THE COUNTY OF GALVESTON

RUFUS G. CROWDER, CPPO CPPB
PURCHASING AGENT

GWEN MCLAREN, CPPB
ASST. PURCHASING AGENT

COUNTY COURTHOUSE
722 Moody (21st Street)
Fifth (5th) Floor
GALVESTON, TEXAS 77550
(409) 770-5371

September 19, 2017

RE: ADDENDUM #1
Bid #B171025, CDBG Round 2.2 I-45 Waterline Project

To All Prospective Bidders,

Attached you will find Addendum #1 for Bid #B171025, CDBG Round 2.2 I-45 Waterline Project.

As a reminder, all questions regarding this bid must be submitted in writing to:

Rufus G. Crowder, CPPO CPPB
Galveston County Purchasing Agent
722 Moody, Fifth (5th) Floor
Galveston, Texas 77550
E-mail: rufus.crowder@co.galveston.tx.us

If you have any further questions regarding this bid, please address them to Rufus Crowder, CPPO CPPB, Purchasing Agent, via e-mail at rufus.crowder@co.galveston.tx.us, or contact the Purchasing Department at (409) 770-5371.

Please excuse us for any inconvenience that this may have caused.

Sincerely,

Rufus G. Crowder, CPPO CPPB
Purchasing Agent
Galveston County

ADDENDUM NO. 1

TO THE

TECHNICAL SPECIFICATIONS, CONTRACT DOCUMENTS AND PLANS FOR

BID #B171025, CDBG ROUND 2.2: I-45 WATERLINE PROJECT
GLO CONTRACT NO. 13-465-000-7974
PROJECT NO. P21465

GALVESTON COUNTY AND THE TEXAS GENERAL LAND OFFICE

September 18, 2017

TO BIDDER OF RECORD:

This addendum, applicable to work designated above, is an amendment to the bidding documents and as such shall be a part of and included in the Contract. Acknowledge receipt of this addendum by submitting the attached acknowledgement form with your bid.

PURPOSE:

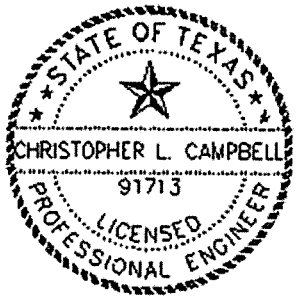
The purpose of this addendum is to clarify previously issued bid documents, technical specifications, special conditions, proposal and plans.

INSTRUCTIONS:

This Addendum uses the change page method: remove and replace or add pages, or Drawing sheets, as directed in the change instructions below.

This Addendum will not change the bid opening date of –

Thursday, October 12, 2017 at 2:00 p.m.



September 18, 2017

CHANGES TO PROJECT MANUAL

1. Include attached Davis Bacon Wage Rate General Decision Number: TX170094 04/21/2017 TX94 with the Contractor's Certification Concerning Labor Standards and Prevailing Wage Requirements.

END OF ADDENDUM NO. 1

ADDENDUM NO. 1

TO THE

TECHNICAL SPECIFICATIONS, CONTRACT DOCUMENTS AND PLANS FOR

BID #B171025, CDBG ROUND 2.2: I-45 WATERLINE PROJECT
GLO CONTRACT NO. 13-465-000-7974
PROJECT NO. P21465

GALVESTON COUNTY AND THE TEXAS GENERAL LAND OFFICE

September 18, 2017

I _____, _____ of
Name Title

_____
Company Name

do hereby acknowledge receipt of Addendum No. 1 for the Construction of the I-45 Waterline Project

Name: _____
Signature

Title: _____

Date: _____

General Decision Number: TX170094 04/21/2017 TX94

Superseded General Decision Number: TX20160094

State: Texas

Construction Type: Heavy

County: Galveston County in Texas.

HEAVY CONSTRUCTION PROJECTS Including Water and Sewer Lines
(Does Not Include Flood Control)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.20 for calendar year 2017 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.20 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2017. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/06/2017
1	04/21/2017

* SFTX0669-001 04/01/2017

	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers)	$ 29.03	15.84

SUTX2005-021 08/05/2005

HEAVY Including Water and Sewer Lines (Excluding Flood Control)

	Rates	Fringes
Carpenter	$ 14.38	
Cement mason/concrete finisher	$ 11.37	1.13
Electrician	$ 18.40	1.34
FORM BUILDER/FORM SETTER	$ 13.35	1.17
IRONWORKER, REINFORCING	$ 11.29	
Laborers:		
Common	$ 10.70	
Landscape	$ 7.35	
Mason Tender Cement	$ 9.96	
Pipelayer	$ 10.07	
PIPEFITTER	$ 17.00	0.04
Power equipment operators:		
Excavator	$ 16.74	
Backhoe	$ 13.25	
Bulldozer	$ 14.00	
Crane	$ 14.91	0.58
Front End Loader	$ 11.75	0.92
Grader	$ 12.20	1.48
Tractor	$ 12.38	1.51
TRUCK DRIVER	$ 12.28	0.98

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the

classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

==========

END OF GENERAL DECISION

THE COUNTY OF GALVESTON

RUFUS G. CROWDER, CPPO CPPB
PURCHASING AGENT

GWEN MCLAREN, CPPB
ASST. PURCHASING AGENT

COUNTY COURTHOUSE
722 Moody (21st Street)
Fifth (5th) Floor
GALVESTON, TEXAS 77550
(409) 770-5371

September 25, 2017

RE: ADDENDUM #2
Bid #B171025, CDBG Round 2.2 I-45 Waterline Project

To All Prospective Bidders,

Attached you will find Addendum #2 for Bid #B171025, CDBG Round 2.2 I-45 Waterline Project.

ATTACHMENTS:
Attached you will find the Final Report of the Geotechnical Investigation Proposed I-45/Hwy 6 Water Distribution System.

SITE VISIT MEETING:
There will be a pre-bid site visit meeting on Thursday, October 5, 2017, at 2:00 P.M. The site visit will begin at the intersection of Avenue L and the GCWA canal in Santa Fe, TX.

As a reminder, all questions regarding this proposal must be submitted in writing to:

Rufus G. Crowder, CPPO CPPB
Galveston County Purchasing Agent
722 Moody, Fifth (5th) Floor
Galveston, Texas 77550
E-mail: rufus.crowder@co.galveston.tx.us

If you have any further questions regarding this proposal, please address them to Rufus Crowder, CPPO CPPB, Purchasing Agent, via e-mail at rufus.crowder@co.galveston.tx.us, or contact the Purchasing Department at (409) 770-5371.

Please excuse us for any inconvenience that this may have caused.

Sincerely,

Rufus G. Crowder, CPPO CPPB
Purchasing Agent
Galveston County

Dickey, Tammy

From: CivCast <no-reply@civcast.com>
Sent: Monday, September 25, 2017 3:19 PM
To: CivCast
Subject: CivCast - Pre-Bid Site Visit Meeting

CIVCAST PROJECT INFO:

Title: I-45/Hwy 6 Water Distribution System

A Pre-Bid Site Visit Meeting is scheduled for **Thursday, October 5, at 2:00 PM**.

The site visit will begin at the **intersection of Ave. L and the GCWA canal in Santa Fe, TX**.

Note: CivCast assumes no responsibility for the content of this message. It was sent to you by a CivCast User.

Please do not reply to this message

Project Link: Click Here

FINAL REPORT
GEOTECHNICAL INVESTIGATION
PROPOSED I-45/HWY 6 WATER DISTRIBUTION SYSTEM
GALVESTON COUNTY, TEXAS
GLO PROJECT NO. P21465

PREPARED FOR:

Dannenbaum Engineering Corporation
3100 West Alabama
Houston, Texas 77098-2094

PREPARED BY:

HTS, Inc. Consultants
416 Pickering Street
Houston, Texas 77091-3312

HTS Project No. 13-S-484

April 3, 2014

HTS, INC. Consultants

HTS, Inc. Consultants
416 Pickering Street, Houston, TX 77091
www.htshouston.com

Phone 713-692-8373
Fax 713-692-8502
Toll Free 1-800-692-TEST

Excellence in Engineering, Consulting, Testing and Inspection

April 3, 2014

Dannenbaum Engineering Corporation
3100 West Alabama
Houston, Texas 77098-2094

Attn: Mr. Larry S. Marr, P.E.

Re: Final Report
Geotechnical Investigation
Proposed I-45/Hwy 6 Water Distribution System
Galveston County, Texas
GLO Project No. P21465

HTS Project No.: 13-S-484

Dear Mr. Marr:

HTS, Inc. Consultants is pleased to submit our geotechnical investigation report for the above referenced project. This report includes the results of field and laboratory testing and geotechnical recommendations pertaining to the design and construction of the proposed I-45/Hwy 6 Water Distribution System.

We appreciate the opportunity to perform this geotechnical investigation and look forward to continued participation during the design and construction phases of this project. If you have any questions pertaining to this report, or if we may be of further service, please contact me at your convenience.

Very truly yours,
HTS, Inc. Consultants

Terry J. Jackson, P.E.
President

STATE OF TEXAS
TERRY J. JACKSON
55409
LICENSED
PROFESSIONAL ENGINEER
4/3/14

HTS, Inc. Consultants
F-3478

TJJ/cg

h:word/2013/450-499/13-484Final

TABLE OF CONTENTS

TABLE

TABLE OF CONTENTS (Continued)

FIGURES

APPENDIX

FINAL REPORT
GEOTECHNICAL INVESTIGATION
PROPOSED I-45/HWY 6 WATER DISTRIBUTION SYSTEM
GALVESTON COUNTY, TEXAS
GLO PROJECT NO. P21465

1.0 INTRODUCTION AND SUMMARY

1.1 Introduction

This report presents the results of a geotechnical investigation pertaining to the design and construction of approximately ± 8,000 linear feet (l.f.) of 24-inch water line from about 4,000 l.f. west of I-45 to Avenue L along the north side of Gulf Coast Water Authority irrigation channel in Galveston County, Texas. The site location of the proposed project is shown in Figures 1 and 2.

The purpose of this geotechnical investigation was to provide data and recommendation pertaining to:

- dewatering requirements for excavations,
- excavation, bedding, and backfilling requirements,
- soil classifications for use in defining OSHA trench shoring and bracing design requirements, and
- lateral earth pressure diagrams.

This geotechnical investigation was performed by HTS, Inc. Consultants (HTS) for Dannenbaum Engineering Corporation (DEC) in accordance with HTS Proposal No. DEC-3620 dated October 28, 2013 and "Agreement for Professional Services" between HTS and DEC dated December 2, 2013.

The scope of work for this geotechnical investigation consisted of:

- drilling and sampling a total of 9 borings (Boring Nos. 1 through 9) to a depth of 10 feet below the surface within the route of the proposed water line project as shown in Figure 2,

- performing field tests during drilling and recovering both disturbed and relatively undisturbed soil samples,

- measuring water level depths in the geotechnical borings during drilling, approximately 15 minutes and after the water is initially encountered, and within 3 hours after the completion of drilling,

- backfilling the bore holes with soil cuttings after the completion of the drilling activities,

- clearly marking each boring location for the client's use in determining the boring locations and elevations,

- visually classifying samples obtained from the borings and conducting laboratory tests to determine the physical and mechanical properties of the soils,

- preparing boring logs and soil profile based on visual soil classifications and the results of laboratory tests,

- performing engineering analyses for the purpose of developing and providing recommendations for excavation, bedding, and backfill for the water line,

- performing engineering analyses as necessary to develop recommendations pertaining to dewatering requirements for excavations, trench shoring and bracing requirements, OSHA soil type classifications pertinent to trench shoring and bracing design, and utility excavation/bedding/backfill requirements in accordance with Galveston County W.C.I.D #1 Standard Construction Details, City of Dickinson, Texas,

- developing/providing recommendations concerning lateral earth pressures that may be used for the design of below ground structures for both the short term (construction phase) and long term (after construction) conditions, and

- preparing/submitting a final report (hard copies and electronic file) of the geotechnical investigation that presents the data, finding, and recommendations and addresses the client's review comments.

1.2 Summary of Findings

The pertinent findings of this geotechnical investigation that pertains to the construction of a water line are provided below.

1.2.1 Subsurface Conditions

The subsurface conditions at the location of the proposed development are described:

- by the laboratory test results presented in Table 1,
- on the boring logs for Boring Nos. 1 through 9 as provided in Appendix A, and
- on the soil profile presented in Figure 3.

Data from the 9 geotechnical borings drilled suggest that the upper 10 feet of subsurface soils within the area of the proposed development are generally composed of 2 separate soil layers. HTS has designated these 2 soil layers as Layers I and II. Descriptions of the soils that constitute these layers are provided below:

LAYER	DEPTH BELOW GROUND SURFACE (FT)	SOIL DESCRIPTION
I	0 – 10	Cohesive soils consisting of gray, light gray, tan LEAN CLAY, LEAN CLAY WITH SAND, SANDY LEAN CLAY, and FAT CLAY, soft to very stiff with ferrous nodules, calcareous nodules, concentration of calcareous nodules, calcareous nodule pockets, sand pockets, sand fissures, sand seams, silt pockets, and slickensides. A layer of loose, gray SILTY SAND was encountered from 0 to 1 foot beneath the surface in Boring No. 4.
II	5 - 10	Cohesionless soils consisting of light gray and tan SILTY SAND and CLAYEY SAND, very loose to medium dense (encountered in Boring Nos. 4, 5, 7, 8, and 9).

Laboratory testing was performed on selected samples of the subsurface materials obtained to classify the soils in accordance with ASTM D 2487 and to define the engineering properties of the soils. Portions of the test results indicating the high and low values of specific testing are provided in the table below:

LAYER	DEPTH (FT)	LIQUID LIMIT (%)		PLASTICITY INDEX (%)		MOISTURE CONTENT (%)		PASSING NO. 200 SIEVE (%)		UNCONFINED COMPRESSIVE STRENGTH (TSF)	
		HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW
I	0 – 10	72	27	49	9	33.7	14.2	96.4	50.1	1.1	0.5
II	5 – 10	24*		9*		26.4	22.6	46.9	13.0	--	

-- No sample was tested.

* Laboratory tests performed on the CLAYEY SAND soil only.

1.2.2 Water Levels in the Borings

Water level measurements were obtained during drilling, 15 minutes after water was initially observed, and within 3 hours after drilling was completed. The results of the water level measurements are presented in the table below:

BORING NO.	TOTAL DEPTH OF BORING (FT.)	DEPTH TO WATER DURING DRILLING (FT.)	DEPTH TO WATER 15 MINUTES AFTER WATER WAS INITIALLY OBESRVED (FT)	DEPTH TO WATER WITHIN 3 HOURS AFTER DRILLING COMPLETION (FT.)	DEPTH TO OBSTRUCTION WITHIN 3 HOURS AFTER DRILLING COMPLETION (FT.)
1	10	Dry	--	Dry	9.0
2	10	Dry	--	3.8	8.9
3	10	9.5	5.8	3.6	6.5
4	10	6.0	3.7	2.8	5.6
5	10	9.0	8.7	4.2	9.4
6	10	5.0	4.4	4.8	6.4
7	10	7.0	6.5	3.2	7.1
8	10	8.0	7.8	4.7	7.7
9	10	6.0	4.8	3.8	6.2

Note: Depths are referenced from the existing material surface elevation at the time the borings were drilled.

1.3 Summary of Recommendations

The recommendations as summarized below are provided for use in the design and construction of the proposed water line.

1.3.1 Water Line Installation Using Open Trench Excavation Method

Water lines may be designed by using conventional conduit formulas and assuming a negative projection condition for the computation of loadings.

The total load on water lines will consist of the weight of the compacted backfill above the pipe, the weight of the pavement, and live loadings where applicable. The wet unit weight of compacted backfill is estimated to be 130 pounds per cubic foot (pcf) for clayey sand/lean clay backfill material.

Bedding and backfill for the proposed water lines should be designed and installed as specified in Figures 5 through 7 of this report titled "Galveston County W.C.I.D. #1, Water Standard Construction Details, City of Dickinson, Texas".

1.3.2 Water Line Installation Using Trenchless Construction Method

Where the water line is installed using trenchless construction or directional drilling technique, it is recommended that construction/installation of the proposed water lines be performed in accordance also with the applicable provisions specified in Figure 8 of this report titled "Galveston County W.C.I.D. #1, Sewer Standard Construction Details, City of Dickinson, Texas".

1.3.3 Water Line Excavation Dewatering Requirements

Water, depths measured from 5 to 9.5 feet beneath the surface, was encountered during the drilling of geotechnical borings except in the locations of Boring Nos. 1 and 2 where the borings were dry during drilling. Where water was initially encountered, the water levels were measured at depths ranging from 3.7 to 8.7 feet beneath the surface. Within 3 hours after the completion of drilling, the water levels were measured at depths ranging from 2.8 feet to 4.8 feet beneath the surface except in Boring No. 1 which remained to be dry.

Based on the groundwater data obtained during our field investigation, it should be anticipated that seepage water will be encountered for excavations that extend to a depth of at least 4 feet below the existing ground surface. The use of sumps and pumps may be used for removal of water in excavations where the exposed soils consist of the site clays. For excavations where the site sands are exposed (within or near the locations of Boring Nos. 4, 5, 7, 8, and 9), the use of a well points, vacuum well points, or other suitable dewatering systems may be required for dewatering of excavations.

1.3.4 Temporary Bracing for Excavations

The contractor should ensure designing and constructing stable protection systems for excavations such as support systems, sloping and benching systems, shield systems, and other systems that provide protection.

Temporary special shoring, for use in the installation of structures or utilities that will require excavations deeper than 5 feet, should consist of vertical or sloped cuts, benches, shields, support systems, or other systems that will provide necessary protection in accordance with OSHA Standards and Interpretations, 29 CFR 1926, Subpart P, "Excavations".

If OSHA Standards and Interpretations, 29 CFR 1926, Subpart P, "Excavations" is used for the design of temporary excavation protection systems, the site Layer I fat clay and lean clay soils should be categorized as Type B soils except for the lean clays from 4 to 6 feet beneath the surface in Boring No. 6 and from 0 to 1 foot beneath the surface in Boring No. 7 which should be classified as Type C soils because of low undrained shear strengths. The site Layer II sands should be categorized as Type C soils. The definitions

of Type B and Type C soils are provided in Appendix A of the OSHA Standards and Interpretations, 29 CFR 1926, Subpart P, "Excavations" (www.osha.gov). In order to eliminate the potential for caving of trench excavations, trench safety shall be implemented for trench excavations that are deeper than 5 feet.

1.3.5 Earth Pressure Design Parameters for Long Term Condition

Earth pressure coefficients may be used to define the lateral loads exerted by the overburden soils on underground structures. Earth pressure coefficients, as provided in this report, were computed by using Rankines' methods. Earth pressure design parameters provided in this report for use in designing below ground structures, are based on effective stress, shear strength parameters. Long term, effective stress, shear strength parameters should be used for the design of permanent underground structures. Below ground structures at the proposed site may be designed by using the following design parameters:

ON SITE SOILS	WEIGHT OF EQUIVALENT FLUID FOR ACTIVE CASE (PCF)	WEIGHT OF EQUIVALENT FLUID FOR PASSIVE CASE (PCF)	ACTIVE EARTH PRESSURE COEFFICIENT (K_A)	PASSIVE EARTH PRESSURE COEFFICIENT (K_P)	EFFECTIVE STRESS ANGLE OF INTERNAL FRICTION (°)*	EFFECTIVE STRESS COHESION (PSF)*	WET UNIT WEIGHT (PCF)
Fat Clay Soils	93	205	0.53	2.47	18	200	120
Lean Clay Soils	96	247	0.49	2.73	20	250	130
Sands	85	265	0.33	3.00	30	0	125

The weights of equivalent fluid shown above, include hydrostatic forces but do not include surcharge forces imposed by construction equipment or vehicular loadings. Surcharge forces must be considered in order to compute maximum stresses for use in the design of below ground structures.

The weights of equivalent fluid for the passive case and the passive earth pressure coefficients shown above do not include a safety factor. It is recommended that for design purposes, a factor of safety of 2 be applied to the effective stress angle of internal friction to calculate for weights of equivalent fluid for the passive case and the passive earth pressure coefficients. With the use of a safety factor of 2, the weights of equivalent fluid for the passive case will be 155, 178, and 177 pcf for the site fat clays, lean clays, and sands, respectively. The passive earth pressure coefficients will be 1.61, 1.71, and 1.70 for the fat clays, lean clays, and sands, respectively.

1.3.6 Recommended Earth Pressure Design Parameters for Design of Temporary Below Ground Structures

Temporary below ground structures, such as temporary trench shoring and bracing for excavations, may be designed using the lateral earth pressure diagram and parameters provided in Figures 4A and 4B.

2.0 FIELD INVESTIGATION

A total of 9 geotechnical borings (Boring Nos. 1 through 9) were drilled for this geotechnical investigation on December 19, 30 and 31, 2013. The boring locations, as shown in Figure 2, were selected and staked in the field by representatives of HTS measuring from existing points of reference. Drilling, sampling, and testing for Boring Nos. 1 through 4 were performed in accordance with applicable ASTM standards by using a truck mounted drill rig and conventional auger drilling methods. Access to Boring Nos. 5 through 9 was restricted due to shrubs and private properties such that a truck mounted drill rig could not be used and drilling/sampling was accomplished using a portable drill rig.

