GEOTECHNICAL ENGINEERING SERVICES REPORT

Proposed Bahia Grande Unit Channel C1 and B2 Crossings
State Highway 48
Port Isabel, Texas

PSI File No.: 328-65066 Revision 1

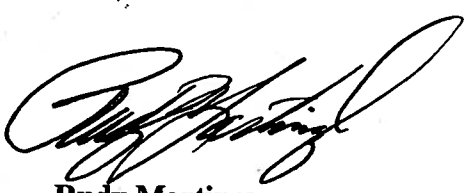
PREPARED FOR

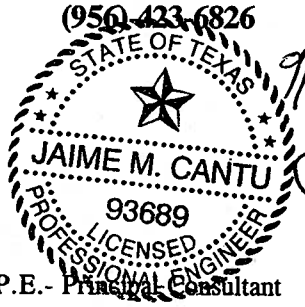
Ocean Trust Texas
11921 Freedom Drive, Suite 550
Reston, VA 20190-5635

September 19, 2006

BY

PROFESSIONAL SERVICE INDUSTRIES, INC.
2020 North Loop 499, Suite 302
Harlingen, Texas 78550
(956) 423-6826





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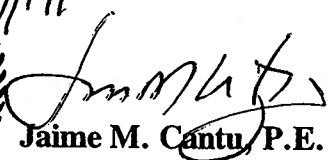

Rudy Martinez
Branch Manager

Jaime M. Cantu, P.E.
Geotechnical Project Engineer

Reviewed by: Danny Anderson, P.E.- Principal Consultant

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PROJECT INFORMATION

Project Authorization

Professional Service Industries, Inc., (PSI) has completed a geotechnical exploration for the proposed Bahia Grande Channel B2 and C1 Crossings at the Bahia Grande Laguna Atascosa National Wildlife Refuge located along State Highway 48 (SH 48) between Brownsville and Port Isabel, Texas. Mr. Thor Lassen of Ocean Trust Texas authorized our services by signing our proposal. This exploration was accomplished in general accordance with PSI Proposal No.: 328-G6069 dated June 27, 2006.

Project Description

Based on the information provided, it is understood that the proposed channel will be crossed with either a group of drainage box culverts or a bridge crossing. The channel crossings are identified as C1 and B2 and are part of the Bahia Grande Laguna Atascosa National Wildlife Refuge flooding of Little Laguna Madre and Laguna Larga near Port Isabel, Texas.

The geotechnical recommendations presented in this report are based on the available project information, channel crossing locations, and the subsurface materials described in this report. If any of the noted information is incorrect, please inform PSI in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. PSI will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

Purpose and Scope of Services

The purpose of this study was to explore the subsurface conditions at the site to enable an evaluation of acceptable foundation and construction methods for the proposed project. Our scope of services included drilling four (4) soil test borings at the site to a depth of about 30 feet below the surface, select laboratory testing, and preparation of this geotechnical report. This report briefly outlines the testing procedures, presents available project information, describes the site and subsurface conditions, and presents recommendations regarding the following:

- Foundation design values and subgrade preparation
- Soil bearing capacity
- OSHA soil classification and excavation considerations
- Comments regarding factors that will impact construction and performance of the proposed construction

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, groundwater, or air on or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

SITE AND SUBSURFACE CONDITIONS

Site Location and Description

The site for the proposed channel crossings are located at the Bahia Grande Laguna Atascosa National Wildlife Refuge on the north side of SH 48 located between Brownsville and Port Isabel, Texas

The site was open and the surface was covered by native brush and grass. Drilling activities were delayed due to rain causing the site to be inaccessible; however, the surficial soils were firm at the time of the field exploration. Our truck mounted-drill rig experienced only minor difficulty in moving about the site.

Subsurface Conditions

The site subsurface conditions were explored with four (4) soil test borings to depths of approximately 30 feet below the existing ground elevation near the proposed channel crossings. The boring locations and depths were selected by Ocean Trust Texas. The borings were located in the field by PSI personnel. The borings were advanced utilizing solid stem auger drilling methods and soil samples were routinely obtained during the drilling process. Drilling and sampling techniques were accomplished generally in accordance with ASTM procedures.

