, nor shall such failure to object or enforce estop the City from insisting on strict compliance with this Contract or from recovering damages, costs or expenses arising as a result of such nonperformance or nonconforming work.

#### **14.10 NOTICES**

14.10.1 All notices required by this Contract shall be in writing and presumed received when deposited in the mail properly addressed to the other party or Engineer at the address set forth herein or set forth in a written designation of change of address delivered to all parties and the Engineer.

**GEOTECHNICAL ENGINEERING REPORT  
PROPOSED BLONDY JHUNE ROAD  
BRIDGES & PAVEMENT  
LUCAS, TEXAS**

**Prepared for:**  
**METROPOLITAN INFRASTRUCTURE, PLLC**  
**Dallas, Texas**

**EWI Report No. MI153492**  
**June 2015**



**Ellerbee-Walczak, Inc.**  
GEOTECHNICAL ENGINEERING &  
CONSTRUCTION MATERIALS TESTING SERVICES

June 1, 2015

Metropolitan Infrastructure, PLLC  
9601 White Rock Trail, Suite 204  
Dallas, Texas 75238

Attn: Mr. Louis Frisbie

Re: Geotechnical Engineering Report  
Proposed Blondy Jhune Road Bridges & Pavement  
Lucas, Texas  
EWL Report No. MI153492

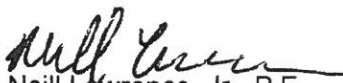
Gentlemen:

Ellerbee-Walczak Inc. (EWI) has completed its Geotechnical Engineering Report at the above referenced location. The results are presented in the attached report.

Please do not hesitate to contact us if you have any questions regarding the information in this report or if we can be of any additional assistance.

It has been a pleasure providing geotechnical services for this project.

Sincerely,  
**Ellerbee-Walczak, Inc.**  
TBPE Firm No. F-4610

  
T. Neill Lawrence, Jr., P.E.  
Manager Engineering





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**GEOTECHNICAL ENGINEERING REPORT  
PROPOSED BLONDY JHUNE ROAD  
BRIDGES & PAVEMENT  
LUCAS, TEXAS**

**1.0 SITE & PROJECT INFORMATION**

The project sites are located on East and West Blondy Jhune Road and west of N. Winningkoff Road in the City of Lucas, Collin County, Texas. Proposed construction consists of two bridges and new roadway sections. We assume maximum column loads for the bridge structure will be on the order of 400 kips, or less.

**2.0 SCOPE OF SERVICES**

The purpose of our geotechnical services for this site were to:

- Evaluate the subsurface conditions encountered in the borings.
- Evaluate the pertinent engineering properties of the recovered samples.
- Provide recommendations concerning suitable types of foundation for the bridge structures. Provide recommendations for earthwork, pavement and site grading.

**3.0 FIELD OPERATIONS**

The subsurface conditions of the site were evaluated by performing four bridge borings and two roadway borings which were drilled on April 9, 2015 at the locations directed by the client. The approximate boring locations are provided on the Plan of Borings (Figure 1) in the Appendix. The results of the field exploration program are presented on the Boring Logs (Figures 2 through 7) in the Appendix. A Soil Classification Chart containing the keys to symbols and the description of terms used on the boring logs is presented on Figure 8.

A truck-mounted drilling rig with continuous flight augers was used to advance the borings. Soils were sampled using steel tubes and during performance of standard penetration tests. The samples were extruded in the field, logged, sealed, and packaged to preserve their in-situ moisture content and reduce disturbance during transportation to the laboratory. The load carrying capacity of the limestone encountered in the bridge borings was evaluated in the field by performance of the Texas Department of Transportation's (TxDOT) Cone Penetration Test. Drilling and sampling were performed in general accordance with applicable ASTM and TxDOT procedures.

#### **4.0 LABORATORY TESTING**

The Boring Logs and samples were reviewed by a geotechnical engineer who assigned soil samples for testing. Tests were performed in the laboratory by technicians working under the direction of the engineer. Testing was performed in general accordance with applicable ASTM procedures.

Liquid and Plastic Limit tests were performed on samples of the cohesive soils. These tests were used in conjunction with moisture content tests for classification and estimating their volume change potential. Absorption swell tests were performed on selected samples of the cohesive materials to quantitatively evaluate volume change potential at the in-situ moisture levels. Hand penetrometer and unconfined compression tests were performed on samples of cohesive soils to evaluate consistency and strength. Soluble sulfate tests were performed on several near surface samples.