Soil sampling during the drilling of the geotechnical borings consisted of continuous sampling to a maximum depth of 12 feet and intermittent sampling thereafter, with both disturbed and relatively undisturbed samples being obtained.

Relatively undisturbed samples were obtained by hydraulically forcing sections of 3-inch O.D. tubing (Shelby tube) into the subsoils. The tube samples were extruded in the field, sealed with foil, and placed into airtight plastic bags. Estimates of the unconfined compressive strengths and undrained shear strengths of the cohesive soils were obtained with pocket penetrometer readings being taken on the tube samples.

Disturbed samples of soil were taken either through the flight auger of the sampler or in conjunction with the standard penetration testing procedures. The standard penetration test (SPT) blow count is defined as the number of SPT hammer blows that are required to advance a split spoon sampler 1 foot into the soil. One SPT hammer blow consists of a 140-pound hammer free falling for a distance of 30 inches. The results of the standard penetration test provide a basis for estimating the relative strength and compressibility of the soil profile components. The samples recovered were removed from the split spoon sampler or the flight auger of the sampler and placed into airtight plastic bags.

The soils samples were visually classified in accordance with ASTM D 2488 standards and methods. All samples were transported HTS' laboratory for purposes of performing laboratory tests on selected samples.

3.0 LABORATORY TESTING

A laboratory testing program was conducted to obtain engineering properties for use in performing engineering analyses and to adjust field soil classifications. The following laboratory tests were performed:

LABORATORY TEST	TEST STANDARD
Moisture Content of Soils	ASTM D 2216
Dry Density of Soils	ASTM D 2937
Percent Soil Particles Passing a No. 200 Sieve	ASTM D 1140
Liquid Limit, Plastic Limit, and Plasticity Index	ASTM D 4318
Unconfined Compressive Strength of Cohesive Soils	ASTM D 2166

The number of tests and the test results are presented in the attached Table 1. All tests were performed in accordance with applicable ASTM standards and methods and soil classifications were completed in accordance with the requirements of ASTM D 2487.

4.0 SUBSURFACE CONDITIONS

4.1 Subsoils

The subsurface soil conditions as determined from the drilling of the geotechnical borings are provided in:

- Section 1.2.1 of this report,
- the boring logs in Appendix A, and
- the soil profile in Figure 3.

The boring logs were prepared by using both field visual classifications and the results of laboratory testing. The stratification lines shown on the boring logs and soil profiles represent the approximate boundaries between soil types and the transitions between soil types may be gradual.

4.2 Water Levels

Water levels in the geotechnical borings are described in Section 1.2.2 of this report, in the boring logs provided in Appendix A, and the soil profile of this report. The water level depths were obtained by observing the drilling operations and the free moisture contained in the samples recovered during drilling, determining water level depths in the borings during drilling, approximately 15 minutes after the water was initially encountered, as applicable, and within 3 hours after the completion of drillings.

It is possible that seasonal variations will cause fluctuations in the water levels measured at the time of our field investigation. Additionally, perched water may be encountered in discontinuous zones within the overburden. We recommend that the contractor determine the ground water level at the site at the time of construction in order to determine the impact, if any, of the water to the construction activities. It should be noted that recommendations contained in this report are based on water level depths at the time of this geotechnical investigation and that an accurate determination of the true water levels may require several days or even months of observations.

5.0 ENGINEERING ANALYSES

Engineering analyses were performed in order to determine data and parameters that can be used for the design of the proposed water line. Analyses performed included:

- analyses of subsurface soil grain size and plasticity characteristics and site water levels as necessary to identify potential dewatering requirements,
- analyses of subsurface soil grain size, plasticity, and shear strength properties as necessary to categorize the site subsurface soil and groundwater conditions with regard to OSHA requirements for trench shoring/bracing,
- analyses to determine water lines bedding requirements, and
- analyses to determine lateral earth pressure design parameters which can be used in the design of permanent below ground structures and temporary below ground structures such as trench shoring/bracing.

5.1 Potential Dewatering Requirements

Potential dewatering requirements were developed based upon measured groundwater level depths, the types of subsurface soils encountered, and the grain size characteristics of the subsurface soils. A dewatering system will most likely be required for sandy soils that occur below the groundwater table. The use of well points, vacuum well points, or a comparable dewatering system should provide for the effective dewatering of sandy soils which occur below the groundwater table and are found to contain less than 15 to 20% soil particles passing a No. 200 sieve. Sumps and sump pumps may be used to effectively dewater soils that occur below the groundwater table and contain more than 20% soil particles passing a No. 200 sieve.

5.2 OSHA Guidelines for Trench Shoring/Bracing

The site soils were categorized as Types B and C soils in accordance with OSHA requirements as referenced in Section 1.3.4 of this report. The site soils were categorized based upon the site groundwater conditions, the results of laboratory tests (moisture content determinations, Atterberg Limits, percent soil particles passing a No. 200 sieve, and unconfined compression tests) and pocket penetrometer values measured during drilling.

5.3 Earth Pressure Analyses for Design of Below Ground Structures

Earth pressure coefficients may be used to define the lateral loads exerted by the overburden soils on underground structures. The earth pressure coefficients for the soils, as provided in this report, were computed by using Rankine's methods. The recommended lateral earth pressure coefficients and equivalent fluid weight values, provided in this report, are based on soil properties as summarized in Section 1.3.5 of this report. Earth pressure design parameters provided in this report for use in designing permanent below ground structures, are based on effective stress and shear strength parameters.

The earth pressure envelope as suggested by Braja Das, and shown in Figures 4A and 4B, may be used to define lateral loads exerted by the overburden soils on temporary underground structures such as temporary trench shoring and bracing for excavations in Section 1.3.6 of this report. The earth pressure envelope was developed in the assumption that the water table is below the bottom of the cut and the sands are assumed to be undrained and pore water pressure is not considered.

6.0 CONSTRUCTION CONSIDERATIONS

The following recommendations should be followed with regard to construction of the proposed water line:

- **Construction dewatering should be performed in order to lower the water table to a depth of at least 2 feet below the bottom of any excavation, as applicable.**
- **Water line backfill criteria should comply with the recommendations provided in Section 1.3 of this report.**
- **Construction operations should be monitored by a representative of the geotechnical engineer.**
- **Materials testing should be performed to assure that acceptable materials and construction methods are provided by the contractor.**

7.0 CLOSING REMARKS

HTS, Inc. Consultants has performed a geotechnical investigation and provided recommendations pertaining to the design and construction of approximately ± 8,000 linear feet (l.f.) of 24-inch water line from about 4,000 l.f. west of I-45 to Avenue L along the north side of Gulf Coast Water Authority irrigation channel in Galveston County, Texas. This report has been prepared for the exclusive use of the Dannenbaum Engineering Corporation in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

In the event that changes are made in the nature, design, or location of the proposed route of the water line, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the findings/recommendations of this report are modified or verified in writing. The analyses and recommendations presented in this report are based upon data obtained from 9 geotechnical borings drilled on December 19, 30 and 31, 2013. The nature and extent of variations within the subsurface materials may not become evident until after construction is initiated. If significant variations in the subsurface materials are encountered during construction, it may be necessary to re-evaluate the recommendations provided in this report.

TABLE

HTS, INC.
Consultants

TABLE 1

LABORATORY TEST SUMMARY

PROJECT: Proposed I-45/Hwy 6 Water Distribution System

LOCATION: Galveston County, Texas

CLIENT: Dannenbaum Engineering Corporation

HTS PROJECT NO.: 13-S-484

Boring No.	Sample Depth (feet)	Type of Material	Moisture Content (%)	Dry Density (pcf)	Atterberg Limits (%)			-200 Sieve (%)	Unconfined Compressive Strength (tsf)	Strain (%)	Lateral Pressure (psi)	Remarks
					LL	PL	PI					
1	2-4	Fat Clay (CH)	33.7	85.8	72	23	49	96.4	0.6 (1,2)	8.2	0	(1) Sample failed along sand fissures.
	6-8	Fat Clay (CH)	28.9	95.4	67	22	45	94.8	1.1 (1,2)	5.4	0	(2) Sample failed along slickensides.
2	0-2	Lean Clay (CL)	19.0		48	15	33					
	8-10	Sandy Lean Clay (CL)	24.2	104.9	27	18	9	59.8	0.5 (1)	6.2	0	
3	4-6	Lean Clay (CL)	20.4		44	16	28					
	8-10	Lean Clay With Sand (CL)	24.5		39	16	23	83.6				
4	0-1	Sandy Silt (ML)	20.9					61.0				
	2-4	Sandy Lean Clay (CL)	14.2	114.6	30	13	17	50.1	0.8 (1)	10.2	0	
	6.5-8	Silty Sand (SM)	23.0					13.0				
5	4-6	Fat Clay (CH)	20.7		55	20	35					
	8-10	Clayey Sand (SC)	25.1		24	15	9	46.8				
6	4-6	Sandy Lean Clay (CL)	26.6		28	19	9	58.7				
	6-8	Lean Clay with Sand (CL)	25.5		37	15	22	78.4				
7	0-1	Lean Clay With Sand (CL)	23.0					75.1				
	2-4	Lean Clay With Sand (CL)	24.8		49	16	33					
	6-7	Clayey Sand (SC)	22.6					46.9				
	8-10	Silty Sand (SM)	26.4					31.5				

HTS, INC. Consultants

TABLE 1

LABORATORY TEST SUMMARY

PROJECT: Proposed I-45/Hwy 6 Water Distribution System

LOCATION: Galveston County, Texas

CLIENT: Dannenbaum Engineering Corporation

HTS PROJECT NO.: 13-S-484

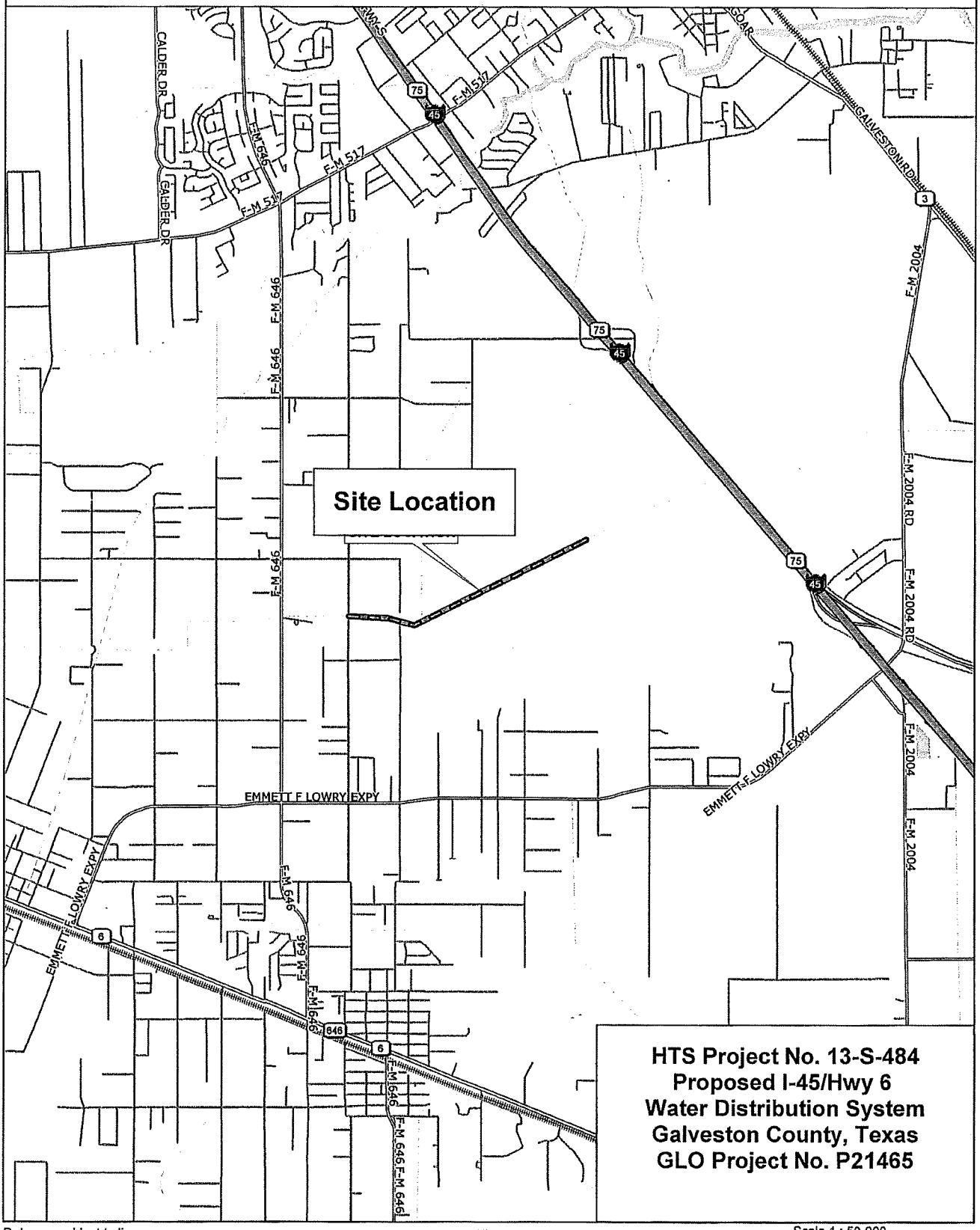
Boring No.	Sample Depth (feet)	Type of Material	Moisture Content (%)	Dry Density (pcf)	Atterberg Limits (%)			-200 Sieve (%)	Unconfined Compressive Strength (tsf)	Strain (%)	Lateral Pressure (psi)	Remarks
					LL	PL	PI					
8	2-4	Lean Clay (CL)	23.1		47	17	30	90.4				
	6-8	Lean Clay (CL)	25.7		46	17	29					
9	0-2	Sandy Lean Clay (CL)	18.9		35	16	19	66.3				
	4-6	Sandy Lean Clay (CL)	21.5		32	16	16					
	6-8	Clayey Sand (SC)	23.1					39.5				

HTS, INC. Consultants

FIGURES

VICINITY MAP

FIGURE 1



HTS Project No. 13-S-484
Proposed I-45/Hwy 6
Water Distribution System
Galveston County, Texas
GLO Project No. P21465

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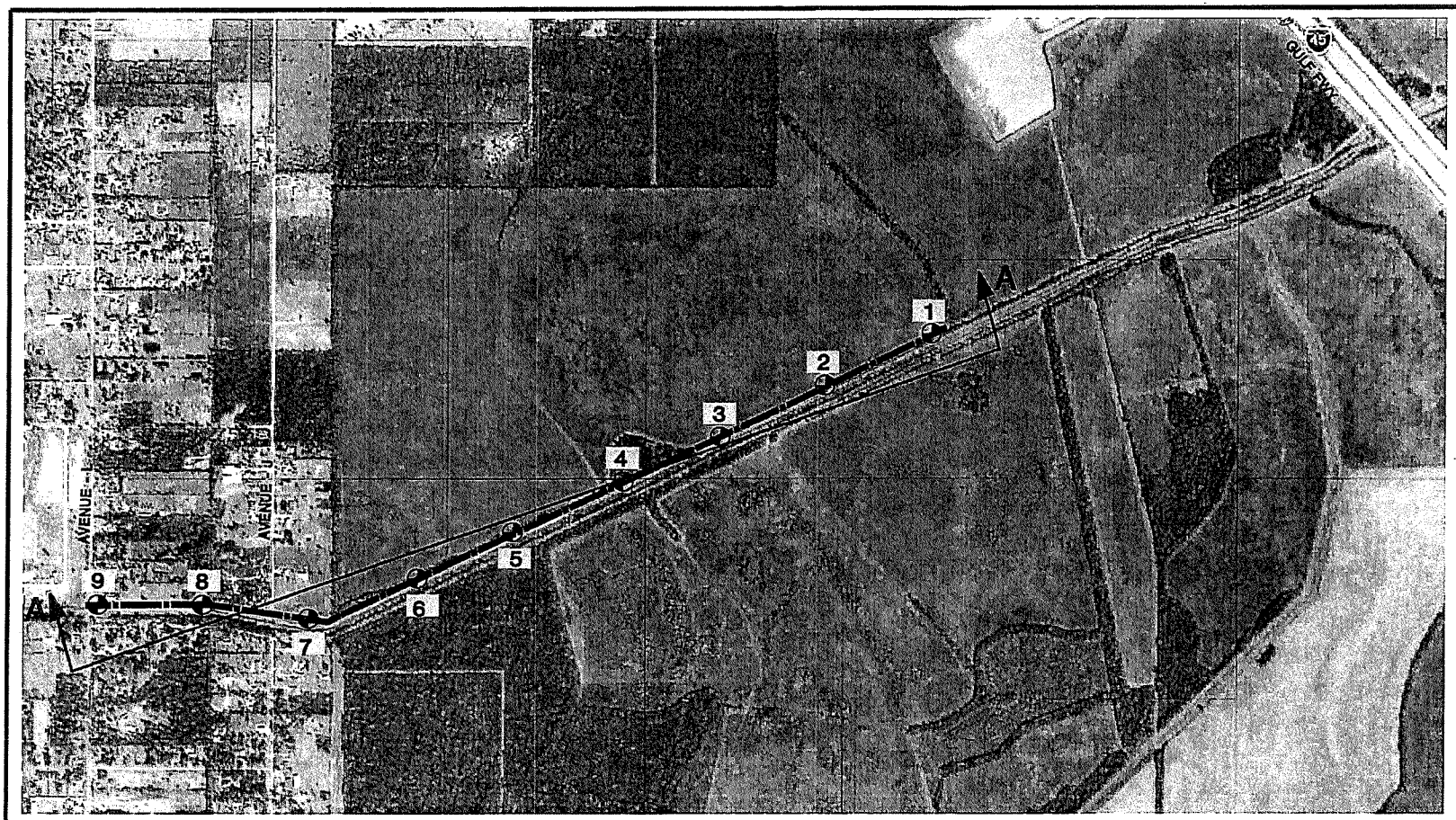
www.delorme.com

TN
MN (2.7°E)

Scale 1 : 50,000

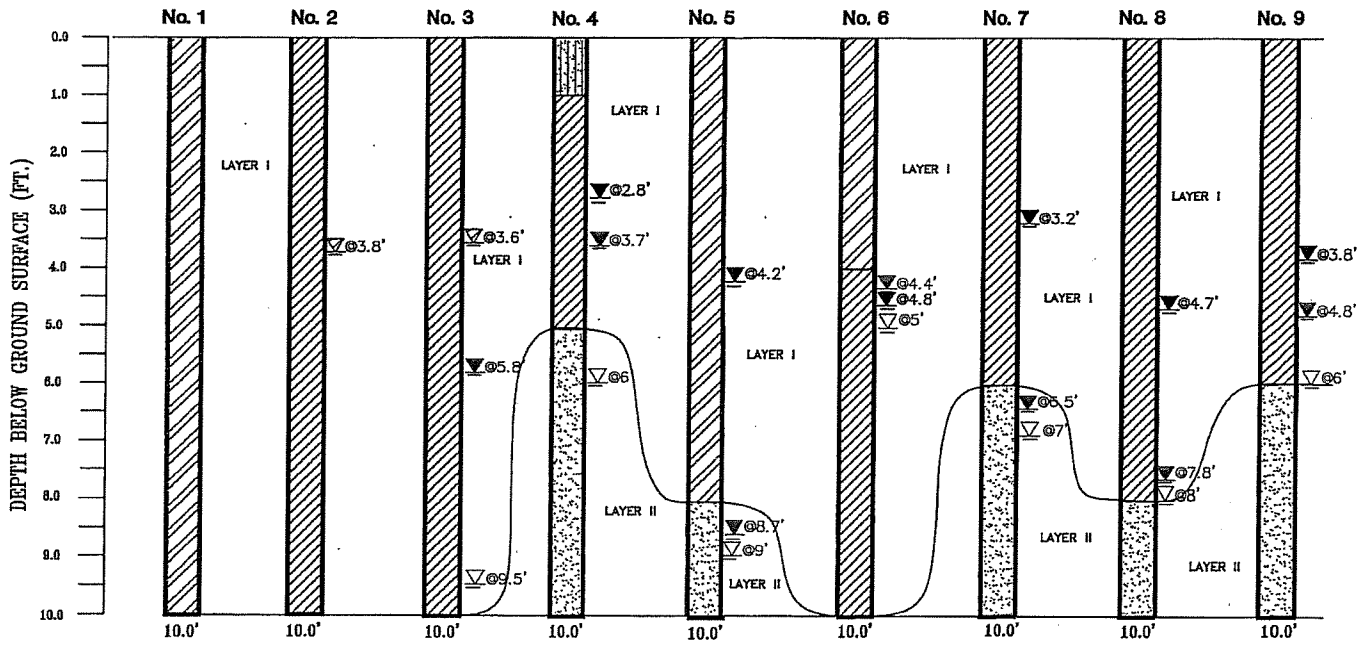
1" = 4,166.7 ft Data Zoom 12-0



LEGEND

◓ Geotechnical borings included in the study

HTS, Inc. Consultants		
Proposed I-45/Hwy 6 Water Distribution System GLO Project No. P21465 Galveston County, Texas		
DRAWN BY: IAT	DATE: 02-06-14	SCALE: NTS
CHECKED BY: BFM	DATE: 02-06-14	
HTS PROJECT NO.: 13-S-484		FIGURE: 2
Boring Locations		



SECTION A–A

LEGEND

- BORING LOCATIONS
- WATER MEASURED DURING DRILLING
- WATER MEASURED 15 MINUTES AFTER WATER WAS ENCOUNTERED
- WATER MEASURED WITHIN 3 HOURS AFTER THE COMPLETION OF DRILLING

NOTES:

1) SEE FIGURE 2 FOR LOCATION OF SECTION A–A.
2) THE STRATIFICATION LINES SHOWN ARE OUR ESTIMATION BETWEEN BORINGS AND DO NOT REPRESENT ACTUAL SUBSOIL CONDITIONS BETWEEN BORINGS.
3) SEE CORRESPONDING BORING LOGS FOR DETAILED SUBSOIL AND GROUNDWATER INFORMATION.