Select soil samples were tested in the laboratory to determine material properties for our evaluation. Laboratory testing was accomplished generally in accordance with ASTM procedures. The subsurface soils encountered at the site generally consist of SANDY LEAN CLAY/LEAN CLAY (CL), FAT CLAY (CH) and CLAYEY SAND (SC).

CHANNEL B2

SANDY LEAN CLAY (CL) was encountered in the borings at this location from the surface to the depths of 13 to 23 feet below the surface. Standard Penetration Tests (SPT) "N" values obtained within this soil stratum ranged from three (3) to 13 blows per foot indicating soft to stiff soil consistencies. These soils are moderate in plasticity as indicated by Atterberg Limit tests results. The tested liquid limit ranged from 40 to 41 with associated plasticity indices (PI) ranging from ranging from 20 to 28 percent.

Below the LEAN/SANDY LEAN CLAY (CL) and extending to the boring termination depth of 30 feet, FAT CLAY (CH) was encountered in boring B1. Standard Penetration Test (SPT) "N" values obtained within this soil stratum ranged from seven (7) to ten (10) blows per foot indicating firm to stiff soil consistencies. These soils are typically high in plasticity based on experience.

Below the SANDY LEAN CLAY (CL) and extending to the boring termination depth of 30 feet, CLAYEY SAND (SC) was encountered in boring B2. Standard Penetration Test (SPT) "N" values obtained within this soil stratum ranged from four (4) to eighteen (18) blows per foot indicating loose to medium dense soil consistencies. These soils are typically low to non-plastic based on experience.

CHANNEL C1

SANDY LEAN CLAY (CL) was encountered in the borings at this location from the surface to the depths of 8 to 23 feet below the surface. Standard Penetration Tests (SPT) "N" values obtained within this soil stratum ranged from three (3) to eight (8) blows per foot indicating soft to firm soil consistencies. These soils are moderate in plasticity as indicated by Atterberg Limit tests results. The tested liquid limit is 41 and associated plasticity index (PI) is 31 percent.

Below the SANDY LEAN CLAY (CL) and extending to the boring termination depth of 30 feet, FAT CLAY (CH) was encountered. Standard Penetration Test (SPT) "N" values obtained within this soil stratum ranged from three (3) to ten (10) blows per foot indicating soft to firm soil consistencies. These soils are typically high in plasticity based on experience.

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring log included in the Appendix should be reviewed for specific information at the individual boring location. This record includes soil descriptions, stratifications, penetration resistances, locations of the samples and laboratory test data. The stratifications shown on the boring log represent the conditions only at the actual boring location. Variations may occur and should be expected beyond the boring location. The stratifications represent the approximate boundary between

subsurface materials and the actual transition may be gradual. Water level information obtained during field operations is also shown on the boring log. The samples that were not altered by laboratory testing will be retained for 60 days from the date of this report and then will be discarded.

Groundwater Information

Groundwater was encountered at depths of eight to thirteen feet below the surface during the drilling operations. Delayed groundwater level readings were measured at four to twelve feet below the surface. It is likely that tidal and seasonal variations (temperature, rainfall, etc) will cause fluctuations in the groundwater level overtime. Additionally, perched water may be encountered in discontinuous zones within the overburden. The apparent groundwater levels presented in this report are the water levels that were observed at the time of our field activities. We recommend that the contractor determine the actual groundwater levels at the site at the time of the construction activities to determine the impact, if any, on the construction procedures.

EVALUATION AND RECOMMENDATIONS

Box Culvert Recommendations

The box culvert can be founded on properly compacted natural clay soils. The following table contains the allowable bearing pressures available at the site for the box culvert.

Channel	Allowable Bearing Pressure (psf) (SF = 2.0)
B-2	2500
C-1	1800

The excavation should be observed by a representative of PSI prior to steel or concrete placement to assess that the foundation materials are capable of supporting the design loads. Soft or loose soil zones encountered at the bottom of the excavations compacted to at least 95 percent of the Standard Proctor density. Cavities formed as a result of excavation of soft or loose soil zones should be backfilled with compacted caliche or crushed limestone, as determined by the Geotechnical Engineer.

