

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,277,110	Northing(NAD83):	13,794,278
Hole Number:	ECP-272-A			Freeboard:	7.67
Time:	10:49			Tide:	0.54
Sounding Elev:	-10.1	Bottom of Probe:	-30.8	Penetration:	20.7 ft.

	Elevation	Description / Material
Surveyed ==>	-10.1	=====
Penetration Depth:		WOR SURFICIAL SILT
10.7	-20.8	=====
		SA SAND BEGIN JET
13.7	-23.8	=====
		SA SAND REFUSAL
20.7	-30.8	=====

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,277,542	Northing(NAD83):	13,794,517
Hole Number:	ECP-273-A			Freeboard:	7.67
Time:	10:56			Tide:	0.37
Sounding Elev:	-10.1	Bottom of Probe:	-32.0	Penetration:	21.9 ft.

	Elevation	Description / Material
Surveyed ==>	-10.1	=====
Penetration Depth:		WOR SURFICIAL SILT
11.4	-21.5	=====
		SA SAND BEGIN JET
13.9	-24.0	=====
		SA SAND REFUSAL
21.9	-32.0	=====

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,277,980	Northing(NAD83):	13,794,737
Hole Number:	ECP-274-A			Freeboard:	7.67
Time:	11:03			Tide:	0.42
Sounding Elev:	-10.1	Bottom of Probe:	-31.4	Penetration:	21.4 ft.

	Elevation	Description / Material
Surveyed ==>	-10.1	=====
Penetration Depth:		WOR SURFICIAL SILT
11.4	-21.4	=====
		SA SAND BEGIN JET
14.4	-24.4	=====
		SA SAND REFUSAL
21.4	-31.4	=====

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,432	Northing(NAD83):	13,794,984
Hole Number:	ECP-275-A			Freeboard:	7.67
Time:	11:08			Tide:	0.45
Sounding Elev:	-10.1	Bottom of Probe:	-31.4	Penetration:	21.3 ft.

	Elevation	Description / Material
Surveyed ==>	-10.1	=====
Penetration Depth:		WOR SURFICIAL SILT
11.8	-21.9	=====
		SA SAND BEGIN JET
13.8	-23.9	=====
		SA SAND REFUSAL
21.3	-31.4	=====

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,871	Northing(NAD83):	13,795,235
Hole Number:	ECP-276-A			Freeboard:	7.67
Time:	11:14			Tide:	0.4
Sounding Elev:	-10.2	Bottom of Probe:	-32.9	Penetration:	22.8 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR SURFICIAL SILT	
12.8	-22.9	=====	
		CL SILT/CLAY	BEGIN JET
14.8	-24.9	=====	
		CL SILT/CLAY	REFUSAL
22.8	-32.9	=====	

Character of Finish: REFUSAL IN SILT/CLAY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,095	Northing(NAD83):	13,794,794
Hole Number:	ECP-277-A			Freeboard:	7.67
Time:	11:23			Tide:	0.45
Sounding Elev:	-10.1	Bottom of Probe:	-31.9	Penetration:	21.8 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.1	=====	
Penetration Depth:		WOR SURFICIAL SILT	
11.8	-21.9	=====	
		CL SILT/CLAY	BEGIN JET
15.8	-25.9	=====	
		SA SAND	JET
18.8	-28.9	=====	
		SA SAND	REFUSAL
21.8	-31.9	=====	

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,662	Northing(NAD83):	13,794,549
Hole Number:	ECP-278-A			Freeboard:	7.67
Time:	11:29			Tide:	0.44
Sounding Elev:	-10.1	Bottom of Probe:	-29.9	Penetration:	19.8 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.1	=====	
Penetration Depth:		WOR	SURFICIAL SILT
13.8	-23.9	=====	
		CL	SILT/CLAY
15.8	-25.9	=====	BEGIN JET
		SA	SAND
19.8	-29.9	=====	REFUSAL

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,344	Northing(NAD83):	13,794,374
Hole Number:	ECP-279-A			Freeboard:	7.67
Time:	11:35			Tide:	0.44
Sounding Elev:	-10.2	Bottom of Probe:	-29.9	Penetration:	19.7 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR	SURFICIAL SILT
11.7	-21.9	=====	
		CL	SILT/CLAY
13.7	-23.9	=====	BEGIN JET
		SA	SAND
18.7	-28.9	=====	JET
		SA	SAND
19.7	-29.9	=====	REFUSAL

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,277,775	Northing(NAD83):	13,794,081
Hole Number:	ECP-280-A			Freeboard:	7.67
Time:	11:41			Tide:	0.4
Sounding Elev:	-10.3	Bottom of Probe:	-29.9	Penetration:	19.7 ft.

	Elevation	Description / Material
Surveyed ==>	-10.3	=====
Penetration Depth:		WOR SURFICIAL SILT
11.2	-21.4	=====
		SA SAND BEGIN JET
13.7	-23.9	=====
		CL-SA SILT/CLAY & SAND REFUSAL
19.7	-29.9	=====

Character of Finish: REFUSAL IN SILT/CLAY & SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,277,347	Northing(NAD83):	13,793,822
Hole Number:	ECP-281-A			Freeboard:	7.67
Time:	11:46			Tide:	0.52
Sounding Elev:	-10.3	Bottom of Probe:	-29.8	Penetration:	19.6 ft.

	Elevation	Description / Material
Surveyed ==>	-10.3	=====
Penetration Depth:		WOR SURFICIAL SILT
11.1	-21.3	=====
		SA SAND BEGIN JET
14.1	-24.3	=====
		SA-SH SAND & SHELL JET
16.6	-26.8	=====
		SA SAND REFUSAL
19.6	-29.8	=====

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,276,902	Northing(NAD83):	13,793,607
Hole Number:	ECP-282-A			Freeboard:	7.67
Time:	11:51			Tide:	0.21
Sounding Elev:	-10.3	Bottom of Probe:	-30.6	Penetration:	20.4 ft.

	Elevation	Description / Material
Surveyed ==>	-10.3	=====
Penetration Depth:		WOR SURFICIAL SILT
11.9	-22.1	=====
		SA SAND BEGIN JET
12.4	-22.6	=====
		SA-SH SAND & SHELL REFUSAL
20.4	-30.6	=====

Character of Finish: REFUSAL IN SAND & SHELL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,277,153	Northing(NAD83):	13,793,161
Hole Number:	ECP-299-A			Freeboard:	7.67
Time:	11:59			Tide:	0.47
Sounding Elev:	-10.3	Bottom of Probe:	-32.9	Penetration:	22.6 ft.

	Elevation	Description / Material
Surveyed ==>	-10.3	=====
Penetration Depth:		WOR SURFICIAL SILT
11.6	-21.9	=====
		SA SAND BEGIN JET
14.6	-24.9	=====
		SA-SH SAND & SHELL REFUSAL
22.6	-32.9	=====

Character of Finish: REFUSAL IN SAND & SHELL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,277,574	Northing(NAD83):	13,793,410
Hole Number:	ECP-300-A			Freeboard:	7.67
Time:	12:07			Tide:	0.32
Sounding Elev:	-10.2	Bottom of Probe:	-32.0	Penetration:	21.8 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR	SURFICIAL SILT
11.8	-22.0	=====	
		CL-SA	SILT/CLAY & SAND
12.8	-23.0	=====	BEGIN JET
		CL	SILT/CLAY
13.8	-24.0	=====	JET
		SA	SAND
18.8	-29.0	=====	JET
		SA	SAND
21.8	-32.0	=====	REFUSAL

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,018	Northing(NAD83):	13,793,632
Hole Number:	ECP-301-A			Freeboard:	7.67
Time:	12:13			Tide:	0.38
Sounding Elev:	-10.3	Bottom of Probe:	-31.5	Penetration:	21.2 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
12.7	-23.0	=====	
		CL-SA	SILT/CLAY & SAND
14.7	-25.0	=====	BEGIN JET
		CL	SILT/CLAY
17.7	-28.0	=====	JET
		SA	SAND
21.2	-31.5	=====	REFUSAL

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,470	Northing(NAD83):	13,793,874
Hole Number:	ECP-302-A			Freeboard:	7.67
Time:	12:19			Tide:	0.37
Sounding Elev:	-10.2	Bottom of Probe:	-31.5	Penetration:	21.3 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR	SURFICIAL SILT
12.3	-22.5	=====	
		CL	SILT/CLAY
15.8	-26.0	=====	BEGIN JET
		SA	SAND
16.8	-27.0	=====	JET
		SA	SAND
21.3	-31.5	=====	REFUSAL

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,893	Northing(NAD83):	13,794,118
Hole Number:	ECP-303-A			Freeboard:	7.67
Time:	12:25			Tide:	0.38
Sounding Elev:	-10.2	Bottom of Probe:	-34.0	Penetration:	23.8 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR	SURFICIAL SILT
12.8	-23.0	=====	
		CL-SA	SILT/CLAY & SAND
16.8	-27.0	=====	BEGIN JET
		SA-SH	SAND & SHELL
23.8	-34.0	=====	REFUSAL

Character of Finish: REFUSAL IN SAND & SHELL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,332	Northing(NAD83):	13,794,356
Hole Number:	ECP-304-A			Freeboard:	7.67
Time:	12:31			Tide:	0.49
Sounding Elev:	-10.2	Bottom of Probe:	-46.8	Penetration:	36.7 ft.

	Elevation	Description / Material
Surveyed ==>	-10.2	=====
Penetration Depth:		WOR SURFICIAL SILT
15.2	-25.3	=====
		SA SAND BEGIN JET
16.7	-26.8	=====
		SA SAND JET
18.7	-28.8	=====
		SA-SH SAND & SHELL JET
19.7	-29.8	=====
		CL SILT/CLAY REFUSAL
36.7	-46.8	=====

Character of Finish: REFUSAL IN SILT/CLAY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,580	Northing(NAD83):	13,793,912
Hole Number:	ECP-305-A			Freeboard:	7.67
Time:	12:41			Tide:	0.41
Sounding Elev:	-10.2	Bottom of Probe:	-46.9	Penetration:	36.7 ft.

	Elevation	Description / Material
Surveyed ==>	-10.2	=====
Penetration Depth:		WOR SURFICIAL SILT
14.7	-24.9	=====
		SA SAND BEGIN JET
17.2	-27.4	=====
		SA SAND JET
18.7	-28.9	=====
		SA-SH SAND & SHELL JET
19.7	-29.9	=====
		CL SILT/CLAY REFUSAL
36.7	-46.9	=====

Character of Finish: REFUSAL IN SILT/CLAY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,140	Northing(NAD83):	13,793,682
Hole Number:	ECP-306-A			Freeboard:	7.67
Time:	12:48			Tide:	0.48
Sounding Elev:	-10.4	Bottom of Probe:	-51.9	Penetration:	41.4 ft.

	Elevation	Description / Material
Surveyed ==>	-10.4	=====
Penetration Depth:		WOR SURFICIAL SILT
13.4	-23.9	=====
		SA SAND BEGIN JET
16.4	-26.9	=====
		SA SAND JET
18.4	-28.9	=====
		CL SILT/CLAY REFUSAL
41.4	-51.9	=====

Character of Finish: REFUSAL IN SILT/CLAY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,694	Northing(NAD83):	13,793,443
Hole Number:	ECP-307-A			Freeboard:	7.67
Time:	12:53			Tide:	0.48
Sounding Elev:	-10.3	Bottom of Probe:	-32.9	Penetration:	22.6 ft.

	Elevation	Description / Material
Surveyed ==>	-10.3	=====
Penetration Depth:		WOR SURFICIAL SILT
13.1	-23.4	=====
		CL SILT/CLAY BEGIN JET
16.6	-26.9	=====
		CL SILT/CLAY JET
18.6	-28.9	=====
		SA SAND JET
20.6	-30.9	=====
		CL SILT/CLAY REFUSAL
22.6	-32.9	=====

Character of Finish: REFUSAL IN SILT/CLAY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,339	Northing(NAD83):	13,793,222
Hole Number:	ECP-308-A			Freeboard:	7.67
Time:	12:59			Tide:	0.32
Sounding Elev:	-10.3	Bottom of Probe:	-35.5	Penetration:	25.3 ft.

	Elevation	Description / Material
Surveyed ==>	-10.3	=====
Penetration Depth:		WOR SURFICIAL SILT
12.8	-23.0	=====
		SA SAND BEGIN JET
14.8	-25.0	=====
		SA-SH SAND & SHELL JET
21.8	-32.0	=====
		SA-SH SAND & SHELL REFUSAL
25.3	-35.5	=====

Character of Finish: REFUSAL IN SAND & SHELL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,277,816	Northing(NAD83):	13,792,957
Hole Number:	ECP-309-A			Freeboard:	7.67
Time:	13:05			Tide:	0.43
Sounding Elev:	-10.3	Bottom of Probe:	-31.9	Penetration:	21.7 ft.

	Elevation	Description / Material
Surveyed ==>	-10.3	=====
Penetration Depth:		WOR SURFICIAL SILT
11.2	-21.4	=====
		SA SAND BEGIN JET
16.7	-26.9	=====
		SA-SH SAND & SHELL REFUSAL
21.7	-31.9	=====

Character of Finish: REFUSAL IN SAND & SHELL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,277,374	Northing(NAD83):	13,792,735
Hole Number:	ECP-310-A			Freeboard:	7.67
Time:	13:11			Tide:	0.38
Sounding Elev:	-10.4	Bottom of Probe:	-48.0	Penetration:	37.6 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.4	=====	
Penetration Depth:		WOR	SURFICIAL SILT
12.6	-23.0	=====	
		CL-SA	SILT/CLAY & SAND
19.1	-29.5	=====	BEGIN JET
		CL	SILT/CLAY
37.6	-48.0	=====	REFUSAL

Character of Finish: REFUSAL IN SILT/CLAY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,277,624	Northing(NAD83):	13,792,280
Hole Number:	ECP-326-A			Freeboard:	7.67
Time:	13:18			Tide:	0.56
Sounding Elev:	-10.3	Bottom of Probe:	-46.8	Penetration:	36.5 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
10.0	-20.3	=====	
		SA	SAND
10.5	-20.8	=====	BEGIN JET
		CL-SH	SILT/CLAY & SHELL
11.5	-21.8	=====	JET
		CL	SILT/CLAY
36.5	-46.8	=====	REFUSAL

Character of Finish: REFUSAL IN SILT/CLAY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,277,844	Northing(NAD83):	13,791,832
Hole Number:	ECP-337-A			Freeboard:	7.67
Time:	13:23			Tide:	0.56
Sounding Elev:	-10.3	Bottom of Probe:	-54.8	Penetration:	44.5 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
12.5	-22.8	=====	
		CL-SH	SILT/CLAY & SHELL
16.5	-26.8	=====	BEGIN JET
		SH	SHELL
17.5	-27.8	=====	JET
		CL-SH	SILT/CLAY & SHELL
41.5	-51.8	=====	JET
		CL	SILT/CLAY
44.5	-54.8	=====	NO REFUSAL

Character of Finish: REFUSAL IN NO REFUSAL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,080	Northing(NAD83):	13,791,412
Hole Number:	ECP-355-A			Freeboard:	7.67
Time:	13:30			Tide:	0.48
Sounding Elev:	-10.3	Bottom of Probe:	-54.9	Penetration:	44.6 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
14.6	-24.9	=====	
		CL	SILT/CLAY
20.6	-30.9	=====	BEGIN JET
		CL-SH	SILT/CLAY & SHELL
44.6	-54.9	=====	NO REFUSAL

Character of Finish: REFUSAL IN NO REFUSAL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,334	Northing(NAD83):	13,790,968
Hole Number:	ECP-365-A			Freeboard:	7.67
Time:	13:36			Tide:	0.54
Sounding Elev:	-10.4	Bottom of Probe:	-46.8	Penetration:	36.4 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.4	=====	
Penetration Depth:		WOR	SURFICIAL SILT
14.4	-24.8	=====	
		CL-SH	SILT/CLAY & SHELL
18.4	-28.8	=====	BEGIN JET
		CL	SILT/CLAY
36.4	-46.8	=====	REFUSAL

Character of Finish: REFUSAL IN SILT/CLAY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,559	Northing(NAD83):	13,790,522
Hole Number:	ECP-381-A			Freeboard:	7.67
Time:	13:41			Tide:	0.54
Sounding Elev:	-10.4	Bottom of Probe:	-49.8	Penetration:	39.4 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.4	=====	
Penetration Depth:		WOR	SURFICIAL SILT
14.4	-24.8	=====	
		CL	SILT/CLAY
14.9	-25.3	=====	BEGIN JET
		CL-SH	SILT/CLAY & SHELL
39.4	-49.8	=====	REFUSAL

Character of Finish: REFUSAL IN SILT/CLAY & SHELL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,238	Northing(NAD83):	13,790,308
Hole Number:	ECP-390-A			Freeboard:	7.67
Time:	13:48			Tide:	0.63
Sounding Elev:	-10.3	Bottom of Probe:	-54.7	Penetration:	44.5 ft.

	Elevation	Description / Material
Surveyed ==>	-10.3	=====
Penetration Depth:		WOR SURFICIAL SILT
17.5	-27.7	=====
		SA SAND BEGIN JET
23.5	-33.7	=====
		CL SILT/CLAY JET
31.5	-41.7	=====
		SA SAND JET
33.5	-43.7	=====
		SA SAND NO REFUSAL
44.5	-54.7	=====

Character of Finish: REFUSAL IN NO REFUSAL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,016	Northing(NAD83):	13,790,763
Hole Number:	ECP-382-A			Freeboard:	7.67
Time:	13:59			Tide:	0.67
Sounding Elev:	-10.3	Bottom of Probe:	-52.7	Penetration:	42.4 ft.

	Elevation	Description / Material
Surveyed ==>	-10.3	=====
Penetration Depth:		WOR SURFICIAL SILT
18.9	-29.2	=====
		CL SILT/CLAY BEGIN JET
21.4	-31.7	=====
		CL SILT/CLAY JET
41.4	-51.7	=====
		SA SAND REFUSAL
42.4	-52.7	=====

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,771	Northing(NAD83):	13,791,203
Hole Number:	ECP-364-A			Freeboard:	7.67
Time:	14:05			Tide:	0.55
Sounding Elev:	-10.3	Bottom of Probe:	-54.8	Penetration:	44.5 ft.

	Elevation	Description / Material
Surveyed ==>	-10.3	=====
Penetration Depth:		WOR SURFICIAL SILT
19.5	-29.8	=====
		SA SAND BEGIN JET
21.0	-31.3	=====
		SA SAND JET
22.5	-32.8	=====
		CL SILT/CLAY JET
33.5	-43.8	=====
		SA SAND NO REFUSAL
44.5	-54.8	=====

Character of Finish: REFUSAL IN NO REFUSAL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,524	Northing(NAD83):	13,791,642
Hole Number:	ECP-356-A			Freeboard:	7.67
Time:	14:12			Tide:	0.73
Sounding Elev:	-10.3	Bottom of Probe:	-54.6	Penetration:	44.4 ft.

	Elevation	Description / Material
Surveyed ==>	-10.3	=====
Penetration Depth:		WOR SURFICIAL SILT
10.4	-20.6	=====
		SA SAND BEGIN JET
20.4	-30.6	=====
		SA SAND NO REFUSAL
44.4	-54.6	=====

Character of Finish: REFUSAL IN NO REFUSAL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,291	Northing(NAD83):	13,792,083
Hole Number:	ECP-336-A			Freeboard:	7.67
Time:	14:20			Tide:	0.73
Sounding Elev:	-10.3	Bottom of Probe:	-43.6	Penetration:	33.4 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
11.4	-21.6	=====	
		CL-SA	SILT/CLAY & SAND
17.9	-28.1	=====	BEGIN JET
		CL	SILT/CLAY
33.4	-43.6	=====	REFUSAL

Character of Finish: REFUSAL IN SILT/CLAY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,051	Northing(NAD83):	13,792,513
Hole Number:	ECP-327-A			Freeboard:	7.67
Time:	14:25			Tide:	0.68
Sounding Elev:	-10.3	Bottom of Probe:	-41.7	Penetration:	31.3 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
12.3	-22.7	=====	
		CL-SA	SILT/CLAY & SAND
18.3	-28.7	=====	BEGIN JET
		SA	SAND
25.3	-35.7	=====	JET
		CL-SA	SILT/CLAY & SAND
31.3	-41.7	=====	REFUSAL

Character of Finish: REFUSAL IN SILT/CLAY & SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,489	Northing(NAD83):	13,792,758
Hole Number:	ECP-328-A			Freeboard:	7.67
Time:	14:46			Tide:	0.85
Sounding Elev:	-10.3	Bottom of Probe:	-44.0	Penetration:	33.7 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
15.2	-25.5	=====	
		CL	SILT/CLAY
18.2	-28.5	=====	BEGIN JET
		CL-SA	SILT/CLAY & SAND
31.2	-41.5	=====	JET
		SA	SAND
33.7	-44.0	=====	REFUSAL

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,722	Northing(NAD83):	13,792,303
Hole Number:	ECP-335-A			Freeboard:	7.67
Time:	14:52			Tide:	0.82
Sounding Elev:	-10.2	Bottom of Probe:	-46.5	Penetration:	36.4 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR	SURFICIAL SILT
12.4	-22.5	=====	
		CL-SA	SILT/CLAY & SAND
17.4	-27.5	=====	BEGIN JET
		SA	SAND
20.4	-30.5	=====	JET
		SA	SAND
36.4	-46.5	=====	REFUSAL

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,964	Northing(NAD83):	13,791,864
Hole Number:	ECP-357-A			Freeboard:	7.67
Time:	14:57			Tide:	0.84
Sounding Elev:	-10.2	Bottom of Probe:	-54.5	Penetration:	44.3 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR	SURFICIAL SILT
15.3	-25.5	=====	
		SH	SHELL
17.3	-27.5	=====	BEGIN JET
		CL	SILT/CLAY
20.3	-30.5	=====	JET
		SH	SHELL
21.3	-31.5	=====	JET
		CL-SH	SILT/CLAY & SHELL
44.3	-54.5	=====	NO REFUSAL

Character of Finish: REFUSAL IN NO REFUSAL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,203	Northing(NAD83):	13,791,420
Hole Number:	ECP-363-A			Freeboard:	7.67
Time:	15:02			Tide:	0.95
Sounding Elev:	-10.2	Bottom of Probe:	-54.4	Penetration:	44.2 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR	SURFICIAL SILT
17.7	-27.9	=====	
		CL-SH	SILT/CLAY & SHELL
19.2	-29.4	=====	BEGIN JET
		CL-SH	SILT/CLAY & SHELL
44.2	-54.4	=====	NO REFUSAL

Character of Finish: REFUSAL IN NO REFUSAL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,431	Northing(NAD83):	13,790,989
Hole Number:	ECP-383-A			Freeboard:	7.67
Time:	15:07			Tide:	0.92
Sounding Elev:	-10.2	Bottom of Probe:	-53.4	Penetration:	43.3 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR	SURFICIAL SILT
16.3	-26.4	=====	
		CL-SA	SILT/CLAY & SAND
18.8	-28.9	=====	BEGIN JET
		CL	SILT/CLAY
41.3	-51.4	=====	JET
		SH	SHELL
42.3	-52.4	=====	JET
		CL-SH	SILT/CLAY & SHELL
43.3	-53.4	=====	REFUSAL

Character of Finish: REFUSAL IN SILT/CLAY & SHELL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,688	Northing(NAD83):	13,790,561
Hole Number:	ECP-389-A			Freeboard:	7.67
Time:	15:14			Tide:	0.89
Sounding Elev:	-10.2	Bottom of Probe:	-51.4	Penetration:	41.3 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR	SURFICIAL SILT
17.3	-27.4	=====	
		CL-SA	SILT/CLAY & SAND
19.3	-29.4	=====	BEGIN JET
		CL-SH	SILT/CLAY & SHELL
41.3	-51.4	=====	REFUSAL

Character of Finish: REFUSAL IN SILT/CLAY & SHELL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,280,047	Northing(NAD83):	13,790,750
Hole Number:	ECP-388-A			Freeboard:	7.67
Time:	15:23			Tide:	1.02
Sounding Elev:	-10.2	Bottom of Probe:	-53.3	Penetration:	43.2 ft.

	Elevation	Description / Material
Surveyed ==>	-10.2	=====
Penetration Depth:		WOR SURFICIAL SILT
4.7	-14.8	=====
		SA SAND BEGIN JET
11.2	-21.3	=====
		SA SAND JET
24.2	-34.3	=====
		CL SILT/CLAY JET
33.2	-43.3	=====
		SA SAND REFUSAL
43.2	-53.3	=====

Character of Finish: REFUSAL IN SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,861	Northing(NAD83):	13,791,217
Hole Number:	ECP-384-A			Freeboard:	7.67
Time:	15:29			Tide:	0.99
Sounding Elev:	-10.2	Bottom of Probe:	-53.3	Penetration:	43.2 ft.

	Elevation	Description / Material
Surveyed ==>	-10.2	=====
Penetration Depth:		WOR SURFICIAL SILT
7.2	-17.3	=====
		SA SAND BEGIN JET
9.2	-19.3	=====
		CL SILT/CLAY JET
31.2	-41.3	=====
		SA SAND JET
33.2	-43.3	=====
		CL-SA SILT/CLAY & SAND REFUSAL
43.2	-53.3	=====

Character of Finish: REFUSAL IN SILT/CLAY & SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,653	Northing(NAD83):	13,791,680
Hole Number:	ECP-362-A			Freeboard:	7.67
Time:	15:35			Tide:	1.1
Sounding Elev:	-10.2	Bottom of Probe:	-51.2	Penetration:	41.1 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR	SURFICIAL SILT
8.1	-18.2	=====	
		CL	SILT/CLAY
10.1	-20.2	=====	BEGIN JET
		CL	SILT/CLAY
41.1	-51.2	=====	REFUSAL

Character of Finish: REFUSAL IN SILT/CLAY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,419	Northing(NAD83):	13,792,121
Hole Number:	ECP-358-A			Freeboard:	7.67
Time:	15:41			Tide:	0.94
Sounding Elev:	-10.3	Bottom of Probe:	-54.4	Penetration:	44.1 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
8.1	-18.4	=====	
		SA	SAND
11.1	-21.4	=====	BEGIN JET
		SA	SAND
44.1	-54.4	=====	NO REFUSAL

Character of Finish: REFUSAL IN NO REFUSAL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,181	Northing(NAD83):	13,792,561
Hole Number:	ECP-334-A			Freeboard:	7.67
Time:	15:47			Tide:	1.07
Sounding Elev:	-10.0	Bottom of Probe:	-51.3	Penetration:	41.2 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.0	=====	
Penetration Depth:		WOR	SURFICIAL SILT
13.2	-23.3	=====	
		SA	SAND
18.7	-28.8	=====	BEGIN JET
		CL-SA	SILT/CLAY & SAND
41.2	-51.3	=====	REFUSAL

Character of Finish: REFUSAL IN SILT/CLAY & SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,278,954	Northing(NAD83):	13,792,992
Hole Number:	ECP-329-A			Freeboard:	7.67
Time:	15:51			Tide:	1.03
Sounding Elev:	-9.5	Bottom of Probe:	-48.3	Penetration:	38.9 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.5	=====	
Penetration Depth:		WOR	SURFICIAL SILT
12.9	-22.3	=====	
		SA-SH	SAND & SHELL
17.9	-27.3	=====	BEGIN JET
		CL-SA	SILT/CLAY & SAND
38.9	-48.3	=====	REFUSAL

Character of Finish: REFUSAL IN SILT/CLAY & SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,803	Northing(NAD83):	13,793,459
Hole Number:	ECP-331-A			Freeboard:	7.67
Time:	16:01			Tide:	1.11
Sounding Elev:	-10.3	Bottom of Probe:	-53.2	Penetration:	43.0 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
15.0	-25.2	=====	
		CL	SILT/CLAY
18.5	-28.7	=====	BEGIN JET
		SA	SAND
41.0	-51.2	=====	JET
		SA-SH	SAND & SHELL
43.0	-53.2	=====	REFUSAL

Character of Finish: REFUSAL IN SAND & SHELL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,280,041	Northing(NAD83):	13,793,014
Hole Number:	ECP-332-A			Freeboard:	7.67
Time:	16:08			Tide:	1.18
Sounding Elev:	-10.3	Bottom of Probe:	-54.2	Penetration:	43.9 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
17.9	-28.2	=====	
		CL	SILT/CLAY
20.4	-30.7	=====	BEGIN JET
		CL-SA	SILT/CLAY & SAND
25.9	-36.2	=====	JET
		SA-SH	SAND & SHELL
43.9	-54.2	=====	NO REFUSAL

Character of Finish: REFUSAL IN NO REFUSAL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,280,290	Northing(NAD83):	13,792,581
Hole Number:	ECP-360-A			Freeboard:	7.67
Time:	16:15			Tide:	1.14
Sounding Elev:	-10.2	Bottom of Probe:	-54.2	Penetration:	44.0 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR	SURFICIAL SILT
19.0	-29.2	=====	
		SA	SAND
20.0	-30.2	=====	BEGIN JET
		CL-SH	SILT/CLAY & SHELL
44.0	-54.2	=====	NO REFUSAL

Character of Finish: REFUSAL IN NO REFUSAL DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,280,091	Northing(NAD83):	13,791,907
Hole Number:	ECP-361-A			Freeboard:	7.67
Time:	16:20			Tide:	1.26
Sounding Elev:	-10.2	Bottom of Probe:	-51.6	Penetration:	41.4 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.2	=====	
Penetration Depth:		WOR	SURFICIAL SILT
17.9	-28.1	=====	
		SA-SH	SAND & SHELL
19.9	-30.1	=====	BEGIN JET
		SA-SH	SAND & SHELL
31.9	-42.1	=====	JET
		CL-SH	SILT/CLAY & SHELL
41.4	-51.6	=====	REFUSAL

Character of Finish: REFUSAL IN SILT/CLAY & SHELL DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,863	Northing(NAD83):	13,792,341
Hole Number:	ECP-359-A			Freeboard:	7.67
Time:	16:27			Tide:	1.3
Sounding Elev:	-10.3	Bottom of Probe:	-54.0	Penetration:	43.8 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
14.8	-25.0	=====	
		SA-SH	SAND & SHELL
21.3	-31.5	=====	BEGIN JET
		CL-SH	SILT/CLAY & SHELL
43.8	-54.0	=====	NO REFUSAL

Character of Finish: REFUSAL IN NO REFUSAL DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,619	Northing(NAD83):	13,792,793
Hole Number:	ECP-333-A			Freeboard:	7.67
Time:	16:32			Tide:	1.31
Sounding Elev:	-10.3	Bottom of Probe:	-54.0	Penetration:	43.7 ft.

	Elevation	Description / Material	
Surveyed ==>	-10.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
17.7	-28.0	=====	
		CL	SILT/CLAY
20.7	-31.0	=====	BEGIN JET
		CL	SILT/CLAY
42.7	-53.0	=====	JET
		CL-SH	SILT/CLAY & SHELL
43.7	-54.0	=====	NO REFUSAL

Character of Finish: REFUSAL IN NO REFUSAL DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	Faucheux Services
Location:	Bird Island Marsh	Engineer:	CH/JBr/NM
		Vessel:	Capt. Wayne Taylor

Date:	11.24.19	Easting(NAD83):	3,279,386	Northing(NAD83):	13,793,214
Hole Number:	ECP-330-A			Freeboard:	7.67
Time:	16:39			Tide:	1.26
Sounding Elev:	-9.3	Bottom of Probe:	-51.1	Penetration:	41.8 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.3	=====	
Penetration Depth:		WOR	SURFICIAL SILT
2.8	-12.1	=====	
		CL	SILT/CLAY
14.8	-24.1	=====	BEGIN JET
		CL-SA	SILT/CLAY & SAND
41.8	-51.1	=====	REFUSAL

Character of Finish:	REFUSAL IN SILT/CLAY & SAND	DATUM:	MLLW
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Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,271,424	Northing(NAD83):	13,797,469
Hole Number:	ECP-401-A			Freeboard:	5
Time:	9:53			Tide:	0.96
Sounding Elev.:	-9.7	Bottom of Probe:	-28.0	Penetration:	18.3 ft.

	Elevation	Description / Material
Surveyed ==>	-9.7	=====
Penetration Depth:		WOR SURFICIAL SILT
5.3	-15.0	=====
		CL-SH SILT/CLAY & SHELL BEGIN JET
14.3	-24.0	=====
		SA SAND REFUSAL
18.3	-28.0	=====

Character of Finish:	REFUSAL IN SAND	DATUM:	MLLW
Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,271,836	Northing(NAD83):	13,797,719
Hole Number:	ECP-402-A			Freeboard:	5
Time:	10:20			Tide:	0.99
Sounding Elev.:	-9.7	Bottom of Probe:	-22.0	Penetration:	12.3 ft.

	Elevation	Description / Material
Surveyed ==>	-9.7	=====
Penetration Depth:		WOR SURFICIAL SILT
5.8	-15.5	=====
		CL SILT/CLAY BEGIN JET
11.3	-21.0	=====
		CL SILT/CLAY REFUSAL
12.3	-22.0	=====

Character of Finish:	REFUSAL IN SILT/CLAY	DATUM:	MLLW
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Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,272,320	Northing(NAD83):	13,797,969
Hole Number:	ECP-403-A			Freeboard:	5
Time:	10:35			Tide:	1.1
Sounding Elev.:	-9.7	Bottom of Probe:	-33.9	Penetration:	24.2 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.7	=====	
Penetration Depth:		WOR SURFICIAL SILT	
3.2	-12.9	=====	
		CL SILT/CLAY	BEGIN JET
12.2	-21.9	=====	
		CL SILT/CLAY	REFUSAL
24.2	-33.9	=====	

Character of Finish: REFUSAL IN SILT/CLAY DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,272,738	Northing(NAD83):	13,798,153
Hole Number:	ECP-404-A			Freeboard:	5
Time:	10:46			Tide:	1.03
Sounding Elev.:	-9.8	Bottom of Probe:	-29.0	Penetration:	19.2 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.8	=====	
Penetration Depth:		WOR SURFICIAL SILT	
4.2	-14.0	=====	
		CL SILT/CLAY	BEGIN JET
13.2	-23.0	=====	
		CL SILT/CLAY	REFUSAL
19.2	-29.0	=====	

Character of Finish: REFUSAL IN SILT/CLAY DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,273,195	Northing(NAD83):	13,798,393
Hole Number:	ECP-405-A			Freeboard:	5
Time:	11:23			Tide:	1.07
Sounding Elev.:	-9.8	Bottom of Probe:	-24.9	Penetration:	15.1 ft.

	Elevation	Description / Material
Surveyed ==>	-9.8	=====
Penetration Depth:		WOR SURFICIAL SILT
4.1	-13.9	=====
		SA SAND BEGIN JET
9.1	-18.9	=====
		SA SAND REFUSAL
15.1	-24.9	=====

Character of Finish:	REFUSAL IN SAND	DATUM:	MLLW
Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,272,929	Northing(NAD83):	13,798,853
Hole Number:	ECP-415-A			Freeboard:	5
Time:	11:36			Tide:	1.18
Sounding Elev.:	-9.8	Bottom of Probe:	-21.3	Penetration:	11.5 ft.

	Elevation	Description / Material
Surveyed ==>	-9.8	=====
Penetration Depth:		WOR SURFICIAL SILT
6.5	-16.3	=====
		CL SILT/CLAY BEGIN JET
8.5	-18.3	=====
		CL-SH SILT/CLAY & SHELL REFUSAL
11.5	-21.3	=====

Character of Finish:	REFUSAL IN SILT/CLAY & SHELL	DATUM:	MLLW
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Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,272,487	Northing(NAD83):	13,798,600
Hole Number:	ECP-416-A			Freeboard:	5
Time:	11:51			Tide:	1.24
Sounding Elev.:	-9.8	Bottom of Probe:	-31.8	Penetration:	22.0 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.8	=====	
Penetration Depth:		WOR SURFICIAL SILT	
8.0	-17.8	=====	
		CL SILT/CLAY	BEGIN JET
11.0	-20.8	=====	
		CL-SH SILT/CLAY & SHELL	REFUSAL
22.0	-31.8	=====	

Character of Finish: REFUSAL IN SILT/CLAY & SHELL **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,272,046	Northing(NAD83):	13,798,390
Hole Number:	ECP-417-A			Freeboard:	5
Time:	12:01			Tide:	1.19
Sounding Elev.:	-9.8	Bottom of Probe:	-33.3	Penetration:	23.5 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.8	=====	
Penetration Depth:		WOR SURFICIAL SILT	
6.5	-16.3	=====	
		SA-CL SILT/CLAY & SAND	BEGIN JET
11.0	-20.8	=====	
		CL SILT/CLAY	REFUSAL
23.5	-33.3	=====	

Character of Finish: REFUSAL IN SILT/CLAY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,271,623	Northing(NAD83):	13,798,136
Hole Number:	ECP-418-A			Freeboard:	5
Time:	12:36			Tide:	1.21
Sounding Elev.:	-9.7	Bottom of Probe:	-41.3	Penetration:	31.6 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.7	=====	
Penetration Depth:		WOR SURFICIAL SILT	
7.6	-17.3	=====	
		CL SILT/CLAY	BEGIN JET
12.1	-21.8	=====	
		SA-CL SILT/CLAY & SAND	REFUSAL
31.6	-41.3	=====	

Character of Finish: REFUSAL IN SILT/CLAY & SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,271,210	Northing(NAD83):	13,797,971
Hole Number:	ECP-419-A			Freeboard:	5
Time:	12:45			Tide:	1.33
Sounding Elev.:	-9.6	Bottom of Probe:	-33.7	Penetration:	24.1 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.6	=====	
Penetration Depth:		WOR SURFICIAL SILT	
7.6	-17.2	=====	
		CL SILT/CLAY	BEGIN JET
13.1	-22.7	=====	
		CL SILT/CLAY	REFUSAL
24.1	-33.7	=====	

Character of Finish: REFUSAL IN SILT/CLAY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,270,964	Northing(NAD83):	13,797,230
Hole Number:	ECP-400-A			Freeboard:	5
Time:	12:56			Tide:	1.27
Sounding Elev.:	-9.7	Bottom of Probe:	-33.7	Penetration:	24.1 ft.

	Elevation	Description / Material
Surveyed ==>	-9.7	=====
Penetration Depth:		WOR SURFICIAL SILT
7.1	-16.7	=====
		CL SILT/CLAY BEGIN JET
11.6	-21.2	=====
		CL SILT/CLAY REFUSAL
24.1	-33.7	=====

Character of Finish: REFUSAL IN SILT/CLAY DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,270,740	Northing(NAD83):	13,797,687
Hole Number:	ECP-420-A			Freeboard:	5
Time:	13:04			Tide:	1.36
Sounding Elev.:	-9.7	Bottom of Probe:	-42.6	Penetration:	33.0 ft.

	Elevation	Description / Material
Surveyed ==>	-9.7	=====
Penetration Depth:		WOR SURFICIAL SILT
9.0	-18.6	=====
		CL SILT/CLAY BEGIN JET
13.0	-22.6	=====
		CL SILT/CLAY REFUSAL
33.0	-42.6	=====

Character of Finish: REFUSAL IN SILT/CLAY DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,270,503	Northing(NAD83):	13,798,098
Hole Number:	ECP-424-A			Freeboard:	5
Time:	13:14			Tide:	1.29
Sounding Elev.:	-9.7	Bottom of Probe:	-45.7	Penetration:	36.0 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.7	=====	
Penetration Depth:		WOR	SURFICIAL SILT
7.5	-17.2	=====	
		CL	SILT/CLAY
14.0	-23.7	=====	BEGIN JET
		CL	SILT/CLAY
36.0	-45.7	=====	REFUSAL

Character of Finish:	REFUSAL IN	SILT/CLAY	DATUM:	MLLW
Project:	HSC-ECIP-PED	Driller:	DAS	
Location:	Bird Island Marsh	Engineer:	CH, MM, AS	
		Vessel:	"TIGER II"	

Date:	08.05.20	Easting(NAD83):	3,270,927	Northing(NAD83):	13,798,358
Hole Number:	ECP-425-A			Freeboard:	5
Time:	13:23			Tide:	1.17
Sounding Elev.:	-9.6	Bottom of Probe:	-39.8	Penetration:	30.3 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.6	=====	
Penetration Depth:		WOR	SURFICIAL SILT
6.3	-15.8	=====	
		CL	SILT/CLAY
14.3	-23.8	=====	BEGIN JET
		CL	SILT/CLAY
30.3	-39.8	=====	REFUSAL

Character of Finish:	REFUSAL IN	SILT/CLAY	DATUM:	MLLW
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Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,271,389	Northing(NAD83):	13,798,561
Hole Number:	ECP-426-A			Freeboard:	5
Time:	13:34			Tide:	1.35
Sounding Elev.:	-9.6	Bottom of Probe:	-45.7	Penetration:	36.1 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.6	=====	
Penetration Depth:		WOR SURFICIAL SILT	
7.1	-16.7	=====	
		CL SILT/CLAY	BEGIN JET
14.1	-23.7	=====	
		SA-CL SILT/CLAY & SAND	NO REFUSAL
36.1	-45.7	=====	

Character of Finish: REFUSAL IN NO REFUSAL DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,271,815	Northing(NAD83):	13,798,830
Hole Number:	ECP-427-A			Freeboard:	5
Time:	13:42			Tide:	1.3
Sounding Elev.:	-9.7	Bottom of Probe:	-34.7	Penetration:	25.0 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.7	=====	
Penetration Depth:		WOR SURFICIAL SILT	
7.0	-16.7	=====	
		CL SILT/CLAY	BEGIN JET
14.0	-23.7	=====	
		CL SILT/CLAY	REFUSAL
25.0	-34.7	=====	

Character of Finish: REFUSAL IN SILT/CLAY DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,272,259	Northing(NAD83):	13,799,052
Hole Number:	ECP-428-A			Freeboard:	5
Time:	13:51			Tide:	1.23
Sounding Elev.:	-9.8	Bottom of Probe:	-31.8	Penetration:	22.0 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.8	=====	
Penetration Depth:		WOR SURFICIAL SILT	
7.5	-17.3	=====	
		CL SILT/CLAY	BEGIN JET
13.0	-22.8	=====	
		SA-CL SILT/CLAY & SAND	REFUSAL
22.0	-31.8	=====	

Character of Finish: REFUSAL IN SILT/CLAY & SAND DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,272,707	Northing(NAD83):	13,799,318
Hole Number:	ECP-429-A			Freeboard:	5
Time:	14:02			Tide:	1.29
Sounding Elev.:	-9.8	Bottom of Probe:	-22.7	Penetration:	12.9 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.8	=====	
Penetration Depth:		WOR SURFICIAL SILT	
4.4	-14.2	=====	
		CL SILT/CLAY	BEGIN JET
6.9	-16.7	=====	
		CL SILT/CLAY	REFUSAL
12.9	-22.7	=====	

Character of Finish: REFUSAL IN SILT/CLAY DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,273,136	Northing(NAD83):	13,799,504
Hole Number:	ECP-430-A			Freeboard:	5
Time:	14:19			Tide:	1.3
Sounding Elev.:	-9.8	Bottom of Probe:	-23.7	Penetration:	14.0 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.8	=====	
Penetration Depth:		WOR SURFICIAL SILT	
4.5	-14.2	=====	
		CL SILT/CLAY	BEGIN JET
9.5	-19.2	=====	
		SA-CL SILT/CLAY & SAND	REFUSAL
14.0	-23.7	=====	

Character of Finish: REFUSAL IN SILT/CLAY & SAND DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,273,367	Northing(NAD83):	13,799,079
Hole Number:	ECP-414-A			Freeboard:	5
Time:	14:23			Tide:	1.3
Sounding Elev.:	-9.9	Bottom of Probe:	-24.2	Penetration:	14.3 ft.

	Elevation	Description / Material	
Surveyed ==>	-9.9	=====	
Penetration Depth:		WOR SURFICIAL SILT	
3.8	-13.7	=====	
		SA SAND	BEGIN JET
7.8	-17.7	=====	
		CL SILT/CLAY	REFUSAL
14.3	-24.2	=====	

Character of Finish: REFUSAL IN SILT/CLAY DATUM: MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,273,601	Northing(NAD83):	13,798,634
Hole Number:	ECP-406-A			Freeboard:	5
Time:	14:41			Tide:	1.31
Sounding Elev.:	-9.9	Bottom of Probe:	-23.7	Penetration:	13.8 ft.

	Elevation	Description / Material
Surveyed ==>	-9.9	=====
Penetration Depth:		WOR SURFICIAL SILT
4.3	-14.2	=====
		CL SILT/CLAY BEGIN JET
9.3	-19.2	=====
		SA-CL SILT/CLAY & SAND REFUSAL
13.8	-23.7	=====

Character of Finish: REFUSAL IN SILT/CLAY & SAND **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,274,051	Northing(NAD83):	13,798,898
Hole Number:	ECP-407-A			Freeboard:	5
Time:	14:50			Tide:	1.25
Sounding Elev.:	-9.9	Bottom of Probe:	-12.8	Penetration:	2.9 ft.

	Elevation	Description / Material
Surveyed ==>	-9.9	=====
Penetration Depth:		WOR SURFICIAL SILT
2.9	-12.8	=====

Character of Finish: WOR ONLY **DATUM:** MLLW

Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,274,569	Northing(NAD83):	13,799,177
Hole Number:	ECP-408-A			Freeboard:	5
Time:	14:59			Tide:	1.16
Sounding Elev.:	-10.0	Bottom of Probe:	-13.8	Penetration:	3.9 ft.

	Elevation	Description / Material
Surveyed ==>	-10.0	=====
Penetration Depth:		WOR SURFICIAL SILT
3.9	-13.8	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,274,929	Northing(NAD83):	13,799,344
Hole Number:	ECP-409-A			Freeboard:	5
Time:	15:01			Tide:	1.3
Sounding Elev.:	-9.9	Bottom of Probe:	-15.7	Penetration:	5.8 ft.

	Elevation	Description / Material
Surveyed ==>	-9.9	=====
Penetration Depth:		WOR SURFICIAL SILT
5.8	-15.7	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
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Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,275,379	Northing(NAD83):	13,799,603
Hole Number:	ECP-410-A			Freeboard:	5
Time:	15:07			Tide:	1.27
Sounding Elev.:	-10.0	Bottom of Probe:	-13.7	Penetration:	3.7 ft.

	Elevation	Description / Material
Surveyed ==>	-10.0	=====
Penetration Depth:		WOR SURFICIAL SILT
3.7	-13.7	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,274,688	Northing(NAD83):	13,799,776
Hole Number:	ECP-411-A			Freeboard:	5
Time:	15:12			Tide:	1.28
Sounding Elev.:	-9.9	Bottom of Probe:	-13.2	Penetration:	3.3 ft.

	Elevation	Description / Material
Surveyed ==>	-9.9	=====
Penetration Depth:		WOR SURFICIAL SILT
3.3	-13.2	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
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Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,274,486	Northing(NAD83):	13,800,235
Hole Number:	ECP-433-A			Freeboard:	5
Time:	15:22			Tide:	1.29
Sounding Elev.:	-10.0	Bottom of Probe:	-13.7	Penetration:	3.7 ft.

	Elevation	Description / Material
Surveyed ==>	-10.0	=====
Penetration Depth:		WOR SURFICIAL SILT
3.7	-13.7	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,274,252	Northing(NAD83):	13,799,548
Hole Number:	ECP-412-A			Freeboard:	5
Time:	15:29			Tide:	1.34
Sounding Elev.:	-9.8	Bottom of Probe:	-13.7	Penetration:	3.8 ft.

	Elevation	Description / Material
Surveyed ==>	-9.8	=====
Penetration Depth:		WOR SURFICIAL SILT
3.8	-13.7	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
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Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,274,047	Northing(NAD83):	13,800,015
Hole Number:	ECP-432-A			Freeboard:	5
Time:	15:33			Tide:	1.16
Sounding Elev.:	-10.0	Bottom of Probe:	-13.8	Penetration:	3.9 ft.

	Elevation	Description / Material
Surveyed ==>	-10.0	=====
Penetration Depth:		WOR SURFICIAL SILT
3.9	-13.8	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,273,563	Northing(NAD83):	13,799,757
Hole Number:	ECP-431-A			Freeboard:	5
Time:	15:37			Tide:	1.31
Sounding Elev.:	-9.8	Bottom of Probe:	-13.7	Penetration:	3.9 ft.

	Elevation	Description / Material
Surveyed ==>	-9.8	=====
Penetration Depth:		WOR SURFICIAL SILT
3.9	-13.7	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
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Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,273,819	Northing(NAD83):	13,799,310
Hole Number:	ECP-413-A			Freeboard:	5
Time:	15:43			Tide:	1.18
Sounding Elev.:	-9.7	Bottom of Probe:	-13.8	Penetration:	4.1 ft.

	Elevation	Description / Material
Surveyed ==>	-9.7	=====
Penetration Depth:		WOR SURFICIAL SILT
4.1	-13.8	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,270,047	Northing(NAD83):	13,797,865
Hole Number:	ECP-423-A			Freeboard:	5
Time:	16:02			Tide:	1.06
Sounding Elev.:	-9.6	Bottom of Probe:	-16.9	Penetration:	7.3 ft.

	Elevation	Description / Material
Surveyed ==>	-9.6	=====
Penetration Depth:		WOR SURFICIAL SILT
7.3	-16.9	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
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Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,270,274	Northing(NAD83):	13,797,414
Hole Number:	ECP-421-A			Freeboard:	5
Time:	16:07			Tide:	1.3
Sounding Elev.:	-9.7	Bottom of Probe:	-15.7	Penetration:	6.1 ft.

	Elevation	Description / Material
Surveyed ==>	-9.7	=====
Penetration Depth:		WOR SURFICIAL SILT
6.1	-15.7	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,270,555	Northing(NAD83):	13,796,990
Hole Number:	ECP-399-A			Freeboard:	5
Time:	16:10			Tide:	1.3
Sounding Elev.:	-9.6	Bottom of Probe:	-16.7	Penetration:	7.1 ft.

	Elevation	Description / Material
Surveyed ==>	-9.6	=====
Penetration Depth:		WOR SURFICIAL SILT
7.1	-16.7	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
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Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,270,079	Northing(NAD83):	13,796,722
Hole Number:	ECP-398-A			Freeboard:	5
Time:	16:13			Tide:	1.1
Sounding Elev.:	-9.7	Bottom of Probe:	-14.9	Penetration:	5.3 ft.

	Elevation	Description / Material
Surveyed ==>	-9.7	=====
Penetration Depth:		WOR SURFICIAL SILT
5.3	-14.9	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
Project:	HSC-ECIP-PED	Driller:	DAS
Location:	Bird Island Marsh	Engineer:	CH, MM, AS
		Vessel:	"TIGER II"

Date:	08.05.20	Easting(NAD83):	3,269,882	Northing(NAD83):	13,797,203
Hole Number:	ECP-422-A			Freeboard:	5
Time:	16:17			Tide:	1.1
Sounding Elev.:	-9.7	Bottom of Probe:	-16.9	Penetration:	7.2 ft.

	Elevation	Description / Material
Surveyed ==>	-9.7	=====
Penetration Depth:		WOR SURFICIAL SILT
7.2	-16.9	=====

Character of Finish:	WOR ONLY	DATUM:	MLLW
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DOLLAR REEF OYSTER MIGITATION PROBING LOCATIONS					
PROBING ID	EASTING	NORTHING	PROBING ID	EASTING	NORTHING
ECP-P647-A	3,280,485.06	13,733,736.11	ECP-P658-A	3,279,279.94	13,734,755.95
ECP-P661-A	3,280,667.26	13,734,208.82	ECP-P669-A	3,279,470.46	13,735,222.39
ECP-P565-A	3,278,979.77	13,731,640.90	ECP-P680-A	3,279,659.65	13,735,690.67
ECP-P584-A	3,279,296.99	13,732,057.90	ECP-P645-A	3,278,634.07	13,734,470.86
ECP-P602-A	3,279,489.70	13,732,522.46	ECP-P657-A	3,278,820.44	13,734,938.11
ECP-P619-A	3,279,672.81	13,732,990.92	ECP-P668-A	3,279,006.34	13,735,398.14
ECP-P634-A	3,279,913.11	13,733,422.80	ECP-P679-A	3,279,195.71	13,735,863.16
ECP-P646-A	3,280,042.61	13,733,914.28	ECP-P526-A	3,276,518.09	13,731,556.36
ECP-P660-A	3,280,228.46	13,734,376.60	ECP-P543-A	3,276,596.24	13,732,054.63
ECP-P671-A	3,280,400.39	13,734,840.35	ECP-P560-A	3,276,778.40	13,732,518.77
ECP-P682-A	3,280,585.19	13,735,307.74	ECP-P579-A	3,276,963.37	13,732,996.38
ECP-P672-A	3,280,875.62	13,734,656.32	ECP-P597-A	3,277,154.60	13,733,453.38
ECP-P683-A	3,281,054.53	13,735,118.13	ECP-P614-A	3,277,336.93	13,733,919.32
ECP-P684-A	3,281,231.67	13,735,589.83	ECP-P629-A	3,277,511.07	13,734,380.59
ECP-P681-A	3,280,125.51	13,735,481.64	ECP-P643-A	3,277,707.01	13,734,839.29
ECP-P670-A	3,279,926.40	13,735,025.41	ECP-P655-A	3,277,886.18	13,735,310.74
ECP-P659-A	3,279,745.93	13,734,569.57	ECP-P666-A	3,278,086.08	13,735,774.86
ECP-P633-A	3,279,207.68	13,733,691.56	ECP-P677-A	3,278,397.02	13,736,191.60
ECP-P618-A	3,279,047.12	13,733,215.55	ECP-P510-A	3,275,766.43	13,731,294.90
ECP-P601-A	3,278,990.17	13,732,693.90	ECP-P525-A	3,275,942.12	13,731,785.35
ECP-P583-A	3,278,823.21	13,732,240.85	ECP-P542-A	3,276,141.84	13,732,252.70
ECP-P564-A	3,278,619.87	13,731,772.90	ECP-P559-A	3,276,312.58	13,732,720.78
ECP-P547-A	3,278,428.87	13,731,311.84	ECP-P578-A	3,276,488.15	13,733,185.08
ECP-P530-A	3,278,261.58	13,730,835.70	ECP-P596-A	3,276,687.31	13,733,653.31
ECP-P513-A	3,277,617.20	13,730,570.89	ECP-P613-A	3,276,888.06	13,734,095.22
ECP-P529-A	3,277,799.44	13,731,039.62	ECP-P628-A	3,277,064.50	13,734,565.36
ECP-P546-A	3,277,975.49	13,731,525.85	ECP-P642-A	3,277,236.60	13,735,039.00
ECP-P563-A	3,278,223.63	13,731,937.24	ECP-P654-A	3,277,433.74	13,735,499.07
ECP-P512-A	3,277,169.13	13,730,769.44	ECP-P665-A	3,277,604.53	13,735,963.36
ECP-P528-A	3,277,336.99	13,731,224.75	ECP-P676-A	3,277,696.22	13,736,469.74
ECP-P545-A	3,277,513.17	13,731,682.95	ECP-P664-A	3,277,147.88	13,736,153.33
ECP-P562-A	3,277,717.49	13,732,150.85	ECP-P675-A	3,277,329.64	13,736,621.10
ECP-P581-A	3,277,882.13	13,732,624.66	ECP-P509-A	3,275,274.27	13,731,513.89
ECP-P599-A	3,278,070.00	13,733,077.79	ECP-P524-A	3,275,485.70	13,731,975.29
ECP-P616-A	3,278,251.84	13,733,546.44	ECP-P541-A	3,275,668.32	13,732,440.63
ECP-P631-A	3,278,446.78	13,734,005.80	ECP-P558-A	3,275,847.39	13,732,901.84
ECP-P511-A	3,276,671.31	13,730,957.86	ECP-P577-A	3,276,009.58	13,733,365.88
ECP-P527-A	3,276,859.00	13,731,412.18	ECP-P595-A	3,276,221.42	13,733,835.21
ECP-P544-A	3,277,051.71	13,731,883.53	ECP-P612-A	3,276,404.16	13,734,305.37
ECP-P561-A	3,277,231.74	13,732,348.23	ECP-P627-A	3,276,585.60	13,734,770.19
ECP-P580-A	3,277,431.80	13,732,809.64	ECP-P641-A	3,276,777.11	13,735,211.85
ECP-P598-A	3,277,618.04	13,733,264.56	ECP-P653-A	3,276,954.55	13,735,677.07
ECP-P615-A	3,277,797.17	13,733,730.87	ECP-P508-A	3,274,846.35	13,731,699.88
ECP-P630-A	3,277,988.23	13,734,199.83	ECP-P523-A	3,275,020.76	13,732,142.05
ECP-P644-A	3,278,175.43	13,734,659.43	ECP-P540-A	3,275,196.13	13,732,617.14
ECP-P656-A	3,278,354.11	13,735,118.28	ECP-P557-A	3,275,385.77	13,733,076.13
ECP-P667-A	3,278,539.58	13,735,584.77	ECP-P576-A	3,275,571.57	13,733,541.36
ECP-P678-A	3,278,713.44	13,736,046.10	ECP-P594-A	3,275,762.19	13,734,012.43
ECP-P582-A	3,278,359.94	13,732,429.57	ECP-P611-A	3,275,945.29	13,734,476.54
ECP-P600-A	3,278,555.56	13,732,893.25	ECP-P626-A	3,276,144.74	13,734,931.35
ECP-P617-A	3,278,721.47	13,733,369.77	ECP-P640-A	3,276,315.74	13,735,410.17
ECP-P632-A	3,278,911.19	13,733,832.58	ECP-P652-A	3,276,502.98	13,735,855.08

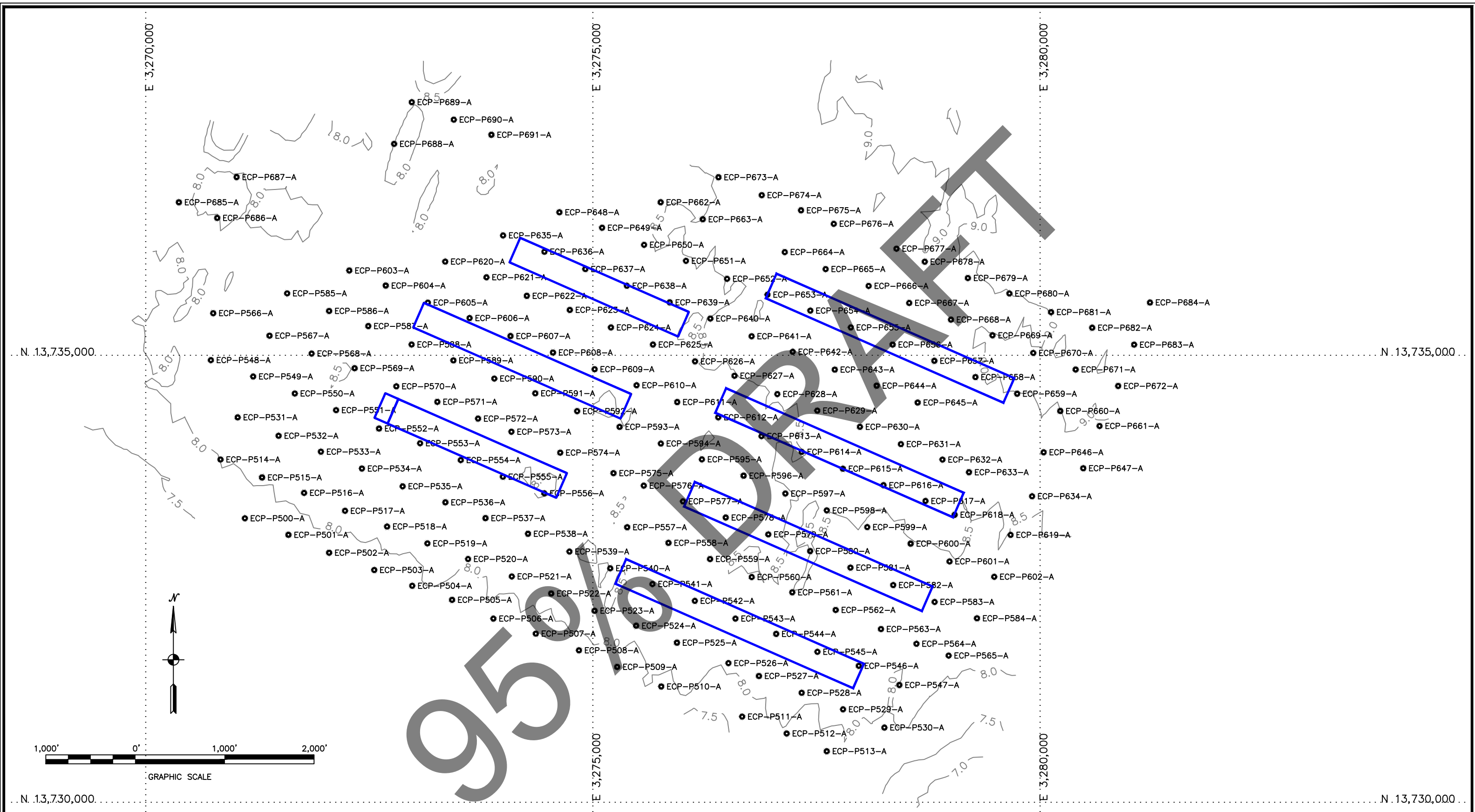
DOLLAR REEF OYSTER MIGITATION PROBING LOCATIONS CONT.					
PROBING ID	EASTING	NORTHING	PROBING ID	EASTING	NORTHING
ECP-P674-A	3,276,890.44	13,736,790.00	ECP-P620-A	3,273,350.82	13,736,047.29
ECP-P507-A	3,274,364.08	13,731,886.03	ECP-P605-A	3,273,156.87	13,735,588.35
ECP-P522-A	3,274,536.27	13,732,335.27	ECP-P588-A	3,272,975.07	13,735,119.82
ECP-P539-A	3,274,740.02	13,732,804.30	ECP-P570-A	3,272,804.09	13,734,652.42
ECP-P575-A	3,275,232.75	13,733,681.04	ECP-P552-A	3,272,610.94	13,734,180.02
ECP-P593-A	3,275,301.07	13,734,199.21	ECP-P534-A	3,272,419.90	13,733,732.78
ECP-P610-A	3,275,490.30	13,734,663.99	ECP-P517-A	3,272,230.47	13,733,260.13
ECP-P625-A	3,275,673.57	13,735,119.62	ECP-P502-A	3,272,052.84	13,732,790.72
ECP-P639-A	3,275,861.30	13,735,590.95	ECP-P501-A	3,271,597.99	13,732,991.84
ECP-P651-A	3,276,043.21	13,736,055.40	ECP-P516-A	3,271,773.10	13,733,460.53
ECP-P663-A	3,276,230.63	13,736,521.17	ECP-P533-A	3,271,961.01	13,733,921.06
ECP-P673-A	3,276,406.35	13,736,990.66	ECP-P551-A	3,272,130.41	13,734,386.09
ECP-P506-A	3,273,890.00	13,732,054.36	ECP-P569-A	3,272,337.77	13,734,855.08
ECP-P521-A	3,274,095.22	13,732,525.77	ECP-P587-A	3,272,490.63	13,735,326.15
ECP-P538-A	3,274,276.51	13,733,003.10	ECP-P604-A	3,272,686.18	13,735,779.28
ECP-P556-A	3,274,458.61	13,733,455.60	ECP-P603-A	3,272,278.11	13,735,947.56
ECP-P574-A	3,274,636.89	13,733,910.07	ECP-P586-A	3,272,052.79	13,735,495.13
ECP-P592-A	3,274,826.67	13,734,374.86	ECP-P568-A	3,271,857.33	13,735,018.71
ECP-P609-A	3,275,021.57	13,734,843.31	ECP-P550-A	3,271,669.31	13,734,571.74
ECP-P624-A	3,275,204.42	13,735,310.45	ECP-P532-A	3,271,488.01	13,734,099.17
ECP-P638-A	3,275,381.87	13,735,776.98	ECP-P515-A	3,271,303.18	13,733,633.35
ECP-P650-A	3,275,575.02	13,736,234.80	ECP-P500-A	3,271,110.66	13,733,176.06
ECP-P662-A	3,275,760.15	13,736,710.96	ECP-P514-A	3,270,838.30	13,733,833.88
ECP-P505-A	3,273,427.58	13,732,263.89	ECP-P531-A	3,271,030.61	13,734,304.99
ECP-P520-A	3,273,606.51	13,732,720.84	ECP-P549-A	3,271,203.52	13,734,762.26
ECP-P537-A	3,273,801.35	13,733,178.23	ECP-P567-A	3,271,386.09	13,735,218.25
ECP-P555-A	3,273,995.77	13,733,640.97	ECP-P585-A	3,271,583.69	13,735,691.52
ECP-P573-A	3,274,091.70	13,734,144.39	ECP-P548-A	3,270,730.48	13,734,945.19
ECP-P591-A	3,274,358.08	13,734,574.29	ECP-P566-A	3,270,756.66	13,735,470.29
ECP-P608-A	3,274,556.19	13,735,029.88	ECP-P686-A	3,270,801.66	13,736,535.99
ECP-P623-A	3,274,744.16	13,735,506.91	ECP-P685-A	3,270,373.02	13,736,710.64
ECP-P637-A	3,274,917.64	13,735,963.66	ECP-P687-A	3,271,018.40	13,736,992.40
ECP-P649-A	3,275,105.06	13,736,426.11	ECP-P688-A	3,272,779.76	13,737,363.33
ECP-P648-A	3,274,627.75	13,736,598.97	ECP-P689-A	3,272,977.48	13,737,830.23
ECP-P636-A	3,274,460.21	13,736,157.98	ECP-P690-A	3,273,447.14	13,737,634.48
ECP-P622-A	3,274,263.90	13,735,664.52	ECP-P691-A	3,273,867.82	13,737,465.68
ECP-P607-A	3,274,081.07	13,735,214.52			
ECP-P590-A	3,273,900.27	13,734,738.72			
ECP-P572-A	3,273,718.31	13,734,291.17			
ECP-P554-A	3,273,525.15	13,733,826.94			
ECP-P536-A	3,273,352.99	13,733,354.93			
ECP-P519-A	3,273,151.94	13,732,895.23			
ECP-P504-A	3,272,982.19	13,732,421.42			
ECP-P503-A	3,272,557.46	13,732,597.61			
ECP-P518-A	3,272,701.05	13,733,084.24			
ECP-P535-A	3,272,874.87	13,733,533.91			
ECP-P553-A	3,273,070.01	13,734,015.49			
ECP-P571-A	3,273,262.99	13,734,478.36			
ECP-P589-A	3,273,442.51	13,734,942.27			
ECP-P606-A	3,273,624.01	13,735,415.58			
ECP-P621-A	3,273,812.26	13,735,871.89			
ECP-P635-A	3,273,998.19	13,736,339.90			

SAN LEON MITIGATION OYSTER PROBING LOCATIONS CONT.					
PROBING ID	EASTING	NORTHING	PROBING ID	EASTING	NORTHING
ECP-P956-A	3,250,242	13,763,594	ECP-P976-A	3,256,821	13,760,938
ECP-P957-A	3,250,762	13,763,631	ECP-P969-A	3,257,181	13,760,593
ECP-P958-A	3,251,256	13,763,646	ECP-P961-A	3,257,525	13,760,242
ECP-P959-A	3,251,748	13,763,675	ECP-P962-A	3,257,885	13,760,606
ECP-P960-A	3,252,163	13,763,694	ECP-P970-A	3,257,502	13,760,944
ECP-P1048-A	3,253,993	13,763,786	ECP-P971-A	3,257,877	13,761,309
ECP-P1049-A	3,254,346	13,764,122	ECP-P972-A	3,258,226	13,761,671
ECP-P1050-A	3,254,695	13,764,495	ECP-P973-A	3,258,590	13,762,019
ECP-P1051-A	3,254,983	13,764,899	ECP-P974-A	3,258,939	13,762,375
ECP-P1052-A	3,255,506	13,765,102	ECP-P975-A	3,259,293	13,762,730
ECP-P1053-A	3,255,746	13,765,562	ECP-P982-A	3,258,927	13,763,082
ECP-P1054-A	3,256,103	13,765,903	ECP-P981-A	3,258,575	13,762,703
ECP-P1055-A	3,256,465	13,766,261	ECP-P980-A	3,258,209	13,762,363
ECP-P1056-A	3,256,810	13,766,609	ECP-P979-A	3,257,878	13,762,007
ECP-P1040-A	3,254,328	13,763,460	ECP-P978-A	3,257,510	13,761,662
ECP-P1041-A	3,255,055	13,764,120	ECP-P977-A	3,257,160	13,761,304
ECP-P1042-A	3,255,412	13,764,498	ECP-P985-A	3,256,811	13,761,667
ECP-P1043-A	3,255,768	13,764,853	ECP-P994-A	3,256,455	13,762,011
ECP-P1035-A	3,256,275	13,765,029	ECP-P990-A	3,258,587	13,763,414
ECP-P1044-A	3,256,484	13,765,546	ECP-P989-A	3,258,205	13,763,070
ECP-P1045-A	3,256,818	13,765,900	ECP-P988-A	3,257,862	13,762,711
ECP-P1046-A	3,257,272	13,766,170	ECP-P987-A	3,257,507	13,762,364
ECP-P1047-A	3,257,516	13,766,638	ECP-P986-A	3,257,166	13,762,011
ECP-P1057-A	3,257,164	13,766,961	ECP-P999-A	3,258,236	13,763,775
ECP-P1039-A	3,257,878	13,766,239	ECP-P998-A	3,257,860	13,763,421
ECP-P1030-A	3,258,282	13,765,847	ECP-P997-A	3,257,518	13,763,066
ECP-P1021-A	3,258,588	13,765,545	ECP-P996-A	3,257,156	13,762,716
ECP-P1020-A	3,258,947	13,765,189	ECP-P995-A	3,256,796	13,762,358
ECP-P1038-A	3,257,470	13,765,944	ECP-P1031-A	3,255,041	13,763,433
ECP-P1018-A	3,258,238	13,765,184	ECP-P1032-A	3,255,405	13,763,787
ECP-P1019-A	3,258,413	13,764,991	ECP-P1033-A	3,255,766	13,764,138
ECP-P1001-A	3,258,939	13,764,478	ECP-P1034-A	3,256,115	13,764,486
ECP-P992-A	3,259,294	13,764,124	ECP-P1036-A	3,256,829	13,765,199
ECP-P1037-A	3,257,162	13,765,544	ECP-P1028-A	3,257,177	13,764,829
ECP-P1029-A	3,257,530	13,765,180	ECP-P1016-A	3,257,530	13,764,483
ECP-P1017-A	3,257,876	13,764,851	ECP-P1008-A	3,257,884	13,764,120
ECP-P1009-A	3,258,237	13,764,470	ECP-P1007-A	3,257,518	13,763,763
ECP-P1000-A	3,258,581	13,764,136	ECP-P1006-A	3,257,267	13,763,311
ECP-P991-A	3,258,954	13,763,759	ECP-P1005-A	3,256,808	13,763,064
ECP-P983-A	3,259,309	13,763,409	ECP-P1004-A	3,256,456	13,762,714
ECP-P968-A	3,259,968	13,762,746	ECP-P1003-A	3,256,105	13,762,348
ECP-P967-A	3,259,563	13,762,257	ECP-P1011-A	3,255,744	13,762,721
ECP-P966-A	3,259,290	13,761,999	ECP-P1012-A	3,256,021	13,763,185
ECP-P965-A	3,258,935	13,761,650	ECP-P1013-A	3,256,478	13,763,431
ECP-P964-A	3,258,567	13,761,296	ECP-P1014-A	3,256,834	13,763,788
ECP-P963-A	3,258,226	13,760,942	ECP-P1015-A	3,257,183	13,764,151
ECP-P1023-A	3,255,418	13,763,095	ECP-P1024-A	3,255,745	13,763,435
ECP-P1022-A	3,255,042	13,762,702	ECP-P1025-A	3,256,115	13,763,783
ECP-P1010-A	3,255,406	13,762,364	ECP-P1026-A	3,256,469	13,764,141
ECP-P1002-A	3,255,759	13,762,002	ECP-P1027-A	3,256,830	13,764,493
ECP-P993-A	3,256,096	13,761,649			
ECP-P984-A	3,256,468	13,761,300			

BIRD ISLAND MARSH PROBING LOCATIONS								
PROBING ID	EASTING	NORTHING	PROBING ID	EASTING	NORTHING	PROBING ID	EASTING	NORTHING
ECP-373-A	3,274,581.42	13,788,393.85	ECP-167-A	3,276,092.11	13,798,265.16	ECP-397-A	3,275,274.35	13,788,199.89
ECP-372-A	3,274,348.29	13,788,829.43	ECP-168-A	3,276,535.38	13,798,512.64	ECP-396-A	3,275,644.73	13,788,368.67
ECP-347-A	3,274,159.77	13,789,217.73	ECP-170-A	3,277,213.12	13,798,305.08	ECP-375-A	3,275,601.34	13,788,941.96
ECP-346-A	3,273,659.68	13,789,577.10	ECP-171-A	3,276,771.68	13,798,076.61	ECP-371-A	3,275,357.30	13,789,298.01
ECP-212-A	3,271,747.26	13,793,668.71	ECP-172-A	3,275,889.41	13,797,607.22	ECP-349-A	3,274,935.36	13,789,701.76
ECP-211-A	3,271,522.20	13,794,105.43	ECP-173-A	3,275,436.53	13,797,366.26	ECP-344-A	3,274,772.37	13,790,192.63
ECP-183-A	3,271,285.35	13,794,540.31	ECP-174-A	3,275,009.86	13,797,122.37	ECP-320-A	3,274,542.63	13,790,614.88
ECP-182-A	3,271,042.92	13,794,982.28	ECP-175-A	3,274,571.18	13,796,887.10	ECP-317-A	3,274,294.38	13,791,062.72
ECP-156-A	3,270,814.58	13,795,436.31	ECP-176-A	3,274,121.17	13,796,659.58	ECP-292-A	3,274,060.23	13,791,491.13
ECP-155-A	3,270,573.93	13,795,859.59	ECP-177-A	3,273,694.34	13,796,409.69	ECP-289-A	3,273,817.91	13,791,949.31
ECP-130-A	3,270,332.68	13,796,294.87	ECP-178-A	3,273,086.10	13,796,085.86	ECP-264-A	3,273,579.87	13,792,377.86
ECP-131-A	3,270,780.54	13,796,554.19	ECP-179-A	3,272,810.56	13,795,941.62	ECP-261-A	3,273,350.82	13,792,831.73
ECP-132-A	3,271,219.15	13,796,788.47	ECP-180-A	3,272,376.68	13,795,715.28	ECP-238-A	3,273,112.27	13,793,253.27
ECP-142-A	3,275,616.42	13,799,149.16	ECP-181-A	3,271,930.15	13,795,467.72	ECP-235-A	3,272,863.47	13,793,692.41
ECP-143-A	3,276,292.31	13,798,956.84	ECP-184-A	3,271,742.88	13,794,807.00	ECP-213-A	3,272,638.53	13,794,139.82
ECP-169-A	3,276,971.64	13,798,745.27	ECP-185-A	3,272,163.48	13,795,027.82	ECP-214-A	3,273,074.63	13,794,376.47
ECP-385-A	3,280,760.93	13,791,699.71	ECP-186-A	3,272,603.40	13,795,254.38	ECP-260-A	3,273,792.16	13,793,053.79
ECP-386-A	3,281,004.72	13,791,258.12	ECP-187-A	3,273,043.18	13,795,490.33	ECP-265-A	3,274,028.50	13,792,616.52
ECP-387-A	3,280,557.75	13,791,026.41	ECP-188-A	3,273,493.65	13,795,727.97	ECP-288-A	3,274,251.98	13,792,171.06
ECP-270-A	3,276,224.89	13,793,801.87	ECP-189-A	3,273,973.91	13,796,003.31	ECP-293-A	3,274,497.89	13,791,731.41
ECP-256-A	3,275,551.42	13,794,008.79	ECP-190-A	3,274,366.29	13,796,209.94	ECP-316-A	3,274,719.51	13,791,294.06
ECP-241-A	3,274,872.98	13,794,210.08	ECP-191-A	3,274,805.74	13,796,440.53	ECP-321-A	3,274,974.25	13,790,862.75
ECP-133-A	3,271,653.87	13,797,018.34	ECP-192-A	3,275,245.07	13,796,676.05	ECP-343-A	3,275,211.09	13,790,408.04
ECP-134-A	3,272,098.54	13,797,257.16	ECP-193-A	3,275,505.08	13,796,816.58	ECP-376-A	3,275,932.93	13,789,090.05
ECP-135-A	3,272,538.45	13,797,482.07	ECP-194-A	3,276,131.66	13,797,151.46	ECP-395-A	3,276,146.71	13,788,659.27
ECP-136-A	3,272,972.83	13,797,729.72	ECP-195-A	3,276,563.67	13,797,382.80	ECP-394-A	3,276,587.92	13,788,890.91
ECP-137-A	3,273,417.93	13,797,960.71	ECP-196-A	3,277,004.75	13,797,620.92	ECP-393-A	3,276,862.09	13,789,042.23
ECP-138-A	3,273,869.60	13,798,209.91	ECP-197-A	3,277,439.16	13,797,859.70	ECP-377-A	3,276,356.64	13,789,330.14
ECP-139-A	3,274,301.73	13,798,438.57	ECP-198-A	3,277,245.23	13,797,191.70	ECP-370-A	3,276,128.86	13,789,770.31
ECP-140-A	3,274,747.17	13,798,675.78	ECP-199-A	3,276,801.10	13,796,956.34	ECP-350-A	3,275,891.97	13,790,210.46
ECP-141-A	3,275,170.30	13,798,912.59	ECP-200-A	3,276,357.99	13,796,723.64	ECP-342-A	3,275,653.91	13,790,648.42
ECP-144-A	3,275,863.53	13,798,707.78	ECP-201-A	3,275,915.07	13,796,475.89	ECP-322-A	3,275,411.63	13,791,082.22
ECP-145-A	3,275,403.65	13,798,478.33	ECP-202-A	3,275,480.48	13,796,238.09	ECP-315-A	3,275,181.14	13,791,525.66
ECP-146-A	3,274,970.65	13,798,246.43	ECP-203-A	3,275,045.21	13,796,002.14	ECP-294-A	3,274,941.72	13,791,964.14
ECP-147-A	3,274,522.65	13,797,994.61	ECP-204-A	3,274,601.51	13,795,763.62	ECP-287-A	3,274,700.42	13,792,409.80
ECP-148-A	3,274,091.21	13,797,763.59	ECP-205-A	3,274,152.90	13,795,529.37	ECP-266-A	3,274,459.53	13,792,861.06
ECP-149-A	3,273,649.64	13,797,530.22	ECP-206-A	3,273,720.74	13,795,292.06	ECP-259-A	3,274,234.75	13,793,283.05
ECP-150-A	3,273,214.68	13,797,293.73	ECP-207-A	3,273,274.13	13,795,049.56	ECP-239-A	3,273,996.72	13,793,727.55
ECP-151-A	3,272,771.43	13,797,057.13	ECP-208-A	3,272,838.56	13,794,815.64	ECP-234-A	3,273,756.94	13,794,174.43
ECP-152-A	3,272,335.55	13,796,815.62	ECP-209-A	3,272,389.93	13,794,579.13	ECP-215-A	3,273,522.19	13,794,617.16
ECP-153-A	3,271,447.43	13,796,340.09	ECP-210-A	3,271,954.12	13,794,342.36	ECP-216-A	3,273,960.21	13,794,852.62
ECP-154-A	3,271,002.81	13,796,106.35	ECP-236-A	3,272,424.10	13,793,473.06	ECP-233-A	3,274,185.68	13,794,415.19
ECP-157-A	3,271,252.29	13,795,678.87	ECP-237-A	3,272,676.52	13,793,025.36	ECP-240-A	3,274,434.94	13,793,970.01
ECP-158-A	3,271,681.07	13,795,903.95	ECP-262-A	3,272,897.88	13,792,587.31	ECP-258-A	3,274,670.27	13,793,528.93
ECP-159-A	3,272,713.46	13,796,459.11	ECP-263-A	3,273,143.33	13,792,143.37	ECP-267-A	3,274,902.55	13,793,086.62
ECP-160-A	3,273,017.71	13,796,627.16	ECP-290-A	3,273,380.80	13,791,702.96	ECP-314-A	3,275,613.76	13,791,772.39
ECP-161-A	3,273,448.59	13,796,858.47	ECP-291-A	3,273,614.85	13,791,269.18	ECP-323-A	3,275,845.18	13,791,334.34
ECP-162-A	3,273,885.84	13,797,089.64	ECP-318-A	3,273,858.04	13,790,829.71	ECP-341-A	3,276,084.95	13,790,893.52
ECP-163-A	3,274,329.15	13,797,329.92	ECP-319-A	3,274,100.03	13,790,378.56	ECP-351-A	3,276,330.46	13,790,457.92
ECP-164-A	3,274,773.03	13,797,562.16	ECP-345-A	3,274,373.02	13,789,970.28	ECP-369-A	3,276,564.22	13,790,009.86
ECP-165-A	3,275,211.04	13,797,788.81	ECP-348-A	3,274,415.83	13,789,381.25	ECP-378-A	3,276,778.83	13,789,551.15
ECP-166-A	3,275,650.04	13,798,034.08	ECP-374-A	3,275,030.07	13,788,639.43	ECP-368-A	3,277,010.51	13,790,244.55

BIRD ISLAND MARSH PROBING LOCATIONS CONT.