SOIL LAYERS

- SILTY SAND
- LEAN CLAY, LEAN CLAY WITH SAND, SANDY LEAN CLAY
- FAT CLAY
- SILTY SAND AND CLAYEY SAND

HTS, Inc. Consultants

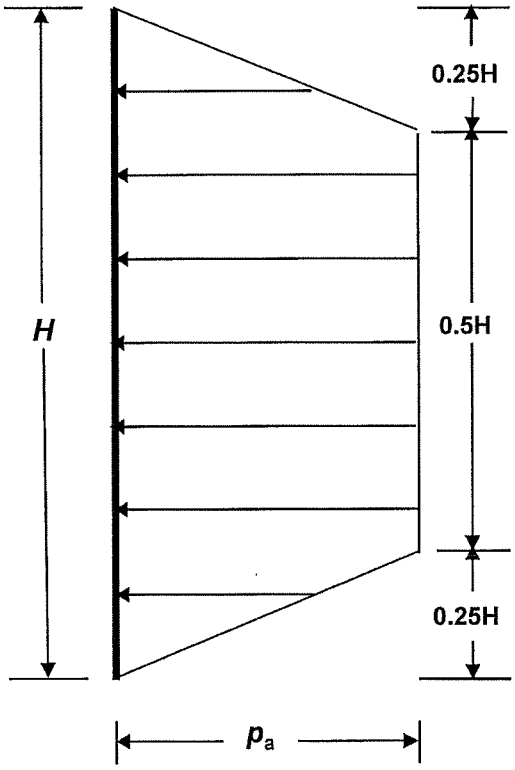
Proposed I-45/Hwy 6
Water Distribution System
GLO Project No. P21465
Galveston County, Texas

DRAWN BY: IAT	DATE: 02–06–14	SCALE: Hor. NTS Vert: 1"=2'
CHECKED BY: BFM	DATE: 02–06–14	
HTS PROJECT NO.: 13-S-484		FIGURE: 3

Soil Profile Section A-A

PRESSURE ENVELOPE FOR BRACED-CUT DESIGN

Cuts in Stiff Clays



Condition: $\frac{\gamma H}{c} \leq 4$

$p_a = 0.2 * \gamma * H$ to $0.4 * \gamma * H$

(with an average of $0.3 \gamma H$)

where: c = undrained cohesion ($\phi = 0$)

γ = unit weight of clay

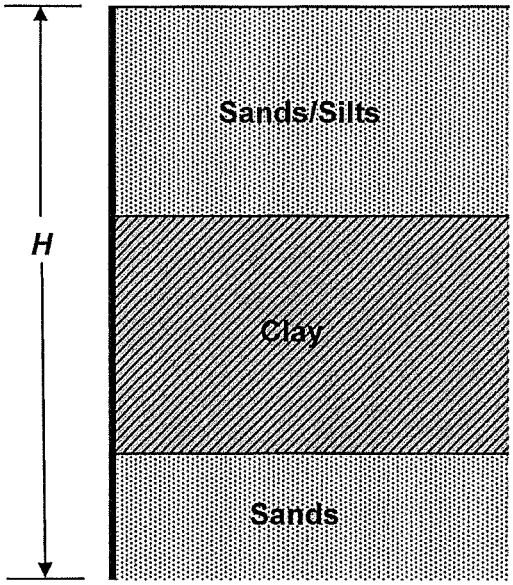
Reference: Pages 522 and 523, Principles of Foundation Engineering, 4th Edition, Braja Das

HTS, INC. Consultants

Pressure Envelope for Braced-Cut Design (Cuts in Stiff Clays)	
Proposed I-45/Hwy 6 Water Distribution System Galveston County, Texas GLO Project No. P21465	
HTS Project No.: 13-S-484	Figure 4A

PRESSURE ENVELOPE FOR BRACED-CUT DESIGN

Cuts in Layered Soils



When layers of both sands and clays are encountered and a braced cut is being constructed, it is proposed that an equivalent value of cohesion ($\phi = 0$ concept) should be determined in accordance with the following manner.

$$c_{av} = \frac{1}{2H}[\gamma_s K_s H_s \tan \phi_s + (H - H_s) n' q_u]$$

where: H = total height of the cut
γ_s = unit weight of sand
H_s = height of the sand layer
K_s = a lateral earth pressure coefficient for the sand layer (≈1.0)
ϕ_s = angle of friction of sand
q_u = unconfined compression strength of clay
n' = a coefficient of progressive failure (ranging from 0.5 to 1.0; average value of 0.75)

The average unit weight, γ_a, of the layers may be obtained using the following equation:

$$\gamma_a = \frac{1}{H}[\gamma_s H_s + (H - H_s) \gamma_c]$$

where: γ_c = saturated unit weight of clay layer

Once the average values of cohesion and unit weight are determined, the pressure envelopes in clay can be used to design the cuts.

When several clay layers are encountered in the cut, the average undrained cohesion becomes

$$c_{av} = \frac{1}{H}(c_1 H_1 + c_2 H_2 + \ldots + c_n H_n)$$

The average unit weight, γ_a, is

$$\gamma_a = \frac{1}{H}(\gamma_1 H_1 + \gamma_2 H_2 + \ldots + g_n H_n)$$

Reference: Pages 524 and 525, Principles of Foundation Engineering, 4th Edition, Braja Das

HTS, INC. Consultants

Pressure Envelope for Braced-Cut Design (Cuts in Layered Soils)	
Proposed I-45/Hwy 6 Water Distribution System Galveston County, Texas GLO Project No. P21465	
HTS Project No.: 13-S-484	Figure 4B

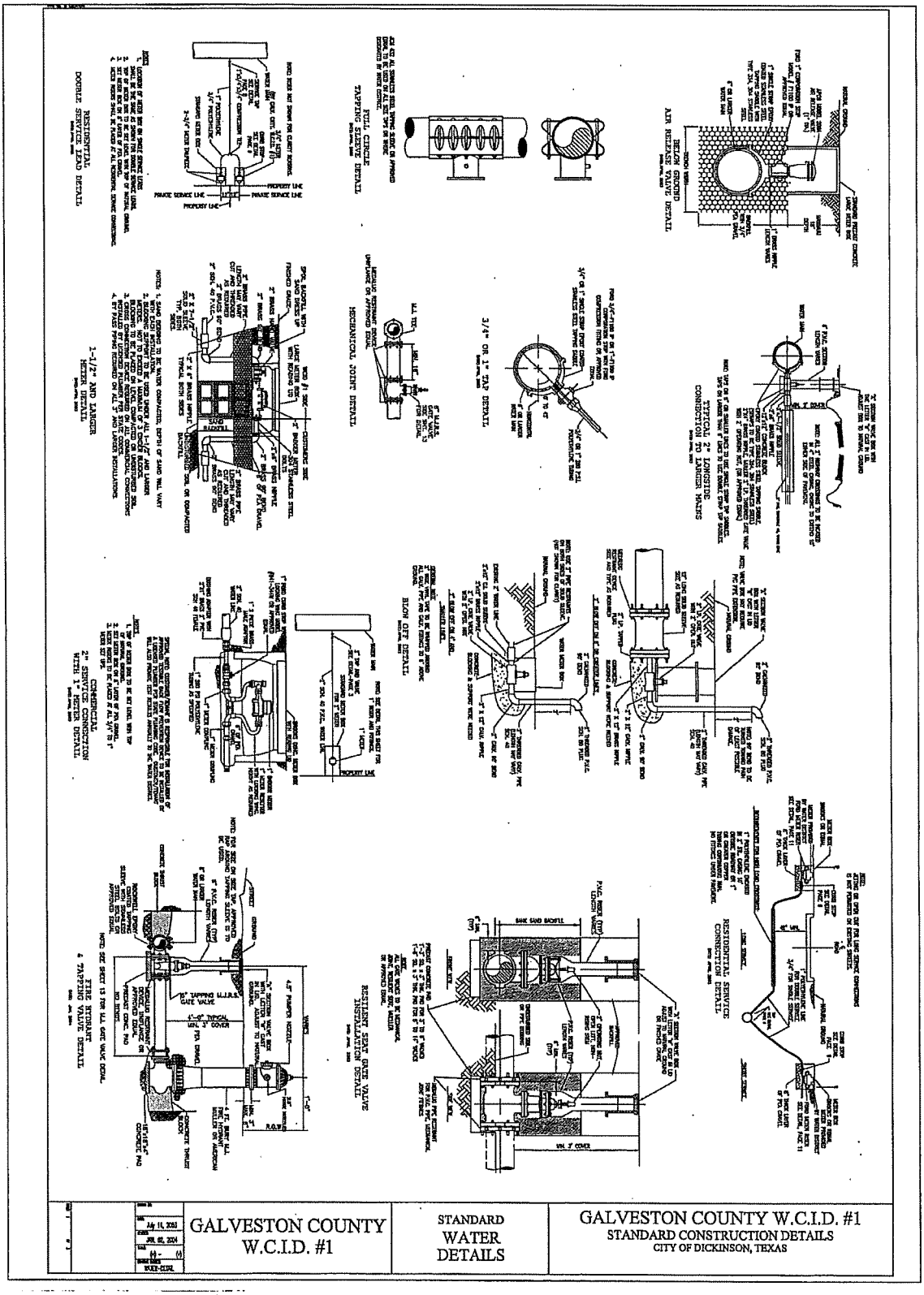

GALVESTON COUNTY
W.C.I.D. #1
STANDARD
WATER
DETAILS
GALVESTON COUNTY W.C.I.D. #1
STANDARD CONSTRUCTION DETAILS
CITY OF DICKINSON, TEXAS

FIGURE 5

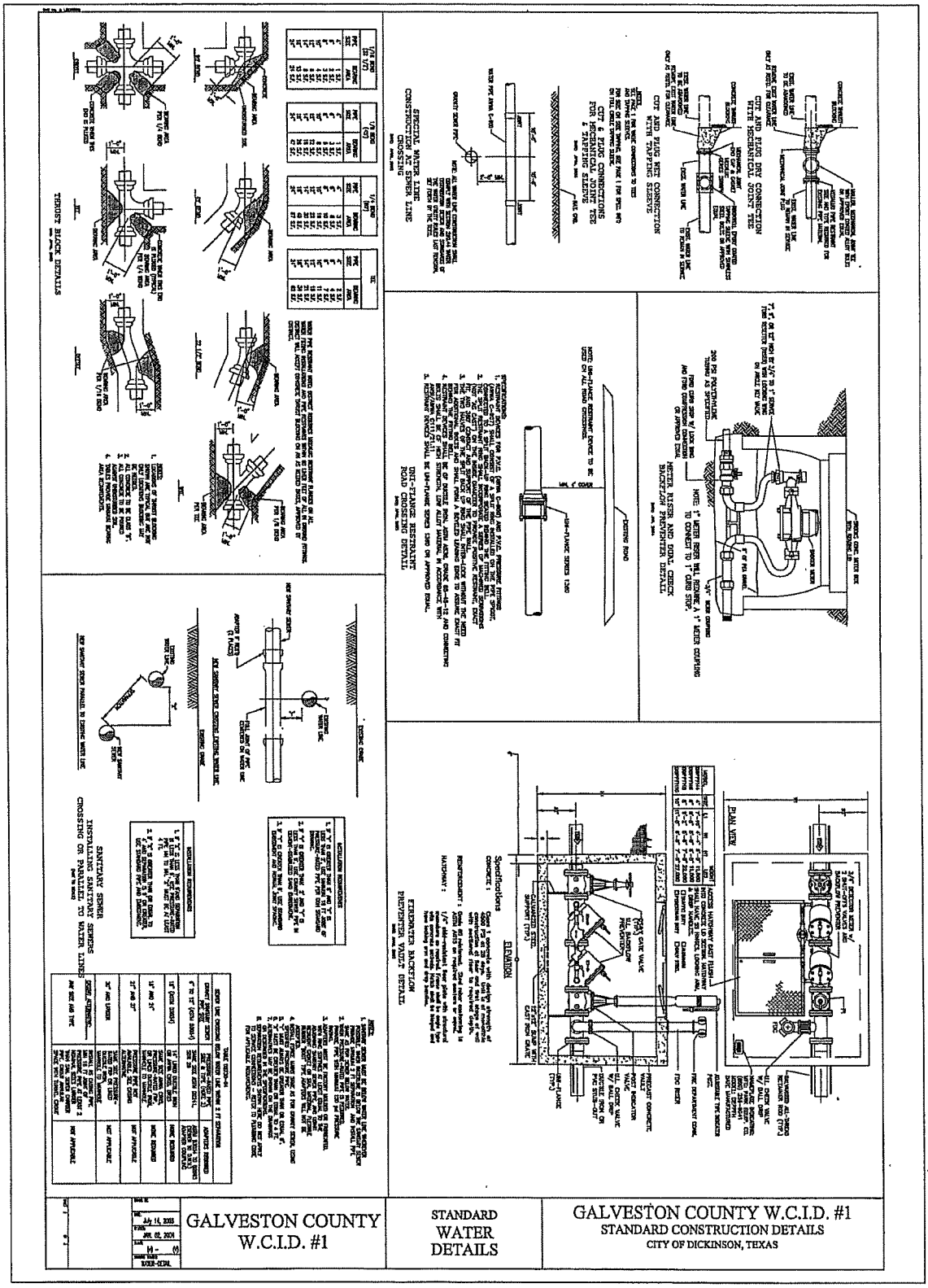

GALVESTON COUNTY W.C.I.D. #1
STANDARD CONSTRUCTION DETAILS
CITY OF DICKINSON, TEXAS
STANDARD WATER DETAILS
GALVESTON COUNTY W.C.I.D. #1

FIGURE 6

GALVESTON COUNTY
W.C.I.D. #1
STANDARD
WATER
DETAILS
GALVESTON COUNTY W.C.I.D. #1
STANDARD CONSTRUCTION DETAILS
CITY OF DICKINSON, TEXAS
REDUCED PRESSURE BACKFLOW PREVENTER w/
STRAINER ON PRECAST CONCRETE PAD
CHECK VALVE ASSEMBLY w/ 4" FDC & PIV
MODEL FDC2-4" THRU 8"
PLAN VIEW
ELEVATION
Specifications

FIGURE 7

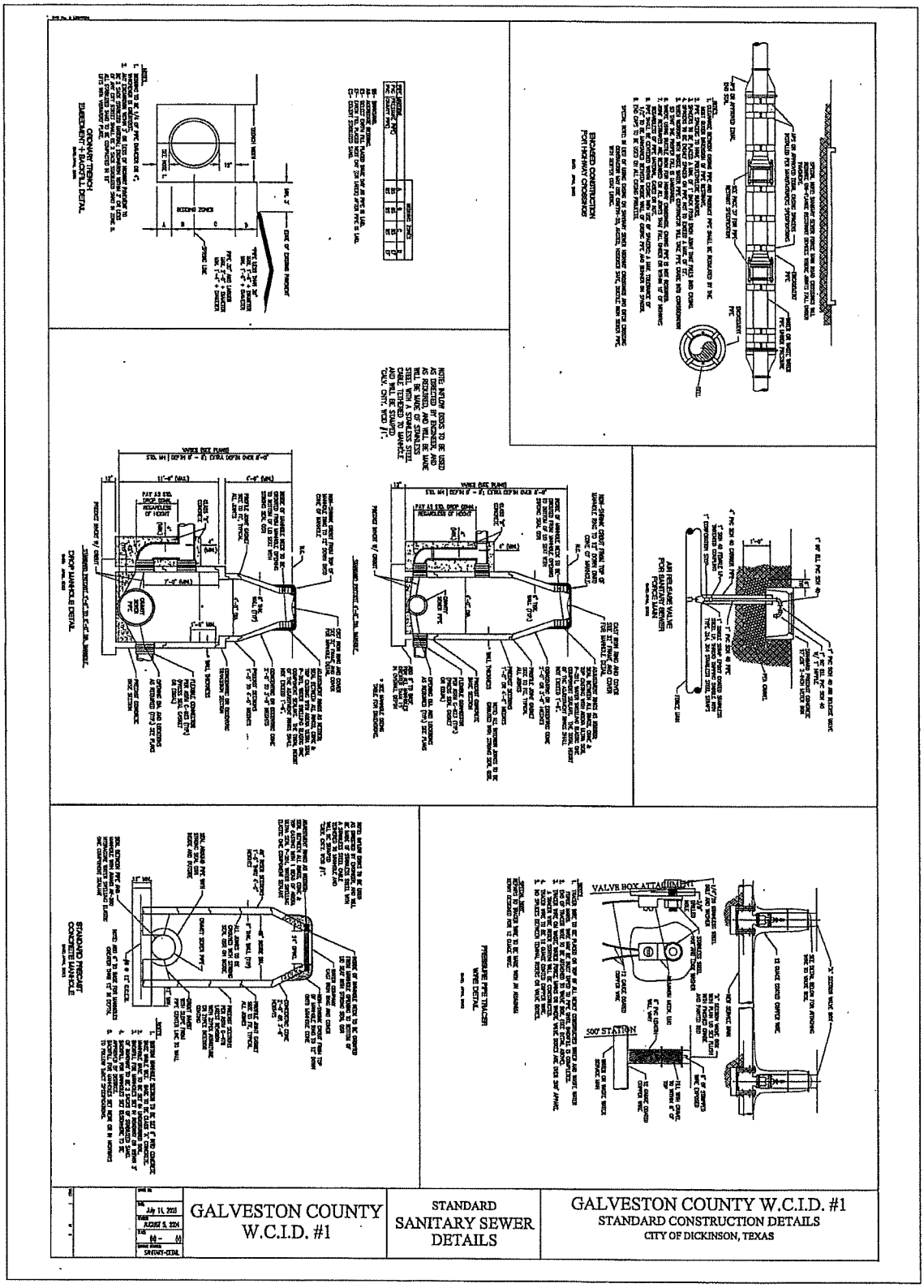

GALVESTON COUNTY
W.C.I.D. #1
STANDARD
SANITARY SEWER
DETAILS
GALVESTON COUNTY W.C.I.D. #1
STANDARD CONSTRUCTION DETAILS
CITY OF DICKINSON, TEXAS