After opening, the excavation should be observed, the surface compacted and concrete placed as quickly as possible to avoid exposure of the bottoms to wetting and drying. Surface

run-off water should be drained away from the excavation. The excavation should be protected to reduce evaporation or entry of moisture.

If soft saturated soils at the subgrade level cannot be compacted to at least 95 percent of the Standard Proctor, it is recommended that a Tensar BX 1100 Geogrid and 12 inches of caliche or crushed limestone be placed beneath the box culvert slab.

Consolidation of the bearing soils resulting from the loads will result in measurable increments of soil settlements. Based on results of the field tests and the anticipated foundation loads, we estimate that the maximum settlement should not exceed one (1) inch.

Bridge Crossing Recommendations

The bridge may be supported on driven timber piles. The piles may be designed for an average allowable skin friction value of 200 psf (SF = 2.0) based on dead load plus design live load considerations. Friction should only be considered for that portion of the pile in contact with undisturbed natural soils.

The pile driving hammer used to drive the piles should be selected according to pile type, length, size, and weight of the pile, as well as potential vibrations resulting from pile driving operations. Care should be taken to assure that the hammer selected is capable of achieving the desired penetration without causing damage to the piles. The final hammer selection should be made by the pile driving contractor.

Accurate records of the final tip elevation and driving resistance should be obtained during pile driving. The piles driving should continue to the desired depth without interruption in the pile driving operation. Supplemental techniques like pilot holes or jetting may reduce the pile capacity and should be avoided.

Some pile heaving may be experienced during installation of adjacent displacement type piles. It is therefore recommended that the tip elevation of the piles be recorded and if significant heave is noted after driving of subsequent piles, provisions must be made for reseating them.

We recommend that the pile driving be monitored by the Geotechnical Engineer or his representative. Sometimes, premature refusal occurs due to poor performance of the hammer rather than from soil resistance. Any changes in hammer blow counts should be carefully examined before making any decisions about the pile penetration or refusal.

Excavations and Backfilling

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document was issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be trenches, deep excavations or foundation excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. Excavations deeper than 20 feet must be designed by a Licensed Engineer in the State of Texas.

The OSHA Soil Classifications are designated for each soil stratum on the boring log. OSHA requires maximum temporary short term slopes as follows:

OSHA SOIL TYPE	SHORT TERM
A	¾ H : 1 V
B	1 H : 1 V
C	1.5 H : 1 V

For long term excavations, flatter slopes will be necessary to maintain a stable excavation. If space limitations do not allow for the trenches to be sloped, trench boxes should be used to protect the excavation walls from failure.

Approved bedding materials should surround box culvert structure and the trench should be backfilled with the compacted on-site soils except where the excavations cross pavements. A structural backfill such as caliche, crushed limestone or flowable fill is recommended in these areas. Each 12 inch lift of backfill should be compacted to at least 95 percent of the Standard Proctor maximum density. Each lift should be tested by a representative of PSI for compliance with the project requirements.

We are providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.

CONSTRUCTION CONSIDERATIONS

It is recommended that PSI be retained to provide observation and testing of construction activities involved in the foundation installation, backfilling, earthwork and related activities of this project. PSI cannot accept any responsibility for any conditions which deviate from those described in this report, nor for the performance of the box culvert if not engaged to also provide construction observation and testing for this project.

Moisture Sensitive Soils/Weather Related Concerns

The clay soils encountered at this site are expected to be sensitive to disturbances caused by construction traffic and changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. In addition, soils which become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather.

Drainage and Groundwater Concerns

Water should not be allowed to collect in the excavations or on prepared subgrades of the construction areas either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff. Positive site surface drainage should be provided to reduce infiltration of surface water around the perimeter of the box culvert and beneath the slab.