The results of the laboratory tests are presented on the Boring Logs in the Appendix. Results of the swell tests are presented below in Table 1.

**TABLE 1 - SUMMARY OF SWELL TESTS**

<b>Boring</b>	<b>Depth (feet)</b>	<b>LL</b>	<b>PI</b>	<b>Initial Moisture (%)</b>	<b>Final Moisture (%)</b>	<b>Surcharge (psf)</b>	<b>Swell (%)</b>
1	4 - 6	42	22	12.5	25.1	625	0
2	6 - 8	38	19	12.3	20.2	875	2.2
5	2 - 4	39	20	13.1	20.0	375	0

#### **5.0 SITE SUBSURFACE CONDITIONS**

The conditions encountered at the boring locations are depicted on the Boring Logs in the Appendix. Descriptions of each stratum with its approximated depth and thickness are provided. The depths reported on the logs refer to the depth from the existing ground surface at the time the borings were performed. A brief description of the stratigraphy indicated by the borings is presented below.

About 2 to 3 inches of HMAC pavement above about 1 to 6 inches of base material was observed at the surface of Borings 1 through 6. Fill soils beneath the pavement consisting of dark brown, brown, brownish gray, gray and tan sandy clays with limestone fragments were encountered beneath the pavement system and extended to depths of 9, 8, 2, 2, 2 and 2 feet existing grades in Borings 1 through 6, respectively. Samples of the sandy clay fill soils had Liquid Limits (LL) of 38 and 42 percent and Plasticity Indices (PI) of 19 and 22. The sandy clay fill soils classified as CL according to the Unified Soil Classification System (USCS) and were very stiff to hard in consistency.

Dark brown, brown, gray, grayish tan and reddish tan sandy clays and clays were next encountered in Borings 1 through 6, and extended to depths of about 14½, 10, 19 and 13½ feet below existing grades in Borings 1, 2, 5 and 6, respectively, and to termination depths of about 10 feet in Borings 3 and 4. They had LL's of 36 to 51 percent, PI's of 19 to 31, classified as CL and to a lesser extent CH according to the USCS and were stiff to hard in consistency.

Tan and some gray fractured limestone with clay seams was next encountered in Borings 2 and 5, and extended to depths of about 12 feet and 22 feet, respectively. Gray limestone was next encountered in Borings 1, 2, 5 and 6, and extended to termination depths of about 25 and 35 feet. The upper several feet of the gray limestone was fractured in Boring 1.

The soil overburden encountered in the borings above the limestone is considered to be moderately active to active with respect to moisture-induced volume changes.

## **6.0 GROUNDWATER**

The borings were advanced in the dry using auger-drilling techniques. This process allows relatively accurate short-term observations of groundwater while drilling. Seepage was observed in Boring 5 while drilling at a depth of about 20 feet below existing grade. A water level of about 27 feet below existing grade was measured in Boring 5 after completion of drilling. Seepage was not encountered in Borings 1, 2, 3, 4 and 6 at the time of drilling and they remained dry after completion of drilling.

Groundwater levels will seasonally fluctuate due to variations in the amount of precipitation, evaporation and surface water runoff. Seepage may occur above and within the limestone particularly during very wet seasonal/annual cycles. In addition, groundwater conditions may change due to landscape irrigation, tree root demand and from leaking buried utilities.

## **7.0 ANALYSIS AND RECOMMENDATIONS**

### **7.1 Bridge Foundation System**

We understand drilled shafts will support the bridge structure. Design parameters are discussed below.

#### **7.1.1 Straight Drilled Shafts**

Straight drilled shafts penetrating the gray limestone will use a combination of end bearing and skin friction in developing their load carrying capacity. Based upon Figures 5-3 and 5-4 of the TxDOT Geotechnical Manual indicates an allowable end bearing pressure of 64,000 pounds per square feet (PSF) and an allowable skin friction value of 4,500 PSF (with recommended 0.7 factor) for compressive and tensile loads in the gray limestone. These values contain a safety factor recommended by TxDOT. If drilled shafts terminate in the harder (un-fractured) gray limestone. Skin friction is applicable for that portion of the shaft embedded in the limestone below any temporary casing.