PROBING ID	EASTING	NORTHING	PROBING ID	EASTING	NORTHING	PROBING ID	EASTING	NORTHING
ECP-352-A	3,276,778.88	13,790,683.47	ECP-247-A	3,277,518.80	13,795,616.91	ECP-329-A	3,278,953.70	13,792,991.59
ECP-340-A	3,276,529.31	13,791,127.06	ECP-248-A	3,277,952.68	13,795,853.86	ECP-331-A	3,279,803.42	13,793,459.48
ECP-324-A	3,276,298.13	13,791,556.70	ECP-249-A	3,278,398.76	13,796,112.77	ECP-332-A	3,280,040.51	13,793,013.89
ECP-313-A	3,276,062.14	13,792,004.91	ECP-250-A	3,278,637.98	13,795,659.78	ECP-360-A	3,280,289.80	13,792,581.07
ECP-296-A	3,275,831.41	13,792,443.91	ECP-251-A	3,278,198.42	13,795,413.87	ECP-361-A	3,280,090.90	13,791,906.65
ECP-295-A	3,275,392.03	13,792,202.56	ECP-252-A	3,277,874.95	13,795,254.83	ECP-359-A	3,279,863.20	13,792,341.33
ECP-286-A	3,275,146.80	13,792,650.04	ECP-253-A	3,276,863.68	13,794,724.60	ECP-333-A	3,279,619.46	13,792,793.44
ECP-285-A	3,275,583.97	13,792,879.38	ECP-272-A	3,277,110.11	13,794,277.65	ECP-330-A	3,279,385.66	13,793,214.29
ECP-268-A	3,275,348.68	13,793,317.04	ECP-273-A	3,277,542.18	13,794,517.19	ECP-401-A	3,271,423.84	13,797,469.02
ECP-257-A	3,275,110.39	13,793,748.46	ECP-274-A	3,277,980.37	13,794,737.25	ECP-402-A	3,271,835.75	13,797,719.12
ECP-232-A	3,274,647.34	13,794,655.41	ECP-275-A	3,278,432.07	13,794,984.17	ECP-403-A	3,272,319.84	13,797,968.75
ECP-217-A	3,274,405.54	13,795,073.14	ECP-276-A	3,278,870.72	13,795,234.53	ECP-404-A	3,272,738.27	13,798,152.84
ECP-218-A	3,274,838.72	13,795,333.77	ECP-277-A	3,279,095.28	13,794,794.19	ECP-405-A	3,273,195.00	13,798,393.33
ECP-231-A	3,275,082.02	13,794,889.51	ECP-278-A	3,278,661.88	13,794,549.41	ECP-415-A	3,272,929.37	13,798,853.13
ECP-242-A	3,275,311.57	13,794,450.22	ECP-279-A	3,278,344.30	13,794,373.74	ECP-416-A	3,272,486.78	13,798,599.71
ECP-269-A	3,275,774.63	13,793,565.86	ECP-280-A	3,277,774.51	13,794,081.25	ECP-417-A	3,272,045.89	13,798,390.09
ECP-284-A	3,276,033.60	13,793,117.63	ECP-281-A	3,277,347.36	13,793,822.13	ECP-418-A	3,271,622.64	13,798,136.46
ECP-297-A	3,276,255.18	13,792,675.91	ECP-282-A	3,276,901.91	13,793,607.48	ECP-419-A	3,271,209.57	13,797,971.11
ECP-312-A	3,276,439.64	13,792,192.15	ECP-299-A	3,277,153.46	13,793,160.90	ECP-400-A	3,270,963.81	13,797,229.85
ECP-339-A	3,277,036.33	13,791,396.38	ECP-300-A	3,277,573.97	13,793,409.54	ECP-420-A	3,270,740.03	13,797,686.78
ECP-353-A	3,277,215.25	13,790,919.75	ECP-301-A	3,278,018.35	13,793,632.49	ECP-424-A	3,270,502.81	13,798,098.03
ECP-367-A	3,277,440.43	13,790,475.63	ECP-302-A	3,278,470.13	13,793,873.87	ECP-425-A	3,270,927.46	13,798,357.94
ECP-379-A	3,277,687.78	13,790,039.23	ECP-303-A	3,278,892.62	13,794,117.78	ECP-426-A	3,271,388.66	13,798,561.32
ECP-392-A	3,277,928.88	13,789,608.61	ECP-304-A	3,279,331.85	13,794,355.96	ECP-427-A	3,271,814.97	13,798,830.21
ECP-391-A	3,278,363.32	13,789,833.96	ECP-305-A	3,279,580.20	13,793,911.59	ECP-428-A	3,272,258.60	13,799,051.82
ECP-380-A	3,278,133.17	13,790,287.23	ECP-306-A	3,279,140.14	13,793,682.38	ECP-429-A	3,272,707.41	13,799,317.68
ECP-366-A	3,277,898.44	13,790,720.63	ECP-307-A	3,278,694.30	13,793,442.93	ECP-430-A	3,273,135.86	13,799,504.47
ECP-354-A	3,277,654.56	13,791,165.28	ECP-308-A	3,278,339.40	13,793,222.06	ECP-414-A	3,273,367.11	13,799,079.12
ECP-338-A	3,277,419.63	13,791,603.42	ECP-309-A	3,277,815.91	13,792,957.48	ECP-406-A	3,273,600.83	13,798,633.88
ECP-325-A	3,277,181.18	13,792,050.17	ECP-310-A	3,277,374.13	13,792,735.42	ECP-407-A	3,274,050.96	13,798,898.24
ECP-311-A	3,276,979.85	13,792,502.72	ECP-326-A	3,277,624.19	13,792,279.99	ECP-408-A	3,274,568.58	13,799,177.00
ECP-298-A	3,276,714.88	13,792,925.55	ECP-337-A	3,277,844.30	13,791,832.16	ECP-409-A	3,274,929.33	13,799,343.57
ECP-283-A	3,276,477.61	13,793,362.07	ECP-355-A	3,278,080.13	13,791,412.08	ECP-410-A	3,275,379.17	13,799,603.23
ECP-255-A	3,275,987.76	13,794,240.37	ECP-365-A	3,278,333.98	13,790,967.75	ECP-411-A	3,274,688.41	13,799,776.18
ECP-243-A	3,275,759.21	13,794,687.21	ECP-381-A	3,278,559.07	13,790,522.07	ECP-433-A	3,274,485.90	13,800,235.35
ECP-230-A	3,275,513.48	13,795,116.71	ECP-390-A	3,279,237.53	13,790,307.63	ECP-412-A	3,274,251.66	13,799,548.46
ECP-219-A	3,275,726.85	13,795,809.21	ECP-382-A	3,279,015.68	13,790,762.98	ECP-432-A	3,274,046.84	13,800,015.34
ECP-229-A	3,275,947.72	13,795,366.64	ECP-364-A	3,278,771.03	13,791,203.49	ECP-431-A	3,273,563.13	13,799,756.79
ECP-244-A	3,276,201.26	13,794,919.36	ECP-356-A	3,278,523.96	13,791,642.16	ECP-413-A	3,273,819.12	13,799,310.25
ECP-254-A	3,276,309.66	13,794,424.90	ECP-336-A	3,278,290.74	13,792,083.22	ECP-423-A	3,270,047.18	13,797,864.68
ECP-271-A	3,276,516.05	13,793,955.09	ECP-327-A	3,278,051.48	13,792,513.42	ECP-421-A	3,270,273.86	13,797,414.46
ECP-220-A	3,276,152.79	13,796,040.71	ECP-328-A	3,278,489.12	13,792,757.99	ECP-399-A	3,270,554.84	13,796,989.53
ECP-221-A	3,276,596.82	13,796,265.72	ECP-335-A	3,278,721.71	13,792,302.97	ECP-398-A	3,270,078.88	13,796,721.51
ECP-222-A	3,277,039.38	13,796,501.59	ECP-357-A	3,278,963.54	13,791,864.43	ECP-422-A	3,269,881.57	13,797,202.75
ECP-223-A	3,277,482.98	13,796,732.41	ECP-363-A	3,279,203.07	13,791,419.75			
ECP-224-A	3,278,161.78	13,796,517.66	ECP-383-A	3,279,431.24	13,790,989.15			
ECP-225-A	3,277,722.94	13,796,300.48	ECP-389-A	3,279,688.03	13,790,560.89			
ECP-226-A	3,277,274.17	13,796,059.63	ECP-388-A	3,280,047.25	13,790,750.28			
ECP-227-A	3,276,833.29	13,795,843.48	ECP-384-A	3,279,861.39	13,791,216.61			
ECP-228-A	3,276,387.37	13,795,602.45	ECP-362-A	3,279,653.29	13,791,680.31			
ECP-245-A	3,276,631.92	13,795,155.23	ECP-358-A	3,279,418.71	13,792,120.65			
ECP-246-A	3,277,065.35	13,795,394.94	ECP-334-A	3,279,181.48	13,792,561.07			



REV	REVISIONS	DATE	APP

NOTES:
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2. ALL ELEVATIONS ARE IN U.S. SURVEY FEET AND REFERENCED TO MLLW AND ARE BELOW THE REFERENCE PLANE UNLESS PRECEDED BY A PLUS (+) SIGN.

LEGEND:
— HSC-ECIP P11 95% DESIGN OYSTER PAD LOCATIONS
● PROBING SURVEY LOCATIONS CONDUCTED BY THE JV IN JANUARY-FEBRUARY, 2020.

**PRELIMINARY
DRAFT**

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ENGINEER:	C. HEDDERMAN
LICENSE NO.:	TX #100209
DATE:	12/08/2020

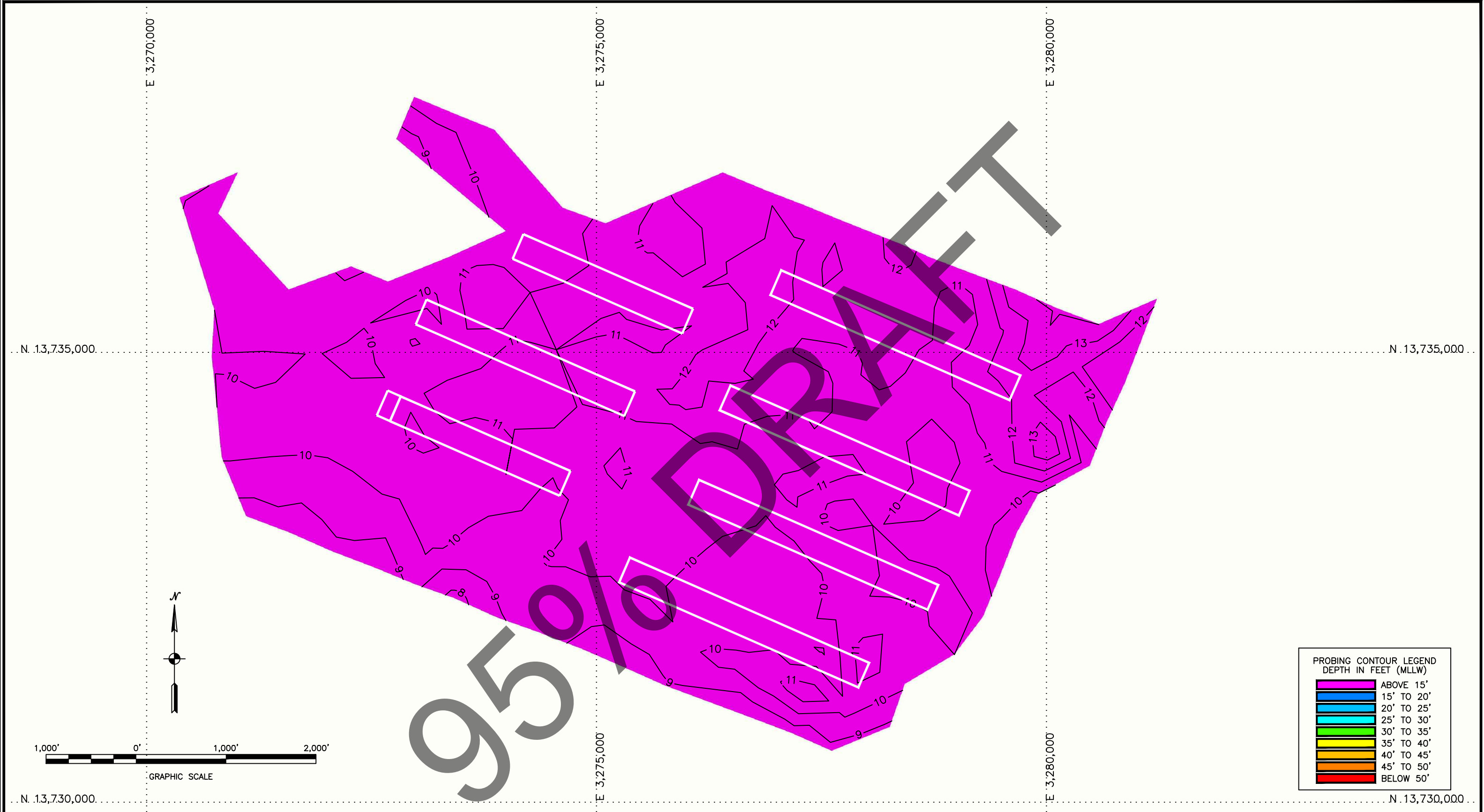
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PORT OF HOUSTON AUTHORITY

HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENTS PROJECT

DOLLAR REEF OYSTER MITIGATION - PROBING SURVEY

DWG DATE:	DECEMBER 08, 2020	DWG:	DOR-Exhibit-DRM_201130
DRAWN:	S. HALPIN	CHECKED:	D.CHENEY
SCALE:	AS SHOWN	SHEET:	09 OF 24
		ENGR:	C. HEDDERMAN
		REV:	



PROBING CONTOUR LEGEND	
DEPTH IN FEET (MLLW)	
	ABOVE 15'
	15' TO 20'
	20' TO 25'
	25' TO 30'
	30' TO 35'
	35' TO 40'
	40' TO 45'
	45' TO 50'
	BELOW 50'

REV	REVISIONS	DATE	APP

NOTES:

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LEGEND:

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ENGINEER:	C. HEDDERMAN
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HOUSTON, TEXAS 77056

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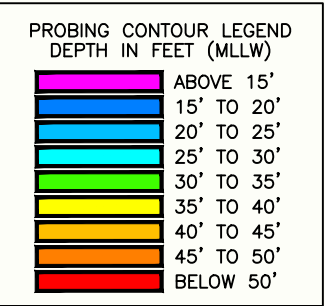
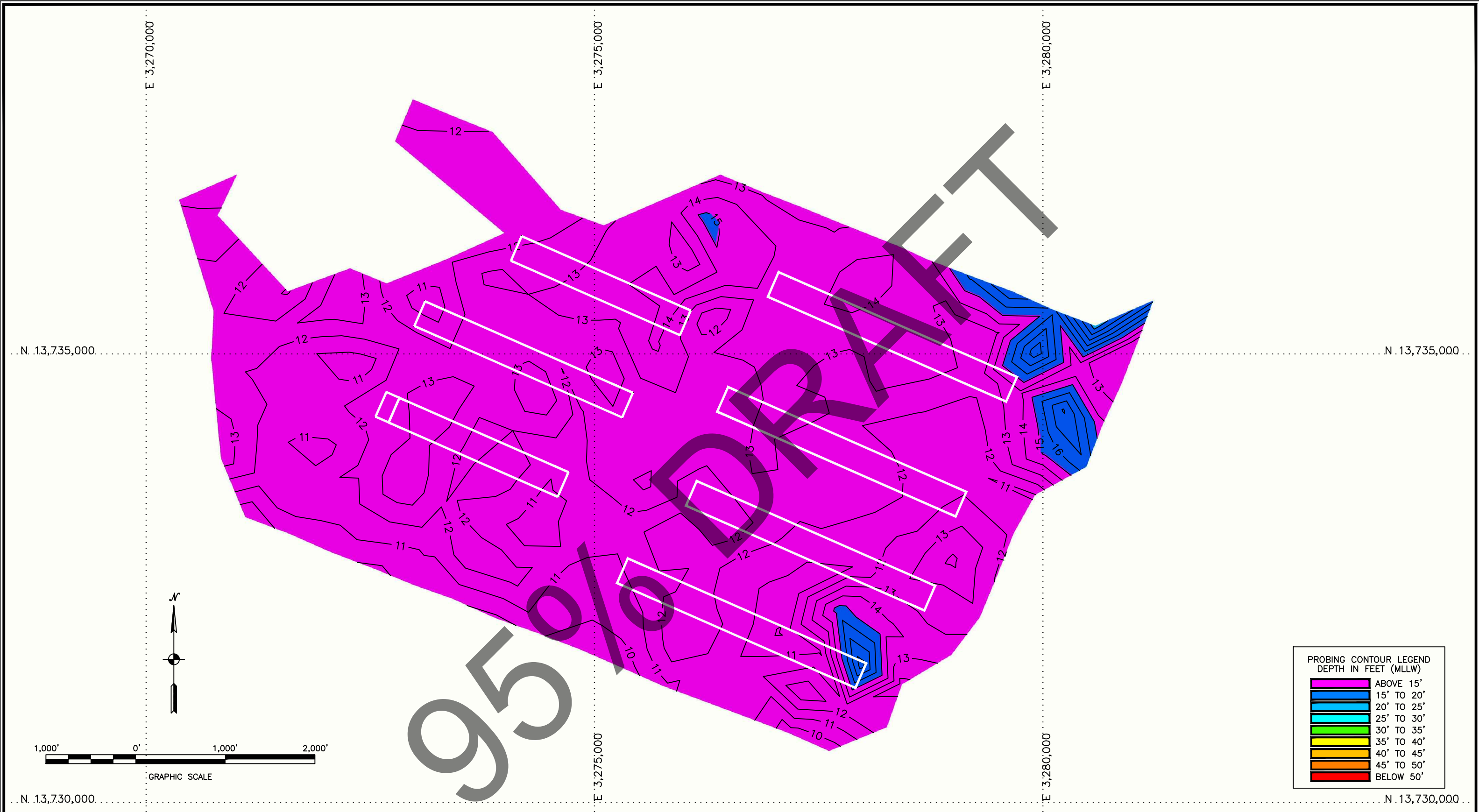
PORT OF HOUSTON AUTHORITY

HOUSTON SHIP CHANNEL

EXPANSION CHANNEL IMPROVEMENTS PROJECT

DOLLAR REEF OYSTER MITIGATION - PROBING SURVEY WOR LAYER

DWG DATE:	DECEMBER 08, 2020	DWG:	DOR-Exhibit-DRM_201130		
DRAWN:	S. HALPIN	CHECKED:	D.CHENEY	ENGR:	C. HEDDERMAN
SCALE:	AS SHOWN	SHEET:	10 OF 24	REV:	



REV	REVISIONS	DATE	APP

NOTES:

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2. ALL ELEVATIONS ARE IN U.S. SURVEY FEET AND REFERENCED TO MLLW AND ARE BELOW THE REFERENCE PLANE UNLESS PRECEDED BY A PLUS (+) SIGN.

LEGEND:

— HSC-ECIP P11 95% DESIGN OYSTER PAD LOCATIONS

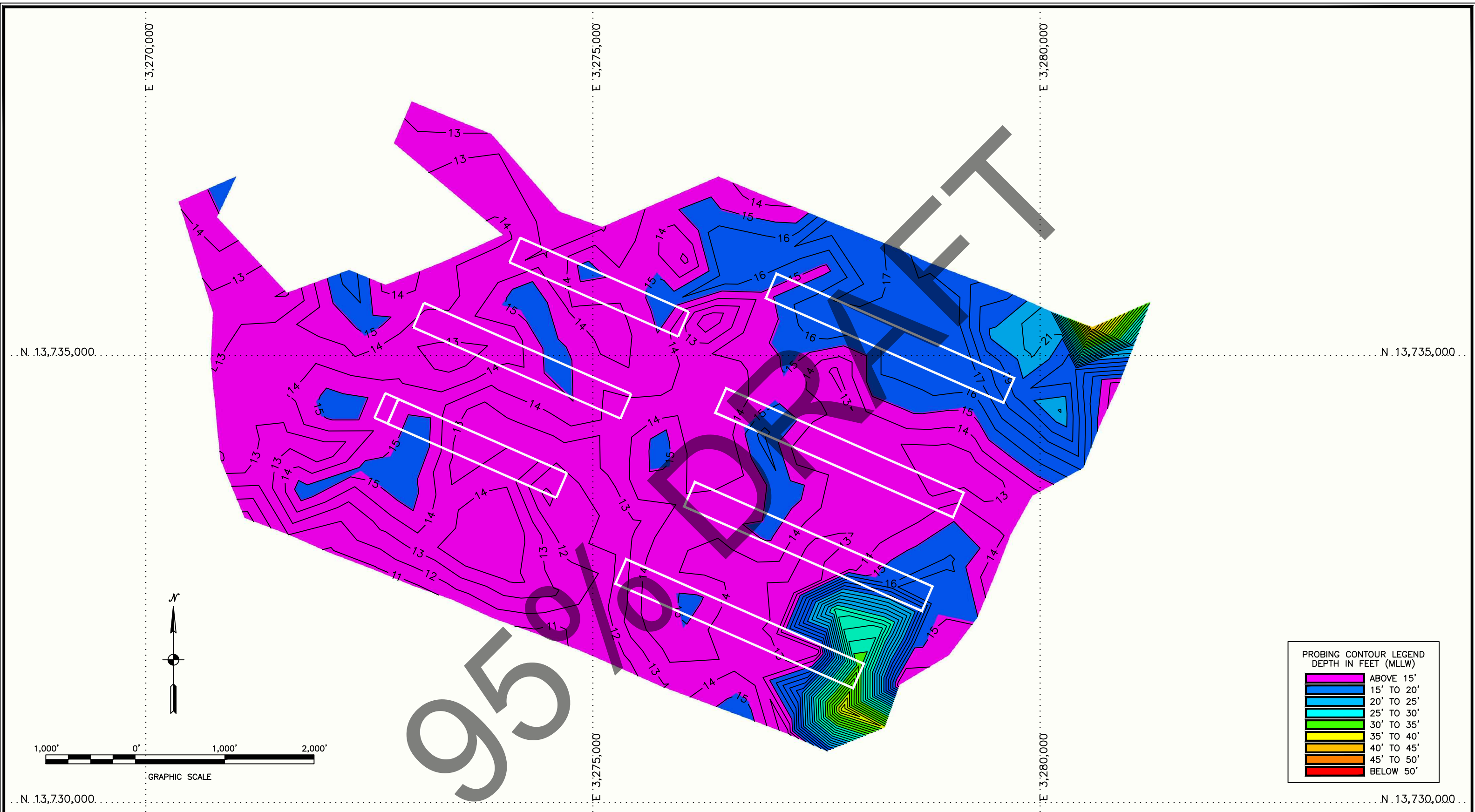
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PORT OF HOUSTON AUTHORITY			
HOUSTON SHIP CHANNEL EXPANSION CHANNEL IMPROVEMENTS PROJECT			
DOLLAR REEF OYSTER MITIGATION - PROBING SURVEY FIRM LAYER			
DWG DATE:	DECEMBER 08, 2020	DWG:	DOR-Exhibit-DRM_201130
DRAWN:	S. HALPIN	CHECKED:	D.CHENEY
SCALE:	AS SHOWN	SHEET:	11 OF 24
		ENGR:	C. HEDDERMAN
		REV:	



REV	REVISIONS	DATE	APP

NOTES:

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LEGEND:

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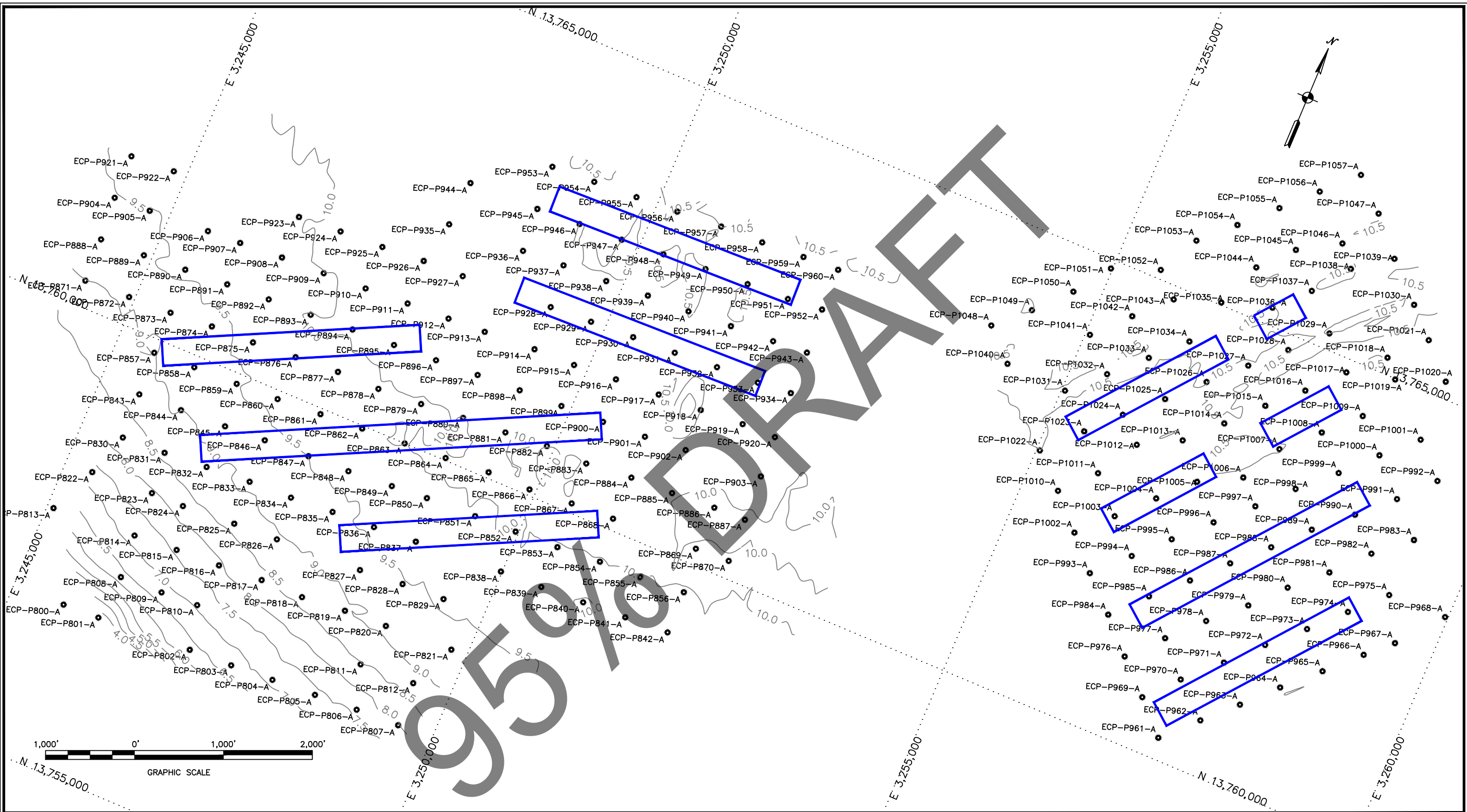
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PORT OF HOUSTON AUTHORITY			
HOUSTON SHIP CHANNEL EXPANSION CHANNEL IMPROVEMENTS PROJECT			
DOLLAR REEF OYSTER MITIGATION - PROBING SURVEY REFUSAL LAYER			
DWG DATE:	DECEMBER 08, 2020	DWG:	DOR-Exhibit-DRM_201130
DRAWN:	S. HALPIN	CHECKED:	D.CHENEY
SCALE:	AS SHOWN	ENGR:	C. HEDDERMAN
SHEET:	12 OF 24	REV:	



REV	REVISIONS	DATE	APP

NOTES:

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LEGEND:

- HSC-ECIP P11 95% DESIGN OYSTER PAD LOCATIONS
- PROBING SURVEY LOCATIONS CONDUCTED BY THE JV IN FEBRUARY, 2020.

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DATE:	12/08/2020

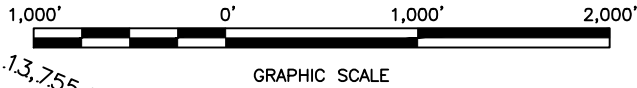
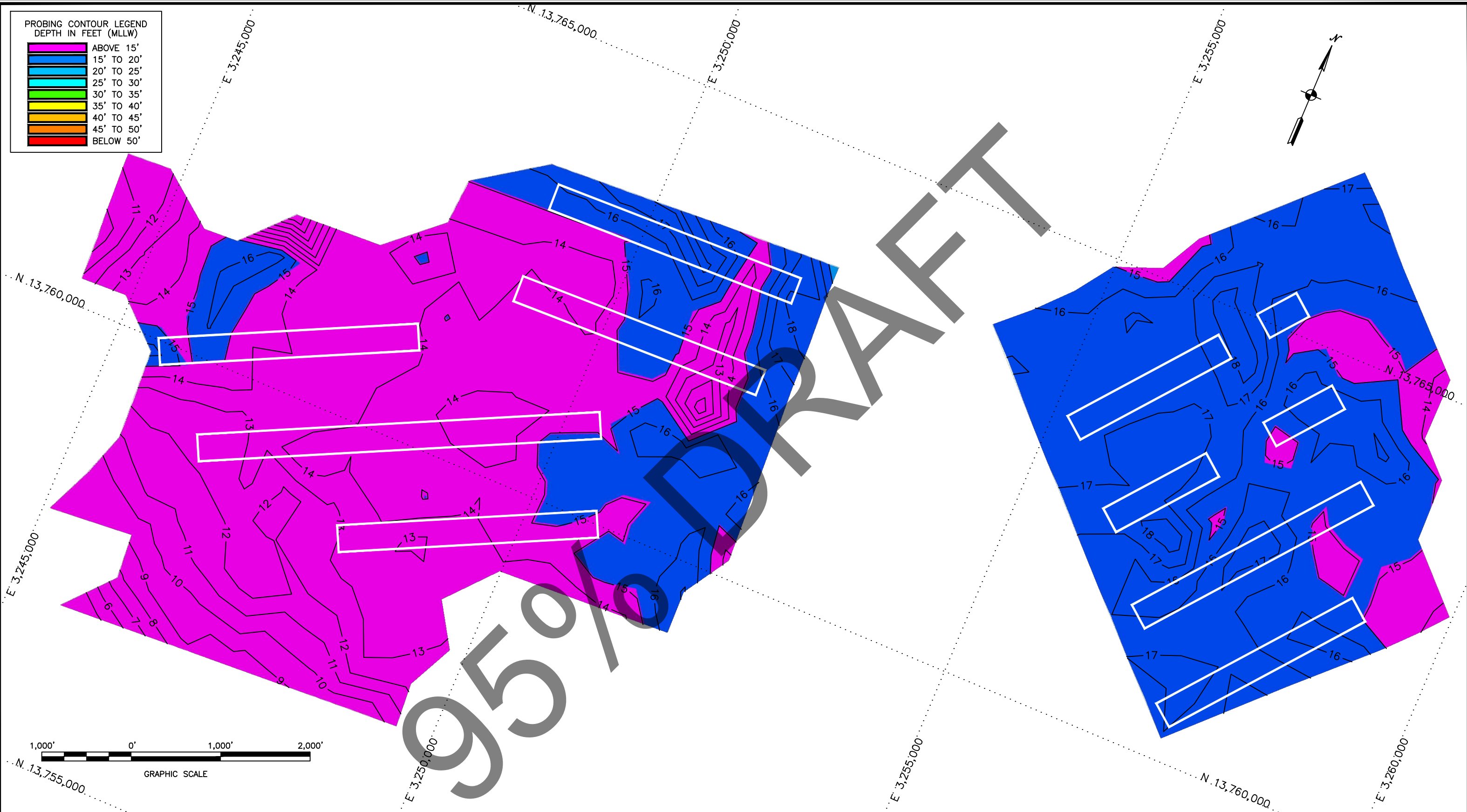
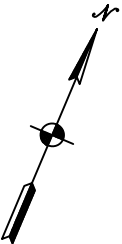
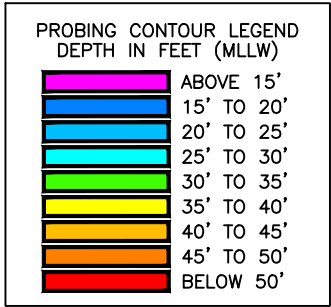
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PORT OF HOUSTON AUTHORITY

HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENTS PROJECT

SAN LEON OYSTER MITIGATION - PROBING SURVEY

DWG DATE:	DECEMBER 08, 2020	DWG:	DOR-Exhibit-SLM_201130
DRAWN:	S. HALPIN	CHECKED:	D. CHENEY
SCALE:	AS SHOWN	SHEET:	13 OF 24
		ENGR:	C. HEDDERMAN
		REV:	



REV	REVISIONS	DATE	APP

NOTES:

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LEGEND:

— HSC-ECIP P11 95% DESIGN OYSTER PAD LOCATIONS

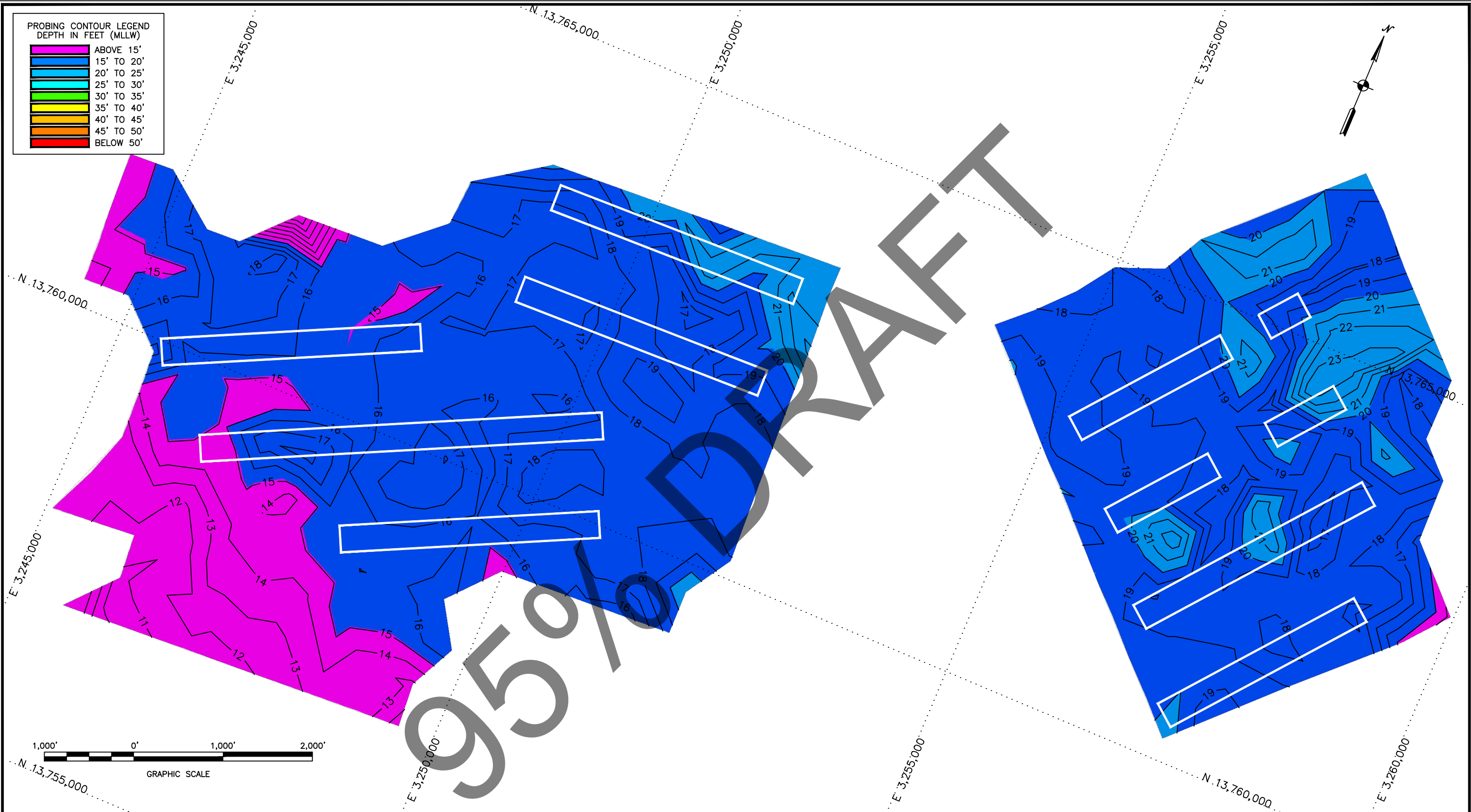
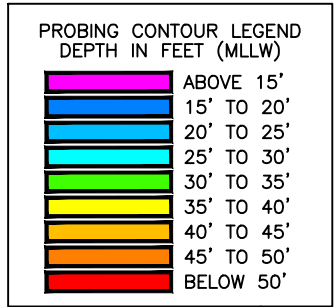
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ENGINEER:	C. HEDDERMAN
LICENSE NO.:	TX #100209
DATE:	12/08/2020

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PORT OF HOUSTON AUTHORITY			
HOUSTON SHIP CHANNEL EXPANSION CHANNEL IMPROVEMENTS PROJECT			
SAN LEON OYSTER MITIGATION - PROBING SURVEY WOR LAYER			
DWG DATE:	DECEMBER 08, 2020	DWG:	DDR-Exhibit-SLM_201130
DRAWN:	S. HALPIN	CHECKED:	D.CHENEY
SCALE:	AS SHOWN	ENGR:	C. HEDDERMAN
SHEET:	14 OF 24	REV:	



REV	REVISIONS	DATE	APP

NOTES:

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LEGEND:

— HSC-ECIP P11 95% DESIGN OYSTER PAD LOCATIONS

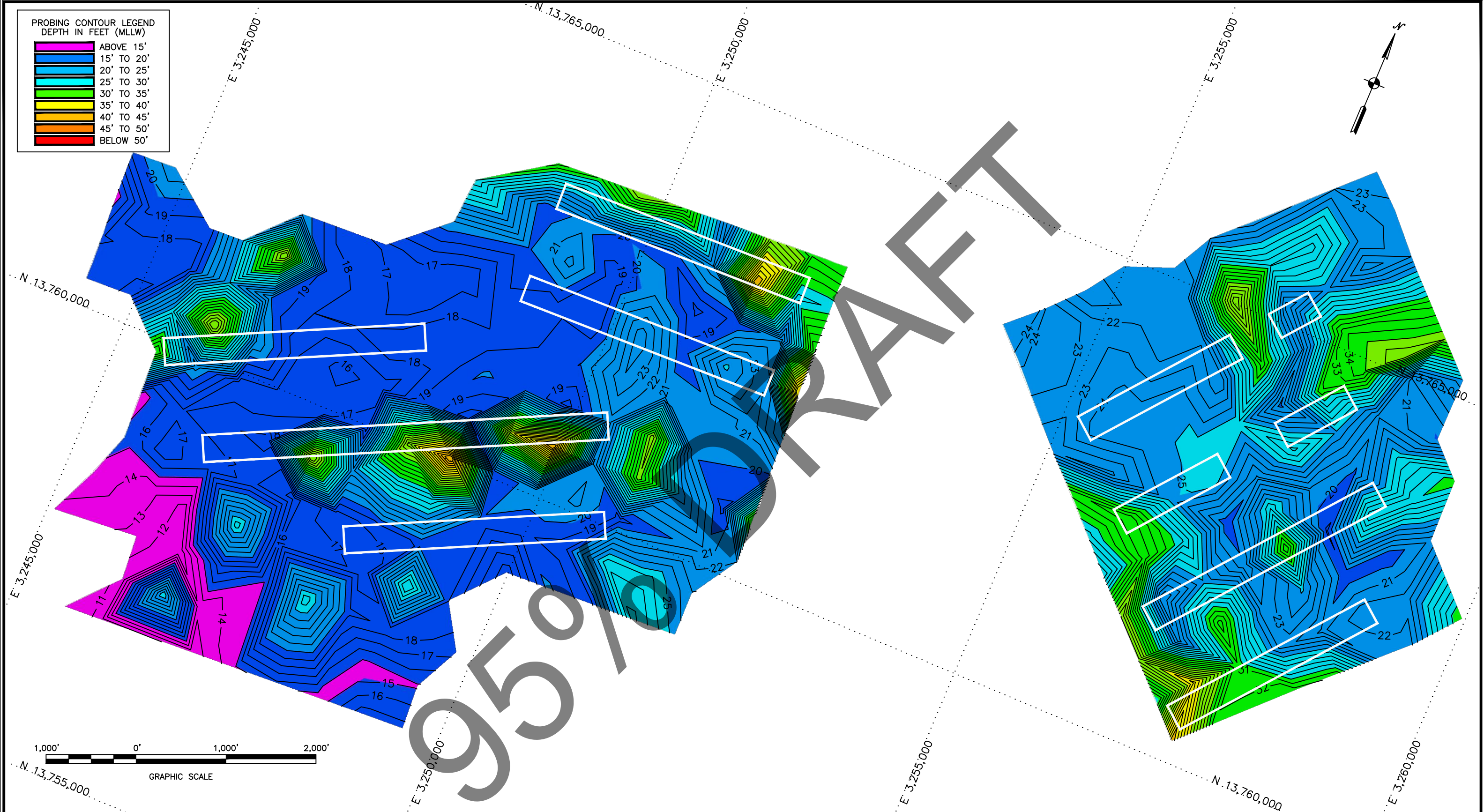
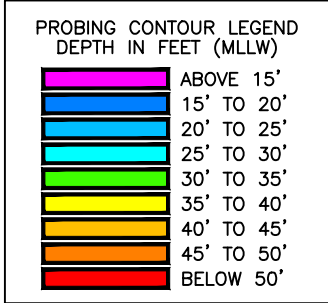
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DATE:	12/08/2020

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PORT OF HOUSTON AUTHORITY			
HOUSTON SHIP CHANNEL EXPANSION CHANNEL IMPROVEMENTS PROJECT			
SAN LEON OYSTER MITIGATION - PROBING SURVEY FIRM LAYER			
DWG DATE:	DECEMBER 08, 2020	DWG:	DDR-Exhibit-SLM_201130
DRAWN:	S. HALPIN	CHECKED:	D.CHENEY
SCALE:	AS SHOWN	SHEET:	15 OF 24
		ENGR:	C. HEDDERMAN
		REV:	



REV	REVISIONS	DATE	APP

NOTES:

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LEGEND:

— HSC-ECIP P11 95% DESIGN OYSTER PAD LOCATIONS

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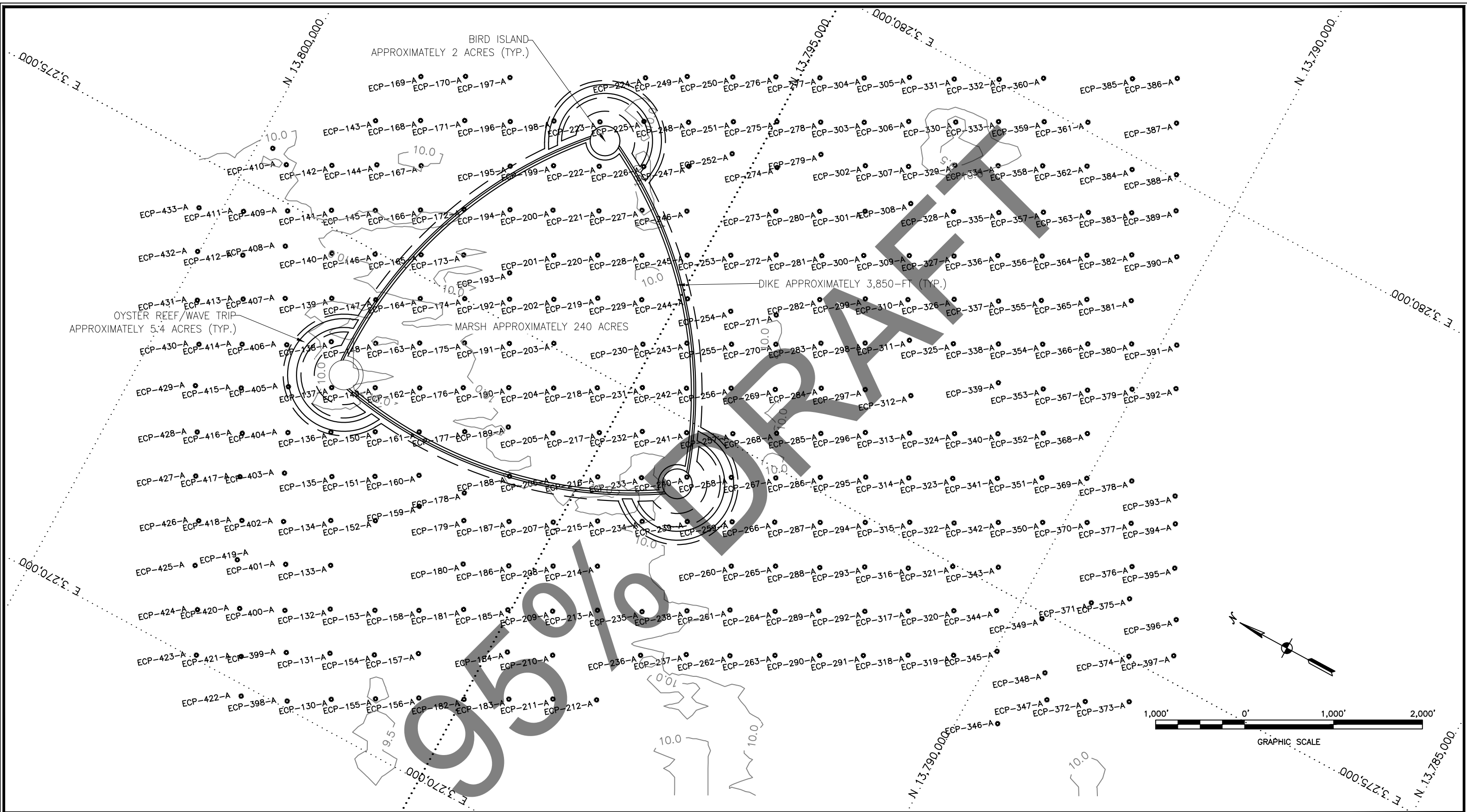
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PORT OF HOUSTON AUTHORITY

HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENTS PROJECT

SAN LEON OYSTER MITIGATION - PROBING SURVEY REFUSAL LAYER

DWG DATE:	DECEMBER 08, 2020	DWG:	DDR-Exhibit-SLM_201130		
DRAWN:	S. HALPIN	CHECKED:	D.CHENEY	ENGR:	C. HEDDERMAN
SCALE:	AS SHOWN	SHEET:	16 OF 24	REV:	



REV	REVISIONS	DATE	APP

NOTES:
1. CONTOURS DEPICTED ON THIS MAP REPRESENT THE RESULTS OF SURVEYS MADE BY THE JV IN OCTOBER 2019 & JULY 2020 AND CAN ONLY INDICATE THE GENERAL CONDITIONS EXISTING AT THAT TIME.
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LEGEND:
● PROBING SURVEY LOCATIONS CONDUCTED BY THE JV IN NOVEMBER 2019 & AUGUST 2020.

PRELIMINARY
DRAFT

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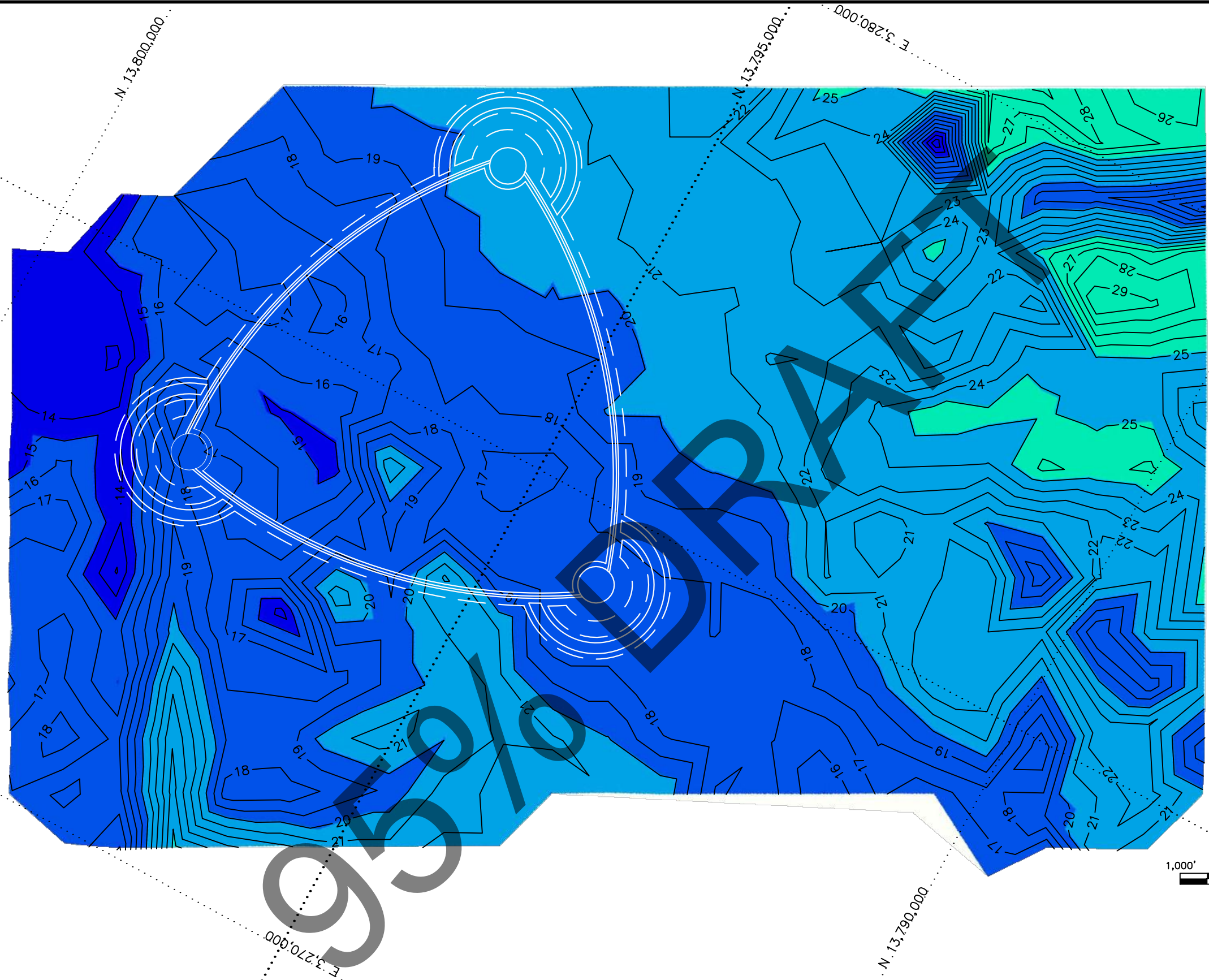
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HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENTS PROJECT

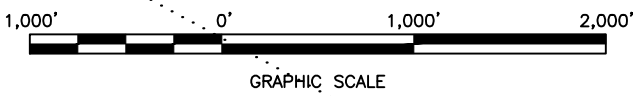
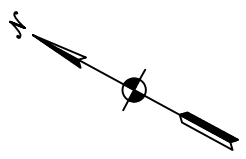
BIRD ISLAND MARSH - PROBING SURVEY

DWG DATE:	DECEMBER 08, 2020	DWG:	DDR-Exhibit-BIM_201130		
DRAWN:	S. HALPIN	CHECKED:	D.CHENEY	ENGR:	C. HEDDERMAN
SCALE:	AS SHOWN	SHEET:	17 OF 24	REV:	



PROBING CONTOUR LEGEND
DEPTH IN FEET (MLLW)

ABOVE 15'
15' TO 20'
20' TO 25'
25' TO 30'
30' TO 35'
35' TO 40'
40' TO 45'
45' TO 50'
BELOW 50'



REV	REVISIONS	DATE	APP

NOTES:

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LEGEND:

— HSC-ECIP P11 95% DESIGN BIRD ISLAND MARSH LOCATION

**PRELIMINARY
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ENGINEER:	C. HEDDERMAN
LICENSE NO.:	TX #100209
DATE:	12/08/2020

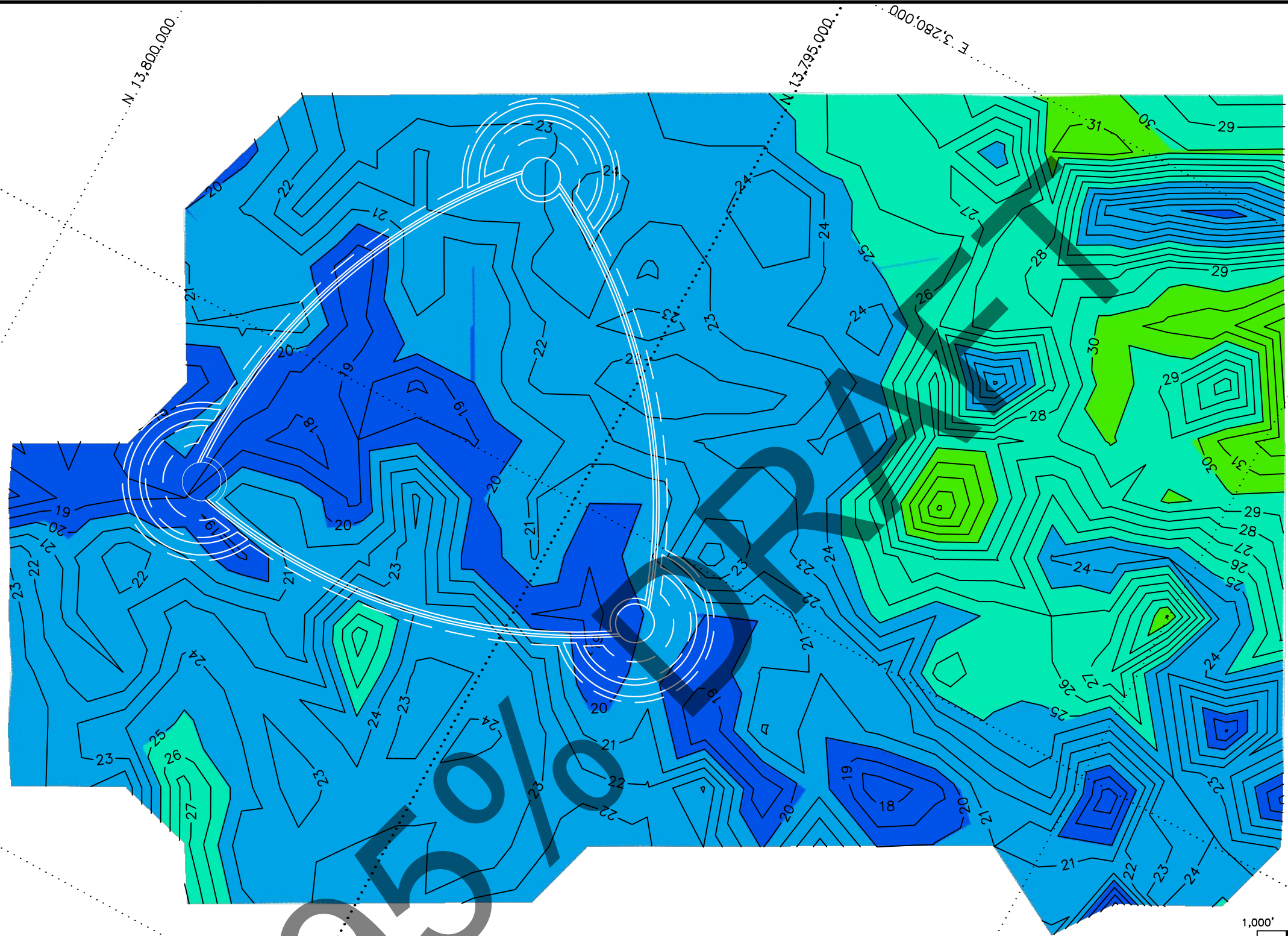
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HOUSTON SHIP CHANNEL
EXPANSION CHANNEL IMPROVEMENTS PROJECT

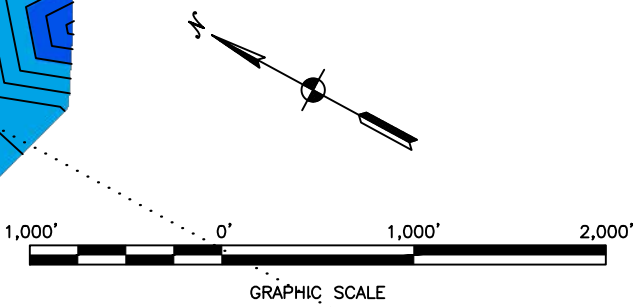
BIRD ISLAND MARSH - PROBING SURVEY WOR LAYER

DWG DATE:	DECEMBER 08, 2020	DWG:	DDR-Exhibit-BIM_201130		
DRAWN:	S. HALPIN	CHECKED:	D.CHENEY	ENGR:	C. HEDDERMAN
SCALE:	AS SHOWN	SHEET:	18 OF 24	REV:	



PROBING CONTOUR LEGEND
DEPTH IN FEET (MLLW)

ABOVE 15'
15' TO 20'
20' TO 25'
25' TO 30'
30' TO 35'
35' TO 40'
40' TO 45'
45' TO 50'
BELOW 50'



REV	REVISIONS	DATE	APP

NOTES:

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LEGEND:

— HSC-ECIP P11 95% DESIGN BIRD ISLAND MARSH LOCATION

**PRELIMINARY
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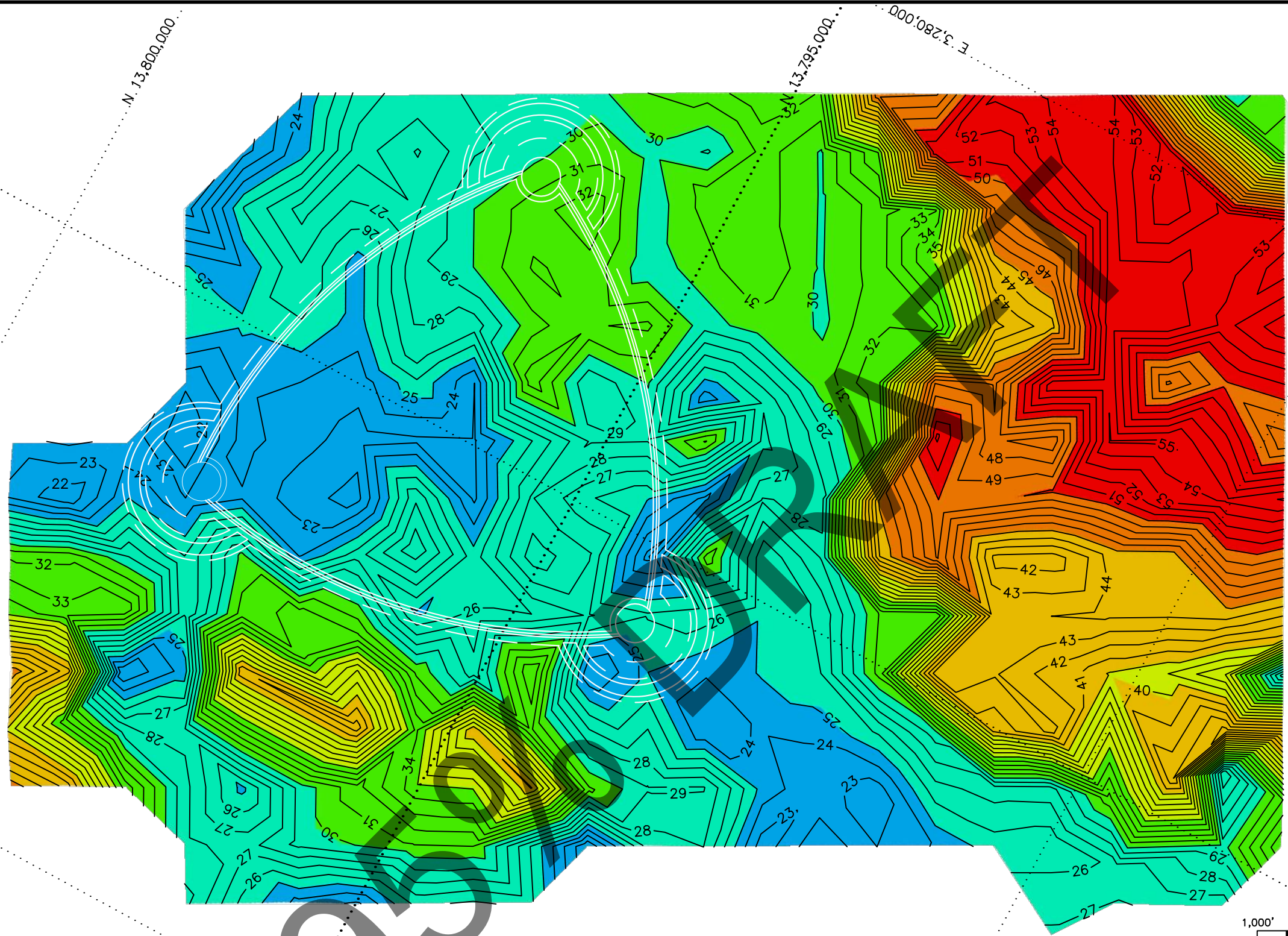
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EXPANSION CHANNEL IMPROVEMENTS PROJECT

BIRD ISLAND MARSH - PROBING SURVEY FIRM LAYER

DWG DATE:	DECEMBER 08, 2020	DWG:	DDR-Exhibit-BIM_201130		
DRAWN:	S. HALPIN	CHECKED:	D.CHENEY	ENGR:	C. HEDDERMAN
SCALE:	AS SHOWN	SHEET:	19 OF 24	REV:	



PROBING CONTOUR LEGEND	
DEPTH IN FEET (MLLW)	
ABOVE 15'	
15' TO 20'	
20' TO 25'	
25' TO 30'	
30' TO 35'	
35' TO 40'	
40' TO 45'	
45' TO 50'	
BELOW 50'	

NOTES:

1. CONTOURS DEPICTED ON THIS MAP REPRESENT THE RESULTS OF PROBING SURVEYS MADE BY THE JV IN NOVEMBER 2019 & AUGUST 2020 AND CAN ONLY INDICATE THE GENERAL CONDITIONS EXISTING AT THAT TIME.

2. ALL ELEVATIONS ARE IN U.S. SURVEY FEET AND REFERENCED TO MLLW AND ARE BELOW THE REFERENCE PLANE UNLESS PRECEDED BY A PLUS (+) SIGN.

LEGEND:

— HSC-ECIP P11 95% DESIGN BIRD ISLAND MARSH LOCATION

PRELIMINARY DRAFT

THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

ENGINEER:	C. HEDDERMAN
LICENSE NO.:	TX #100209
DATE:	12/08/2020

TurnerCollie&Braden Inc.
JOINT VENTURE - PORT DEVELOPMENT AND ENVIRONMENTAL SERVICES
GAHAGAN & BRYANT ASSOCIATES
TEXAS ENGINEERING FIRM F-10788
5444 WESTHEIMER, SUITE 200
HOUSTON, TEXAS 77056
TEL. 713.780.4100

PORT OF HOUSTON AUTHORITY			
HOUSTON SHIP CHANNEL			
EXPANSION CHANNEL IMPROVEMENTS PROJECT			
BIRD ISLAND MARSH - PROBING SURVEY REFUSAL LAYER			
DWG DATE:	DECEMBER 08, 2020	DWG:	DDR-Exhibit-BIM_201130
DRAWN:	S. HALPIN	CHECKED:	D.CHENEY
SCALE:	AS SHOWN	SHEET:	20 OF 24
		ENGR:	C. HEDDERMAN
		REV:	

Appendix B – Boring Logs

The boring logs provided herein are taken from multiple sources and may not reflect the full extent of data collected or reporting provided at that time. Full data reports in possession of the Engineer can be provided electronically upon request by the Contractor.