Delayed groundwater readings were measured at a depth of four (4) feet below the surface after the completion of the drilling operations. It is possible for a groundwater table to be present closer to the surface during other times of the year depending upon climatic and rainfall conditions. Additionally, perched water may be encountered in discontinuous zones within the overburden. Any water accumulation should be removed from excavations by creating a sump location and then pumping. Excavations deeper than about five (5) feet will likely begin to weep with water. A sump and pump dewatering system will likely be required to control groundwater inflow. Should excessive and uncontrolled amounts of seepage occur, the Geotechnical Engineer should be consulted.

REPORT LIMITATIONS

The recommendations submitted, in this report, are based on the available subsurface information obtained by PSI and design details furnished by Ocean Trust for the proposed

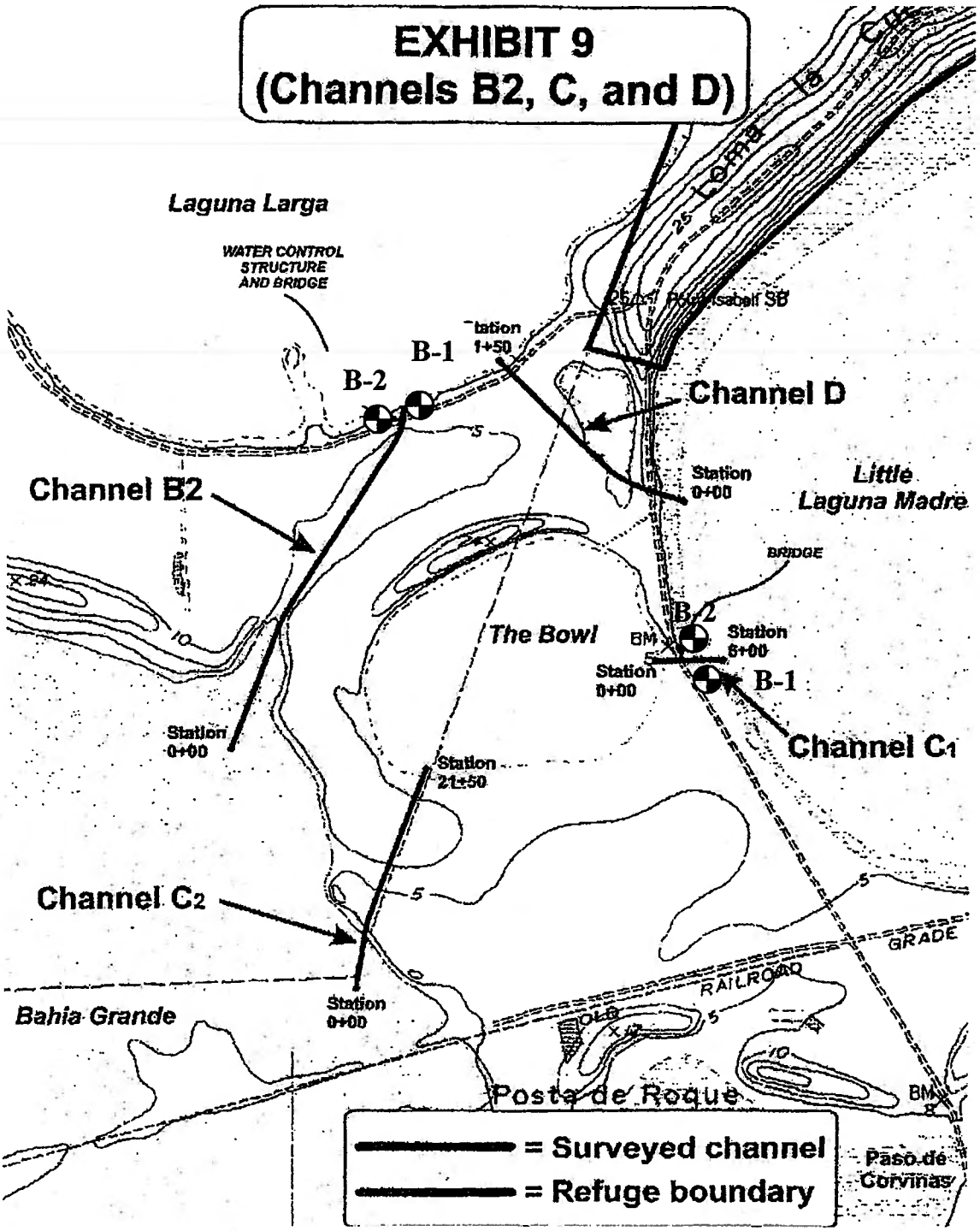
project. If there are any revisions to the plans for this project, or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the foundation recommendations are required. If PSI is not notified of such changes, PSI will not be responsible for the impact of those changes on the project.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional Geotechnical Engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are more complete, the Geotechnical Engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At this time, it may be necessary to submit supplementary recommendations. If PSI is not retained to perform these functions, PSI will not be responsible for the impact of those conditions on the project. This report has been prepared for the exclusive use of Ocean Trust for the specific application to the proposed Bahia Grande Unit Channel C1 and B2 Crossings to be located at the Bahia Grande Laguna Atascosa National Wildlife Refuge in Port Isabel, Texas.