A minimum penetration of 3 feet into the bearing stratum is recommended to achieve the allowable end bearing value. Deeper penetrations may be required to develop additional skin friction and/or uplift resistance. We recommend that the estimated initial point when calculating the point of fixity for design of the bent/column should be about 1 foot beneath the top of the gray limestone.

In order to develop full load carrying capacity in skin friction, adjacent shafts should have a minimum center to center spacing of 2.5 times the diameter of the larger shaft. Closer spacing may require some reductions in skin friction and/or changes in installation sequences. Closely spaced shafts should be examined on a case by case basis. As a general guide, the design skin friction will vary linearly from the full value at a spacing of 2.5 diameters to 50 percent of the design value at 1.0 diameter.

Settlements of properly constructed drilled shafts bearing in the hard limestone are expected to be negligible.

##### **7.1.1.1 Lateral Capacity**

An allowable lateral resistance of 500 PSF is recommended in the soils overlying the gray limestone. The top 5 feet of soil should be neglected. An allowable lateral resistance of 5,000 PSF is recommended in the gray limestone. This lateral resistance is considered to act on the projected diameter of the shaft.

#### **7.1.1.2 Soil Induced Uplift Loads**

The shafts will be subject to some uplift as a result of heave in the overlying soils. The magnitude of these loads varies with the shaft diameter, soil parameters, and particularly the in-situ moisture levels at the time of construction. They can be approximated at this site by assuming a uniform uplift of 1,500 PSF over the shaft perimeter for a depth of 10 feet. The shafts must contain sufficient continuous vertical reinforcing to resist the net tensile load.

#### **7.1.1.3 Drilled Shaft Construction Considerations**

Excavations for the shafts should be maintained in the dry. Concreting should closely follow excavation to reduce potential caving and/or seepage problems. Close coordination of excavation and concreting will be required due to groundwater seepage.

Seepage was encountered in Boring 5 at the time of drilling and casing may be required. Seepage rates and caving soils could require the use of temporary casing. If necessary, the casing should be seated in the bearing stratum with all water and most loose material removed prior to beginning the design penetration. Care must then be taken that a sufficient head of plastic concrete is maintained within the casing during extraction.

The concrete should have a slump of 6 inches plus or minus 1 inch and be placed in a manner to avoid striking the reinforcing steel during placement. Complete installation of individual shafts should be accomplished within an 8-hour period after the design penetration into the bearing stratum is begun.

All drilled shaft installations should be inspected by qualified geotechnical personnel to help verify the bearing stratum, the design penetration, and perform related duties.

#### **7.2 Site Grading**

The site soils are generally suitable for general site grading. If required, any imported fill material should have a Liquid Limit of less than 35 percent and no rock greater than 4 inches in dimension. The fill material should be free of vegetation and debris.

The subgrade in areas to be filled should be stripped of vegetation and any major root systems. Relatively soft soils could be present in low lying areas. These soft soils should be excavated to firm ground. Any soft areas should be undercut and backfilled with properly compacted fill material placed as recommended in this section.



Both the areas to receive fill and the fill materials should be free of vegetation, roots, debris, large rocks or other objectionable material. Prior to placing any fill, the subgrade should be scarified to a minimum depth of 8 inches and re-compacted to a minimum of 95 percent of ASTM D 698 at or above the optimum moisture content determined by that test. The fill materials should then be spread in loose, relatively horizontal lifts, less than 9 inches thick, and uniformly compacted to the same criteria. If filling is suspended and the subgrade becomes desiccated or rutted, it should be reworked prior to placement of a subsequent lift.

If fill is to be placed on existing slopes, either natural or man-made, that are steeper than six horizontal to one vertical (6:1), then the fill materials should be benched into the existing slopes in such a manner as to provide a minimum bench-key width of five feet. This provides a good contact between the two materials, breaks up potential sliding planes, and allows relatively horizontal lift placement. In areas where the slopes are comprised of the existing fills, the benches should extend several feet into the slope to remove disturbed material. The fills should be constructed beyond final grades and cut back to the desired slope. Fill should not be placed parallel to cut or fill slopes.