FIGURE 8

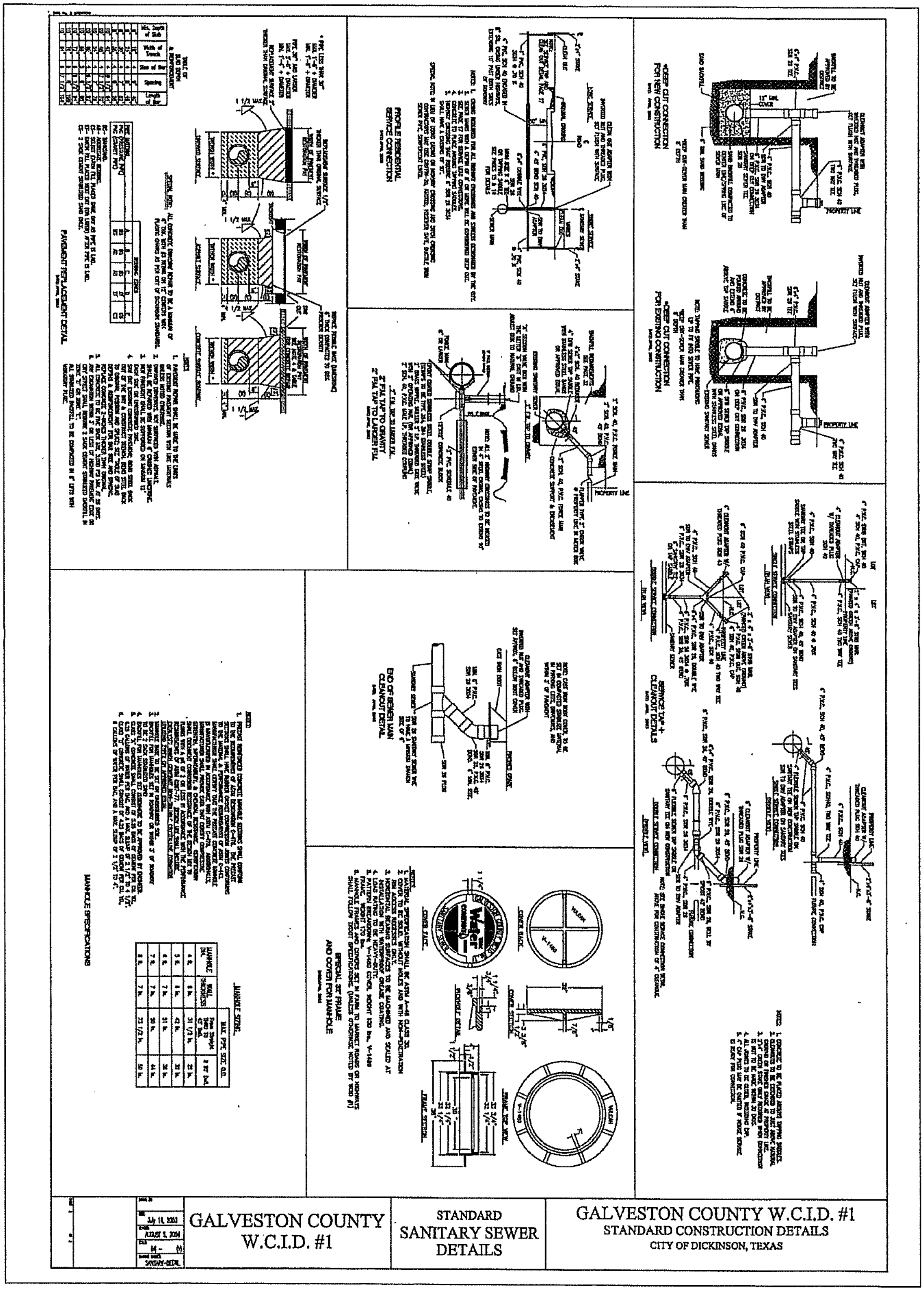

GALVESTON COUNTY
W.C.I.D. #1
STANDARD
SANITARY SEWER
DETAILS
GALVESTON COUNTY W.C.I.D. #1
STANDARD CONSTRUCTION DETAILS
CITY OF DICKINSON, TEXAS
PAVEMENT REPLACEMENT DETAIL
PROFILE RESIDENTIAL SERVICE CONNECTION
MANHOLE SPECIFICATIONS
END OF REMOTE MAIN CLEANOUT DETAIL
SERVICE TAP + CLEANOUT DETAILS

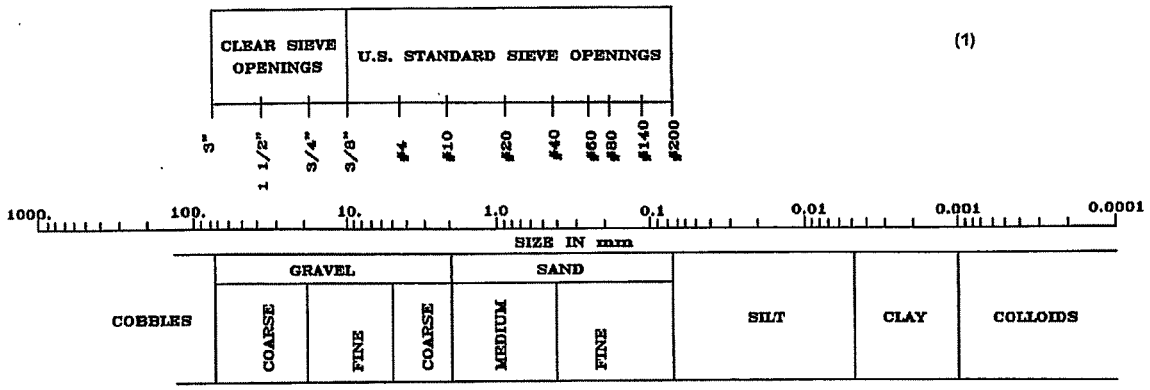
FIGURE 9

APPENDIX A

BORING LOGS
(Boring Nos. 1 through 9)

HTS, INC. Consultants

DESCRIPTION OF BORING LOG TERMS



(1)

U S C S CLASSIFICATION FOR SOILS

BORING LOG LEGEND

- Core
- Penetration Sample
- No Recovery
- J - Jar
- Groundwater Level Encountered During Drilling
- Static Water Level

SPLIT-SPOON SAMPLER DRIVING RECORD

Blows Per Foot	Description
8-10-12	Number of blows for each six inch increment of split spoon penetration
50/5"	Number of blows of split spoon penetration for the indicated depth of penetration in inches.

STRENGTH OF COHESIVE SOILS (2)

Consistency	Undrained Shear Strength, Tons per Sq. Ft.	Unconfined Compressive Strength, Tons Per Sq. Ft. (Pocket Penetrometer)
Very Soft	0.12	Less than 0.25
Soft	0.12 to 0.25	0.25 to 0.50
Firm	0.25 to 0.50	0.50 to 1.0
Stiff	0.50 to 1.0	1.0 to 2.0
Very Stiff	1.0 to 2.0	2.0 to 4.0
Hard	Greater than 2.0	Greater than 4.0

DENSITY OF GRANULAR SOILS (2)

Blows Per Foot	Descriptive Term	Relative Density %
0 - 4	Very Loose	Less than 20
5 - 10	Loose	20 to 40
11 - 30	Medium Dense	40 to 60
31 - 50	Dense	60 to 80
Over 50	Very Dense	Greater than 80

SOIL STRUCTURE

Slickensided	Having planes of weakness that appear slick and glossy. The degree of slickensidedness depends upon the spacing of slickensides and the ease of breaking along these planes.
Fissured	Containing shrinkage or relief cracks, often filled with fine sand or silt: usually more or less vertical.
Pocket	Inclusion of material of different texture that is smaller than the diameter of the sample.
Parting	Inclusion less than 1/8 inch thick extending through the sample.
Seam	Inclusion 1/8 inch to 3 inches thick extending through the sample.
Layer	Inclusion greater than 3 inches thick extending through the sample.
Laminated	Soil sample composed of alternating partings or seams of differernt soil types.
Interlayered	Soil sample composed of alternating layers if different soil types.
Intermixed	Soil sample composed of pockets of different soil types and layered or laminated structure is not evident.
Calcareous	Having appreciable quantities of carbonate.

Notes:
The boring logs and related information depict subsurface conditions only at the specific locations and dates indicated. Soil conditions and water levels at other locations may differ from conditions occuring at these boring locations. Also the passage of time may result in a change in the conditions at these boring locations.

References:
(1) ASTM D 422
(2) Soil Mechanics in Engineering Practice, Terzaghi and Peck, 1967.

HTS, INC. Consultants

LOG OF BORING

PROJECT: Proposed I-45/Hwy 6 Water Distribution System

BORING NO.: 1
BORING LOCATION: See Figure 2
BORING TYPE: Auger

PROJECT LOCATION: Galveston County, Texas

HTS PROJECT NO.: 13-S-484

CLIENT: Dannenbaum Engineering Corporation

DATE: December 30, 2013

Depth (ft.)	Sample Type	Sample No.	Penetrometer Reading (tsf)	SPT Blows Per Foot	Description of Stratum
1		1	3.25		Gray FAT CLAY (CH), firm to very stiff w/ sand pockets
2					- w/ sand fissures and slickensides at 2'
3		2	1.5		
4					- tan and light gray w/ ferrous nodules and calcareous nodules at 4'
5		3	1.75		
6					
7		4	2.25		
8					
9		5	2.25		
10					10'
					Boring terminated at 10'

Water was not encountered during drilling. Approximately 3 hours after drilling was complete, the boring was dry and open to a depth of 9'.

HTS, INC. Consultants

LOG OF BORING

PROJECT: Proposed I-45/Hwy 6 Water Distribution System

BORING NO.: 2
BORING LOCATION: See Figure 2
BORING TYPE: Auger

PROJECT LOCATION: Galveston County, Texas

HTS PROJECT NO.: 13-S-484
DATE: December 30, 2013

CLIENT: Dannenbaum Engineering Corporation

Depth (ft.)	Sample Type	Sample No.	Penetrometer Reading (tsf)	SPT Blows Per Foot	Description of Stratum
1		1	2.75		Gray LEAN CLAY (CL), stiff to very stiff w/ sand pockets
2					
3		2	1.75		▼ 3.8'
4					- tan and light gray w/ ferrous nodules and calcareous nodules at 4'
5		3	1.75		
6					
7		4	1.75		
8					8'
9		5	1.0		Tan and light gray SANDY LEAN CLAY (CL), firm to stiff w/ sand fissures
10					10'
					Boring terminated at 10'

Water was not encountered during drilling. Approximately 2 hours after drilling was complete, the water level was measured at a depth of 3.8' and the boring was open to a depth of 8.9'.

HTS, INC. Consultants

LOG OF BORING

PROJECT: Proposed I-45/Hwy 6 Water Distribution System

BORING NO.: 3
BORING LOCATION: See Figure 2
BORING TYPE: Auger

PROJECT LOCATION: Galveston County, Texas

HTS PROJECT NO.: 13-S-484
DATE: December 30, 2013

CLIENT: Dannenbaum Engineering Corporation

Depth (ft.)	Sample Type	Sample No.	Penetrometer Reading (tsf)	SPT Blows Per Foot	Description of Stratum
1		1	4.0		Gray LEAN CLAY WITH SAND (CL), very stiff
2					2'
3		2	1.5		Gray and light gray LEAN CLAY (CL), stiff to very stiff w/ sand pockets, ferrous nodules, and calcareous nodules ▼ 3.6'
4					- tan and light gray at 4'
5		3	2.25		▼ 5.8'
6					
7		4	1.75		
8					8'
9		5	1.0		Light gray LEAN CLAY WITH SAND (CL), firm to stiff w/ sand pockets and sand seams ▽ 9.5'
10					10'
					Boring terminated at 10'

Water was encountered at a depth of 9.5' during drilling. Approximately 15 minutes after the water was initally observed, the water level was measured at a depth of 5.8'. Approximately 1 hour after drilling was complete, the water level was measured at a depth of 3.6' and the boring was open to a depth of 6.5'.

HTS, INC. Consultants

LOG OF BORING

PROJECT: Proposed I-45/Hwy 6 Water Distribution System

BORING NO.: 4
BORING LOCATION: See Figure 2
BORING TYPE: Auger

PROJECT LOCATION: Galveston County, Texas

HTS PROJECT NO.: 13-S-484
DATE: December 30, 2013

CLIENT: Dannenbaum Engineering Corporation

Depth (ft.)	Sample Type	Sample No.	Penetrometer Reading (tsf)	SPT Blows Per Foot	Description of Stratum
1		1	1.0		Gray SANDY SILT (ML), loose 1'
2					Gray and light gray SANDY LEAN CLAY (CL), firm to stiff w/ calcareous nodules and sand fissures ▼ 2.8'
3		2	1.5		
4					▼ 3.7'
5		3	1.0		5'
6					Tan SILTY SAND (SM), loose to medium dense ▽ 6' - light gray at 6'
7	X	4		6-8-11	
8	X				
9	X	5		6-9-15	
10	X				10'

Boring terminated at 10'

Water was encountered at a depth of 6' during drilling. Approximately 15 minutes after the water was initally observed, the water level was measured at a depth of 3.7'. Approximately 30 minutes after drilling was complete, the water level was measured at a depth of 2.8' and the boring was open to a depth of 5.6'.

HTS, INC. Consultants

LOG OF BORING

PROJECT: Proposed I-45/Hwy 6 Water Distribution System

BORING NO.: 5
BORING LOCATION: See Figure 2
BORING TYPE: Auger

PROJECT LOCATION: Galveston County, Texas

HTS PROJECT NO.: 13-S-484
DATE: December 31, 2013

CLIENT: Dannenbaum Engineering Corporation

Depth (ft.)	Sample Type	Sample No.	Penetrometer Reading (tsf)	SPT Blows Per Foot	Description of Stratum
1		1	2.0		Gray FAT CLAY (CH), stiff to very stiff w/ sand pockets
2					- w/ ferrous nodules and calcareous nodules at 2'
3		2	2.25		
4					▼ 4.2' - w/ calcareous nodules pockets at 4'
5		3	1.25		
6					- w/ sand seams at 6'
7		4	1.5		
8					8' ▼ 8.7' Tan and light gray CLAYEY SAND (SC), very loose
9		5	0.25		▽ 9'
10					10' Boring terminated at 10'

Water was encountered at a depth of 9' during drilling. Approximately 15 minutes after the water was initally observed, the water level was measured at a depth of 8.7'. Approximately 1 hour after drilling was complete, the water level was measured at a depth of 4.2' and the boring was open to a depth of 9.4'.

HTS, INC. Consultants

LOG OF BORING

PROJECT: Proposed I-45/Hwy 6 Water Distribution System

BORING NO.: 6
BORING LOCATION: See Figure 2
BORING TYPE: Auger

PROJECT LOCATION: Galveston County, Texas

HTS PROJECT NO.: 13-S-484
DATE: December 31, 2013

CLIENT: Dannenbaum Engineering Corporation

Depth (ft.)	Sample Type	Sample No.	Penetrometer Reading (tsf)	SPT Blows Per Foot	Description of Stratum
1		1	2.0		Tan FAT CLAY (CH), firm to stiff w/ sand pockets
2					- w/ silt pockets and concentration of calcareous nodules at 2'
3		2	1.0		
4					4'
5		3	0.25		▼ 4.4' ▼ 4.8' Tan SANDY LEAN CLAY (CL), soft ▽ 5'
6					6'
7		4	1.25		Tan and light gray LEAN CLAY WITH SAND (CL), stiff to very stiff w/ calcareous nodules, sand pockets, and sand fissures
8					
9		5	2.0		
10					10'
					Boring terminated at 10'

Water was encountered at a depth of 5' during drilling. Approximately 15 minutes after the water was initally observed, the water level was measured at a depth of 4.4'. Approximately 30 minutes after drilling was complete, the water level was measured at a depth of 4.8' and the boring was open to a depth of 6.4'.

HTS, INC. Consultants

LOG OF BORING

PROJECT: Proposed I-45/Hwy 6 Water Distribution System

PROJECT LOCATION: Galveston County, Texas

CLIENT: Dannenbaum Engineering Corporation

BORING NO.: 7
BORING LOCATION: See Figure 2
BORING TYPE: Auger

HTS PROJECT NO.: 13-S-484
DATE: December 19, 2013

Depth (ft.)	Sample Type	Sample No.	Penetrometer Reading (tsf)	SPT Blows Per Foot	Description of Stratum
1		1	0.25		Gray LEAN CLAY WITH SAND (CL), soft to very stiff
2			1.75		- tan and light gray w/ ferrous nodules and sand fissures at 2'
3		2	2.0		▼ 3.2'
4					
5		3	2.5		
6					6'
7	J	4			▼ 6.5' Tan and light gray CLAYEY SAND (SC) ▽ 7'
8					8'
9	J	5			Tan and light gray SILTY SAND (SM)
10					10'

Boring terminated at 10'

Water was encountered at a depth of 7' during drilling. Approximately 15 minutes after the water was initally observed, the water level was measured at a depth of 6.5'. Approximately 2 hours after drilling was complete, the water level was measured at a depth of 3.2' and the boring was open to a depth of 7.1'.

HTS, INC. Consultants

LOG OF BORING

PROJECT: Proposed I-45/Hwy 6 Water Distribution System

PROJECT LOCATION: Galveston County, Texas

CLIENT: Dannenbaum Engineering Corporation

BORING NO.: 8
BORING LOCATION: See Figure 2
BORING TYPE: Auger

HTS PROJECT NO.: 13-S-484
DATE: December 19, 2013

Depth (ft.)	Sample Type	Sample No.	Penetrometer Reading (tsf)	SPT Blows Per Foot	Description of Stratum
1		1	0.75		Gray SANDY LEAN CLAY (CL), firm
					1'
2					Gray LEAN CLAY (CL), firm to stiff - tan and light gray at 2'
3		2	1.0		
4					- w/ ferrous nodules and sand pockets at 4'
					▼ 4.7'
5		3	1.25		
6					
7		4	2.0		▼ 7.8'
8					8' ▽ 8'
9		5	0.25		Tan and light gray CLAYEY SAND (SC), very loose
10					10'
					Boring terminated at 10'

Water was encountered at a depth of 8' during drilling. Approximately 15 minutes after the water was initally observed, the water level was measured at a depth of 7.8'. Approximately 1 hour after drilling was complete, the water level was measured at a depth of 4.7' and the boring was open to a depth of 7.7'.

HTS, INC. Consultants

LOG OF BORING

PROJECT: Proposed I-45/Hwy 6 Water Distribution System

PROJECT LOCATION: Galveston County, Texas

CLIENT: Dannenbaum Engineering Corporation

BORING NO.: 9
BORING LOCATION: See Figure 2
BORING TYPE: Auger

HTS PROJECT NO.: 13-S-484
DATE: December 19, 2013

Depth (ft.)	Sample Type	Sample No.	Penetrometer Reading (tsf)	SPT Blows Per Foot	Description of Stratum
1		1	2.5		Gray SANDY LEAN CLAY (CL), firm to very stiff
2					- gray and light gray w/ concentrations of calcareous nodules at 2'
3		2	1.25		▼ 3.8'
4					- tan w/ calcareous nodules at 4'
5		3	1.0		▼ 4.8'
6					6' ▽ 6'
7	J	4			Tan CLAYEY SAND (SC)
8					
9	J	5			
10					10'

Boring terminated at 10'

Water was encountered at a depth of 6' during drilling. Approximately 15 minutes after the water was initally observed, the water level was measured at a depth of 4.8'. Approximately 30 minutes after drilling was complete, the water level was measured at a depth of 3.8' and the boring was open to a depth of 6.2'.

HTS, INC. Consultants

THE COUNTY OF GALVESTON

RUFUS G. CROWDER, CPPO CPPB
PURCHASING AGENT

GWEN MCLAREN, CPPB
ASST. PURCHASING AGENT

COUNTY COURTHOUSE
722 Moody (21st Street)
Fifth (5th) Floor
GALVESTON, TEXAS 77550
(409) 770-5371

October 2, 2017

RE: ADDENDUM #3
Bid #B171025, CDBG Round 2.2 I-45 Waterline Project

To All Prospective Bidders,

Attached you will find Addendum #3 for Bid #B171025, CDBG Round 2.2 I-45 Waterline Project.

As a reminder, all questions regarding this bid must be submitted in writing to:

Rufus G. Crowder, CPPO CPPB
Galveston County Purchasing Agent
722 Moody, Fifth (5th) Floor
Galveston, Texas 77550
E-mail: rufus.crowder@co.galveston.tx.us

If you have any further questions regarding this bid, please address them to Rufus Crowder, CPPO CPPB, Purchasing Agent, via e-mail at rufus.crowder@co.galveston.tx.us, or contact the Purchasing Department at (409) 770-5371.

Please excuse us for any inconvenience that this may have caused.

Sincerely,

Rufus G. Crowder, CPPO CPPB
Purchasing Agent
Galveston County

ADDENDUM NO. 3

TO THE

TECHNICAL SPECIFICATIONS, CONTRACT DOCUMENTS AND PLANS FOR

BID #B171025, CDBG ROUND 2.2: I-45 WATERLINE PROJECT
GLO CONTRACT NO. 13-465-000-7974
PROJECT NO. P21465

GALVESTON COUNTY AND THE TEXAS GENERAL LAND OFFICE

October 2, 2017

TO BIDDER OF RECORD:

This addendum, applicable to work designated above, is an amendment to the bidding documents and as such shall be a part of and included in the Contract. Acknowledge receipt of this addendum by submitting the attached acknowledgement form with your bid.

PURPOSE:

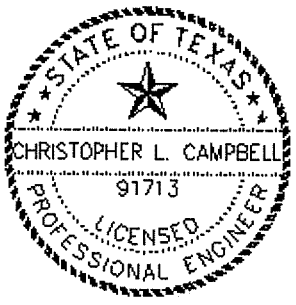
The purpose of this addendum is to clarify previously issued bid documents, technical specifications, special conditions, proposal and plans.

INSTRUCTIONS:

This Addendum uses the change page method: remove and replace or add pages, or Drawing sheets, as directed in the change instructions below.

This Addendum will not change the bid opening date of –

Thursday, October 12, 2017 at 2:00 p.m.