95% DRAFT



Project 11

Houston Ship Channel Expansion Channel Improvement Project

Boring Logs



PORT HOUSTONSM
THE INTERNATIONAL PORT OF TEXAS

December 9, 2020

95% PRELIMINARY

THIS DOCUMENT IS RELEASED FOR
THE PURPOSE OF INTERIM REVIEW
AND IS NOT INTENDED TO BE USED
FOR CONSTRUCTION, BIDDING, OR
PERMITTING PURPOSES.

ENGINEER: ASHLEY P. JUDITH
LICENSE NO: TX# 112988
DATE: DECEMBER 09, 2020

ENGINEER: CHESTER HEDDERMAN
LICENSE NO: TX# 100209
DATE: DECEMBER 09, 2020

TurnerCollie&Braden, Inc.

JOINT VENTURE - PORT DEVELOPMENT AND ENVIRONMENTAL SERVICES

Gahagan & Bryant Associates, Inc.

LOG OF BORING ECP-128A

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13765557.3; E: 3273213.76
 DEPTH OF WATER: 12.8 FT
 OFFSET: N/A
 SURFACE ELEVATION: -12.42 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 48 FT

DATE: 12/7/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon				STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF									
				DRY AUGER:	N/A	TO	N/A								FT	○ HAND PENETROMETER	● UNCONFINED COMPRESSION	■ UNCONSOLIDATED-UNDRAINED TRIAxIAL COMPRESSION	△ TORVANE	0.2	0.4	0.6	0.8	1.0
				WET ROTARY:	0	TO	48								FT									
DESCRIPTION OF MATERIAL																								
-15			X	Very soft, gray, SANDY FAT CLAY (CH)	WOH			26																
	5			-w/ shells at 0'-8'	WOH			50																
-20					WOH																			
	10			-w/ shells at 8'-12'	WOH			53																
-25																								
	15							60		44	84	26	58											
-30																								
	20																							
-35																								
	25																							
-40			X	Very soft, gray and dark brown, ORGANIC CLAY (OH)	WOH	97		67	108	33	75													
	30			-w/ shells at 22'-24'		95		87	140	48	92													
-45					WOH																			
	35																							
-50																								
	40																							
-55																								
	45																							
-60																								

Remarks: Mudline was encountered at 12.80' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

LOG OF BORING ECP-129

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13765002.28; E: 3271938.7
 DEPTH OF WATER: 14.4 FT
 OFFSET: N/A
 SURFACE ELEVATION: -13.28 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 48 FT

DATE: 12/7/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon DRY AUGER: <u>N/A</u> TO <u>N/A</u> FT WET ROTARY: <u>0</u> TO <u>48</u> FT	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF ○ HAND PENETROMETER ● UNCONFINED COMPRESSION ■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION △ TORVANE
	0			DESCRIPTION OF MATERIAL								
-15				Very soft to soft, gray, FAT CLAY WITH SAND (CH) -w/ shells at 0'-2'	WOH			54				△
	5				WOH	71.3	69	50	67	20	47	●
-20					WOH							△
	10				WOH			80				△
-25					WOH				94	27	67	△
	15				WOH			66				
-30				Very soft to soft, gray, FAT CLAY (CH)	WOH	95.1	55	76	93	29	64	■
	20				WOH							△
-35				Very soft, gray, FAT CLAY WITH SAND (CH)	WOH			66				△
	25				WOH	81.4	61	61	95	34	61	■
-40					WOH							△
	30				WOH			87				△
-45				Very soft to soft, gray, FAT CLAY (CH) -w/ sand seams at 32'-36'	WOH	94		60	84	31	53	△
	35				WOH							△
-50					WOH			68				△
	40				WOH	91.2	59	71	89	32	57	■
-55				Very soft, gray, ORGANIC CLAY (OH)	WOH							△
	45				WOH							△
-60					WOH			117				

Remarks: Mudline was encountered at 14.40' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

LOG OF BORING ECP-130

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13769049.48; E: 3270711
 DEPTH OF WATER: 13.6 FT
 OFFSET: N/A
 SURFACE ELEVATION: -12.09 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 48 FT

DATE: 12/8/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon DRY AUGER: <u>N/A</u> TO <u>N/A</u> FT WET ROTARY: <u>0</u> TO <u>48</u> FT	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF ○ HAND PENETROMETER ● UNCONFINED COMPRESSION ■ UNCONSOLIDATED-UNDRAINED TRIAxIAL COMPRESSION △ TORVANE
	0			DESCRIPTION OF MATERIAL								
-15				Very soft to soft, gray, FAT CLAY WITH SAND (CH) -w/ shells at 2'-4'	WOP	75		49	50	17	33	△
	5						64	60				●
-20				-w/ shells at 6'-14'	WOP	78		76	74	21	53	△
	10											△
-25					WOP			68				
	15			Very soft, gray, ORGANIC CLAY (OH)	WOP	91		58				■
				Medium dense, gray, SILTY SAND (SM)	19	37		146				
-30				Very soft, gray, CLAYEY SAND (SC)	WOH	49.5		15				
	20			Loose, gray, SILTY SAND (SM)				66	31	15	16	
-35					4	19		18				
	25				7							
-40					8							
	30				9	12		19				
-45					6							
	35				9			19				
-50				Loose, Light brown, SAND WITH SILT (SP-SM)	10							
	40				5	5		19				
-55					6			18				
	45				6			17				
-60				Stiff, brown, FAT CLAY (CH)	5							
					10	85		29	72	26	46	

Remarks: Mudline was encountered at 13.60' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

LOG OF BORING ECP-131

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13769470.34; E: 3268704.54
 DEPTH OF WATER: 11.9 FT
 OFFSET: N/A
 SURFACE ELEVATION: -10.76 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 50 FT

DATE: 12/8/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon DRY AUGER: <u>N/A</u> TO <u>N/A</u> FT WET ROTARY: <u>0</u> TO <u>50</u> FT	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF ○ HAND PENETROMETER ● UNCONFINED COMPRESSION ■ UNCONSOLIDATED-UNDRAINED TRIAxIAL COMPRESSION △ TORVANE
	0			DESCRIPTION OF MATERIAL								0.2 0.4 0.6 0.8 1.0
				NO RECOVERY	WOH							
				Very loose, gray, SHELLS WITH SAND	WOH			40				
-15	5				WOH	26		27				
				Very soft, gray, FAT CLAY (CH)	WOH							
-20	10				WOH	92		64	73	23	50	
					WOH			76				△
-25	15				WOH			68				△
				Very soft to soft, gray and dark brown, ORGANIC CLAY (OH)	WOH	97		78	91	31	60	
-30	20						31					△ ■
				Loose to dense, gray, CLAYEY SAND (SC)	9	34		86	26	12	14	
-35	25				30							
					35			33				
-40	30				9							
				Medium dense, gray, SAND WITH SILT (SP-SM)	12							
-45	35				11	5		20				
					12							
-50	40				13			18				
					16							
-55	45			Stiff to very stiff, reddish brown, FAT CLAY (CH)	16			17				
					17			18				○
-60	50				13			41				○
					17	88		43	75	29	46	

Remarks: Mudline was encountered at 11.90' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

LOG OF BORING ECP-132A

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13773793.81; E: 3267272.43
 DEPTH OF WATER: 11.9 FT
 OFFSET: N/A
 SURFACE ELEVATION: -10.04 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 50 FT

DATE: 12/8/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon DRY AUGER: <u>N/A</u> TO <u>N/A</u> FT WET ROTARY: <u>0</u> TO <u>50</u> FT	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF ○ HAND PENETROMETER ● UNCONFINED COMPRESSION ■ UNCONSOLIDATED-UNDRAINED TRIAxIAL COMPRESSION △ TORVANE
	0			DESCRIPTION OF MATERIAL								0.2 0.4 0.6 0.8 1.0
				NO RECOVERY	WOP							
					WOP							
-15	5			Very loose, gray, CLAYEY SAND (SC) -w/ shells at 4'-6'	WOP	32		30				
					WOP							
					WOP							
-20	10			Very soft, gray, LEAN CLAY (CL) -w/ shells at 10'-12'	WOP	93		44	34	31	17	14
					WOP							
-25	15			-w/ sand seams at 16'-18'	WOP	95	74	46	53	28	25	■
					WOH							
-30	20				WOH							△
				Very soft, gray, ORGANIC CLAY (OH) -w/ roots at 22'-24'	WOH	95		95	129	44	85	△
-35	25				WOH							
							43	90				■
-40	30			Loose to medium dense, gray, SILTY SAND (SM)	WOH							
					5	16		24				
-45	35				16							
					13							
					9			21				
-50	40			Firm to very stiff, brown, FAT CLAY (CH) -w/ sand seams at 38'-40'	7	100		31				○
-55	45			-w/ sand pocket at 46'-48'	5		86	35	59	23	36	■
												○
-60	50				6	100		42	93	32	61	

Remarks: Mudline was encountered at 11.90' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

LOG OF BORING ECP-133

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13775543.38; E: 3264312.04
 DEPTH OF WATER: 15.3 FT
 OFFSET: N/A
 SURFACE ELEVATION: -14.45 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 46 FT

DATE: 12/9/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon DRY AUGER: <u>N/A</u> TO <u>N/A</u> FT WET ROTARY: <u>0</u> TO <u>46</u> FT	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF ○ HAND PENETROMETER ● UNCONFINED COMPRESSION ■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION △ TORVANE
	0			DESCRIPTION OF MATERIAL								
-15				Very soft, gray, FAT CLAY (CH)	WOH	87.9		63				
	5							90	69	31	38	△
-20					WOH			74				△
	10											△
-25				Very soft, gray, ORGANIC CLAY (OH)	WOH							
	15						40	119				■
-30				Medium dense to dense, gray, SILTY SAND (SM)	36			69				
	20				17	14		19				
					18							
-35					15			29				
	25			Loose, brown, SILTY SAND (SM)	17							
-40					5	22		22				
	30				5			22				
-45					5							
	35			Loose, brown, SAND WITH SILT (SP-SM)	4			21				
-50					9	5		20				
	40			Very soft to stiff, brown, LEAN CLAY WITH SAND (CL)	7							
-55					9	75.5	97	28	43	22	21	△ ■
	45				9			28	44	14	30	○
-60					9			25				

Remarks: Mudline was encountered at 15.3' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

LOG OF BORING ECP-134

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13777152.87; E: 3263133.6
 DEPTH OF WATER: 16.1 FT
 OFFSET: N/A
 SURFACE ELEVATION: -14.25 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 46 FT

DATE: 12/9/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon DRY AUGER: <u>N/A</u> TO <u>N/A</u> FT WET ROTARY: <u>0</u> TO <u>46</u> FT	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF ○ HAND PENETROMETER ● UNCONFINED COMPRESSION ■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION △ TORVANE
	0			DESCRIPTION OF MATERIAL								
-15				Very soft, gray, SANDY FAT CLAY (CH)	WOP			55				
				-w/ shells at 2'- 10'	WOP	57		53				
-20	5				WOP			50				
					WOP			60				
-25	10				WOP	63		23	30	19	11	
				Soft to very stiff, gray and brown, SANDY LEAN CLAY (CL)	4	56.0	105	18	28	16	12	
-30	15				22	69						
				Loose to medium dense, gray and brown, SILTY SAND (SM)	5							
-35	20				28							
					17	13		19				
-40	25				10							
				Loose to medium dense, gray and brown, SAND WITH SILT (SP-SM)	10	5		18				
-45	30				12							
					8			19				
-50	35				28							
				Firm to stiff, reddish brown and gray, FAT CLAY (CH)	14			16				
-55	40				10	89		35	63	20	43	
					7		96	33				
-60	45				8			34				

Remarks: Mudline was encountered at 16.10' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

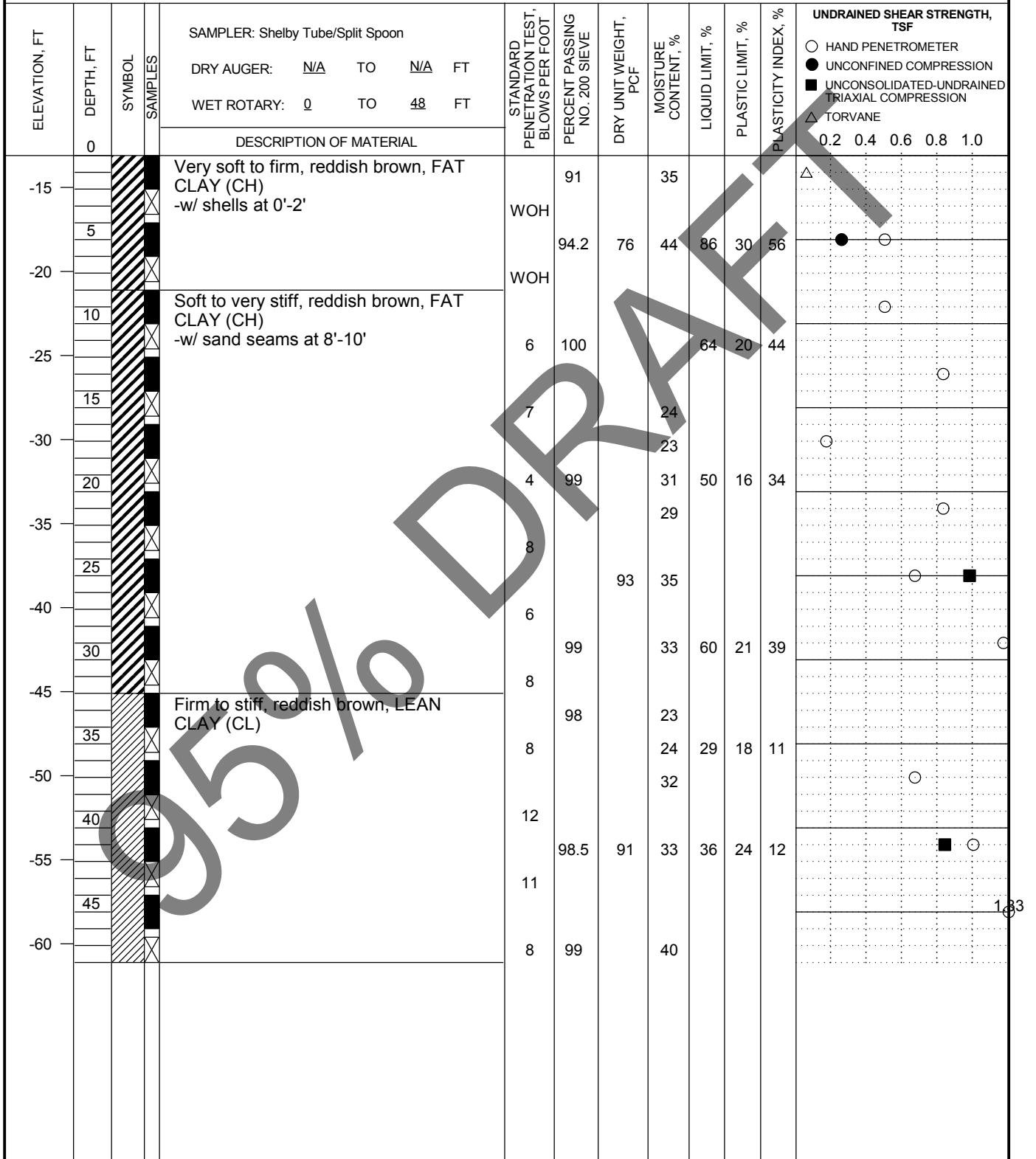
LOG OF BORING ECP-135

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13779581.42; E: 3263077.4
 DEPTH OF WATER: 13.8 FT
 OFFSET: N/A
 SURFACE ELEVATION: -13.1 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 48 FT

DATE: 12/11/2019



COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

Remarks: Mudline was encountered at 13.80' below the water level during drilling operations.

LOG OF BORING ECP-136

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13782023.59; E: 3259617.75
 DEPTH OF WATER: 15.7 FT
 OFFSET: N/A
 SURFACE ELEVATION: -14.16 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 46 FT

DATE: 12/11/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF
	0			SAMPLER: Shelby Tube/Split Spoon DRY AUGER: N/A TO N/A FT WET ROTARY: 0 TO 46 FT								
-15				Very soft, gray, SANDY LEAN CLAY (CL) -w/ shells at 2'-4'	WOP	62		48	42	15	27	△
-20	5			Soft to stiff, gray, FAT CLAY (CH)	5	96.4	91	35	74	33	41	○
-25	10				5			21				○
-30	15			Soft to firm, gray, LEAN CLAY WITH SAND (CL)	4		104	22	31	23	8	△
-35	20			Reddish brown, SANDY FAT CLAY (CH) Loose, reddish brown, SILT (ML)	8	67		41	56	19	37	
-40	25			Firm to very stiff, reddish brown, FAT CLAY (CH)	5		111	24				■
-45	30			-w/ shells at 28'-34'	9	100		27	62	26	36	○
-50	35				13			32				
-55	40				8	99		34	74	29	45	○
-60	45				11			34	78	28	50	○

Remarks: Mudline was encountered at 15.70' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

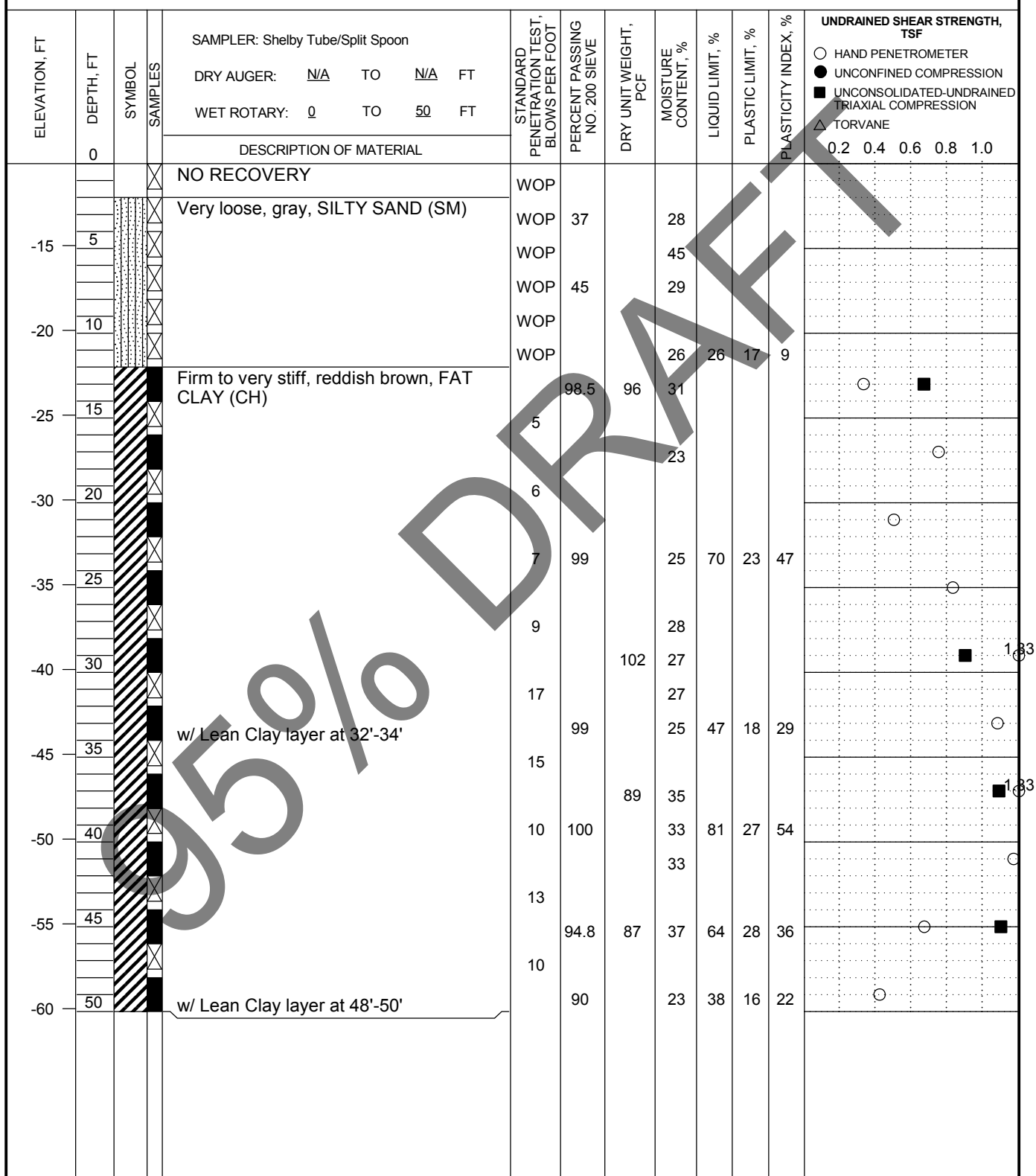
LOG OF BORING ECP-137A

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13785071.68; E: 3259087.06
 DEPTH OF WATER: 12.5 FT
 OFFSET: N/A
 SURFACE ELEVATION: -10.17 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 50 FT

DATE: 12/12/2019



COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

Remarks: Mudline was encountered at 12.50' below the water level during drilling operations.

LOG OF BORING ECP-138

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13786070.21; E: 3256688.29
 DEPTH OF WATER: 13.5 FT
 OFFSET: N/A
 SURFACE ELEVATION: -12.08 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 48 FT

DATE: 12/12/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon DRY AUGER: <u>N/A</u> TO <u>N/A</u> FT WET ROTARY: <u>0</u> TO <u>48</u> FT	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF ○ HAND PENETROMETER ● UNCONFINED COMPRESSION ■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION △ TORVANE
	0			DESCRIPTION OF MATERIAL								0.2 0.4 0.6 0.8 1.0
				NO RECOVERY	WOP							
-15				Very soft, gray, LEAN CLAY (CL) -w/ shells at 2'-4'	WOP	60		37				
	5				WOP							
-20				Very soft, gray, LEAN CLAY WITH SAND (CL) -w/ shells at 12'-14'	WOP	83		50	45	15	30	
	10				WOP							△
-25					WOP			60				△
	15				WOH	55		48				
-30				Very soft, gray, SANDY LEAN CLAY (CL)	WOH		66	57				■
	20				WOH			75				
-35				Very soft, gray, FAT CLAY (CH)		88		71	63	16	47	△
	25				2							△
-40				Very loose, gray, CLAYEY SAND (SC)	WOH	42		40	33	13	20	
	30				WOH			34				
-45				Loose, gray, SAND WITH SILT (SP-SM)	5			24				
	35				4	5						
-50				Firm to stiff, gray, FAT CLAY (CH)	5	97		38	75	25	50	
	40				7							
-55							87	35				■ ○
	45				8			34				○
-60				Loose, gray, CLAYEY SAND (SC)	10	46		23	29	14	15	

Remarks: Mudline was encountered at 13.50' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

LOG OF BORING ECP-139A

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13787930.41; E: 3255342.49
 DEPTH OF WATER: 14.8 FT
 OFFSET: N/A
 SURFACE ELEVATION: -12.12 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 48 FT

DATE: 12/12/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon DRY AUGER: N/A TO N/A FT WET ROTARY: 0 TO 48 FT	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF ○ HAND PENETROMETER ● UNCONFINED COMPRESSION ■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION △ TORVANE
	0			DESCRIPTION OF MATERIAL								
				Very loose, gray, CLAYEY SAND (SC) -w/ shells at 0'-8'		49.5		35	30	16	14	△
-15	5				WOP			29				△
-20	10			Very soft, gray, FAT CLAY (CH)	WOP	91		73	72	26	46	
-25	15			-w/ shells at 14'-16'	WOP			59				
-30	20				WOP	94		54	72	19	53	△
-35	25			-w/ sand at 24'-28'	WOP			61				△
-40	30				WOP	89		63	68	20	48	△
-45	35				WOH	75		59	60	20	40	△
-50	40			Loose to dense, gray, SILTY SAND (SM)	5	49		27				■
-55	45				9							△
-60					9							
					19			21				
					8	26		23				
					35			20				

Remarks: Mudline was encountered at 14.80' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

LOG OF BORING ECP-140A

PROJECT: Houston Ship Channel Expansion - Segment 1B
 LOCATION: N: 13789681.12; E: 3253902.9
 DEPTH OF WATER: 13.0 FT
 OFFSET: N/A
 SURFACE ELEVATION: -11.04 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 50 FT

DATE: 12/13/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF
	0			DRY AUGER: N/A TO N/A FT WET ROTARY: 0 TO 50 FT								○ HAND PENETROMETER ● UNCONFINED COMPRESSION ■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION △ TORVANE
				DESCRIPTION OF MATERIAL								0.2 0.4 0.6 0.8 1.0
				Very loose, gray, SILTY SAND (SM)	WOP	35		33				
-15	5			-w/ shells at 4'-6'	WOP							
					WOP	48		36				
					WOP							
-20	10							32				△
				Very soft to soft, gray, LEAN CLAY (CL)	WOP							
-25	15					87		33	30	15	15	△
				-w/ shells at 16'-18'	WOP							
								57				△
-30	20				3							
				Very soft to firm, gray, FAT CLAY (CH)		96		63	74	21	53	△
-35	25			-w/ wood pieces at 24'-26'	WOH							
					WOH		50	102				○ ■
-40	30			-w/ wood pieces at 28'-30'				99				
					WOP	98		86	100	29	71	○ ■
-45	35						52	85				○ ■
					WOH							△
-50	40			-w/ wood pieces at 38'-42'	WOH							
												○ ■
-55	45			Very soft to very stiff, gray, LEAN CLAY (CL)	WOH	95		26	47	15	32	
								22				○
-60	50				8							
							109	24				○ ■

Remarks: Mudline was encountered at 13' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1B.GPJ 4/27/20

LOG OF BORING ECP-141

PROJECT: Houston Ship Channel Expansion - Segment 1C
 LOCATION: N: 13791317.42; E: 3254986.62
 DEPTH OF WATER: 9.90 FT
 OFFSET: N/A
 SURFACE ELEVATION: -9.03 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 52 FT

DATE: 12/13/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF
				DRY AUGER: <u>N/A</u> TO <u>N/A</u> FT								
				DESCRIPTION OF MATERIAL								
-10				Very soft, gray, FAT CLAY WITH SAND (CH) -w/ sand and silt seams at 0'-10'	WOP	85		48	68	22	46	
	5				WOP			67				
-15					WOP			88				
	10				WOP							
-20					WOP			76.7				
	15			Very soft, gray, LEAN CLAY WITH SAND (CL)	WOP	90.7		42	34	16	18	
-25					WOP							
	20				WOH			34				
-30					WOH			80				
	25				WOH			98.4				
-35				Very soft to soft, gray, LEAN CLAY (CL) -w/ silt and sand seams at 14'-22' -w/ shells at 18'-22'	WOH	90.1		49	59	21	38	△
	30				WOH							
-40					WOH			60				
	35				WOH			29				
-45					WOH							
	40			Very soft to soft, gray, FAT CLAY WITH SAND (CH) -w/ shells at 42'-44'	WOH	79.2		56	94	24	70	△
-50					WOH							
	45				WOH			62				
-55					WOH			61				
	50				WOH			65				
-60				Soft, gray, SANDY FAT CLAY (CH) -w/ shells at 48'-50'	4	57.9		29	50	20	30	○
								27				

COH HG1910092.1.1 - HSC SEGMENT 1C.GPJ 4/27/20

Remarks: Mudline was encountered at 9.90' below the water level during drilling operations.

LOG OF BORING ECP-142

PROJECT: Houston Ship Channel Expansion - Segment 1C
 LOCATION: N: 13794204.53; E: 3253569.85
 DEPTH OF WATER: 12.80 FT
 OFFSET: N/A
 SURFACE ELEVATION: -10.81 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 50 FT

DATE: 12/13/2019

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLER: Shelby Tube/Split Spoon	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF
	0		DRY AUGER: N/A TO N/A FT WET ROTARY: 0 TO 50 FT								○ HAND PENETROMETER ● UNCONFINED COMPRESSION ■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION △ TORVANE
			DESCRIPTION OF MATERIAL								0.2 0.4 0.6 0.8 1.0
			Very soft, gray, CLAYEY SAND (SC) -w/ shells at 0'-4'	WOP	49.2		32	35	16	19	
-15	5		Firm to very stiff, reddish brown, LEAN CLAY (CL) -w/ sand pocket at 4'-8'	WOP	98.3	91	31	46	22	24	
-20	10			5	99.1		31	37	17	20	
-25	15			5	96.6		30	49	19	30	
				6			39				
-30	20			8		89	34				
-35	25		Firm to stiff, reddish brown and gray, FAT CLAY (CH) with occasional sandy clay layers -w/ silt seams at 24'-30'	15	96.7		36	59	22	37	
				5							
-40	30			5	67.2	103	25				
					100		37	72	23	49	
-45	35			9							
-50	40			9	84.9	85	38				
							33	73	23	50	
-55	45		Stiff to very stiff, gray, SANDY LEAN CLAY (CL) -w/ calcareous nodules at 42'-46'	8	64.1		20	30	15	15	
				12							
-60	50		Medium dense, gray, SILTY CLAYEY SAND (SC-SM)	15	41.9		24	19	13	6	
				19			23				

Remarks: Mudline was encountered at 12.80' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1C.GPJ 4/27/20

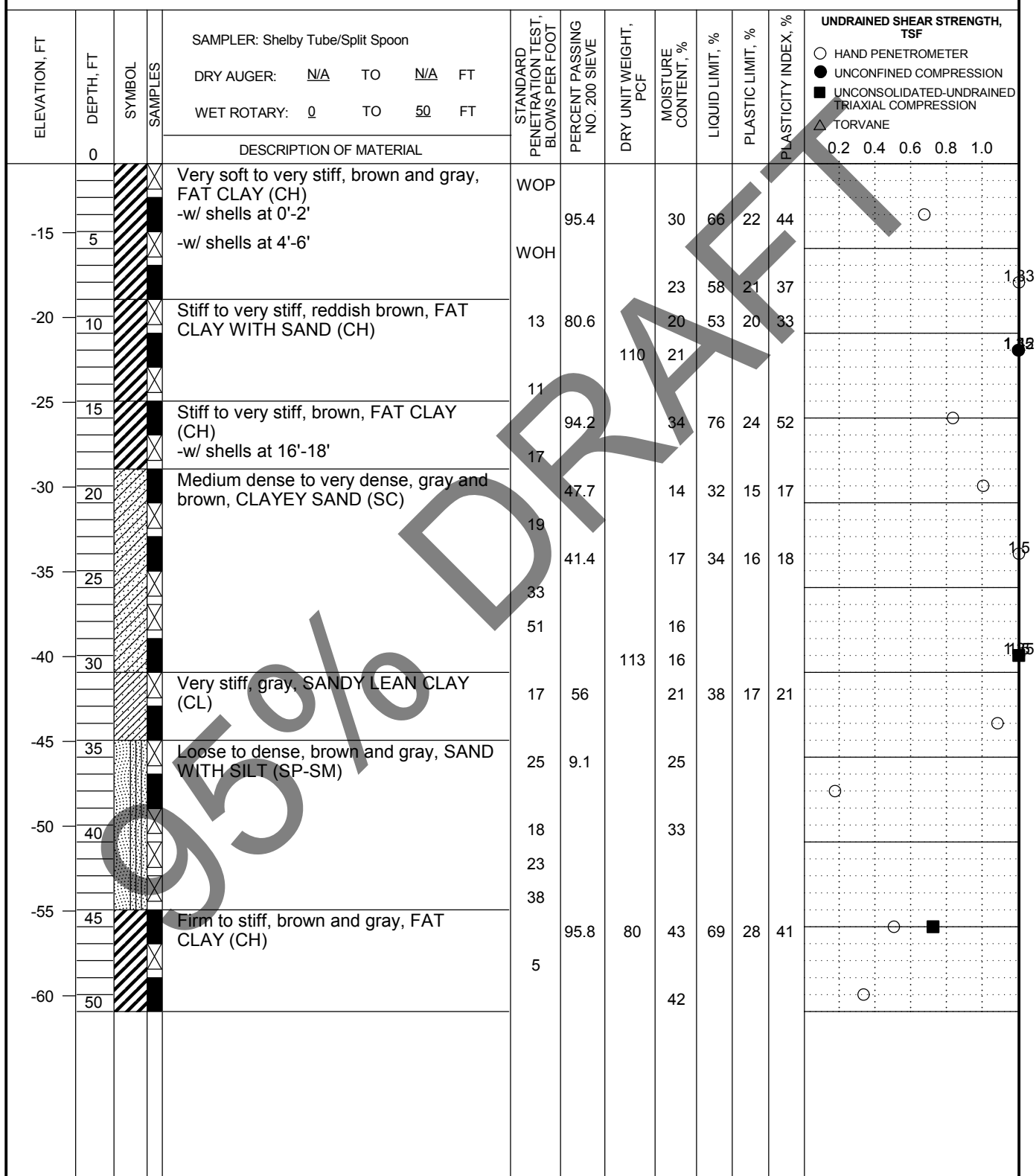
LOG OF BORING ECP-143

PROJECT: Houston Ship Channel Expansion - Segment 1C
 LOCATION: N: 13796795.5; E: 3251145.93
 DEPTH OF WATER: 11.30 FT
 OFFSET: N/A
 SURFACE ELEVATION: -10.93 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 50 FT

DATE: 12/19/2019



COH HG1910092.1.1 - HSC SEGMENT 1C.GPJ 4/27/20

Remarks: Mudline was encountered at 11.30' below the water level during drilling operations.

LOG OF BORING ECP-144

PROJECT: Houston Ship Channel Expansion - Segment 1C
 LOCATION: N: 13800187.19; E: 3251373.18
 DEPTH OF WATER: 10.40 FT
 OFFSET: N/A
 SURFACE ELEVATION: -10.29 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 50 FT

DATE: 1/4/2020

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon DRY AUGER: N/A TO N/A FT WET ROTARY: 0 TO 50 FT	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF ○ HAND PENETROMETER ● UNCONFINED COMPRESSION ■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION △ TORVANE 0.2 0.4 0.6 0.8 1.0
	0			DESCRIPTION OF MATERIAL								
				Very soft, gray, LEAN CLAY (CL) -w/ shells at 0'-4'		89.6		54	45	18	27	△
-15	5			-w/ shells at 6'-8'	WOP			28	27	14	13	△
-20	10			Stiff to very stiff, reddish brown and gray, FAT CLAY (CH) -w/ ferrous stains at 10'-12'	WOP		94	30				● ○
				-w/ shells at 12'-16'	8	96.5		25	61	22	39	
-25	15			-w/ calcareous nodules at 14'-18'								○
				-w/ ferrous stains at 14'-30'	11			23				
-30	20				10			29				
						95.9	99	25	61	27	34	● ○
-35	25			-w/ calcareous nodules at 24'-26'	8							
					11			25				
-40	30				22							○
-45	35			Medium dense to very dense, reddish brown, brown and gray, CLAYEY SAND (SC) -w/ shells at 32'-34'		45.2		17	39	18	21	
				-w/ ferrous stains at 32'-34'	24			29				
-50	40			-w/ ferrous stains at 36'-38'	26	45.3		25	27	14	13	
					53							○
-55	45			Stiff, reddish brown and gray, FAT CLAY (CH) -w/ silt and sand seams at 44'-50'	9	99.5		27	55	20	35	○
-60	50				13							

Remarks: Mudline was encountered at 10.40' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1C.GPJ 4/27/20

LOG OF BORING ECP-145

PROJECT: Houston Ship Channel Expansion - Segment 1C
 LOCATION: N: 13802709.33; E: 3248958.71
 DEPTH OF WATER: 10.80 FT
 OFFSET: N/A
 SURFACE ELEVATION: -10.17 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 50 FT

DATE: 1/1/2020

ELEVATION, FT	DEPTH, FT	SYMBOL	SAMPLES	SAMPLER: Shelby Tube/Split Spoon	STANDARD PENETRATION TEST, BLOWS PER FOOT	PERCENT PASSING NO. 200 SIEVE	DRY UNIT WEIGHT, PCF	MOISTURE CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	UNDRAINED SHEAR STRENGTH, TSF
	0			DRY AUGER: N/A TO N/A FT WET ROTARY: 0 TO 50 FT								○ HAND PENETROMETER ● UNCONFINED COMPRESSION ■ UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION △ TORVANE
				DESCRIPTION OF MATERIAL								0.2 0.4 0.6 0.8 1.0
				Very soft, gray, SANDY LEAN CLAY (CL) -w/ shells at 0'-10'	WOP			30				△
-15	5				WOP	65.3		44	40	18	22	△
				Stiff to very stiff, reddish brown and gray, FAT CLAY (CH) -w/ shells at 10'-14'	10	96.3	98	26	61	37	24	○ ●
-20	10				9	97.1		29	68	22	46	○
-25	15				12			23				○
-30	20			Very stiff, reddish brown and gray, FAT CLAY WITH SAND (CH) with occasional sand seams	10	80.9	107	22	58	25	33	● 1.38
-35	25				10			16				○ 1.5
-40	30			Stiff to very stiff, gray and reddish brown, LEAN CLAY (CL) -w/ sand pockets at 32'-36' -w/ sand seams at 36'-40'	13	89.7	106	22	38	20	18	○ ■
-45	35				11			24	37	18	19	○
-50	40				12			27				○
-55	45			Stiff to very stiff, gray and reddish, FAT CLAY (CH) -w/ ferrous stains at 40'-48' -w/ calcareous nodules at 44'-48'	13		96	28	71	27	44	■ 1.83
-55	45				11			24				○ 1.62
-60	50							25				○ 1.5

Remarks: Mudline was encountered at 10.80' below the water level during drilling operations.

COH HG1910092.1.1 - HSC SEGMENT 1C.GPJ 4/27/20

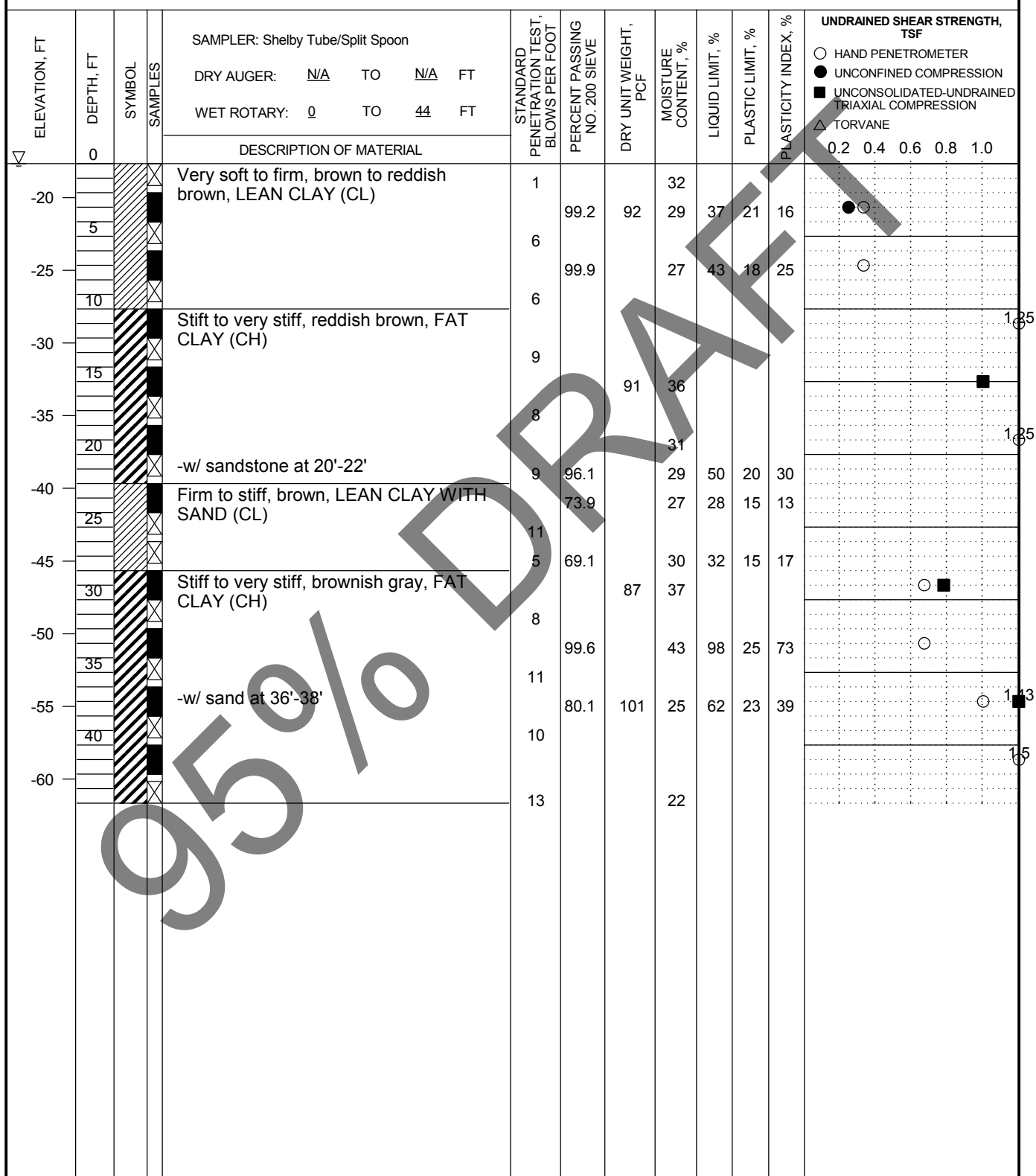
LOG OF BORING ECP- 201

PROJECT: Houston Ship Channel Expansion - Segment 2
 LOCATION: N: 13793352.46; E: 3250927.1
 DEPTH OF WATER: 18.60 FT
 OFFSET: N/A
 SURFACE ELEVATION: -17.66 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 44 FT

DATE: 12/14/2019



COH HG1910092.1.1 - HSC SEGMENT 2.GPJ 4/27/20

Remarks: Mudline was encountered at 18.60' below the water level during drilling operations.

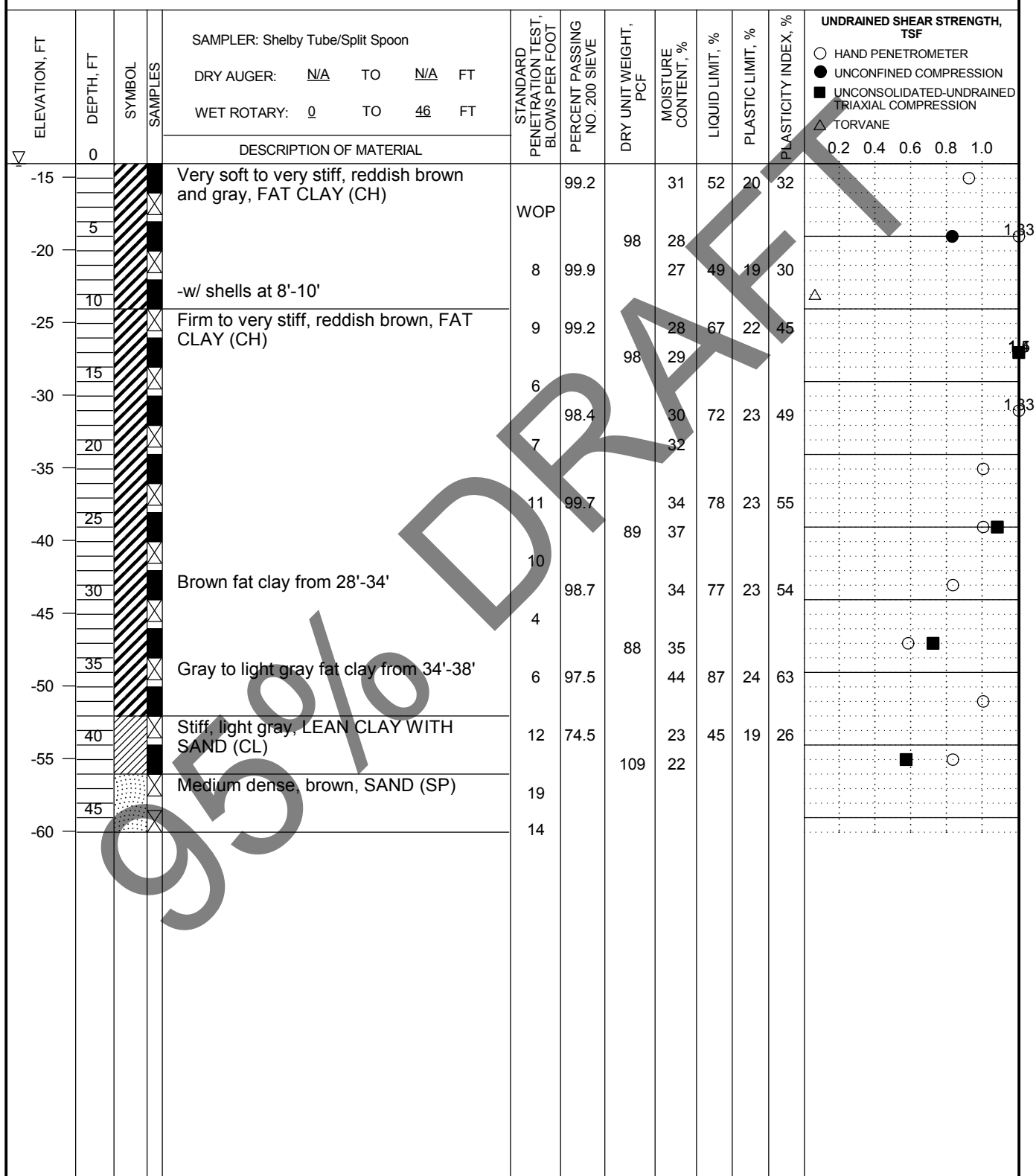
LOG OF BORING ECP- 202

PROJECT: Houston Ship Channel Expansion - Segment 2
 LOCATION: N: 13793134.47; E: 3246722.93
 DEPTH OF WATER: 14.60 FT
 OFFSET: N/A
 SURFACE ELEVATION: -14.07 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 46 FT

DATE: 12/14/2019



COH HG1910092.1.1 - HSC SEGMENT 2.GPJ 4/27/20

Remarks: Mudline was encountered at 14.60' below the water level during drilling operations.

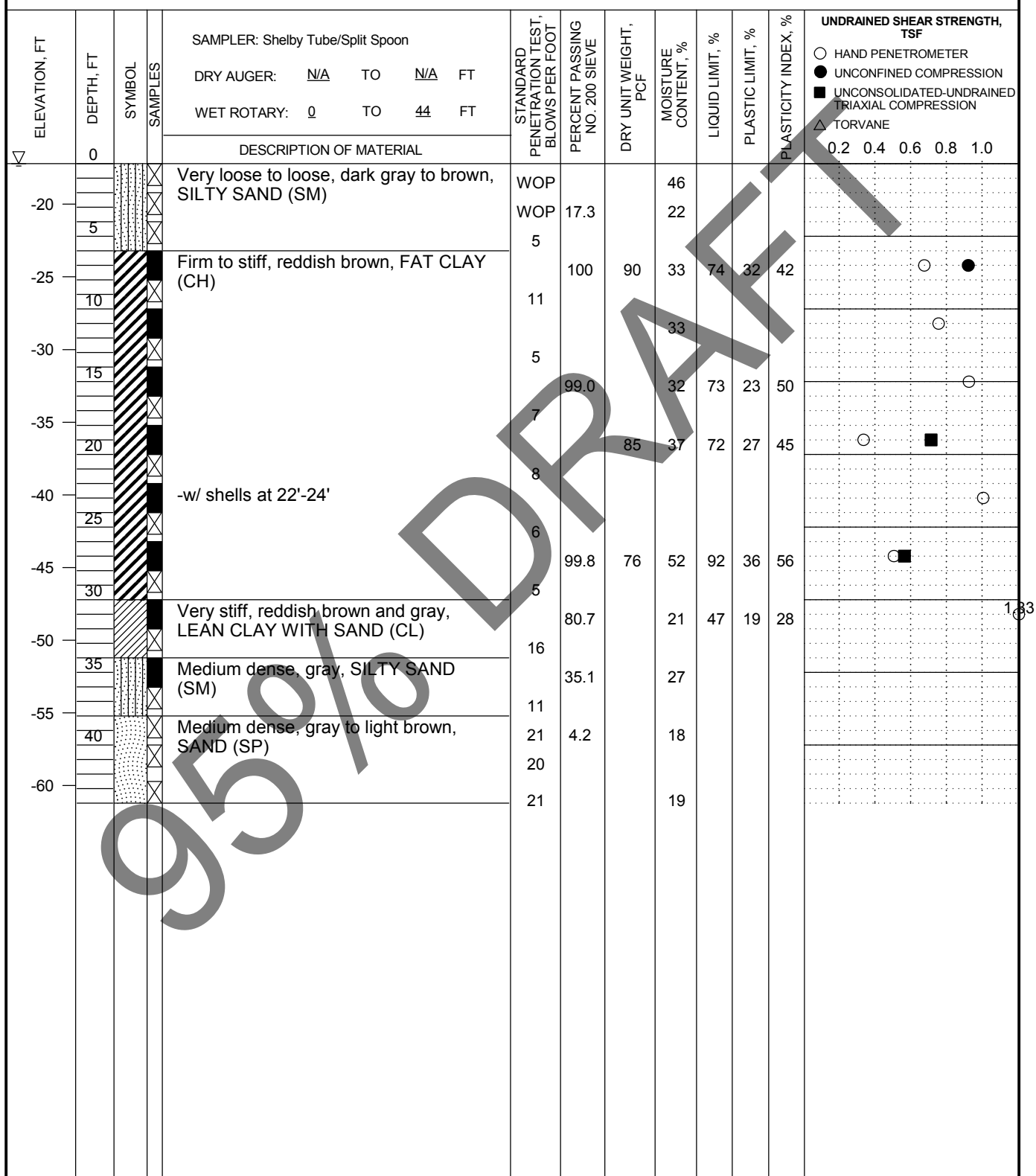
LOG OF BORING ECP- 203A

PROJECT: Houston Ship Channel Expansion - Segment 2
 LOCATION: N: 13792928.68; E: 3243112.06
 DEPTH OF WATER: 16.10 FT
 OFFSET: N/A
 SURFACE ELEVATION: -17.21 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 44 FT

DATE: 12/17/2019



COH HG1910092.1.1 - HSC SEGMENT 2.GPJ 4/27/20

Remarks: Mudline was encountered at 16.10' below the water level during drilling operations.

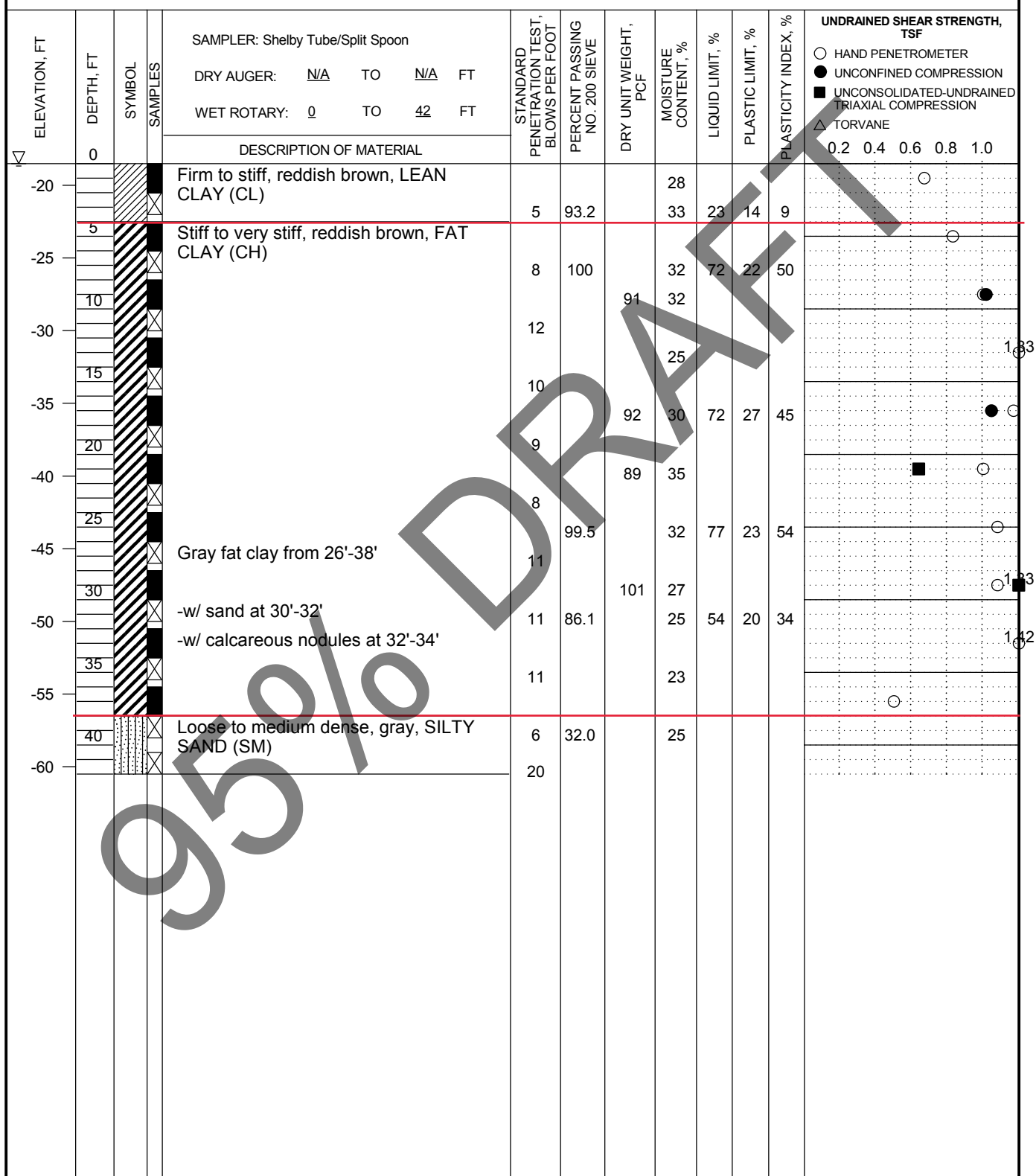
LOG OF BORING ECP- 204A

PROJECT: Houston Ship Channel Expansion - Segment 2
 LOCATION: N: 13792794.19; E: 3241300.52
 DEPTH OF WATER: 20.10 FT
 OFFSET: N/A
 SURFACE ELEVATION: -18.51 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 42 FT

DATE: 12/16/2019



COH HG1910092.1.1 - HSC SEGMENT 2.GPJ 4/27/20

Remarks: Mudline was encountered at 20.10' below the water level during drilling operations.

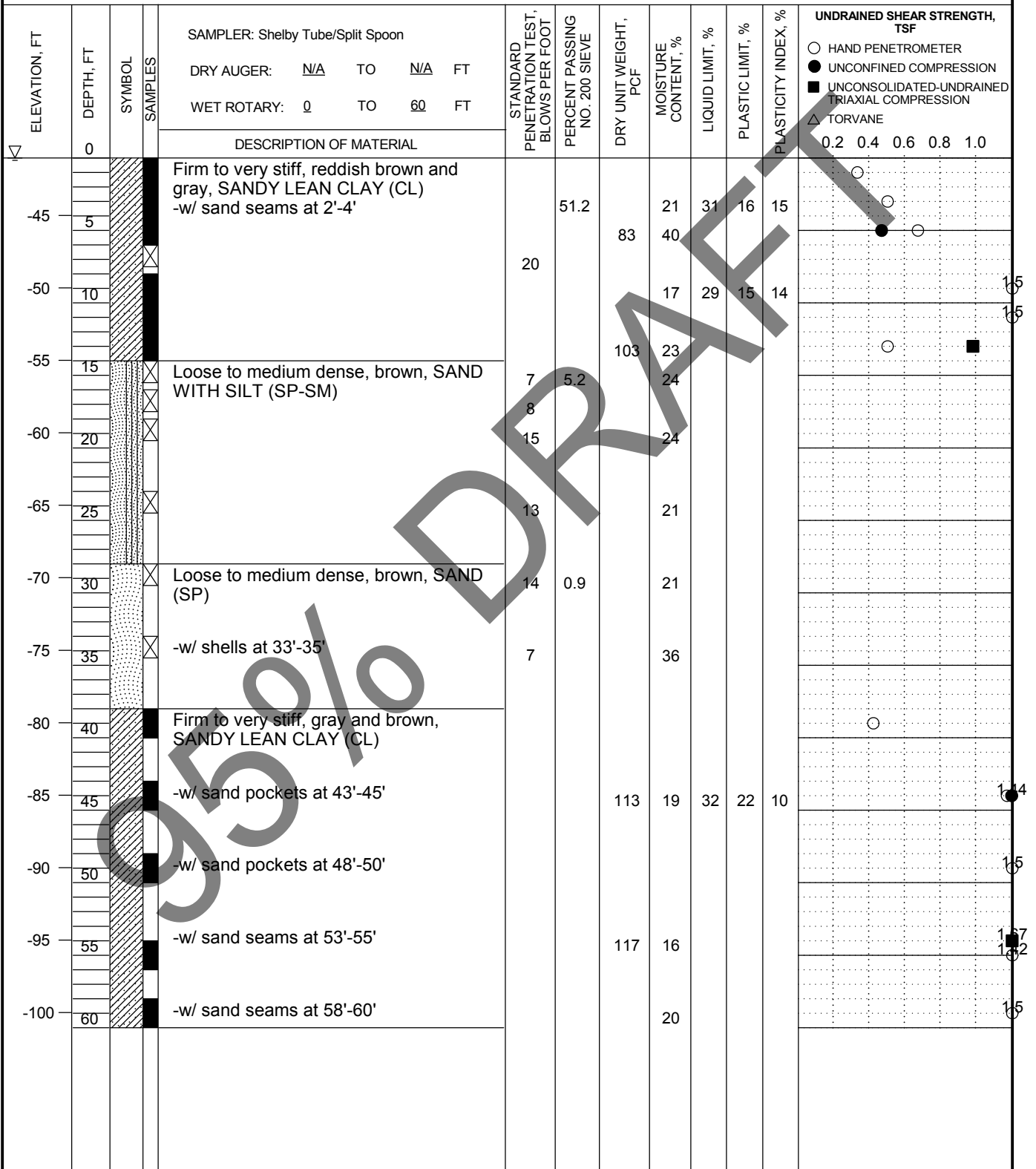
LOG OF BORING ECP- 205A

PROJECT: Houston Ship Channel Expansion - Segment 2
 LOCATION: N: 13792269.87; E: 3233162.81
 DEPTH OF WATER: 43.0 FT
 OFFSET: N/A
 SURFACE ELEVATION: -41.04 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 60 FT

DATE: 12/15/2019



COH HG1910092.1.1 - HSC SEGMENT 2.GPJ 4/27/20

Remarks: Mudline was encountered at 43.0' below the water level during drilling operations.

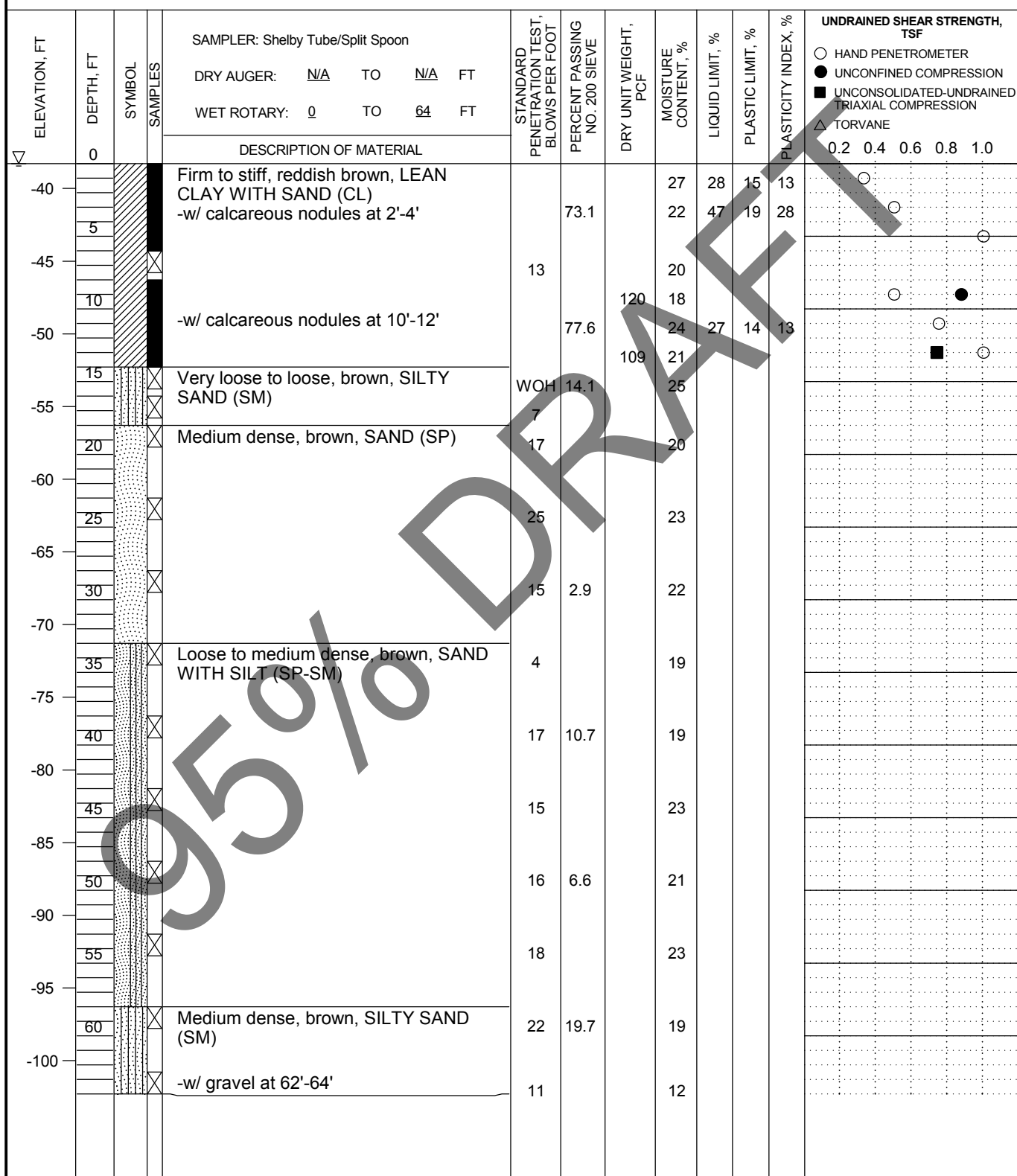
LOG OF BORING ECP- 206A

PROJECT: Houston Ship Channel Expansion - Segment 2
 LOCATION: N: 13792248.52; E: 3232700.13
 DEPTH OF WATER: 38.6 FT
 OFFSET: N/A
 SURFACE ELEVATION: -38.29 FT

PROJECT NO.: HG1910092.1.1

COMPLETION DEPTH: 64 FT

DATE: 12/16/2019



COH HG1910092.1.1 - HSC SEGMENT 2.GPJ 4/27/20

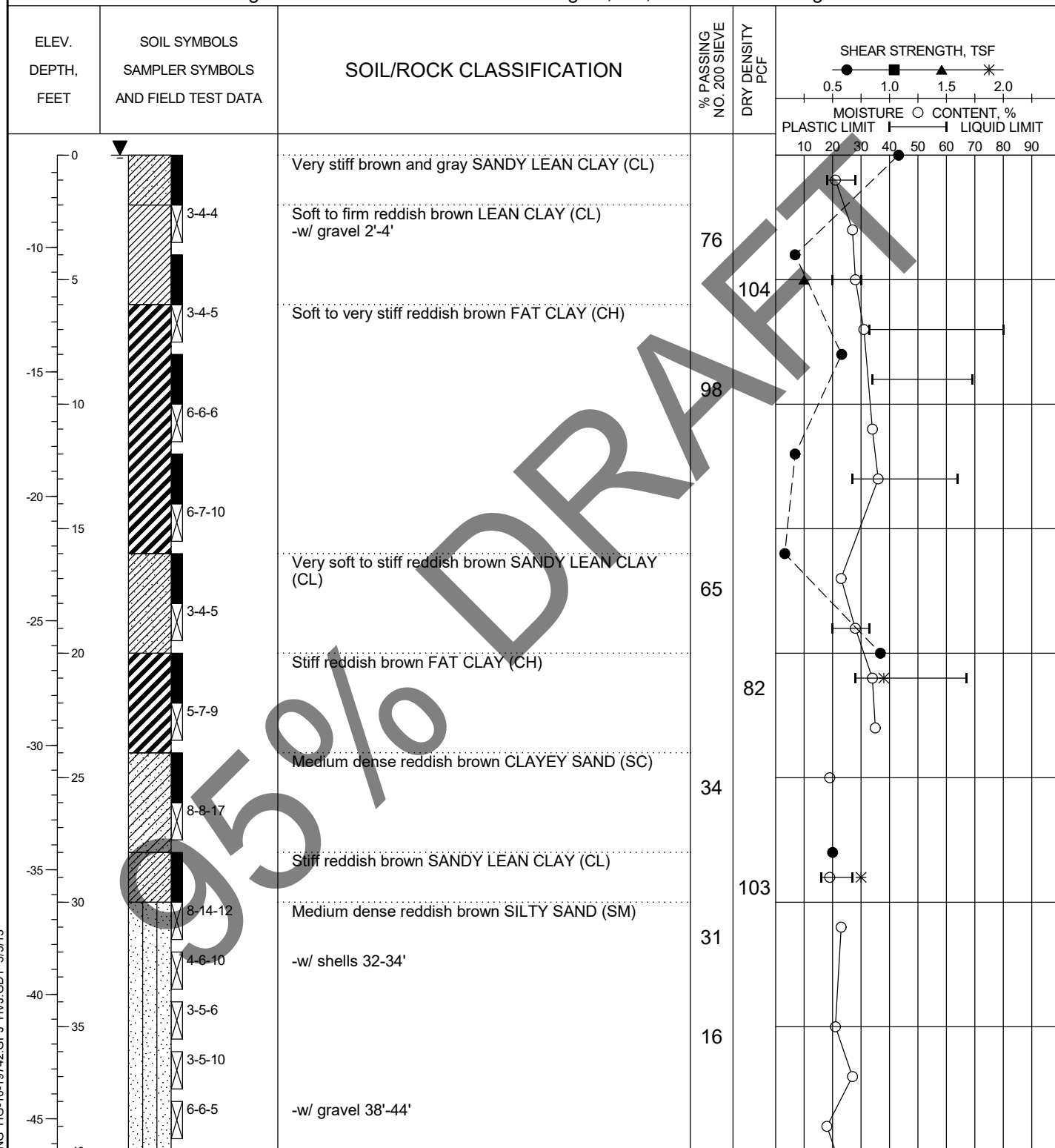
Remarks: Mudline was encountered at 38.6' below the water level during drilling operations.

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-59 (Depth of Water = 8 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 11/29/2012
 Northing: 13,792,322.4
 Easting: 3,232,971.8

Project No.: HG1019742
 Elevation (MLT): -6.3 feet
 Station: 40+19.82
 Range: -293.46



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-1a

LOG OF SOIL BORING HG-10-19742.GPJ HVJ.GDT 3/5/13

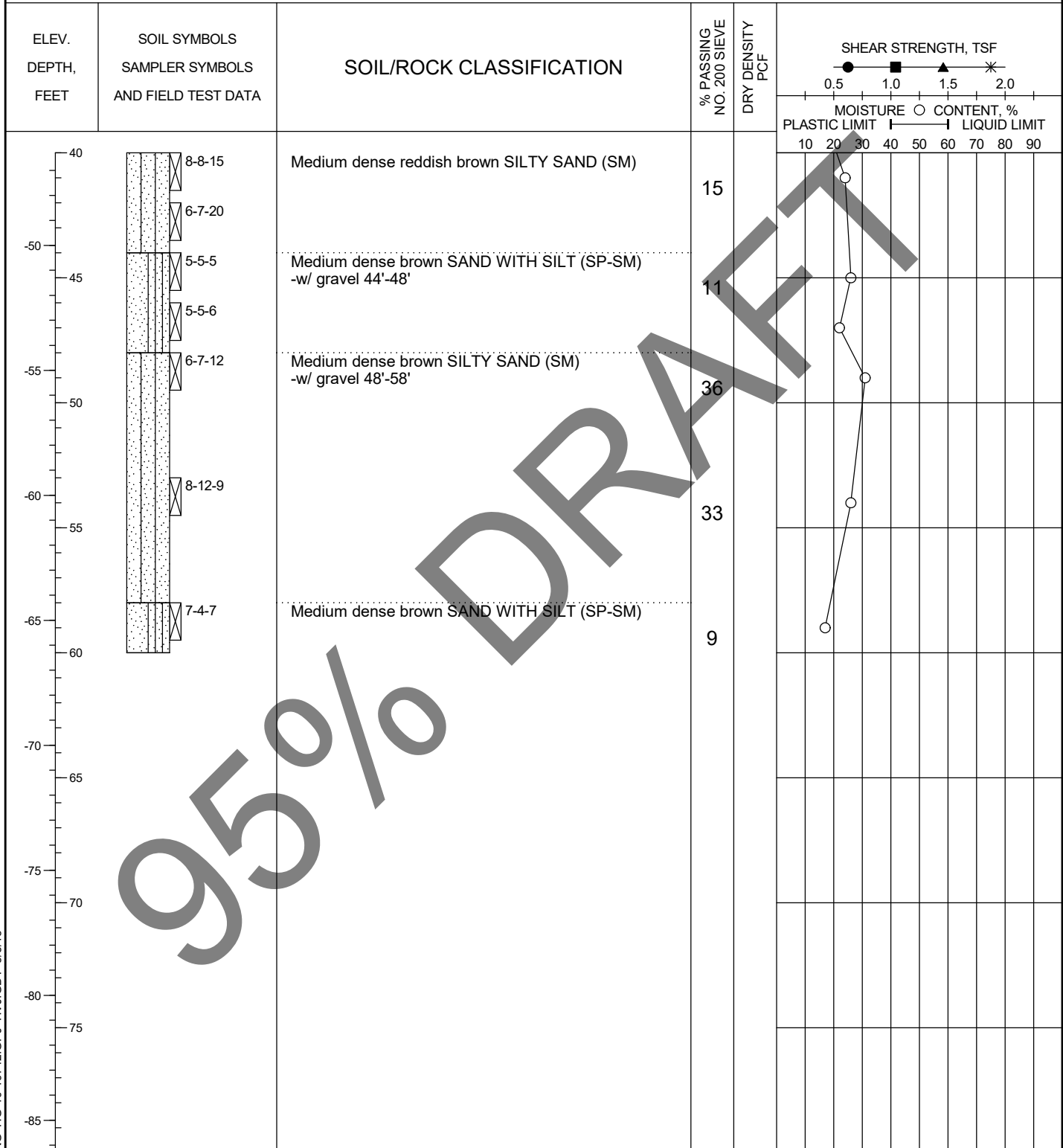


LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-59 (Depth of Water = 8 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 11/29/2012
 Northing: 13,792,322.4
 Easting: 3,232,971.8

Project No.: HG1019742
 Elevation (MLT): -6.3 feet
 Station: 40+19.82
 Range: -293.46



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

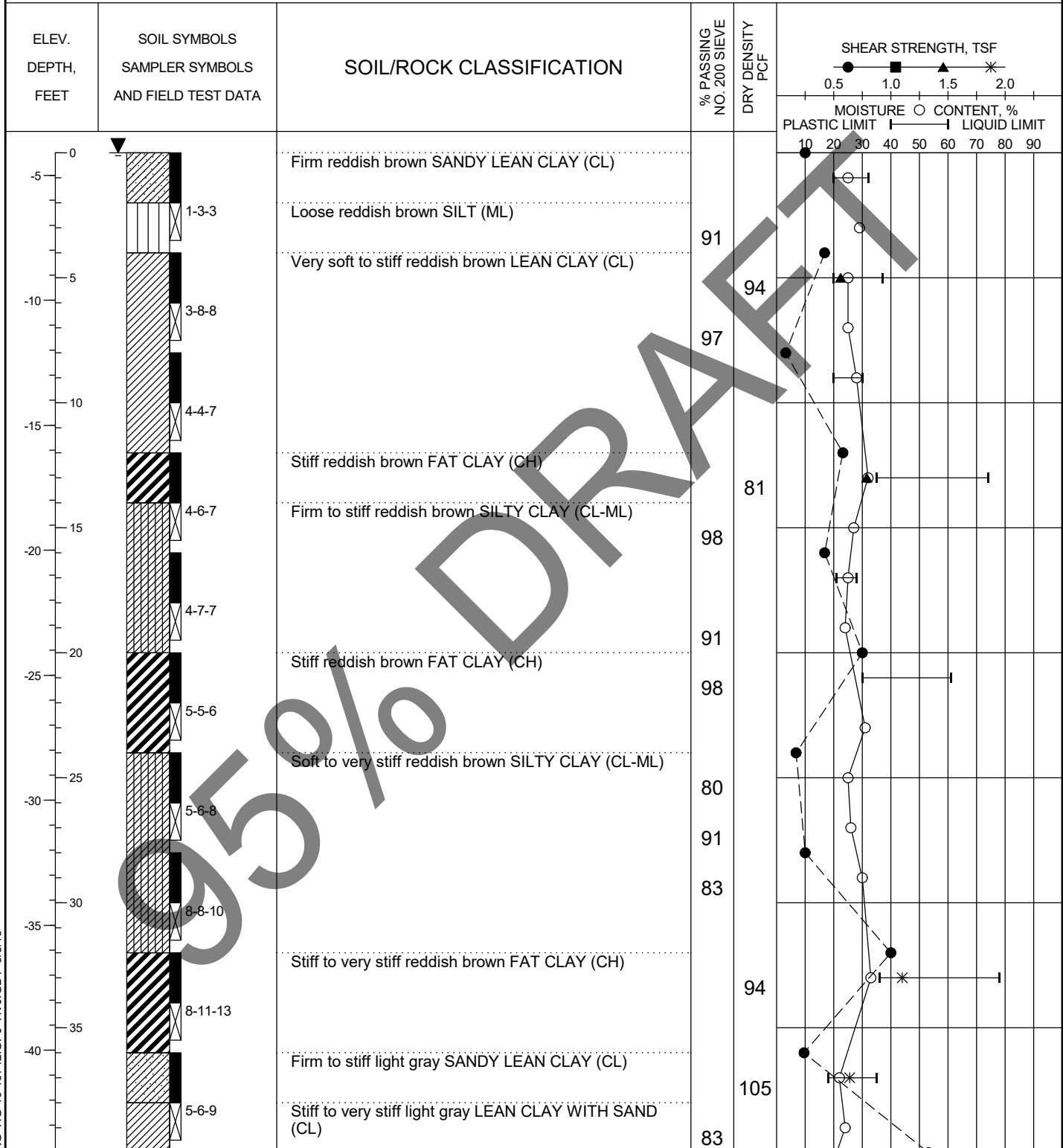
PLATE A-1b

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-60 (Depth of Water = 6.5 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/1/2012
 Northing: 13,792,468.8
 Easting: 3,235,561.0

Project No.: HG1019742
 Elevation (MLT): -4.1 feet
 Station: 66+13.17
 Range: -300.23



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

See Plate 2 for boring location.