Properly constructed fills of up to 10 feet in height will be subject to minimal long-term settlements. Anticipated long-term settlements will increase with the height of the fill, reaching magnitudes on the order of 1 or more inches for a 20 foot section.

Final slopes should be as flat as practical to reduce the possibility of creep and shallow slides. Particularly in cut slopes, the shear strength of the site clays can deteriorate with time. Final side slopes in cuts or fills of less than five feet in height may be as steep as 2H:1V. Taller sections will require considerably flatter slopes, such that slopes 10 feet or more in height have a maximum slope of 4H:1V.

Roadway edges should be maintained several feet away from the crest of slopes in order to reduce the effects of creep or shallow slides.

### **7.3 Pavement Subgrade Preparation**

Based on our experience with the soils encountered in this geologic formation, the various soils are not known to have sulfates in sufficient concentration to indicate potential damage to Portland Cement Concrete or sulfate induced heave in a lime modified subgrade. For verification, EWI performed soluble sulfate testing a total of 3 samples recovered from the borings at the locations listed below, for the determination of sulfate contents.

<u>Sulfate Test Locations</u>	<u>Soluble Sulfate Content</u>
Stations: Boring 3, 0' to 2'	<100 Parts Per Million
Boring 4, 2' to 4'	<100 Parts Per Million
Boring 6, 0' to 2'	<100 Parts Per Million

Testing was performed in general accordance with the TxDOT 145E Method. The test results are attached. Review of the test results indicates the soluble sulfate levels on all 3 samples were at or below 100 Parts per Million (ppm).

Subgrade soil materials at the site will mostly consist of sandy clay soils. These soils are subject to some loss in support value with the moisture increases, which occur beneath pavement sections. They react with lime, which serves to improve and maintain their support value.

The soil types and depth of seasonal moisture variations (Active Zones) at this site are estimated to vary from 6 to about 10 feet below finished grades. The following recommendations are based upon our experience with the area soils and assuming fills placed are controlled.

Based upon our experience, a minimum of 6 percent hydrated lime (33 Lbs./Square Yard or more); by dry weight, will likely be required for soil subgrade in pavement areas. Lime series testing should be performed after all rough street grades have been established.

The lime should be thoroughly mixed and blended with the top 6 inches of the subgrade (TxDOT Item 260). Stabilization should extend a minimum of one foot beyond the edge of the pavement. Limestone fragments within the surficial soils may hamper proper mixing of lime and soils.

The soil subgrade should then be uniformly compacted to a minimum of 95 percent of ASTM D698 at or above the optimum moisture content determined by that test. It should then be protected and maintained in a moist condition until the pavement is placed.

Project specifications should allow a curing period between initial and final mixing of the lime/soil mixture. We recommend a minimum of three days for these soils. The availability of this curing period with lime is of considerable advantage in achieving proper pulverization of the soil. This pulverization is necessary to achieve uniform mixing of the soil with the lime.

### **7.3.1 Pavement Recommendations**

A minimum of eight inches of concrete is recommended for collect roadway. The concrete should have a minimum 28-day compressive strength of 3,600 psi and contain a minimum of  $6 \pm 1.5$  percent entrained air. As a minimum, the section should be reinforced with No. 4 bars on 18-inch centers in both directions.

The concrete sections should have a minimum 28-day compressive strength of 3,600 psi. A minimum of  $6 \pm 1.5$  percent entrained air is recommended. The pavements should be properly jointed and reinforced with a minimum of No. 3 bars on 18 inch centers in both directions.

Concrete quality will be important in order to produce the desired flexural strength and long-term durability. A mix design should be submitted by the contractor and correlations between flexural strengths and compressive strengths verified if concrete strengths will be controlled by compressive strengths.

Due to construction over swelling clays, reinforced pavement is recommended and should be placed as described in Section 4 of the Pavement Design Manual. Portland cement concrete pavement types for the roadway can be either continuously reinforced concrete pavement (CRCP) or jointed reinforced concrete pavement (JRCF). Either type of reinforced pavement should perform similarly in this area.

Proper joint placement and design is critical to pavement performance. Load transfer at all longitudinal joints and maintenance of water-tight joints should be accomplished by the use of tie-bars. Contraction joints as described in Section 4 of the Pavement Design Manual should be sawed as soon as practical and preferably within 5 to 12 hours after placing concrete. Joints should also be properly cleaned and sealed as soon as possible to avoid infiltration of water, small gravel, etc.

