

ADDENDUM NO. 1

**CITY OF BEAUMONT
WASTEWATER TREATMENT PLANT
WET WEATHER FLOW IMPROVEMENTS**

Project Reference Number: WU 0112-01

THIS ADDENDUM IS ISSUED FOR THE PURPOSE OF AMENDING THE CONTRACT DOCUMENTS FOR THE CITY OF BEAUMONT, WET WEATHER FLOW IMPROVEMENTS PROJECT, AS FOLLOWS:

CONTRACT DOCUMENTS

1. Section 0500 – Information Required Of Bidders – Replace Page 31 with the attached Page 31. Item 12 has been added.
2. Scope Of Work – Add the following to the Scope Of Work section (pages 9 thru 10).

Additive Bid Items

- Dewater both ponds and remove and dispose of all settled solids above the clay liner all in accordance with the plans and specifications.
- Furnish and install new Solar Bee units in Pond 2 and Pond 3 all in accordance with the plans and specifications.
- Replace existing influent junction box with a proposed concrete junction box including all tie-ins, bypass pumping and piping, temporary entrance roads, traffic control, and concrete pavement replacement all in accordance with the plans and specifications.

Special Requirements

8. Liquid content from Pond 1 will only be allowed to be transferred into Pond 2 at the north-west corner of Pond 2.
3. Bid Proposal – Replace existing Bid Proposal sheet 24 with attached Bid Proposal sheet. Additive Item ADD 4. has been included.
4. Bid Breakdown – Replace existing Bid Breakdown section (page 25) with attached Bid Breakdown sheet. Additive Item ADD 4. has been included.

SPECIFICATIONS

1. Add attached supplemental soil report to Specification Item 97 – Subsurface Conditions
2. Add attached Special Provision SP#1-411 to Specification Item 411 – Sewer Flow Control
3. Add attached Special Provision SP#1-528 to Specification Item 528 – Fiberglass Pipe For Gravity Sewer
4. Add attached Special Provision SP#1-868 to Specification Item 868 – Horizontal Aspirating Aerators
5. Add attached Special Provision SP#1-16050 to Specification Item 16050 – Electrical Basic Materials And Methods

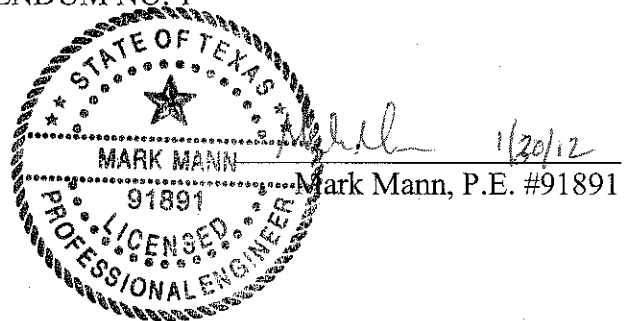
PLANS

1. Plan sheet 2 of 24 – Replace existing sheet with attached half-scale sheet. Influent junction box replacement and bypass pumping have been added.
2. Plan sheet 10 of 24 – Replace existing sheet with attached half scale sheet. Ring and Covers have been revised to an aluminum double door hatch.
3. Plans Sheets - Add sheet 17B of 24 – Additive work - Influent Junction Box Replacement
4. Plans Sheets - Add sheet 17C of 24 – Additive work - Influent Junction Box Replacement
5. Plans Sheets - Add sheet 17D of 24 – Additive Work - Influent Junction Box Details
6. Plan sheet 24 of 24 – Replace existing sheet with attached half scale sheet. Electrical Panel Rack has been relocated, and sidewalk has been added.

GENERAL

A copy of the Pre-Bid Attendance sheet has been attached for the Contractor's use.

END OF ADDENDUM NO. 1



10. Listed below construction equipment owned by Bidder which will be available for the work required by this Contract. Attach additional sheets as required.

<u>Description</u> <u>Mfg., Model, Capacity, etc.</u>	<u>Quantity</u> <u>Available</u>	<u>Years in</u> <u>Service</u>	<u>Condition</u>
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11. List below all sub-contractors which will perform work covered by this contract.