APPENDIX

EXHIBIT 9
(Channels B2, C, and D)



0 Not to Scale

Approximate feet

Information To Build On
Engineering • Consulting • Testing
2020 North Loop 499, Suite 302
Harlingen, TX 78550
(956) 423-6826 - FAX (956) 423-5735

Boring Location Plan
328-65066

Bahia Grande Channel Crossing
Port Isabel, Texas

LOG OF BORING NO. B1

Bahia Grande Channel B2
Port Isabel, Texas
PSI Project No. : 328-65066

TYPE BORING: Straight Flight Auger — LOCATION: See Location Plan

SURF. ELEV.: N/A

DEPTH, FT.	SOIL DESCRIPTION	% PASSING #200 SIEVE	BLOWS PER FOOT	LIQUID LIMIT	PLASTIC INDEX	MOISTURE CONTENT	SHEAR STRENGTH IN TSF (○ HAND PEN ● UNC CMP, 0.0 2.0 4.0; PL WC LL, 20 40 60)	UNIT DRY WT. LB./CU FT.
0	SANDY LEAN CLAY (CL), black, stiff (OSHA TYPE B)		8			18		
	brown, stiff		5	40	20	17		
5	SANDY LEAN CLAY (CL), red/brown, soft (OSHA TYPE C)	69	6			15		
	red/brown, soft					23		
10	brown, firm					27		
	brown, firm		3			24		
15								
	brown, soft		6			45		
20								
	FAT CLAY (CH), brown, firm (OSHA TYPE B)		7			28		
25								
	brown, stiff		10			44		
30								

BORING DEPTH: 30.0 FEET
DATE: 8/1/06

DEPTH TO WATER: 13 ft
DELAYED WATER DEPTH: 10 ft

BL_TEXAS BAHIA GRANDE.GPJ PSI_CORP.GDT 9/20/06

PLATE 2

Geotechnical Consulting Services
Harlingen, Texas

LOG OF BORING NO. B2

Bahia Grande Channel B2
Port Isabel, Texas
PSI Project No. : 328-65066

TYPE BORING: Straight Flight Auger

LOCATION: See Location Plan

SURF. ELEV.: N/A

DEPTH, FT.	SYMBOL	SAMPLES	SOIL DESCRIPTION	% PASSING #200 SIEVE	BLOWS PER FOOT	LIQUID LIMIT	PLASTIC INDEX	MOISTURE CONTENT	SHEAR STRENGTH IN TSF ○HAND PEN ●UNC CMP 0.0 2.0 4.0 / PL WC LL 20 40 60	UNIT DRY WT. LB./CU FT.
			LEAN CLAY (CL), dark brown, stiff (OSHA TYPE A)	48	13			38		
5			dark brown, stiff					29		
			LEAN CLAY (CL),dark brown, firm (OSHA TYPE A)					27		
10			dark brown, firm	94		41	28	36		
			dark brown, firm					27		
15			CLAYEY SAND (SC), brown, medium (OSHA TYPE C)		4			30		
20			brown, medium	23	11			32		
25			brown, medium		15			31		
30			brown, medium		18			42		