Regular maintenance should be anticipated during the service life of the pavement. Cracks or failures that will develop should be properly sealed or repaired.

Alternately, and HMA pavement section above flexible base may be considered as an alternate to rigid pavement above lime modified subgrade. The minimum HMA section should consist of 2 inches of Type "D", above 5 inches of Type "A or B" above 8 inches of properly compacted flexible base. The flexible base may either be crushed limestone or crushed concrete meeting TxDOT Item 247, Type a, Grades 1 or 2.

### **7.3.2 Pavement Movements**

The soils encountered in the borings are generally moderately active to active and subject to volume changes with fluctuations in their moisture content. The clays expand (heave) with increases in moisture and contract (shrink) with decreases in moisture. The movement at the center of the pavement typically occurs as post construction heave. At the edge of the pavement, both shrinkage and swell could occur due to seasonal moisture fluctuations in response to rainfall and evapotranspiration.

The potential magnitude of the moisture-induced movements is rather indeterminate. It is influenced by the soil properties, surface drainage, and overburden pressures and to a great extent by soil moisture levels at the time of construction. The greatest potential for post-construction movement occurs when the soils are in dry condition at the time of construction. Based on TxDOT Test Method 124-E, potential active soil movements, to the boring depths evaluated, along the alignment are estimated to range up to on the order of 1½ to 3 inches, for the upper 8 feet of the soil profile.

Flat grades should be avoided with positive drainage provided away from the pavement edges. A minimum grade of 0.5% and preferably 1% is recommended for all pavements.

## **8.0 LIMITATIONS**

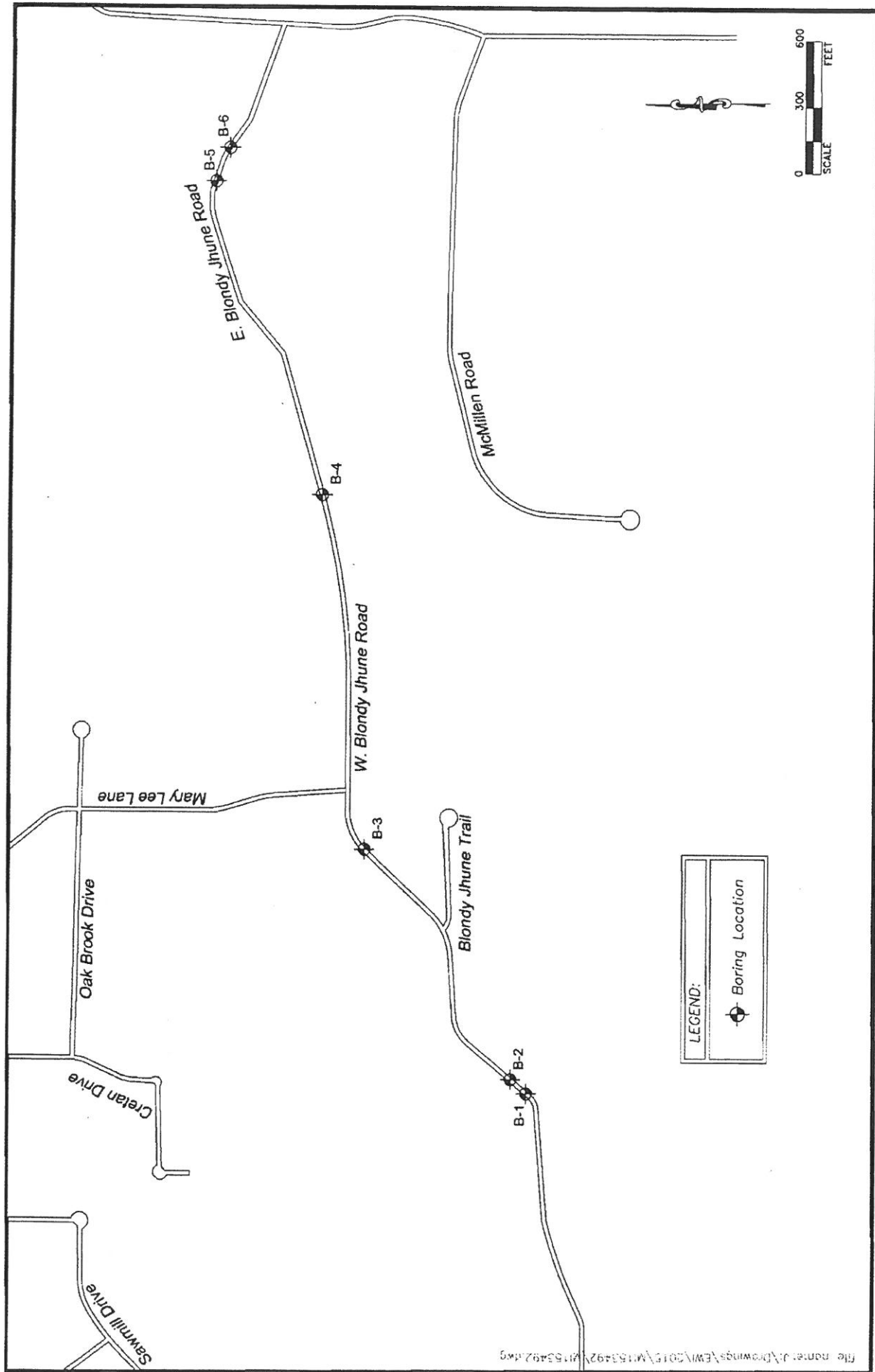
The professional services performed for the preparation of this geotechnical report were accomplished in accordance with current and locally accepted geotechnical engineering principles and practices. The recommendations presented in this report are based upon the data obtained from the borings at the indicated locations and/or from other information discussed in this report. The possibility always exists that the subsurface conditions occurring between borings, across the site, or due to seasonal/annual climatic cycles may vary from those encountered in the borings. The nature of these variations may not become evident until during or after construction. Should subsurface conditions varying significantly from those described herein, EWI should be immediately notified to evaluate the effects on these recommendations and so supplemental recommendations can be provided. EWI's services should also be retained for the final review of design plans/specifications so comments can be made regarding interpretation of the geotechnical recommendations provided in this report.