<u>Sub-Contractor</u> <u>Name</u>	<u>Address</u>	<u>Work To Be</u> <u>Performed</u>	<u>Name of On-Site</u> <u>Field Foreman</u>
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12. Contractor shall provide a separate list of any lawsuits filed against their company or against an owner or supplier setting forth the style of the case, court, county claims of plaintiff and the resolution for all instances occurring within the past five (5) years.

Authorized Signature for Bidder

Date

**BID PROPOSAL
CITY OF BEAUMONT
JEFFERSON COUNTY, TEXAS
WASTE WATER TREATMENT PLANT
WET WEATHER FLOW IMPROVEMENTS**

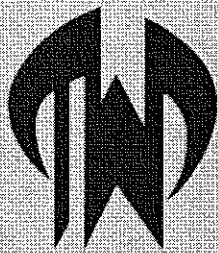
Item	Quantity	Unit	Description	Unit Price	Total Price
<u>ADDITIVE BID ITEMS</u>					
ADD 1.	100,000	CY	Furnish all labor, materials and equipment to Clean Pond No. 2 and Pond No. 3, of Dry/Dewatered materials, including dewatering, excavation, transport and disposal of all solids content above the clay liner, all in strict accordance with the plans and specifications for,		
			DOLLARS		
			CENTS	\$	\$ *
			Per Cubic Yard		
ADD 2.	50,000	CY	Furnish all labor, materials and equipment to Clean all ponds,(Excess over other Bid Item Qty.) of Dry/Dewatered materials, including dewatering, excavation, transport and disposal of all solids content above the clay liner, all in strict accordance with the plans and specifications for,		
			DOLLARS		
			CENTS	\$	\$ *
			Per Cubic Yard		
ADD 3.	12	EA	Furnish all labor, materials and equipment to install Solar Bee units in Ponds No 2 and No 3, including relocation of existing aeration units, electrical equipment and appurtenances, all in strict accordance with the plans and specifications for,		
			DOLLARS		
			CENTS	\$	\$ *
			Per Each		
ADD 4.	1	LS	Furnish all labor, materials and equipment to remove/replace the existing influent junction box, including excavation, bypass pumping, structural concrete, paving, restoration and all required tie-ins, complete and operable, all in strict accordance with the plans and specifications for,		
			DOLLARS		
			CENTS	\$	\$ *
			Lump Sum		

** Bidder shall indicate the selected pipe material used in preparing their bid for each item by circling and initialing by the selected material listed below.

Item 5. HDPE or FIBERGLASS	Initial:
Item 6. HDPE or FIBERGLASS	Initial:

BID BREAKDOWN
CITY OF BEAUMONT
JEFFERSON COUNTY, TEXAS
WASTEWATER TREATMENT PLANT
WET WEATHER FLOW IMPROVEMENTS

Item	Description	Quant.	Units	Item Amount	Item Total
1. Mobilization					
A.	Payment & Performance Bonds	1	LS		
B.	Insurance	1	LS		
C.	Mobilization	1	LS		
TOTAL BID ITEM 1.					
2. Conversion of Pond No. 1					
A.	Drain Pond & Remove Existing Aeration Equipment	1	LS		
B.	Modify existing clay liner, including additional clay material	1	LS		
C.	Aerator Pads	18	EA		
D.	New Aeration Equipment	18	EA		
E.	Flow Control Station Structure	1	LS		
F.	Pumps	1	LS		
G.	Pump Discharge Piping	1	LS		
H.	Gates	1	LS		
I.	Screen Structure & Effluent Pipe Slope Protection	1	LS		
J.	Bar Screen Equipment & Installation	1	LS		
K.	Overflow Structure	1	LS		
L.	MCC 6 Building	1	LS		
M.	MCC Foundation	1	LS		
N.	Electrical & Controls	1	LS		
TOTAL BID ITEM 2.					
4. New Junction Box Construction					
A.	Junction Box No. 12-Including structure, gates & electrical	1	LS		
B.	Junction Box No. 13-Including structure, gates & electrical	1	LS		
C.	Junction Box No. 14-Including structure, gates & electrical	1	LS		
TOTAL BID ITEM 4.					
ADD 4. Influent Junction Box Replacement					
A.	Excavation	1	LS		
B.	Demolition	1	LS		
C.	Backfill	1	LS		
D.	Bypass Pumping	1	LS		
E.	Structural Concrete	1	LS		
F.	Connection to Existing Pipes (All Sizes)	1	LS		
G.	Manhole Rings and Covers	2	EA		
H.	Ground Water Control	1	LS		
I.	Trench Safety/Shoring	1	LS		
J.	Temporary Access Road	1	LS		
K.	Fencing & Gates	1	LS		
L.	Traffic Control	1	LS		
TOTAL BID ITEM ADD 4.					