BORING DEPTH: 30.0 FEET
DATE: 9/8/06

DEPTH TO WATER: 13 ft
DELAYED WATER DEPTH: 10 ft

BL_TEXAS_BAHIA GRANDE.GPJ PSI_CORP.GDT 9/20/06

PLATE 3

Geotechnical Consulting Services
Harlingen, Texas

LOG OF BORING NO. B1

Bahia Grande Channel C1
Port Isabel, Texas
PSI Project No. : 328-65066

TYPE BORING: Straight Flight Auger — LOCATION: See Location Plan

SURF. ELEV.: N/A

DEPTH, FT.	SOIL DESCRIPTION	% PASSING #200 SIEVE	BLOWS PER FOOT	LIQUID LIMIT	PLASTIC INDEX	MOISTURE CONTENT	UNIT DRY WT. LB./CU FT.
	SANDY LEAN CLAY (CL), brown, firm (OSHA TYPE B)		6			23	
5	brown, firm		5			23	
	brown, firm		6			20	
10	FAT CLAY (CH), green olive, soft (OSHA TYPE C)	96	4			20	
	brown, soft		4			22	
15	brown, soft		3			23	
20	FAT CLAY (CL), brown, firm (OSHA TYPE B)		6			17	
25	brown, firm		7			37	
30	brown, stiff		10			26	

SHEAR STRENGTH IN TSF
○ HAND PEN ● UNC CMP
0.0 2.0 4.0
PL WC LL
20 40 60

BORING DEPTH: 30.0 FEET
DATE: 8/1/06

DEPTH TO WATER: 11 ft
DELAYED WATER DEPTH: 4 ft

BL TEXAS BAHIA GRANDE C-1.GPJ PSI_CORP.GDT 9/20/06

PLATE 4

Geotechnical Consulting Services
Harlingen, Texas

LOG OF BORING NO. B2

Bahia Grande Channel C1
Port Isabel, Texas
PSI Project No. : 328-65066

TYPE BORING: Straight Flight Auger — LOCATION: See Location Plan

SURF. ELEV.: N/A

DEPTH, FT.	SOIL DESCRIPTION	% PASSING #200 SIEVE	BLOWS PER FOOT	LIQUID LIMIT	PLASTIC INDEX	MOISTURE CONTENT	SHEAR STRENGTH IN TSF ○HAND PEN ●UNC CMP 0.0 2.0 4.0 / PL WC LL 20 40 60	UNIT DRY WT. LB./CU FT.
	SANDY LEAN CLAY (CL), brown, firm (OSHA TYPE B)		8			28		
5	SANDY LEAN CLAY (CL), red/brown, soft (OSHA TYPE C)		4	41	31	29		
	brown, firm	65	5			28		
10	brown, firm					33		
	brown, soft					21		
15	brown, firm		5			39		
	brown, firm		7			33		
20								
25	FAT CLAY (CH), brown, soft (OSHA TYPE B)		4			33		
	brown, firm		6			35		
30								

BORING DEPTH: 30.0 FEET
DATE: 9/8/06

DEPTH TO WATER: 12 ft
DELAYED WATER DEPTH: 12 ft

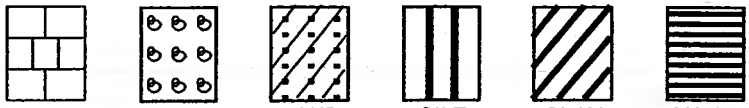
BL_TEXAS BAHIA GRANDE C-1.GPJ PSI_CORP.GDT 9/20/06

