



Date: \_\_\_\_\_  
Drawn By: \_\_\_\_\_  
Checked By: \_\_\_\_\_

DEPTH, FT	WATER LEVEL SYMBOL SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 1 COORDINATES: 735698 (North) 3610183 (East) SURFACE EL.: 6.93'	ELEVATION, FT	CLASSIFICATION						SHEAR STRENGTH					
					UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	ORGANIC CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT				
STRATUM DESCRIPTION											0.5	1.0	1.5	2.0	2.5	
			FILL: CLAY, stiff to very stiff, brown - with roots to 0.5' - brown and gray below 2'			48		84	22	62						
			FILL: SANDY SILT, gray, with clay pockets	2.9												
			FILL: CLAY, very soft, dark gray	0.9		90										
			FILL: CLAY, stiff, dark gray, with roots and organic material	-1.1		28		45	13	32						
10		3	SILTY SAND, very loose, dark gray, fine	-4.6												
			SILTY CLAY, firm, dark gray	-11.1												
			CLAY, firm, dark gray	-16.1	54	81										
				-20.1		78										
		6	SILTY SAND, loose, gray - with clay below 28.5'	-20.1		36										
			SILTY CLAY, soft to firm, gray - with sand and shell fragments below 34'	-24.6				45								
			CLAY, soft, gray - with shell fragments below 39'	-31.1				31								
			SILTY CLAY, very soft to firm, gray - with organic pockets below 43'	-36.1	59	67										
						64	5									
						69										
					54	81										

**NOTES:**

1. Depth-to-water not measured during drilling.
2. Terms and symbols defined on Plate A-41.
3. Boring coordinates based on NAD 27, Texas State Plane coordinate datum. Elevations based on NGVD 29.
4. \* Triaxial sample at 25, 60 and 150 ft failed across soft spots.

DATE: December 6, 2003  
 TOTAL DEPTH: 150'  
 CAVED DEPTH: Not Applicable  
 DRY AUGER: Not Applicable  
 WET ROTARY: 0' to 150'  
 BACKFILL: Cement-Bentonite Grout  
 LOGGER: L. Baker

**LOG OF BORING NO. B-20**  
 LNG PROCESS AREA, MARINE AREA, AND PERIMETER DIKES  
 EXXONMOBIL DEVELOPMENT COMPANY  
 GOLDEN PASS, SABINE, TEXAS

O:\EXXONMOBIL LNG PROJECT\SIGOLDEN PASS\DRAWING\04150963.GPJ FOR LNG JOBS 3/28/2004



Date: \_\_\_\_\_  
 Drawn By: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Checked By: \_\_\_\_\_

DEPTH, FT	WATER LEVEL	SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 1 COORDINATES: 735698 (North) 3610183 (East) SURFACE EL.: 6.93'	ELEVATION, FT	CLASSIFICATION						SHEAR STRENGTH								
							UNIT DRY WT. PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	ORGANIC CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT							
STRATUM DESCRIPTION																					
60-70					SILTY CLAY, very soft to firm, gray - with fine sand pockets below 64'			77													
70-80					CLAY, stiff, tan and light gray - very calcareous, 78' to 79' - with calcareous nodules below 78' - very stiff at 80' - with silt pockets below 83'	-69.1		80													
80-90					CLAY, stiff, tan and light gray - very calcareous, 78' to 79' - with calcareous nodules below 78' - very stiff at 80' - with silt pockets below 83'		57	70													
90-100					SILTY CLAY, firm to stiff, gray and brown - with a clayey silt seam, 88.5' to 89' - gray below 93' - with sand seams, 96.5' to 97.5' - with sand seams, 104' to 104.5'	-81.1		21													
100-110					SILTY CLAY, firm to stiff, gray and brown - with a clayey silt seam, 88.5' to 89' - gray below 93' - with sand seams, 96.5' to 97.5' - with sand seams, 104' to 104.5'		89	33													
110-111				8	SILTY SAND, loose, fine, gray, with shell fragments	-101.6		33													
111-112					CLAY, stiff, gray - with silt partings and organic material below 118'	-103.1		30													
112-113					CLAY, stiff, gray - with silt partings and organic material below 118'	-112.1	92	24													
113-114					CLAY, stiff, gray - with silt partings and organic material below 118'			44													
114-115					CLAY, stiff, gray - with silt partings and organic material below 118'			31													