October 2, 2017

CHANGES TO DRAWINGS

1. Remove Sheet 1 of 41 – Cover Sheet and replace with Sheet 1 of 41 – Cover Sheet from Addendum No. 3.

2. Remove Sheet 5 of 41 – 24" Waterline Plan & Profile B.L. STA: 0+00 TO B.L. STA: 5+ and replace with Sheet 5 of 41 – 24" Waterline Plan & Profile B.L. STA: 0+00 TO B.L. STA: 5+ from Addendum No. 3.
3. Remove Sheet 25 of 41 – Flow Control/Pressure Reducing Station Details and replace with Sheet 25 of 41 – Flow Control/Pressure Reducing Station Details from Addendum No. 3.
4. Remove Sheet 26 of 41 – Metering Station Details and replace with Sheet 26 of 41 – Metering Station Details from Addendum No. 3.
5. Remove Sheet 29 of 41 – Water Details and replace with Sheet 29 of 41 – Water Details from Addendum No. 3.
6. Remove Sheet 34 of 41 – Excavation, Bedding, Backfill and Pavement Repair Details and replace with Sheet 34 of 41 – Excavation, Bedding, Backfill and Pavement Repair Details from Addendum No. 3.

CHANGES TO PROJECT MANUAL

1. Remove the Bid Proposal and replace with the Bid Proposal from Addendum No. 3.
2. Remove Technical Specifications Table of Contents and replace with the Technical Specifications Table of Contents from Addendum No. 3.
3. Remove Section 02526 – Water Meters in its entirety.
4. Remove Section 02523 - Pressure Reducing/Flow Control Valve and replace with the Section 02523 - Pressure Reducing/Flow Control Valve from Addendum No. 3.

CLARIFICATIONS

1. **Q:** Please confirm existing 39" Pipe Type, either AWWA C301 PCCP Lined Cylinder Pipe, or AWWA C303 Bar Wrapped Cylinder Pipe. Drawing 29 states pipe is "B-301". Specification summary of work page 7 of 8 says to use PCCP for construction. If existing is PCCP, connections must be completed at the joints. If the existing pipe is Bar Wrap, connections can be made using welded butt strap closures (refer to drawing 29).

   A: It is the understanding of the Engineer that the existing 39" pipe is AWWA C303 Bar Wrapped Cylinder Pipe.

2. **Q:** Spec Section 02526 - 2.01. Spec section indicates that the magmeter needs to have a pulse output and a MODBUS output. It also calls out a separate signal transmitter in 2.01.B.2 to provide a 4-20 mA output. I believe this Sensus 1107D is obsolete. Plus, the magmeter itself can provide a 4-20 mA output. Please clarify what type of output signal is needed to provide an output to the radio equipment provided by Prime Controls. Also, plan sheet 26 indicates that an equal will be allowed but the spec does not. Please clarify if an equal will be allowed for the magmeter.

   A: Since the water meter and all associated equipment will be provided and installed by Prime Controls, Spec. Section 02526 will be deleted from the Project Manual and any reference to approved equals for the water meter will be deleted from the Construction Drawings. Also, the Scope of Work to be performed by Prime Controls will be uploaded to Civcast for Contractor reference.

3. **Q:** What are the Contract Days?

A: In accordance with the Contract Award document, the Contractor shall complete the work within 270 Calendar Days.

4. **Q:** I cannot find the ductile iron pipe specifications for the pressure/flow control station and meter station.

   A: In accordance with Spec Section 02511, Item 2.01, A. 2., water line piping within plant site to be welded joint steel pipe with flange or approved restraint joint connections

5. **Q:** I am hoping to request OCV Control Valves be written in as an approved equal on the flow control valve section.

   A: OCV Control Valves will not be written in as an approved equal

6. **Q:** Can you provide a drawing for the 6" blow off?

   A: The 6" blow-off is part of the combination vacuum relief/air release valve assembly and is shown in that detail. The separate bid item for the 6" blow-off is being removed.

7. **Q:** Do underground restraints on DI fittings & bell joint clamps require SS bolts?

   A: Yes. They require SS nuts and washers as well.

8. **Q:** Will the Contractor have access along GCWA's ROW and will matting be required?

   A: GCWA says yes to access and no to matting, but the Contractor must restore the ROW to existing conditions.

9. **Q:** Will any permits be required?

   A: Yes, City of Santa Fe will require a permit for work in a ROW.

10. **Q:** Will the Contractor have access through the TCE's within the wetlands?

    A: Yes.

11. **Q:** Is the Mobilization amount a fixed amount?

    A: Yes

12. **Q:** Will the Prime Controls cost need to be bonded?

    A: Yes. Where does the Bidder place the bonding costs? Contractor's discretion.

13. **Q:** What does the Contractor do with the excess spoil materials?

    A: The Contractor will haul off excess spoil materials at his expense.

14. **Q:** Where are the valves located on the existing 39-inch water line? Are the valves fully operable?

    A: According to GCWA, the nearest valve to the south is located at the intersection of FM 1764 and Ave. F, a distance of approximately 10,000 LF, and the nearest valve to the north is located at the intersection of 2nd St. and Ave. L, a distance of approximately 6,600 LF. The valves are operable but GCWA will not guarantee zero leakage and GCWA wants to remind the contractors that the Contractor of record should never operate any GCWA valves without a GCWA representative on site.

15. **Q:** How long can the existing 39-inch water line be turned off? GCWA says it depends on demand; what time of year will this occur?

A: Taking the line out of service will shut down flow to both Dickinson WCID#1 and League City. They will need plenty of notice. Tell us time of year and we will check with those affected agencies.

16. **Q:** Is there a conflict with the existing 2-inch gas line next to the existing 39-inch water line? If the gas line is in conflict, who moves the gas line?

    A: This question will be answered if there is a conflict.

17. **Q:** Who sets the construction staking?

    A: The Contractor.

18. **Q:** Who provides the Construction Materials Testing services?

    A: HTS

19. **Q:** Will there be a Pre-Construction meeting?

    A: Yes

20. **Q:** What is the distance between the valves on the abandoned 24-inch water line on Avenue L?

    A: Unknown. Who owns the abandoned 24" water line? The City of Galveston, they have confirmed it is abandoned.

21. **Q:** Is there cathodic protection on the existing 39-inch water line?

    A: According to GCWA, no.

22. **Q:** Who pays for any dewatering?

    A: The Contractor is paid for dewatering under Bid Item No. 24.

23. **Q:** Will the Geotechnical Report be available to the Bidders?

    A: Yes, on Civcast and on the Galveston County web site.

24. **Q:** What are the backfill requirements under the existing 39-inch water line?

    A: Cement stabilized sand will be installed in the pipe zone and up to the subgrade.

25. **Q:** What is the required connection between the existing 39-inch water line and the proposed 24-inch water line?

    A: A 24" flanged outlet tee off of the 39" pipe.

26. **Q:** Is there any requirement to add to the existing 39-inch water line?

    A: The Contractor shall only replace what is shown in the drawings.

27. **Q** Will Avenue L be required to stay open all of the time?

    A: Yes, traffic control as shown in the drawings will be required.

28. **Q:** Will the existing 39-inch water line require hydro testing and chlorination?

    A: According to GCWA, they will approve a visual weld test and like any other potable water, disinfect and take Bac-T samples. GCWA will require the samples to be collected by GCWA personnel on the entirety of the project, not just the 39". Follow AWWA chlorination requirements. They will push water from both sides and blow-off into the canal.

29. **Q:** What is the required transition between the PVC pipe and the steel pipe?

A: The steel pipe will extend below grade to the first bend going back to horizontal pipe. All steel pipe will be coated per the spec.

30. **Q:** Will there be a site visit for the Bidders?

A: Yes, a Pre-Bid Site Meeting has been scheduled for Thursday, October 5, from 2:00 pm to 4:00 pm. We will meet at the west end of the project at the intersection of Ave. L and the GCWA canal.

31. **Q:** Where is the power source/electrical service for the electrical equipment?

A: The drawings call for a generator to be installed at the water meter which will be powered by the flow of the water through the meter.

32. **Q:** How long until NTP?

A: According to the County, approximately two (2) months after the bid date.

END OF ADDENDUM NO. 3

ADDENDUM NO. 3

TO THE

TECHNICAL SPECIFICATIONS, CONTRACT DOCUMENTS AND PLANS FOR

BID #B171025, CDBG ROUND 2.2: I-45 WATERLINE PROJECT
GLO CONTRACT NO. 13-465-000-7974
PROJECT NO. P21465

GALVESTON COUNTY AND THE TEXAS GENERAL LAND OFFICE

October 2, 2017

I _____, _____ of
Name Title

_____
Company Name

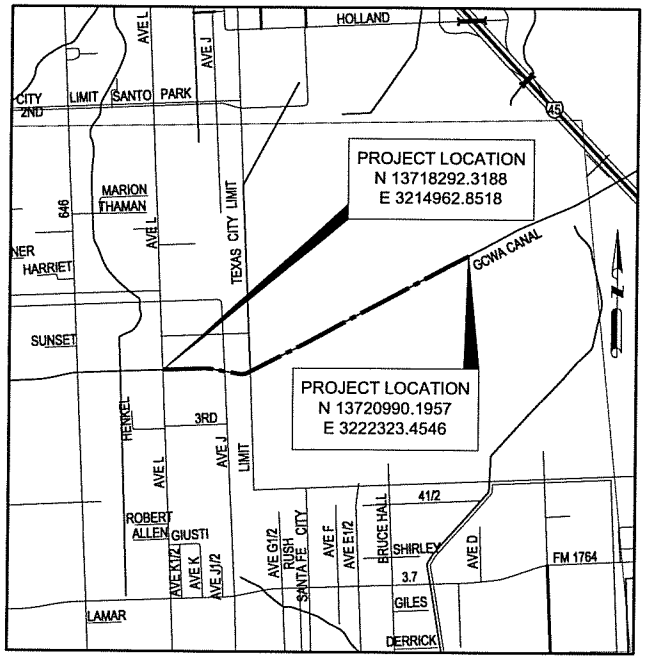
do hereby acknowledge receipt of Addendum No. 3 for the Construction of the I-45 Waterline Project

Name: _____
Signature

Title: _____

Date: _____

CONSTRUCTION PLANS FOR
I-45/HWY 6 WATER DISTRIBUTION SYSTEM



VICINITY MAP
N.T.S.

MK	DESCRIPTION	DATE	CHK.
1	ADDENDUM #2	10/2/17	CLC

GALVESTON COUNTY

GLO CONTRACT No. 13-465-000-7974
PROJECT No. P21465
BID PACKAGE No. 228101-1_BID10

Gulf Coast Water Authority

Binkley & Barfield, Inc.
consulting engineers
Texas Registration Number F-257
1710 Seamist Drive Houston, Texas 77008 (713) 869-3433

WORK ORDER No. 7975
DATE: FEBRUARY 2016

Sheet List Table

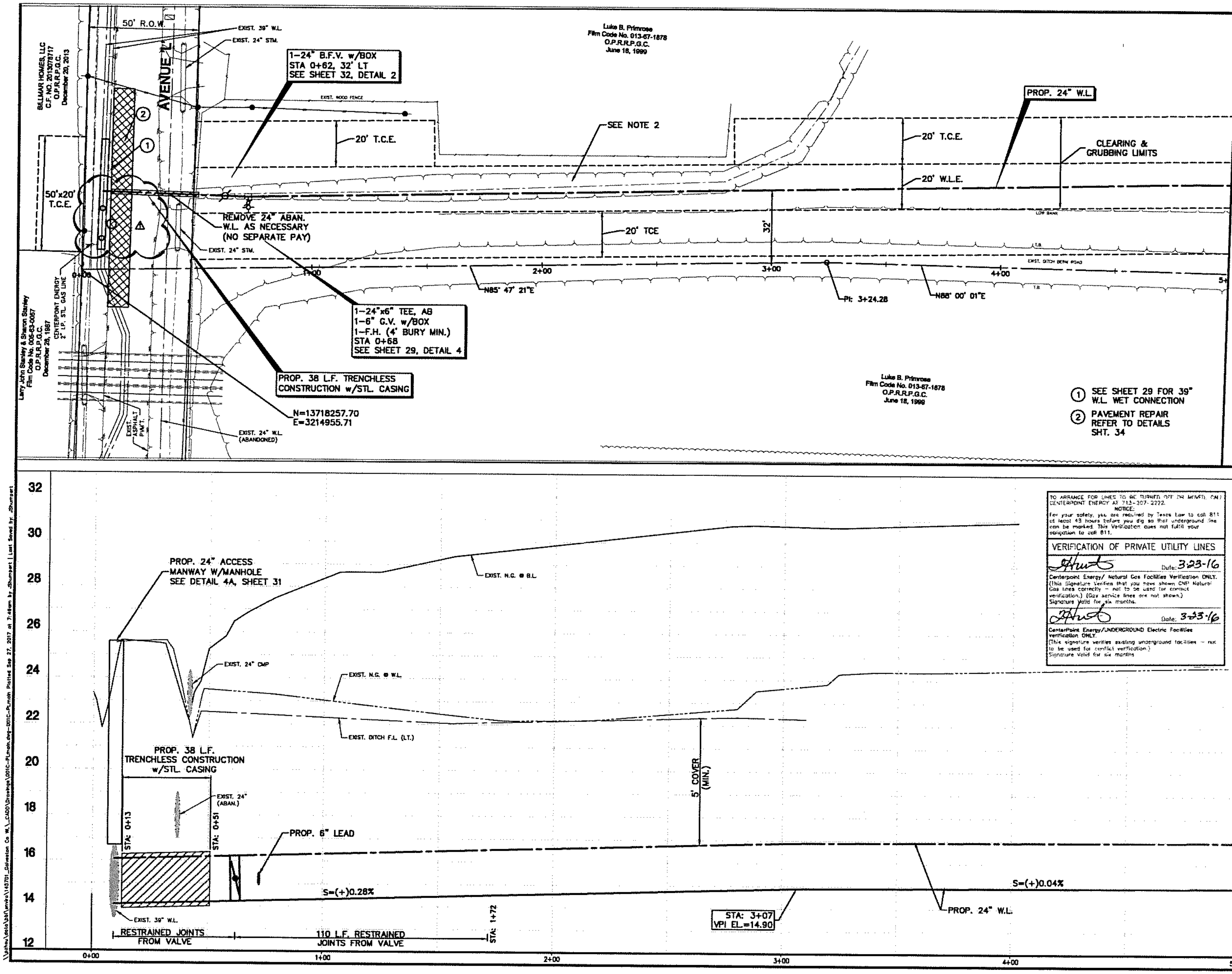
#	
1	COVER SHEET
2	CONSTRUCTION NOTES
3	SHEET LAYOUT
4	PROJECT SIGN
5	24" WATERLINE PLAN & PROFILE B.L. STA: 0+00 TO B.L. STA: 5+00
6	24" WATERLINE PLAN & PROFILE B.L. STA: 5+00 TO B.L. STA: 10+00
7	24" WATERLINE PLAN & PROFILE B.L. STA: 10+00 TO B.L. STA: 15+00
8	24" WATERLINE PLAN & PROFILE B.L. STA: 15+00 TO B.L. STA: 20+00
9	24" WATERLINE PLAN & PROFILE B.L. STA: 20+00 TO B.L. STA: 25+00
10	24" WATERLINE PLAN & PROFILE B.L. STA: 25+00 TO B.L. STA: 30+00
11	24" WATERLINE PLAN & PROFILE B.L. STA: 30+00 TO B.L. STA: 35+00
12	24" WATERLINE PLAN & PROFILE B.L. STA: 35+00 TO B.L. STA: 40+00
13	24" WATERLINE PLAN & PROFILE B.L. STA: 40+00 TO B.L. STA: 45+00
14	24" WATERLINE PLAN & PROFILE B.L. STA: 45+00 TO B.L. STA: 50+00
15	24" WATERLINE PLAN & PROFILE B.L. STA: 50+00 TO B.L. STA: 55+00
16	24" WATERLINE PLAN & PROFILE B.L. STA: 55+00 TO B.L. STA: 60+00
17	24" WATERLINE PLAN & PROFILE B.L. STA: 60+00 TO B.L. STA: 65+00
18	24" WATERLINE PLAN & PROFILE B.L. STA: 65+00 TO B.L. STA: 70+00
19	24" WATERLINE PLAN & PROFILE B.L. STA: 70+00 TO B.L. STA: 75+00
20	24" WATERLINE PLAN & PROFILE B.L. STA: 75+00 TO B.L. STA: 79+00
21	24" WATERLINE PLAN & PROFILE B.L. STA: 79+00 TO B.L. STA: 81+00
22	STORM WATER POLLUTION PREVENTION PLAN
23	TRAFFIC CONTROL PLAN ONE-LANE CLOSURE
24	METERING / FLOW CONTROL SITE
25	FLOW CONTROL/ PRESSURE REDUCING STATION DETAILS
26	METERING STATION DETAILS
27	METER STATION AND PRESSURE SLAB ON GRADE
28	STANDARD MECHANICAL DETAILS
29	WATER DETAILS
30	MISCELLANEOUS DETAILS
31	AIR VALVE IN SERVICE MANHOLE DETAILS
32	VALVE AND VENT PIPING AND SERVICE MANHOLE DETAILS
33	MANHOLE COVER
34	EXCAVATION, BEDDING BACKFILL AND PAVEMENT REPAIR DETAILS
35	BEDDING AND BACKFILL AUGER PIT AND HOLE DETAIL AND TUNNEL AND CASING DETAIL
36	BAR-WRAPPED CONCRETE CYLINDER PIPE DETAILS
37	STORM WATER POLLUTION PREVENTION DETAILS
38	PRE-CAST CONCRETE BUILDING DETAILS
~~39~~	~~CATHODIC PROTECTION DETAILS~~ ⚠
40	SURVEY CONTROL
41	SURVEY CONTROL

APPROVED: _____ DATE 3/22/16
IVAN LANGFORD - GULF COAST WATER AUTHORITY

APPROVED: _____ DATE 3-22-16
DOUGLAS KNEUPPER - CITY OF TEXAS CITY

STATE OF TEXAS
CHRISTOPHER L. CAMPBELL
91713
LICENSED PROFESSIONAL ENGINEER
02/09/2016

GLO CONTRACT NO 13-465-000; WORK ORDER # 7975



NOTES:
1. THE CONTRACTOR IS MADE AWARE THAT CLEARING AND GRUBBING (I.E. REMOVAL AND DISPOSAL OF TREES, BUSHES (ANY SIZE, TYPE)) WILL BE REQUIRED TO FACILITATE INSTALLATION OF WATER LINE.
2. THE CONTRACTOR SHALL REGRADE THE AREA AS NECESSARY TO ALLOW FOR DRAINAGE DURING CONSTRUCTION. THE CONTRACTOR SHALL REGRADE THE AREA TO ITS ORIGINAL CONDITION OR BETTER AFTER CONSTRUCTION. THE CONTRACTOR SHALL PERFORM THE WORK AT NO ADDITIONAL COST TO THE PROJECT UNLESS SHOWN OTHERWISE ON PLANS.
3. THE CONTRACTOR SHALL CONTACT AND COORDINATE WITH ALL AFFECTED PROPERTY OWNERS PRIOR TO COMMENCING CONSTRUCTION.
4. THE CONTRACTOR SHALL COORDINATE WITH ALL THE PIPELINE COMPANIES AND TAKE PRECAUTIONS TO PROTECT THE PIPELINES AS NECESSARY AND MEET THEIR REQUIREMENTS TO FACILITATE CONSTRUCTION OF THE PROPOSED WATER LINE AT NO ADDITIONAL COST TO THE PROJECT.
5. ALL VALVES AND FITTINGS SHALL HAVE MECHANICAL JOINTS UNLESS SHOWN OTHERWISE. CARRIER PIPE ENCASED IN STEEL CASING SHALL BE RESTRAINED AT ALL JOINTS. NO SEPARATE PAYMENT SHALL BE MADE FOR FITTINGS, VALVES, AND RESTRAINTS AND SHALL BE INCLUDED IN THE PERTINENT BID ITEM IN THE BID.
6. ANY STORM SEWER PIPE DAMAGE/DISTURBED FROM THE CONTRACTORS OPERATIONS SHALL BE REMOVED AND REPLACED AT NO ADDITIONAL COST TO THE PROJECT.