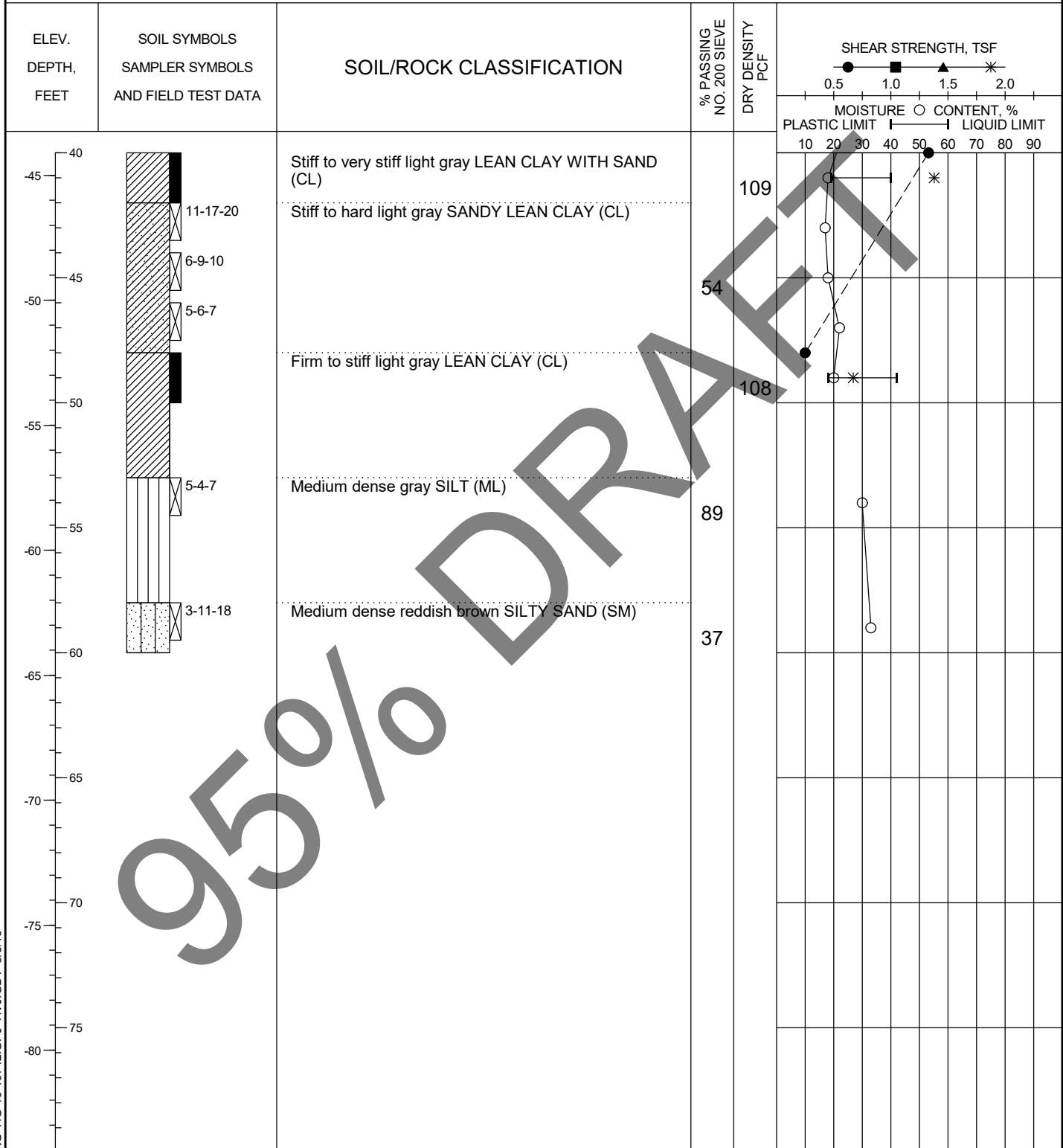
PLATE A-2a

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-60 (Depth of Water = 6.5 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/1/2012
 Northing: 13,792,468.8
 Easting: 3,235,561.0

Project No.: HG1019742
 Elevation (MLT): -4.1 feet
 Station: 66+13.17
 Range: -300.23



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

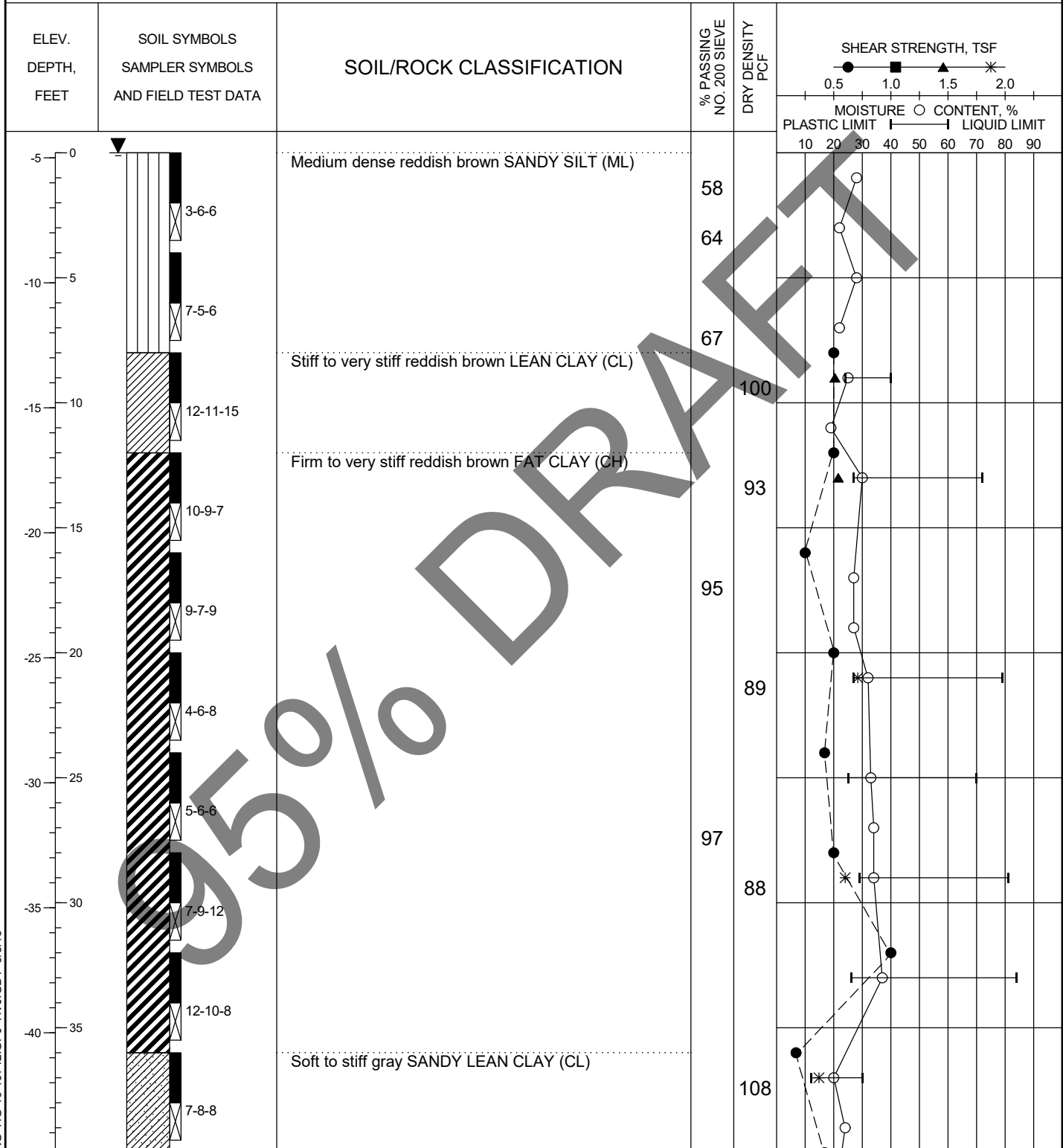
PLATE A-2b

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-61 (Depth of Water = 9 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/2/2012
 Northing: 13,792,524.4
 Easting: 3,236,551.0

Project No.: HG1019742
 Elevation (MLT): -4.8 feet
 Station: 76+04.73
 Range: -302.44



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

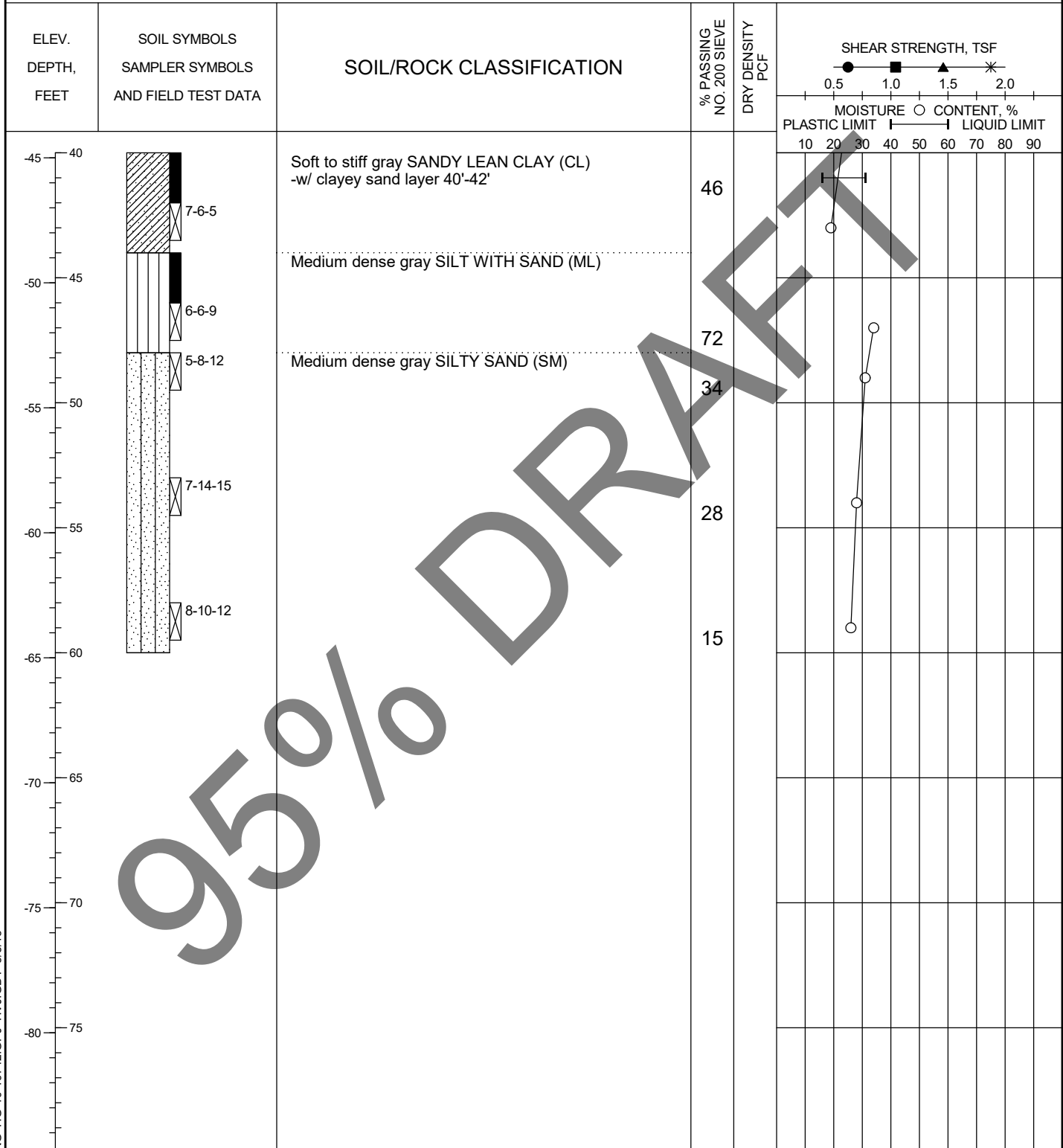
PLATE A-3a

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-61 (Depth of Water = 9 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/2/2012
 Northing: 13,792,524.4
 Easting: 3,236,551.0

Project No.: HG1019742
 Elevation (MLT): -4.8 feet
 Station: 76+04.73
 Range: -302.44



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

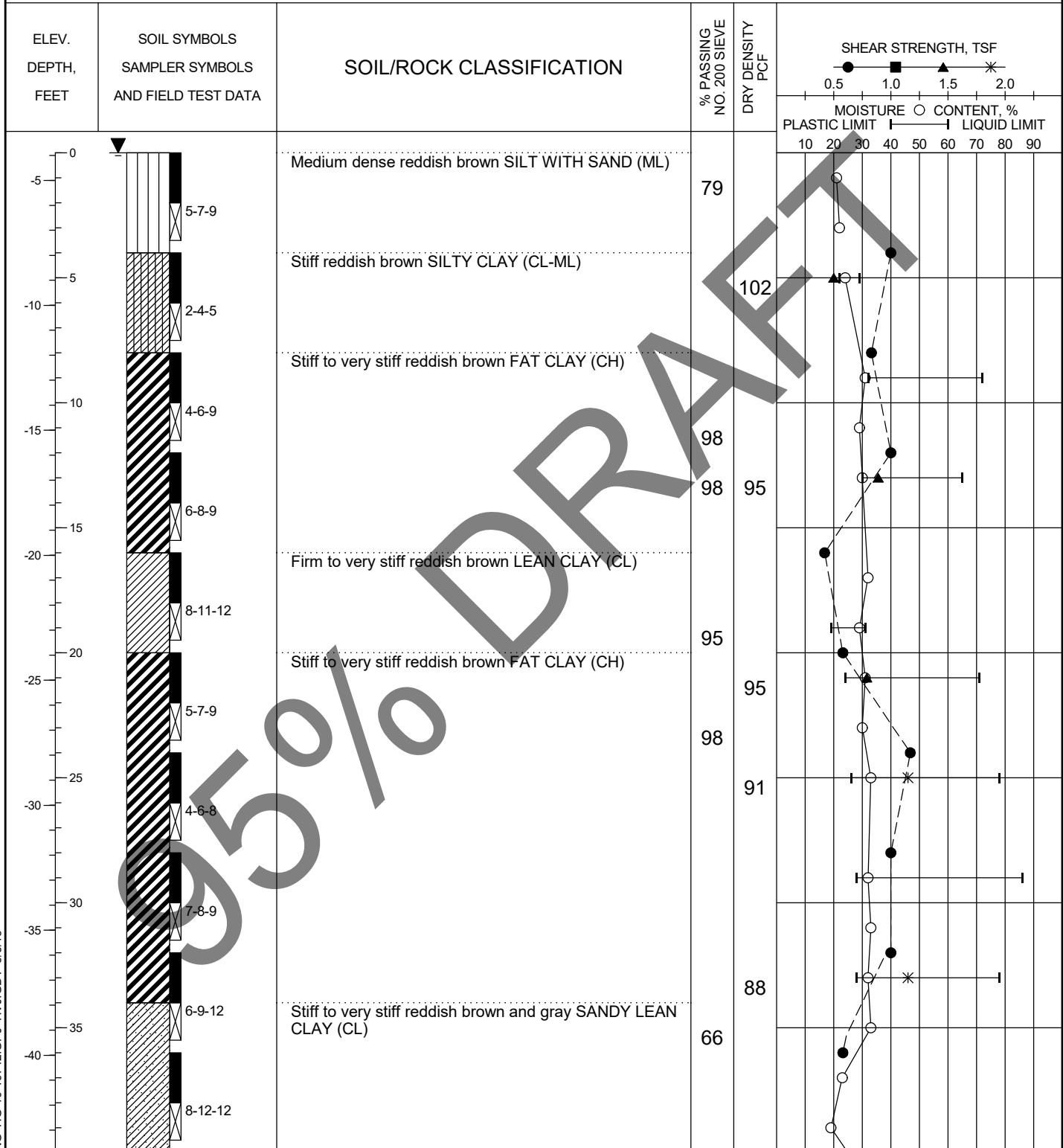
PLATE A-3b

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-62 (Depth of Water = 6.5 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/2/2012
 Northing: 13,792,570.7
 Easting: 3,237,372.8

Project No.: HG1019742
 Elevation (MLT): -3.9 feet
 Station: 84+27.86
 Range: -304.36



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-4a

LOG OF BORING

Project: Bayport Ship Channel Phase 2

Boring No.: 12-62 (Depth of Water = 6.5 feet)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 12/2/2012

Northing: 13,792,570.7

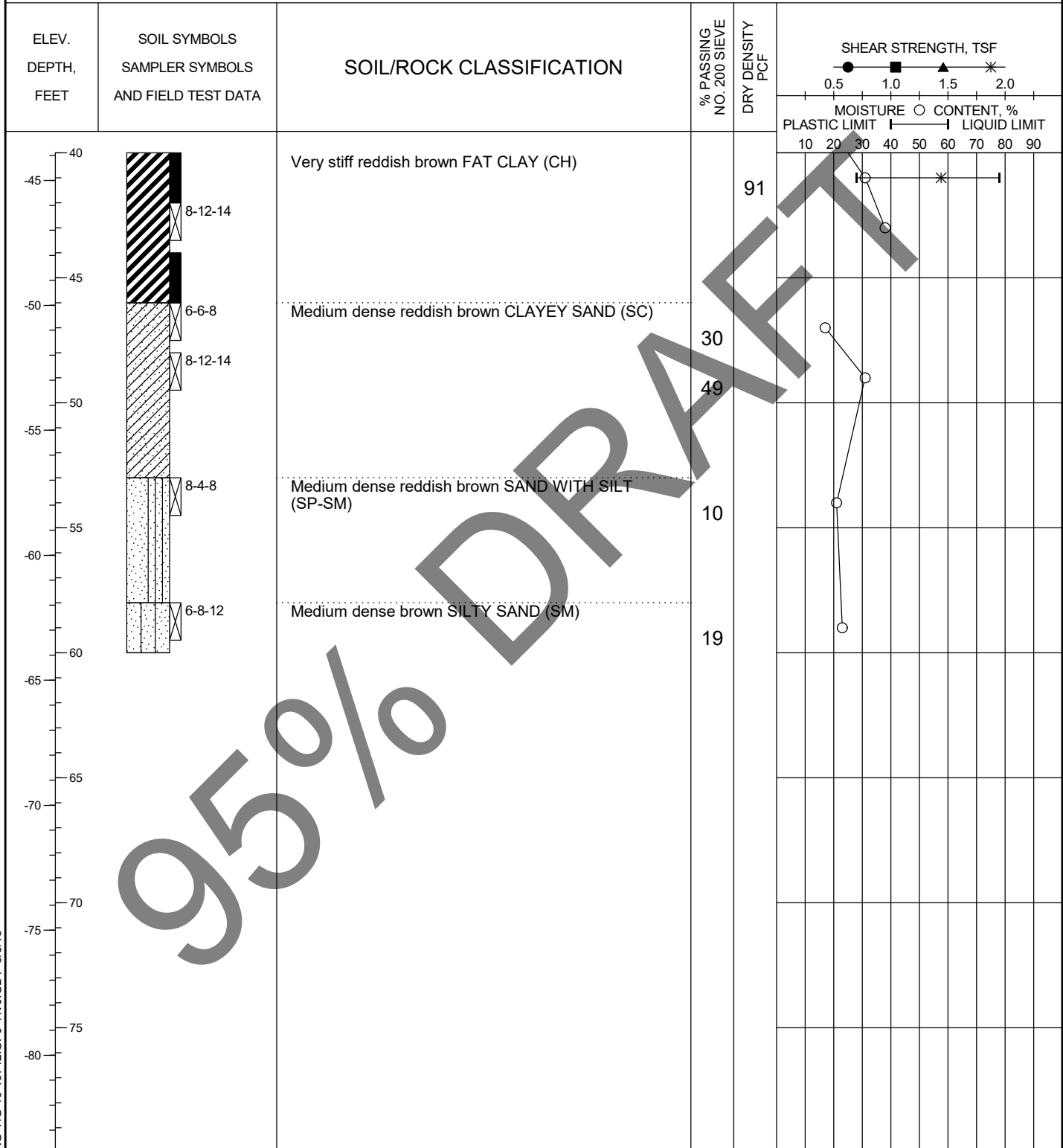
Easting: 3,237,372.8

Project No.: HG1019742

Elevation (MLT): -3.9 feet

Station: 84+27.86

Range: -304.36



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

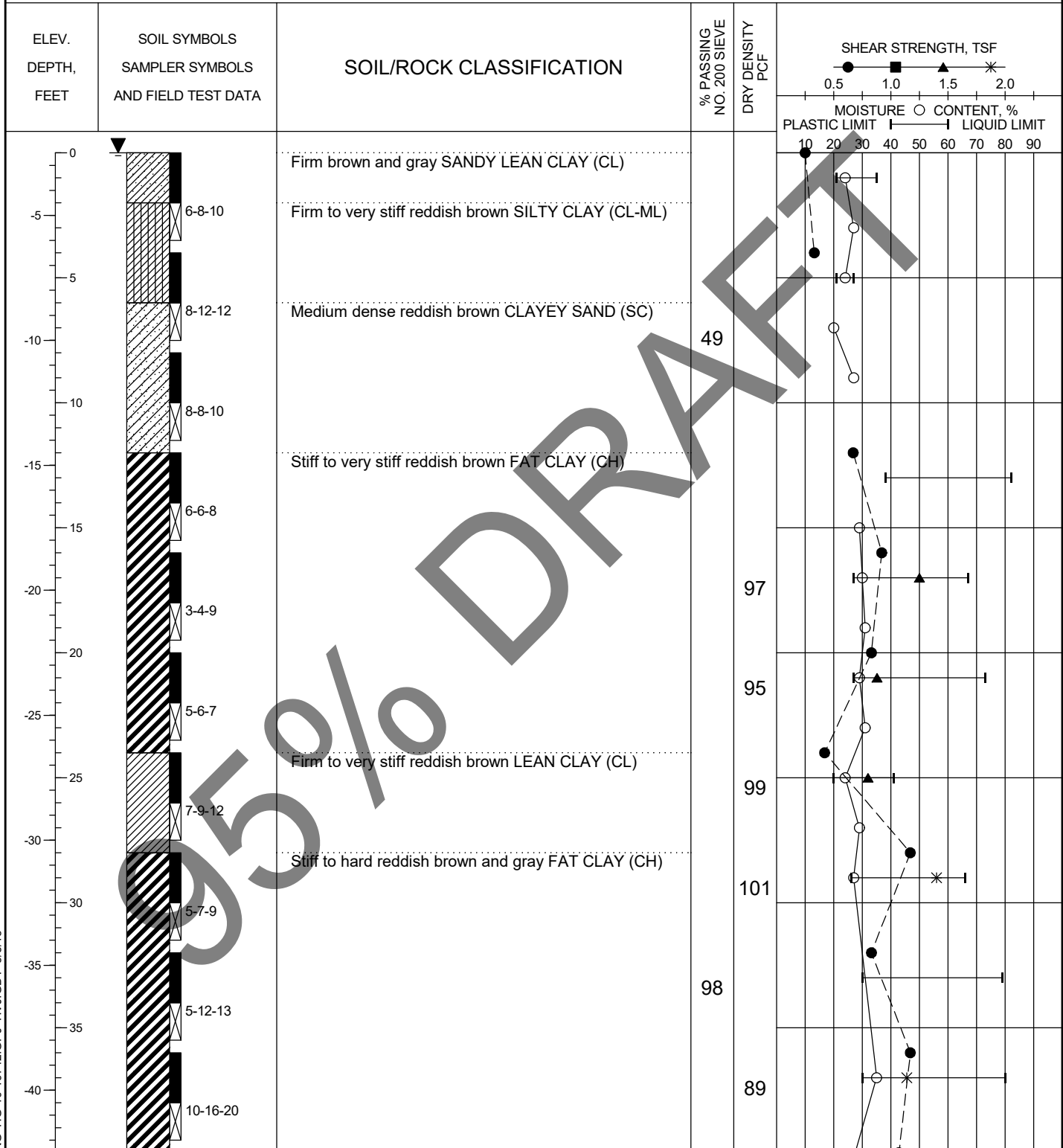
PLATE A-4b

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-63 (Depth of Water = 5.6 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/4/2012
 Northing: 13,792,636.2
 Easting: 3,238,117.7

Project No.: HG1019742
 Elevation (MLT): -2.5 feet
 Station: 91+75.17
 Range: -329.62



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

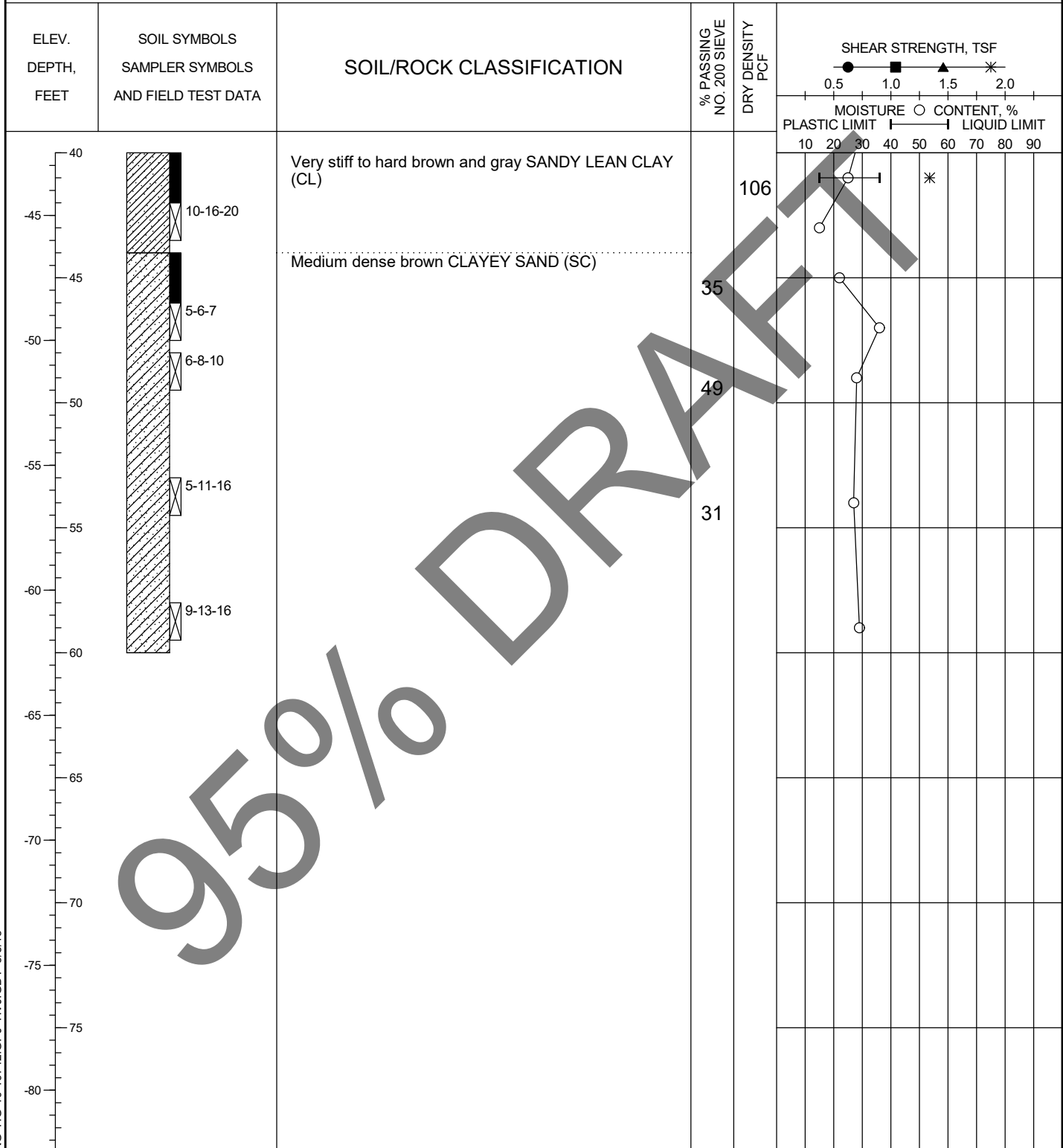
PLATE A-5a

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-63 (Depth of Water = 5.6 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/4/2012
 Northing: 13,792,636.2
 Easting: 3,238,117.7

Project No.: HG1019742
 Elevation (MLT): -2.5 feet
 Station: 91+75.17
 Range: -329.62



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

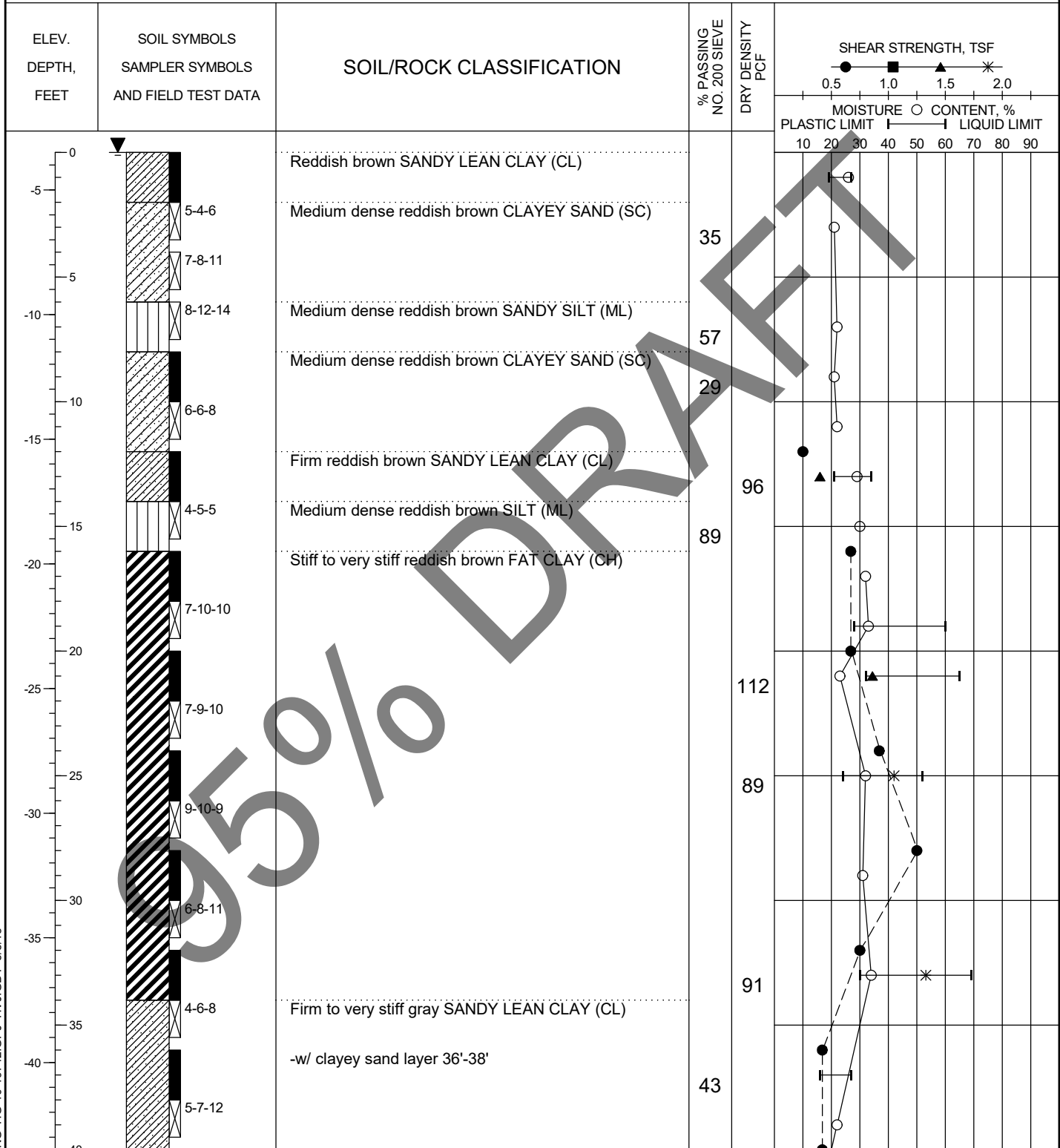
PLATE A-5b

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-64 (Depth of Water = 5.8 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/5/2012
 Northing: 13,792,650.1
 Easting: 3,238,737.2

Project No.: HG1019742
 Elevation (MLT): -3.5 feet
 Station: 97+94.49
 Range: -310.14



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

See Plate 2 for boring location.

PLATE A-6a

LOG OF BORING

Project: Bayport Ship Channel Phase 2

Boring No.: 12-64 (Depth of Water = 5.8 feet)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 12/5/2012

Northing: 13,792,650.1

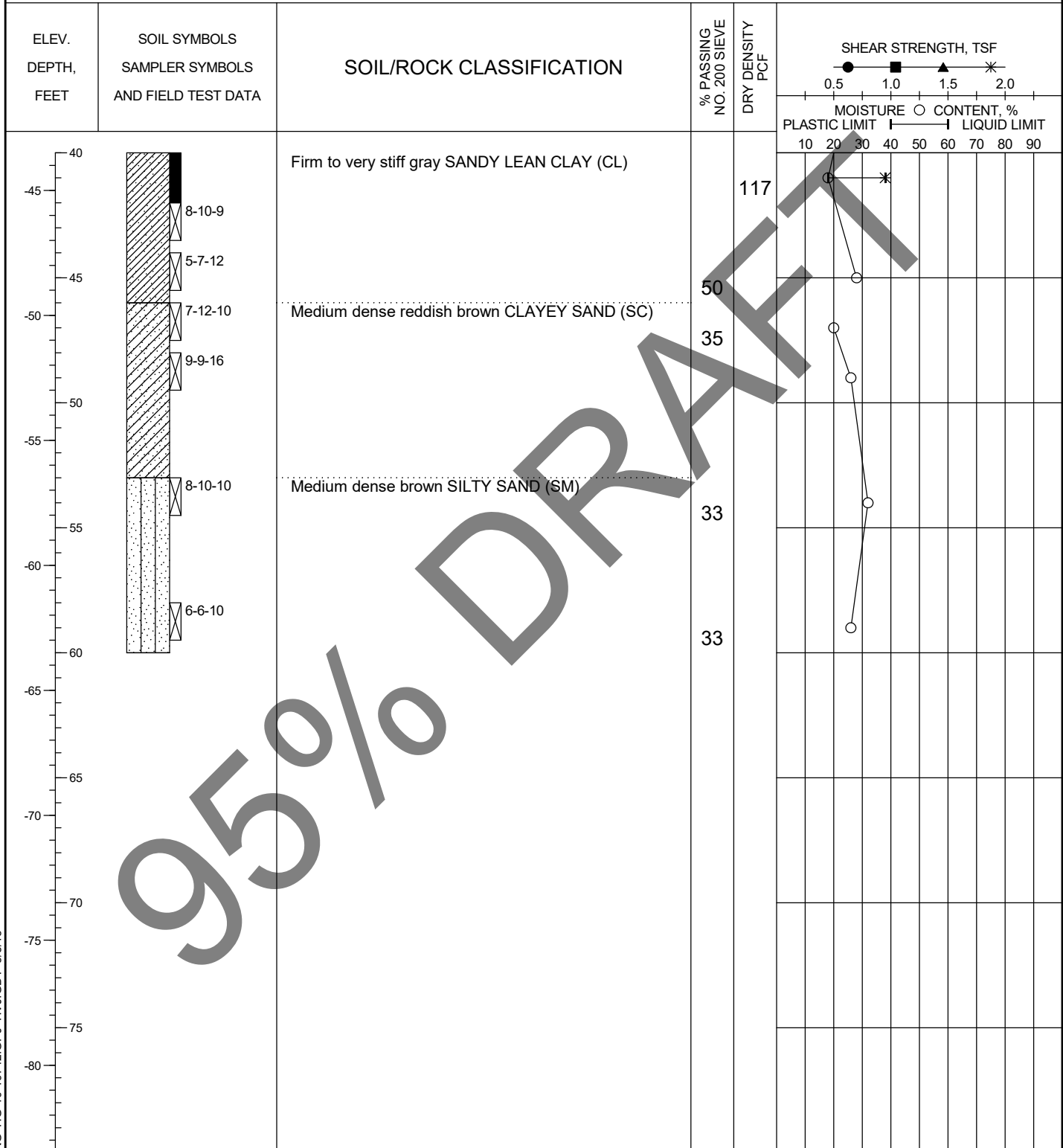
Easting: 3,238,737.2

Project No.: HG1019742

Elevation (MLT): -3.5 feet

Station: 97+94.49

Range: -310.14



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-6b

LOG OF BORING

Project: Bayport Ship Channel Phase 2

Boring No.: 12-65 (Depth of Water = 6.4 feet)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 12/6/2012

Northing: 13,792,677.0

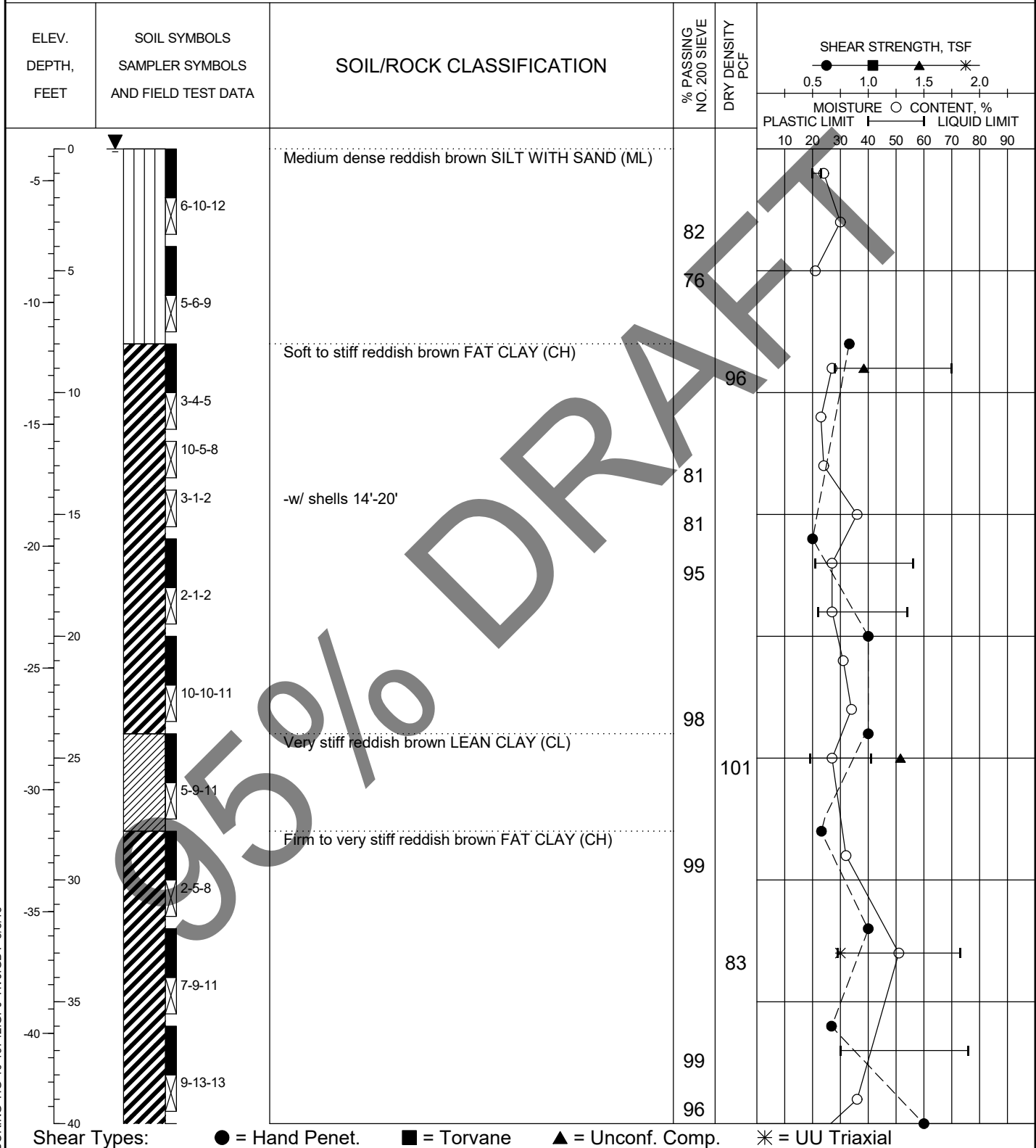
Easting: 3,239,947.5

Project No.: HG1019742

Elevation (MLT): -3.7 feet

Station: 110+04.53

Range: -271.76



See Plate 2 for boring location.

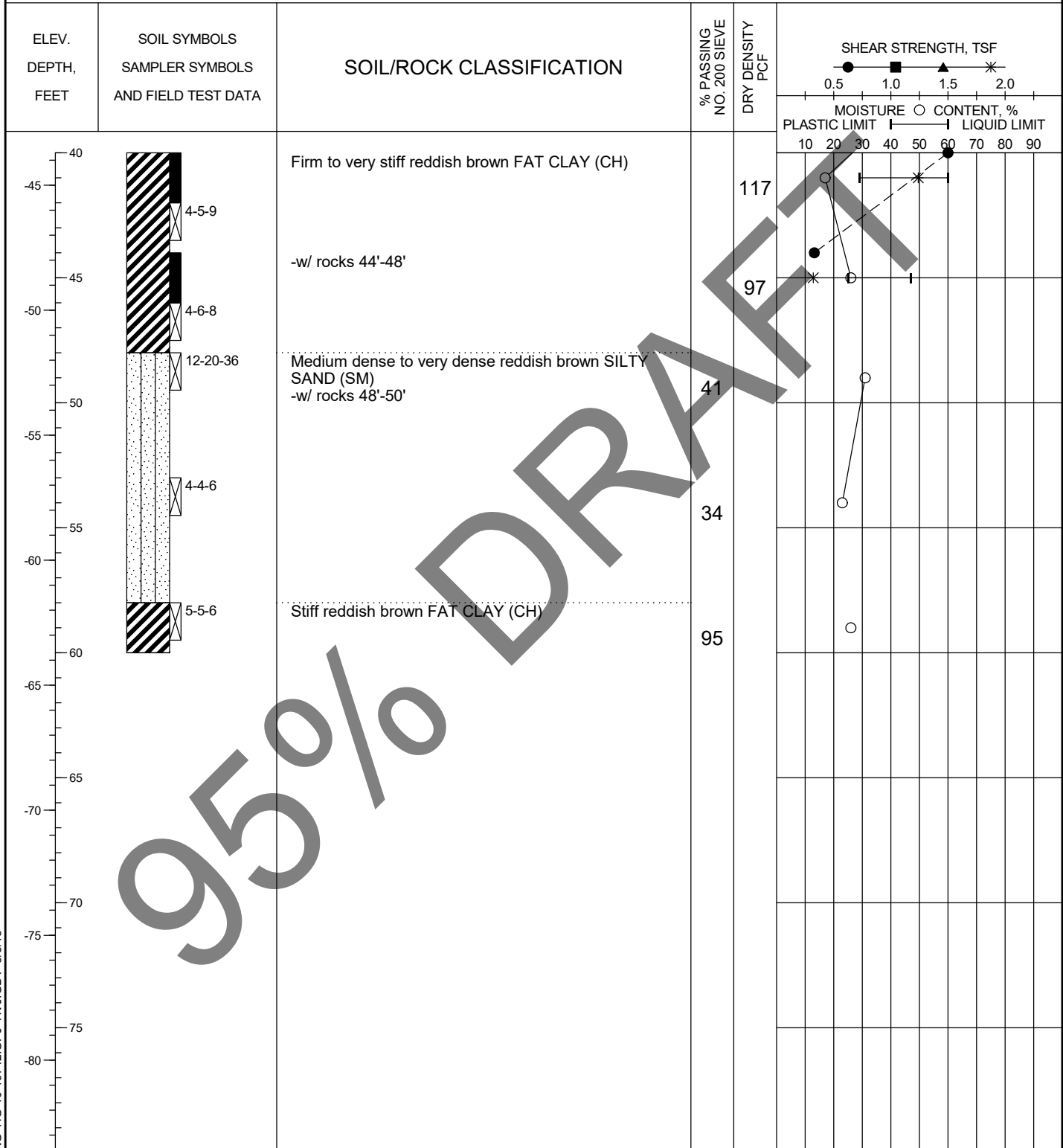
PLATE A-7a

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-65 (Depth of Water = 6.4 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/6/2012
 Northing: 13,792,677.0
 Easting: 3,239,947.5

Project No.: HG1019742
 Elevation (MLT): -3.7 feet
 Station: 110+04.53
 Range: -271.76



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

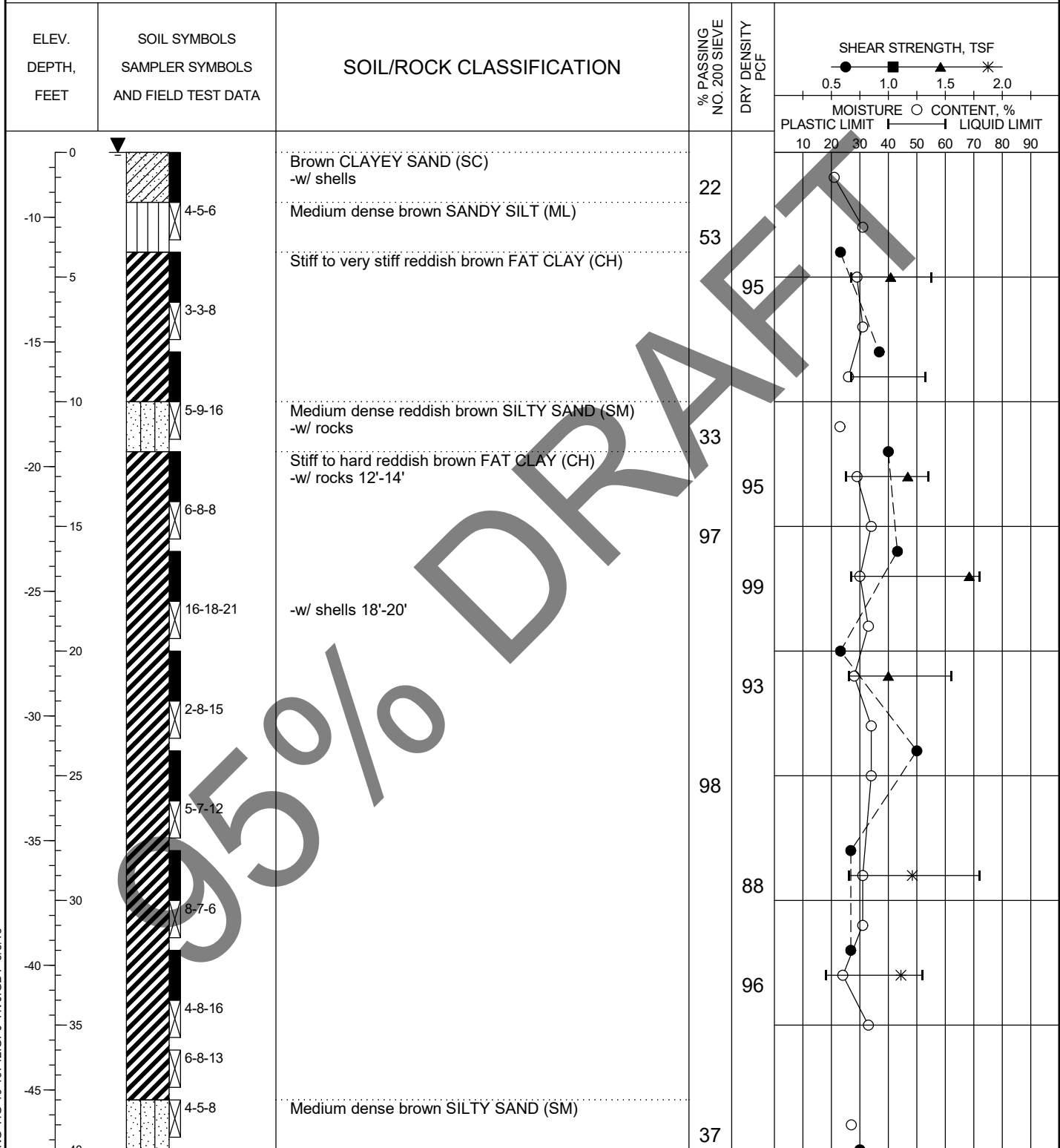
PLATE A-7b

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-66 (Depth of Water = 8.6 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/13/2012
 Northing: 13,792,800.2
 Easting: 3,241,739.5

Project No.: HG1019742
 Elevation (MLT): -7.4 feet
 Station: 128+00.58
 Range: -298.30



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-8a

LOG OF BORING

Project: Bayport Ship Channel Phase 2

Boring No.: 12-66 (Depth of Water = 8.6 feet)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 12/13/2012

Northing: 13,792,800.2

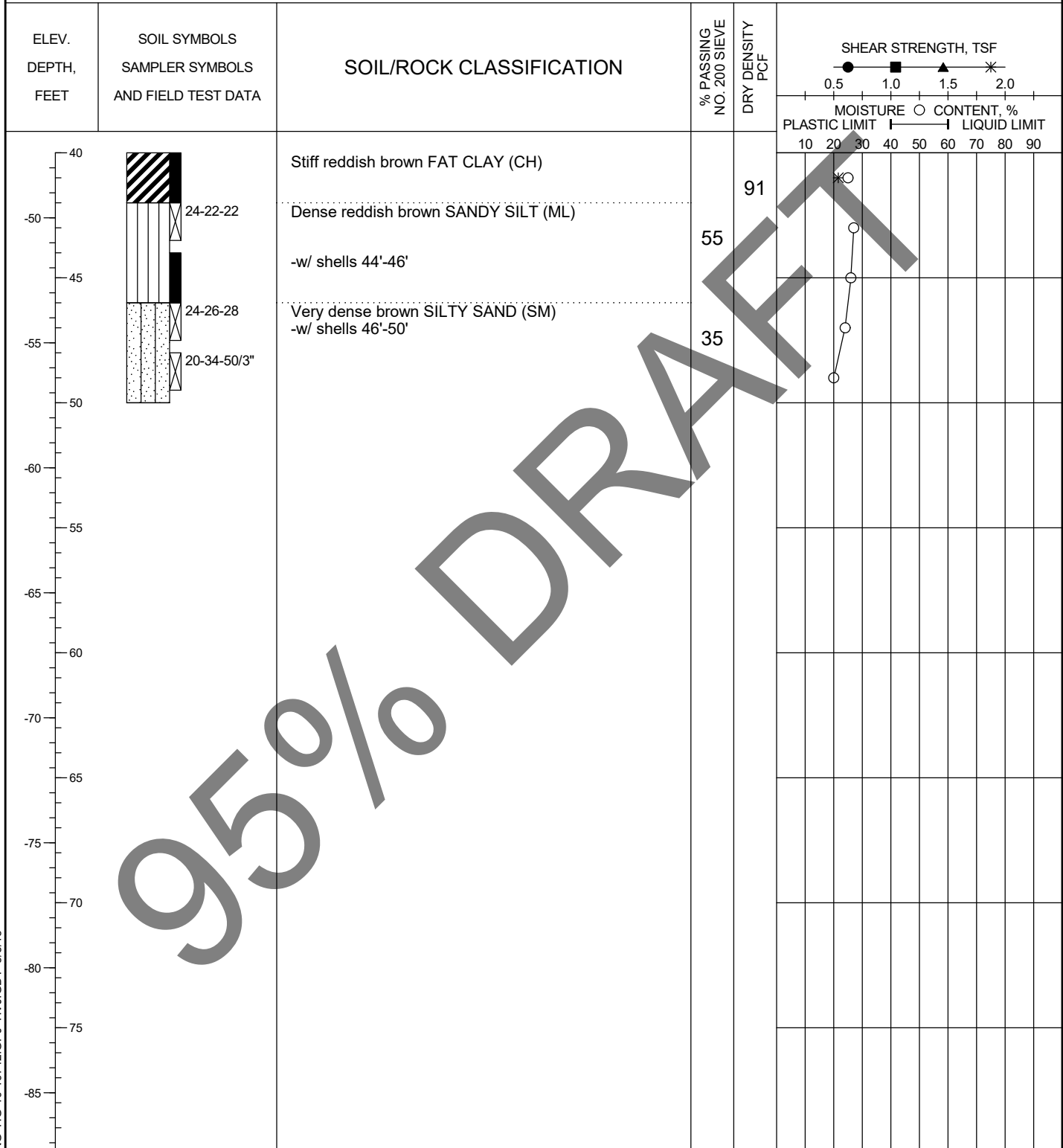
Easting: 3,241,739.5

Project No.: HG1019742

Elevation (MLT): -7.4 feet

Station: 128+00.58

Range: -298.30



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

See Plate 2 for boring location.

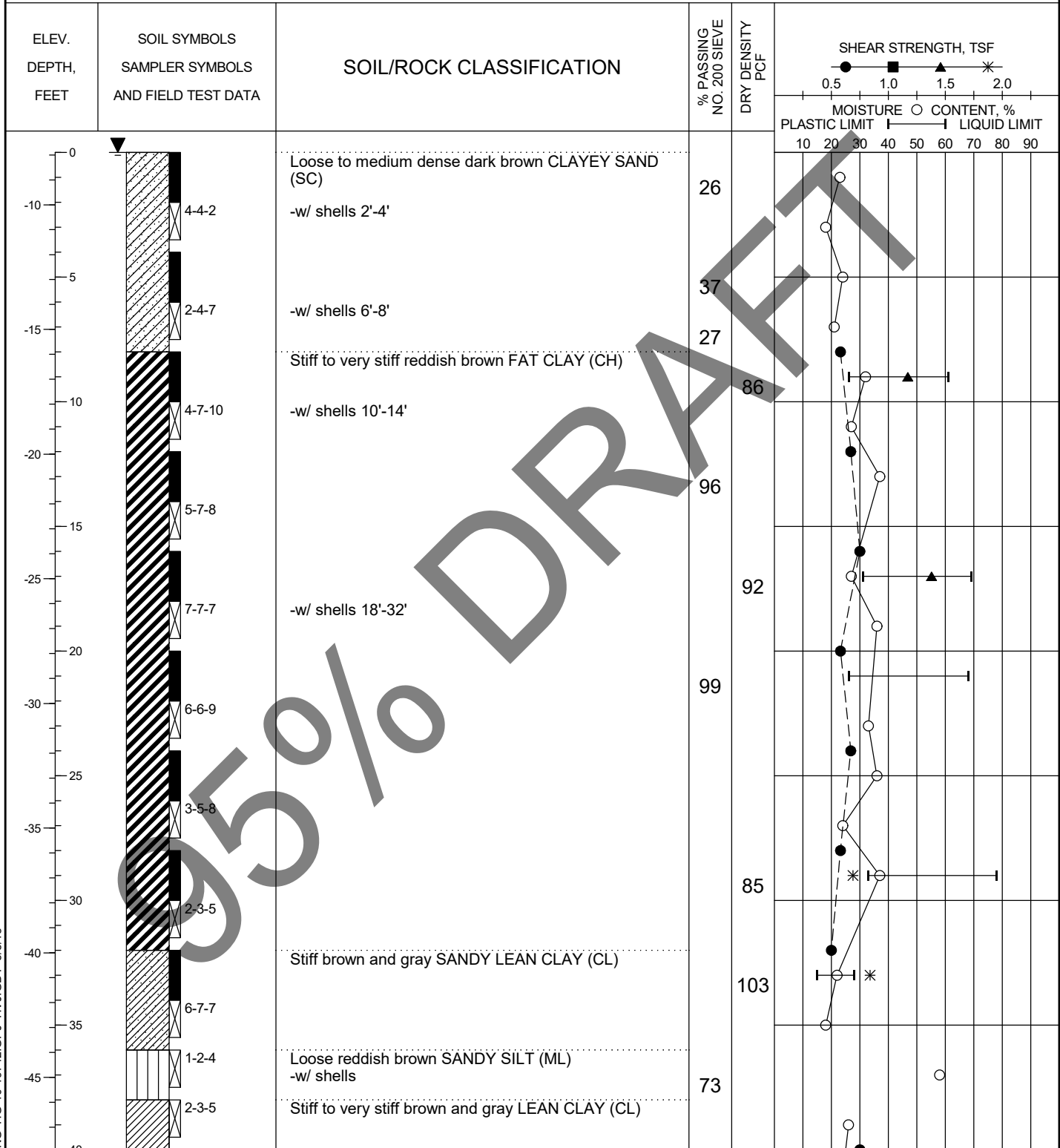
PLATE A-8b

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-67 (Depth of Water = 9.6 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/14/2012
 Northing: 13,792,911.1
 Easting: 3,243,700.5

Project No.: HG1019742
 Elevation (MLT): -7.9 feet
 Station: 147+64.64
 Range: -303.44



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-9a

LOG OF SOIL BORING HG-10-19742.GPJ HVJ.GDT 3/5/13



LOG OF BORING

Project: Bayport Ship Channel Phase 2

Boring No.: 12-67 (Depth of Water = 9.6 feet)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 12/14/2012

Northing: 13,792,911.1

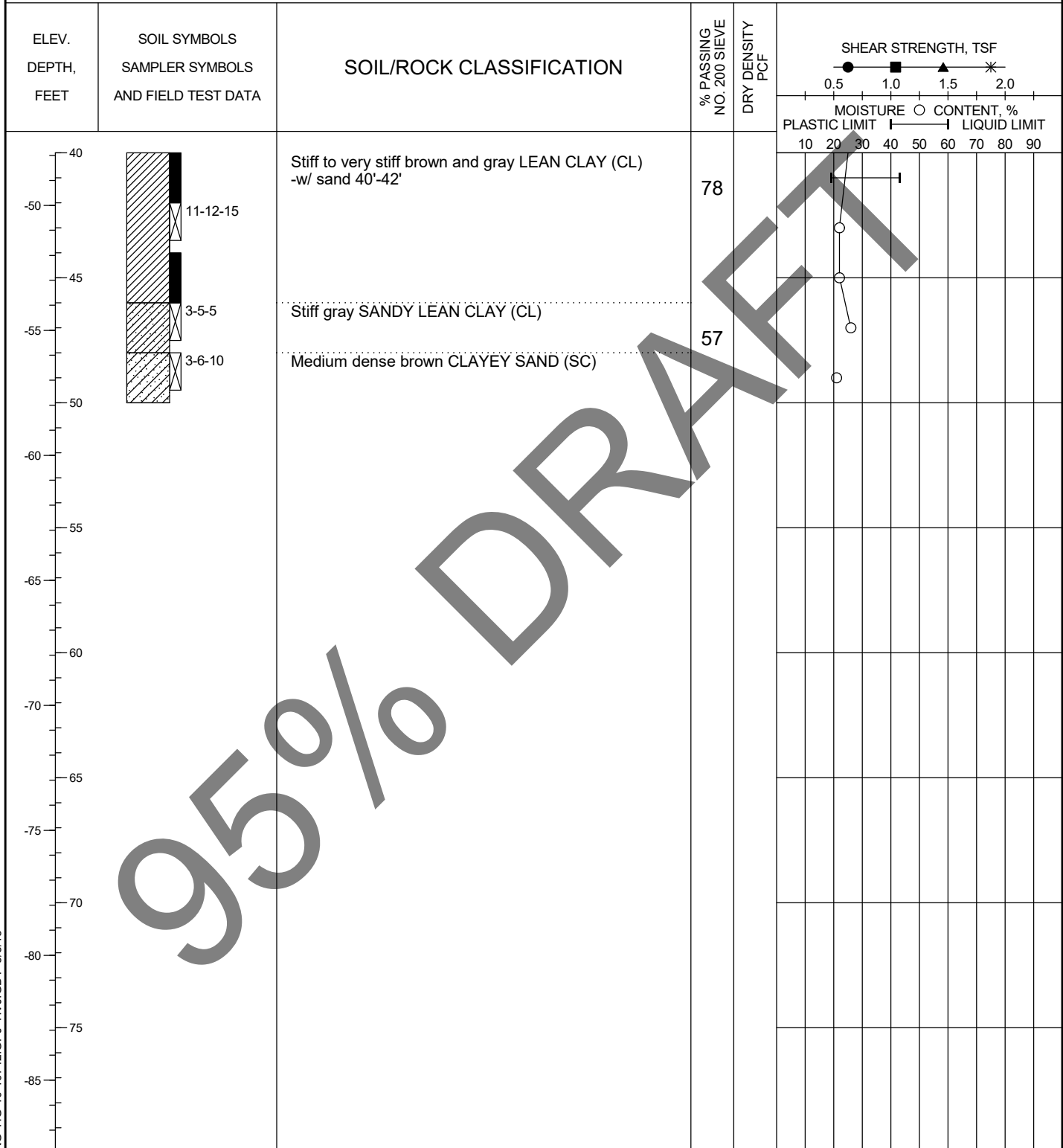
Easting: 3,243,700.5

Project No.: HG1019742

Elevation (MLT): -7.9 feet

Station: 147+64.64

Range: -303.44



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

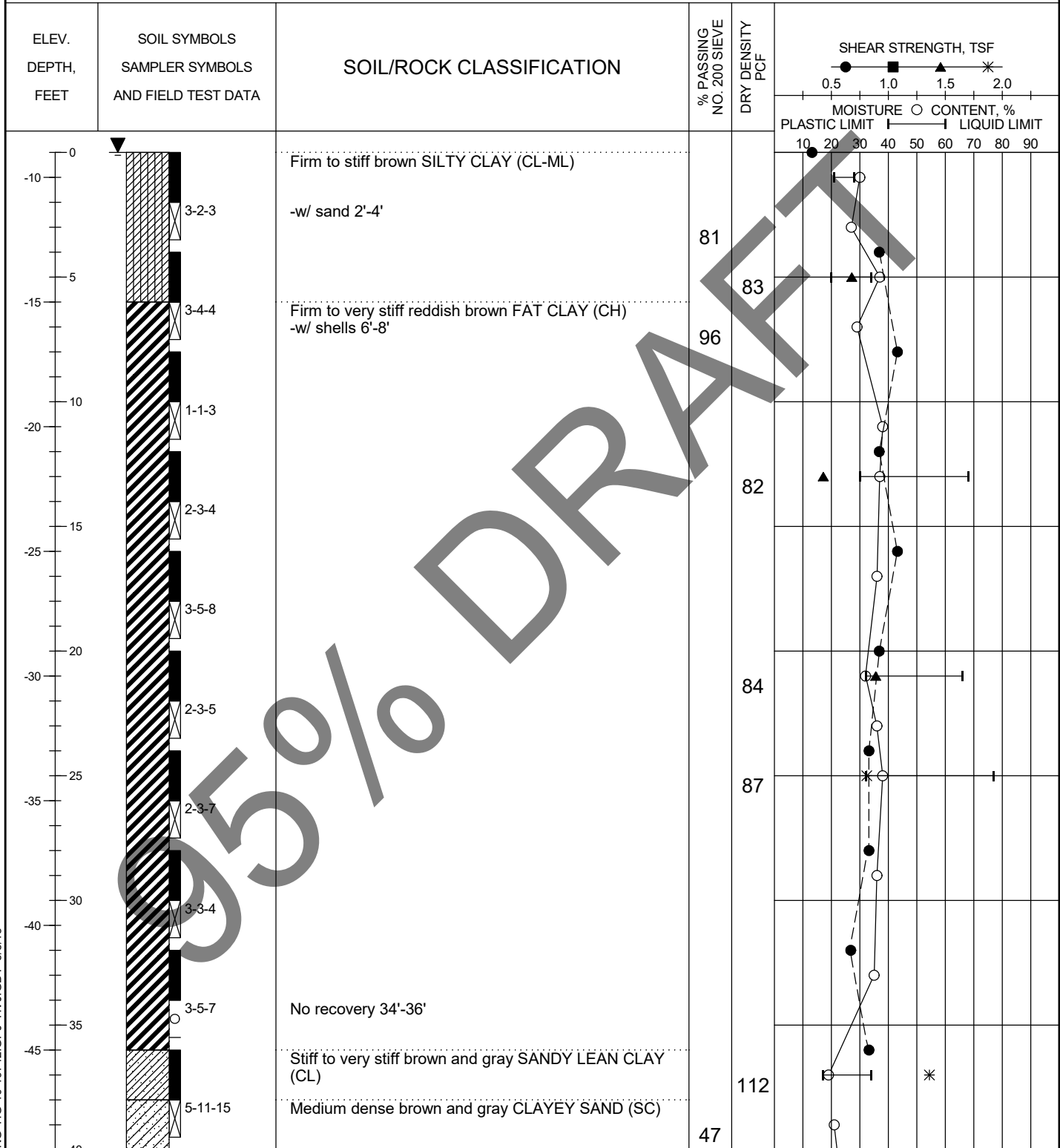
PLATE A-9b

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-68 (Depth of Water = 13 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/17/2012
 Northing: 13,793,020.4
 Easting: 3,245,610.6

Project No.: HG1019742
 Elevation (MLT): -9.0 feet
 Station: 166+77.87
 Range: -309.69



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

See Plate 2 for boring location.

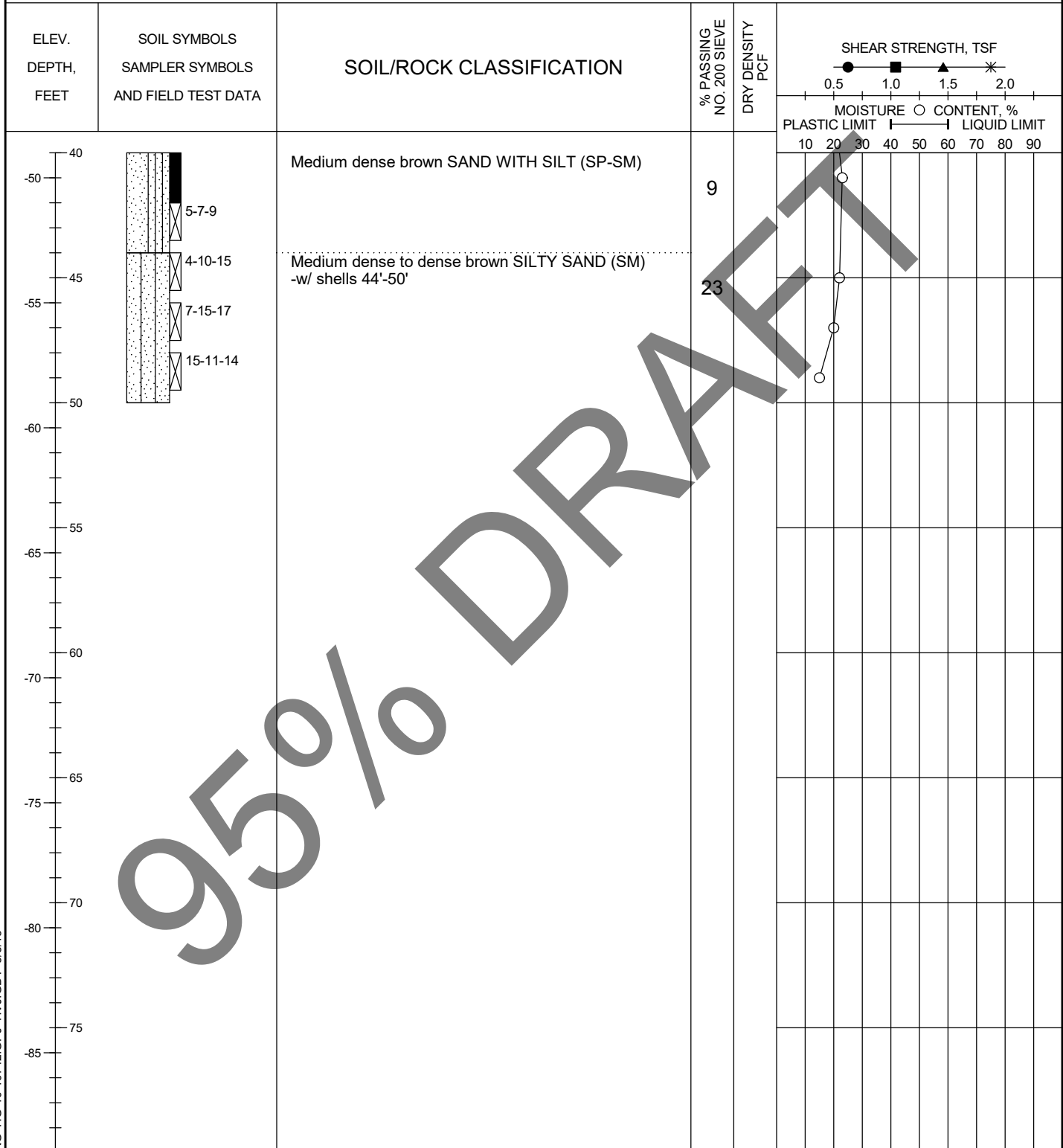
PLATE A-10a

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-68 (Depth of Water = 13 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/17/2012
 Northing: 13,793,020.4
 Easting: 3,245,610.6

Project No.: HG1019742
 Elevation (MLT): -9.0 feet
 Station: 166+77.87
 Range: -309.69



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

See Plate 2 for boring location.