Tolunay-Wong Engineers, Inc.

**REPORT OF GEOTECHNICAL SERVICES
SLUDGE SETTLEMENT POND LINER
LAFIN ROAD WASTEWATER TREATMENT PLANT
WATER RECLAMATION DEPARTMENT
CITY OF BEAUMONT
BEAUMONT, TEXAS**

Prepared for:

**City of Beaumont
4900 Lafin Road
Beaumont, Texas 77705**

Prepared by:

**Tolunay-Wong Engineers, Inc.
2455 West Cardinal Drive, Suite A
Beaumont, Texas 77705**

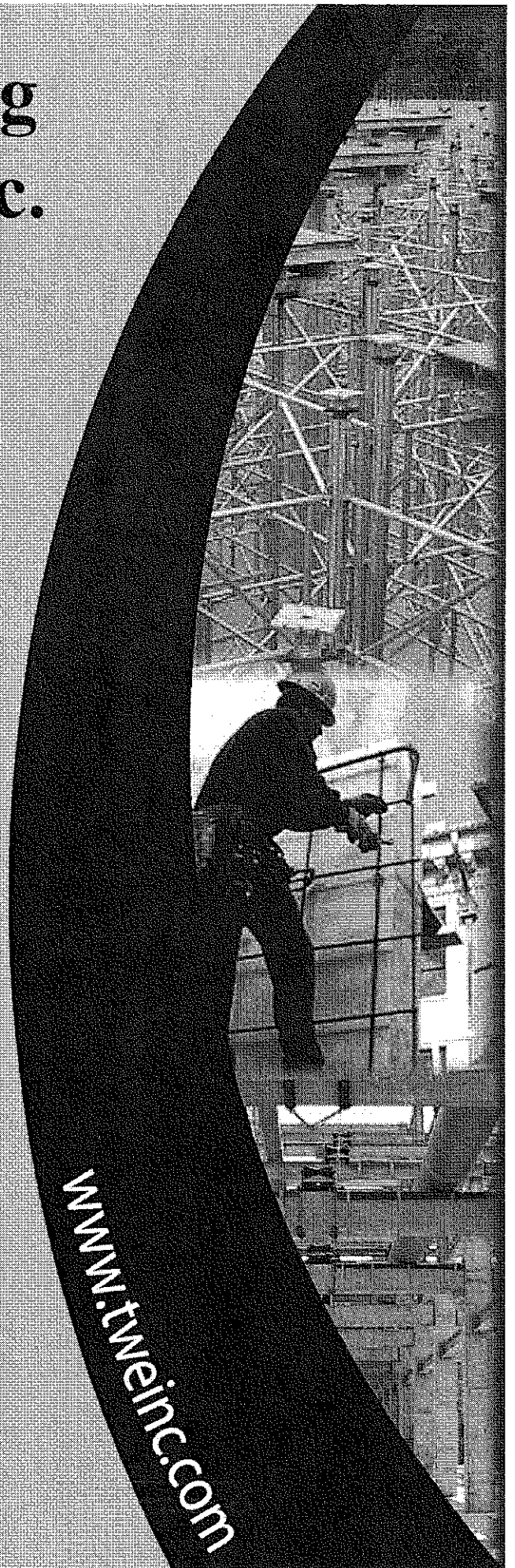
January 19, 2012

Project No. 11.23.442 / Report No. 49332

Geotechnical Engineering
Environmental Consulting
Construction Materials Testing
Deep Foundations Testing

HOUSTON • CORPUS CHRISTI • DALLAS/FORT WORTH
BEAUMONT • BATON ROUGE • GAINESVILLE

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Tolunay-Wong Engineers, Inc.