PLATE 5

Geotechnical Consulting Services
Harlingen, Texas

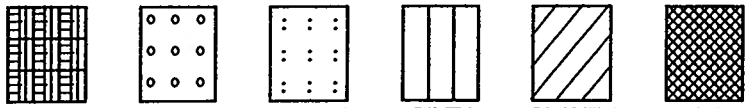
KEY TO TERMS AND SYMBOLS USED ON LOGS

SOIL TYPE



SAMPLER TYPE

MODIFIERS



UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D 2487

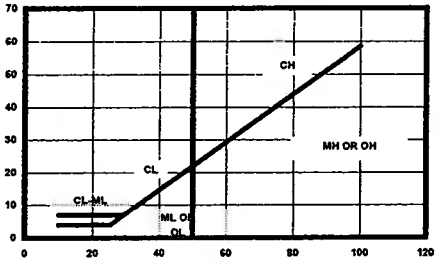
MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS LESS THAN 60% PASSING NO. 200 SIEVE	GRAVEL & GRAVELY SOILS LESS THAN 60% PASSING NO. 4 SIEVE	CLEAN GRAVEL (LITTLE OR NO FINES	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		W/ APPRECIABLE FINES	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN 60% PASSING NO. 4 SIEVE	CLEAN SANDS LITTLE FINES	SW	WELL GRADED SAND, GRAVELY SAND (LITTLE FINES)
			SP	POORLY GRADED SANDS, GRAVELY SAND (L.FINES)
		SANDS WITH APPREA. FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS,SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 60% PASSING NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS & VERY FINE SANDS,ROCK FLOUR SILTY OR CLAYEY FINE SANDS OR CLAYEY SILT W/ LOW PI
			CL	INORGANIC CLAY OF LOW TO MEDIUM PI LEAN CLAY GRAVELY CLAYS, SANDY CLAYS, SILTY CLAYS
			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PI
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY FAT CLAYS
			OH	ORGANIC CLAYS OF MED TO HIGH PI, ORGANIC SILT
HIGHLY ORGANIC SOIL			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS
UNCLASSIFIED FILL MATERIALS			ARTIFICIALLY DEPOSITED AND OTHER UNCLASSIFIED SOILS AND MAN-MADE SOIL MIXTURES	

CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	Qu IN TONS/FT^2
VERY SOFT	0 TO 0.25
SOFT	0.25 TO 0.5
MEDIUM STIFF	0.5 TO 1.0
STIFF	1.0 TO 2.0
VERY STIFF	2.0TO 4.0
HARD	4.0+

RELATIVE DENSITY - GRANULAR SOILS

CONSISTENCY	N-VALUE (BLOWS/FOOT)
VERY LOOSE	5 or less
LOOSE	5-10
MEDIUM DENSE	11-30
DENSE	31-50
VERY DENSE	51+



ABBREVIATIONS

HP - HAND PENETROMETER
TV - TORVANE
MV - MINIATURE VANE
UC - UNCONFINED COMPRESSION TEST
UU - UNCONSOLIDATED UNDRAINED TRAIXIAL
CU - CONSOLIDATED UNDRAINED

NOTE: PLOT INDICATES SHEAR STRENGTH AS OBTAINED BY ABOVE TESTS

▼ HYDRO-STATIC WATER LEVEL

▽ WATER LEVEL UNDER HYDRO - STATIC PRESSURE HEAD

CLASSIFICATION OF GRANULAR SOILS

U.S. STANDARD SIEVE SIZE(S)

6"	3"	3/4"	4	10	40	200

BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		

152	76.2	19.1	4.76	2.0	0.42	0.074	0.002

GRAIN SIZE IN MM

Atterberg Limits Report

26-010 MKC

Raba Kistner
Raba-Kistner Consultants, Inc.
800 E. Hackberry
McAllen, Texas 78501
(956) 682-5332 • FAX (956) 682-5487
www.rkci.com

File 26-010 Copy Edd Josh Jeff Bill

TO: Foremost Paving, Inc.
ATTN: Mr. Bill Cowgill

Project No.: AMD05-104-00
Technician: Client
Date: 08-18-05

PROJECT: MISCELLANEOUS TESTING, VARIOUS LOCATIONS
FOREMOST PAVING, INC.