**NOTES:**

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					UNIT DRY WT., PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	ORGANIC CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT					
STRATUM DESCRIPTION																	
			SILTY CLAY, stiff, gray														
130			CLAY, stiff, gray, with silt pockets	-121.1	76	46											
140			- firm below 139'			51											
150			- with silt partings below 148' - soft at 150'	-143.1	67	58											
160																	
170																	

**NOTES:**

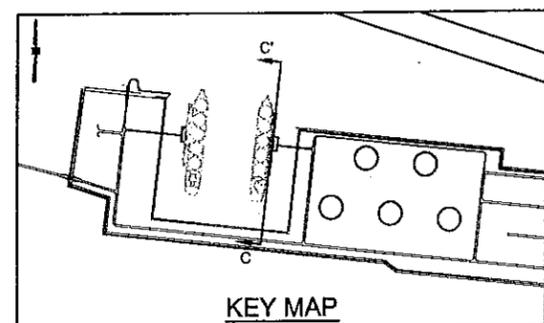
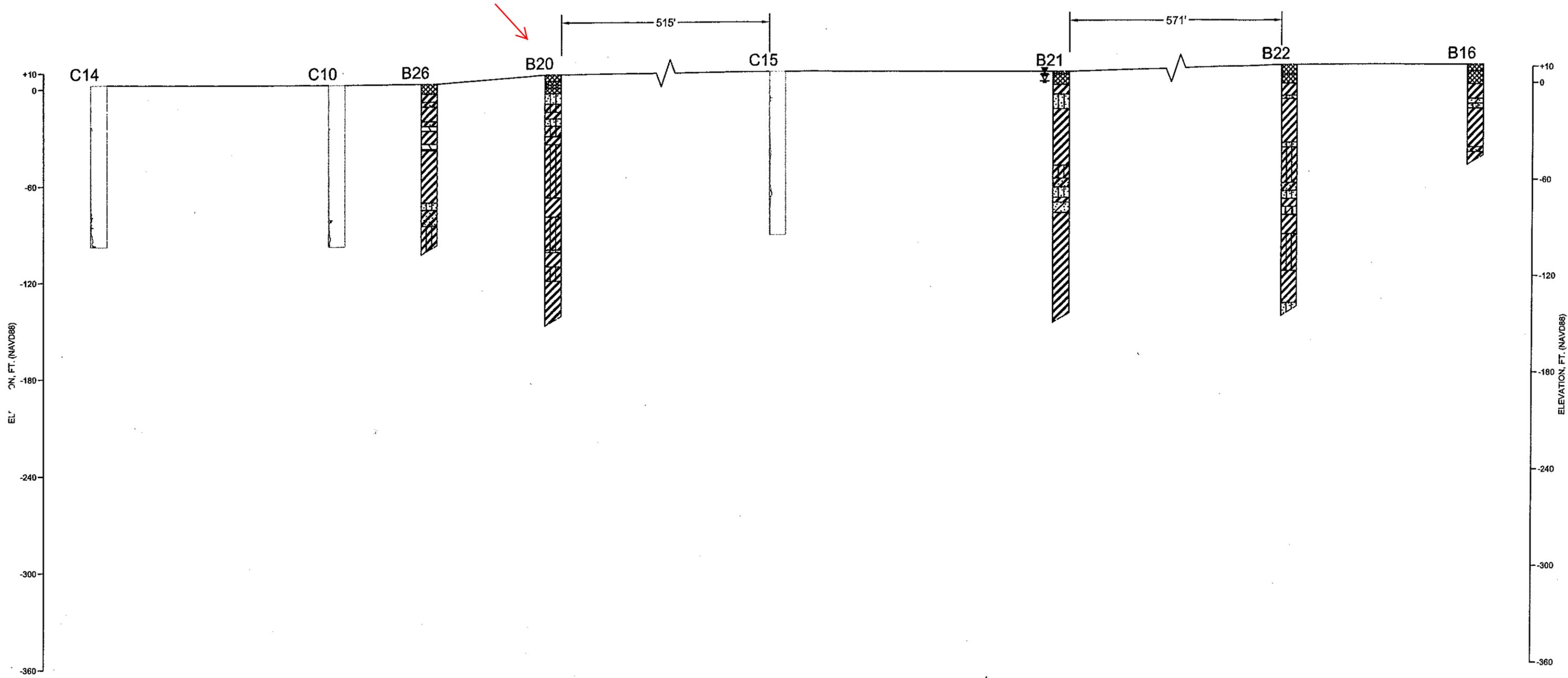
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**EXXONMOBIL DEVELOPMENT COMPANY**  
**GOLDEN PASS, SABINE, TEXAS**