2455 West Cardinal Drive, Suite B • Beaumont, Texas 77705 • Phone: (409) 840-4214 • Fax: (409) 840-4259

January 19, 2012

City of Beaumont
4900 Lafin Road
Beaumont, Texas 77705

Attn: Mr. George Newsome
gnewsome@ci.beaumont.tx.us

Ref: Report of Geotechnical Services
Sludge Settlement Pond Liner
Lafin Road Waste Water Treatment Plant
Water Reclamation Department
City of Beaumont
Beaumont, Texas
TWE Project No. 11.23.442 / Report No. 49332

Dear Mr. Newsome,

Tolunay-Wong Engineers, Inc. (TWE) is pleased to submit this report of our geotechnical services performed for the above referenced project. This report contains a general description of the project, the scope of our services provided and geotechnical information obtained from the subsurface exploration.

Project Overview

The project consists of the City of Beaumont Water Reclamation Department planning to convert an existing sludge settlement pond into a retention pond at the Lafin Road Waste Water Treatment Plant (WWTP) in Beaumont, Texas. The sludge settlement pond to be converted is centrally located within the WWTP facility and encompasses an area approximately 670-ft wide by 1,060-ft long. The depth of the settlement pond averages approximately 10-ft to the existing clay liner and the existing sludge has a varying depth of 5-ft to 8-ft. According to the Client, the existing sludge pond is currently in service and was last excavated in the late 1970's.

Scope of Services

The purposes of our geotechnical services were to investigate the existing clay liner in the sludge pond, and provide laboratory testing on recovered samples to assist the Client in determining if the liner is in accordance with Texas Commission on Environmental Quality (TCEQ) standards.

Our scope of services performed for the project consisted of:

1. Collecting two (2) thin-walled, Shelby tubes at four (4) locations along the perimeter of the existing settlement pond;
2. Performing geotechnical laboratory tests on recovered soil samples as requested by the Client; and,
3. Providing results of tests performed.

TWE

Project No. 11.23.442
Report No. 49332
Page 1 of 4

Field Program

TWE conducted an exploration of the sludge settlement pond liner at the project site on December 19, 2011. Four (4) locations selected by the Client were explored to a depth of 4-ft below the top of the clay liner. Cohesive soil samples were recovered by pushing 3-in diameter, thin-walled Shelby tubes to a depth of 4-ft.

The Shelby tube sampling location plan is presented on Drawing No. 11.23.442-1 in Appendix A of this report. Sampling of the clay pond liner was performed using a track excavator with a long reach extension (provided by the Client). Our field personnel coordinated the field activities and logged the samples. The recovered soil sample depths with corresponding pocket penetrometer measurements and tabulated laboratory test results are presented on the boring logs in Appendix B.

Laboratory Services

A laboratory testing program was conducted on selected samples to assist in classification of the soils recovered and to evaluate the physical and engineering properties of the soils sampled.

Laboratory Testing Program

Laboratory tests were performed in general accordance with ASTM International standards. The types and brief descriptions of the laboratory tests performed are presented in Table 1 below.

Table 1 Laboratory Testing Program	
Type of Test	Testing Method
Amount of Materials in Soils Finer than Sieve No. 200	ASTM D 1140
Natural Water Content of Soil	ASTM D 2216
Atterberg Limits	ASTM D 4318
Hydraulic Conductivity (Permeability)	ASTM D 5084

Amount of Materials in Soils Finer than No. 200 (75- μ m) Sieve (ASTM D 1140)

This test method determines the amount of materials in soils finer than the No. 200 (75- μ m) sieve by washing. The loss in weight resulting from the wash treatment is presented as a percentage of the original sample and is reported as the percentage of silt and clay particles in the sample.

Water (Moisture) Content of Soil by Mass (ASTM D 2216)

This test method determines water (moisture) content by mass of soil where the reduction in mass by drying is due to loss of water. The water (moisture) content of soil, expressed as a percentage, is defined as the ratio of the mass of water to the mass of soil solids. Moisture content may provide an indication of cohesive soil shear strength and compressibility when compared to Atterberg Limits.

Liquid Limit, Plastic Limit and Plasticity Index of Soils (ASTM D 4318)

This test method determines the liquid limit, plastic limit and the plasticity index of soils. These tests, also known as Atterberg limits, are used from soil classification purposes. They also provide an indication of the volume change potential of a soil when considered in conjunction with the natural moisture content. The liquid limit and plastic limit establish boundaries of consistency for plastic soils. The plasticity index is the difference between the liquid limit and plastic limit.