ITEMS TESTED: Soil for Atterberg Limits

Samples of the following materials were delivered by Mr. Bill Cowgill with Foremost Paving, Inc., for laboratory Atterberg Limits determination.

1) Dark Brown Fat Clay
2) Brown Clayey Sand
3) Dark Brown Lean Clay
4) Brown Sandy Lean Clay
5) Brown Fat Clay
6) Brown Sandy Lean Clay

According to Mr. Cowgill with Foremost Paving, Inc., these materials were obtained from the following locations:

Samples from U.S. Fish & Wildlife, S.H. 48, Brownsville, Texas

The Atterberg Limits of these materials were determined in general accordance with ASTM D4318 test procedures. The laboratory test results are shown below.

1	Liquid Limit	=	63	Location: B-2 Top
	Plastic Limit	=	23	
	Plasticity Index	=	40	
2	Liquid Limit	=	32	Location: B-2 Bottom
	Plastic Limit	=	20	
	Plasticity Index	=	12	
3	Liquid Limit	=	49	Location: C-2 Top Middle
	Plastic Limit	=	22	
	Plasticity Index	=	27	
4	Liquid Limit	=	39	Location: C-2 Bottom Middle
	Plastic Limit	=	19	
	Plasticity Index	=	20	
5	Liquid Limit	=	50	Location: C-2 North Top
	Plastic Limit	=	21	
	Plasticity Index	=	29	
6	Liquid Limit	=	36	Location: C-2 North Bottom
	Plastic Limit	=	19	
	Plasticity Index	=	17	

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RABA-KISTNER CONSULTANTS, INC.

BY: _____
Martin Vila, P.E.

Assignment No.: M-66644
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File 24-010 Copy Jeff Eddie C.

mkc

Engineering · Testing · Environmental · Facilities · Infrastructure

Atterberg Limits Report

Raba Kistner
Raba-Kistner Consultants, Inc.
800 E. Hackberry
McAllen, Texas 78501
(956) 682-5332 · FAX (956) 682-5487
www.rkci.com

TO: Foremost Paving, Inc.
ATTN: Mr. Bill Cowgill, General Superintendent

Project No.: AMD05-104-00
Technician: Client
Date: 11-11-05

PROJECT: MISCELLANEOUS TESTING, VARIOUS LOCATIONS
FOREMOST PAVING, INC.

ITEMS TESTED: Soil for Atterberg Limits

A sample of the following material was delivered by Mr. Bill Cowgill with Foremost Paving, Inc., for laboratory Atterberg Limits determination:

Brown Clayey Sand (Proposed Fill Material)

According to Mr. Cowgill with Foremost Paving, Inc., this material was obtained from the following location:

Sample from State Highway 48, Channel "B"; Bottom, Brownsville, Texas

The Atterberg Limits of this material were determined in general accordance with ASTM D4318 test procedures. The laboratory test results are shown below.

Liquid Limit	=	31
Plastic Limit	=	18
Plasticity Index	=	13

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RABA-KISTNER CONSULTANTS, INC.

BY: _____
Martin Vila, P.E.

Assignment No.: M-66390
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Atterberg Limits Report

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Project No.: AMD05-104-00
Technician: Client
Date: 11-11-05

PROJECT: MISCELLANEOUS TESTING, VARIOUS LOCATIONS
FOREMOST PAVING, INC.

ITEMS TESTED: Soil for Atterberg Limits

A sample of the following material was delivered by Mr. Bill Cowgill with Foremost Paving, Inc., for laboratory Atterberg Limits determination:

Brown Fat Clay (Proposed Fill Material)

According to Mr. Cowgill with Foremost Paving, Inc., this material was obtained from the following location:

Sample from State Highway 48, Channel "B"; Top; Brownsville, Texas

The Atterberg Limits of this material were determined in general accordance with ASTM D4318 test procedures. The laboratory test results are shown below.

Liquid Limit	=	57
Plastic Limit	=	21
Plasticity Index	=	36

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RABA-KISTNER CONSULTANTS, INC.

BY: _____
Martin Vila, P.E.

Assignment No.: M-68391
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