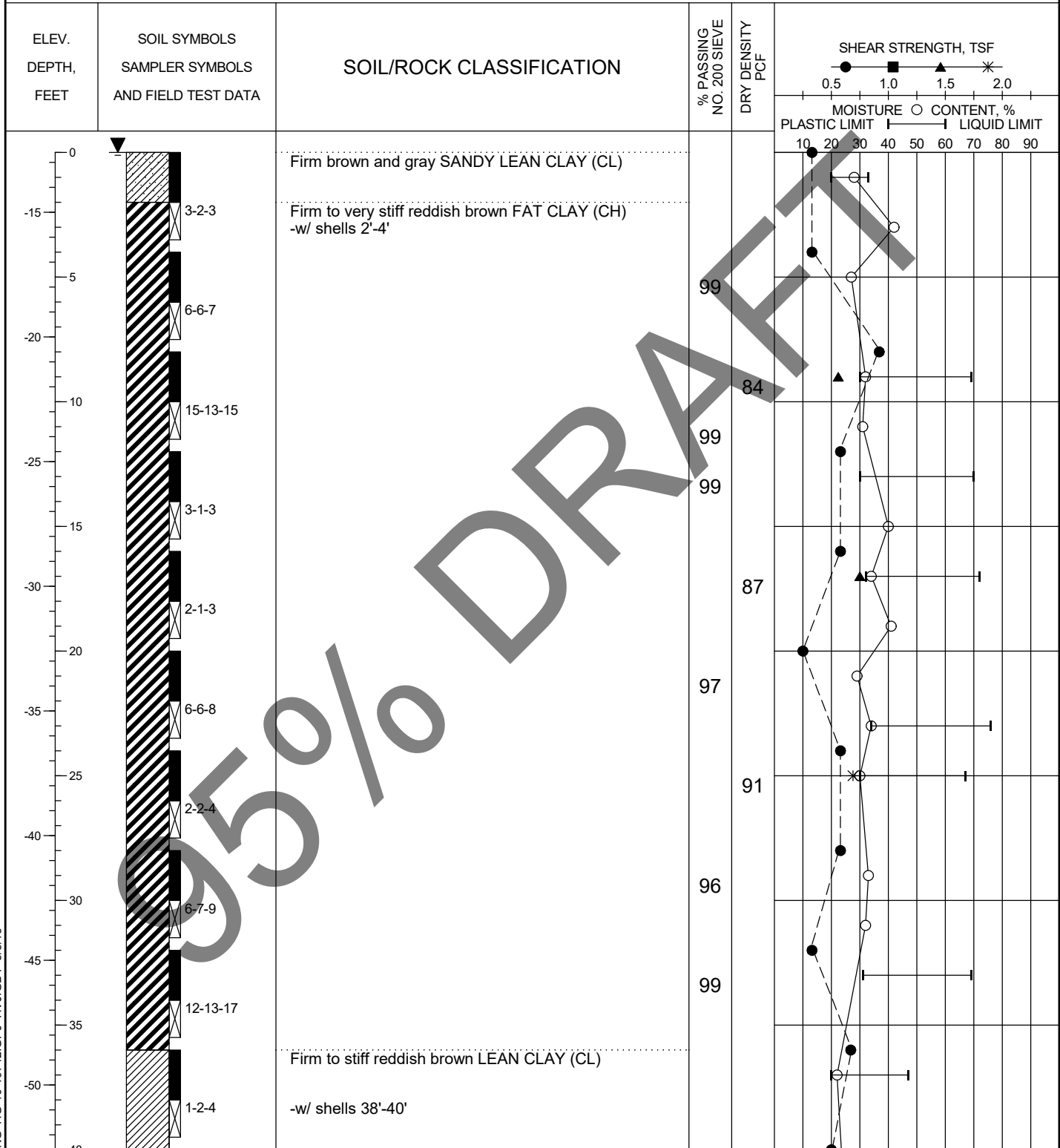
PLATE A-10b

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-69 (Depth of Water = 15 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/15/2012
 Northing: 13,793,093.1
 Easting: 3,247,509.2

Project No.: HG1019742
 Elevation (MLT): -12.6 feet
 Station: 185+77.69
 Range: -279.92



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

See Plate 2 for boring location.

PLATE A-11a

LOG OF SOIL BORING HG-10-19742.GPJ HVJ.GDT 3/5/13

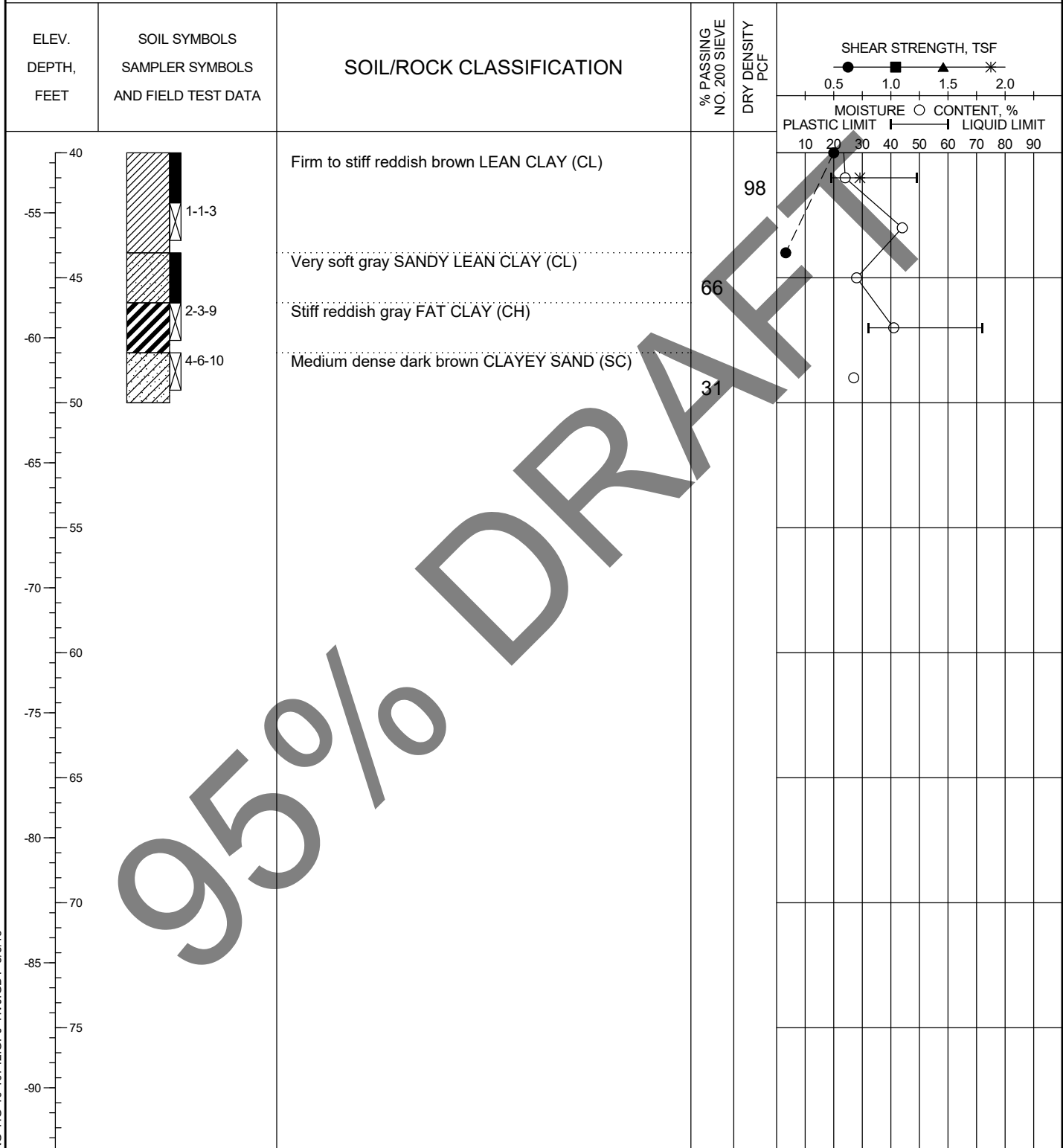


LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-69 (Depth of Water = 15 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/15/2012
 Northing: 13,793,093.1
 Easting: 3,247,509.2

Project No.: HG1019742
 Elevation (MLT): -12.6 feet
 Station: 185+77.69
 Range: -279.92



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

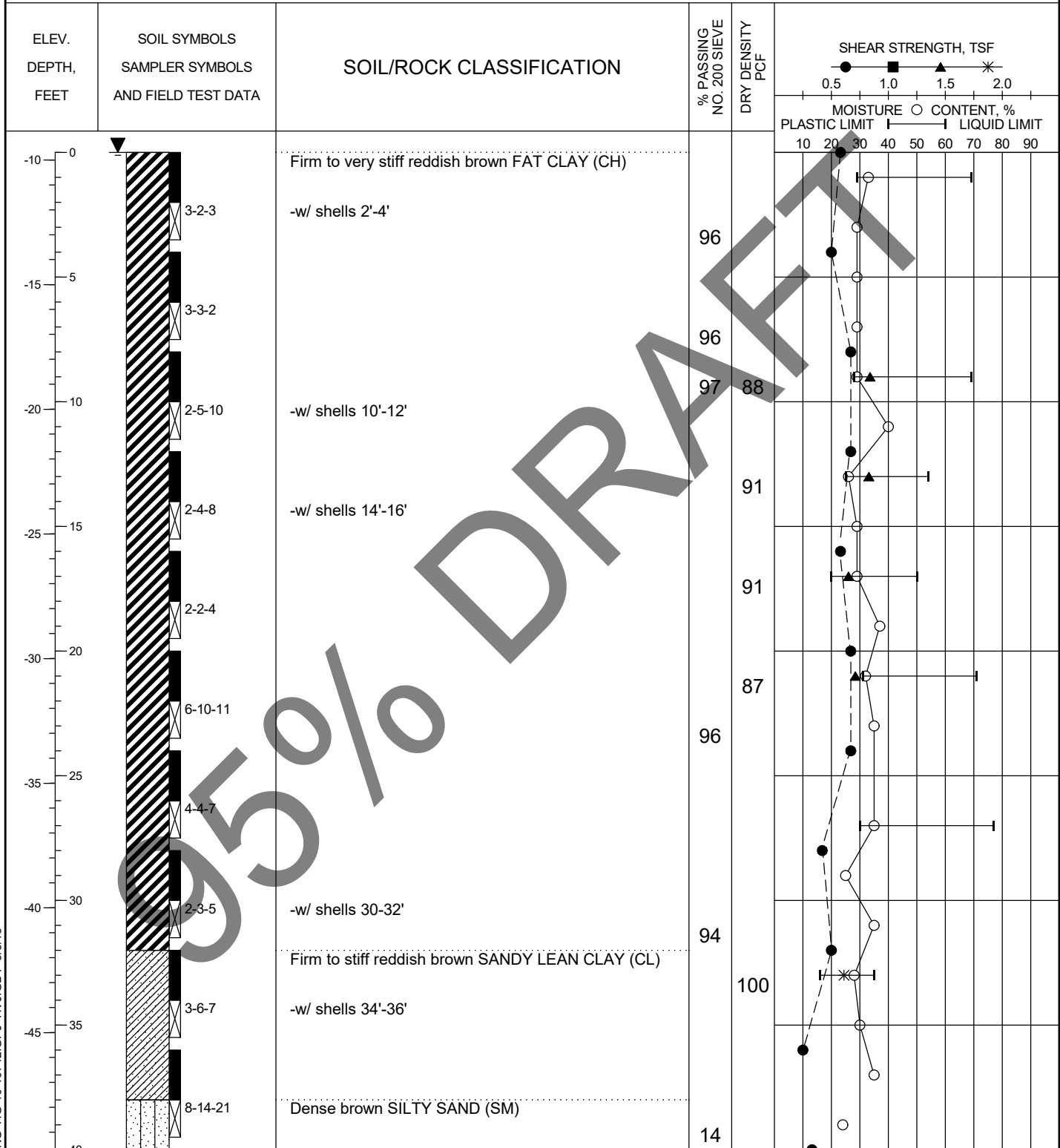
PLATE A-11b

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-70 (Depth of Water = 12 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/15/2012
 Northing: 13,793,232.1
 Easting: 3,249,431.0

Project No.: HG1019742
 Elevation (MLT): -9.7 feet
 Station: 205.04.19
 Range: -315.20



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

See Plate 2 for boring location.

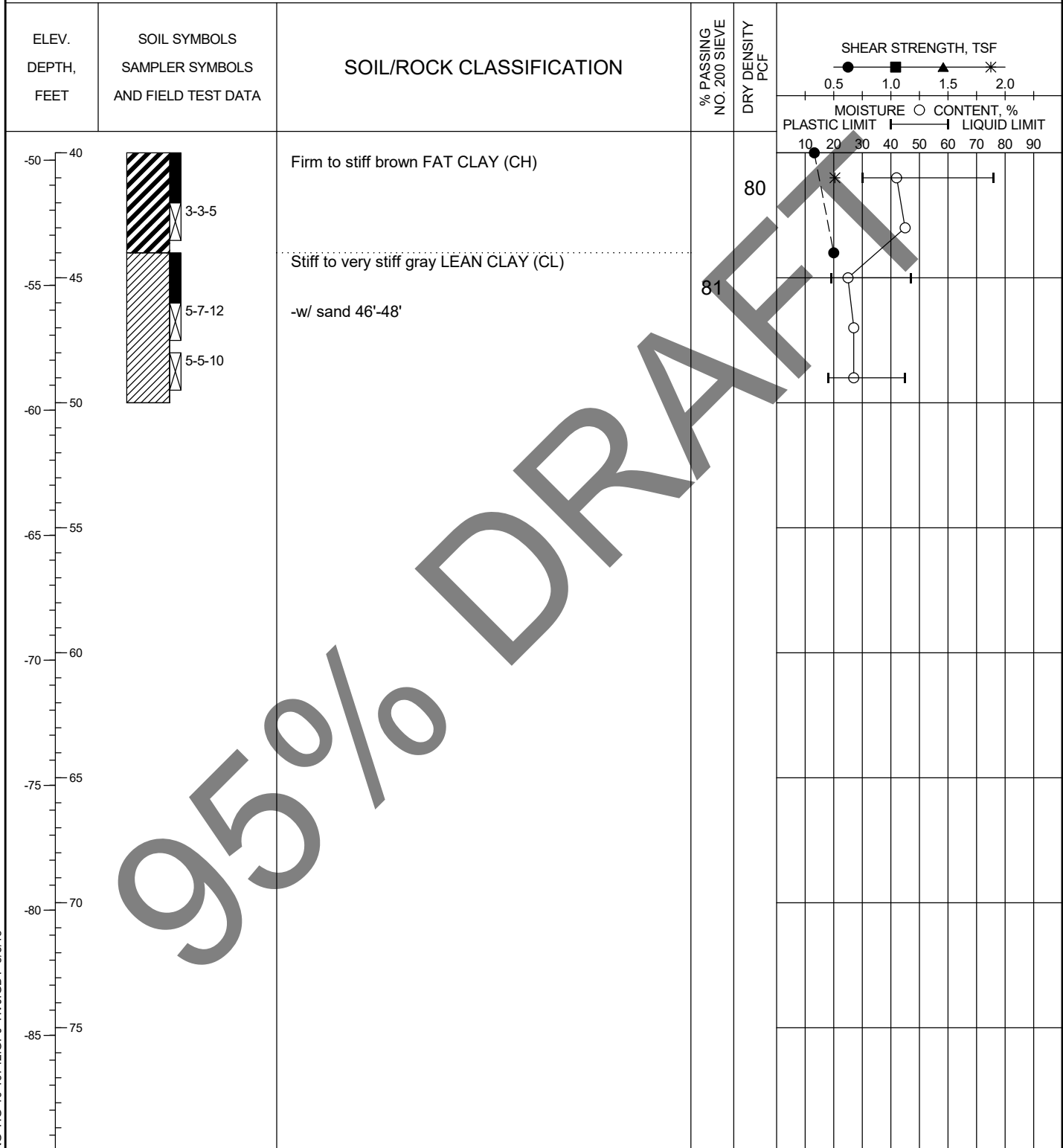
PLATE A-12a

LOG OF BORING

Project: Bayport Ship Channel Phase 2
 Boring No.: 12-70 (Depth of Water = 12 feet)
 Groundwater during drilling: 0 feet
 Groundwater after drilling: ---

Date: 12/15/2012
 Northing: 13,793,232.1
 Easting: 3,249,431.0

Project No.: HG1019742
 Elevation (MLT): -9.7 feet
 Station: 205.04.19
 Range: -315.20



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

See Plate 2 for boring location.

PLATE A-12b

LOG OF BORING

Project: Bayport Ship Channel Widening and Deepening

Boring No.: BH-1

Groundwater during drilling: 15 feet

Groundwater after drilling: ---

Date: 9/30/2011

Northing: --

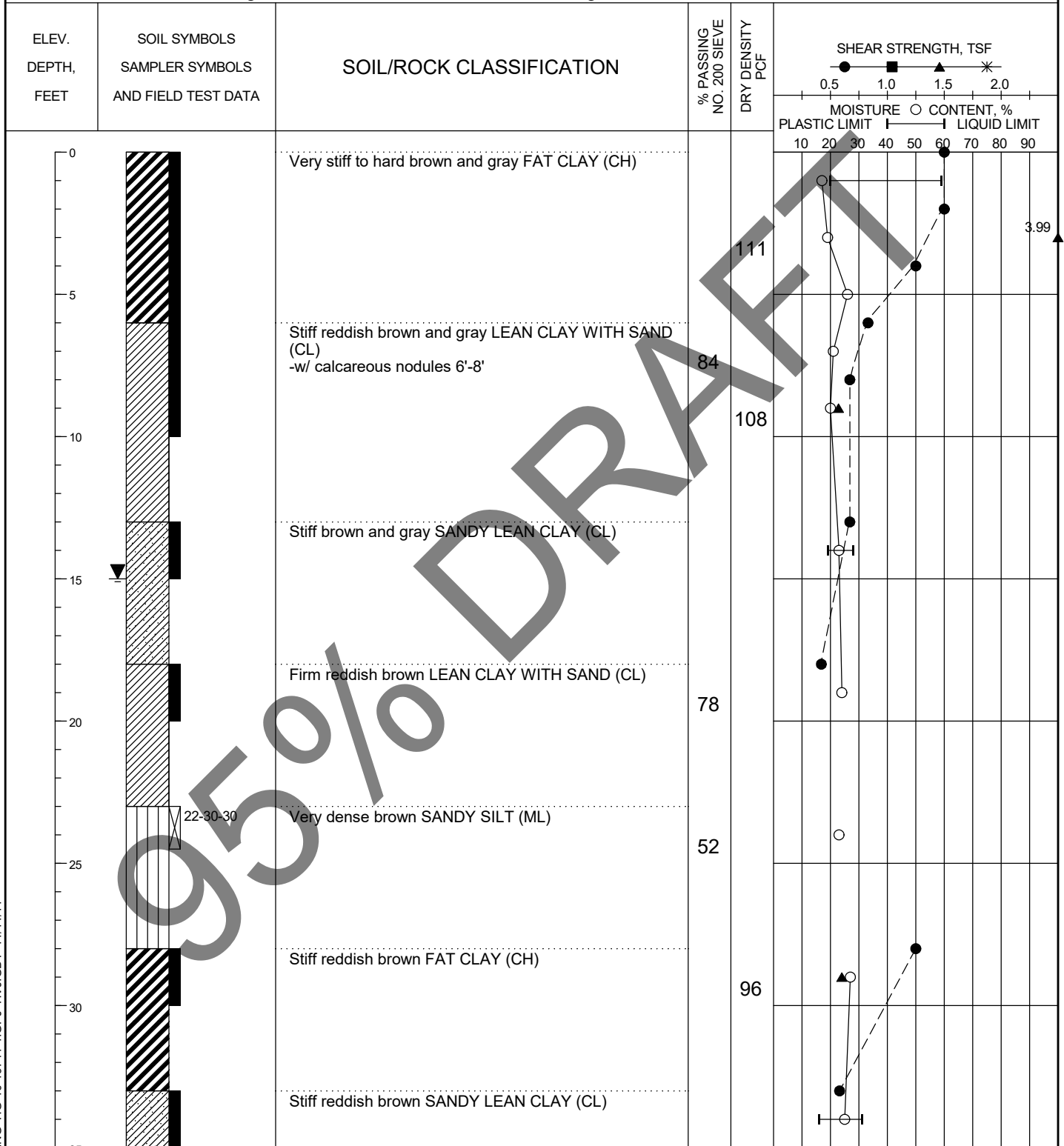
Easting: --

Project No.: HG1019741-1

Elevation: --

Station: --

Offset: --



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Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

See Plate 2 for boring location.

PLATE A-1a

LOG OF SOIL BORING HG-10-19741-1.GPJ HVJ.GDT 11/11/11

LOG OF BORING

Project: Bayport Ship Channel Widening and Deepening

Boring No.: BH-1

Groundwater during drilling: 15 feet

Groundwater after drilling: ---

Date: 9/30/2011

Northing: --

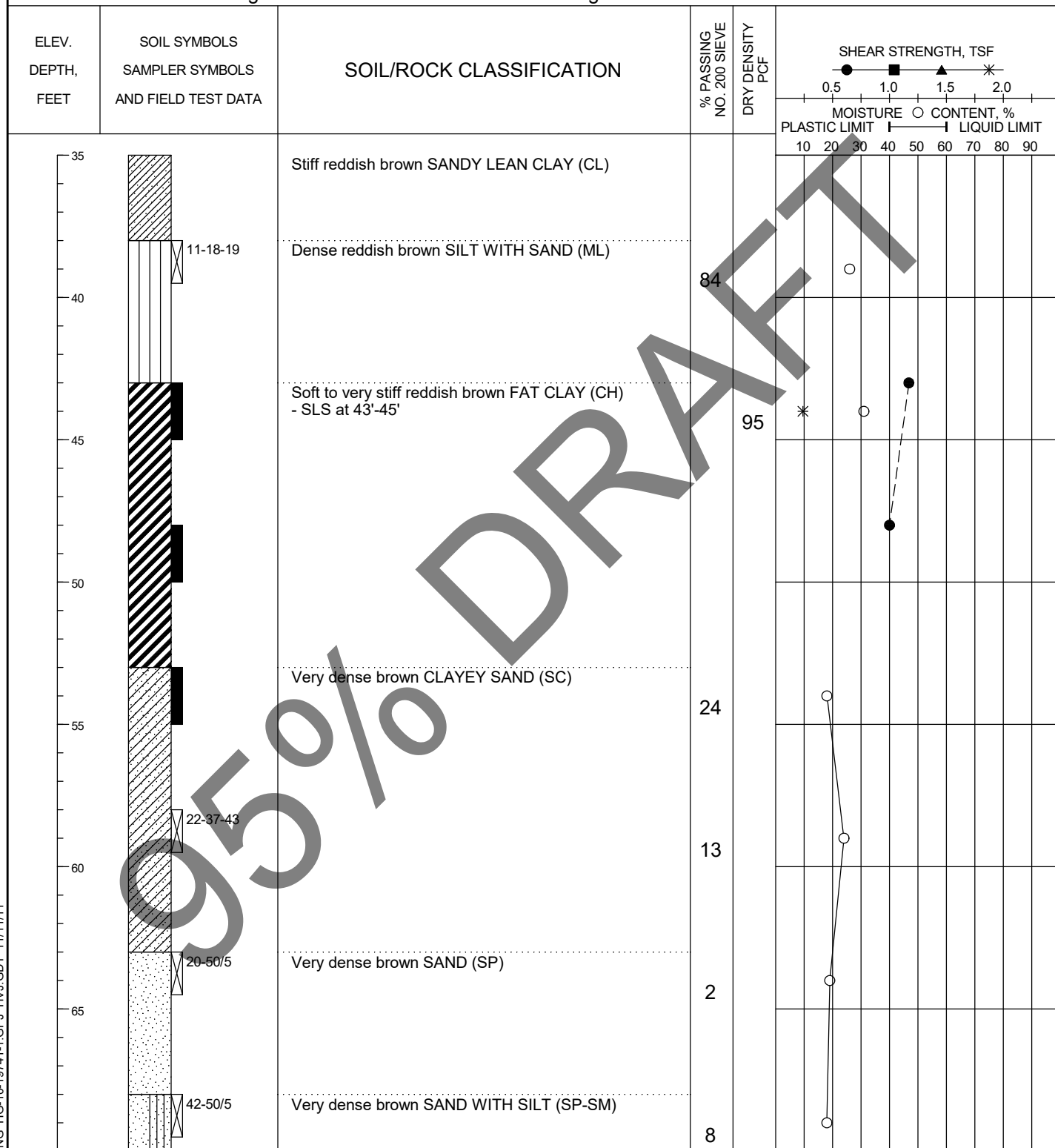
Easting: --

Project No.: HG1019741-1

Elevation:

Station: --

Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-1b

LOG OF BORING

Project: Bayport Ship Channel Widening and Deepening

Boring No.: BH-2

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9/30/2011

Northing: --

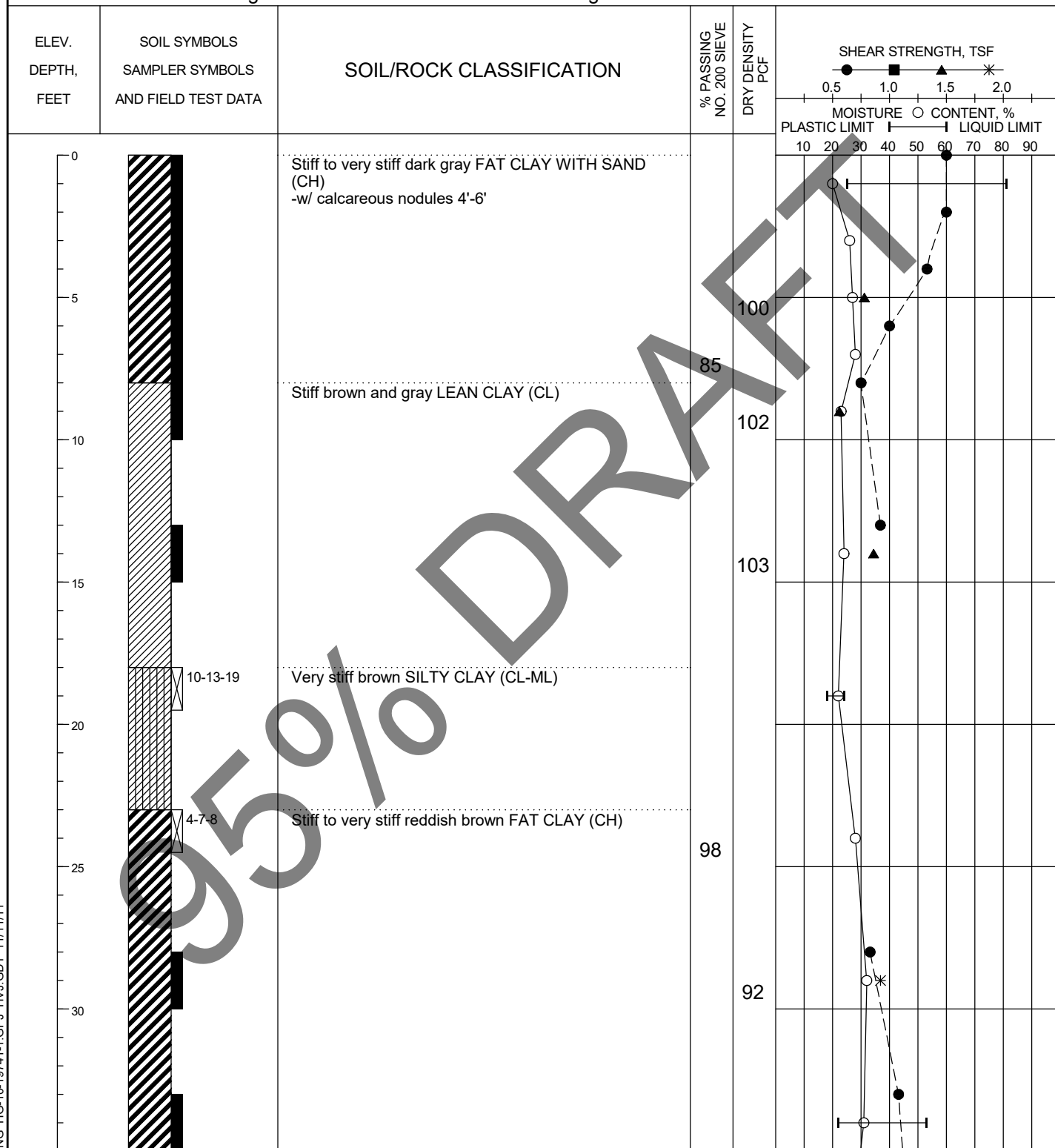
Easting: --

Project No.: HG1019741-1

Elevation: --

Station: --

Offset: --



Shear Types:

● = Hand Penet.

■ = Torvane

▲ = Unconf. Comp.

* = UU Triaxial

See Plate 2 for boring location.

PLATE A-2a

LOG OF SOIL BORING HG-10-19741-1.GPJ HVJ.GDT 11/11/11

LOG OF BORING

Project: Bayport Ship Channel Widening and Deepening

Boring No.: BH-2

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9/30/2011

Northing: --

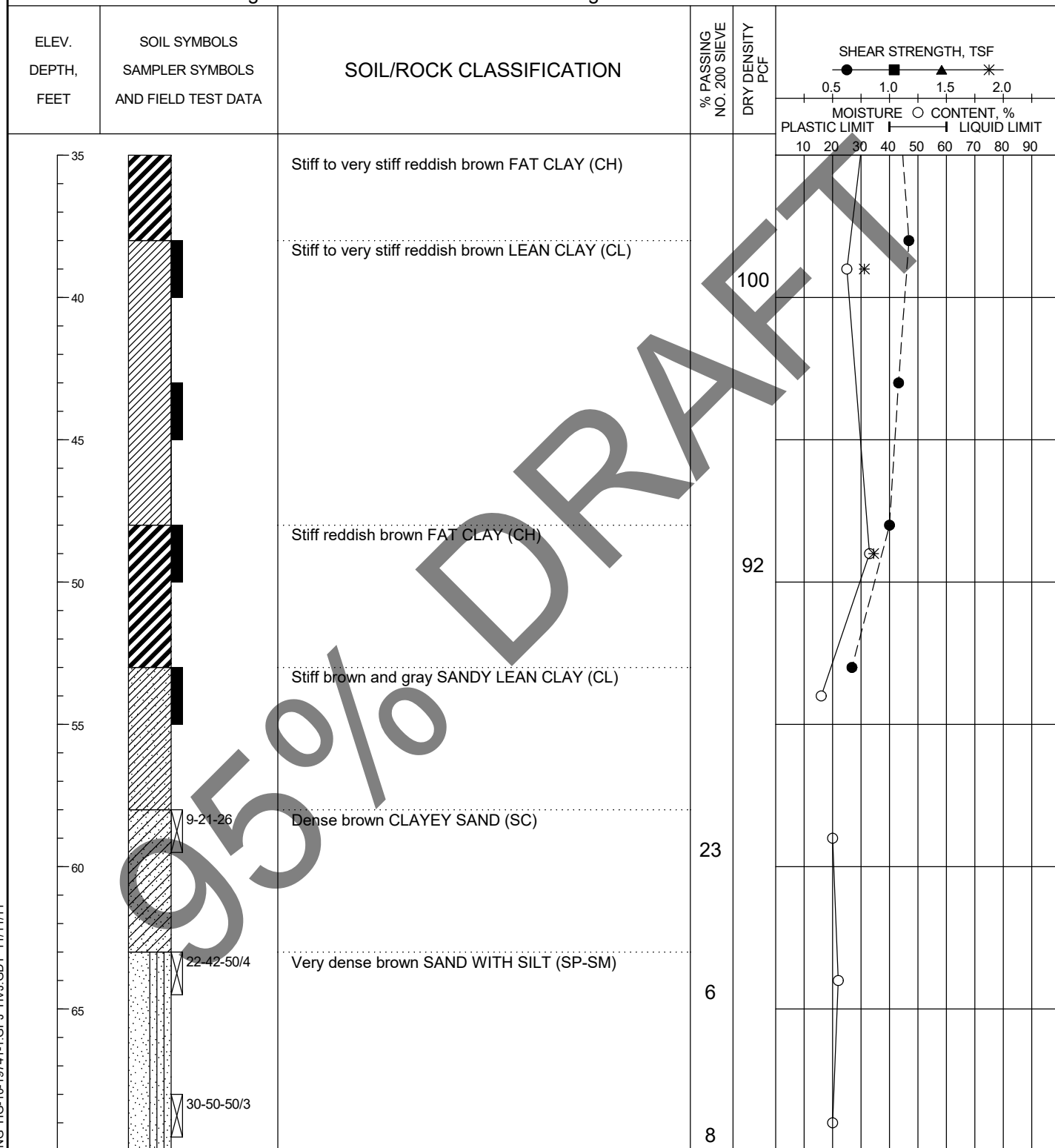
Easting: --

Project No.: HG1019741-1

Elevation: --

Station: --

Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

See Plate 2 for boring location.

PLATE A-2b

LOG OF BORING

Project: HSC Borings

Boring No.: HSC-09-05 (Depth of water = 17.2 ft)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 10/25/2009

Northing: 13,798,751.9

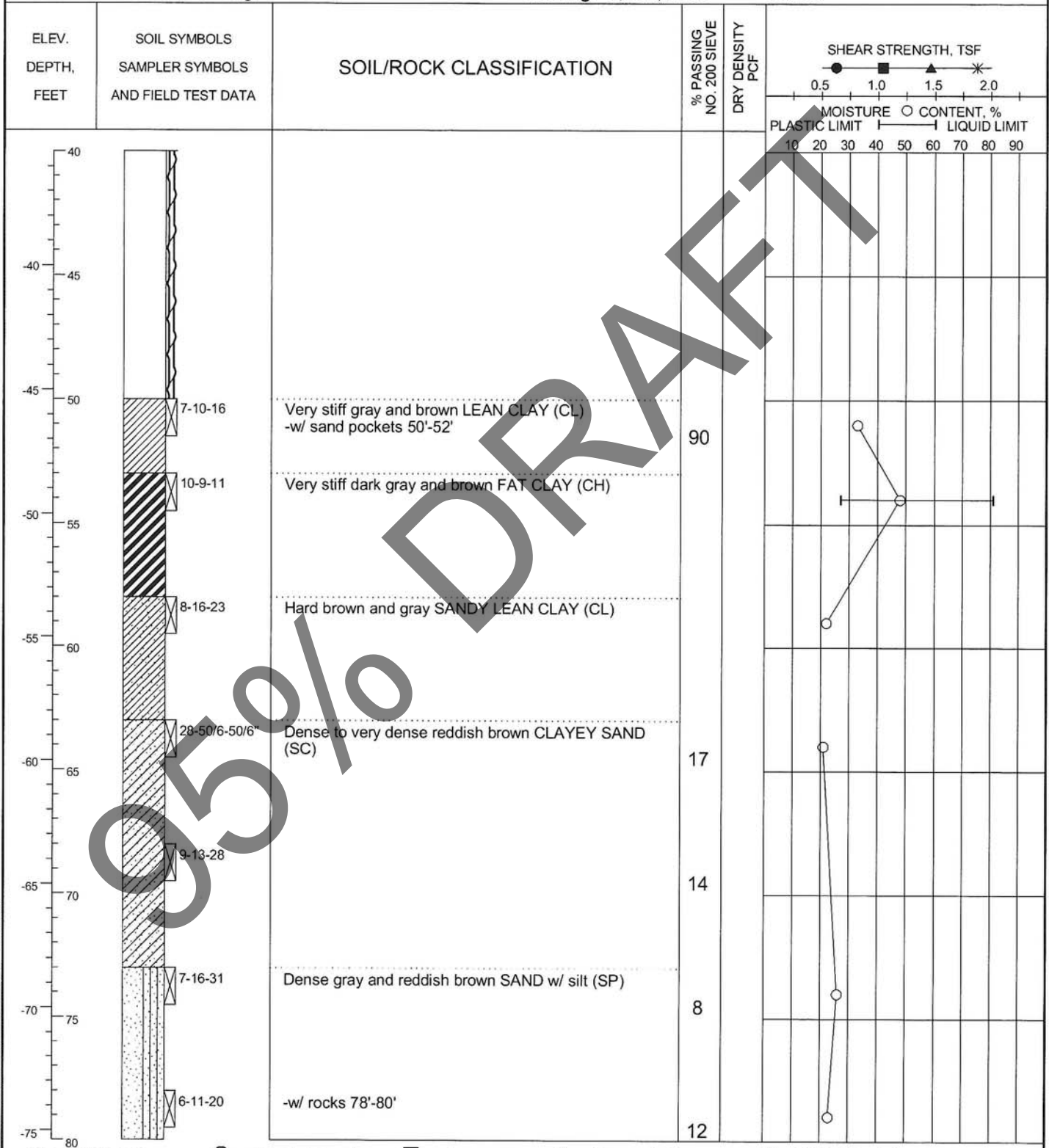
Easting: 3,250,628.5

Project No.: HG0915782

Elevation: -12.6 feet

Station: --

Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-5b



LOG OF BORING

Project: HSC Borings

Boring No.: HSC-09-06 (Depth of water = 14.5 ft)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 10/25/2009

Northing: 13,797,685.5

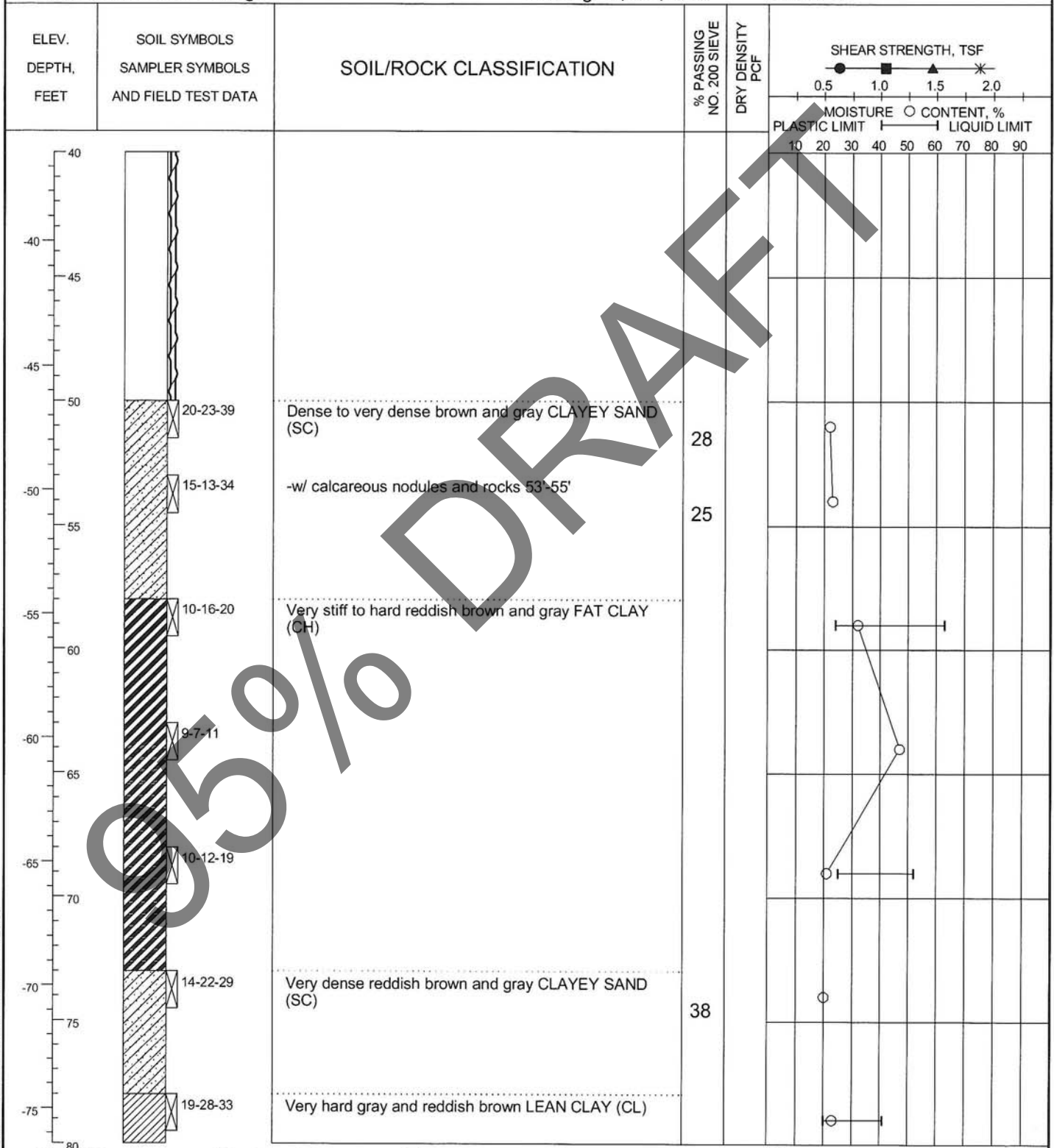
Easting: 3,252,091.7

Project No.: HG0915782

Elevation: -10.9 feet

Station: --

Offset: --



Shear Types:

● = Hand Penet.

■ = Torvane

▲ = Unconf. Comp.

* = UU Triaxial

See Plate 2 for boring location.

PLATE A-6b

LOG OF BORING

Project: HSC Borings

Boring No.: HSC-09-07 (Depth of water = 11.5 ft)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 11/1/2009

Northing: 13,795,878.7

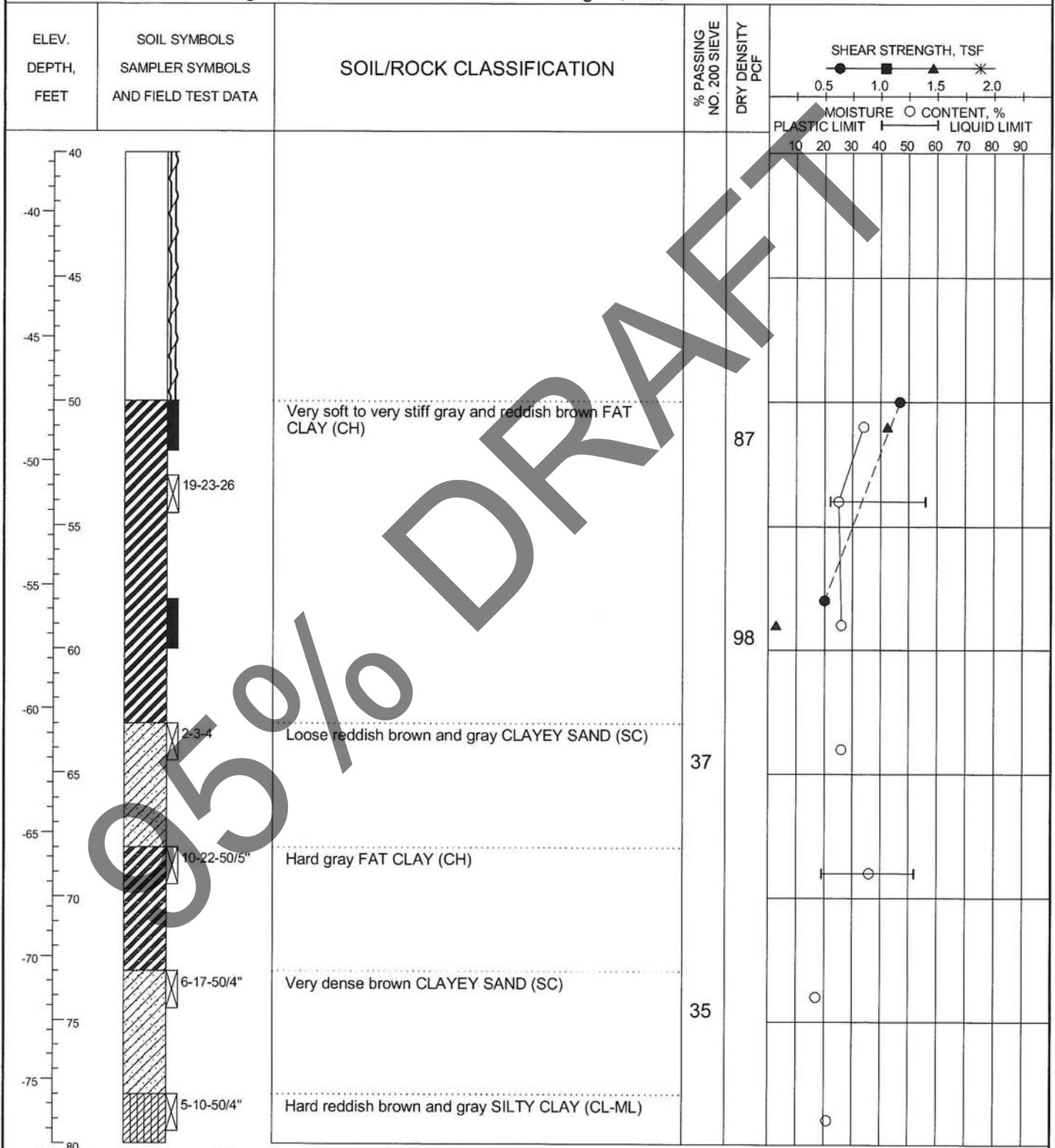
Easting: 3,251,576.3

Project No.: HG0915782

Elevation: -9.1 feet

Station: --

Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-7b



LOG OF SOIL BORING HG-09-15782.GPJ HVJ.GDT 11/23/09

LOG OF BORING

Project: HSC Borings

Boring No.: HSC-09-08 (Depth of water = 17.4 ft)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 10/28/2009

Northing: 13,794,405.5

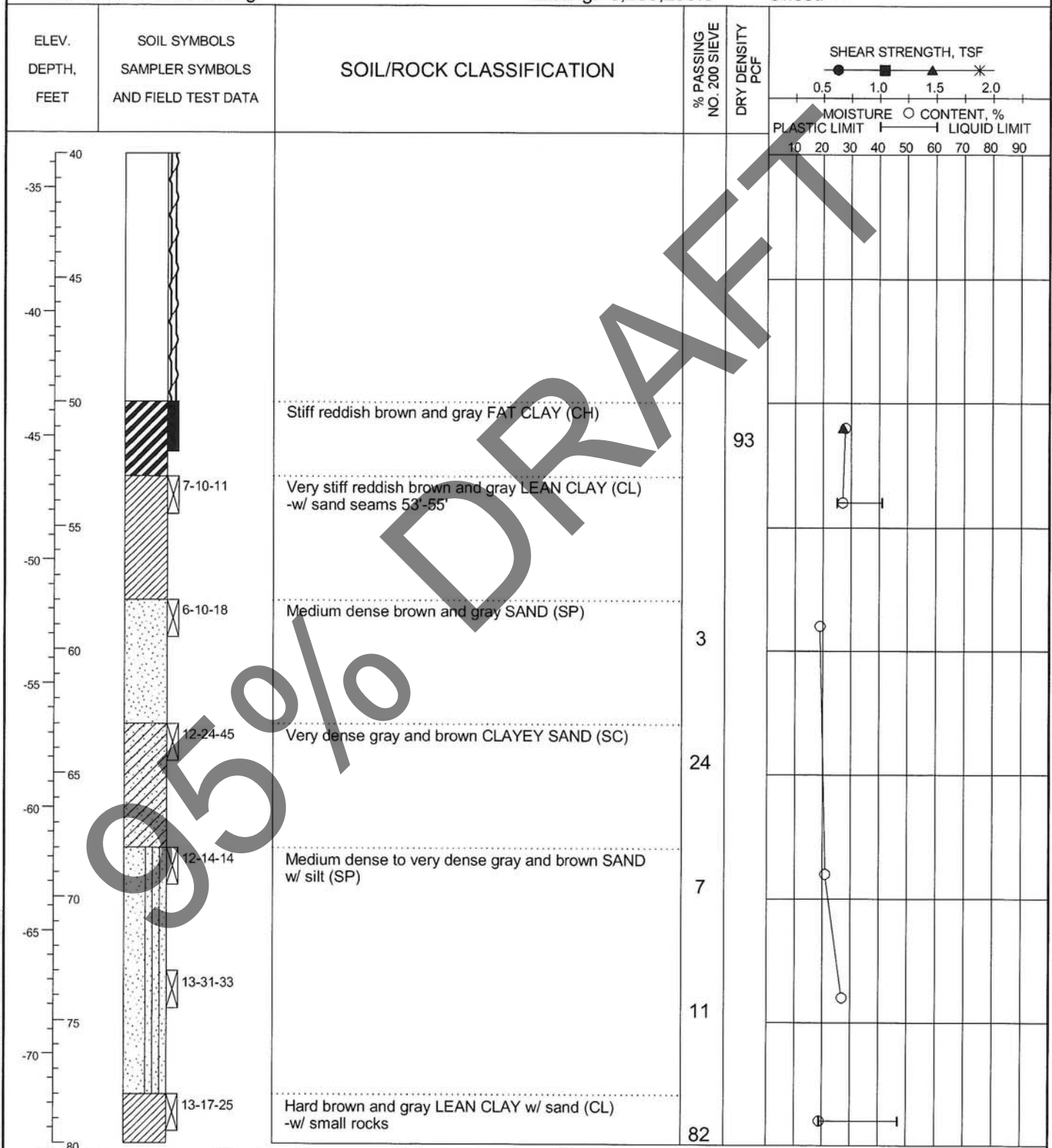
Easting: 3,253,299.5

Project No.: HG0915782

Elevation: -11.0 feet

Station: --

Offset: --



Shear Types:

● = Hand Penet.

■ = Torvane

▲ = Unconf. Comp.

* = UU Triaxial

See Plate 2 for boring location.

PLATE A-8b

LOG OF BORING

Project: HSC Borings

Boring No.: HSC-09-09 (Depth of water = 13.5 ft)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 10/28/2009

Northing: 13,789,208.7

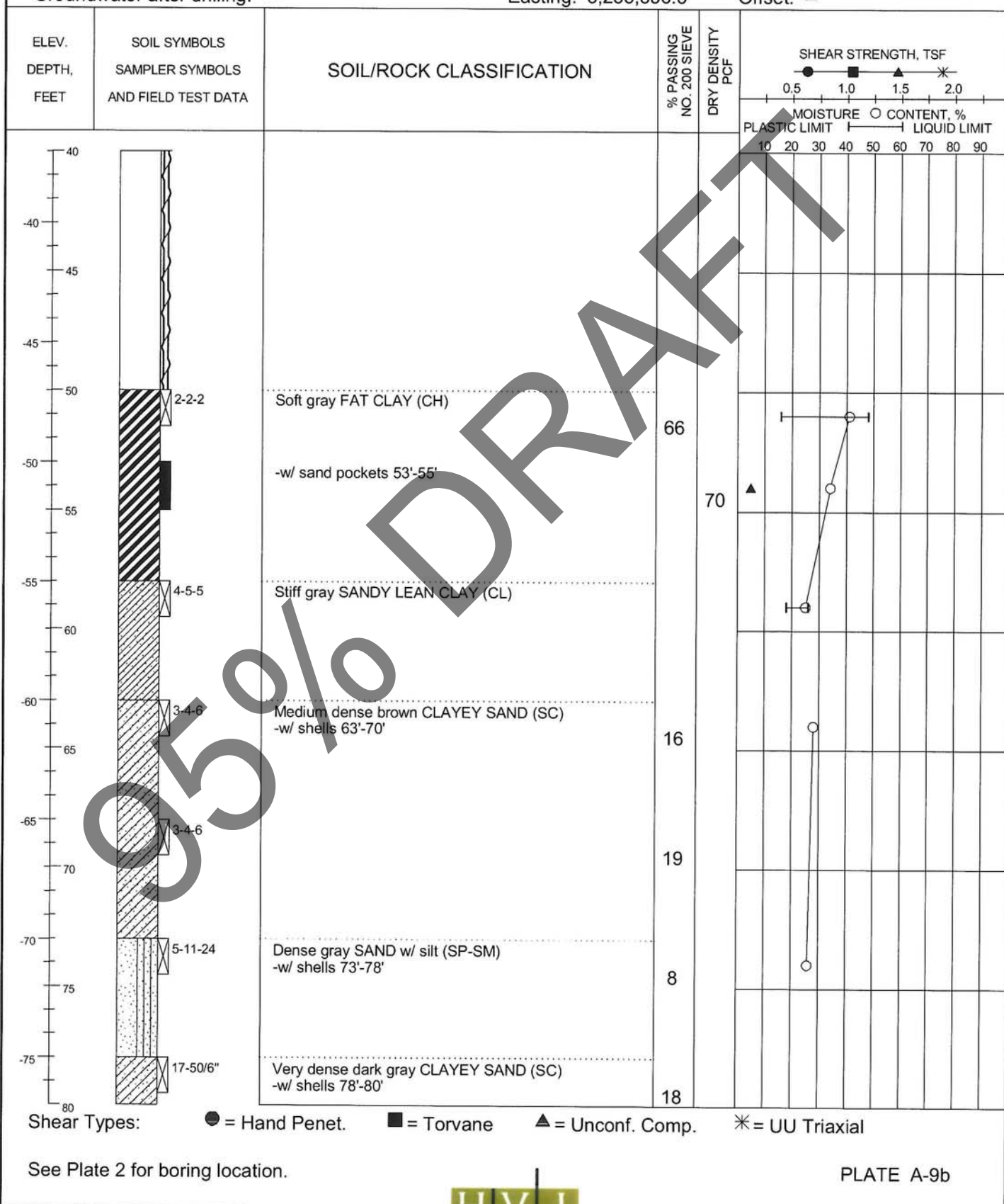
Easting: 3,255,836.3

Project No.: HG0915782

Elevation: -10.5 feet

Station: --

Offset: --



LOG OF SOIL BORING HG-09-15782.GPJ HVJ GDT 11/23/09

LOG OF BORING

Project: HSC Borings

Boring No.: HSC-09-10 (Depth of water = 13.9 ft)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 10/28/2009

Northing: 13,786,780.0

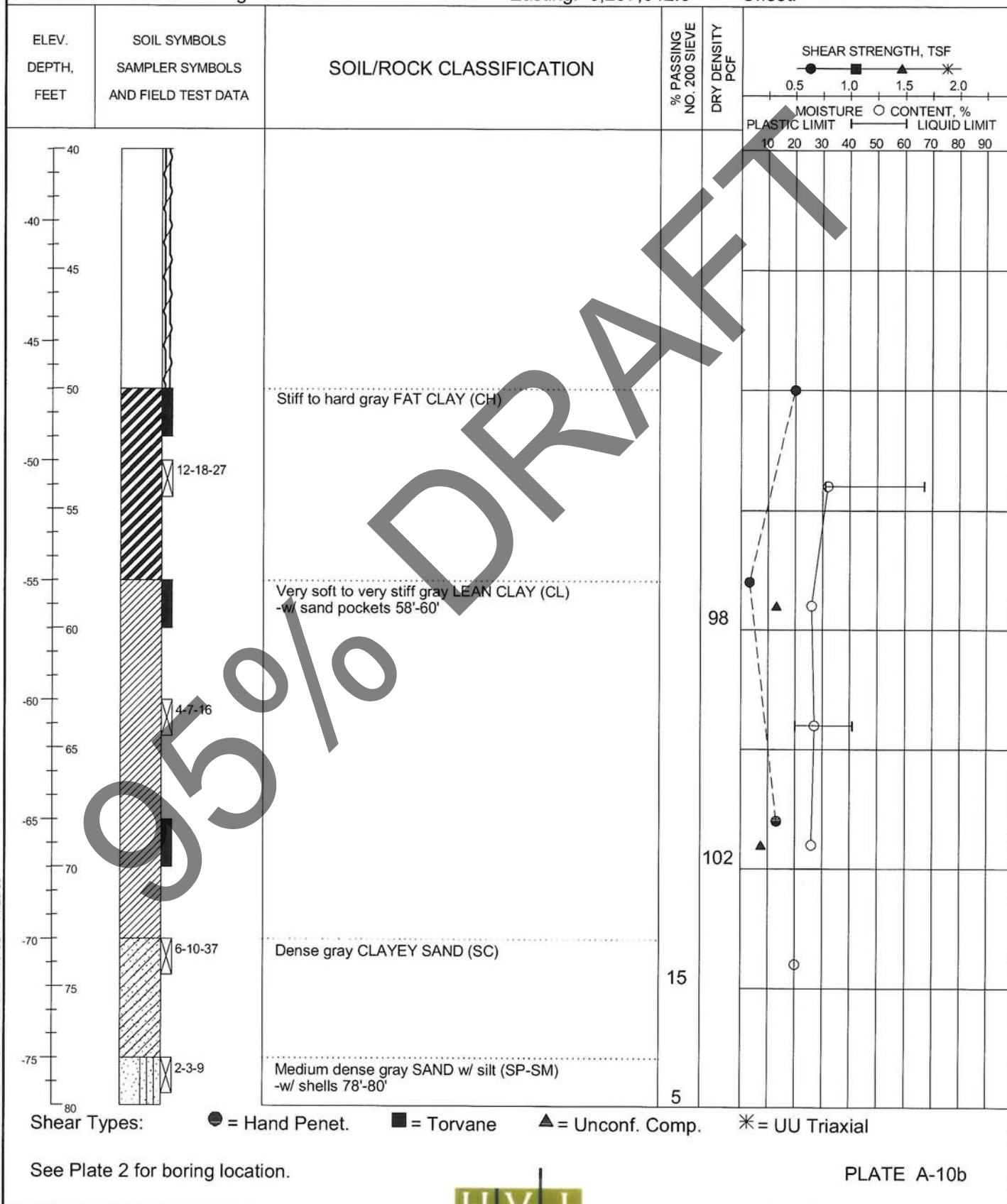
Easting: 3,257,642.6

Project No.: HG0915782

Elevation: -10.9 feet

Station: --

Offset: --



LOG OF SOIL BORING HG-09-15782 GPJ HVJ GDT 11/23/09

LOG OF BORING

Project: HSC Borings

Boring No.: HSC-09-11 (Depth of water = 13.9 ft)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 10/27/2009

Northing: 13,784,106.5

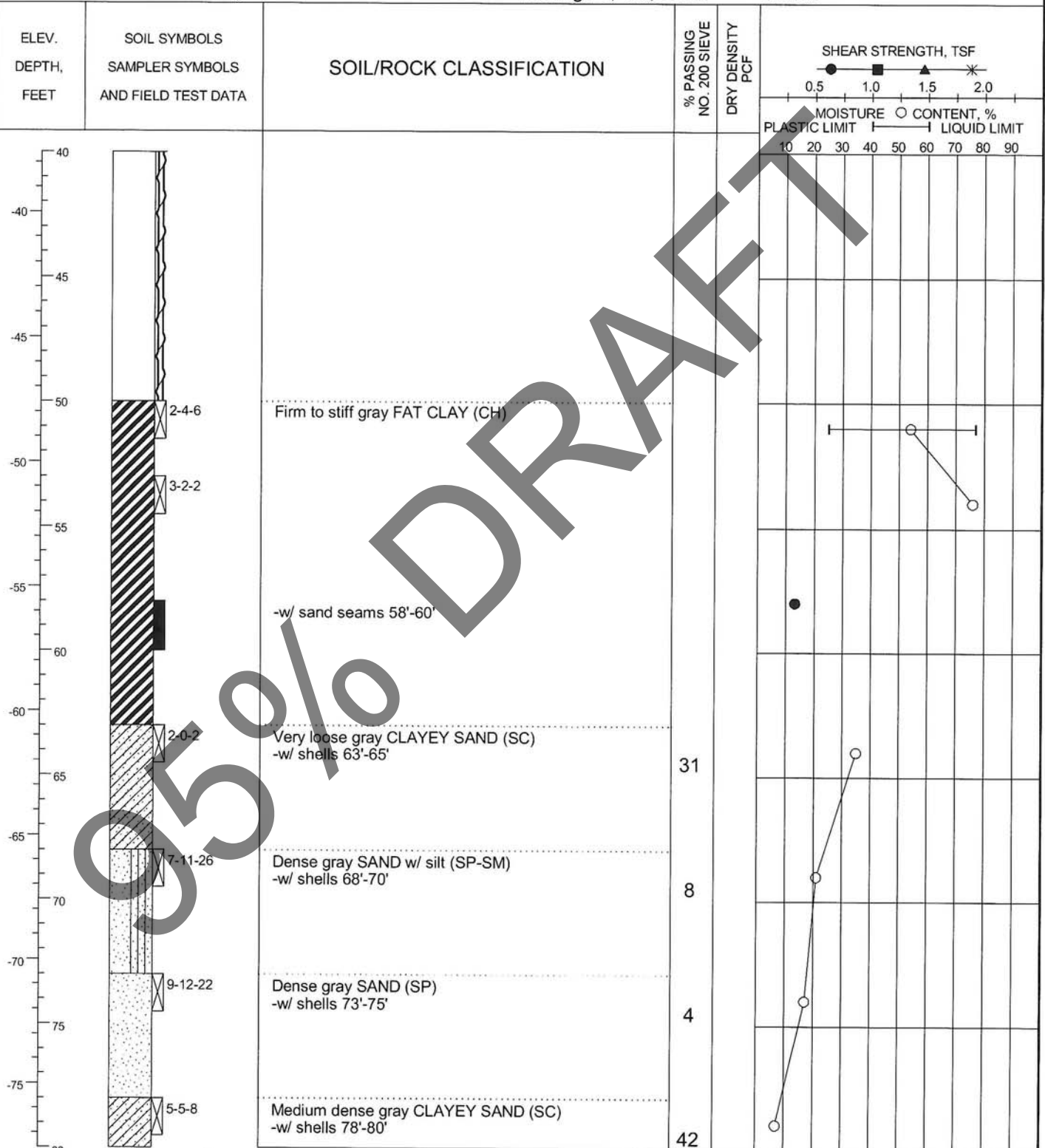
Easting: 3,258,313.8

Project No.: HG0915782

Elevation: -11.5 feet

Station: --

Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-11b

LOG OF SOIL BORING HG-09-15782 GPJ HVJ GDT 11/23/09



LOG OF BORING

Project: HSC Borings

Boring No.: HSC-09-12 (Depth of water = 15.4 ft)

Groundwater during drilling: 0 feet

Groundwater after drilling: ---

Date: 10/27/2009

Northing: 13,782,937.0

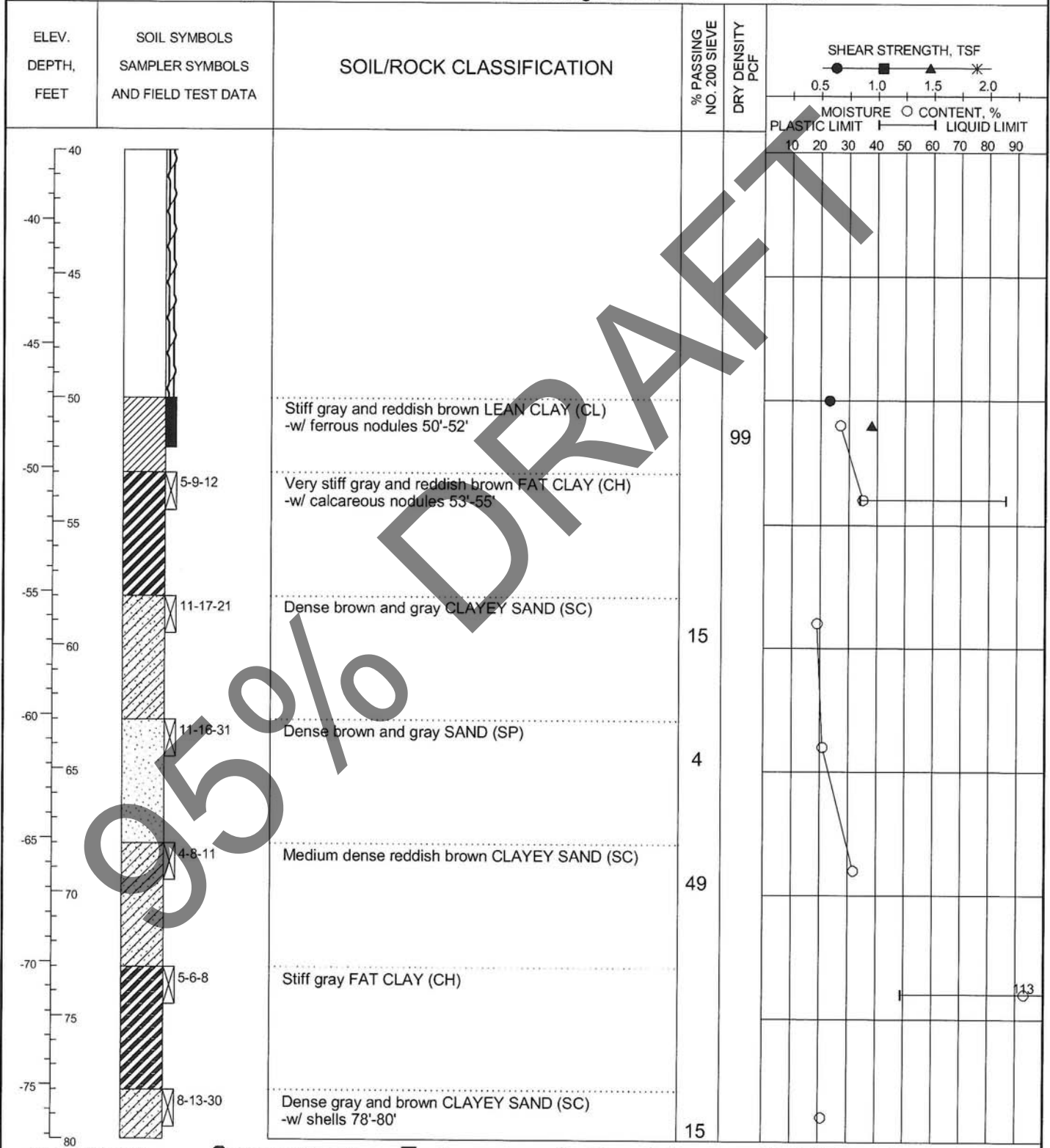
Easting: 3,259,172.2

Project No.: HG0915782

Elevation: -12.6 feet

Station: --

Offset: --



Shear Types:

● = Hand Penet.

■ = Torvane

▲ = Unconf. Comp.

* = UU Triaxial

See Plate 2 for boring location.