Hydraulic Conductivity Permeability (ASTM D 5084)

This test method determines the laboratory measurement of the hydraulic conductivity of water-saturated porous materials with a flexible wall permeameter at temperatures between 15 and 30 degrees Celsius.

The laboratory test results are presented on the boring logs in Appendix B.

Site Conditions

Our interpretations of the subsurface soil conditions within the existing sludge pond are based on information obtained from Shelby tube sampling performed during our field program and the results of laboratory testing performed on recovered samples. Subsurface conditions may vary at areas not explored by the sampling locations.

Subsurface Soil Stratigraphy

The subsurface conditions encountered within the sludge settlement pond from the existing pond liner surface to an approximate depth of 4-ft consisted of lean clay (CL) and fat clay (CH) soils. Pocket penetrometer values indicate firm to stiff consistencies with values ranging from 1.00-*tsf* to 2.50-*tsf*. Detailed descriptions of the soils encountered at the sampling locations are presented on the boring logs in Appendix B.

Subsurface Soil Properties

Depth Range (ft)	Sampling Location	Moisture Content (%)	Coefficient of Permeability, k_{20} (cm/sec)	Liquid Limit (%)	Plasticity Index (%)	Plastic Limit (%)	Moisture Content in Relation to Plastic Limit	Passing No. 200 Sieve (%)
0-2	ST-1	22	--	41	27	14	(+) 8	83
	ST-2	27	--	61	42	19	(+) 8	88
	ST-3	29	3.3×10^{-8}	48	33	15	(+) 14	85
	ST-4	43	--	84	61	23	(+) 20	98

TABLE 2 (continued)
City of Fort Worth, Texas

Depth Range (ft)	Sampling Location	Moisture Content (%)	Coefficient of Permeability, k_{20} (cm/sec)	Liquid Limit (%)	Plasticity Index (%)	Plastic Limit (%)	Moisture Content in Relation to Plastic Limit	Passing No. 200 Sieve (%)
2-4	ST-1	20	--	35	20	15	(+) 5	78
	ST-2	19	--	38	25	13	(+) 6	81
	ST-3	22	--	33	18	15	(+) 7	74
	ST-4	23	--	38	24	14	(+) 9	83

Results of Atterberg limit tests on selected cohesive soil samples indicated liquid limits ranging from 33 to 84 with corresponding plasticity indices ranging from 18 to 61. The amount of materials finer than the No. 200 sieve ranged from 74% to 98% within the cohesive soil samples tested for grain size distribution. Moisture content ranged from 19% to 43% within the selected samples.

Closing

We appreciate the opportunity to work with you on this phase of the project and look forward to the opportunity of providing additional services as the project progresses. If you have any questions regarding this report or if we can be of further assistance, please contact us.

Sincerely,

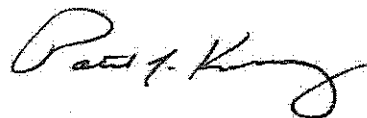
TOLUNAY-WONG ENGINEERS, INC.

Texas Board of Professional Engineers Firm Registration Number F-000124



Tyler G. Henneke, E.I.T.
Staff Professional

TGH/PJK/tgh



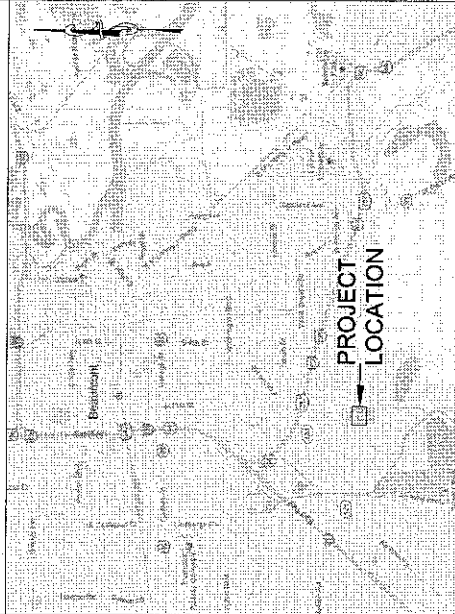
Patrick J. Kenney, P.E.
Vice President – Southeast Region
Engineering Services