SCALE 1"=20'

MK.	DESCRIPTION	DATE	DWN.	CHK.
1	ADDENDUM #2	10/2/17		CLC

CHRISTOPHER L. CAMPBELL
91713
LICENSED PROFESSIONAL ENGINEER
02/08/2016

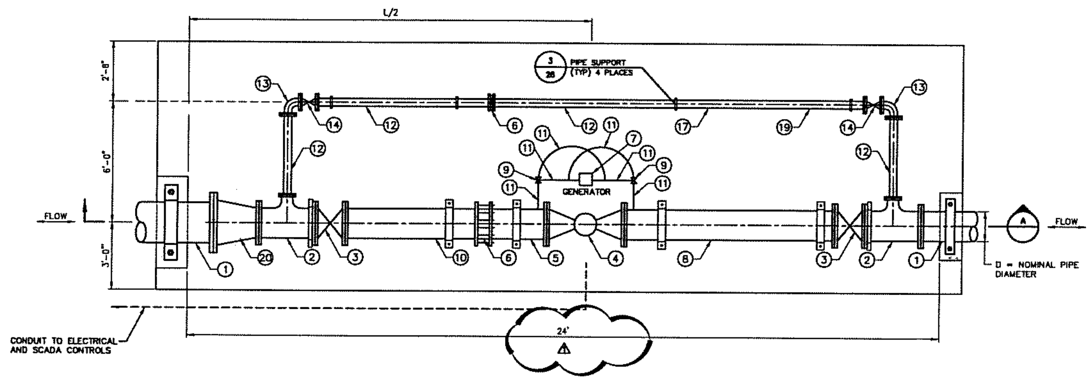
Binkley & Barfield, Inc.
consulting engineers
Texas Registration Number F-257
1710 Seamist Drive Houston, Texas 77008 (713) 869-3433

THE STATE OF TEXAS
COUNTY OF GALVESTON

I-45 & HWY-6 WATER DISTRIBUTION SYSTEM

24" WATERLINE
PLAN & PROFILE
B.L. STA: 0+00 TO B.L. STA: 5+00

Project No.: 145701
Date: Sep 27, 2017
Dwn By: J.T.S.
Chkd By: J.M.B.
Scale: HORZ 1"=20' VERT 1"=2'
SHEET 5 OF 41



PLAN – SLAB ON GRADE PRESSURE/FLOW CONTROL STATION

SCALE: NTS

SLAB ON GRADE PRESSURE/FLOW CONTROL STATION

(SEE NOTE D)	PIPE RUN SIZE = METER NOMINAL INSIDE DIAMETER, DIA. (INCH) =	DIA. = 12 INCH
ITEM	FITTING DESCRIPTION	FITTING SIZE (INCH)
1	PIPE (DIAMETER)	16
2	TEE (DIAMETER, RUN X RUN X BRANCH)	12X12X12
3	VALVE, GATE GV-1 (SEE NOTE A) (DIAMETER)	12
4	VALVE, PRESSURE REDUCING-SUSTAINING, FLOW CONTROL W/LOW FLOW BYPASS 131G-CE-BCNSKC (SEE NOTE B) (DIAMETER)	12
5	PIPE SPOOL (LENGTH) = (5 X DIA.) MINIMUM	12
6	FLEXIBLE COUPLING (DIAMETER)	12
7	GENERATOR -CLA-VAL/SOER TECHNOLOGY X143 HP	–
8	PIPE SPOOL (LENGTH) = (5 X DIA.) MINIMUM	12
9	3-WAY VALVE	–
10	PIPE SPOOL (DIAMETER)	12
11	2" PIPING	–
12	PIPE SPOOL (DIAMETER)	12
13	ELBOW, 90 DEGREE (DIAMETER)	12
14	VALVE, GATE GV-1 (SEE NOTE A) (DIAMETER)	12
15	NOT USED	–
16	NOT USED	–
17	PIPE SPOOL (DIAMETER)	12
18	NOT USED	–
19	PIPE SPOOL (DIAMETER)	12
20	REDUCER	16x12

NOTES:

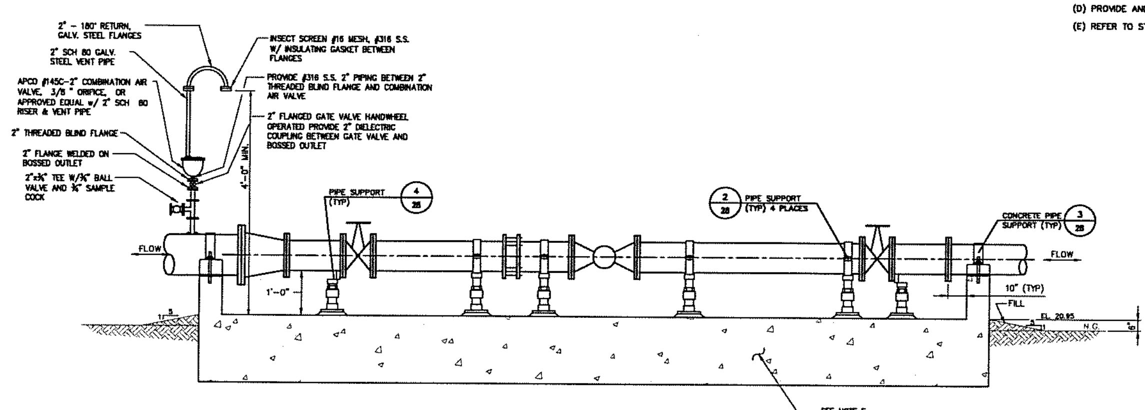
(A) DESIGN IS BASED ON AMERICAN R/D RESILENT GATE VALVE, PATTERN 2052 W/HAND WHEEL OPERATOR OR APPROVED EQUAL.

(B) DESIGN IS BASED ON THE CLA-VAL 131G-CE-BCNSKC 150 WITH C105LCW LIMIT. ELECTRONIC CONTROL VLA CLA-VAL VC-22P ELECTRONIC CONTROLLER OR APPROVED EQUAL.

(C) IF THE ENGINEER REQUIRES AN INCREMENTAL PIPE RUN WITH A NOMINAL INSIDE DIAMETER NOT APPEARING IN THESE STANDARD DRAWINGS, THE STRUCTURE, HEREIN DESIGNATED, FOR THE NEXT LARGER NOMINAL DIAMETER SHOULD BE USED.

(D) PROVIDE AND INSTALL INSTRUMENTATION AND CONTROLS PER TECHNICAL SPECIFICATIONS.

(E) REFER TO STRUCTURAL DRAWINGS FOR REINFORCING STEEL DETAILS.



SECTION (A)

SCALE: NTS

MK.	DESCRIPTION	DATE	DWN.	CHK.
1	ADDENDUM #2	10/2/17		CLC

STATE OF TEXAS — CHRISTOPHER L. CAMPBELL — 91713 — LICENSED PROFESSIONAL ENGINEER — 02/06/2018

Binkley & Barfield, Inc.
consulting engineers
Texas Registration Number F-257
1710 Seamist Drive Houston, Texas 77008 (713) 869-3433

THE STATE OF TEXAS — COUNTY OF GALVESTON

I-45 & HWY-6 WATER DISTRIBUTION SYSTEM

FLOW CONTROL/ PRESSURE REDUCING STATION DETAILS

Project No.: 145701
Date: Sep 28, 2017
Dwn By: J.T.S.
Chkd By: J.M.B.
Scale: HORZ: N/A VERT: N/A
SHEET 25 OF 41

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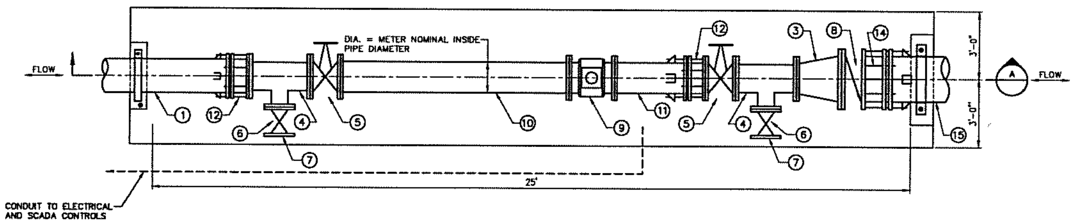


PLAN – SLAB ON GRADE METERING STATION

SCALE: NTS

SLAB ON GRADE METERING STATION

PIPE RUN SIZE = METER NOMINAL INSIDE DIAMETER, DIA. (INCH) =		DIA. = 12 INCH
ITEM	FITTING DESCRIPTION	FITTING SIZE (INCH)
1	PIPE (DIAMETER)	12
2	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	12
3	REDUCER	16X12
4	TEE W/BASE (DIAMETER, RUN X RUN X BRANCH)	12X12X6
5	VALVE, GATE GV-1 (SEE NOTE A) (DIAMETER)	12
6	VALVE, GATE GV-1 (SEE NOTE A) (DIAMETER)	6
7	BLIND FLANGE (SIZE)	6
8	VALVE, CHECK – DUAL DISC (SEE NOTE C) (DIAMETER)	16
9	FLOW METER SIZE (MAG METER) (SEE NOTE B)	12
10	PIPE SPOOL (DIAMETER) LENGTH=(5 x DIA.)	12
11	PIPE SPOOL (DIAMETER) LENGTH=(5 x DIA.)	12
12	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	12
13	NOT USED	–
14	FLANGED COUPLING ADAPTER WITH RESTRAINTS (DIAMETER)	16
15	PIPE (DIAMETER)	16

NOTES:

(A) DESIGN IS BASED ON AMERICAN R/D RESILENT GATE VALVE, PATTERN 2052 W/HAND WHEEL OPERATOR OR APPROVED EQUAL.

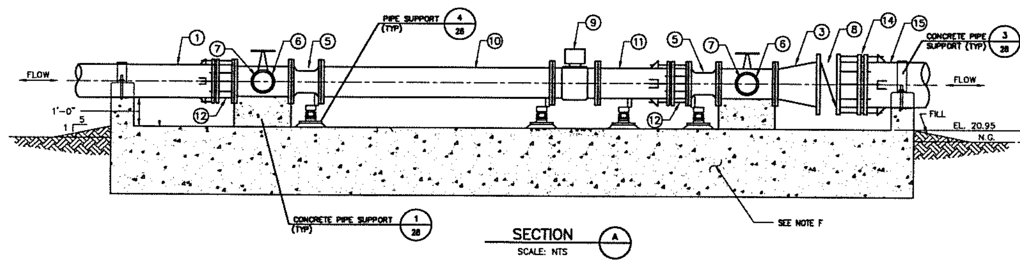
(B) DESIGN IS BASED ON THE SIEMENS SITRANS FM MAG 5100W ELECTROMAGNETIC FLOW METER ~~OR APPROVED EQUAL. REFER TO SPECIFICATION SECTION "ELECTROMAGNETIC FLOW METERS"~~ 1

(C) DESIGN BASED ON APCO SERIES 9000 DOUBLE DOOR CHECK VALVE, WAFER STYLE TRIM – ALUMINUM BRONZE DOORS, BUNA N SEAT, 316 STAINLESS STEEL SPRING AND HINGE PIN OR APPROVED EQUAL.

(D) PROVIDE AND INSTALL INSTRUMENTATION AND CONTROLS PER TECHNICAL SPECIFICATIONS.

(E) IF THE ENGINEER REQUIRES AN INCREMENTAL PIPE RUN WITH A NOMINAL INSIDE DIAMETER NOT APPEARING IN THESE STANDARD DRAWINGS. THE STRUCTURE, HEREIN DESIGNATED, FOR THE NEXT LARGER NOMINAL DIAMETER SHOULD BE USED.

(F) REFER TO STRUCTURAL DRAWINGS FOR REINFORCING STEEL DETAILS.



SECTION (A)

SCALE: NTS

* L (LENGTH) OF METER RUN IS A MIN. MAY BE INCREASED BASED ON PIPING SHOP DRAWINGS.

MK.	DESCRIPTION	DATE	DWN.	CHK.
1	ADDENDUM #2	10/2/17		CLC

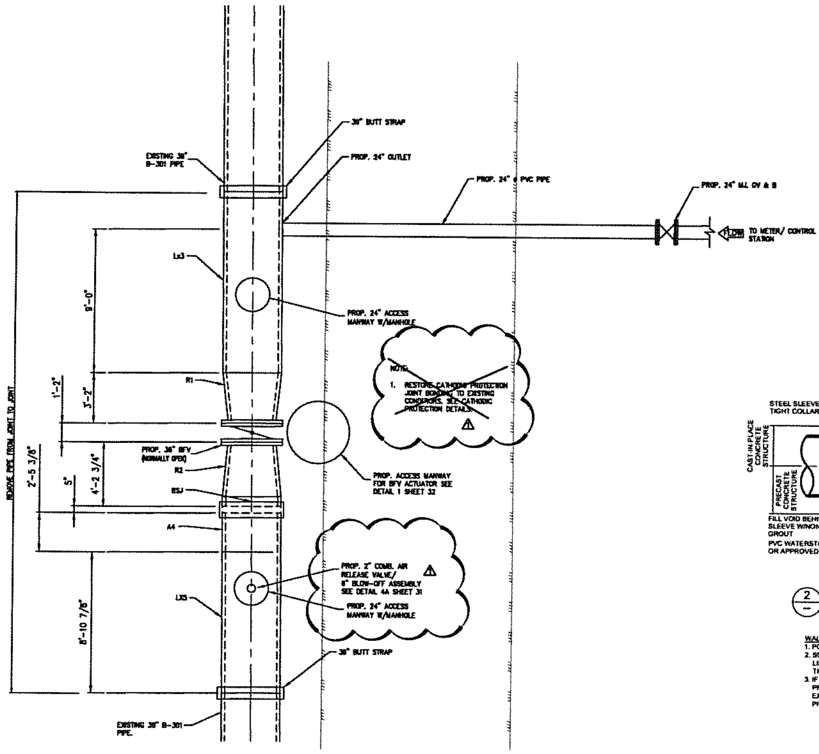
STATE OF TEXAS — CHRISTOPHER L. CAMPBELL — 91713 — LICENSED PROFESSIONAL ENGINEER — 02/08/2016

Binkley & Barfield, Inc.
consulting engineers
Texas Registration Number F-257

I-45 & HWY-6 WATER DISTRIBUTION SYSTEM

METERING STATION DETAILS

Project No.: 145701 | Date: Sep 27, 2017 | Dwn By: J.T.S. | Chkd By: J.M.B.
Scale: HORZ: N/A VERT: N/A
SHEET 26 OF 41

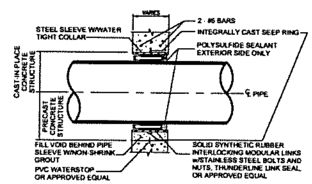


NOTE:

CONTRACTOR SHALL FIELD VERIFY ALL INFORMATION IN THIS LOCATION PRIOR TO PURCHASE OF ANY NEW OR ADDITIONAL MATERIAL. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR REVIEW AND PROVIDE A DETAILED PLAN TO ACCOMPLISH THE WORK. THE PLAN SHOULD INCLUDE SPECIFIC ACTIONS, TIME ANTICIPATED, EQUIPMENT NECESSARY (INCLUDING BACK-UP EQUIPMENT).

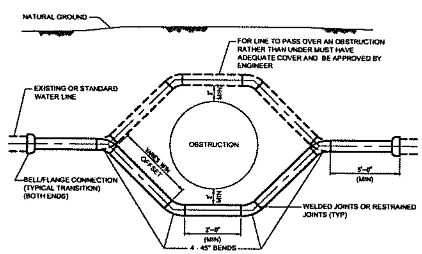
PC.	QTY.	DESCRIPTION
LX3	1	39" LB W/24" OUTLET W/ 24" BF (ACCESS)
R1	1	39" LS x 36" FLG REDUCER
R2	1	39" CPE x 36" FLG REDUCER
BSJ	1	39" SPLIT BUTT STRAP JOINT
A4	1	39" CEP x LB ADAPTOR
LX5	1	39" LS x LB SHORT w /24" OUTLET w/ 24" BF (ACCESS)

1 — 24" CONNECTION TO EXISTING 39" SUPPLY LINE



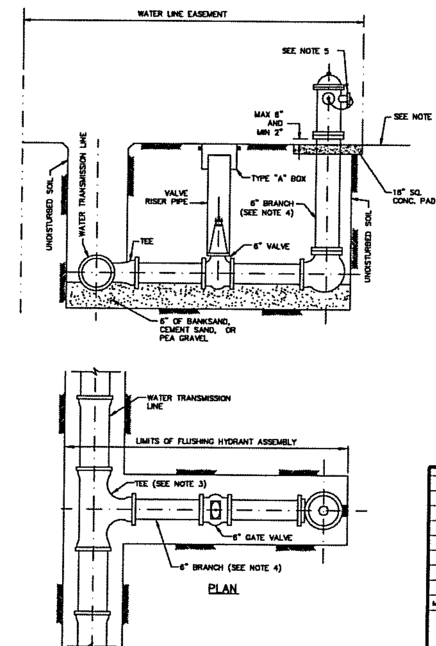
2 — TYPICAL WALL PENETRATION DETAIL

WALL PENETRATION NOTES:
1. POLYSULFIDE SEALANT EXTERIOR SIDE ONLY.
2. SOLID SYNTHETIC RUBBER INTERLOCKING MODULAR LINKS w/STAINLESS STEEL BOLTS AND NUTS, THUNDERLINE LINK SEAL, OR APPROVED EQUAL.
3. IF MANHOLE IS CAST IN PLACE CONSTRUCTION, PROVIDE DETAIL(S) FOR WALL PENETRATION INCLUDING EXTRA REINFORCING. DETAILS TO BE SEALED BY A PROFESSIONAL ENGINEER LICENSED IN TEXAS.



3 — TYPICAL PIPE OFFSET SECTION FOR WATER MAINS

NOTES:
1. ALL MATERIALS AND COATINGS TO BE IN ACCORDANCE WITH WATER MAIN STANDARD SPECIFICATIONS.
2. RESTRAIN EXISTING PIPING BEYOND OFFSET SECTION AS REQUIRED TO PREVENT MOVEMENT.



NOTES:

1. LOCATE FLUSHING HYDRANTS AS SHOWN ON PLANS. PROVIDE TEMPORARY MEANS TO DIFFUSE FLOW FROM HYDRANT AND PREVENT EROSION OF EXISTING GROUND DURING FLUSHING.
2. IN OPEN-DITCH ROADWAYS OR OTHER CORRIDORS, SET THE FLUSHING HYDRANTS WITHIN 3 FEET OF RIGHTS-OF-WAY LINES, EASEMENT LINE OR AS SHOWN ON PLANS.
3. IF WATER TRANSMISSION LINE IS PVC OR D.I. PIPE MATERIAL, INSTALL A D.I. TEE.
4. PROVIDE RESTRAINED JOINTS FOR FLUSHING HYDRANT ASSEMBLY.
5. PAINT FLUSHING HYDRANT BLACK. INSTALL DISK ON PUMPER NOZZLE AND LABEL "GCWA – FOR FLUSHING ONLY".

4 — STANDARD FLUSHING HYDRANT ASSEMBLY
N.T.S. (FOR WATER LINES 30-INCHES AND SMALLER IN DIAMETER)

MK.	DESCRIPTION	DATE	DWN.	CHK.
1	ADDENDUM #2	10/2/17		CLC

STATE OF TEXAS — CHRISTOPHER L. CAMPBELL — 91713 — LICENSED PROFESSIONAL ENGINEER — 02/08/2016

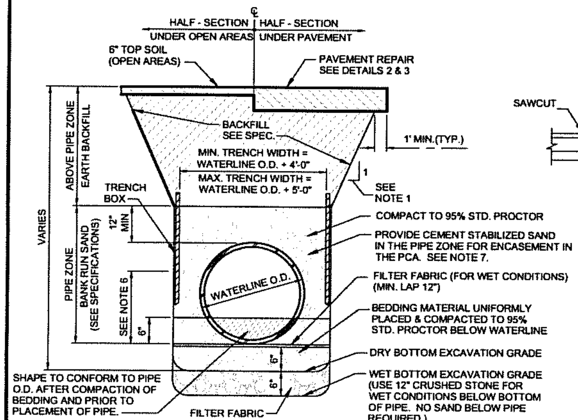
Binkley & Barfield, Inc.
consulting engineers
Texas Registration Number F-257

THE STATE OF TEXAS — COUNTY OF GALVESTON

I-45 & HWY-6 WATER DISTRIBUTION SYSTEM

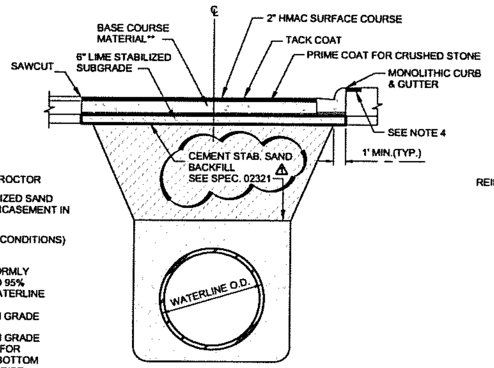
WATER DETAILS

Project No.: 145701
Date: Sep 29, 2017
Dwn By: J.T.S.
Chkd By: J.M.B.
Scale: HORZ: N/A VERT: N/A
SHEET 29 OF 41



1 EXCAVATION & BACKFILL DETAIL

NOTES:
1. SEE TRENCH SAFETY SYSTEM SPECIFICATIONS FOR MAXIMUM ALLOWABLE SLOPES.
2. FOR WET BOTTOM EXCAVATION LIMITS OF CRUSHED STONE, EXTEND AS SHOWN.
3. KEY CONCRETE TRENCH DAM MINIMUM OF 6 INCHES INTO TRENCH BOTTOM AND WALLS.
4. TRENCH DAM MAY BE FORMED OR UNFORMED. ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING 6-INCH MINIMUM THICKNESS AND 6-INCH KEY DEPTH REQUIREMENTS.
5. TRENCH DAM SHALL BE PLACED AT LEAST 5 FT. AWAY FROM ANY PIPELINE STRUCTURE (EACH SIDE). SEE SECTION 02317 FOR OTHER REQUIREMENTS.
6. THIS PORTION OF PIPE EMBEDMENT ZONE MUST BE RECOMPACTED TO PROPER DENSITIES AFTER MOVING SUPPORT SYSTEM FORWARD.
7. USE FILTER FABRIC AS A BOND BREAKER BETWEEN CEMENT STABILIZED SAND AND PIPE.