PLATE A-12b

LOG OF SOIL BORING HG-09-15782.GPJ HVJ GDT 11/23/09



LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-1
 Depth of Water: 2.4 feet
 Date: 11/2/2009

Northing: 13,791,960.0
 Easting: 3,239,469.7

Project No.: HG0915780
 Bay Bottom Elevation: -0.3 feet MLT
 Station: --
 Offset: --

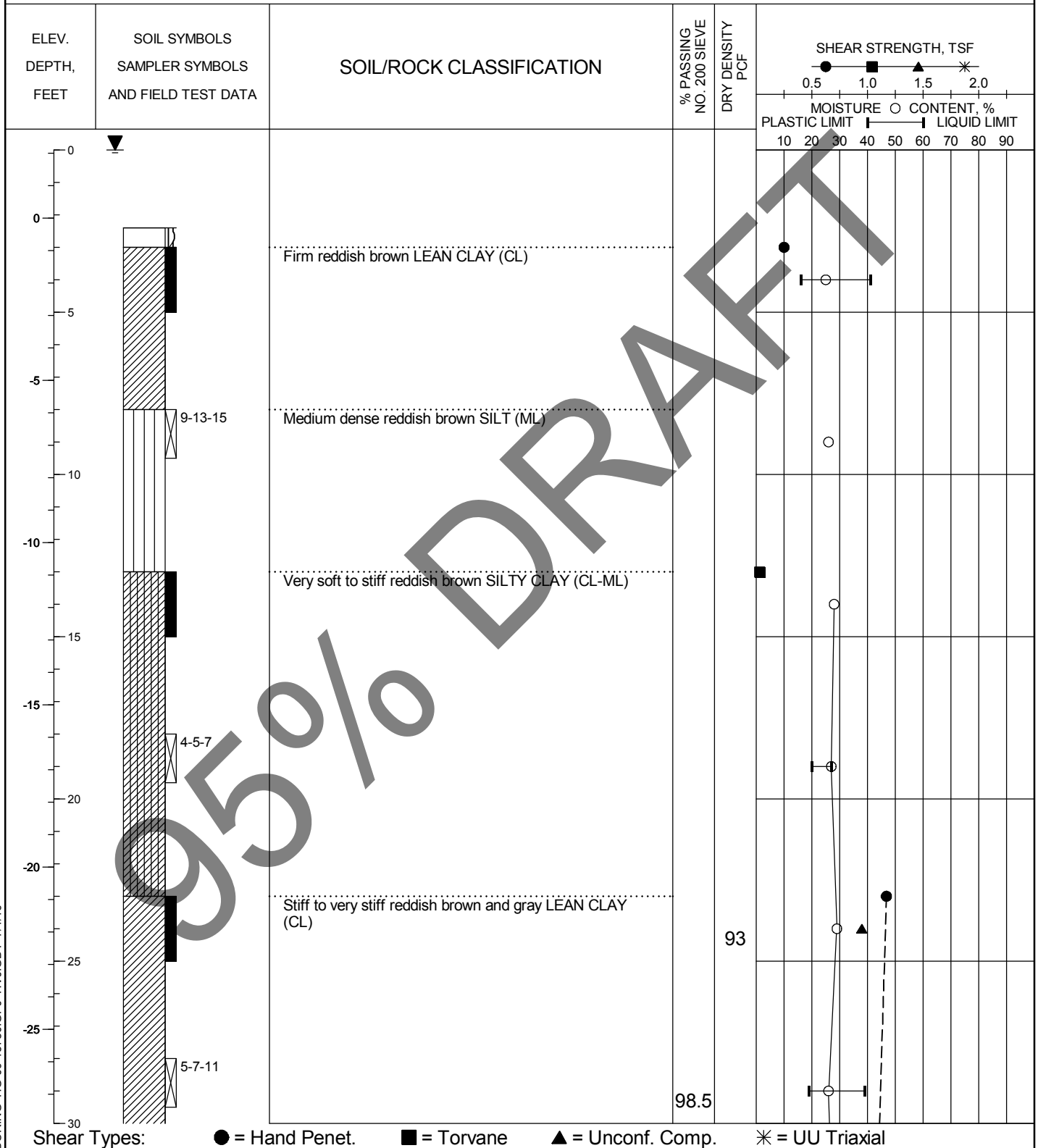


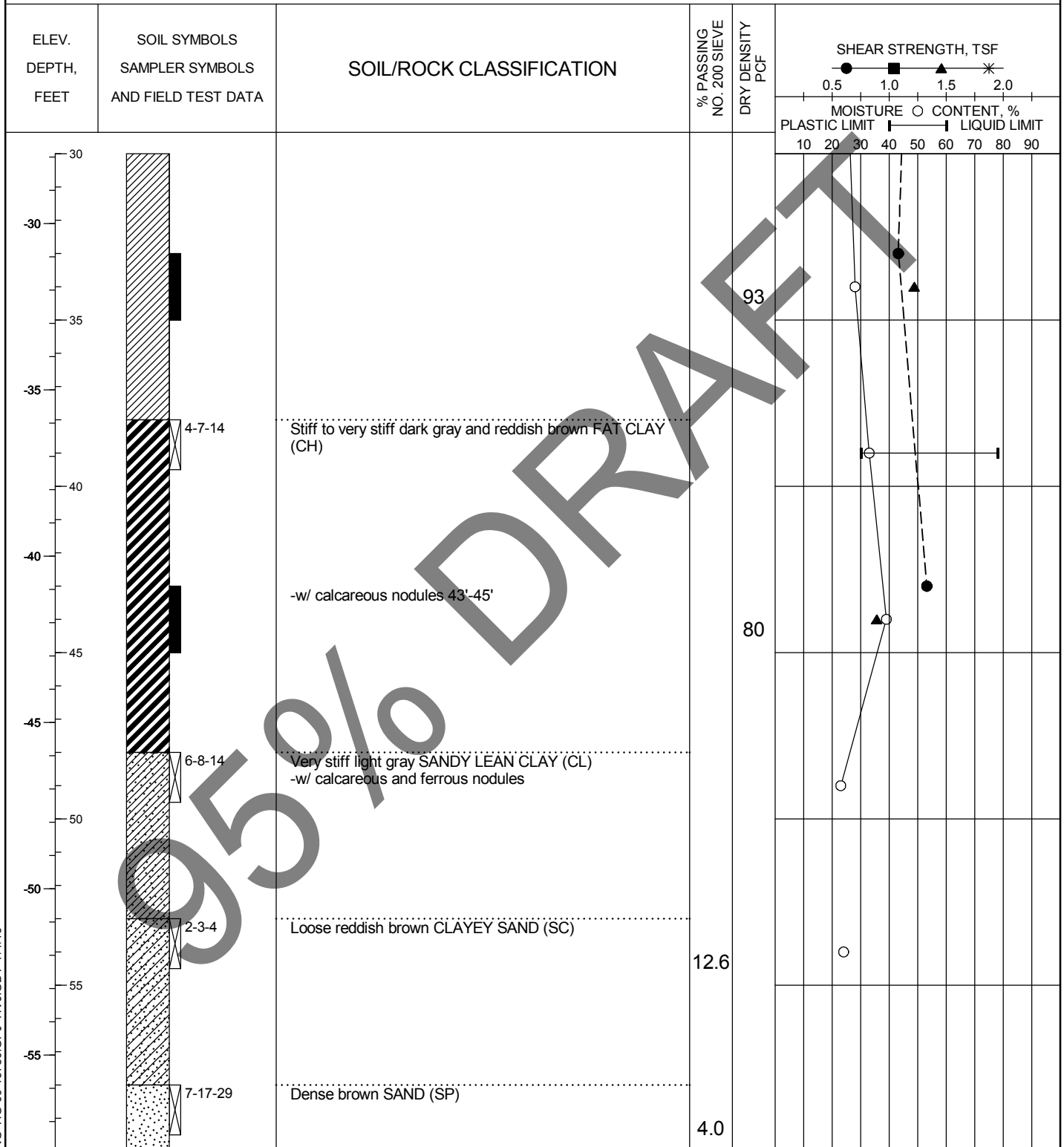
PLATE A-a

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
Boring No.: BC-1
Depth of Water: 2.4 feet
Date: 11/2/2009

Northing: 13,791,960.0
Easting: 3,239,469.7

Project No.: HG0915780
Bay Bottom Elevation: -0.3 feet MLT
Station: --
Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

PLATE A-b

LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-2
 Depth of Water: 14 feet
 Date: 7/27/2009

Northing: 13,792,183.0
 Easting: 3,239,956.0

Project No.: HG0915780
 Bay Bottom Elevation: -12.8 feet MLT
 Station: --
 Offset: --

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF	SHEAR STRENGTH, TSF		MOISTURE CONTENT, %										
					●	■	▲	✱	○	□							
					0.5	1.0	1.5	2.0	10	20	30	40	50	60	70	80	90
						PLASTIC LIMIT		LIQUID LIMIT									
0	▼																
0																	
-5																	
-5																	
-10																	
-10																	
-15																	
-15																	
-20																	
-20																	
-25																	
-25																	
-30																	

Shear Types:

● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

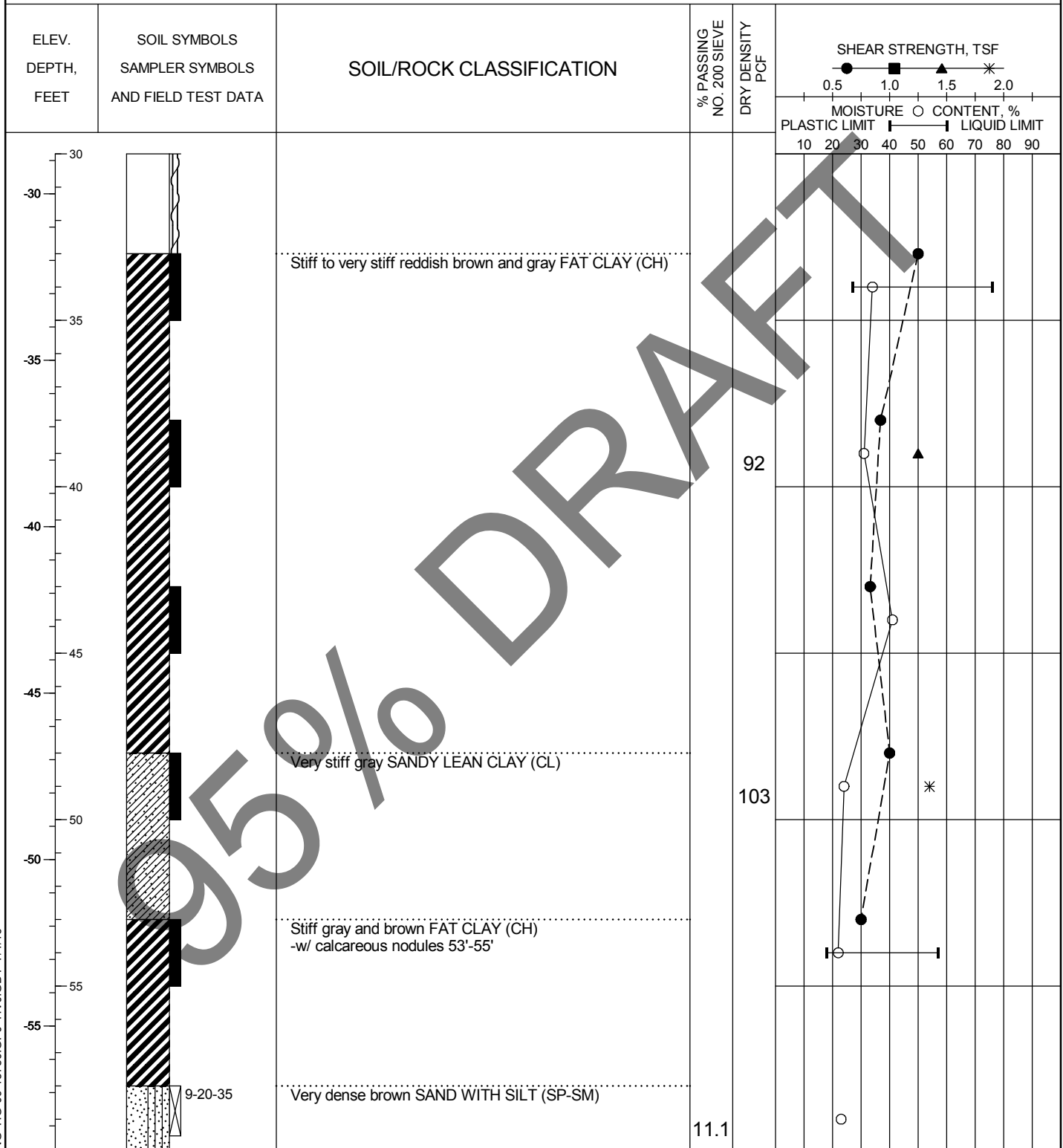
PLATE A-a

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-2
 Depth of Water: 14 feet
 Date: 7/27/2009

Northing: 13,792,183.0
 Easting: 3,239,956.0

Project No.: HG0915780
 Bay Bottom Elevation: -12.8 feet MLT
 Station: --
 Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

PLATE A-b

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-3
 Depth of Water: 9.5 feet
 Date: 7/28/2009

Northing: 13,792,964.4
 Easting: 3,241,452.0

Project No.: HG0915780
 Bay Bottom Elevation: -7.1 feet MLT
 Station: --
 Offset: --

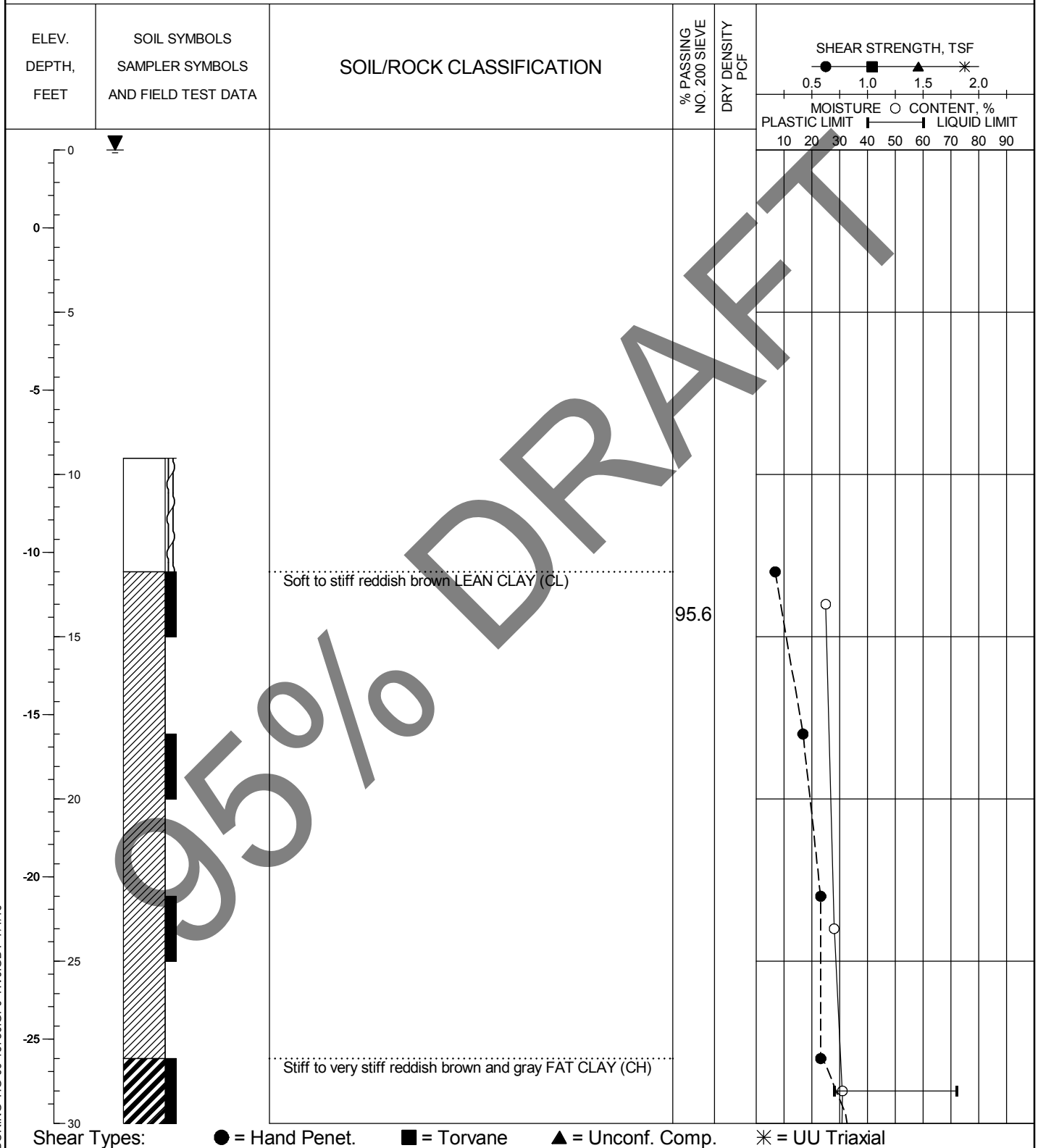


PLATE A-a

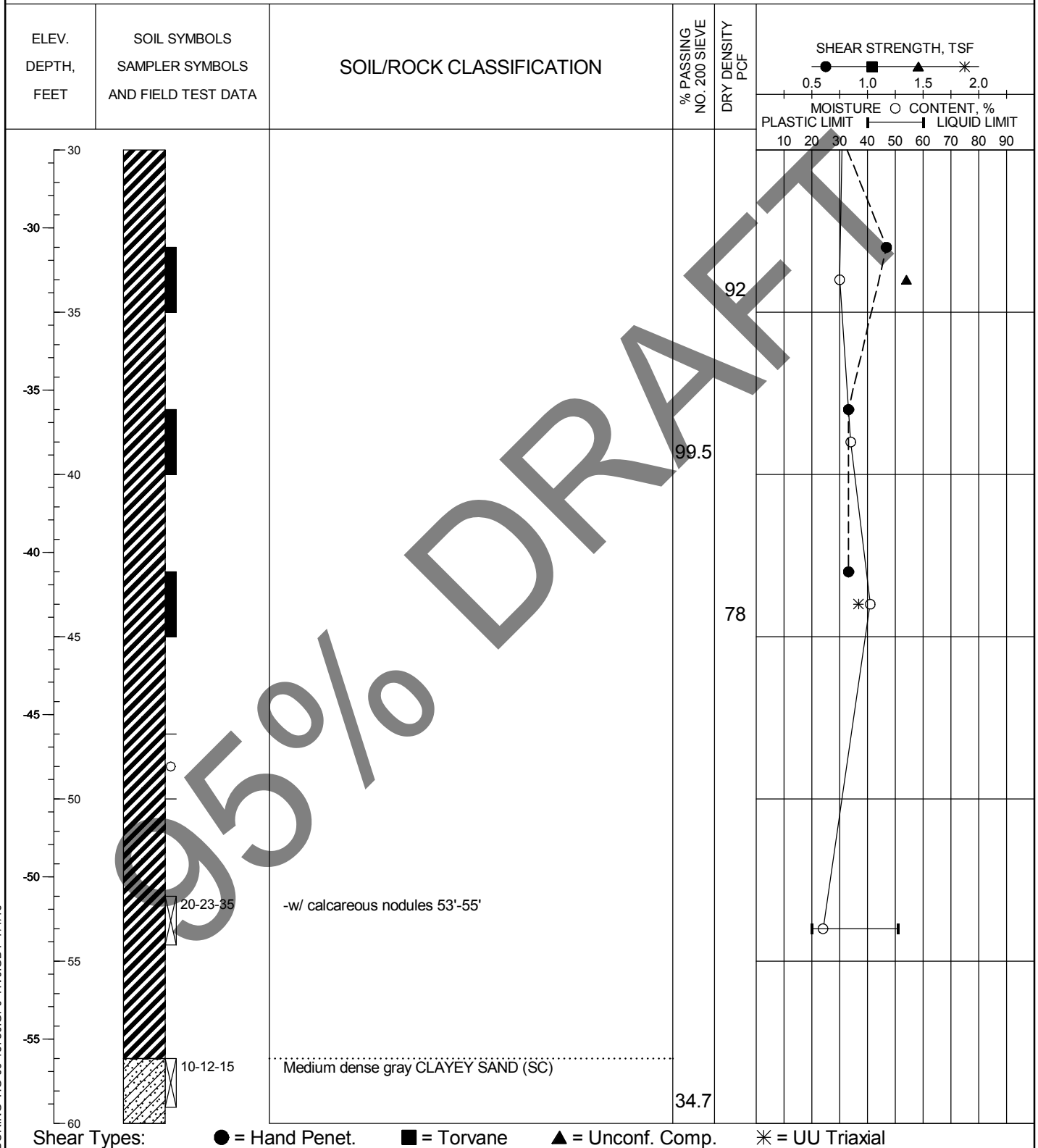
LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-3
 Depth of Water: 9.5 feet
 Date: 7/28/2009

Northing: 13,792,964.4
 Easting: 3,241,452.0

Project No.: HG0915780
 Bay Bottom Elevation: -7.1 feet MLT
 Station: --
 Offset: --



LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

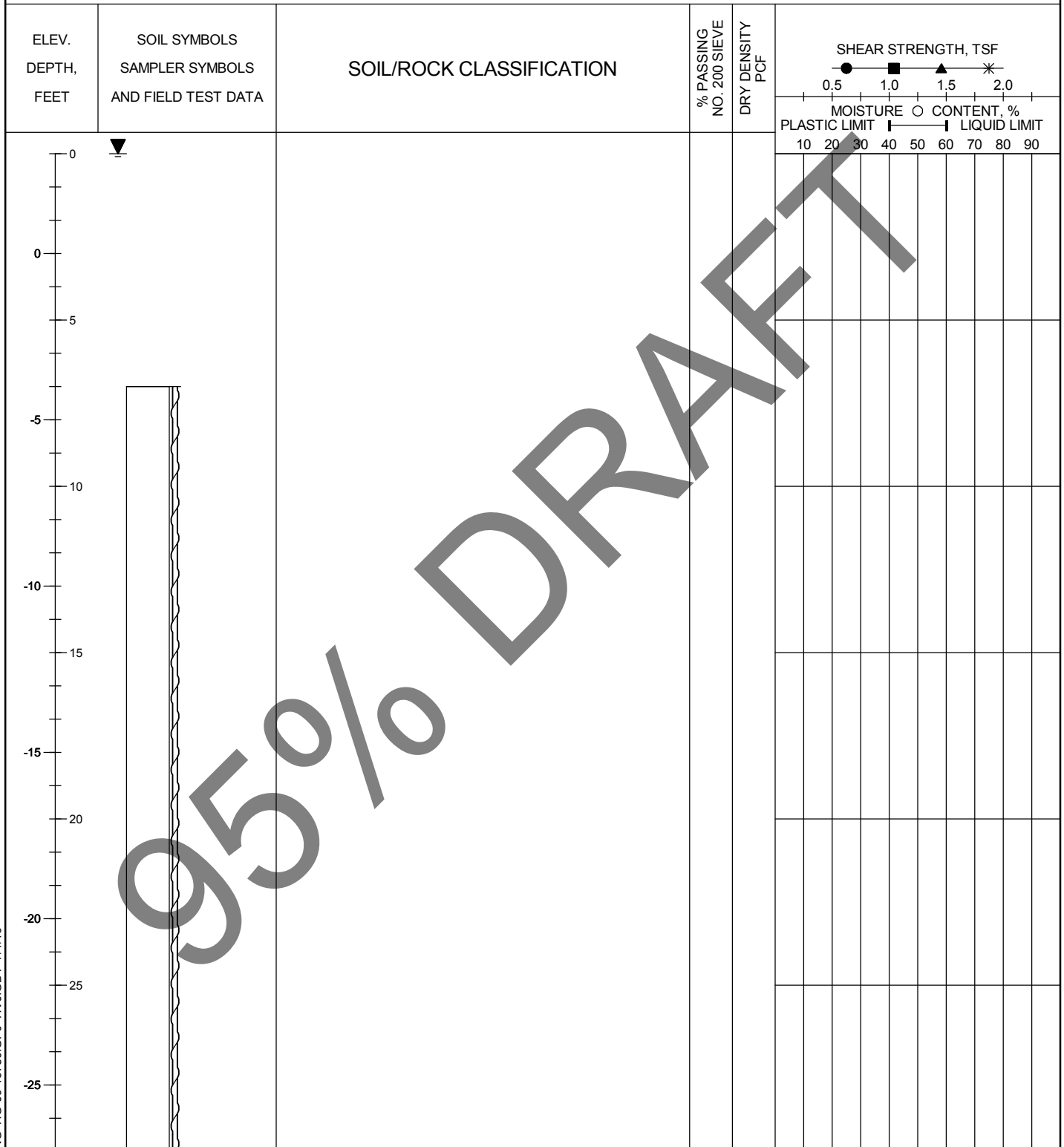
PLATE A-b

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-4
 Depth of Water: 7 feet
 Date: 8/1/2009

Northing: 13,792,079.0
 Easting: 3,241,379.6

Project No.: HG0915780
 Bay Bottom Elevation: -4.0 feet MLT
 Station: --
 Offset: --



95% DRAFT

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

PLATE A-a

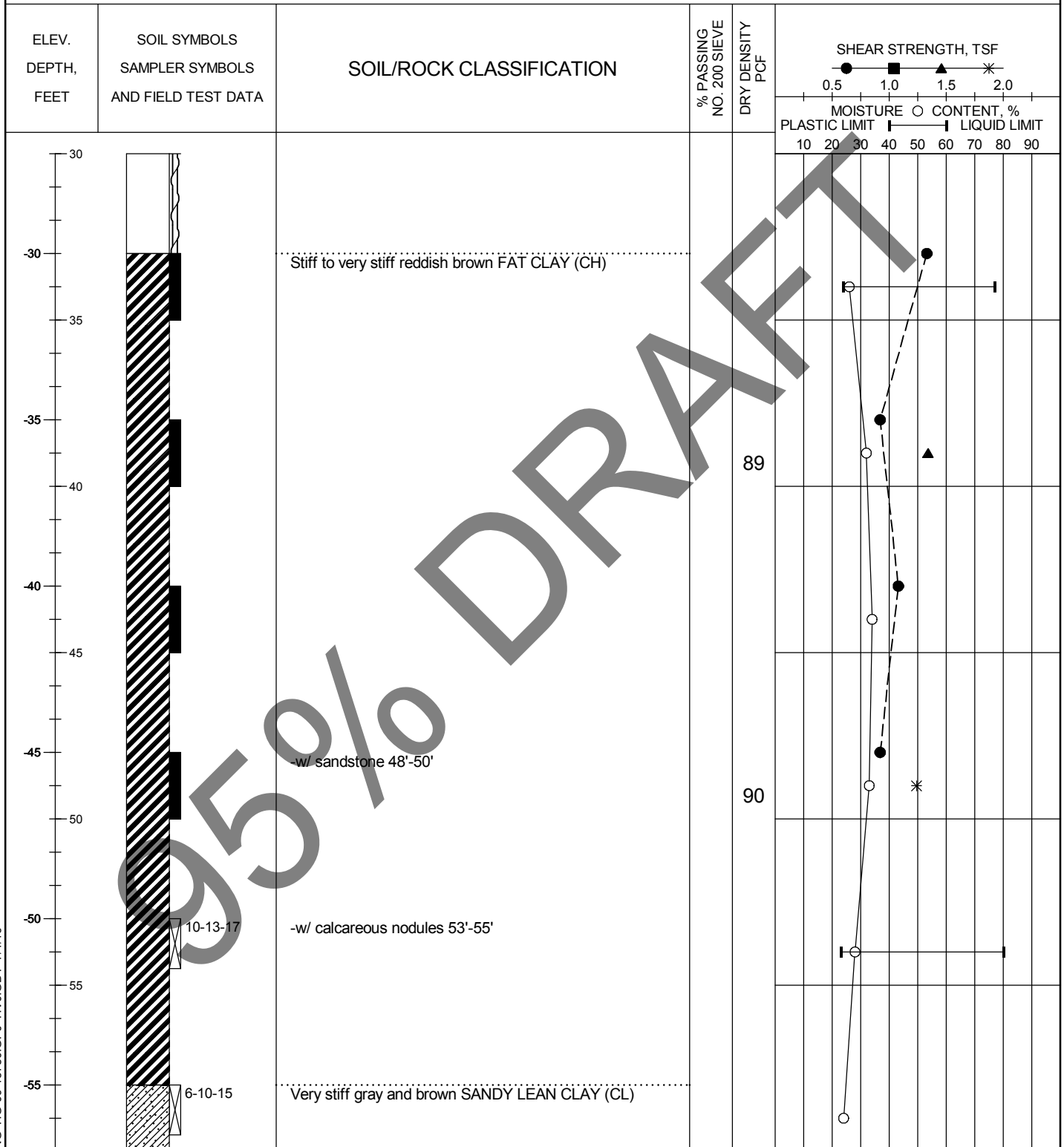


LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-4
 Depth of Water: 7 feet
 Date: 8/1/2009

Northing: 13,792,079.0
 Easting: 3,241,379.6

Project No.: HG0915780
 Bay Bottom Elevation: -4.0 feet MLT
 Station: --
 Offset: --



Shear Types:

● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

PLATE A-b

LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-5
 Depth of Water: 10 feet
 Date: 7/27/2009

Northing: 13,792,877.0
 Easting: 3,242,944.3

Project No.: HG0915780
 Bay Bottom Elevation: -7.7 feet MLT
 Station: --
 Offset: --

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF	SHEAR STRENGTH, TSF ● ■ ▲ ✱ 0.5 1.0 1.5 2.0		MOISTURE CONTENT, % ○ □ 10 20 30 40 50 60 70 80 90	
					PLASTIC LIMIT LIQUID LIMIT			
0	▼							
0								
5								
-5								
-10								
-15								
-20								
-25								
-30								

Shear Types:

● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

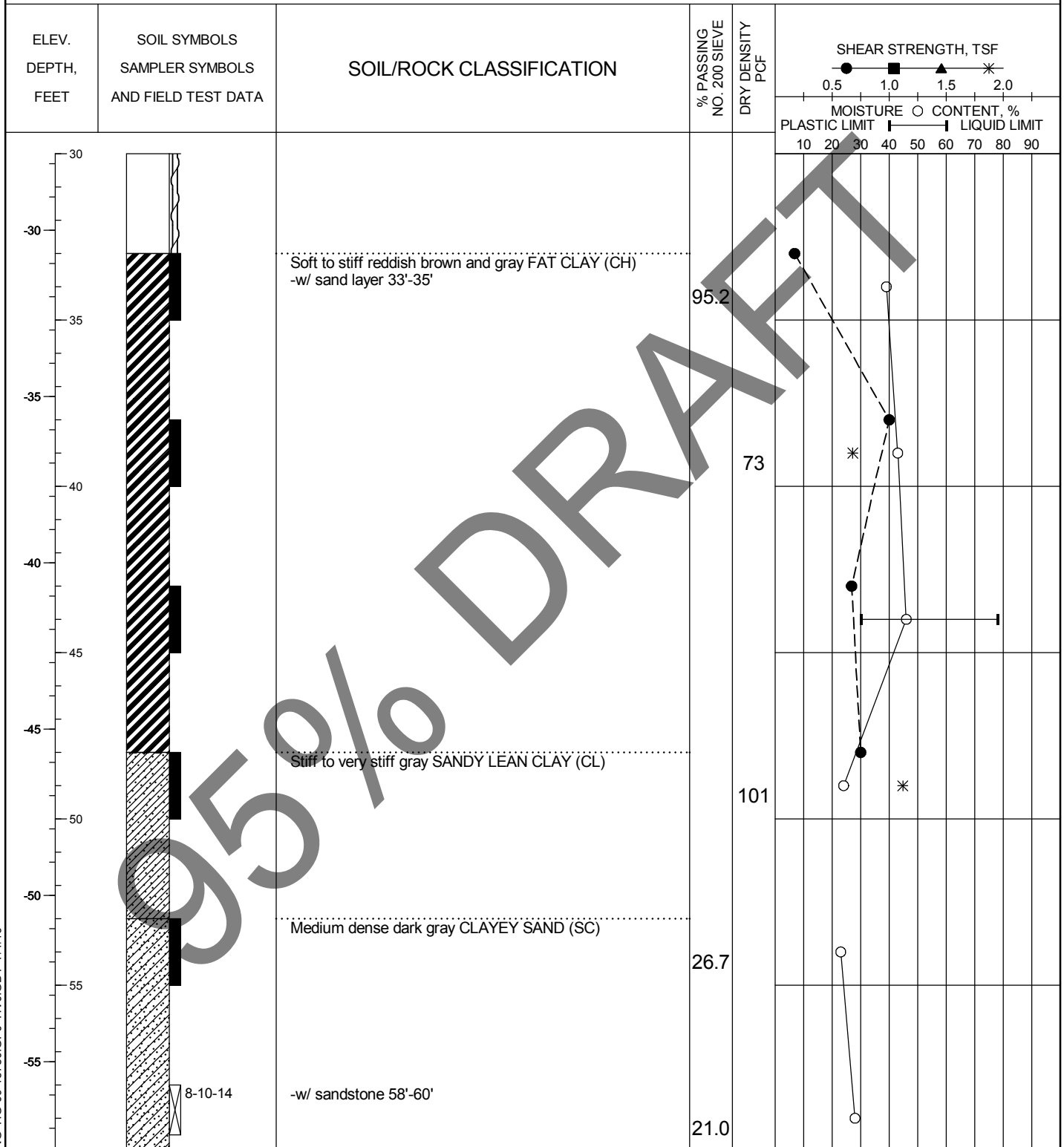
PLATE A-a

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-5
 Depth of Water: 10 feet
 Date: 7/27/2009

Northing: 13,792,877.0
 Easting: 3,242,944.3

Project No.: HG0915780
 Bay Bottom Elevation: -7.7 feet MLT
 Station: --
 Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

PLATE A-b

LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-6
 Depth of Water: 13 feet
 Date: 7/30/2009

Northing: 13,792,267.4
 Easting: 3,248,555.0

Project No.: HG0915780
 Bay Bottom Elevation: -10.4 feet MLT
 Station: --
 Offset: --

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF	SHEAR STRENGTH, TSF ● ■ ▲ ✱ 0.5 1.0 1.5 2.0 MOISTURE CONTENT, % ○ 10 20 30 40 50 60 70 80 90 PLASTIC LIMIT LIQUID LIMIT
0 0 5 -5 -10 -15 -20 -25 -30	▼				

Shear Types:

● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

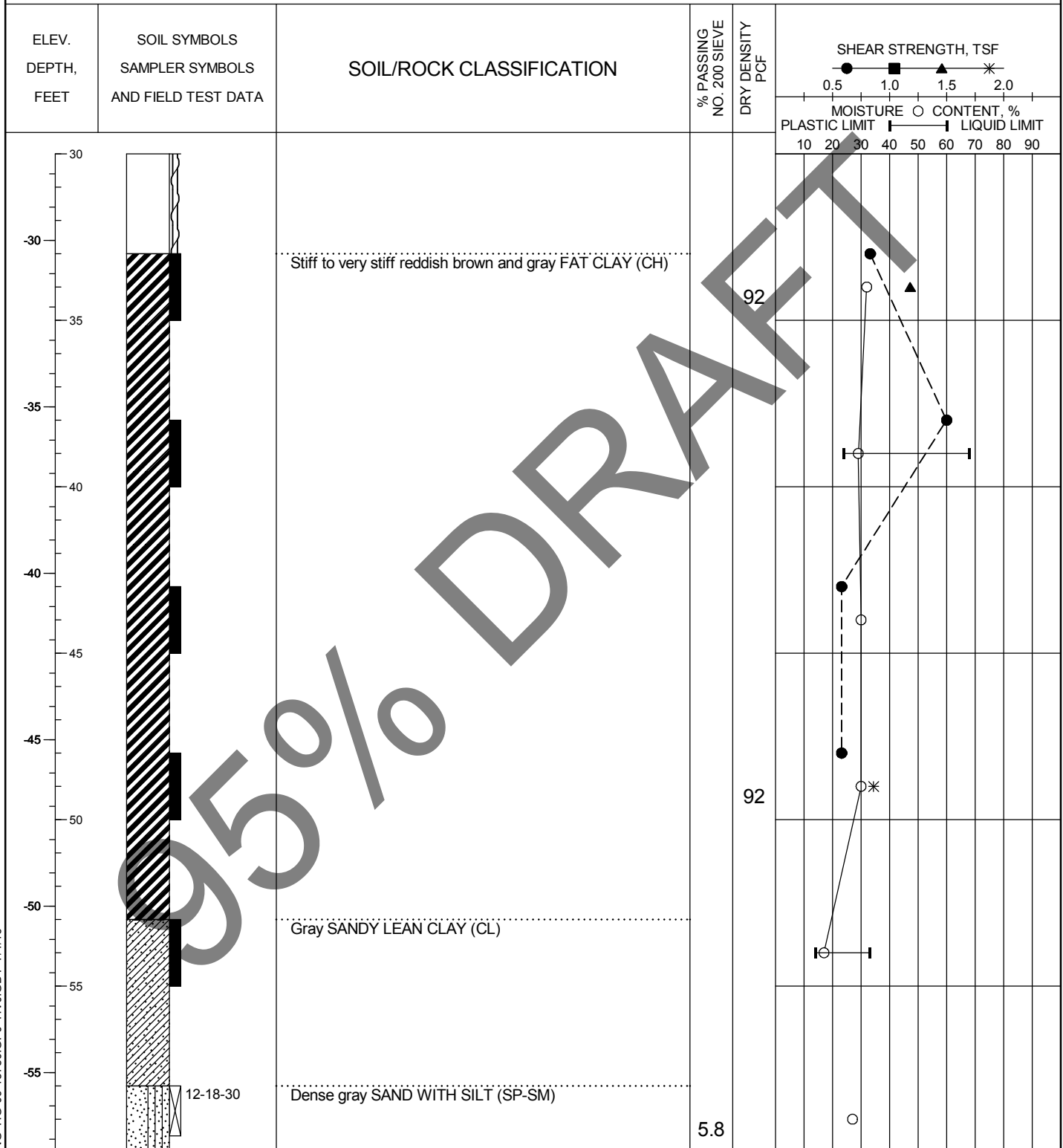
PLATE A-a

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-6
 Depth of Water: 13 feet
 Date: 7/30/2009

Northing: 13,792,267.4
 Easting: 3,248,555.0

Project No.: HG0915780
 Bay Bottom Elevation: -10.4 feet MLT
 Station: --
 Offset: --



Shear Types:

● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

PLATE A-b

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-7
 Depth of Water: 12 feet
 Date: 8/1/2009

Northing: 13,793,343.3
 Easting: 3,250,386.3

Project No.: HG0915780
 Bay Bottom Elevation: -9.7 feet MLT
 Station: --
 Offset: --

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF	SHEAR STRENGTH, TSF ● ■ ▲ ✱ 0.51.01.52.0 MOISTURE O CONTENT, % PLASTIC LIMIT LIQUID LIMIT 102030405060708090
0	▼				
0					
5					
-5					
-10					
-15					
-20					
-25					
-30					

95% DRAFT

Shear Types:

● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✱ = UU Triaxial

LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

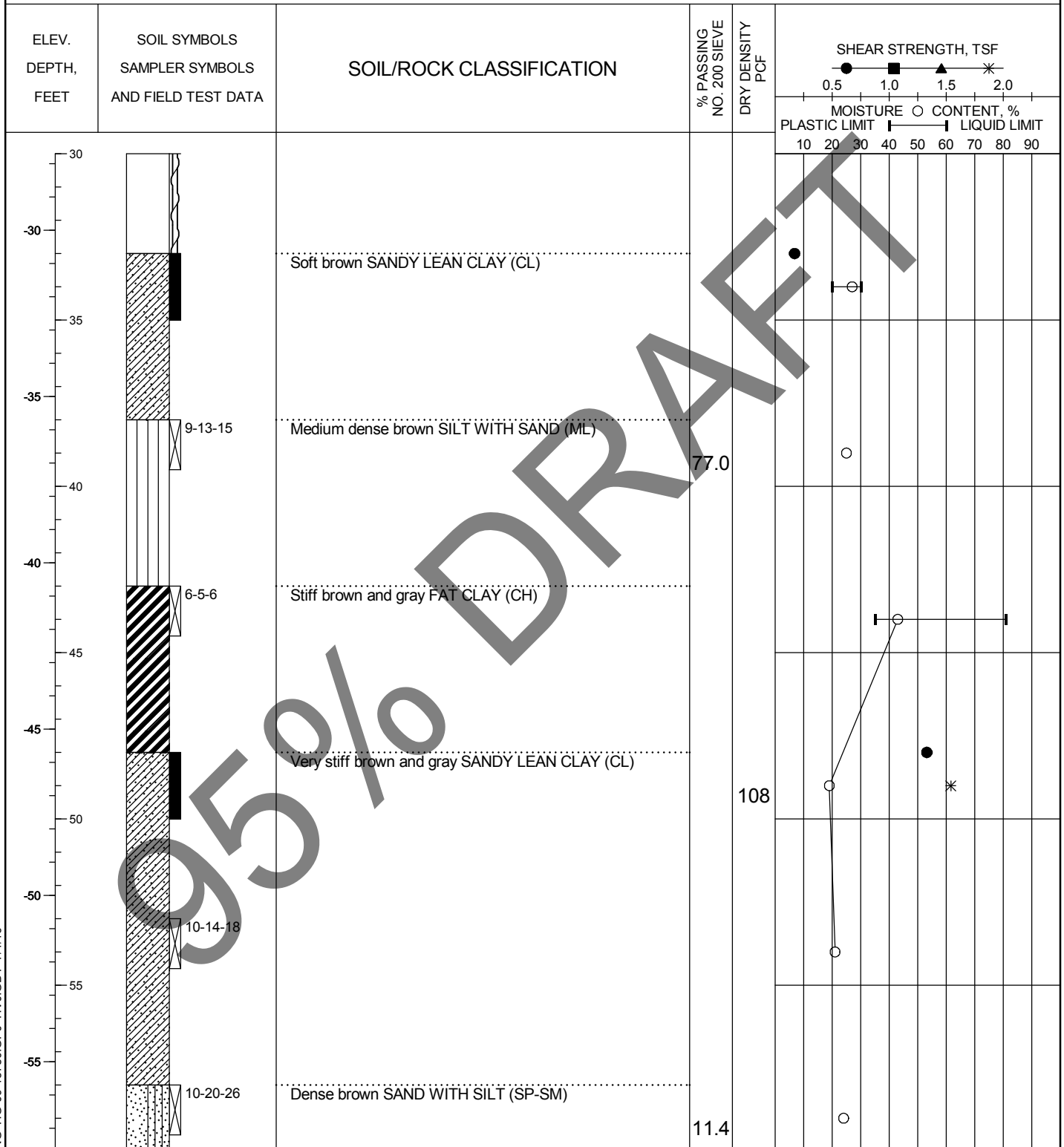
PLATE A-a

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-7
 Depth of Water: 12 feet
 Date: 8/1/2009

Northing: 13,793,343.3
 Easting: 3,250,386.3

Project No.: HG0915780
 Bay Bottom Elevation: -9.7 feet MLT
 Station: --
 Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

PLATE A-b

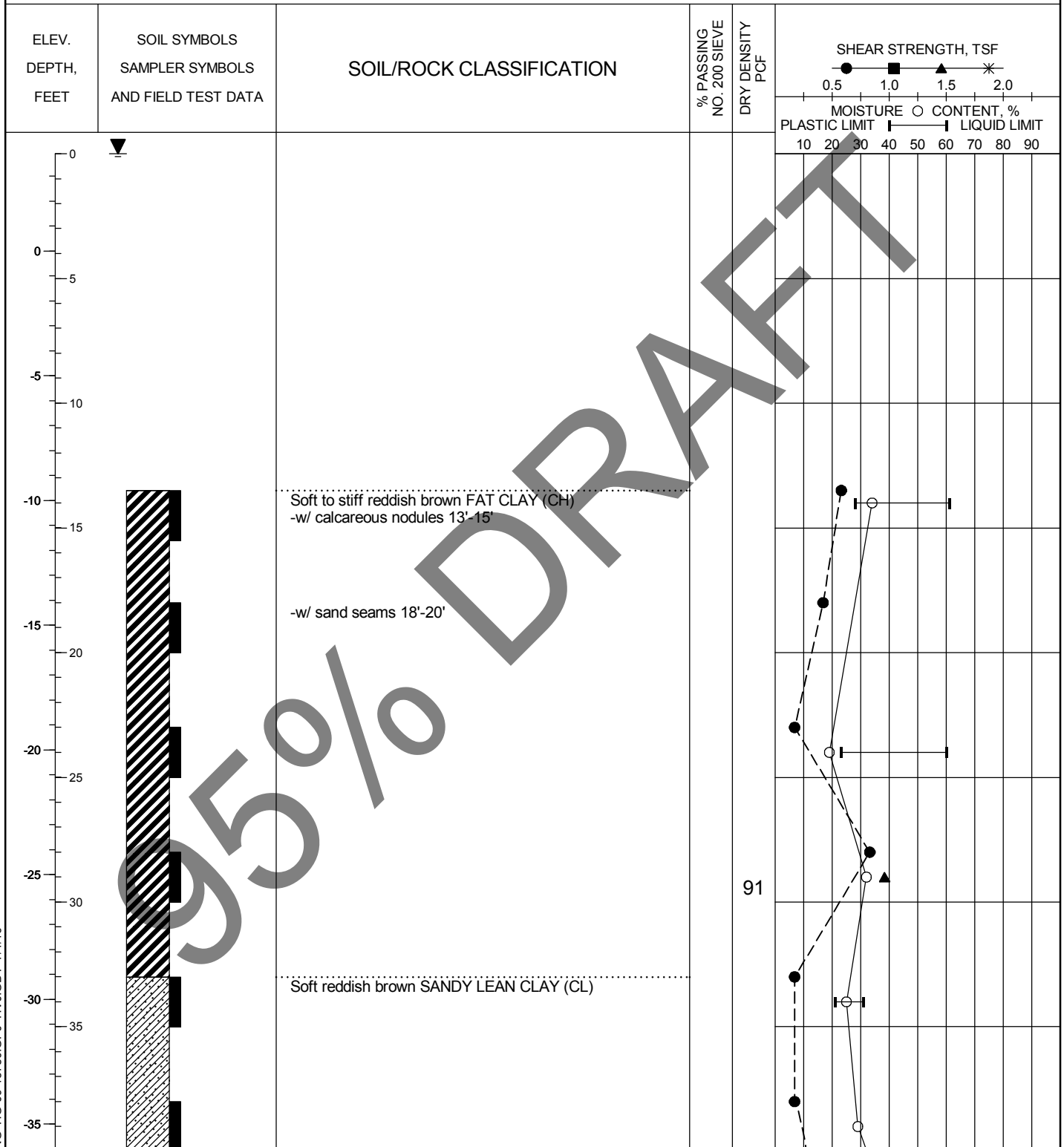
LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-8
 Depth of Water: 13.5 feet
 Date: 8/3/2009

Northing: 13,792,245.4
 Easting: 3,251,343.4

Project No.: HG0915780
 Bay Bottom Elevation: -9.6 feet MLT
 Station: --
 Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

PLATE A-a

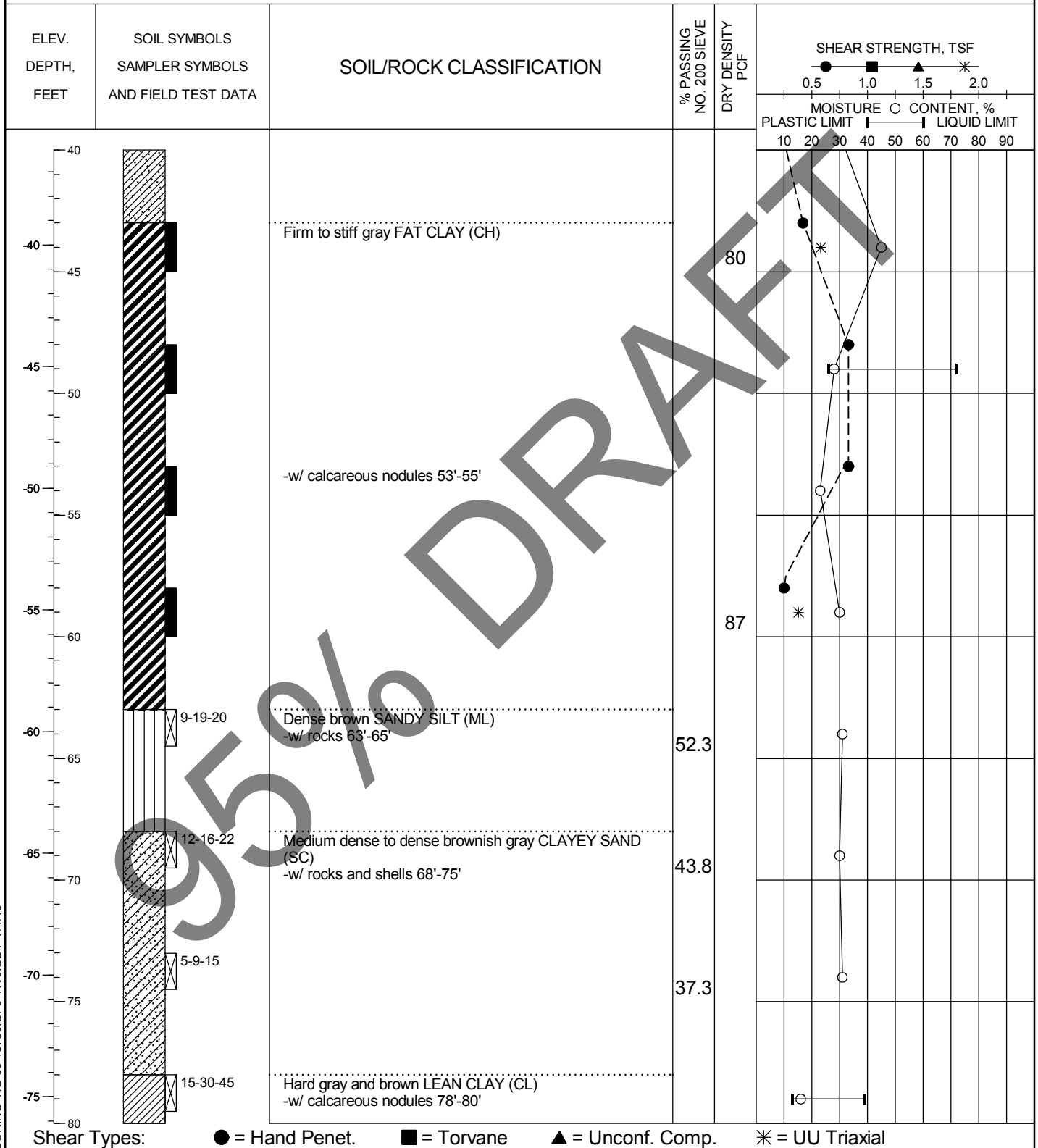
LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-8
 Depth of Water: 13.5 feet
 Date: 8/3/2009

Northing: 13,792,245.4
 Easting: 3,251,343.4

Project No.: HG0915780
 Bay Bottom Elevation: -9.6 feet MLT
 Station: --
 Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

PLATE A-b

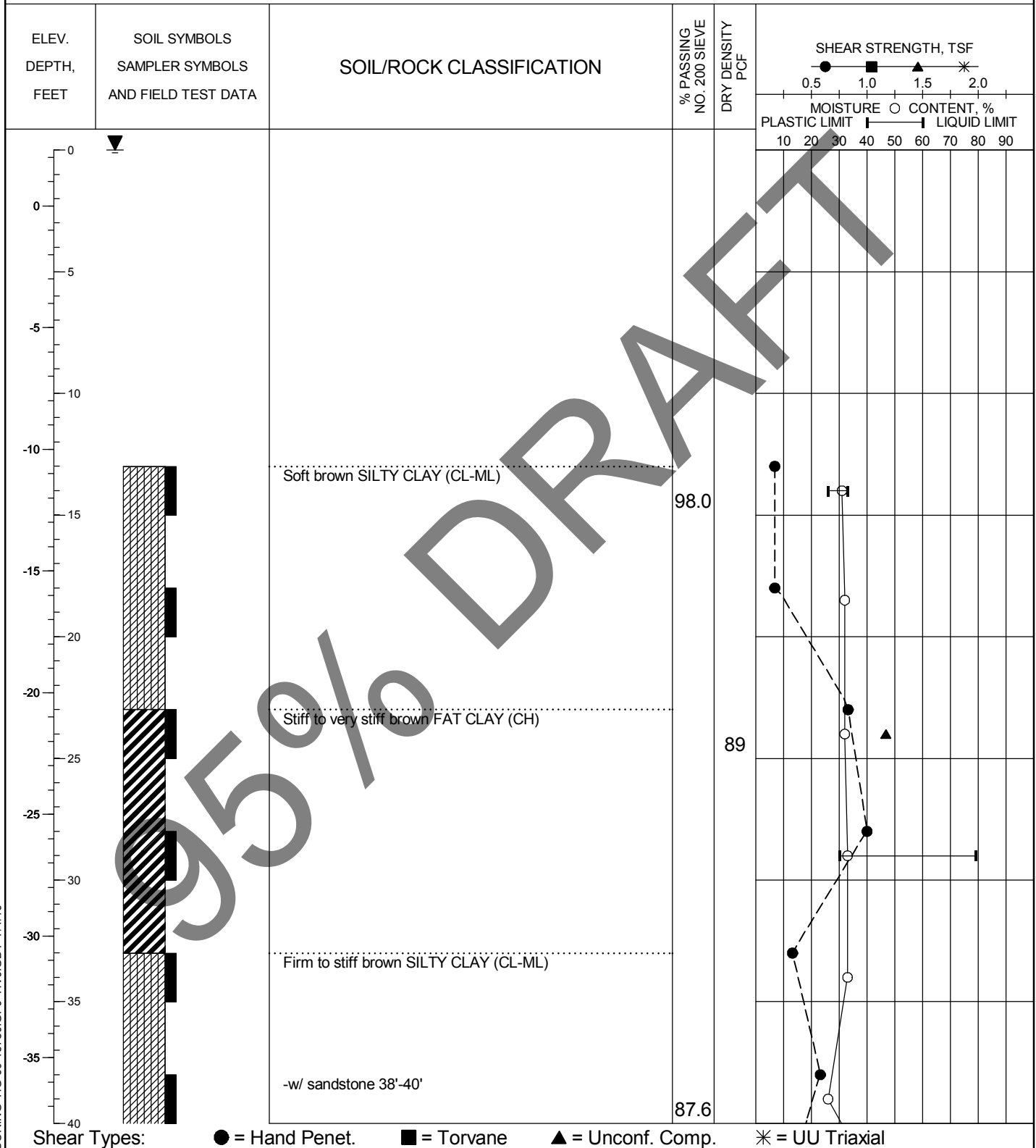
LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-9
 Depth of Water: 13 feet
 Date: 7/25/2009

Northing: 13,791,410.3
 Easting: 3,252,308.4

Project No.: HG0915780
 Bay Bottom Elevation: -10.7 feet MLT
 Station: --
 Offset: --



LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

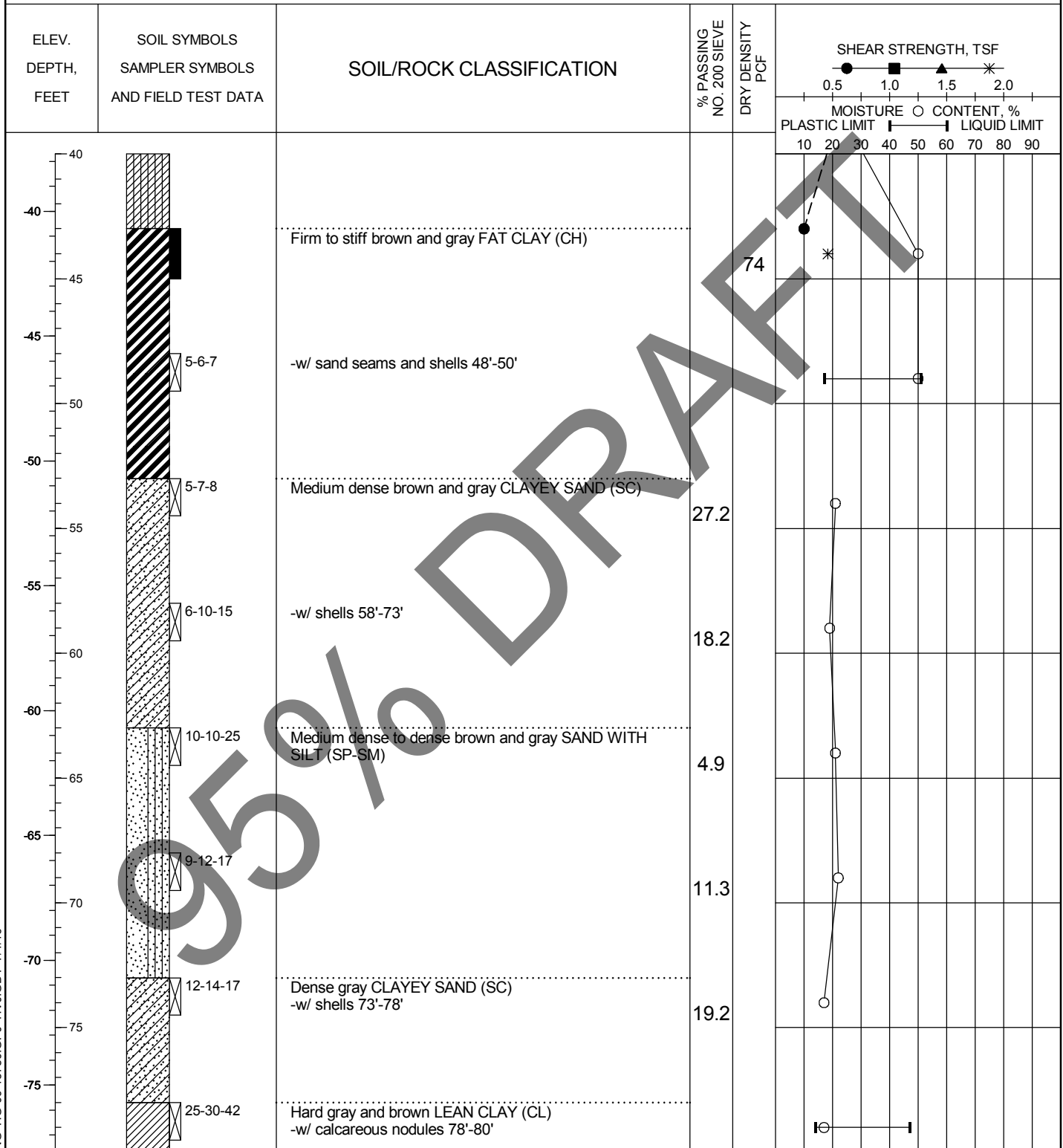
PLATE A-a

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-9
 Depth of Water: 13 feet
 Date: 7/25/2009

Northing: 13,791,410.3
 Easting: 3,252,308.4

Project No.: HG0915780
 Bay Bottom Elevation: -10.7 feet MLT
 Station: --
 Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

PLATE A-b

LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-10
 Depth of Water: 14 feet
 Date: 7/31/2009

Northing: 13,791,410.3
 Easting: 3,253,113.6

Project No.: HG0915780
 Bay Bottom Elevation: -9.3 feet MLT
 Station: --
 Offset: --

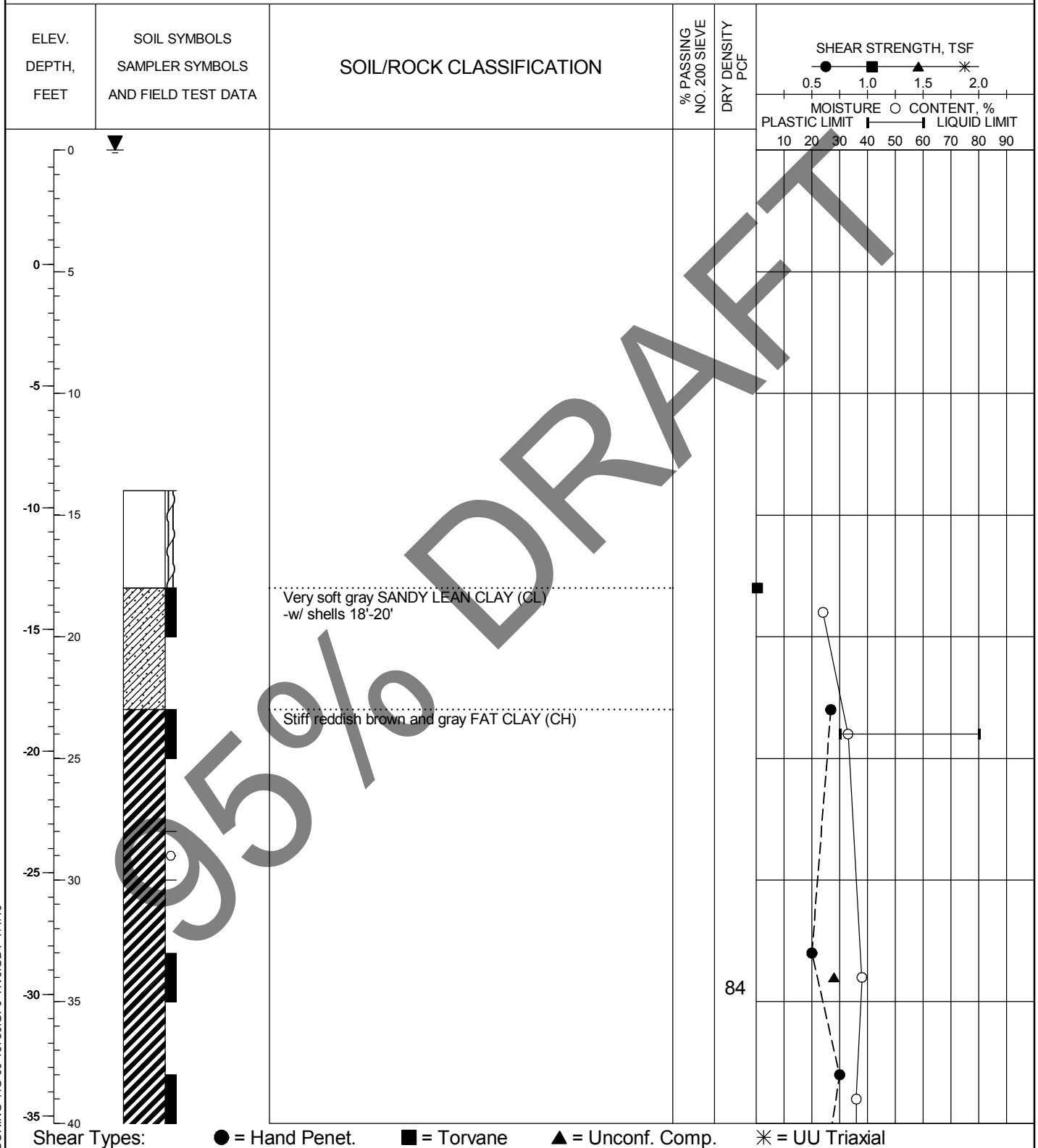


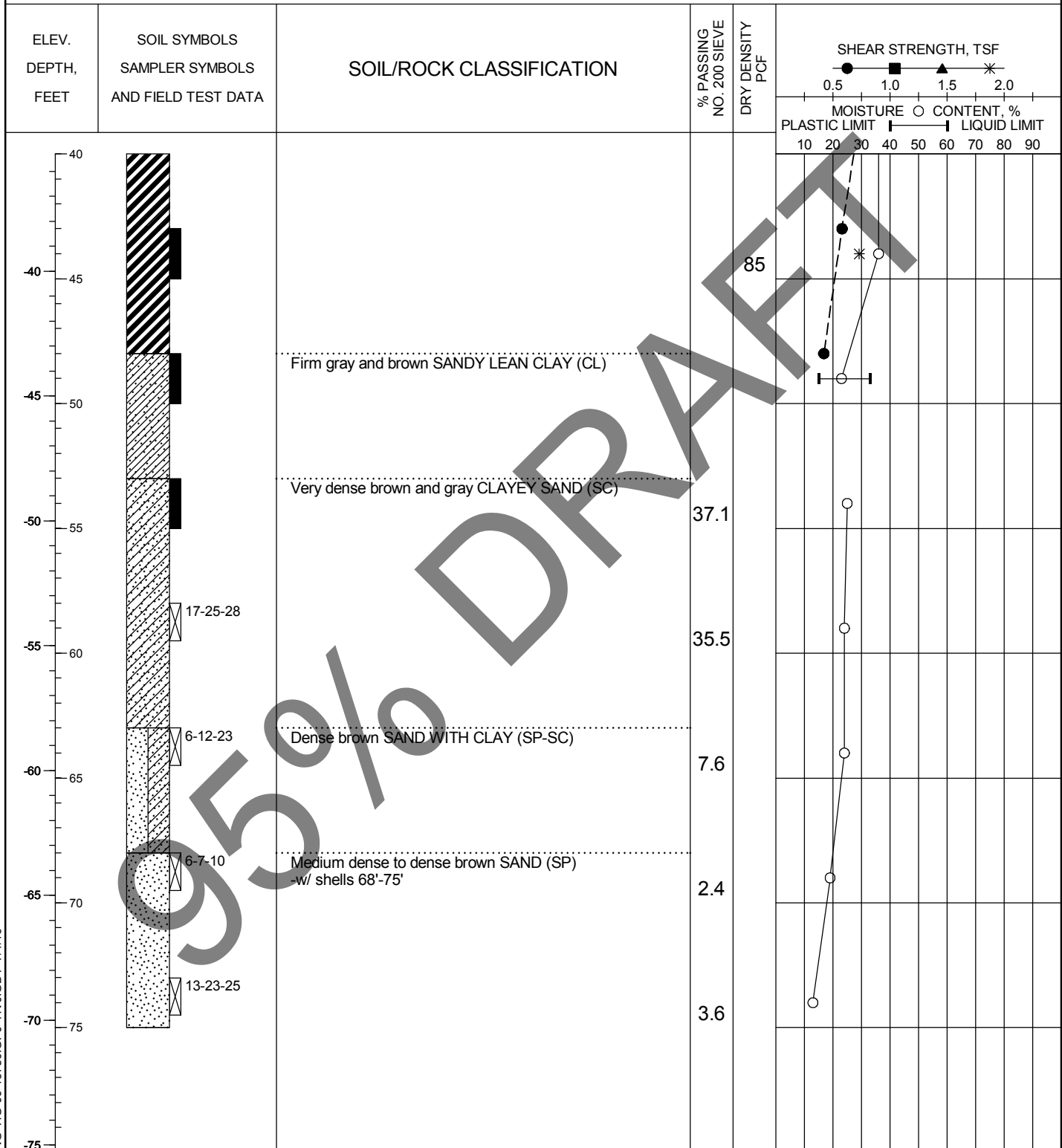
PLATE A-a

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
Boring No.: BC-10
Depth of Water: 14 feet
Date: 7/31/2009

Northing: 13,791,410.3
Easting: 3,253,113.6

Project No.: HG0915780
Bay Bottom Elevation: -9.3 feet MLT
Station: --
Offset: --



Shear Types:

● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

PLATE A-b

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-11
 Depth of Water: 10 feet
 Date: 7/29/2009

Northing: 13,791,820.3
 Easting: 3,234,023.2

Project No.: HG0915780
 Bay Bottom Elevation: -7.5 feet MLT
 Station: --
 Offset: --

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF	SHEAR STRENGTH, TSF		MOISTURE CONTENT, %	
					●	■	▲	*
0	▼							
0								
5								
-5								
-10								
-15								
-20								
-25								
-30								

95% DRAFT

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

PLATE A-a

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-11
 Depth of Water: 10 feet
 Date: 7/29/2009

Northing: 13,791,820.3
 Easting: 3,234,023.2

Project No.: HG0915780
 Bay Bottom Elevation: -7.5 feet MLT
 Station: --
 Offset: --

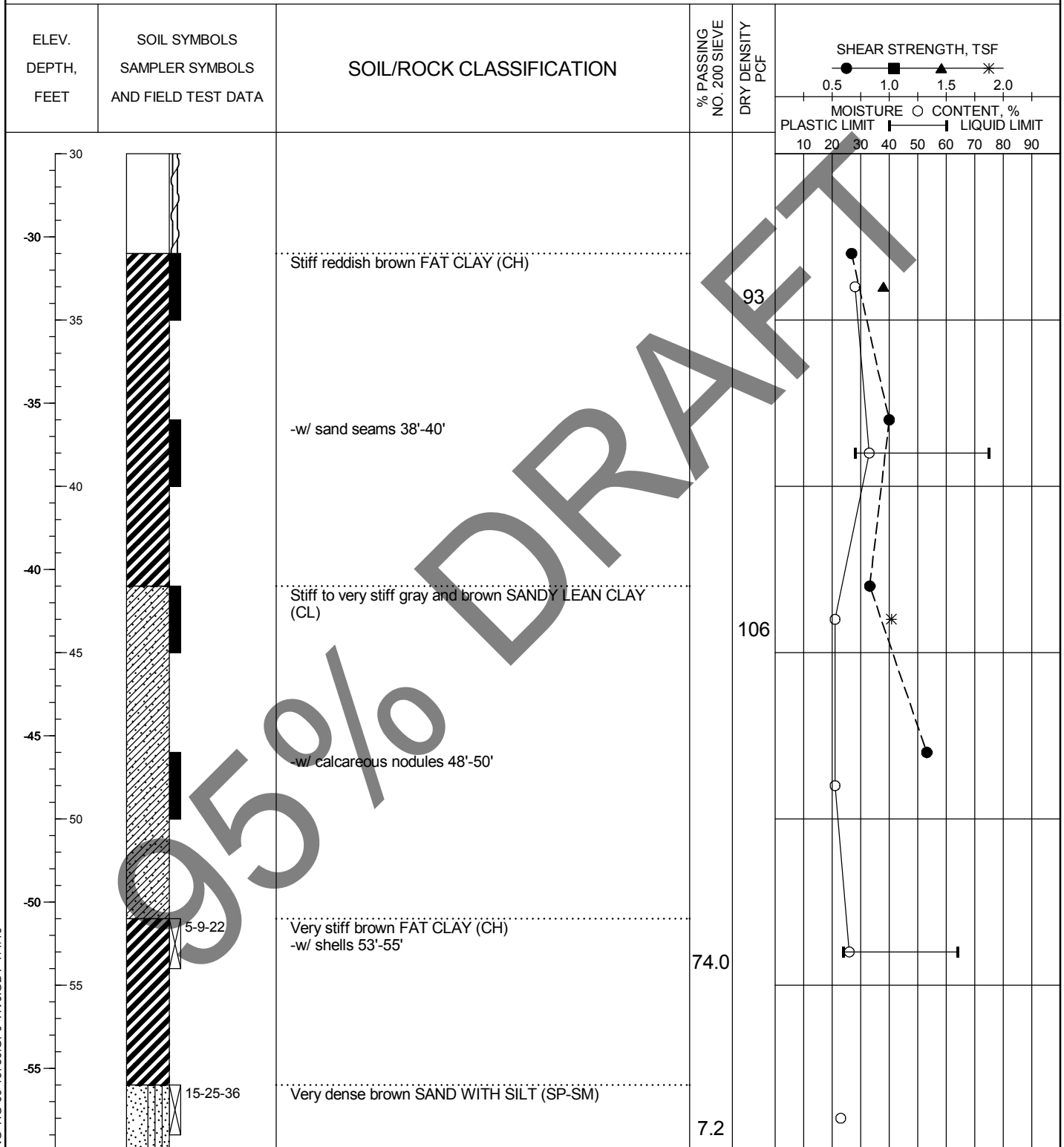


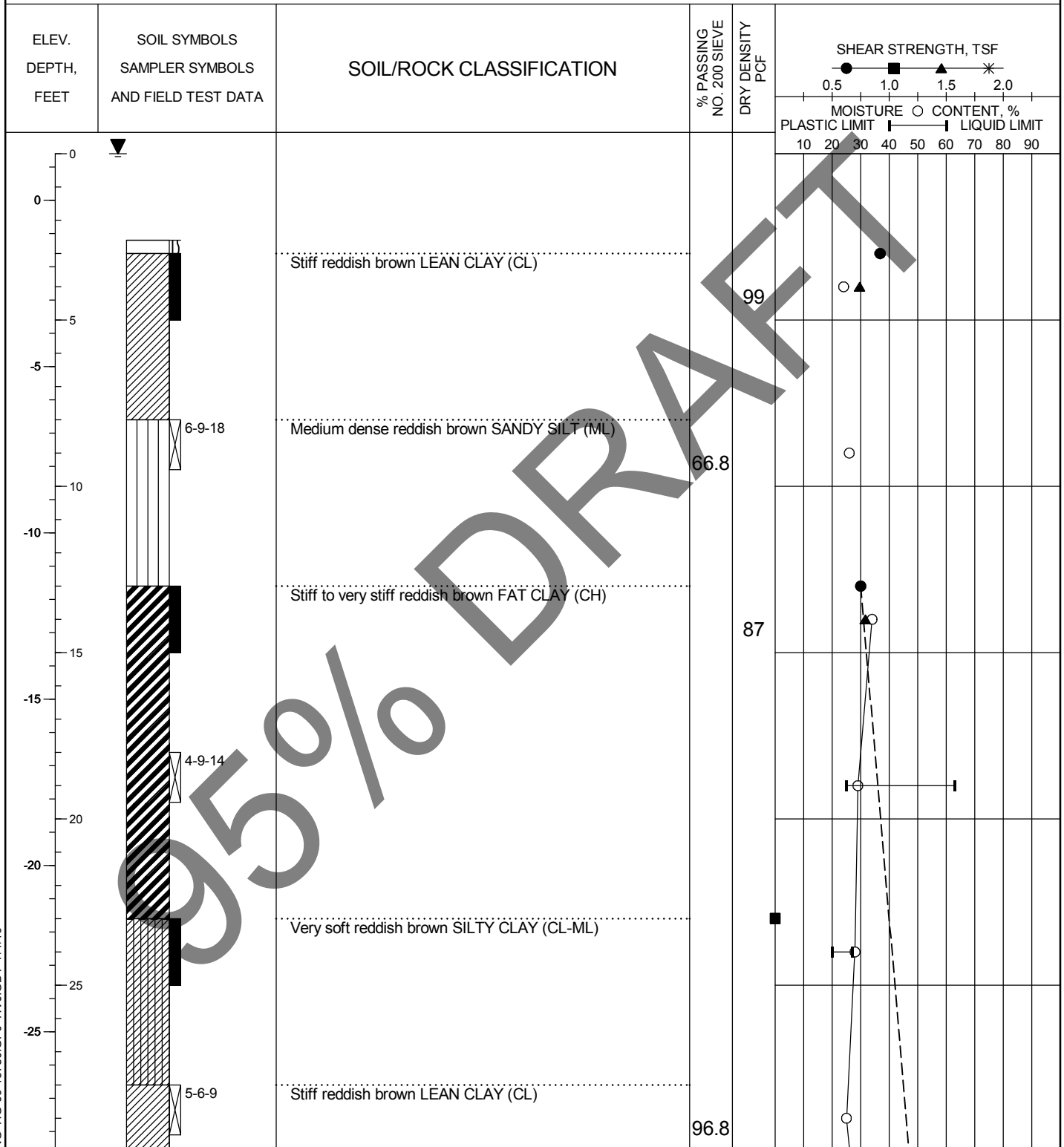
PLATE A-b

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
Boring No.: BC-12
Depth of Water: 2.6 feet
Date: 11/2/2009

Northing: 13,791,873.0
Easting: 3,235,386.1

Project No.: HG0915780
Bay Bottom Elevation: -1.2 feet MLT
Station: --
Offset: --



Shear Types:

● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

PLATE A-a

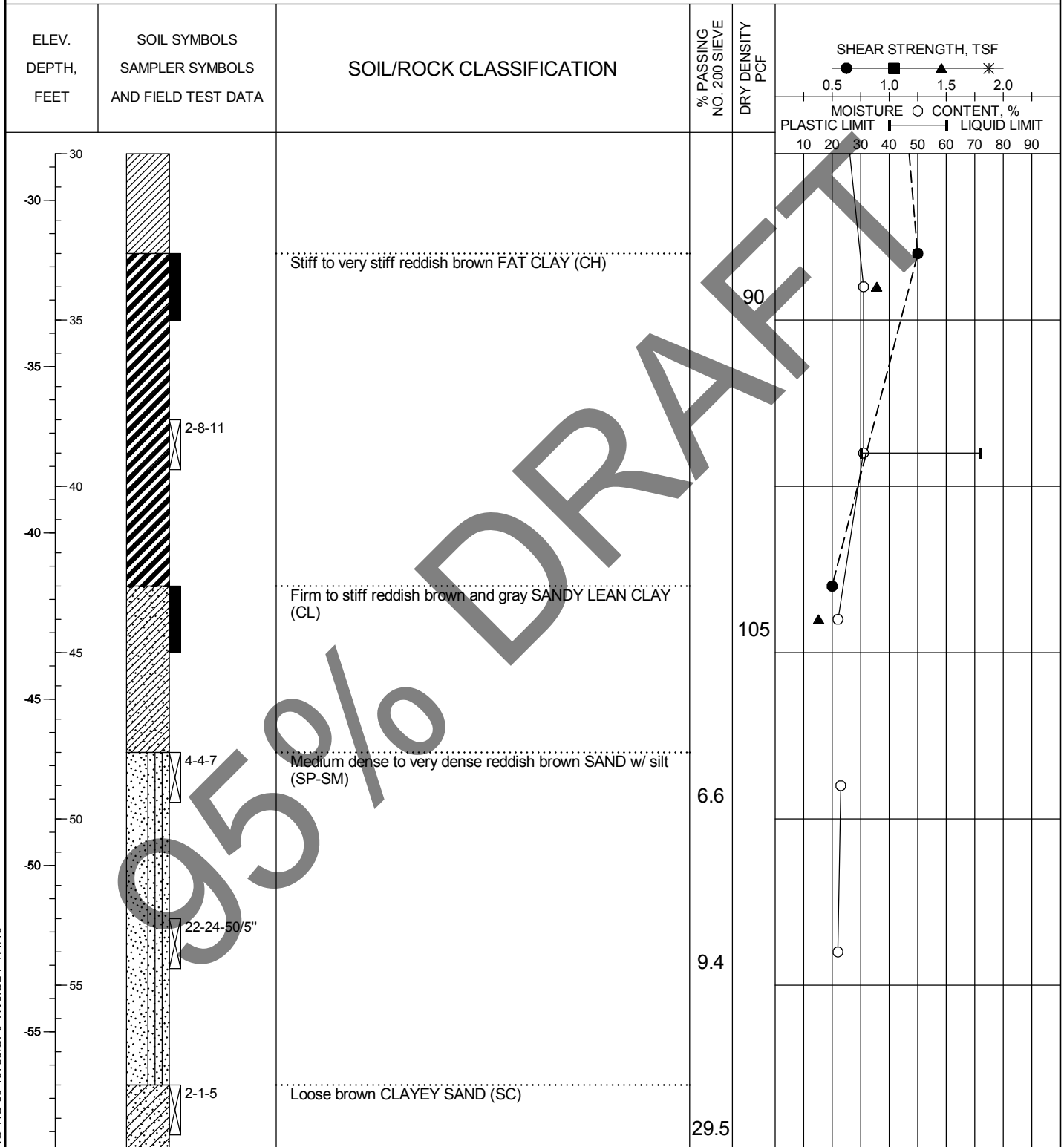
LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-12
 Depth of Water: 2.6 feet
 Date: 11/2/2009

Northing: 13,791,873.0
 Easting: 3,235,386.1

Project No.: HG0915780
 Bay Bottom Elevation: -1.2 feet MLT
 Station: --
 Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

PLATE A-b

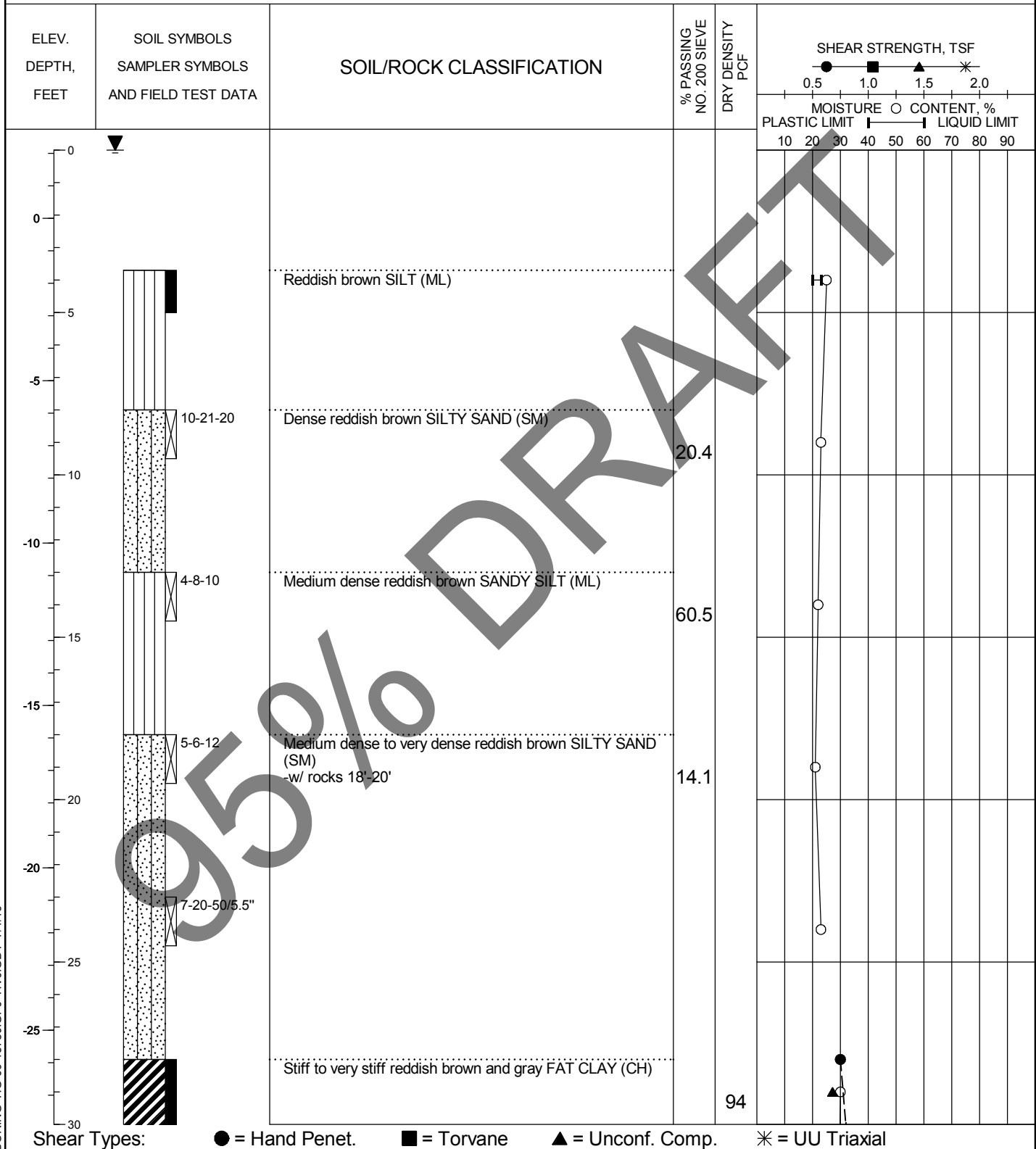
LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
Boring No.: BC-14
Depth of Water: 3.7 feet
Date: 11/2/2009

Northing: 13,790,998.0
Easting: 3,233,346.6

Project No.: HG0915780
Bay Bottom Elevation: -1.6 feet MLT
Station: --
Offset: --



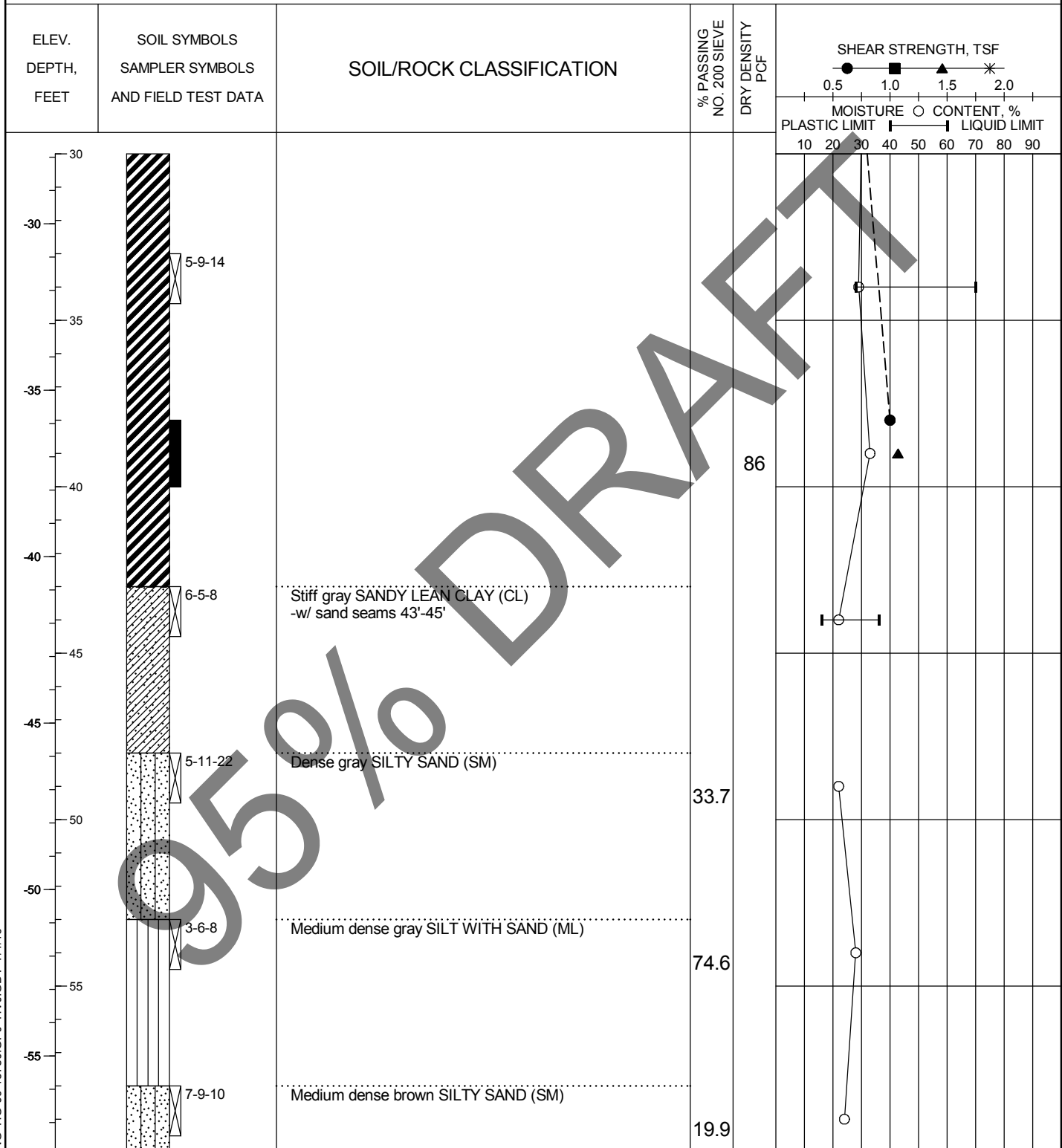
LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

LOG OF BORING

Project: Atkinson Marsh Cells 7,8 & 9
 Boring No.: BC-14
 Depth of Water: 3.7 feet
 Date: 11/2/2009

Northing: 13,790,998.0
 Easting: 3,233,346.6

Project No.: HG0915780
 Bay Bottom Elevation: -1.6 feet MLT
 Station: --
 Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

PLATE A-b

LOG OF SOIL BORING HG-09-15780.GPJ HVJ.GDT 7/1/16

LOG OF BORING B-1

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61223 W 95.01292	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSION STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
		SURFACE ELEVATION: 15.57 ft											
		DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120											
		MATERIAL DESCRIPTION											
0		Tan & brown SANDY LEAN CLAY "FILL" w/ clay pockets			17								
5		Very stiff brown & tan FAT CLAY w/ SAND "FILL" w/ gravel	(P)3.50		16	104							
10		-firm, gray & tan @ 6'-8'	(P)0.75		32		64	42				83	
15		Stiff gray FAT CLAY (CH) w/ ferrous nodules	(P)2.75		26								
20			(P)2.50		26		70	48					
25		-gray & reddish brown @ 15'-17'	(P)2.00		26	95			1.50	7			
30		Firm reddish brown SANDY LEAN CLAY (CL) w/ ferrous nodules & silt pockets	(P)1.25		21	103			0.83	12	11		
35			(P)1.75 (T)0.25		27								
40		-firm to stiff @ 23'-33'	(P)2.25 (T)0.31		29	96							
45		Stiff to very stiff reddish brown FAT CLAY (CH) w/ ferrous nodules & silt pockets	(P)4.00		29	94	69	45	1.76	6 *			
50		-slickensided @ 33'-35'											

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-11-09
DATE BORING COMPLETED: 11-11-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.