APPENDIX A

Shelby Tube Sampling Location Plan
Drawing No. 11.23.442-1



VICINITY MAP



SOIL BORING COORDINATES

SAMPLING LOCATION	LATITUDE	LONGITUDE
ST-1	30° 01' 51.74" N	94° 07' 59.51" W
ST-2	30° 01' 49.79" N	94° 07' 59.51" W
ST-3	30° 01' 53.90" N	94° 07' 56.63" W
ST-4	30° 01' 53.94" N	94° 07' 52.19" W

LEGEND



SHELBY TUBE SAMPLING LOCATION

BY	DATE	REVISIONS	NO.

Tolunay-Wong Engineers, Inc.

SHELBY TUBE SAMPLING LOCATION PLAN
 SLUDGE SETTLEMENT POND LINER
 LAFIN ROAD WASTE WATER TREATMENT PLANT
 CITY OF BEAUMONT, TEXAS

DRAWN BY:	M.M.	DWG. NO.	11.23.442-1
CHECKED BY:	T.G.H.	SCALE:	N.T.S.
APPROVED BY:	P.J.K.	DATE:	DECEMBER 21, 2011

APPENDIX B

Logs of Borings ST-1 through ST-4 and a
Key to Symbols and Terms used on Boring Logs

LOG OF BORING ST-1

PROJECT: Sludge Settlement Pond Liner
Lafin Road WWTP - Beaumont, Texas

CLIENT: City of Beaumont Water Reclamation
Beaumont, Texas

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 30° 01' 51.74" W 94° 07' 59.51"	SURFACE ELEVATION: --	DRILLING METHOD: Dry Augered: -- to -- Wash Bored: -- to --	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psf)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED	
				MATERIAL DESCRIPTION														
	0	CLAY	CLAY	Stiff tan and light gray LEAN CLAY with SAND (CL)				(P)2.50		22		41	27				83	
	2			-with ferrous nodules from 2' to 4'				(P)2.50		20		35	20				78	
	4			Bottom @ 4'														
	5																	
	6																	
	7																	

COMPLETION DEPTH: 4 ft
 DATE BORING STARTED: 12/19/11
 DATE BORING COMPLETED: 12/19/11
 LOGGER: J. Turner
 PROJECT NO.: 11.23.442

NOTES: Shelby tube samples were obtained using equipment provided by the City of Beaumont. Sampling was terminated at a depth of 4-ft below the existing pond liner.

LOG OF BORING ST-2

PROJECT: Sludge Settlement Pond Liner
Lafin Road WWTP - Beaumont, Texas

CLIENT: City of Beaumont Water Reclamation
Beaumont, Texas

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 30° 01' 49.79" W 94° 07' 59.51"	SURFACE ELEVATION: -	DRILLING METHOD: Dry Augered: - to - Wash Bored: - to -	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED	
				MATERIAL DESCRIPTION														
	0	█	█	Stiff tan and light gray FAT CLAY (CH) -with slickensides and calcareous nodules from 0' to 2'			(P)2.00		27		61	42					88	
	1																	
	2	█	█	Stiff tan and light gray LEAN CLAY with SAND (CL)			(P)2.50		19		38	25					81	
	3																	
	4	Bottom @ 4'																
	5																	
	6																	
	7																	

COMPLETION DEPTH: 4 ft
DATE BORING STARTED: 12/19/11
DATE BORING COMPLETED: 12/19/11
LOGGER: J. Turner
PROJECT NO.: 11.23.442

NOTES: Shelby tube samples were obtained using equipment provided by the City of Beaumont. Sampling was terminated at a depth of 4-ft below the existing pond liner.