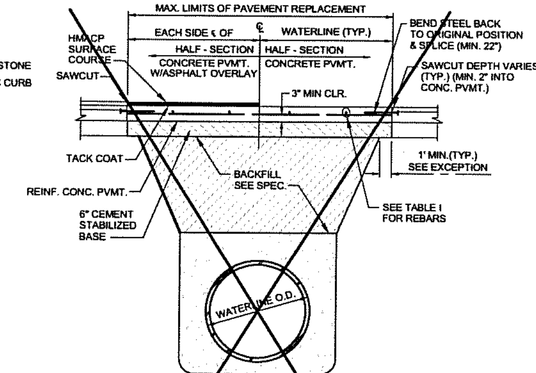


TYPICAL REPAIR OF
2 FLEXIBLE BASE PAVEMENT

NOTES:
* OMIT CURB WHEN EXISTING ROADWAY DOES NOT HAVE ONE

** BASE COURSE MATERIAL SHALL CONSIST OF THE FOLLOWING OPTIONS:

1. 6" HOT MIX ASPHALTIC BASE COURSE (BLACK BASE)
2. 8" RECYCLED CRUSHED CONCRETE BASE COURSE
3. FOR ENTIRE ROADWAY REPLACEMENT.
4. INSTALL 1 FOOT STRIP OF SOD GRASS TO PREVENT EROSION UNTIL GRASS IS ESTABLISHED.



TYPICAL REPAIR OF CONCRETE PAVEMENT OR
3 CONCRETE PAVEMENT w/ASPHALT OVERLAY

NOTES:
1. MIN. THICKNESS 6" FOR ROADWAY WIDTH LESS THAN OR EQUAL TO 27' F/F OF CURB.
2. MIN. THICKNESS 7" FOR ROADWAY WIDTH GREATER THAN 27' F/F OF CURB.
3. MIN. THICKNESS 8" FOR MAJOR THOROUGHFARES.
4. REINFORCING STEEL ARE SHOWN ON TABLE I & II.
5. SEAL CONCRETE JOINTS BEFORE APPLYING ASPHALT OVERLAY

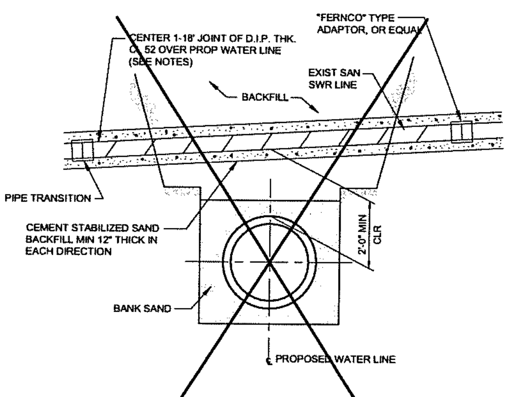
TABLE I : REINFORCING STEEL INFORMATION FOR VARIOUS PAVEMENT THICKNESS (F) WITH L = EXPANSION JOINT SPACING = 60 FT. FC' = 3000 PSI AND FY = 60,000 PSI

F (IN).	REBAR SIZE & SPACING	MIN LENGTH OF LAP (IN.)
6	A) #3 AT 11 IN., B) #4 AT 20 IN.	16 &22
7	#4 AT 17 IN.	22
8	A) #5 AT 23 IN., B) #4 AT 15 IN.	22
9	A) #5 AT 20 IN., B) #4 AT 13 IN.	22
10	A) #4 AT 12 IN., B) #5 AT 18 IN.	22 & 27
11	A) #4 AT 10 IN., B) #5 AT 16 IN.	22 & 27
12	A) #4 AT 10 IN., B) #5 AT 15 IN.	22 & 27

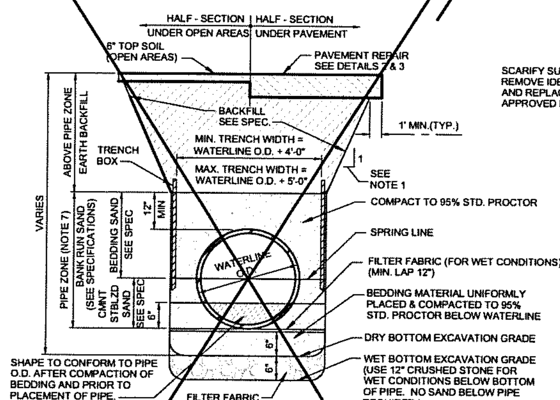
DOWELS AT EXPANSION JOINTS FOR REINFORCED PAVEMENT: CHANGE THE DOWELS SIZES & SPACING AT EXPANSION JOINTS FOR REINFORCED PAVEMENTS FROM 3/4 IN. DIAMETER, 10 IN. LONG & SPACED AT 22 IN. ON CENTERS TO THE FOLLOWING: (SEE TABLE II, BELOW)

TABLE II: DOWEL SIZES & SPACINGS AT EXPANSION JOINTS FOR VARIOUS PAVEMENT THICKNESS.

PAVEMENT THICKNESS (IN.)	DOWEL SIZES & SPACING		
	DIAMETER (IN.)	LENGTH (IN.)	SPACING (IN.)
6	3/4"	18	12
7	7/8"	18	12
8	1"	18	12
9	1-1/8"	20	12
10	1-1/4"	20	12
11	1-1/4"	20	12
12	1-1/4"	20	12

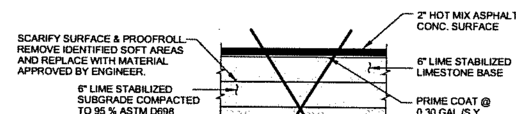


4 D.I.P. OVER PROPOSED WATER LINE



WATER LINE WITH HEIGHT OF
4 EARTH COVER GREATER THAN 16'
EXCAVATION & BACKFILL DETAIL (FOR LARGE DIAMETER WATER LINES)

NOTES:
1. SEE TRENCH SAFETY SYSTEM SPECIFICATIONS FOR MAXIMUM ALLOWABLE SLOPES.
2. FOR WET BOTTOM EXCAVATION LIMITS OF CRUSHED STONE, EXTEND AS SHOWN.
3. KEY CONCRETE TRENCH DAM MINIMUM OF 6 INCHES INTO TRENCH BOTTOM AND WALLS.
4. TRENCH DAM MAY BE FORMED OR UNFORMED. ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING 6 INCH MIN. THICKNESS AND 6 INCH KEY DEPTH REQUIREMENTS.
5. TRENCH DAM SHALL BE PLACED AT LEAST 5 FT. AWAY FROM ANY PIPELINE STRUCTURE (EACH SIDE) SEE SECTION 02317 FOR OTHER REQUIREMENTS.
6. THIS PORTION OF PIPE EMBEDMENT ZONE MUST BE RECOMPACTED TO PROPER DENSITIES AFTER MOVING SUPPORT SYSTEM FORWARD.
7. USE POLYETHYLENE WRAP AS A BOND BREAKER BETWEEN CEMENT STABILIZED SAND AND PIPE.



6 TEMPORARY ASPHALT PAVEMENT SECTION

GENERAL NOTES:
1. ROADWAY EXCAVATION, SITE GRADING, AND HYDROMULCH SEEDING OR SODDING WITHIN R.O.W. AND/OR LIMITS OF CONSTRUCTION IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS.
2. MEASUREMENT AND PAYMENT (INCLUDING DRIVEWAYS) SHALL BE AS PER SPECIFICATION SECTIONS UNLESS OTHERWISE SHOWN ON BID FORM.
3. NEW ASPHALTIC PAVEMENTS SHALL BE MIN. 2" HMAC TOP,w/BASE AND SUBGRADE PER DETAILS AND SPECIFICATIONS.
4. NEW CONCRETE PAVEMENTS TO BE SAME THICKNESS AS EXISTING, UNLESS OTHERWISE DIRECTED.
5. STREETS OR DRIVEWAYS SHALL BE REPAIRED OR REPLACED USING HIGH EARLY STRENGTH CONCRETE AS INDICATED ON DRAWINGS, ACCORDING TO PAVEMENT REPLACEMENT SCHEDULE WHERE PROVIDED.
6. APPLICABLE TO EXISTING CONCRETE AREAS THAT REQUIRE REMOVAL AND REPLACEMENT CONCRETE DUE TO OPEN TRENCH (EXCLUDE THE MEDIAN ISLAND).
7. ANY REMOVAL AND REPLACEMENT OF PAVEMENT NOT IDENTIFIED ON THE DRAWINGS SHALL BE COORDINATED WITH THE PROJECT MANAGER.
8. ALL PAVEMENT REPLACEMENT SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE CONSTRUCTION SPECIFICATIONS.

MK.	DESCRIPTION	DATE	DWN.	CHK.
1	ADDENDUM #2	10/2/17		CLC

STATE OF TEXAS — CHRISTOPHER L. CAMPBELL — 91713 — LICENSED PROFESSIONAL ENGINEER — 02/08/2016

Binkley & Barfield, Inc.
consulting engineers
Texas Registration Number F-257

THE STATE OF TEXAS — COUNTY OF GALVESTON

I-45 & HWY-6 WATER DISTRIBUTION SYSTEM

EXCAVATION, BEDDING BACKFILL AND PAVEMENT REPAIR DETAILS

Project No.: 145701 | Scale: HORZ: N/A VERT: N/A | SHEET 34 OF 41
Date: Sep 27, 2017
Dwn By: J.T.S.
Chkd By: J.M.B.

BID PROPOSAL

The bidder hereby proposes to furnish all labor, material, equipment and incidentals for:
(Project Name Here)
Enclosed is a Cashier's Check or Bid Bond in the sum of 5% of the greatest amount bid.

Bidder agrees to perform in accordance with the requirements of the contract documents in consideration of payment by the County of the prices in this proposal.

IN CASE OF DISCREPANCY BETWEEN UNIT PRICES AND EXTENDED PRICES, UNIT PRICES WILL GOVERN.

This bid sheet must be completely filled out in ink or typewritten with any necessary supplemental information attached.

The undersigned hereby agrees to all of the foregoing terms and provisions and to all terms and provisions of the contract, if awarded, which includes all provisions of Sections I - VI of this bid package.

BIDDER _____

SIGNATURE _____

PRINT NAME _____

TITLE _____

ADDRESS _____

CITY, STATE _____

ZIP _____

TELEPHONE _____

FAX NO _____

DATE _____

TAX I.D. No. _____

Item No.	Section No.	Item Description[4]	Unit	Unit Quantity	Unit Price[1]	Total
GENERAL SITE						
1	01502	Mobilization[1]	LS	1	$109,000[2]	$109,000
2	02233	Clearing and Grubbing	AC	6	$_____	$_____
3	01570	Storm Water Pollution Prevention Implementation	MO	9	$_____	$_____
4	01570	Filter Fabric Fence	LF	2,660	$_____	$_____
5	02921	Hydromulch Seeding, Fertilizer, and Watering.	AC	7	$_____	$_____
6	01575	Stabilized Construction Roads, Parking Areas, Exits, and Truck Washing Areas	SY	220	$_____	$_____
7	01740	Site Restoration	LF	7,270	$_____	$_____
PAVING						
8	02221, 02741	Remove and Replace Existing Asphalt Pavement, all thicknesses, Complete in Place.	SY	95	$_____	$_____
WATER						
9	02511	Remove a Portion of the Existing 39" Water Line Along Avenue L and Replace It with a Two (2) - 39" Spool Pieces, Two (2) - 39" x 36" Reducers, One (1) - 39" x 24" Tee, and One (1) - Butt Strap Joint. Complete in Place.	LS	1	$_____	$_____

Item No.	Section No.	Item Description[4]	Unit	Unit Quantity	Unit Price[1]	Total
10	02511	Furnish and Install 24-Inch PVC C905 Water Line, including Fittings, Restrained Joints, and Appurtenances by Open Cut, Complete in Place, in Accordance with Plans and Specifications.	LF	7,270	$_____	$_____
11	02447 / 02511 / 02517	Furnish and Install 24-inch PVC C905 Water Line, including Access Pits, Fittings, Restrained Joints, and Appurtenances, by Trenchless Construction in Tunnel Liner, Complete in Place, in Accordance with Plans and Specifications.	LF	730	$_____	$_____
12	02511	Furnish and Install 16-Inch PVC C905 Water Line, including Fittings, Restrained Joints, and Appurtenances by Open Cut, Complete in Place, in Accordance with Plans and Specifications.	LF	45	$_____	$_____
13	02522	Furnish and Install 36-Inch Butterfly Valve with Service Manhole, Complete in Place, in Accordance with Plans and Specifications.	EA	1	$_____	$_____
14	02522	Furnish and Install 24-Inch Butterfly Valve with Valve Box, Complete in Place, in Accordance with Plans and Specifications.	EA	4	$_____	$_____
15	02521	Furnish and Install 16-Inch Gate Valve with Valve Box, Complete in Place, in Accordance with Plans and Specifications.	EA	1	$_____	$_____

Item No.	Section No.	Item Description[4]	Unit	Unit Quantity	Unit Price[1]	Total
16	02082	Furnish and Install Extra Depth for Service Manhole (>8' Depth) , Complete in Place, in Accordance with Plans and Specifications.	VF	2	$_____	$_____
17	02524	Furnish and Install 2-Inch Combination Vacuum Relief/Air Inlet and Air Release Valve w/Service Manhole, Vent Piping and Bollards. Complete in Place, in Accordance with Plans and Specifications.	EA	3	$_____	$_____
18	02081/ 02082	Furnish and Install 24-Inch Access Manway w/Service Manhole for 39" Water Line, Complete in Place, in Accordance with Plans and Specifications.	EA	2	$_____	$_____
~~19~~	~~02524~~	~~Furnish and Install 6-Inch Blow-Off Assembly, Complete in Place, in Accordance with Plans and Specifications.~~	~~EA~~	~~1~~	~~$_____~~	~~$_____~~
20	02520	Furnish and Install Flushing Hydrant, Complete in Place, in Accordance with Plans and Specifications.	EA	2	$_____	$_____
21	02511	Furnish and Install 16-Inch Wet Connection, Complete in Place, in Accordance with Plans and Specifications.	EA	1	$_____	$_____
22	02260	Furnish and Install Trench Safety System for Trench Excavations.	LF	7,270	$_____	$_____
23	02317	6" Overexcavation of Trench Bottom	LF	7,270	$_____	$_____
24	01578	Dewatering	LF	7,270	$_____	$_____
25	01555	Installation and Maintainance of Traffic Control Devices	LS	1	$_____	$_____

Item No.	Section No.	Item Description[4]	Unit	Unit Quantity	Unit Price[1]	Total
26	01555	Flagmen	LS	1	$_____	$_____
27		Remove and Replace 30-Inch Storm Sewer	LF	10	$_____	$_____
28	02821	Furnish and Install 7-Ft Tall Perimeter Fencing and Swinging Vehicle Gate with 3 Strands of Barbed Wire at the Top, Complete in Place, in Accordance with Plans and Specifications.	LS	1	$_____	$_____
29	13120	Furnish and Install 8 Ft. x 8 Ft. Pre-Cast Concrete Building on Crushed Rock Bedding Foundation, Complete in Place, in Accordance with Plans and Specifications	LS	1	$_____	$_____
30	02521, 02526	Furnish and Install 12-Inch Standard Meter Station Slab on Grade, Including Concrete Slab, 10-Inch Strainers, and Appurtenances, Complete in Place, in Accordance with Plans and Specifications.	LS	1	$_____	$_____
31	02521, 02523	Furnish and Install 12-Inch Standard Pressure/Flow Control Station Slab on Grade, Including Concrete Slab, Valves, Piping, and Appurtenances, Complete in Place, in Accordance with Plans and Specifications.	LS	1	$_____	$_____
		TOTAL BASE BID				$_____

Item No.	Section No.	Item Description[4]	Unit	Unit Quantity	Unit Price[1]	Total
		EXTRA UNIT PRICES				
32	02951	Extra Removal and Replacement of Asphalt Pavement and Subgrade	SY	50	$_____ $150.00[3]	$_____
33	02922	Extra Placement of Sodding	SY	100	$_____ $10.00[3]	$_____
34	02922	Bedding and Backfill for Wet Conditions	LF	800	$_____ $15.00[3]	$_____
35	02318	Extra Excavation Around Structures.	CY	100	$_____ $25.00[3]	$_____
36	02318	Extra Hand Excavation	CY	100	$_____ $25.00[3]	$_____
37	02318	Extra Machine Excavation	CY	100	$_____ $15.00[3]	$_____
38	02318	Extra Placement of Backfill Material	CY	100	$_____ $10.00[3]	$_____
39	02318	Extra Select Backfill	CY	100	$_____ $25.00[3]	$_____
40	02318	Extra Cement Stabilized Sand	CY	100	$_____ $20.00[3]	$_____
41	02501	Extra 24" Ductile Iron Compact Fittings in Place.	Ea	4	$_____ $1,000.00[3]	$_____
42a	02501	Extra 39" AWWA C303 Bar Wrapped Cylinder Pipe Fittings in Place.	LF	40	$_____ $1,500.00[3]	$_____
42	02713	Crushed Stone Manhole Foundations for Wet Conditions	EA	5	$_____ $150.00[3]	$_____
		SUB-TOTAL EXTRA UNIT PRICE ITEMS				$_____

Item No.	Section No.	Item Description[4]	Unit	Unit Quantity	Unit Price[1]	Total
		CASH ALLOWANCES				
43	01110	Furnish and Install Radio Tower and Related SCADA Communications Equipment, including concrete footings/ pads, etc., as Directed by the Engineer, Complete in Place. **This work shall be performed by the GCWA SCADA Contractor, Prime Controls.**	ALLOW	1	$20,000	$20,000
44		Furnish and Install SCADA Comunications and Electrical Equipment at Metering Station and Pressure/Flow Control Station Site, Complete in Place, in Accordance with Plans and Specifications. **This work shall be performed by the GCWA SCADA Contractor, Prime Controls.**	LS	1	$60,000	$60,000
45		Permit Fees	ALLOW	1	$1,000	$1,000
		SUB-TOTAL CASH ALLOWANCE ITEMS				$81,000

Subtotal General Items $_____

Subtotal Paving $_____

Subtotal Water Line Items $_____

TOTAL BASE BID (SUM OF ITEMS ABOVE) $_____

Subtotal Extra Unit Price Items $_____

Subtotal Cash Allowance Items $_____

TOTAL AMOUNT BID BASE BID PLUS SUBTOTAL EXTRA UNIT PRICE ITEMS $_____

Notes:

(1) In the event of a discrepancy, this column shall govern.

(2) Fixed Price determined prior to Bid. Cannot be adjusted by the Bidder.

(3) Minimum Bid Price determined prior to Bid. Can be increased by the Bidder by crossing out the Minimum and noting revised price on the line above.

(4) The intent of the Contract Documents is for the Contractor to include all items necessary for the proper execution and completion of the Work described in the Contract Documents. No separate measurement and payment shall be made for any work unless identified as a pay item in the BID. Include the cost of work not identified as a separate pay item in Contract price bid for items of which this work is a component. In case of discrepancy between measurement and payment within the BID and Technical Specification Section, the BID shall govern.

(5) Trenchless Construction is defined as any method other than open cut including methods that utilize primary tunnel liner or steel casing. Contractor shall determine, based on soil information, if a primary tunnel liner is required.

State of Texas Tax Statement of Materials and other charges:

The cost of in-place materials to be incorporated into the project $_____

The cost of labor, profit, materials not in-place and all other charges $_____

TOTAL: (Must agree with bid) $_____

GALVESTON COUNTY
I-45/HWY 6 WATER DISTRIBUTION SYSTEM

TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

END OF DOCUMENT

Section 02523

PRESSURE REDUCING/FLOW CONTROL VALVE

PART 1 GENERAL

1.01 SECTION INCLUDES

The Contractor shall furnish and install control valves, and appurtenances completely as specified herein.

1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for pressure reducing/flow control valves is on unit price basis for each valve installed.

2. Payment includes vault, piping, manhole, fittings, and appurtenances necessary for complete installation of valve.

3. Refer to Section 01270 - Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is a Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

1.03 REFERENCES

A. ASME B 16.1 - Cast Iron Pipe Flanges and Flanged Fittings.

B. ASTM A 126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.

C. AWWA C 504 - Standard for Rubber-Seated Butterfly Valves.

D. AWWA C 550 - Standard for Protective Interior Coatings for Valves and Hydrants.

1.04 SUBMITTALS

A. Conform to requirements of Section 01330 - Submittal Procedures.

B. Submit one drawing or illustration showing unit construction for each type and size valve used.

C. Submit the following information for each valve:

1. Description including type of valve, type of operator and accessories included.

2. Size and end connections.

3. Maximum non-shock working pressure for which valve is designed.

4. Materials of construction and coatings for valves, operators and accessories.

5. K or Cv value.

6. Manufacturer's make and model.

D. Location of nearest stocking distributor.

E. Affidavits:

1. Submit affidavits of compliance with the reference standards.

1.05 QUALITY CONTROL

Submit manufacturer's affidavit that pressure reducing valves purchased for Work, were manufactured and tested in the United States, and conform to requirements of this Section.