LOG OF BORING B-1

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61223 W 95.01292 SURFACE ELEVATION: 15.57 ft DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120	(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											
40		Stiff to very stiff reddish brown FAT CLAY (CH) -stiff @ 38'-48'	(P)1.75		24	99			1.57	11	22		
45			(P)2.25 (T)0.63		28	96							
50		-stiff to very stiff & slickensided @ 48'-50'	(P)3.75		31	92			1.29	4			
55		-very stiff to hard @ 53'-55'	(P)4.50		28	94							
60		Very stiff gray & tan SANDY LEAN CLAY (CL) w/ ferrous nodules	(P)3.00		17								
65		Dense light gray & tan SILTY SAND (SM)		25/6" 22/6" 26/6"								21	
70		-medium dense @ 68.5'-70'		7/6" 10/6" 10/6"									
				13/6"	33							6	

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-11-09
DATE BORING COMPLETED: 11-11-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.

LOG OF BORING B-1

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61223 W 95.01292	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOW/COUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
				SURFACE ELEVATION: 15.57 ft											
				DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120	MATERIAL DESCRIPTION										
-60	75	X		Dense gray POORLY GRADED SAND w/ SILT (SP-SM)		15/6" 23/6"									
-65	80	X		Very stiff gray FAT CLAY (CL)		12/6" 8/6" 9/6"	52		87	62				93	
-70	85	X		Dense gray SILTY SAND (SM)		25/6" 21/6" 13/6"	24							12	
-75	90			Stiff to very stiff gray LEAN CLAY w/ SAND (CL)	(P)3.50		17	108	34	16	1.33	5			
-80	95			-very stiff to hard, gray & brown @ 93'-95' -w/ ferrous nodules @ 93'-98'	(P)4.50									85	
-85	100			Very stiff light gray & tan SANDY LEAN CLAY (CL)	(P)3.75		18	109			2.26	11	57		
-90	105			-very stiff to hard @ 103'-105'	(P)4.50										
-95	110				(P)3.25										

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-11-09
DATE BORING COMPLETED: 11-11-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.

LOG OF BORING B-1

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61223 W 95.01292	(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
			SURFACE ELEVATION: 15.57 ft											
-100			Very stiff light gray & tan SANDY LEAN CLAY (CL)	(P)2.00		19	109			0.67	6	66		Cons
			-firm to stiff below 113'											
-105			-gray @ 118'-120'	(P)2.00		15	108	27	10				56	
-110			Bottom @ 120'											
-115														
-120														
-125														
-130														

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-11-09
DATE BORING COMPLETED: 11-11-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.



LOG OF BORING B-4

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61194 W 95.01254	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOW/COUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
			SURFACE ELEVATION: 14.41 ft											
DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120				MATERIAL DESCRIPTION										
0			Gray SILTY SAND "FILL" w/ crushed concrete and gravel road base											
			Firm gray & tan SANDY LEAN CLAY "FILL" w/ gravel	(P)1.25		13								
10	5		Stiff gray FAT CLAY (CH) w/ ferrous nodules	(P)1.75		31	87	86	61					
			-slickensided, gray & tan @ 9'-11'	(P)2.00		31	87			1.25	5 *			
5	10		-gray & reddish brown @ 12'-14'	(P)2.50		24								
0	15		-very stiff & reddish brown @ 15'-17'	(P)4.25		24								
			Stiff to very stiff reddish brown & light gray LEAN CLAY (CL) w/ ferrous nodules	(P)3.00 (T)0.63		20	103							
-5	20		-soft to firm & reddish brown @ 23'-25'	(P)1.00 (T)0.38		26	100	31	12	0.34	6	14	100	
-10	25		Stiff reddish brown & gray FAT CLAY (CH) slickensided w/ ferrous nodules	(P)2.50		29	93							
-15	30		-very stiff @ 33'-43'			26	98						89	
-20	35													

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-11-09
DATE BORING COMPLETED: 11-12-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-4

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61194 W 95.01254	(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
		SURFACE ELEVATION: 14.41 ft											
</													

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-11-09
DATE BORING COMPLETED: 11-12-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-4

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61194 W 95.01254 SURFACE ELEVATION: 14.41 ft DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120	(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															
-60	75	X		Dense tan SILTY SAND (SM)		20/6" 26/6"									
-65	80	X		-very dense @ 78.5'-80'		28/6" 30/6" 40/6"									
-70	85			Very stiff to hard gray SANDY LEAN CLAY (CL) w/ ferrous & calcareous nodules	(P)4.50										
-75	90			-stiff to very stiff @ 88'-90'	(P)2.75		15	115			3.74	16	51	55	
-80	95			-light gray & tan @ 93'-95'	(P)4.50		16		28	10				70	
-85	100			Stiff to very stiff gray & tan FAT CLAY (CH) w/ ferrous nodules -slickensided @ 98'-100'	(P)4.00		22	102			1.28	4 *			
-90	105			Very stiff to hard light gray & tan SANDY LEAN CLAY (CL)	(P)4.50		19	111							
-95	110			-stiff below 108' -light gray @ 108'-115'	(P)2.25		20								

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-11-09
DATE BORING COMPLETED: 11-12-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-4

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61194 W 95.01254	(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
			SURFACE ELEVATION: 14.41 ft											
DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120				MATERIAL DESCRIPTION										
-100			Stiff light gray & tan SANDY LEAN CLAY (CL) w/ silty sand layers @ 113'-115'	(P)2.00										
-105			-tan @ 118'-120'	(P)2.75		19	110			1.09	10	69		
-110			Bottom @ 120'											
-115														
-120														
-125														
-130														

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-11-09
DATE BORING COMPLETED: 11-12-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-5

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61220 W 95.01198	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOW/COUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
		SURFACE ELEVATION: 15.06 ft											
		DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120											
		MATERIAL DESCRIPTION											
15 0		Stiff gray & tan LEAN CLAY "FILL" w/ ferrous nodules	(P)1.50										
10 5		Very stiff gray FAT CLAY "FILL" w/ ferrous nodules	(P)4.00		26	95							
5 10		Stiff gray & tan FAT CLAY (CH) w/ ferrous nodules	(P)2.00		30								
		-firm to stiff & gray @ 9'-11'	(P)2.00		28	92	79	55	0.86	1 *			
		-gray & reddish brown, slickensided @ 12'-14'	(P)2.25		26								
0 15		-very stiff & reddish brown w/ silt pockets & calcareous nodules @ 15'-17'	(P)3.75		22	103							
-5 20			(P)1.50										
-10 25		Soft to firm reddish brown LAEN CLAY (CL)	(P)1.25 (T)0.19		29	99	28	8					
-15 30		Stiff reddish brown FAT CLAY (CH) -slickensided, w/ ferrous nodules & silt pockets	(P)2.75		32								
-20 35			(P)2.50		29	92	58	36	1.29	4 *			

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-12-09
DATE BORING COMPLETED: 11-16-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.



LOG OF BORING B-5

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61220 W 95.01198		(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
		SURFACE ELEVATION: 15.06 ft												
		DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120		MATERIAL DESCRIPTION										
-25 -30 -35 -40 -45 -50 -55		Stiff reddish brown FAT CLAY (CH)		(P)2.25		23	100			1.10	8			
				(P)2.75		24		59	38					
		-very stiff @ 48'-50'		(P)3.50										
				(P)3.25		29	92			1.60	2 *			
		-stiff to very stiff, reddish brown & gray @ 53'-55'		(P)3.25		29	92			1.60	2 *			
				(P)3.00										
		Very stiff gray SANDY LEAN CLAY (CL) w/ ferrous nodules & sand pockets		(P)3.00										
				(P)3.50		19	110			2.54	7	39		
		w/ calcareous nodules @ 63'-65'		(P)3.50		19	110			2.54	7	39		
				(P)3.50		19	110			2.54	7	39		
-55		Dense gray SILTY SAND (SM)			20/6" 20/6" 26/6"								23	
		-gray & tan @ 73.5'-80'			21/6"									

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-12-09
DATE BORING COMPLETED: 11-16-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.



LOG OF BORING B-5

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61220 W 95.01198	(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
		SURFACE ELEVATION: 15.06 ft											
		DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120											
		MATERIAL DESCRIPTION											
-60 75	X	-very dense below 73.5' Very dense gray & tan SILTY SAND (SM)		40/6" 37/6"									
-65 80	X			19/6" 20/6" 37/6"									
-70 85	■	Stiff gray LEAN CLAY (CL) w/ ferrous nodules	(P)2.00		25	101	43	23				93	Cons
-75 90	■	-soft to firm & light gray @ 88'-95'	(P)4.50 (T)0.19		19	104							
-80 95	■	-very stiff to hard, light gray & tan @ 93'-95'	(P)4.50										
-85 100	■	Very stiff to hard gray FAT CLAY (CH) -slickensided, w/ ferrous nodules	(P)4.50		21	106	59	39	2.57	3 *			
-90 105	■	-light gray & tan @ 103'-105'	(P)4.50		20	109							
-95 110	■	Very stiff to hard light gray SANDY LEAN CLAY (CL) w/ ferrous nodules	(P)4.50		19	110							

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-12-09
DATE BORING COMPLETED: 11-16-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.

LOG OF BORING B-5

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61220 W 95.01198	(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
			SURFACE ELEVATION: 15.06 ft											
			DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120											
			MATERIAL DESCRIPTION											
-100 115			Very stiff to hard light gray SANDY LEAN CLAY (CL) -stiff, light gray & tan @ 113'-120'	(P)2.50		18	108			1.18	11	66		
-105 120			Bottom @ 120'		5/6" 5/6" 8/6"								58	
-110 125														
-115 130														
-120 135														
-125 140														
-130 145														

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-12-09
DATE BORING COMPLETED: 11-16-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.

LOG OF BORING B-8

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61198 W 95.01122 SURFACE ELEVATION: 14.38 ft	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOW/COUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
		DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120 MATERIAL DESCRIPTION											
0		Tan SILTY SAND & CRUSHED LIMESTONE "FILL"			20								
		Tan SANDY LEAN CLAY "FILL"											
10		Very stiff to hard reddish brown & gray LEAN CLAY "FILL" w/ sand pockets & ferrous nodules	(P)4.50		17								
5		-very stiff, gray & tan @ 6'-8'	(P)3.00		27								
5		Very stiff gray FAT CLAY (CH) w/ ferrous nodules	(P)3.50		26	97	77	55	2.48	5 *		88	
10		-firm reddish brown & tan @ 12'-14'	(P)1.50 (T)325		33	89			0.57	5 *	8		
15		w/ silt pockets, ferrous & calcareous nodules @ 15' 17'	(P)3.00		24	102	70	47					
20		Very stiff reddish brown LEAN CLAY (CL)		8/6" 9/6" 11/6"	24							96	
		-stiff @ 23'-25'	(P)2.25				37	18					
25			(P)3.25		31								
30		Very stiff reddish brown FAT CLAY (CH) -slickensided & w/ ferrous nodules	(P)3.50		29	92							
35													

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-10-09
DATE BORING COMPLETED: 11-10-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.

LOG OF BORING B-8

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61198 W 95.01122 SURFACE ELEVATION: 14.38 ft	(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
		DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120											
-25 40 -30 45 -35 50 -40 55 -45 60 -50 65 -55 70		Very stiff reddish brown FAT CLAY (CH)											
		Firm to stiff reddish brown LEAN CLAY (CL)	(P)1.25		25	99	47	28	1.35	12	22	98	
		-stiff & w/ ferrous nodules @ 43'-45'	(P)2.00										
		Very stiff reddish brown FAT CLAY (CH) -slickensided & w/ ferrous nodules											
		-stiff to very stiff @ 48'-50'	(P)3.50		31	91			1.72	3 *			
		-very soft to hard @ 53'-55'	(P)4.50		32	91							
		Very stiff gray SANDY FAT CLAY (CH) w/ ferrous nodules & sand pockets	(P)3.50										
		-very stiff to hard gray & reddish brown w/ calcareous nodules @ 63'-65'	(P)4.50		20	107	61	40	2.50	9	36	68	
		Very dense gray POORLY GRADED SAND w/ SILT (SP-SM)		50/5"									
				17/6"	21							11	

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-10-09
DATE BORING COMPLETED: 11-10-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

120 ft
11-10-09
11-10-09
S. Cortinas
09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.



LOG OF BORING B-8

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61198 W 95.01122 SURFACE ELEVATION: 14.38 ft	(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
		DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120											
-60 75	X	Very dense gray POORLY GRADED SAND w/ SILT (SP-SM)		20/6" 50/2"									
-65 80	X	-dense & w/ sandstone @ 78.5'-80'		20/6" 20/6" 12/6"									
-70 85		Stiff gray & tan SANDY LEAN CLAY (CL) w/ ferrous nodules	(P)2.25										
-75 90		-soft to stiff @ 88'-90'	(P)2.50		19	110						64	Cons
-80 95		-very stiff, light gray & tan @ 93'-95'	(P)3.75										
-85 100		Very stiff to hard gray & tan LEAN CLAY (CL) w/ ferrous nodules & sand pockets	(P)4.50		22								
-90 105		Very stiff to hard gray & tan FAT CLAY (CH) slickensided w/ ferrous nodules	(P)4.50										
-95 110		Very stiff gray & tan SANDY SILTY CLAY (CL- ML) w/ ferrous nodules	(P)3.50										

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-10-09
DATE BORING COMPLETED: 11-10-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.

LOG OF BORING B-8

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61198 W 95.01122	(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
			SURFACE ELEVATION: 14.38 ft											
			DRILLING METHOD: Dry Augered: 0 to 20 Wash Bored: 20 to 120											
			MATERIAL DESCRIPTION											
-100			Very stiff gray & tan SANDY SILTY CLAY (CL-ML) -stiff to very stiff @ 113'-115' -light gray & tan below 113'	(P)4.25		18	106	24	7	1.34	7	66	52	
-105			-very stiff to hard @ 118'-120'	(P)4.50										
-110			Bottom @ 120'											
-115														
-120														
-125														
-130														

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-10-09
DATE BORING COMPLETED: 11-10-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.



LOG OF BORING B-9

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61208 W 95.01041	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOW/COUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
		SURFACE ELEVATION: -6.20 ft											
		DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 120											
		MATERIAL DESCRIPTION											
0		Very soft reddish brown & tan LEAN CLAY (CL) w/ silty sand pockets	(T)0.09										
-10		-soft to firm @ 3'-5'	(P)1.00 (T)0.22		23	110	29	9				88	
5		-firm, w/ silt seams & silt pockets @ 6'-11'	(P)1.25		27								
-15			(T)0.09		27	102							
10		Stiff reddish brown & tan FAT CLAY (CH) w/ ferrous nodules	(P)2.25		31	92							
-20		-stiff to very stiff, w/ silt pockets & seams @ 15'-20'	(P)3.00		29								
15		-slicesided @ 18'-20' -reddish brown below 18'	(P)3.75		31	91	70	47	1.11	2 *		99	
-25			(P)1.00		27	99			1.18	16	13		
20		-firm to stiff, w/ silt layers @ 23'-25'											
-30			(P)2.00		34	90			1.22	2 *			
25		-slicesided @ 28'-30' w/ ferrous nodules @ 28'-40'											
-35			(P)3.25		31	92			2.23	7	19		
30		-very stiff @ 33'-35'											
-40													
35													

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-10-09
DATE BORING COMPLETED: 11-11-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-9

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61208 W 95.01041	(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
		SURFACE ELEVATION: -6.20 ft											
MATERIAL DESCRIPTION													
-45		Stiff reddish brown & tan FAT CLAY (CH)		5/6" 3/6" 6/6"									
-50		Very dense gray & tan SILTY SAND (SM) w/ clay pockets		13/6" 37/6" 40/6"									
-55		-medium dense & tan @ 48.5'-50'		4/6" 5/6" 6/6"	20							14	
-60		-dense @ 53.5'-55'		4/6" 13/6" 19/6"									
-65		-medium dense @ 58.5'-60'		3/6" 4/6" 7/6"									
-70		Very stiff to hard gray & tan SANDY FAT CLAY (CH) w/ sand pockets & ferrous nodules		7/6" 16/6" 17/6"	28								
-75		-firm to very stiff @ 68'-70'	(P)3.25 (T)0.30		20	108						70	
-80				10/6"	18								

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-10-09
DATE BORING COMPLETED: 11-11-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-9

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61208 W 95.01041	(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
		SURFACE ELEVATION: -6.20 ft											
MATERIAL DESCRIPTION													
75		Very stiff gray & tan SANDY FAT CLAY (CH)	(P)3.00	12/6" 18/6"	24	99			3.06	7			
-85													
80		Very stiff to hard gray & tan FAT CLAY (CH) w/ sand pockets & ferrous nodules		6/6" 9/6" 20/6"	27							96	
-90													
85		Dense gray CLAYEY SAND (SC)		16/6" 14/6" 17/6"	26		57	38					
-95													
90		Very stiff to hard tan FAT CLAY (CH) w/ ferrous nodules		26/6" 19/6" 13/6"									
-100													
95		-stiff, tan & reddish brown @ 108'-110'	(P)2.00	10/6" 17/6" 26/6"	28								
-105													
100		Very stiff to hard tan FAT CLAY (CH) w/ ferrous nodules		20/6" 23/6" 29/6"	19								
-110													
105		Very stiff to hard tan FAT CLAY (CH) w/ ferrous nodules											
-115													
110		Very stiff to hard tan FAT CLAY (CH) w/ ferrous nodules											
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110		Very stiff to hard tan FAT CLAY (CH) w/ ferrous nodules											

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-10-09
DATE BORING COMPLETED: 11-11-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-9

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61208 W 95.01041 SURFACE ELEVATION: -6.20 ft	(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
		DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 120											
-120	115	Very stiff to hard tan FAT CLAY (CH) -reddish brown & gray, w/ calcareous nodules @ 113'-115'	(P)4.50+		25	101			2.56	4			
-125	120	Very stiff to hard gray & reddish brown LEAN CLAY (CL) Bottom @ 120'		11/6" 14/6" 20/6"			40	22				95	
-130	125												
-135	130												
-140	135												
-145	140												
-150	145												

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-10-09
DATE BORING COMPLETED: 11-11-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-11

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61246 W 94.99956	(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
		SURFACE ELEVATION: -17.30 ft DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 86 MATERIAL DESCRIPTION											
0		Soft reddish brown & gray LEAN CLAY (CL) w/ silty sand pockets	(T)0.16										
-20		-firm @ 3'-5'	(P)1.25				44	24					
5		-very soft @ 6'-8'	(T)0.08		23	109							
-25													
10		Very stiff reddish brown FAT CLAY (CH) w/ silt pockets	(P)3.00		32	90							
-30		-stiff @ 12'-14'	(P)2.50		24	98							
15													
-35		Firm reddish brown LEAN CLAY (CL) w/ silt seams & silt layers	(P)0.75		26	97							
20													
-40		Stiff to very stiff reddish brown FAT CLAY (CH) -slickensided & w/ ferrous nodules & silt pockets	(P)2.25		30	92			2.53	5 *			
25													
-45		-stiff @ 23'-25'	(P)2.75				82	58					
30													
-50		-reddish brown, gray, w/ ferrous & calcareous nodules @ 28'-30'	(P)2.50		34	86			2.50	4 *			
35													
		Gray CLAYEY SAND (SC) w/ clay pockets			14	128						34	

COMPLETION DEPTH: 86 ft
DATE BORING STARTED: 11-11-09
DATE BORING COMPLETED: 11-13-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.



LOG OF BORING B-11

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61246 W 94.99956 SURFACE ELEVATION: -17.30 ft	(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
		DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 86											
-55		Gray CLAYEY SAND (SC)											
40		Stiff gray SANDY LEAN CLAY (CL)	(P)1.75										
-60													
45	X	Medium dense tan POORLY GRADED SAND w/ SILT (SP-SM) w/ clay pockets		6/6" 6/6" 7/6"								11	
-65													
50	X	-dense 2 48.5'-50'		10/6" 16/6" 28/6"									
-70													
55		Stiff gray & dark gray LEAN CLAY (CL) w/ ferrous nodules & sand pockets -slickensided @ 53'-55'	(P)2.25		37	81	28	12	1.23	2 *			
-75													
60		-stiff to very stiff @ 58'-60'	(P)2.25		24	101			2.25	8	34		
-80													
65		Very stiff gray & dark gray FAT CLAY (CH) w/ ferrous & calcareous nodules	(P)4.25		25	97			2.09	3			
-85													
70		-w/ sand seams & pockets @ 68'-70'	(P)3.75		26	98							
-90													
		-very stiff to hard @ 73'-75'	(P)4.50+		18	111			3.41	10			

COMPLETION DEPTH: 86 ft
DATE BORING STARTED: 11-11-09
DATE BORING COMPLETED: 11-13-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.



LOG OF BORING B-11

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61246 W 94.99956	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSION STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
				SURFACE ELEVATION: -17.30 ft											
				DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 86	MATERIAL DESCRIPTION										
75 <															

COMPLETION DEPTH: 86 ft
DATE BORING STARTED: 11-11-09
DATE BORING COMPLETED: 11-13-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

86 ft
11-11-09
11-13-09
S. Cortinas
09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.

LOG OF BORING B-11

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61246 W 94.99956 SURFACE ELEVATION: -17.30 ft DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 86	(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											
-130		Very stiff to hard gray FAT CLAY (CH)											
115		-very stiff @ 113'-114'	(P)3.00		19	108							
-135		-very stiff to hard @ 118.5'-120'		14/6" 14/6" 21/6"	18								
120		Bottom @ 120'											
-140													
125													
-145													
130													
-150													
135													
-155													
140													
-160													
145													
-165													

COMPLETION DEPTH: 86 ft
DATE BORING STARTED: 11-11-09
DATE BORING COMPLETED: 11-13-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.



LOG OF BORING B-12

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61213 W 94.99959 SURFACE ELEVATION: 4.80 ft DRILLING METHOD: Dry Augered: 0 to 11 Wash Bored: 11 to 120	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOW/COUNT	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 gray & tan FAT CLAY (CH) w/ ferrous nodules & silt pockets	(P)1.75										
0		-gray & brown @ 3'-5'	(P)2.50		24	105							
5		-reddish brown & light gray @ 6'-8'	(P)2.25		21								
10		Firm reddish brown SANDY LEAN CLAY (CL) w/ ferrous nodules & silt pockets	(P)0.75		22	109							
15		Medium dense reddish brown SILT (ML) w/ clay balls		6/6" 8/6" 6/6"								88	
20		-loose @ 18.5'-20'		4/6" 5/6" 5/6"									
25		Very stiff reddish brown FAT CLAY (CH) w/ ferrous nodules & silt pockets	(P)4.00		30	99							
30		-stiff & slickensided @ 28'-30'	(P)2.50		31	94			1.56	4			
35		Stiff reddish brown & gray LEAN CLAY (CL)	(P)2.50		25	96	49	28					

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-13-09
DATE BORING COMPLETED: 11-13-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.

LOG OF BORING B-12

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61213 W 94.99959 SURFACE ELEVATION: 4.80 ft DRILLING METHOD: Dry Augered: 0 to 11 Wash Bored: 11 to 120	(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											
		Stiff reddish brown & gray LEAN CLAY (CL)											
-35	40	Very stiff reddish brown & gray FAT CLAY (CH) -slickensided & w/ ferrous nodules	(P)3.00		30	94			2.24	4 *			
-40	45		(P)3.50		29	94							
-45	50		(P)3.50										
-50	55	Very stiff gray FAT CLAY w/ SAND (CH) w/ ferrous & calcareous nodules	(P)3.50										
-55	60	w/ sand pockets @ 58'-60'	(P)3.00		16	114	62	41	3.58	6			
-60	65	Medium dense gray SILTY SAND (SM)		8/6" 9/6" 9/6"								35	
-65	70	w/ shell fragments, gravel & sandstone @ 68.5'-70'		11/6" 11/6" 16/6"									
				5/6"									

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-13-09
DATE BORING COMPLETED: 11-13-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.



LOG OF BORING B-12

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61213 W 94.99959 SURFACE ELEVATION: 4.80 ft DRILLING METHOD: Dry Augered: 0 to 11 Wash Bored: 11 to 120	(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															
-70	75			Stiff gray FAT CLAY w/ SAND (CH)		6/6" 7/6"									
				w/ sand pockets @ 78'-80'	(P)2.00		25	96	52	32	1.83	10	46	83	Cons
-75	80														
				-stiff to very stiff @ 83'-85'	(P)3.50		29	95			1.28	5			
				-gray & tan, w/ ferrous & calcareous nodules @ 83'-85'											
-80	85														
				-very stiff & gray @ 88'-90'	(P)4.00										
-85	90														
				-firm to stiff @ 93'-95'	(P)2.00		25	96			0.96	10	54		
-90	95														
				Stiff gray LEAN CLAY w/ SAND (CL)	(P)2.75		16	113			1.48	2	57	74	
-95	100														
				-stiff to hard @ 103'-115'	(P)4.50		16	116			1.81	6			
-100	105														
				w/ calcareous nodules @ 108'-110'	(P)4.50										
				-very stiff to hard below 108'											
-105	110														

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-13-09
DATE BORING COMPLETED: 11-13-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.

LOG OF BORING B-12

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61213 W 94.99959	(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
			SURFACE ELEVATION: 4.80 ft											
			DRILLING METHOD: Dry Augered: 0 to 11 Wash Bored: 11 to 120											
MATERIAL DESCRIPTION														
-110	115		Very stiff to hard gray LEAN CLAY w/ SAND (CL) -soft to hard & w/ sandstone layers @ 113'-115'	(P)4.50		21	103							
-115	120		Very stiff reddish brown & gray FAT CLAY (CH) - slickensided @ 118'-120'	(P)4.25		25	100	72	49	1.85	2 *			
			Bottom @ 120'											
-120	125													
-125	130													
-130	135													
-135	140													
-140	145													

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-13-09
DATE BORING COMPLETED: 11-13-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

120 ft
11-13-09
11-13-09
G. Singleton
09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.
Cons: One dimensional consolidation test.



LOG OF BORING B-13

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61247 W 94.99870	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOW/COUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
				SURFACE ELEVATION: -2.90 ft											
				DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 120											
				MATERIAL DESCRIPTION											
0				Soft reddish brown LEAN CLAY (CL) w/ silty pockets & ferrous nodules	(T)0.13										
-5				-very soft @ 3'-5'	(T)0.08		24	101	27	11				98	
5				-stiff @ 6'-8'	(P)2.25										
-10				-very stiff @ 9'-11'	(P)3.00										
10				-stiff @ 12'-14' w/ ferrous nodules below 12'-18'	(P)2.75										
-15				-firm @ 15'-17'	(P)1.25		30	96	41	22	0.59	2		94	
15				Stiff reddish brown FAT CLAY (CH)	(P)2.25										
-20					(P)2.50										
20															
-25															
25															
-30				-very stiff, slickensided, reddish brown & gray @ 28'-30'	(P)3.25		29	95			2.52	2 *			
30															
-35				-stiff & reddish brown @ 33'-35'	(P)2.75										
35															

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-13-09
DATE BORING COMPLETED: 11-14-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-13

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61247 W 94.99870	(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
		SURFACE ELEVATION: -2.90 ft											
-40		Stiff reddish brown & gray FAT CLAY (CH) -very stiff @ 38'-45' -reddish brown & gray @ 38'-40'	(P)3.00										
-45		-gray & w/ calcareous nodules @ 43'-45'	(P)3.00										
-50		Stiff gray SANDY LEAN CLAY (CL) w/ sand pockets, ferrous & calcareous nodules	(P)2.50		20		30	15				57	
-55													
-55		Medium dense gray CLAYEY SAND (SC) w/ clay pockets		3/6" 8/6" 8/6"	24							28	
-60		Dense gray POORLY GRADED SAND (SP)		11/6" 17/6" 25/6"									
-65		-medium dense & w/ clay pockets below 63.5'		5/6" 6/6" 12/6"	23							3	
-70		-tan @ 68.5'-70'		8/6" 14/6" 13/6"									
-75		Stiff gray FAT CLAY (CH)	(P)2.50		26	99			1.59	4	42		

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-13-09
DATE BORING COMPLETED: 11-14-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-13

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61247 W 94.99870 SURFACE ELEVATION: -2.90 ft DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 120	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOW/COUNT	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															
	75			Stiff gray FAT CLAY (CH) w/ shell fragments, ferrous nodules & sand seams											
	-80			-very stiff & w/ calcareous nodules @ 78'-80'	(P)3.50		18	111							
	80														
	-85														
	85			Very stiff gray FAT CLAY w/ SAND (CH) w/ sand pockets & seams, ferrous & calcareous nodules	(P)3.75		16	117	54	35	3.76	12	48	75	
	-90				(P)3.75		19								
	90														
	-95			-gray & dark gray @ 93'-95'	(P)3.50		20	110							
	95														
	-100			-stiff to very stiff @ 98'-100'	(P)3.75		15	114			1.60	6	37		
	100														
	-105			-stiff @ 103'-105'	(P)2.25									84	
	105														
	-110														
	110			Very stiff to hard gray LEAN CLAY (CL) w/ sand pockets, ferrous & calcareous nodules	(P)4.50+		16		42	24					

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-13-09
DATE BORING COMPLETED: 11-14-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-13

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61247 W 94.99870	(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
			SURFACE ELEVATION: -2.90 ft											
DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 120				MATERIAL DESCRIPTION										
-115			Very stiff to hard gray LEAN CLAY (CL)											
-115			Very stiff to hard reddish brown & gray FAT CLAY (CH) w/ ferrous nodules	(P)4.50+		24	102			4.68	9 *			
-120				(P)4.50+										
-120			Bottom @ 120'											
-125														
-125														
-130														
-130														
-135														
-135														
-140														
-140														
-145														
-145														
-150														

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-13-09
DATE BORING COMPLETED: 11-14-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

120 ft
11-13-09
11-14-09
S. Cortinas
09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-15

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61244 W 94.99764 SURFACE ELEVATION: -3.10 ft DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 120	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOW/COUNT	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		Firm to stiff reddish brown SANDY FAT CLAY (CH)	(P)1.00 (T)0.66		22								
-5		w/ silt pockets, calcareous & ferrous nodules											
5		Firm reddish brown SILTY CLAY (CL-ML)	(P)1.25		24	103							
-10		-very soft @ 6'-8'	(T)0.07		20	108							
10		Firm reddish brown FAT CLAY (CH)	(P)1.25		25								
-15		w/ silt pockets & calcareous nodules											
15		w/ ferrous nodules @ 12'-14'	(P)0.75		27	98							
-20		w/ shell fragments & ferrous nodules @ 15'-17'	(P)1.75		20	111			1.37	5			
20		-stiff @ 15'-23'	(P)2.00		30	93			1.33	8 *			
-25		-very stiff & w/ ferrous nodules @ 23'-25'	(P)2.50		30	93			2.56	7 *			
25													
-30		w/ ferrous nodules, silt layers & pockets @ 28'-30'	(P)1.00		26	99			0.62	7	16		
30													
-35		-stiff & w/ ferrous nodules @ 33'-35'	(P)2.75		32	91			1.97	4			
35													
-40													

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-14-09
DATE BORING COMPLETED: 11-15-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-15

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61244 W 94.99764	(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
		SURFACE ELEVATION: -3.10 ft											
		DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 120											
		MATERIAL DESCRIPTION											
40		Stiff reddish brown FAT CLAY (CH) -very stiff @ 38'-50'	(P)3.50		29								
45		-gray @ 43'-50' -w/ wood debris @ 43'-45'	(P)3.00		34	88	95	68	2.20	5			
50			(P)3.00		20	111							
55		Medium dense gray & tan POORLY GRADED SAND w/ SILT (SP-SM) w/ clay pockets		10/6" 12/6" 16/6"	22							10	
60		-dense & gray @ 58.5'-60'		16/6" 19/6" 20/6"									
65		Very stiff gray FAT CLAY (CH) w/ ferrous nodules		8/6" 14/6" 16/6"	48								
70		-stiff to very stiff @ 68'-70' -gray @ 68'-80'	(P)2.00		25	98	67	46	2.07	10			
75		-stiff & w/ calcareous nodules @ 73'-75'	(P)2.25		26	99							

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-14-09
DATE BORING COMPLETED: 11-15-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-15

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61244 W 94.99764	(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
		SURFACE ELEVATION: -3.10 ft											
		DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 120											
		MATERIAL DESCRIPTION											
75		Stiff gray FAT CLAY (CH)											
-80		-very stiff to hard w/ sand pockets @ 78'-80'	(P)4.50+		15	118			5.02	14			
80													
-85													
85		Very stiff to hard gray SANDY LEAN CLAY (CL) w/ sand pockets & ferrous nodules	(P)4.50+										
-90													
90		-stiff to hard @ 88'-90'	(P)4.50+		21	105			1.23	4			
-95													
95		Very dense gray SILT w/ SAND (ML)		27/6" 50/4"								84	
-100													
100		Very stiff gray & reddish brown FAT CLAY (CH) w/ ferrous nodules, sand pockets & seams	(P)4.25		21	107							
-105													
105		-stiff to very stiff @ 103'-105'	(P)3.50		22	102			1.12	4	60		
-110													
110		Very stiff to hard gray LEAN CLAY (CL) w/ sand pockets, ferrous nodules, & calcareous nodules	(P)4.50+		15	119			5.47	15			

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-14-09
DATE BORING COMPLETED: 11-15-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-15

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61244 W 94.99764	(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
		SURFACE ELEVATION: -3.10 ft											
		DRILLING METHOD: Dry Augered: to Wash Bored: 0 to 120											
		MATERIAL DESCRIPTION											
-115		Very stiff to hard gray LEAN CLAY (CL)	(P)4.50+		15	116	41	23	3.86	8		86	
-115		Very stiff to hard reddish brown FAT CLAY (CH) w/ ferrous & calcareous nodules	(P)4.50+		24	102							
-120		Bottom @ 119'											
-125													
-130													
-135													
-140													
-145													
-150													

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-14-09
DATE BORING COMPLETED: 11-15-09
LOGGER: S. Cortinas
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-16

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61188 W 94.99751 SURFACE ELEVATION: 12.95 ft DRILLING METHOD: Dry Augered: 0 to 22 Wash Bored: 22 to 120	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOW/COUNT	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		Very stiff brown SANDY LEAN CLAY "FILL"	(P)3.25		16								
10		-very stiff to hard & w/ ferrous nodules @ 3'-5'	(P)4.50		24	103							
5		Very stiff to hard gray FAT CLAY (CH) slickensided w/ ferrous nodules	(P)4.50		22								
5		-stiff to very stiff, light gray & brown @ 9'-17'	(P)3.50		27	97	80	57	1.82	1 *		97	
10		-very stiff @ 13'-18'	(P)3.75		25								
0		-w/ silt pockets @ 15'-17'	(P)4.00		21	105			1.84	3 *			
15		-very stiff to hard, reddish brown @ 18'-20'	(P)4.50									98	
-5													
20													
-10		Medium dense tan & reddish brown SILTY SAND (SM)		4/6" 8/6" 9/6"									
-15		-reddish brown @ 28.5'-30'		4/6" 7/6" 9/6"	25								
30													
-20		Very stiff reddish brown FAT CLAY (CH)	(P)3.25				79	56					
35													

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-16-09
DATE BORING COMPLETED: 11-16-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-16

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61188 W 94.99751 SURFACE ELEVATION: 12.95 ft	(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
		DRILLING METHOD: Dry Augered: 0 to 22 Wash Bored: 22 to 120	MATERIAL DESCRIPTION										
-25		Very stiff reddish brown FAT CLAY (CH) -stiff to very stiff, slickensided, w/ ferrous nodules @ 38'-40'	(P)2.75		30	93			2.33	8			
-40													
-30		-slickensided & w/ ferrous nodules @ 43'-68'	(P)3.75		23								
-45													
-35			(P)3.75		30	93			2.52	6 *			
-50													
-40			(P)4.00		27								
-55													
-45			(P)3.50				78	54					
-60													
-50		-stiff to very stiff @ 63'-65'	(P)3.50		34	88			1.93	3 *			
-65													
-55		Very stiff gray LEAN CLAY (CL)	(P)3.25		24	101							
-70													
-60		-gray & tan, w/ sand pockets, ferrous &	(P)3.75		26								

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-16-09
DATE BORING COMPLETED: 11-16-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

120 ft
11-16-09
11-16-09
G. Singleton
09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.



LOG OF BORING B-16

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29.61188 W 94.99751 SURFACE ELEVATION: 12.95 ft DRILLING METHOD: Dry Augered: 0 to 22 Wash Bored: 22 to 120	(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											
75		calcareous nodules @ 73.5'-75' Very stiff gray LEAN CLAY (CL)											
-65													
80		Very dense gray POORLY GRADED SAND w/ SILT SAND (SP-SM)		19/6" 27/6" 34/6"								9	
-70													
85				26/6" 34/6" 50/2"									
-75													
90		Soft to stiff gray FAT CLAY (CH) -slickensided & w/ ferrous nodules	(P)2.50		34	87							
-80													
95		Very stiff to hard gray SANDY LEAN CLAY (CL) w/ ferrous & calcareous nodules	(P)4.50										
-85													
100		Stiff to very stiff gray FAT CLAY (CH) w/ ferrous nodules & sand pockets	(P)3.50		27	95			1.97	6			
-90													
105		Very stiff to hard gray SANDY LEAN CLAY (CL)	(P)4.50		19	110							
-95													
110		-very soft & slickensided @ 108'-110'	(P)4.50		20	108							

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-16-09
DATE BORING COMPLETED: 11-16-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

LOG OF BORING B-16

PROJECT: Wharves 2 & 6 - Bayport Terminal Complex
Port of Houston Authority

CLIENT: CH2M Hill
Houston, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 29.61188 W 94.99751	(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
			SURFACE ELEVATION: 12.95 ft											
			MATERIAL DESCRIPTION											
-100			Very stiff to hard gray SANDY LEAN CLAY (CL)											
-115			Very stiff to hard gray FAT CLAY w/ SAND (CH)		10/6" 32/6" 30/6"	29								
-120			Bottom @ 120'		18/6" 20/6" 38/6"	25								
-135														

COMPLETION DEPTH: 120 ft
DATE BORING STARTED: 11-16-09
DATE BORING COMPLETED: 11-16-09
LOGGER: G. Singleton
PROJECT NO.: 09.14.037

NOTES: Boring backfilled with cement bentonite grout upon completion of sampling.

SYMBOLS AND TERMS USED ON BORING LOGS

Common Unified Soil Classification System Groups



Well Graded Gravel (GW)



Well Graded Gravel with Sand (GW)



Poorly Graded Gravel (GP)



Silty Gravel (GM)



Clayey Gravel (GC)



Well Graded Sand (SW)



Well Graded Sand with Gravel (SW)



Poorly Graded Sand (SP)



Poorly Graded Sand with Silt (SP-SM)



Silty Sand (SM)



Clayey Sand (SC)



Silty Clayey Sand (SC-SM)



Lean Clay (CL)



Lean Clay with Sand (CL)



Sandy Lean Clay (CL)



Silty Clay (CL-ML)



Sandy Silty Clay (CL-ML)



Silt (ML)



Silt with Sand (ML)



Sandy Silt (ML)



Fat Clay (CH)



Fat Clay with Sand (CH)



Sandy Fat Clay (CH)



Elastic Silt (MH)



Peat (PT)

Miscellaneous Materials



Asphalt and/or Base



Concrete



Fill

Sampler Types



Pavement / Rock Core



Thin-Walled Tube



SPT Split-Barrel



Auger



Sampling Attempt With No Recovery



TxDOT Cone Penetrometer Test



California Split-Barrel Sampler

Field Test Data

P = 2.5

Pocket Penetrometer Measurement (tsf)

8/6"

Blow Count per 6-in. Interval of the Standard Penetration Test

T = 0.8

Torvane Measurement (tsf)

WOR

Weight of Rod

WOH

Weight of Hammer



Observed Water Level During Drilling



Observed Water Level After Drilling

Laboratory Test Data

*

Failed on slickensided plane.

**

Did not fail at 15% strain.

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Relative Density	Typical SPT 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 FINE-GRAINED SOILS

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

** The correlation of consistency with a typical SPT " N_{60} " value range is approximate.





CPT Data

Job Number 04.1909-0061

CPT Number CPT-02

Location Port of Houston

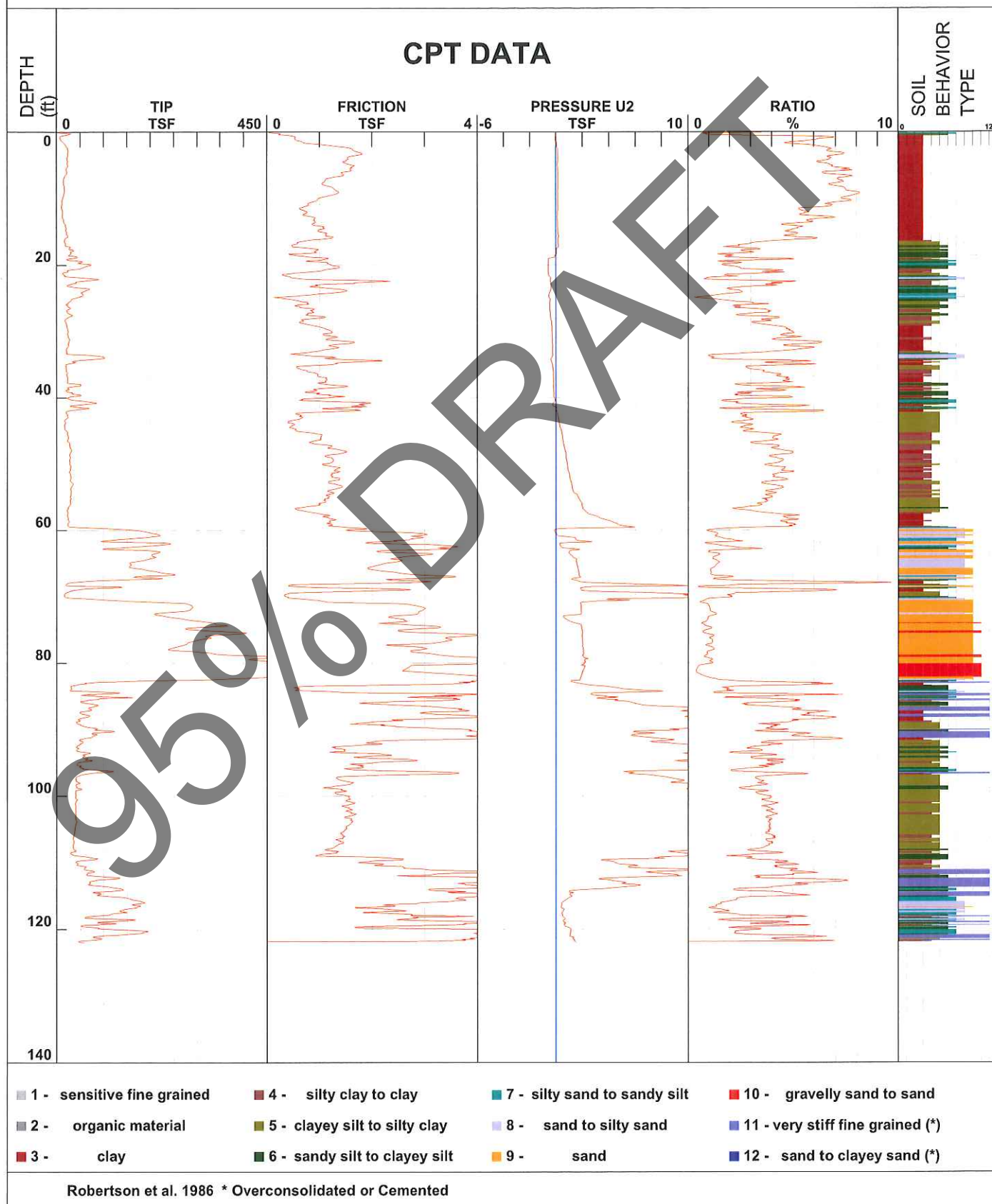
Operator Robert Biehle

Date and Time 10-Nov-2009 14:44:04

Cone Number A15F2.5CKE2H2120

Client

Tolunay-Wong Engineers





CPT Data

Job Number 04.1909-0061

CPT Number CPT-03

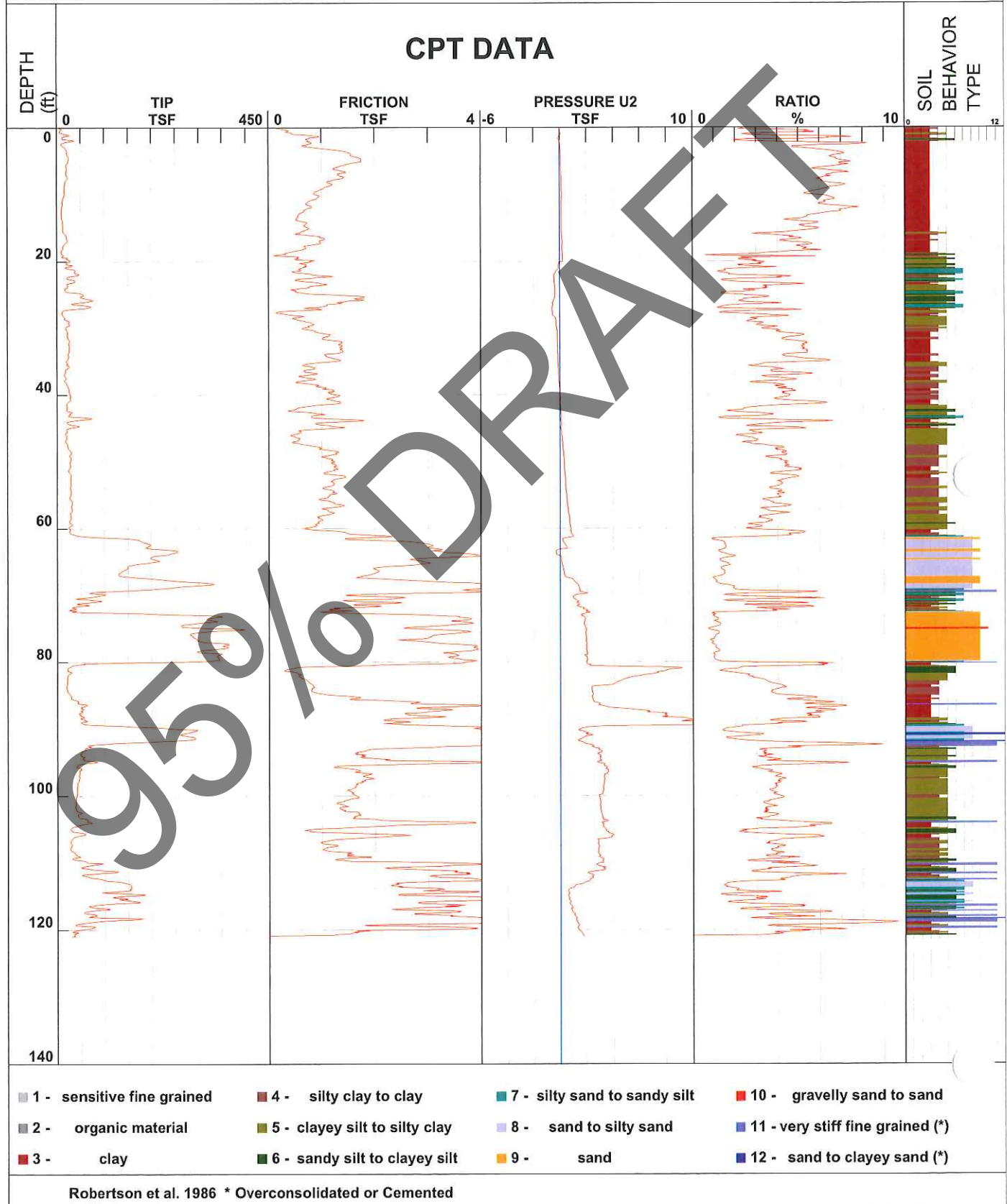
Location Port of Houston

Operator Robert Biehle

Date and Time 11-Nov-2009 08:04:50

Cone Number A15F2.5CKE2H2120

Client Tolunay-Wong Engineers





CPT Data

Job Number 04.1909-0061

CPT Number CPT-06

Location Port of Houston

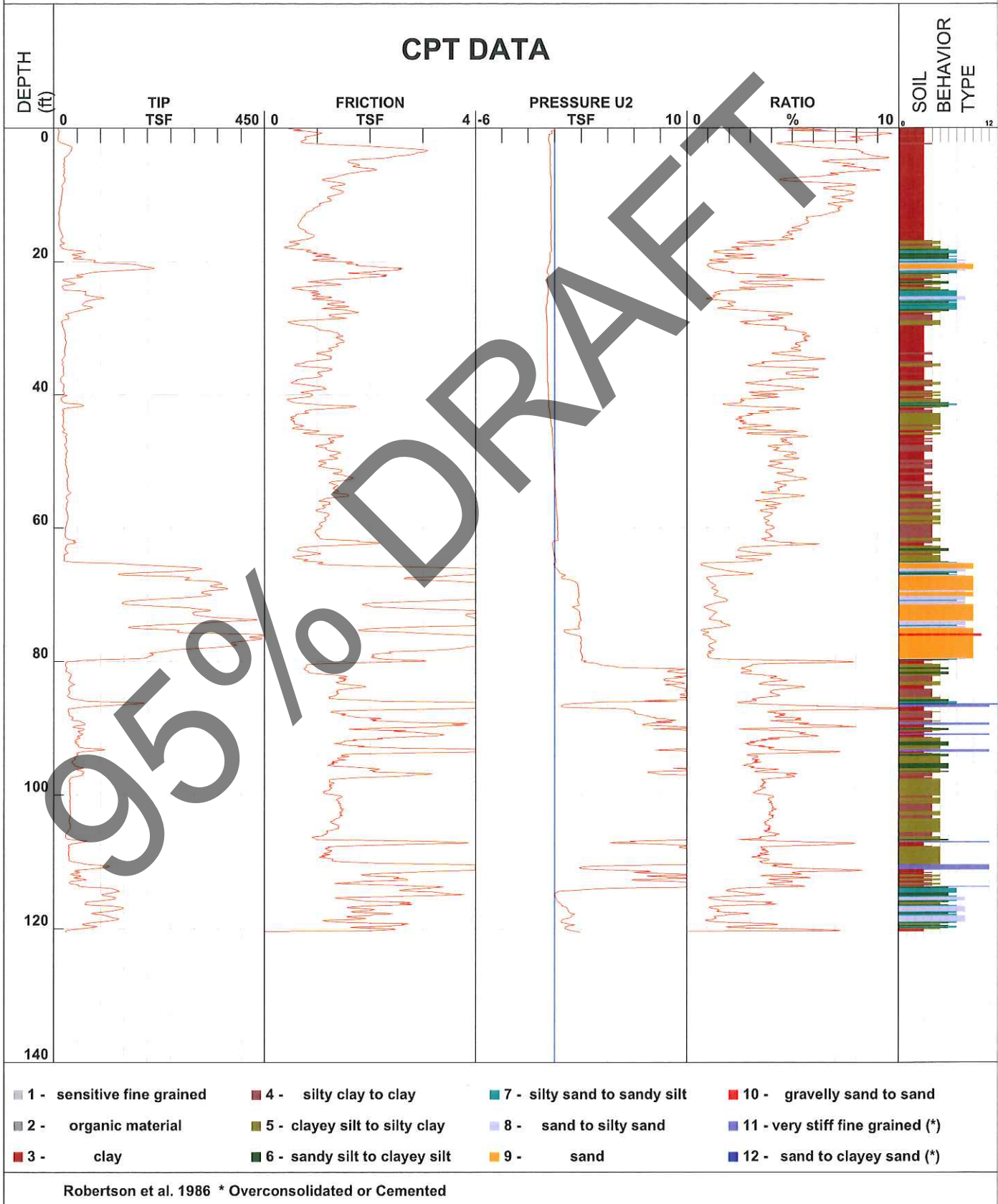
Operator Robert Biehle

Date and Time 11-Nov-2009 10:17:10

Cone Number A15F2.5CKE2H2120

Client

Tolunay-Wong Engineers





CPT Data

Job Number 04.1909-0061

CPT Number CPT-07

Location Port of Houston

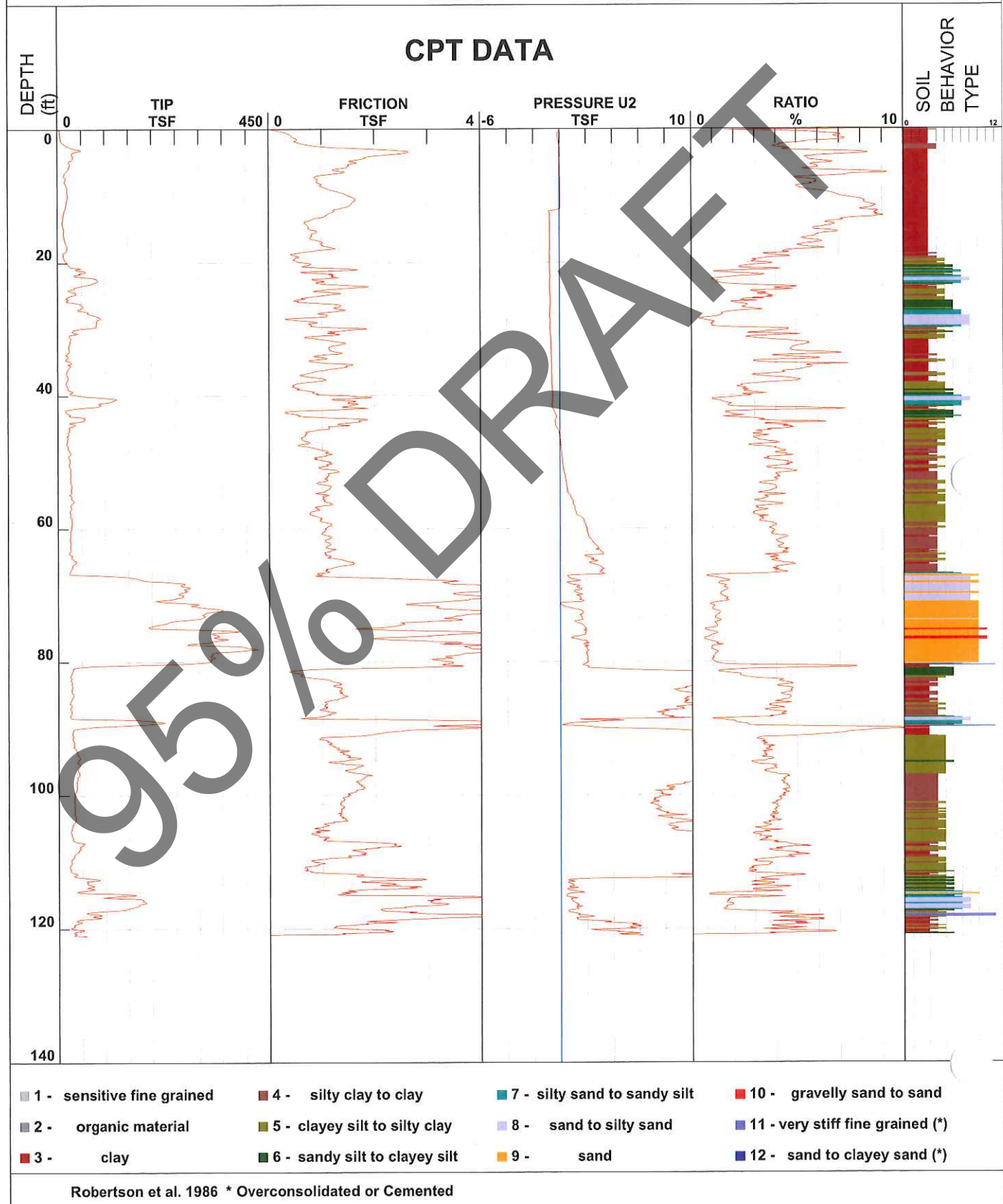
Operator Robert Biehle

Date and Time 10-Nov-2009 10:12:27

Cone Number A15F2.5CKE2H2120

Client

Tolunay-Wong Engineers





CPT Data

Job Number 04.1909-0061

CPT Number CPT-10

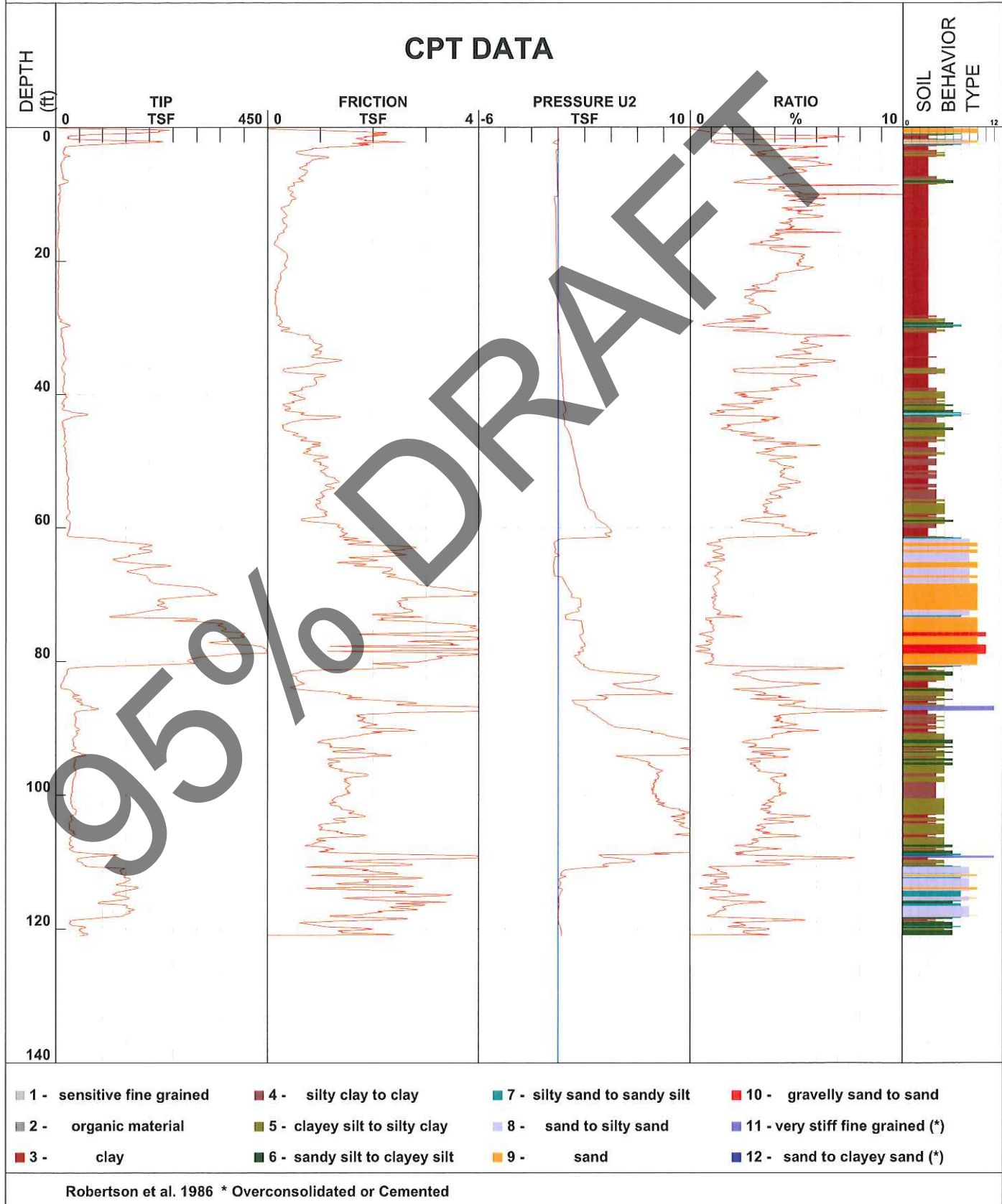
Location Port of Houston

Operator Robert Biehle

Date and Time 10-Nov-2009 12:32:41

Cone Number A15F2.5CKE2H2120

Client Tolunay-Wong Engineers





CPT Data

Job Number 04.1909-0061

CPT Number CPT-14

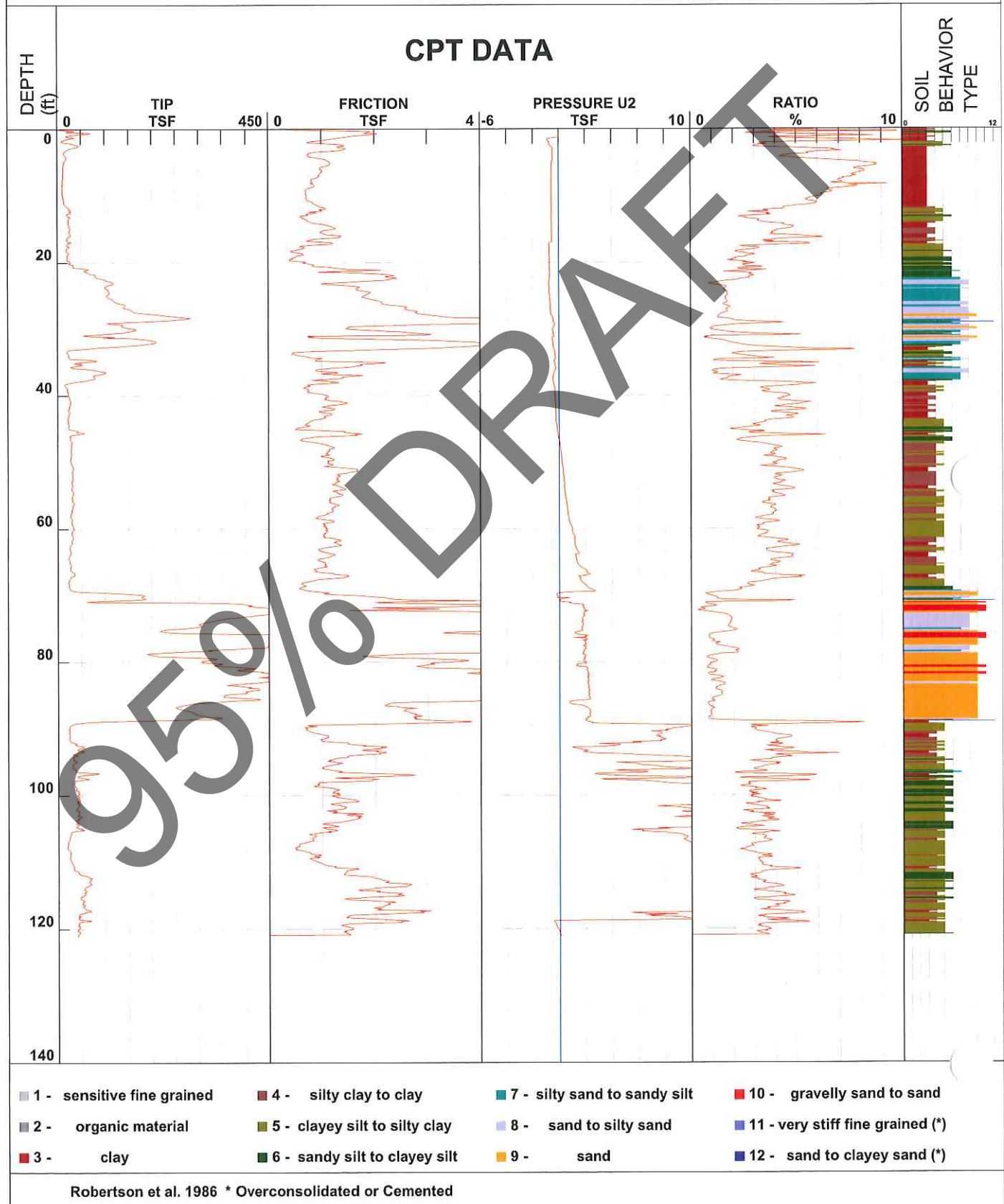
Location Port of Houston

Operator Robert Biehle

Date and Tin 11-Nov-2009 13:21:00

Cone Number A15F2.5CKE2H2120

Client Tolunay-Wong Engineers



LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-1 (Water Depth = 7')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-3-04

Northing: 13,790,960.0

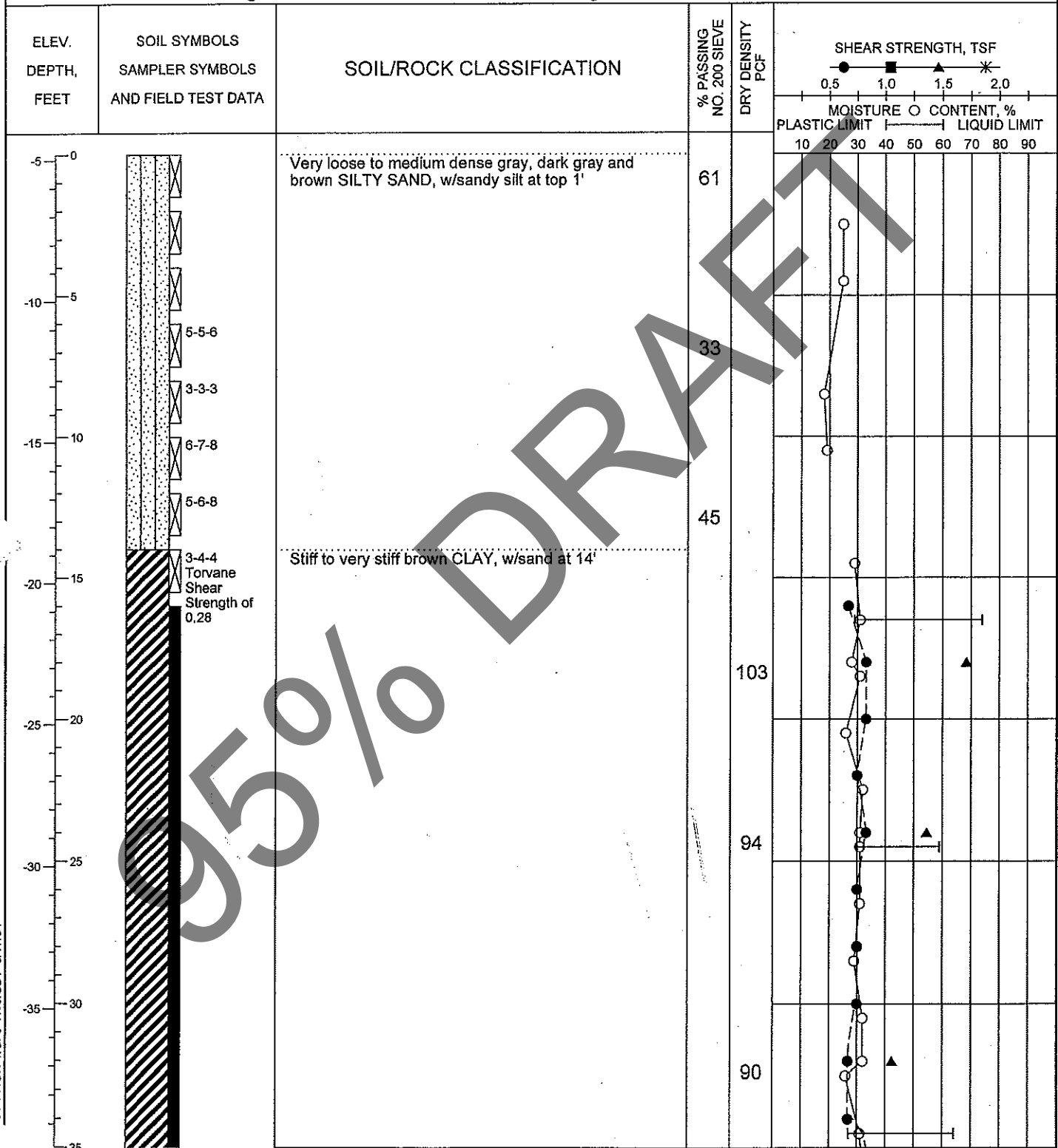
Easting: 3,243,125.2

Project No.: 04-144GH-1

Elevation: -4.80 feet

Station: --

Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-1a

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-1 (Water Depth = 7')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-3-04

Northing: 13,790,960.0

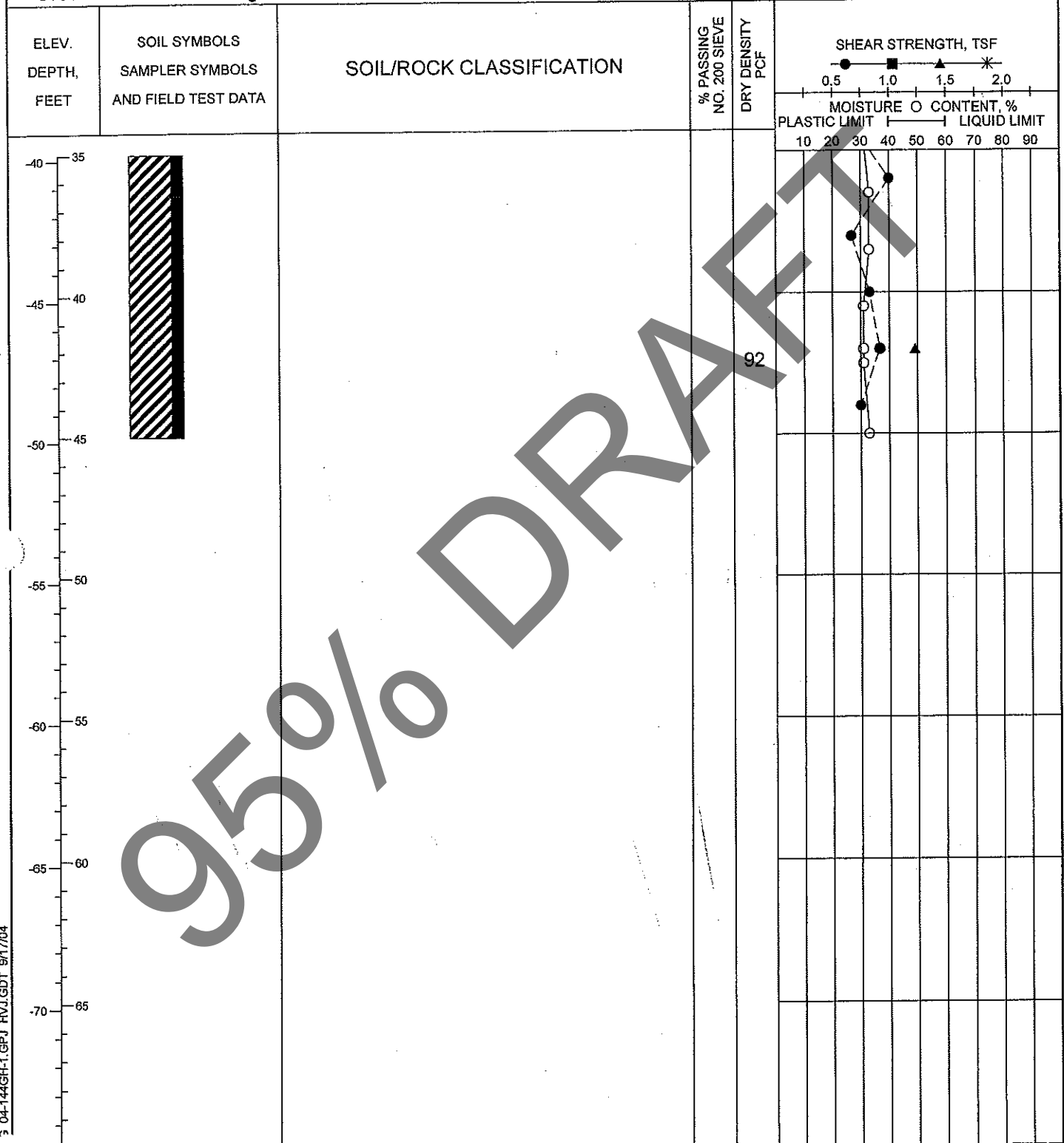
Easting: 3,243,125.2

Project No.: 04-144GH-1

Elevation: -4.80 feet

Station: --

Offset: --



Shear Types:

● = Hand Penet.