LOG OF BORING ST-3

PROJECT: Sludge Settlement Pond Liner
Lafin Road WWTP - Beaumont, Texas

CLIENT: City of Beaumont Water Reclamation
Beaumont, Texas

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 30° 01' 53.90" W 94° 07' 56.63"	SURFACE ELEVATION: --	DRILLING METHOD: Dry Augered: -- to -- Wash Bored: -- to --	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED	
				MATERIAL DESCRIPTION														
	0	CL	CL	Firm tan and light gray LEAN CLAY with SAND (CL)				(P)1.00		29		48	33				85	
	2			-becomes stiff with ferrous nodules				(P)2.00		22		33	18				74	
	4			Bottom @ 4'														
	5																	
	6																	
	7																	

COMPLETION DEPTH: 4 ft
DATE BORING STARTED: 12/19/11
DATE BORING COMPLETED: 12/19/11
LOGGER: J. Turner
PROJECT NO.: 11.23.442

NOTES: Shelby tube samples were obtained using equipment provided by the City of Beaumont. Sampling was terminated at a depth of 4-ft below the existing pond liner.

LOG OF BORING ST-4

PROJECT: Sludge Settlement Pond Liner
Lafin Road WWTP - Beaumont, Texas

CLIENT: City of Beaumont Water Reclamation
Beaumont, Texas

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 30° 01' 53.94" W 94° 07' 52.19"	SURFACE ELEVATION:	DRILLING METHOD: Dry Augered: -- to Wash Bored: -- to --	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psf)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
				MATERIAL DESCRIPTION													
	0	█	█	Stiff tan and light gray FAT CLAY (CH) -with calcareous and ferrous nodules from 0' to 2'			(P)1.75		43		84	61				98	
	2						Stiff tan and light gray LEAN CLAY with SAND (CL)			(P)2.00		23		38	24		
	4			Bottom @ 4'													
	5																
	6																
	7																

COMPLETION DEPTH: 4 ft
DATE BORING STARTED: 12/19/11
DATE BORING COMPLETED: 12/19/11
LOGGER: J. Turner
PROJECT NO.: 11.23.442

NOTES: Shelby tube samples were obtained using equipment provided by the City of Beaumont. Sampling was terminated at a depth of 4-ft below the existing pond liner.

SYMBOLS AND TERMS USED ON BORING LOGS

Most Common Unified Soil Classifications System Symbols

	Fill		Silt w/ Sand (ML)
	Pavement		Well Graded Sand (SW)
	Lean Clay (CL)		Well Graded Sand w/ Gravel (SW-GM)
	Lean Clay w/ Sand (CL)		Poorly Graded Sand (SP)
	Sandy Lean Clay (CL)		Poorly Graded Sand w/ Silt (SP-SM)
	Fat Clay (CH)		Silt (ML)
	Fat Clay w/ Sand (CH)		Elastic Silt (MH)
	Sandy Fat Clay (CH)		Elastic Silt w/ Sand (MH-SP)
	Silty Clay (CL)		Silty Gravel (GM)
	Sandy Silty Clay (CL-ML)		Clayey Gravel (GC)
	Silty Clayey Sand (SC-SM)		Well Graded Gravel (GW)
	Clayey Sand (SC)		Well Graded Gravel w/ Sand (SP-GM)
	Sandy Silt (ML)		Poorly Graded Gravel (GP)
	Silty Sand (SM)		Peat

Sampler Symbols

Meaning

	Pavement core
	Thin-walled tube sample
	Standard Penetration Test (SPT)
	Auger sample
	Sampling attempt with no recovery
	TxDOT Cone Penetrometer Test

Field Test Data

2.50	Pocket penetrometer reading in tons per square foot
8/6"	Blow count per 6-in. interval of the Standard Penetration Test
	Observed free water during drilling
	Observed static water level

Laboratory Test Data

Wc (%)	Moisture content in percent
Dens. (pcf)	Dry unit weight in pounds per cubic foot
Qu (tsf)	Unconfined compressive strength in tons per square foot
UU (tsf)	Compressive strength under confining pressure in tons per square foot
Str. (%)	Strain at failure in percent
LL	Liquid Limit in percent
PI	Plasticity Index
#200 (%)	Percent passing the No. 200 mesh sieve
()	Confining pressure in pounds per square inch
*	Slickensided failure
**	Did not fail @ 15% strain

RELATIVE DENSITY OF COHESIONLESS & SEMI-COHESIONLESS SOILS

The following descriptive terms for relative density apply to cohesionless soils such as gravels, silty sands, and sands as well as semi-cohesive and semi-cohesionless soils such as sandy silts, and clayey sands.