The recommendations provided in this report were prepared for the exclusive use of our client. No warranties, expressed or implied, are intended or made. The information and recommendations provided in this report are applicable only for the design of the types of structure(s) described in the Site and Project Information section of this report and should not be used for any other structures, locations or for any other purposes. We should not be held responsible for the conclusions, opinions or recommendations made by others based upon the information submitted in this report. If changes to the design and/or location of this project as outlined in this report are planned, the recommendations provided in this report shall not be considered valid unless EWI reviews these changes and either verifies or amends this report in writing. Construction issues such as site safety support of excavations and dewatering procedures are the responsibility of others.

The scope of services for this report does not include any environmental or biological assessments either specifically or implied. If the owner is concerned about the potential mold, fungi, bacteria, identification of contaminants or hazardous materials and conditions, additional studies should be undertaken.

EWI's capabilities include a full range of construction material testing and observation services. EWI should be retained to provide testing and observation during excavation, grading, foundation and construction phases of this project.

We will retain the samples recovered from the borings on this project for a period of 30 days subsequent to the submittal date printed on this report. After the 30-day period, the samples will be discarded unless otherwise notified by the owner in writing.



## PLAN OF BORINGS

Blondy Jhune Roadway  
Lucas, Texas



Ellerbe Waltzack, Inc.

EWI Project No. MI153492



Ellerbee-Walczak, Inc.  
4501 Broadway Avenue  
Haltom City, Texas 76117  
Telephone: 817-759-9999  
Fax: 817-759-1888

# BORING NUMBER B-1

PAGE 1 OF 1

CLIENT Metro Infrastructure

PROJECT NAME Blondy Jhune Rd.