**SECTION C-C'**



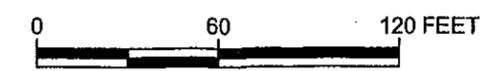
**LEGEND**

CLAY	SILT
CLAYEY SAND	SILTY CLAY
SANDY CLAY	CLAYEY SILT
SAND	EXTENDED WATER LEVEL
SANDY SILT	WATER LEVEL FIRST ENCOUNTERED
SILTY SAND	

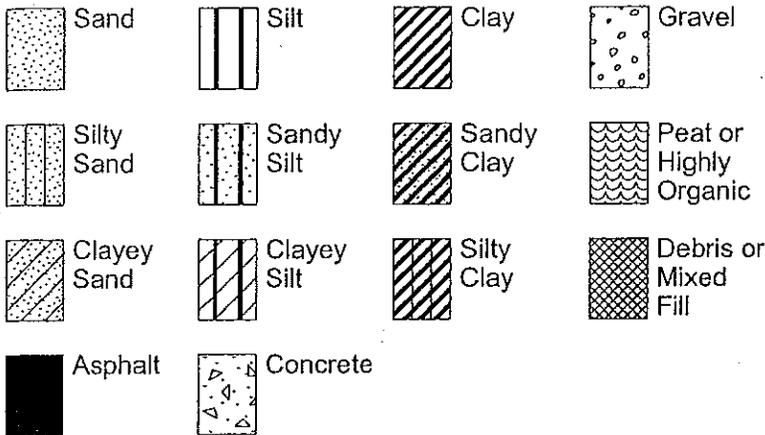
**NOTE:**

1. PCPT PROFILES PRESENTED ABOVE DISPLAY CONE TIP RESISTANCE. SEE REPORT TEXT FOR ADDITIONAL INFORMATION REGARDING PCPTs.
2. DATA CONCERNING SUBSURFACE CONDITIONS HAVE BEEN OBTAINED AT BORING AND PCPT LOCATION ONLY. ACTUAL CONDITIONS AT LOCATIONS BETWEEN BORINGS AND PCPTs MAY DIFFER FROM THE GENERALIZED PROFILE SHOWN ABOVE.

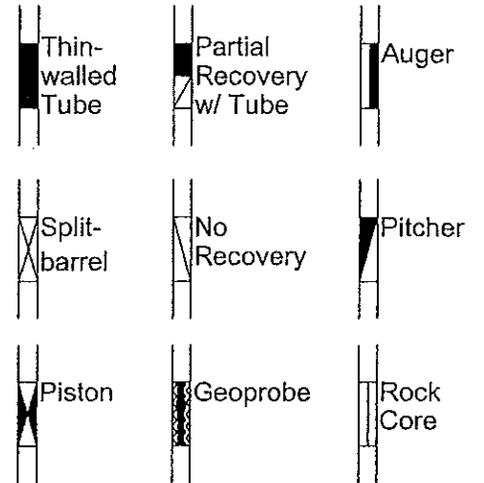
**SUBSURFACE STRATIGRAPHY - SECTION C-C'**