Relative Density	Typical N_{60} Value Range*
Very Loose	0-4
Loose	5-10
Medium Dense	11-30
Dense	31-50
Very Dense	Over 50

* N_{60} is the number of blows from a 140-lb weight having a free fall of 30-in. required to penetrate the final 12-in. of an 18-in. sample interval, corrected for field procedure to an average energy ratio of 60% (Terzaghi, Peck, and Mesri, 1996).

CONSISTENCY OF COHESIVE SOILS

The following descriptive terms for consistency apply to cohesive soils such as clays, sandy clays, and silty clays.

Pocket Penetrometer (tsf)	Typical Compressive Strength (tsf)	Consistency	Typical SPT " N_{60} " Value Range**
pp < 0.50	qu < 0.25	Very soft	≤ 2
$0.50 \leq pp < 0.75$	$0.25 \leq qu < 0.50$	Soft	3-4
$0.75 \leq pp < 1.50$	$0.50 \leq qu < 1.00$	Firm	5-8
$1.50 \leq pp < 3.00$	$1.00 \leq qu < 2.00$	Stiff	9-15
$3.00 \leq pp < 4.50$	$2.00 \leq qu < 4.00$	Very Stiff	16-30
pp ≥ 4.50	qu ≥ 4.00	Hard	≥ 31

** An " N_{60} " value of 31 or greater corresponds to a hard consistency. The correlation of consistency with a typical SPT " N_{60} " value range is approximate.



**SPECIAL PROVISION NO. 1 TO
ITEM 411 – Sewer Flow Control**

411.02 – Bypass Pumping – Add the following:

2. For WWTP influent bypass pumping, the Contractor shall furnish and maintain sufficient pump(s) with capacity equal to or greater than the average daily flow (ADF) and wet weather flows indicated below.

WWTP ADF = 20 MGD ; WWTP Wet Weather Flow = 50 MGD

411.04 – Bypass Pumping – Add the following:

Contractor shall be required to maintain vehicular traffic access into the plant site, and City Landfill. Contractor shall provide road crossings by installing casings under the existing roadway or providing prefabricated temporary road ramps for pumping operations or another approved method. Contractor shall provide all necessary fittings, connections, equipment, and materials (asphalt/limestone) to maintain pump flows and traffic access.

**SPECIAL PROVISION NO. 1 TO
ITEM 528 – Fiberglass Pipe For Gravity Sewer**

Item 528 – Fiberglass Pipe For Gravity Sewer – Revise the following sections:

2.02 Manufacture and Construction

- A. Pipes: Pipe shall be Glass Fiber Reinforced Polymer Gravity Sewer Pipe in accordance with ASTM D3262 and ASTM D4161 having a dense, nonporous, corrosion-resistant, consistent composite structure. The internal liner shall be a glass reinforced thermoset liner suitable for sewer service, and shall be highly resistant to exposure to sulfuric acid as produced by biological activity from hydrogen sulfide gases. Pipe shall meet or exceed the requirements of ASTM D3262 when tested in accordance with ASTM D3681. The interior surface shall provide crack resistance and abrasion resistance. The exterior surface of the pipes shall be comprised of a sand and resin layer which provides UV protection to the exterior. Pipe shall meet the requirements of ASTM D3262, Table 1 General Designation Requirements for Fiberglass Sewer Pipe.

2.04 Testing

- D. Strain Corrosion: The long term strain corrosion shall meet or exceed the minimum requirements of ASTM 3262

**SPECIAL PROVISION NO. 1 TO
ITEM 868 – Horizontal Aspirating Aerators**

Item 868 – Horizontal Aspirating Aerators – Revise the following sections:

868-01 GENERAL

5. The aerators will be manufactured by Aeration Industries International Inc., Aquaturbo Systems Inc. or prior approved equivalent.

868.03 - AERATOR DRIVE MOTOR

12. Submersible motors shall be specifically designed for immersion duty, with mechanical seal (Silicon/Viton or equal) and integral fully sealed power cable. Submersible motors shall be provided with seal leak detection sensors.

**SPECIAL PROVISION NO. 1 TO
ITEM 16050 – Electrical Basic Materials And Methods**

Item 16050 – Electrical Basic Materials And Methods – Revise the following sections:

2.06 - Main Switchboard, Section I. – Finish

J. Switchboards meeting the above requirements shall be as manufactured by Eaton (Cutler-Hammer).