PROJECT NUMBER MI153492

PROJECT LOCATION Lucas, TX

DATE STARTED 4/9/15

COMPLETED 4/9/15

GROUND ELEVATION N/A

GROUND WATER LEVELS:

DRILLING METHOD Continuous Flight Auger

AT TIME OF DRILLING Dry

AT END OF DRILLING Dry

NOTES

AFTER DRILLING -

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	N: Blows/ft. T: Inches/100 Blows P: Tons/Sq. Ft. R: Percent Q <sub>u</sub> : Kips/sq. Ft. R <sub>QD</sub> : Percent	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
							LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Asphalt (2")								
		Base (6")								
		Tan and gray sandy clay (FILL) - with limestone fragments	ST	P = 2.5		14				
			ST	P = 3.25						
5			ST	P = 4.5+		12	42	20	22	
			ST	P = 4.5+						
			THD	T = 12"/55						
10		Reddish-tan sandy clay	SS	N = 17		18	39	19	20	
15		Gray limestone	SS	N = 50/4"						
20			THD	T = 1.5"/100						
25			THD	T = 1.25"/100						
		Bottom of hole at 25 feet.								

GEOTECH BH COLUMNS MI153492 GPJ GINT US.GDT 6/1/15

FIGURE 2

Ellerbee-Walczak, Inc.  
4501 Broadway Avenue  
Haltom City, Texas 76117  
Telephone: 817-759-9999  
Fax: 817-759-1888

## BORING NUMBER B-2

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CLIENT Metro Infrastructure

PROJECT NAME Blondy Jhune Rd.

PROJECT NUMBER MI153492

PROJECT LOCATION Lucas, TX

DATE STARTED 4/9/15

COMPLETED 4/9/15

GROUND ELEVATION N/A

GROUND WATER LEVELS:

DRILLING METHOD Continuous Flight Auger

AT TIME OF DRILLING Dry

AT END OF DRILLING Dry

NOTES

AFTER DRILLING --

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	N: Blows/ft. T: Inches/100 Blows P: Tons/Sq. Ft. R: Percent Qu: Kips/sq. Ft. RQD: Percent	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
							LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Asphalt (2")								
		Base (6")								
		Brown sandy clay (FILL) - with limestone fragments	ST	P = 3.25						
			ST	P = 4.5+ Qu = 3.5	115	13				
5			ST	P = 4.5+						
			ST	P = 4.5+		12	38	19	19	
		Grayish-tan clay	ST	P = 4.5+						
10		Tan limestone - with clay seams								
		Gray limestone	AU							
			THD	T = 1"/100						
15										
			AU							
20			THD	T = 1.5"/100						
			AU							
25			THD	T = 1.25"/100						
		Bottom of hole at 25 feet.								

FIGURE 3

Ellerbee-Walczak, Inc.  
4501 Broadway Avenue  
Haltom City, Texas 76117  
Telephone: 817-759-9999  
Fax: 817-759-1888

# BORING NUMBER B-3

PAGE 1 OF 1

CLIENT Metro Infrastructure

PROJECT NAME Blondy Jhune Rd.

PROJECT NUMBER MI153492

PROJECT LOCATION Lucas, TX

DATE STARTED 4/9/15

COMPLETED 4/9/15

GROUND ELEVATION N/A

GROUND WATER LEVELS:

DRILLING METHOD Continuous Flight Auger

AT TIME OF DRILLING Dry

AT END OF DRILLING Dry

NOTES

AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	N: Blows/ft. T: Inches/100 Blows P: Tons/Sq. Ft. R: Percent Qu: Kips/sq. Ft. RQD: Percent	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
							LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Asphalt (2")								
1		Base (6")								
2		Dark brown sandy clay (FILL)	ST	P = 3.75						
3		- with limestone fragments	ST	P = 2.75						
4		Brown sandy clay	ST	P = 2.5 Qu = 4.8	101	23				
5			ST	P = 3.75						
6			ST	P = 3.75						
7			ST	P = 3.75						
8			ST	P = 3.75						
9			ST	P = 3.75						
10		Bottom of hole at 10 feet.								

FIGURE 4

Ellerbee-Walczak, Inc.  
4501 Broadway Avenue  
Haltom City, Texas 76117  
Telephone: 817-759-9999  
Fax: 817-759-1888

# BORING NUMBER B-4

PAGE 1 OF 1

CLIENT Metro Infrastructure

PROJECT NAME Blondy Jhune Rd.