PART 2 P R O D U C T S

2.01 FUNCTION

A. The Electronic Control Valve shall control the valve flow rate via a solenoid controlled pilot system. The valve shall also be equipped with an integral independent hydraulic pressure sustaining, reducing, and relief override features, with a low flow bypass and a model

1. X-143HP Hydo Turbine.

B. The valve shall be hydraulically operated, single diaphragm actuated, globe pattern. The valve shall consist of three major components: the body with seat installed, the cover with bearing installed, and the diaphragm assembly. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons or rolling diaphragms operating the main valve or pilot controls. Valve body and cover shall be of cast material. Ductile Iron is standard, other materials shall be available. No fabrication or welding shall be used in the manufacturing process.

C. Solenoid pilot alternately applies pressure to or exhausts pressure from the diaphragm chamber of the main valve which in turn causes the main valve to open or close.

2.02 DESCRIPTION

A. No separate chambers shall be allowed between the main valve cover and body. Valve body and cover shall be of cast material. Ductile Iron is standard and other materials shall be available. No fabrication or welding shall be used in the manufacturing process. The valve shall contain a resilient, synthetic rubber disc, with a rectangular cross-section contained on three and one-half sides by a disc retainer and forming a tight seal against a single removable seat insert. No O-ring type discs (circular, square, or quad type) shall be permitted as the seating surface. The disc guide shall be of the contoured type to permit smooth transition of flow and shall hold the disc firmly in place.

The disc retainer shall be of a sturdy one-piece design capable of withstanding opening and closing shocks. It must have straight edge sides and a radius at the top edge to prevent excessive diaphragm wear as the diaphragm flexes across this surface. No hourglass-shaped disc retainers shall be permitted and no V-type or slotted type disc guides shall be used.

B. The diaphragm assembly containing a non-magnetic 303 stainless steel stem of sufficient diameter to withstand high hydraulic pressures shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. The seat shall be a solid, one-piece design and shall have a minimum of a five-degree taper on the seating surface for a positive, drip-tight shut off. No center guides shall be permitted. The stem shall be drilled and tapped in the cover end to receive and affix such accessories as may be deemed necessary. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure.

C. The flexible, non-wicking, FDA approved diaphragm shall consist of nylon fabric bonded with synthetic rubber compatible with the operating fluid. The center hole for the main valve stem must be sealed by the vulcanized process or a rubber grommet sealing the center stem hole from the operating pressure. The diaphragm shall not be used as the seating surface. The diaphragm shall be fully supported in the valve body and cover by machined surfaces which support no less than one-half of the total surface area of the diaphragm in either the fully opened or fully closed position.

D. The main valve seat and the stem bearing in the valve cover shall be removable. Valve seat in 8" and larger size valves shall be retained by flat head machine screws for ease of maintenance. The lower bearing of the valve stem shall be contained concentrically within the seat and shall be exposed to the flow on all sides to avoid deposits. To insure proper alignment of the valve stem, the valve body and cover shall be machined with a locating lip. No "pinned" covers to the

valve body shall be permitted. Cover bearing, disc retainer, and seat shall be made of the same material. The valve shall be designed in a way that enables disassembly of the Cover and diaphragm assembly vertically up from the top of a narrow valve pit. Diagonally shaped ("Y" pattern) valve body is not accepted. All necessary repairs and/or modifications other than replacement of the main valve body shall be possible without removing the valve from the pipeline.

E. The valve manufacturer shall warrant the valve to be free of defects in material and workmanship for a period of three years from date of shipment, provided the valve is installed and used in accordance with all applicable instructions. Electrical components shall have a one-year warranty.

F. The valve manufacturer shall be able to supply a complete line of equipment from 2" through 48" sizes and a complete selection of complementary equipment. The valve manufacturer shall also provide a computerized cavitation chart which shows flow rate, differential pressure, percentage of valve opening, Cv factor, system velocity, and if there will be cavitation damage. The valve manufacturer shall be able to provide cavitation analysis substantiated by independent third party testing.

G. Material Specification

Valve Size:	One 12" (Globe)
Main Valve Body and Cover:	Ductile Iron ASTM
A-536 Main Valve Trim:	Stainless Steel
End Detail:	150 LB Flange ANSI B16.42
Pressure Rating:	250 psi max. working pressure
Rubber Material:	-40 to +180 Degrees F
Temperature Range:	Buna N
Coating:	FDA approved heat fusion bonded epoxy coating to internal and external surfaces of valve body including disc retainer and diaphragm washer

2.03 PILOT CONTROL SYSTEM

A. The 131 control valve pilot system shall consist of dual solenoids which alternately apply or relieve pressure to the diaphragm chamber to position the main valve. One shall be normally closed (energized to open), with Nema type 4 enclosure and one shall be normally open (energized to close) with Nema type 4 enclosure. Solenoids shall be arranged to provide Main valve closure upon power failure. A manual system to by-pass the solenoids shall also be provided.

B. The valve shall also be equipped with an integral independent hydraulic pressure Sustaining and pressure Relief override features.The valve uses a CRA pilot

control for hydraulic pressure sustaining control, and a CRL pilot for pressure relief override.

C. Material Specification for Pilot Control Pressure Rating: 300 psi

Rubber Material:	Buna N
Tubing and Fittings:	Bronze and Copper
Operating Fluid:	Water
Solenoid Voltage:	120 Volts
Enclosure Type:	NEMA 4
Desired Options: Guages on inlet and outlet	X105LCW limit switch, X141
CRA Adjustment Range:	20-105 psi
CRL Adjustment Range:	20-200 psi

2.04 MANUFACTURER

A. This valve shall be a Cla-Val Co. Model No. 131-CE BCPSYKCX Electronic Flow Control Valve with Pressure Sustaining and pressure Relief override Features, as manufactured by Cla-Val Co., Newport Beach, CA 92659-0325.

PART 3 EXECUTION

3.01 EARTHWORK

A. Conform to applicable provisions of Section 02317 – Excavation and Backfill for Utilities.

3.02 INSTALLATION

A. The Contractor shall install the valves in accordance with the following requirements:

1. Installation shall be in accordance with the plans, approved shop drawings and the manufacturer's instructions.

2. Install valves and valve operators to provide for ease of access and operation.

3. Install buried valve by carefully lowering into position in such a manner to prevent damage to any part of the valves.The valve shall be placed in proper position and shall be securely held until all connections have been made. All buried pipe and appurtenances shall be wrapped in polyethylene encasement in accordance with AWWA C105/A21.5.

4. All buried valves 8 inches and larger shall rest on a concrete pad. Pad shall extend for the full width of the trench and from back-to-back of hub (or flange).Care shall be taken to not interfere with the jointing.

B. The Equipment Manufacturer shall furnish all accessories and hardware necessary for installation.

3.03 SETTING VALVES

A. Provide services of technical representative of valve manufacturer on site during installation of valves and to serve as adviser on aspects of installation. Take necessary precautions to protect pilot system during PRV installation.

B. Prior to installing valves, remove foreign matter from within valves. Inspect valves in open and closed position to verify that parts are in satisfactory working condition.

3.04 FIELD QUALITY CONTROL

A. The Equipment Manufacturer shall perform the following services:

1. Inspect the completed installation and note deficiencies.

2. Assist the Contractor during start-up, adjusting, and site testing of completed installation as required. A direct factory representative shall be made available for start-up service, inspection and necessary adjustments.

3. Instruct Owner personnel in the operations and maintenance of the equipment.

B. Testing: Field startup testing will be in accordance with Section 01755. All valves shall be tested by manufacturer in accordance with AWWA C500.

C. Valve shall not hang and shall seat and unseat to/from fully closed position. Verify valve tag is installed and correct. Verify valve position indicator correctly reflects valve positions and limit switches (if used) are set correctly.

3.05 DISINFECTION AND TESTING

Disinfect valves and appurtenances as required by Section 02514 - Disinfection of Water Lines and test as required by Section 02515 - Hydrostatic Testing of Pipelines.

3.06 PAINTING OF PIPING AND VALVES

Paint piping and valves located in vaults, stations, and above ground using ACRO Paint No. 2215, or approved equal.

3.07 WARRANTY

The valve manufacturer shall warrant the valve to be free of defects in material and workmanship for a period of three years from date of startup, provided the valve is installed and used in accordance with all applicable instructions.

Electrical components shall have a one-year warranty.

END OF SECTION

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THE COUNTY OF GALVESTON

RUFUS G. CROWDER, CPPO CPPB
PURCHASING AGENT

GWEN MCLAREN, CPPB
ASST. PURCHASING AGENT

COUNTY COURTHOUSE
722 Moody (21st Street)
Fifth (5th) Floor
GALVESTON, TEXAS 77550
(409) 770-5371

October 6, 2017

RE: ADDENDUM #4
Bid #B171025, CDBG Round 2.2 I-45 Waterline Project

To All Prospective Bidders,

Attached you will find Addendum #4 for Bid #B171025, CDBG Round 2.2 I-45 Waterline Project.

As a reminder, all questions regarding this bid must be submitted in writing to:

Rufus G. Crowder, CPPO CPPB
Galveston County Purchasing Agent
722 Moody, Fifth (5th) Floor
Galveston, Texas 77550
E-mail: rufus.crowder@co.galveston.tx.us

If you have any further questions regarding this bid, please address them to Rufus Crowder, CPPO CPPB, Purchasing Agent, via e-mail at rufus.crowder@co.galveston.tx.us, or contact the Purchasing Department at (409) 770-5371.

Please excuse us for any inconvenience that this may have caused.

Sincerely,

Rufus Crowder

Rufus G. Crowder, CPPO CPPB
Purchasing Agent
Galveston County

ADDENDUM NO. 4

TO THE

TECHNICAL SPECIFICATIONS, CONTRACT DOCUMENTS AND PLANS FOR

BID #B171025, CDBG ROUND 2.2: I-45 WATERLINE PROJECT
GLO CONTRACT NO. 13-465-000-7974
PROJECT NO. P21465

GALVESTON COUNTY AND THE TEXAS GENERAL LAND OFFICE

October 6, 2017

TO BIDDER OF RECORD:

This addendum, applicable to work designated above, is an amendment to the bidding documents and as such shall be a part of and included in the Contract. Acknowledge receipt of this addendum by submitting the attached acknowledgement form with your bid.

PURPOSE:

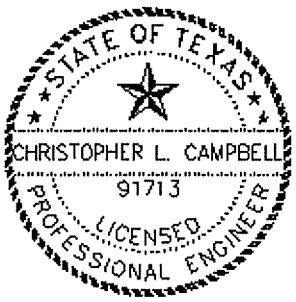
The purpose of this addendum is to clarify previously issued bid documents, technical specifications, special conditions, proposal and plans.

INSTRUCTIONS:

This Addendum uses the change page method: remove and replace or add pages, or Drawing sheets, as directed in the change instructions below.

This Addendum will not change the bid opening date of –

Thursday, October 12, 2017 at 2:00 p.m.



October 6, 2017

CHANGES TO PROJECT MANUAL

1. Remove the Bid Proposal and replace with the Bid Proposal from Addendum No. 4.

CLARIFICATIONS

1. **Q:** Will the Contractor have access through the TCE's within the wetlands?

   A: Yes. *In clarification to the previous response, the Contractor can install a temporary access road in the wetlands area, but must restore to existing conditions.*

END OF ADDENDUM NO. 4

ADDENDUM NO. 4

TO THE

TECHNICAL SPECIFICATIONS, CONTRACT DOCUMENTS AND PLANS FOR

BID #B171025, CDBG ROUND 2.2: I-45 WATERLINE PROJECT
GLO CONTRACT NO. 13-465-000-7974
PROJECT NO. P21465

GALVESTON COUNTY AND THE TEXAS GENERAL LAND OFFICE

October 6, 2017

I _____, _____ of
Name Title

_____
Company Name

do hereby acknowledge receipt of Addendum No.'s 1, 2, 3, and 4 for the Construction of the I-45 Waterline Project

Name: _____
Signature

Title: _____

Date: _____

BID PROPOSAL

The bidder hereby proposes to furnish all labor, material, equipment and incidentals for:
(Project Name Here)
Enclosed is a Cashier's Check or Bid Bond in the sum of 5% of the greatest amount bid.

Bidder agrees to perform in accordance with the requirements of the contract documents in consideration of payment by the County of the prices in this proposal.

IN CASE OF DISCREPANCY BETWEEN UNIT PRICES AND EXTENDED PRICES, UNIT PRICES WILL GOVERN.

This bid sheet must be completely filled out in ink or typewritten with any necessary supplemental information attached.

The undersigned hereby agrees to all of the foregoing terms and provisions and to all terms and provisions of the contract, if awarded, which includes all provisions of Sections I - VI of this bid package.

BIDDER _____

SIGNATURE _____

PRINT NAME _____

TITLE _____

ADDRESS _____

CITY, STATE _____

ZIP _____

TELEPHONE _____

FAX NO _____

DATE _____

TAX I.D. No. _____

Item No.	Section No.	Item Description[4]	Unit	Unit Quantity	Unit Price[1]	Total
		GENERAL SITE				
1	01502	Mobilization[1]	LS	1	$109,000[2]	$109,000
2	02233	Clearing and Grubbing	AC	6	$	$
3	01570	Storm Water Pollution Prevention Implementation	MO	9	$	$
4	01570	Filter Fabric Fence	LF	2,660	$	$
5	02921	Hydromulch Seeding, Fertilizer, and Watering.	AC	7	$	$
6	01575	Stabilized Construction Roads, Parking Areas, Exits, and Truck Washing Areas	SY	220	$	$
7	01740	Site Restoration	LF	7,270	$	$
8	01504	Install Temporay Barbed Wire Cattle Fencing, Complete in Place.	LF	1,500	$	$
		PAVING				
9	02221, 02741	Remove and Replace Existing Asphalt Pavement, all thicknesses, Complete in Place.	SY	95	$	$
		WATER				
10	02511	Remove a Portion of the Existing 39" Water Line Along Avenue L and Replace It with a Two (2) - 39" Spool Pieces, Two (2) - 39" x 36" Reducers, One (1) - 39" x 24" Tee, and One (1) - Butt Strap Joint. Complete in Place.	LS	1	$	$

Item No.	Section No.	Item Description[4]	Unit	Unit Quantity	Unit Price[1]	Total
11	02511	Furnish and Install 24-Inch PVC C905 Water Line, including Fittings, Restrained Joints, and Appurtenances by Open Cut, Complete in Place, in Accordance with Plans and Specifications.	LF	7,270	$_____	$_____
12	02447 / 02511 / 02517	Furnish and Install 24-inch PVC C905 Water Line, including Access Pits, Fittings, Restrained Joints, and Appurtenances, by Trenchless Construction in Tunnel Liner, Complete in Place, in Accordance with Plans and Specifications.	LF	730	$_____	$_____
13	02511	Furnish and Install 16-Inch PVC C905 Water Line, including Fittings, Restrained Joints, and Appurtenances by Open Cut, Complete in Place, in Accordance with Plans and Specifications.	LF	45	$_____	$_____
14	02522	Furnish and Install 36-Inch Butterfly Valve with Service Manhole, Complete in Place, in Accordance with Plans and Specifications.	EA	1	$_____	$_____
15	02522	Furnish and Install 24-Inch Butterfly Valve with Valve Box, Complete in Place, in Accordance with Plans and Specifications.	EA	4	$_____	$_____
16	02521	Furnish and Install 16-Inch Gate Valve with Valve Box, Complete in Place, in Accordance with Plans and Specifications.	EA	1	$_____	$_____

Item No.	Section No.	Item Description[4]	Unit	Unit Quantity	Unit Price[1]	Total
17	02082	Furnish and Install Extra Depth for Service Manhole (>8' Depth) , Complete in Place, in Accordance with Plans and Specifications.	VF	2	$_____	$_____
18	02524	Furnish and Install 2-Inch Combination Vacuum Relief/Air Inlet and Air Release Valve w/Service Manhole, Vent Piping and Bollards. Complete in Place, in Accordance with Plans and Specifications.	EA	3	$_____	$_____
19	02081/ 02082	Furnish and Install 24-Inch Access Manway w/Service Manhole for 39" Water Line, Complete in Place, in Accordance with Plans and Specifications.	EA	2	$_____	$_____
~~19~~	~~02524~~	~~Furnish and Install 6-Inch Blow-Off Assembly, Complete in Place, in Accordance with Plans and Specifications.~~	~~EA~~	~~1~~	~~$_____~~	~~$_____~~
20	02520	Furnish and Install Flushing Hydrant, Complete in Place, in Accordance with Plans and Specifications.	EA	2	$_____	$_____
21	02511	Furnish and Install 16-Inch Wet Connection, Complete in Place, in Accordance with Plans and Specifications.	EA	1	$_____	$_____
22	02260	Furnish and Install Trench Safety System for Trench Excavations.	LF	7,270	$_____	$_____
23	02317	6" Overexcavation of Trench Bottom	LF	7,270	$_____	$_____
24	01578	Dewatering	LF	7,270	$_____	$_____
25	01555	Installation and Maintainance of Traffic Control Devices	LS	1	$_____	$_____

Item No.	Section No.	Item Description[4]	Unit	Unit Quantity	Unit Price[1]	Total
26	01555	Flagmen	LS	1	$_____	$_____
27		Remove and Replace 30-Inch Storm Sewer	LF	10	$_____	$_____
28	02821	Furnish and Install 7-Ft Tall Perimeter Fencing and Swinging Vehicle Gate with 3 Strands of Barbed Wire at the Top, Complete in Place, in Accordance with Plans and Specifications.	LS	1	$_____	$_____
29	13120	Furnish and Install 8 Ft. x 8 Ft. Pre-Cast Concrete Building on Crushed Rock Bedding Foundation, Complete in Place, in Accordance with Plans and Specifications	LS	1	$_____	$_____
30	02521, 02526	Furnish and Install 12-Inch Standard Meter Station Slab on Grade, Including Concrete Slab, 10-Inch Strainers, and Appurtenances, Complete in Place, in Accordance with Plans and Specifications.	LS	1	$_____	$_____
31	02521, 02523	Furnish and Install 12-Inch Standard Pressure/Flow Control Station Slab on Grade, Including Concrete Slab, Valves, Piping, and Appurtenances, Complete in Place, in Accordance with Plans and Specifications.	LS	1	$_____	$_____
		TOTAL BASE BID				$_____

Item No.	Section No.	Item Description[4]	Unit	Unit Quantity	Unit Price[1]	Total
		EXTRA UNIT PRICES				
32	02951	Extra Removal and Replacement of Asphalt Pavement and Subgrade	SY	50	$_____ $150.00[3]	$_____
33	02922	Extra Placement of Sodding	SY	100	$_____ $10.00[3]	$_____
34	02922	Bedding and Backfill for Wet Conditions	LF	800	$_____ $15.00[3]	$_____
35	02318	Extra Excavation Around Structures.	CY	100	$_____ $25.00[3]	$_____
36	02318	Extra Hand Excavation	CY	100	$_____ $25.00[3]	$_____
37	02318	Extra Machine Excavation	CY	100	$_____ $15.00[3]	$_____
38	02318	Extra Placement of Backfill Material	CY	100	$_____ $10.00[3]	$_____
39	02318	Extra Select Backfill	CY	100	$_____ $25.00[3]	$_____
40	02318	Extra Cement Stabilized Sand	CY	100	$_____ $20.00[3]	$_____
41	02501	Extra 24" Ductile Iron Compact Fittings in Place.	Ea	4	$_____ $1,000.00[3]	$_____
42a	02501	Extra 39" AWWA C303 Bar Wrapped Cylinder Pipe Fittings in Place.	LF	40	$_____ $2,200.00[3]	$_____
42	02713	Crushed Stone Manhole Foundations for Wet Conditions	EA	5	$_____ $150.00[3]	$_____
		SUB-TOTAL EXTRA UNIT PRICE ITEMS				$_____

Item No.	Section No.	Item Description[4]	Unit	Unit Quantity	Unit Price[1]	Total
		CASH ALLOWANCES				
43	01110	Furnish and Install Radio Tower and Related SCADA Communications Equipment, including concrete footings/ pads, etc., as Directed by the Engineer, Complete in Place. **This work shall be performed by the GCWA SCADA Contractor, Prime Controls.**	ALLOW	1	$20,000	$20,000
44		Furnish and Install SCADA Comunications and Electrical Equipment at Metering Station and Pressure/Flow Control Station Site, Complete in Place, in Accordance with Plans and Specifications. **This work shall be performed by the GCWA SCADA Contractor, Prime Controls.**	LS	1	$60,000	$60,000
45		Permit Fees	ALLOW	1	$1,000	$1,000
		SUB-TOTAL CASH ALLOWANCE ITEMS				$81,000

Subtotal General Items $_____

Subtotal Paving $_____

Subtotal Water Line Items $_____

TOTAL BASE BID (SUM OF ITEMS ABOVE)	$_____
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TOTAL AMOUNT BID BASE BID PLUS SUBTOTAL EXTRA UNIT PRICE ITEMS	$_____

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