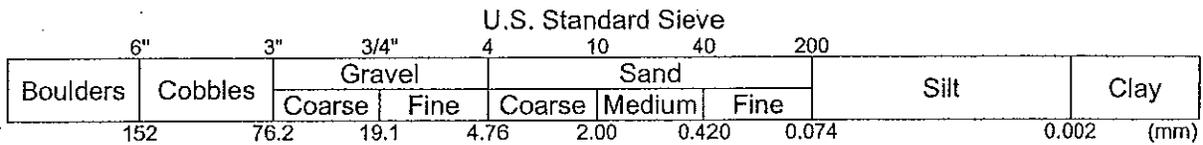
**SOIL TYPES**



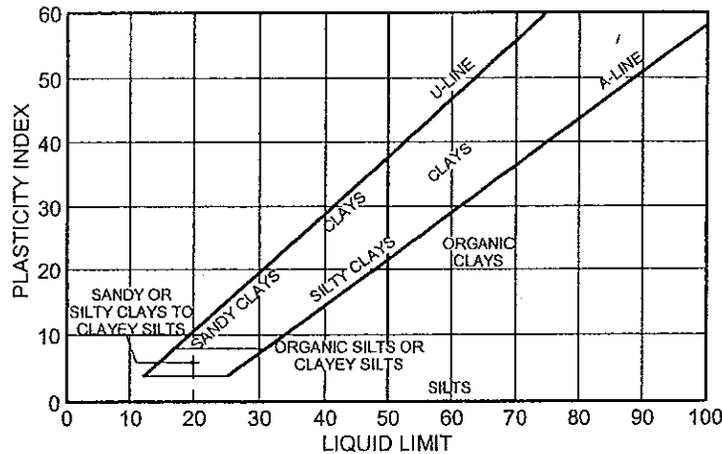
**SAMPLER TYPES**



**SOIL GRAIN SIZE**



**PLASTICITY CHART**



**SOIL STRUCTURE**

- Slickensided ..... Having planes of weakness that appear slick and glossy.
- 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 different soil type.
- Interlayered ..... Soil sample composed of alternating layers of different soil type.
- Intermixed ..... Soil sample composed of pockets of different soil type and layered or laminated structure is not evident.
- Calcareous ..... Having appreciable quantities of carbonate.
- Carbonate ..... Having more than 50% carbonate content.

**TERMS AND SYMBOLS USED ON BORING LOGS**  
**SOIL CLASSIFICATION (1 of 2)**

### STANDARD PENETRATION TEST (SPT)

A 2-in.-OD, 1-3/8-ID split spoon sampler is driven 1.5 ft into undisturbed soil with a 140-pound hammer free falling 30 in. After the sampler is seated 6 in. into undisturbed soil, the number of blows required to drive the sampler the last 12 in. is the Standard Penetration Resistance or "N" value, which is recorded as blows per foot as described below.

### SPLIT-BARREL SAMPLER DRIVING RECORD

Blows Per Foot	Description
25	25 blows drove sampler 12 inches, after initial 6 inches of seating.
50/7"	50 blows drove sampler 7 inches, after initial 6 inches of seating.
Ref/3"	50 blows drove sampler 3 inches during initial 6-inch seating interval.
WOH	Weight of Hammer drove sampler 12 inches, without driving spoon.
WOR	Weight of Rod drove sampler 12 inches, without attaching hammer.

**NOTE:** To avoid damage to sampling tools, driving is limited to 50 blows during or after seating interval.

### DENSITY OF GRANULAR SOILS

Descriptive Term	*Relative Density, %	**Blows Per Foot (SPT)
Very Loose	< 15	0 to 4
Loose	15 to 35	5 to 10
Medium Dense	35 to 65	11 to 30
Dense	65 to 85	31 to 50
Very Dense	> 85	> 50

\*Estimated from sampler driving record.

\*\*Requires correction for depth, groundwater level, and grain size.

### STRENGTH OF COHESIVE SOILS

Term	Undrained Shear Strength, ksf	Blows Per Foot (SPT) (approximate)
Very Soft	< 0.25	0 to 2
Soft	0.25 to 0.50	2 to 4
Firm	0.50 to 1.00	4 to 8
Stiff	1.00 to 2.00	8 to 16
Very Stiff	2.00 to 4.00	16 to 32
Hard	> 4.00	> 32

### SHEAR STRENGTH TEST METHOD

U - Unconfined    Q = Unconsolidated - Undrained Triaxial

P = Pocket Penetrometer    T = Torvane    V = Miniature Vane    F = Field Vane

### HAND PENETROMETER CORRECTION

Our experience has shown that the hand penetrometer generally overestimates the in-situ undrained shear strength of over consolidated Pleistocene Gulf Coast clays. These strengths are partially controlled by the presence of macroscopic soil defects such as slickensides, which generally do not influence smaller scale tests like the hand penetrometer. Based on our experience, we have adjusted these field estimates of the undrained shear strength of natural, overconsolidated Pleistocene Gulf Coast soils by multiplying the measured penetrometer reading by a factor of 0.6. These adjusted strength estimates are recorded in the "Shear Strength" column on the boring logs. Except as described in the text, we have not adjusted estimates of the undrained shear strength for projects located outside of the Pleistocene Gulf Coast formations.

Information on each boring log is a compilation of subsurface conditions and soil or rock classifications obtained from the field as well as from laboratory testing of samples. Strata have been interpreted by commonly accepted procedures. The stratum lines on the logs may be transitional and approximate in nature. Water level measurements refer only to those observed at the time and places indicated, and can vary with time, geologic condition, or construction activity.