PROJECT NUMBER MI153492

PROJECT LOCATION Lucas, TX

DATE STARTED 4/9/15

COMPLETED 4/9/15

GROUND ELEVATION N/A

GROUND WATER LEVELS:

DRILLING METHOD Continuous Flight Auger

AT TIME OF DRILLING Dry

AT END OF DRILLING Dry

NOTES

AFTER DRILLING --

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	N: Blows/ft. T: Inches/100 Blows P: Tons/Sq. Ft. R: Percent Q: Kips/sq. Ft. RQD: Percent	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
							LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Asphalt (2")								
		Base (2")	ST	P = 4.5+ Qu = 16	115	15				
		Tan limestone (FILL)								
		Brown sandy clay	ST	P = 3.5						
		Dark brown sandy clay								
5			ST	P = 4.5+						
		Brown sandy clay	ST	P = 4.5+		12	44	20	24	
			ST	P = 4.5+						
10										
		Bottom of hole at 10 feet.								

Ellerbe-Walczak, Inc.  
4501 Broadway Avenue  
Haltom City, Texas 76117  
Telephone: 817-759-9999  
Fax: 817-759-1888

# BORING NUMBER B-5

PAGE 1 OF 1

CLIENT Metro Infrastructure

PROJECT NAME Blondy Jhune Rd.

PROJECT NUMBER MI153492

PROJECT LOCATION Lucas, TX

DATE STARTED 4/9/15

COMPLETED 4/9/15

GROUND ELEVATION N/A

DRILLING METHOD Continuous Flight Auger

GROUND WATER LEVELS:

▽ AT TIME OF DRILLING 20.0 ft

▽ AT END OF DRILLING 27.0 ft

NOTES

AFTER DRILLING

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	N: Blows/ft. T: Inches/100 Blows P: Tons/Sq. Ft. R: Percent Q: Kips/sq. Ft. RQD: Percent	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
							LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Asphalt (2")								
		Base (1')								
		Tan sandy clay (FILL) - with limestone fragments	ST	P = 4.5+						
		Brown sandy clay	ST	P = 4.5+		13	39	19	20	
5			ST	P = 4.5+						
		Tan and gray clay	ST	P = 4.5+		15	51	20	31	
10			ST	P = 4.5+						
		Light brown sandy clay								
15			SS	N = 9						
20		Tan limestone - with clay seams	SS	N = 50/3"						
25			SS	N = 50/3"						
		Gray limestone	THD	T = 1.5"/100						
30			THD	T = 1"/100						
35		Bottom of hole at 35 feet.								

FIGURE 6

Ellerbee-Walczak, Inc.  
4501 Broadway Avenue  
Haltom City, Texas 76117  
Telephone: 817-759-9999  
Fax: 817-759-1888

# BORING NUMBER B-6

PAGE 1 OF 1

CLIENT Metro Infrastructure

PROJECT NAME Blondy Jhune Rd.

PROJECT NUMBER MI153492

PROJECT LOCATION Lucas, TX

DATE STARTED 4/9/15

COMPLETED 4/9/15

GROUND ELEVATION N/A

DRILLING METHOD Continuous Flight Auger

GROUND WATER LEVELS:

AT TIME OF DRILLING Dry

AT END OF DRILLING Dry

NOTES



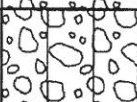
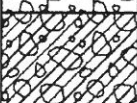


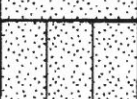
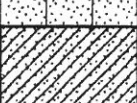
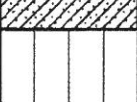

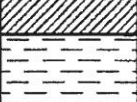



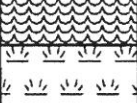
AFTER DRILLING --

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	N: Blows/ft. T: Inches/100 Blows P: Tons/Sq. Ft. R: Percent Qu: Kips/sq. Ft. RQD: Percent	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
							LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		Asphalt (3")								
		Base (5")								
		Brownish-gray sandy clay (FILL)	ST	P = 2.5						
		Brown sandy clay	ST	P = 2.75						
5			ST	P = 1.5		16	32	16	16	
			ST	P = 1.75						
10		Grayish-tan sandy clay	ST	P = 1.75		19	36	17	19	
15		Gray limestone	AU							
			THD	T = 0.5"/100						
20			AU							
			THD	T = 1"/100						
25			AU							
			THD	T = 1.25"/100						
		Bottom of hole at 25 feet.								

FIGURE 7



# SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS  MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS  MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS  (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS  MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS  (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES  (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS  MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS  LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS  LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Figure 8