■ = Torvane

▲ = Unconf. Comp.

✱ = UU Triaxial

See Plate 2 for boring location.

PLATE A-1b

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-2 (Water Depth = 7')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-4-04

Northing: 13,791,566.3

Easting: 3,242,663.0

Project No.: 04-144GH-1

Elevation: -4.99 feet

Station: --

Offset: --

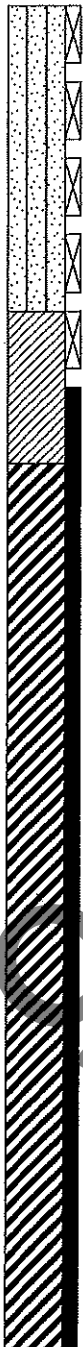
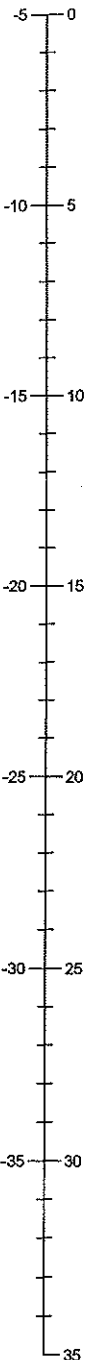
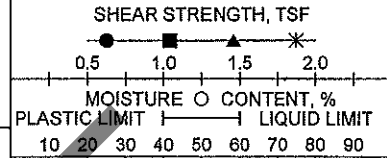
ELEV.
DEPTH,
FEET

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL/ROCK CLASSIFICATION

% PASSING
NO. 200 SIEVE

DRY DENSITY
PCF



Very loose to medium dense gray, dark gray and brown SILTY SAND, w/sandy silt 2' to 4'

52

13

Stiff to hard brown SANDY CLAY

Stiff to very stiff brown CLAY

96

92

92

90

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-2a

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-2 (Water Depth = 7')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-4-04

Northing: 13,791,566.3

Easting: 3,242,663.0

Project No.: 04-144GH-1

Elevation: -4.99 feet

Station: --

Offset: --

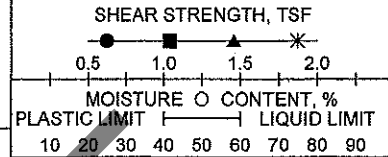
ELEV.
DEPTH,
FEET

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

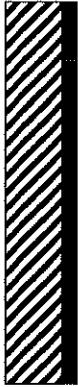
SOIL/ROCK CLASSIFICATION

% PASSING
NO. 200 SIEVE

DRY DENSITY
PCF



-40 -35
-45 -40
-50 -45
-55 -50
-60 -55
-65 -60
-70 -65
70



91

Shear Types:

● = Hand Penet.

■ = Torvane

▲ = Unconf. Comp.

* = UU Triaxial

See Plate 2 for boring location.

PLATE A-2b

HVJ Associates, Inc.

Geotechnical, Environmental & Materials Engineers

3 04-144GH-1.GPJ HVJ.GDT 9/17/04

LOG OF SOIL

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-3 (Water Depth = 9')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-3-04

Northing: 13,791,615.1

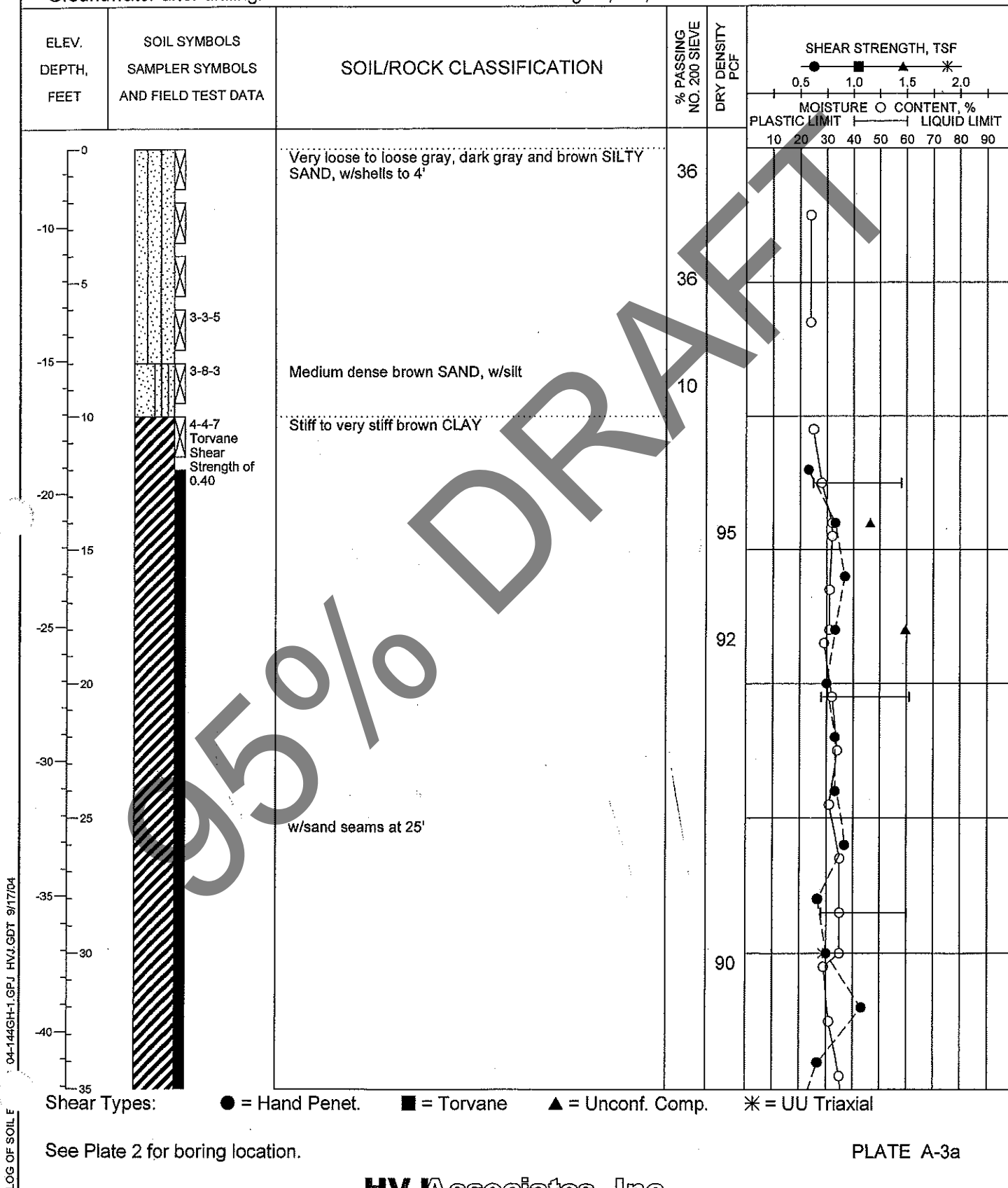
Easting: 3,243,454.0

Project No.: 04-144GH-1

Elevation: -7.09 feet

Station: --

Offset: --



LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-3 (Water Depth = 9')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-3-04

Northing: 13,791,615.1

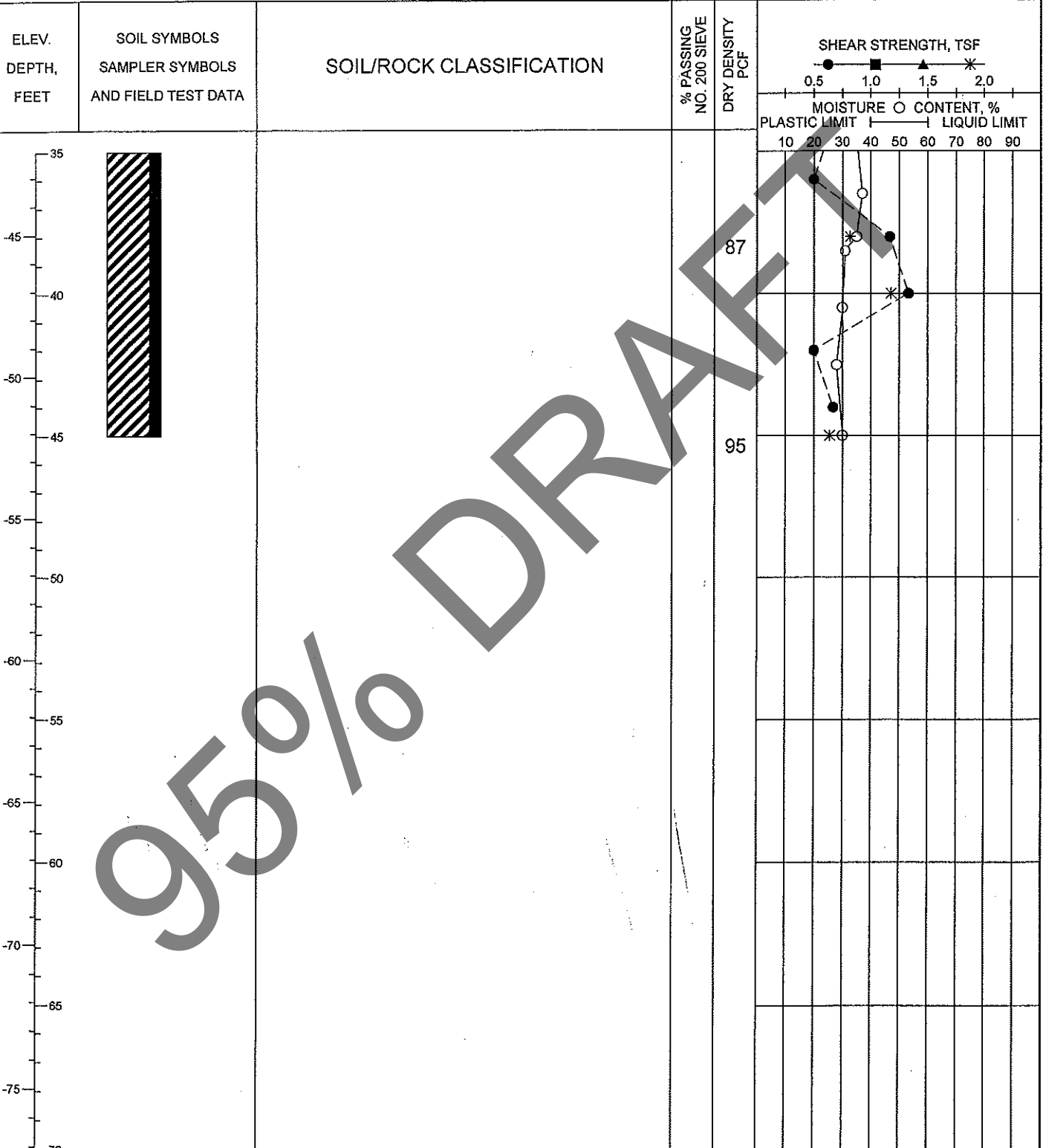
Easting: 3,243,454.0

Project No.: 04-144GH-1

Elevation: -7.09 feet

Station: --

Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-3b

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-4 (Water Depth = 8')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-4-04

Northing: 13,792,055.2

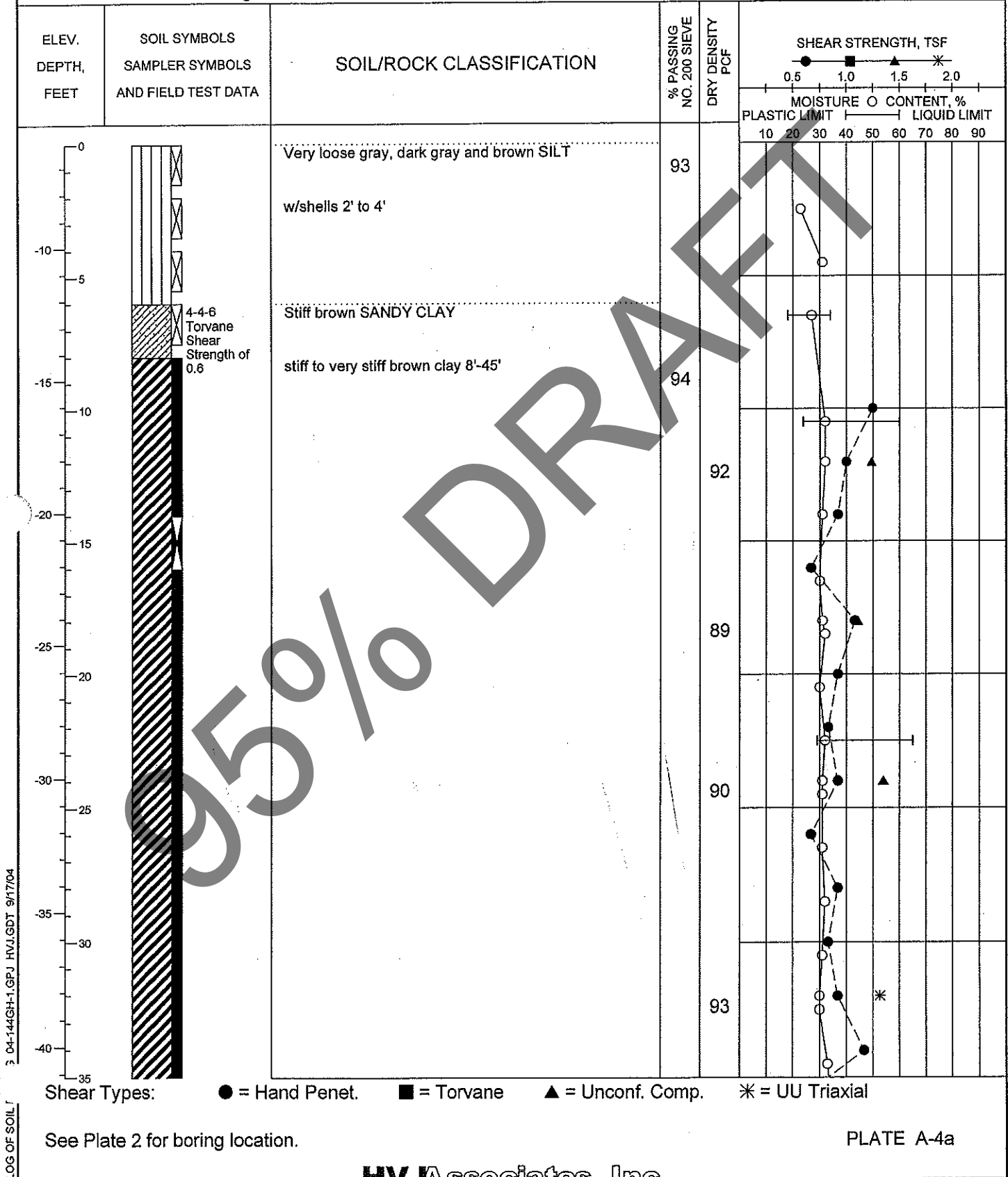
Easting: 3,242,293.9

Project No.: 04-144GH-1

Elevation: -6.11 feet

Station: --

Offset: --



LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-4 (Water Depth = 8')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-4-04

Northing: 13,792,055.2

Easting: 3,242,293.9

Project No.: 04-144GH-1

Elevation: -6.11 feet

Station: --

Offset: --

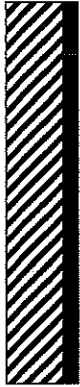
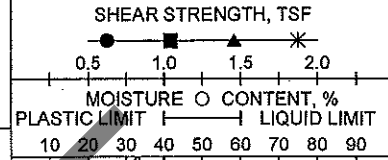
ELEV.
DEPTH,
FEET

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL/ROCK CLASSIFICATION

% PASSING
NO. 200 SIEVE

DRY DENSITY
PCF



slickensided below 42'

91

Shear Types:

● = Hand Penet.

■ = Torvane

▲ = Unconf. Comp.

* = UU Triaxial

See Plate 2 for boring location.

PLATE A-4b

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-5 (Water Depth = 9')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-4-04

Northing: 13,792,105.6

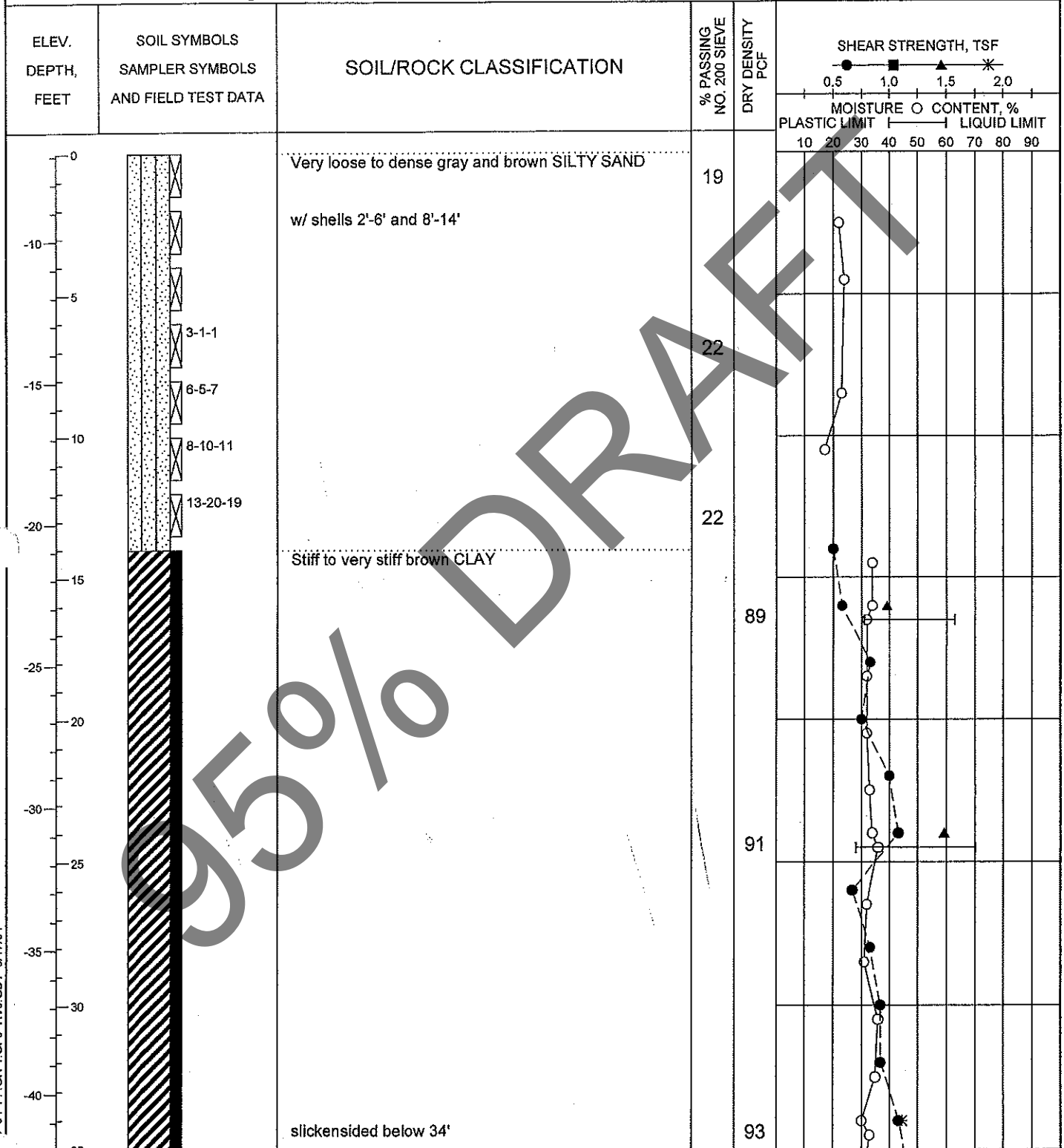
Easting: 3,242,985.2

Project No.: 04-144GH-1

Elevation: -6.91 feet

Station: --

Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ※ = UU Triaxial

See Plate 2 for boring location.

PLATE A-5a

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-5 (Water Depth = 9')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-4-04

Northing: 13,792,105.6

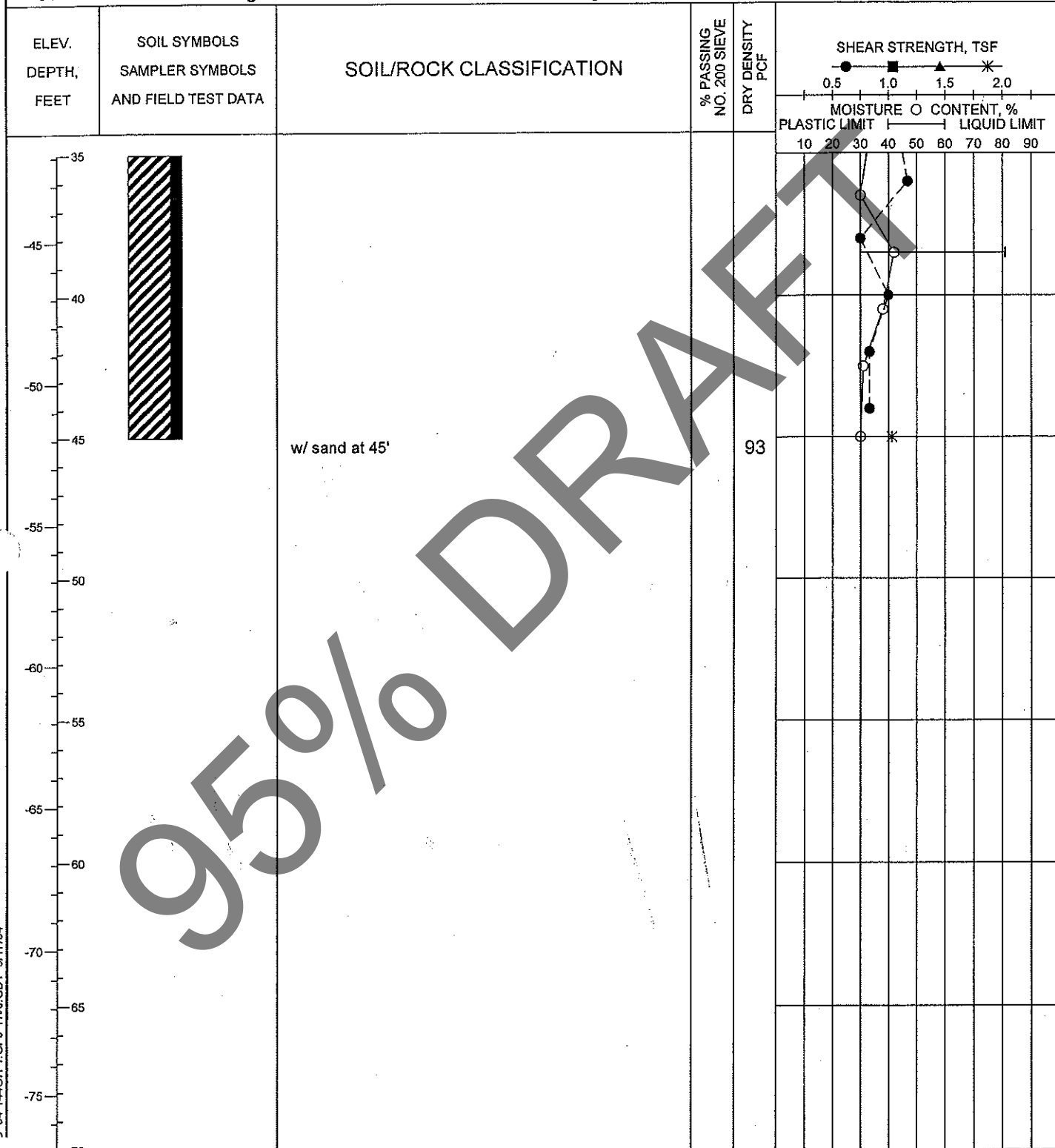
Easting: 3,242,985.2

Project No.: 04-144GH-1

Elevation: -6.91 feet

Station: --

Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-5b

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-6 (Water Depth = 10')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-4-04

Northing: 13,792,140.5

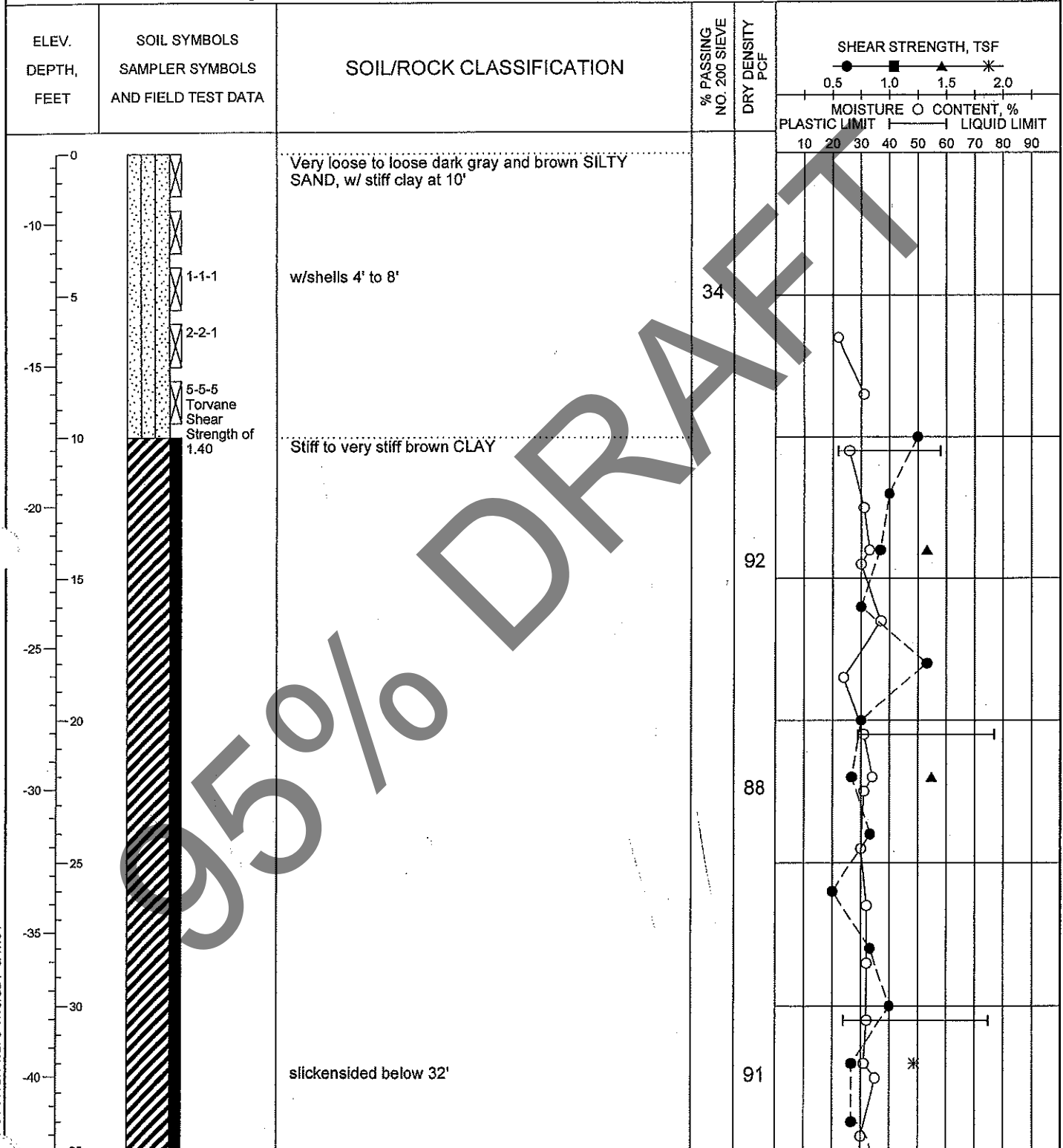
Easting: 3,243,877.9

Project No.: 04-144GH-1

Elevation: -7.54 feet

Station: --

Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

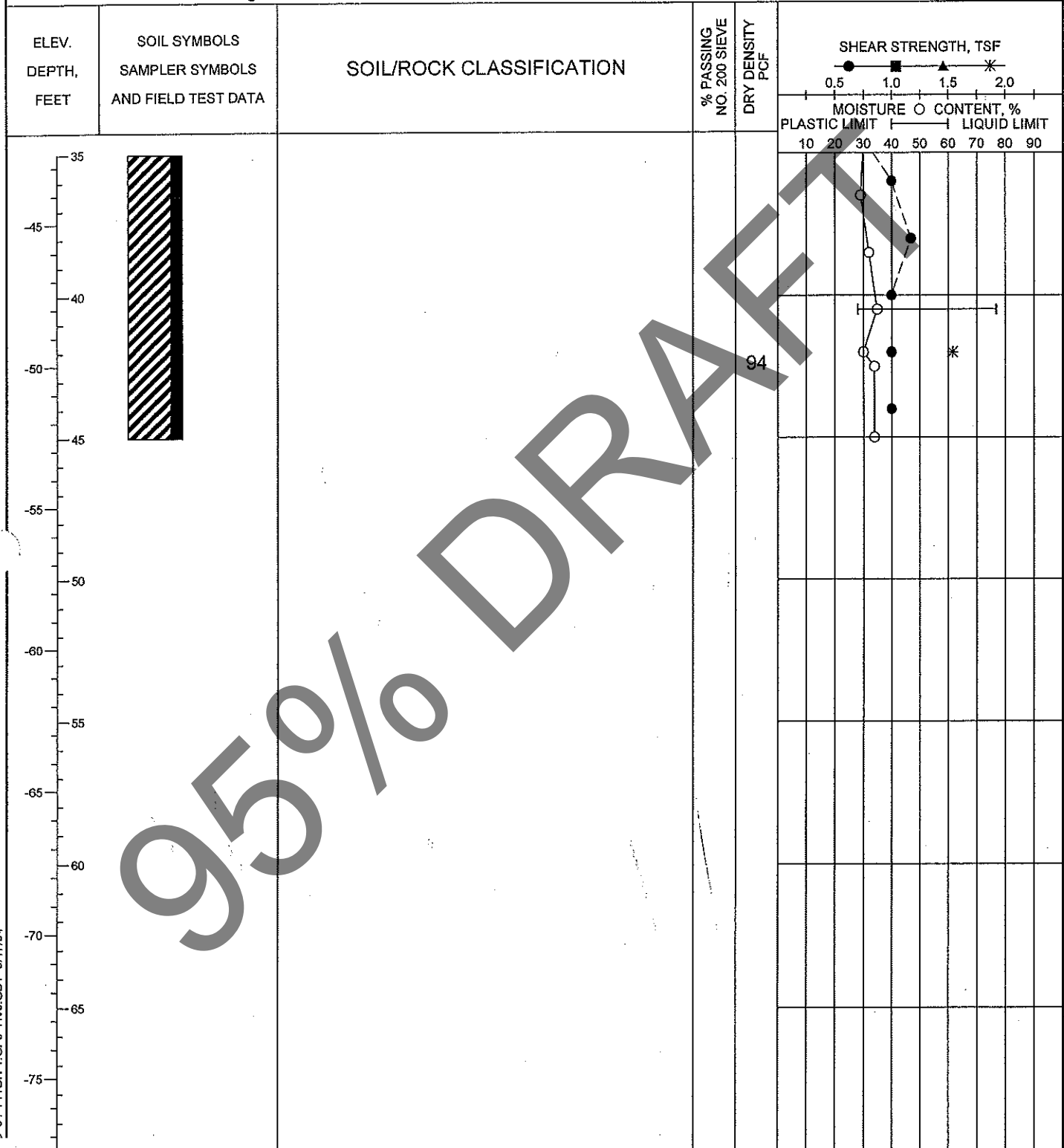
PLATE A-6a

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL
 Boring No.: MB-6 (Water Depth = 10')
 Groundwater during drilling: ---
 Groundwater after drilling: ---

Date: 9-4-04
 Northing: 13,792,140.5
 Easting: 3,243,877.9

Project No.: 04-144GH-1
 Elevation: -7.54 feet
 Station: --
 Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

PLATE A-6b

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-7 (Water Depth = 6')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-2-04

Northing: 13,790,554.7

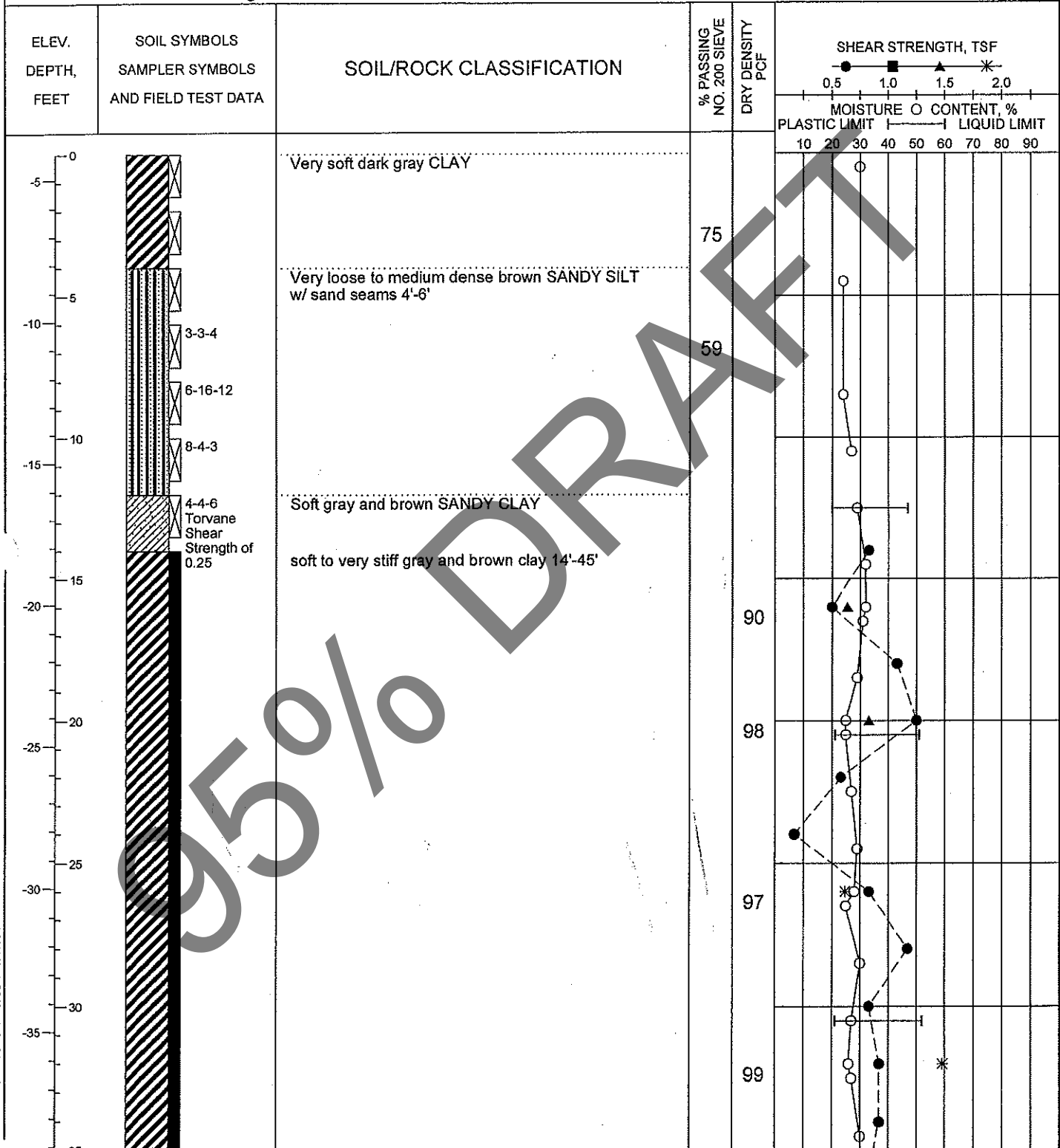
Easting: 3,243,365.4

Project No.: 04-144GH-1

Elevation: -4.10 feet

Station: --

Offset: --



Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. * = UU Triaxial

See Plate 2 for boring location.

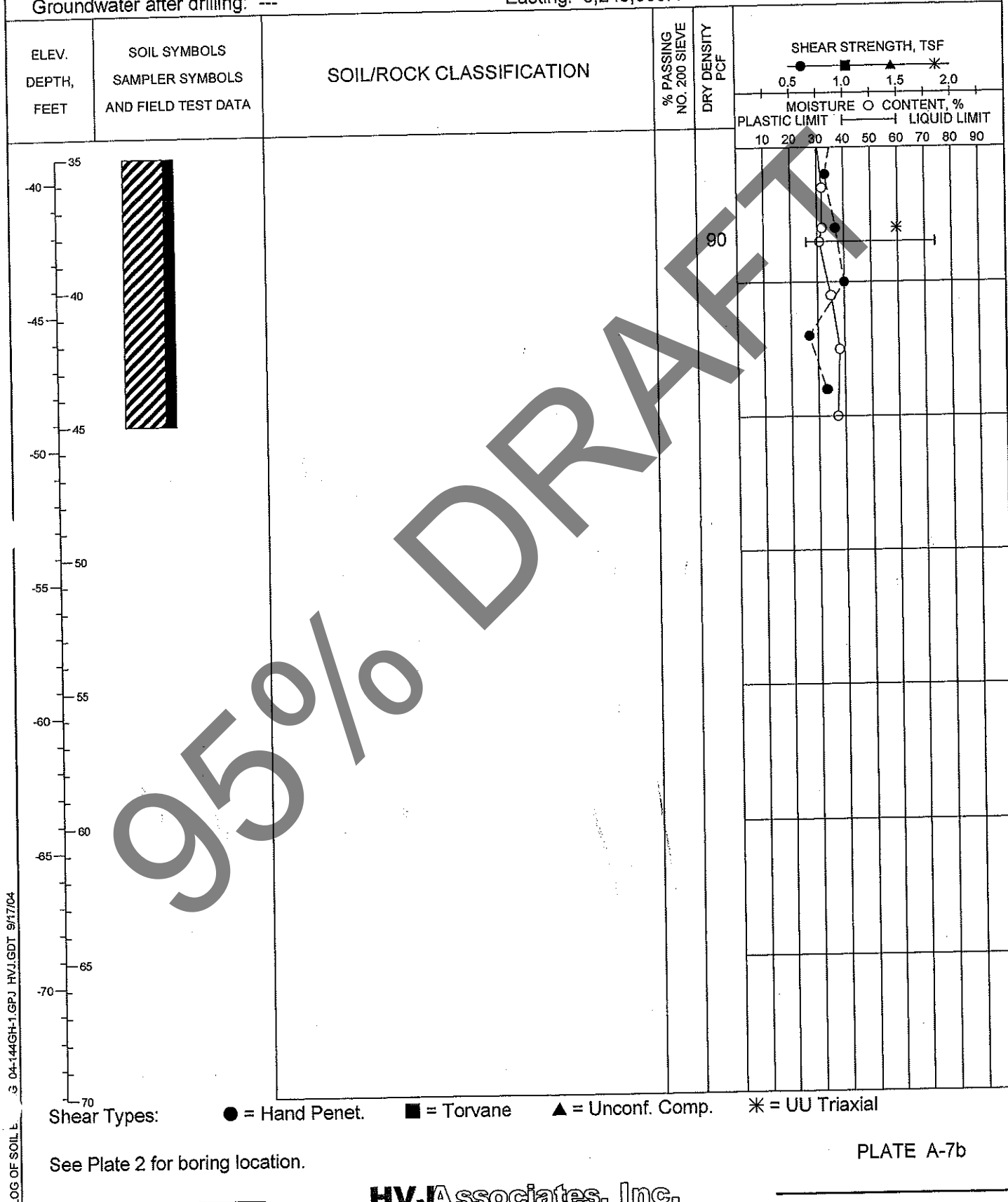
PLATE A-7a

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL
Boring No.: MB-7 (Water Depth = 6')
Groundwater during drilling: ---
Groundwater after drilling: ---

Date: 9-2-04
Northing: 13,790,554.7
Easting: 3,243,365.4

Project No.: 04-144GH-1
Elevation: -4.10 feet
Station: --
Offset: --



LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-8 (Water Depth = 5')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-2-04

Northing: 13,790,050.0

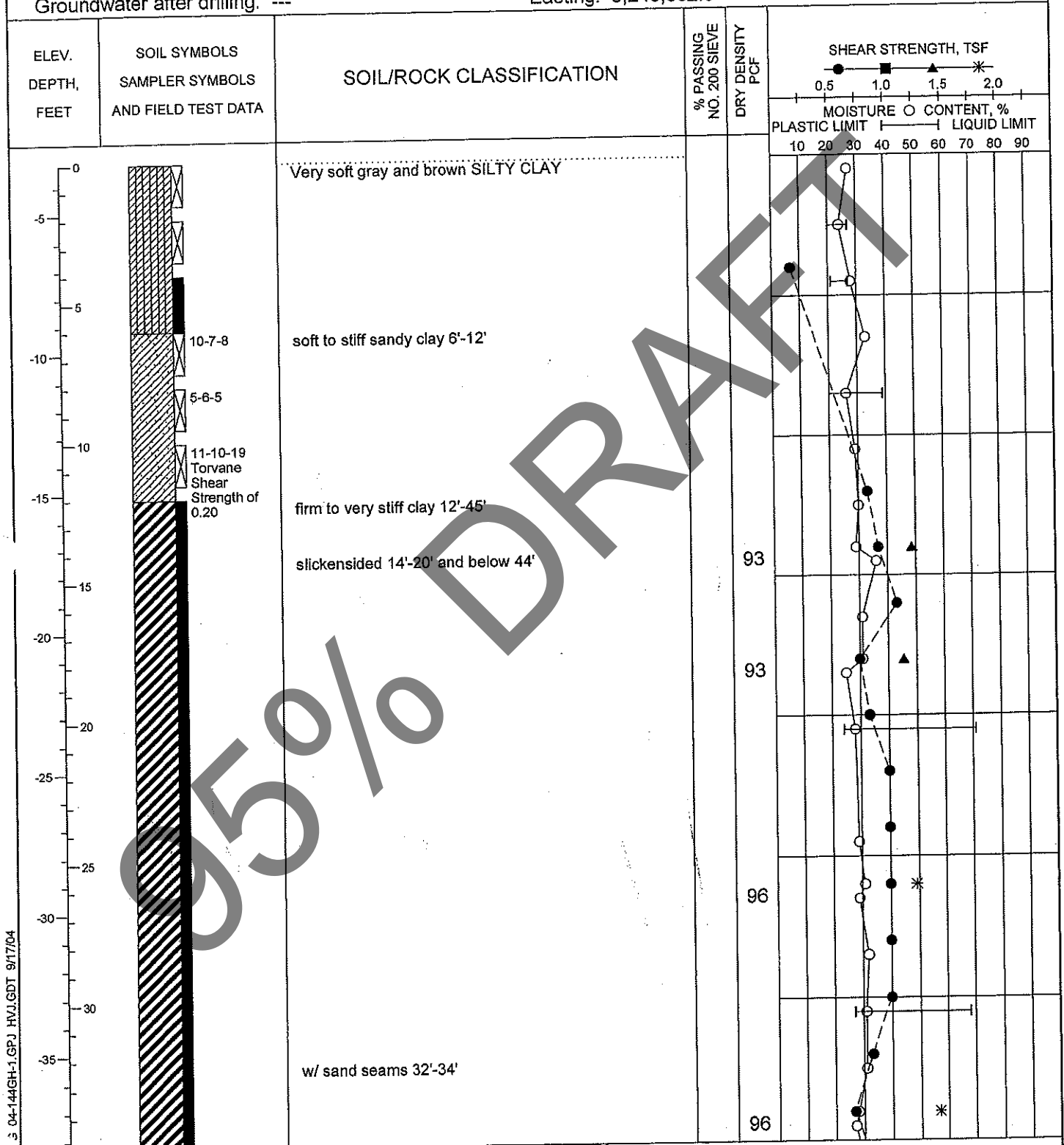
Easting: 3,243,552.3

Project No.: 04-144GH-1

Elevation: -3.20 feet

Station: --

Offset: --



Shear Types:

● = Hand Penet.

■ = Torvane

▲ = Unconf. Comp.

* = UU Triaxial

See Plate 2 for boring location.

PLATE A-8a

HVJ Associates, Inc.

Geotechnical, Environmental & Materials Engineers

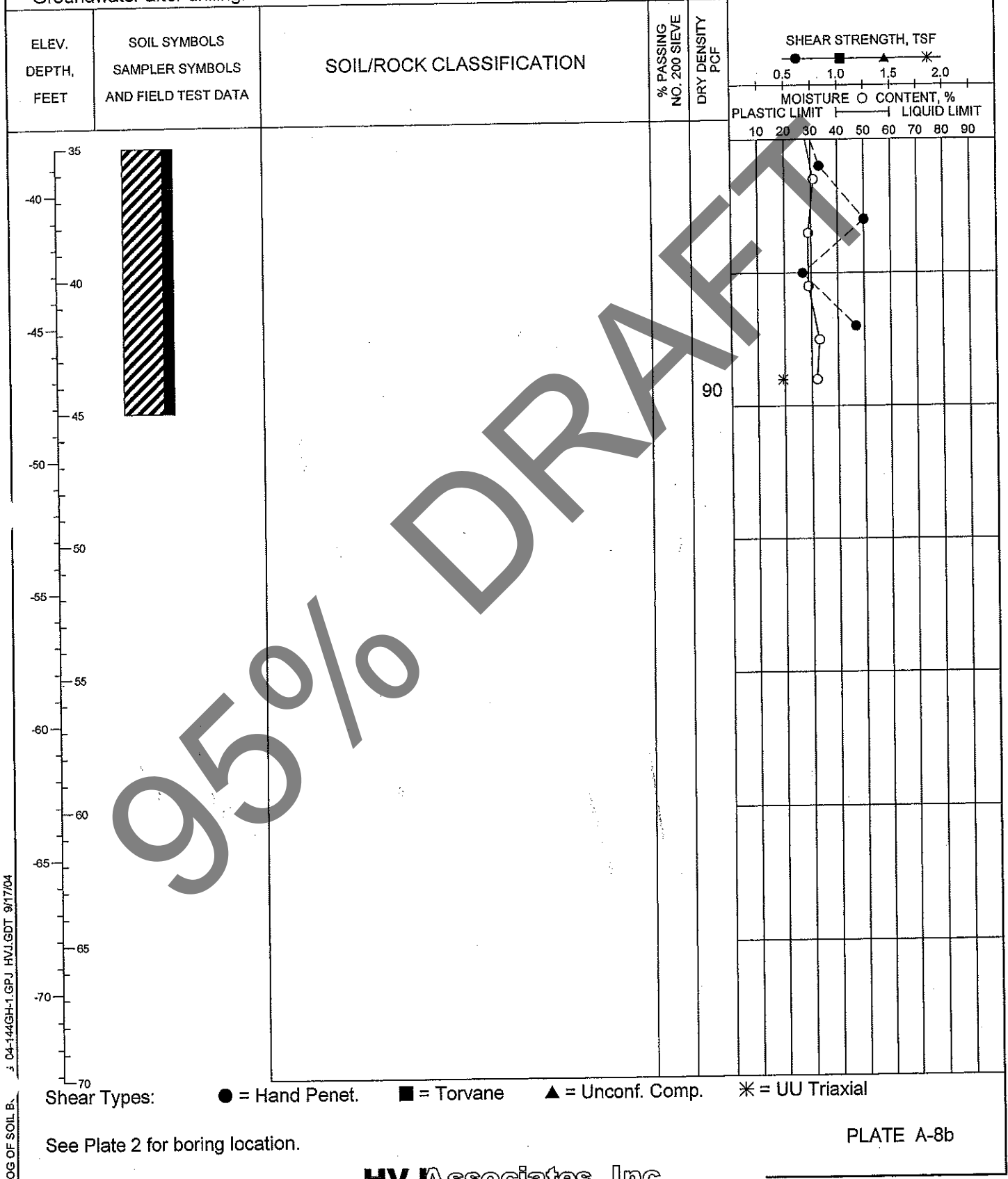
LOG OF SOIL 6 3 04-144GH-1.GPJ HVJ.GDT 9/17/04

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL
 Boring No.: MB-8 (Water Depth = 5')
 Groundwater during drilling: ---
 Groundwater after drilling: ---

Date: 9-2-04
 Northing: 13,790,050.0
 Easting: 3,243,552.3

Project No.: 04-144GH-1
 Elevation: -3.20 feet
 Station: --
 Offset: --



LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-9 (Water Depth = 5')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-1-04

Northing: 13,789,836.5

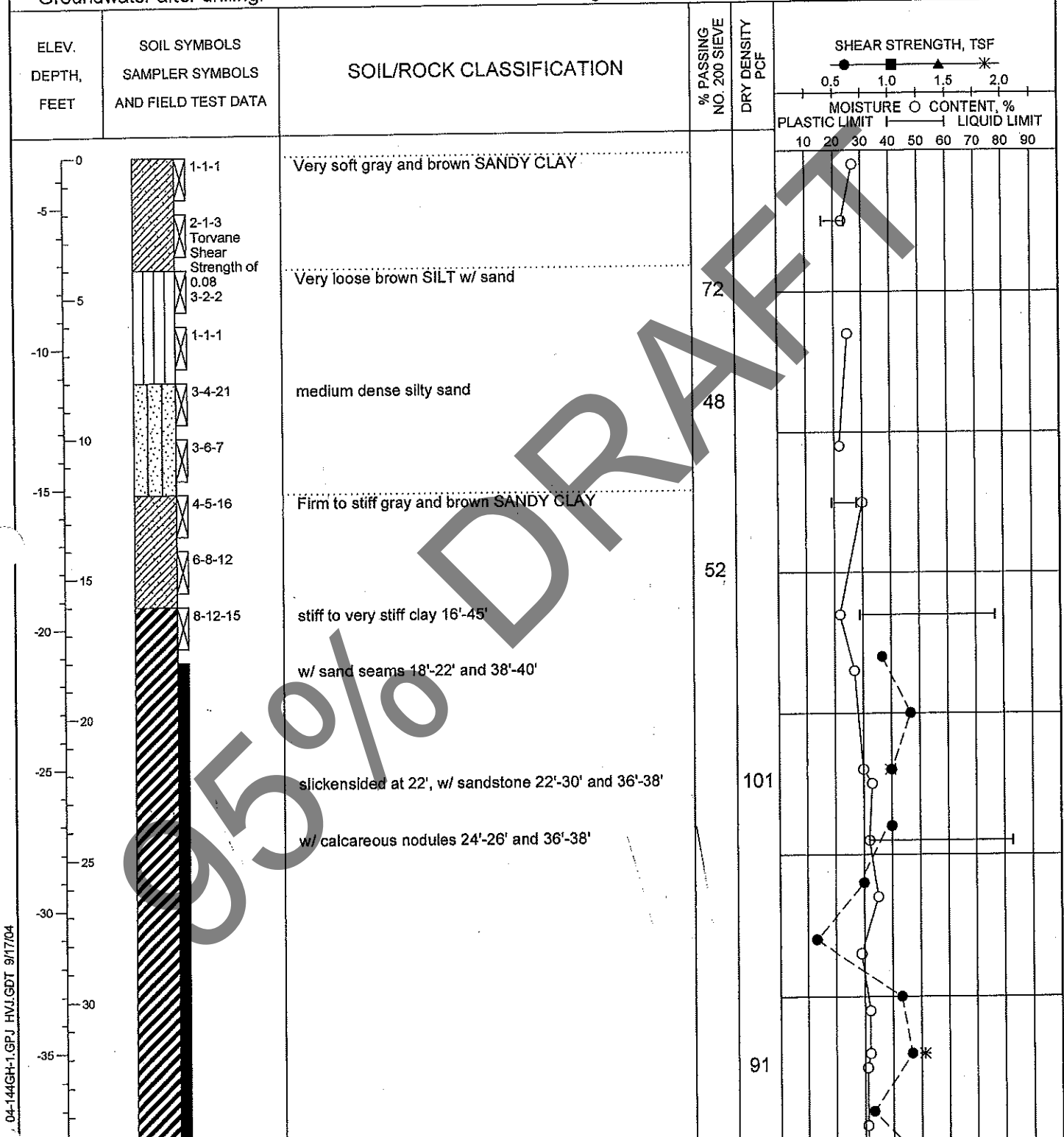
Easting: 3,244,010.6

Project No.: 04-144GH-1

Elevation: -3.20 feet

Station: --

Offset: --



Shear Types:

● = Hand Penet.

■ = Torvane

▲ = Unconf. Comp.

* = UU Triaxial

See Plate 2 for boring location.

PLATE A-9a

HVJ Associates, Inc.

Geotechnical, Environmental & Materials Engineers

LOG OF BORING

Project: BAYPORT CRUISE TERMINAL

Boring No.: MB-9 (Water Depth = 5')

Groundwater during drilling: ---

Groundwater after drilling: ---

Date: 9-1-04

Northing: 13,789,836.5

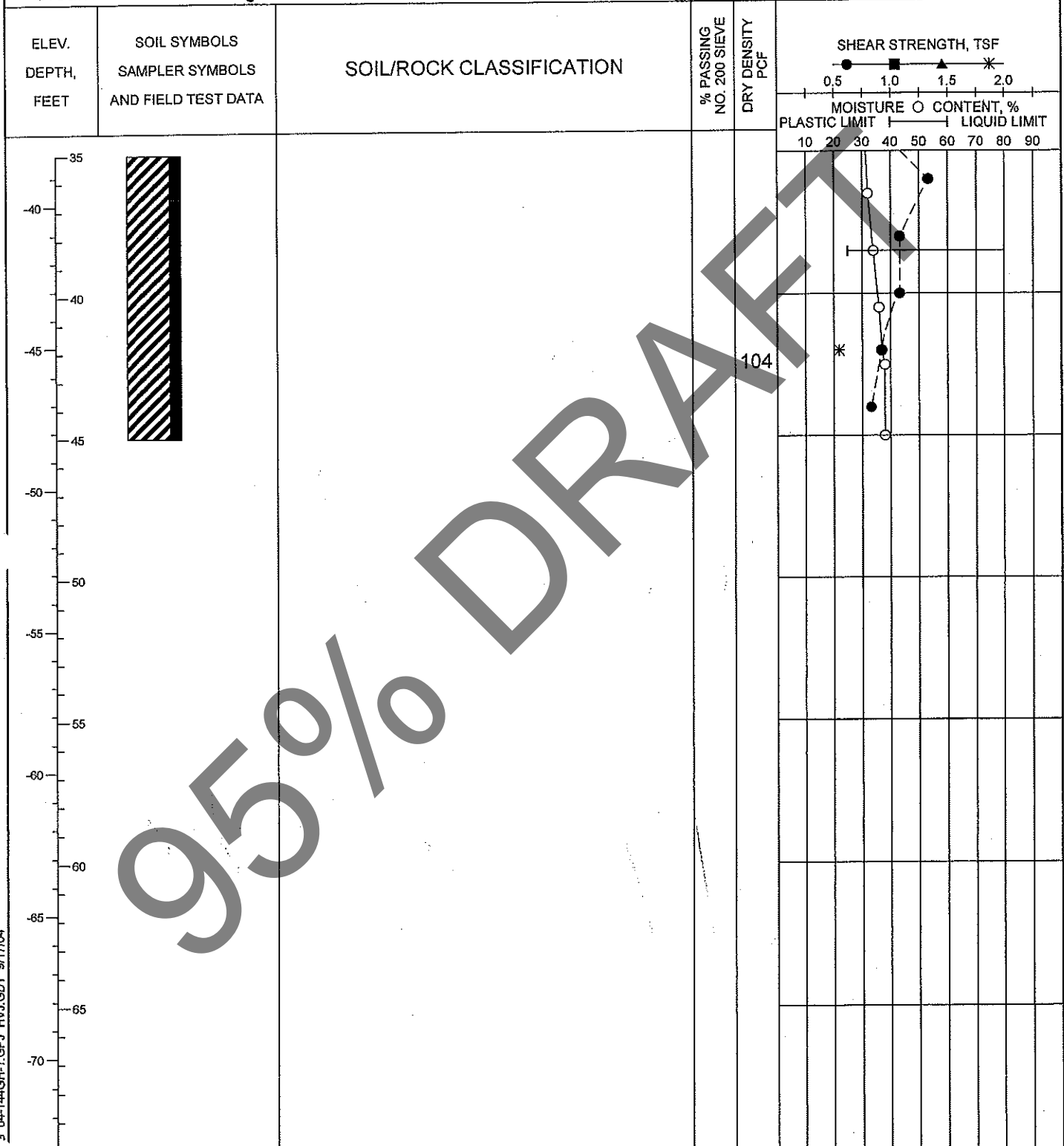
Easting: 3,244,010.6

Project No.: 04-144GH-1

Elevation: -3.20 feet

Station: ---

Offset: --



Shear Types:

● = Hand Penet.

■ = Torvane

▲ = Unconf. Comp.

* = UU Triaxial

See Plate 2 for boring location.

PLATE A-9b

NOTES

1. SOILS HAVE BEEN CLASSIFIED IN ACCORDANCE WITH ASTM 2487-93 "CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES (UNIFIED SOILS CLASSIFICATION SYSTEM)". CONSISTENCY OF SOILS SUCH AS SOFT, MEDIUM, HARD, LOOSE, DENSE, ETC., ARE RELATIVE TERMS BASED ON ESTIMATED UNDISTURBED SHEAR STRENGTH OF THE MATERIAL AS DETERMINED BY VISUAL CLASSIFICATION POCKET PENETROMETER TESTS AND PENETRATION RESISTANCE DURING SAMPLING.
2. FIGURES TO THE RIGHT OF BORING LOGS ARE WATER CONTENTS IN PERCENT OF THE DRY WEIGHT, DRY DENSITY, LIQUID LIMIT, PLASTIC LIMIT, AND BAR LINEAR SHRINKAGE. (MC, UDW, LL, PL, IL, S, P) FIGURES TO THE LEFT OF BORING LOGS ARE BLOWS PER FOOT OF PENETRATION FROM STANDARD PENETRATION TESTING.
3. BORINGS WERE DRILLED USING WET ROTARY DRILLING TECHNIQUES AND UNDISTURBED SAMPLES WERE RECOVERED WITH A 3-INCH DIAMETER THIN WALL SAMPLER WHERE COHESIVE MATERIALS WERE ENCOUNTERED, WHERE COHESIONLESS MATERIALS WERE ENCOUNTERED, DISTURBED SAMPLES WERE TAKEN WITH A SPLIT SPOON SAMPLER DURING PERFORMANCE OF STANDARD PENETRATION TESTING.
4. (*) INDICATES BAR LINEAR SHRINKAGE

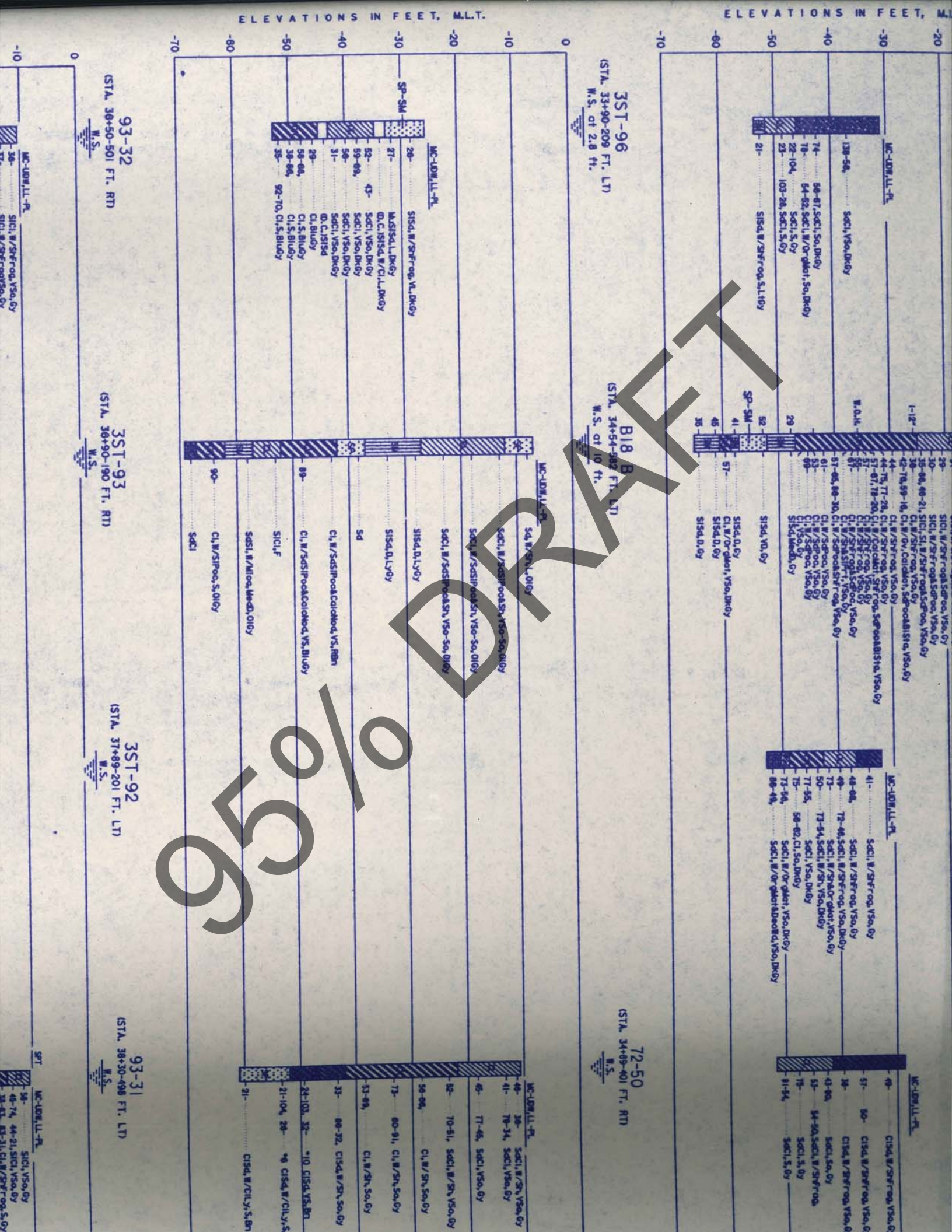
VISUAL CLASSIFICATIONS

Ba Bailes	L Loose	Sta Strains
Bl Black	Lt Light	TD (toninsh)
Blu Blue	Ly Layer(s)	Tr Trocets)
Bn Brown	Mat Material	V Very
Col Colicereous	Mico	W/ With
Cl Clayey	Med Medium	W.O.P. Weight of Pipe
Coo Coarse	Mu Muck	W.O.H. Weight of Hammer
D Dense	Nod Nodules	Washed
D.C. Driller's	Ol Olive	Wd Wooded
Classification	Org Organic	Wh White
Dec Decayed	Poc Pockett(s)	W.S. Water Surface
Dk Dark	Prt Parting	Y Yellowish
F Firm	R Red	
Fer Ferrous	S Stiff	
Frog Fragment(s)	Sd Sandy	
Gy Grayish	Sh Shelly	
Gv Gravelly	Sl Silty	
Hobn Hydrocarbon	Sks Slicken Sides	
H Hard	Sms Seams	
Inc Inclusions	So Soft	
Lg Large	St Stones	

LABORATORY CLASSIFICATION

CL INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, LEAN CLAYS.
CH INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.
GC CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
GM SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
GP POORLY-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
ML INORGANIC SILTS AND VERY FINE SANDS, WITH SLIGHT PLASTICITY.
OH ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
SC CLAYEY SANDS, SAND-CLAY MIXTURES.
SM SILTY SANDS, SAND-SILT MIXTURES.
SP POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES.

REVIEWED BY: _____ CHECKED BY: _____ E.S.R. E.S.R. I.F. ISHAQ SYED, P.E. CHIEF, DISTRICT/STRUCTURES SECTION APPROVED BY: _____ D. B. CAMPBELL, P.E. CHIEF, INSPECTING BRANCH		OFFICE OF THE DISTRICT ENGINEER U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS HOUSTON-GALVESTON NAVIGATION CHANNEL, 45-FOOT PROJECT DREDGING MID BAY LOGS OF BORINGS STA. 75+92 TO STA. 78+9 DATE: JUNE 20 SCALE: AS SHOWN DRAWING NUMBER: F-11 SHEET 80 OF 96	
PREPARED UNDER THE DIRECTION OF Nicholas J. Buechner, Col., C.E. District Engineer		AS REQUIRED BY CHIEF'S REGULATION NO. 110-1-118.1 HARRY G. KOHLER, P.E. CHIEF, ENGINEERING AND CONSTRUCTION DIVISION	



93-30

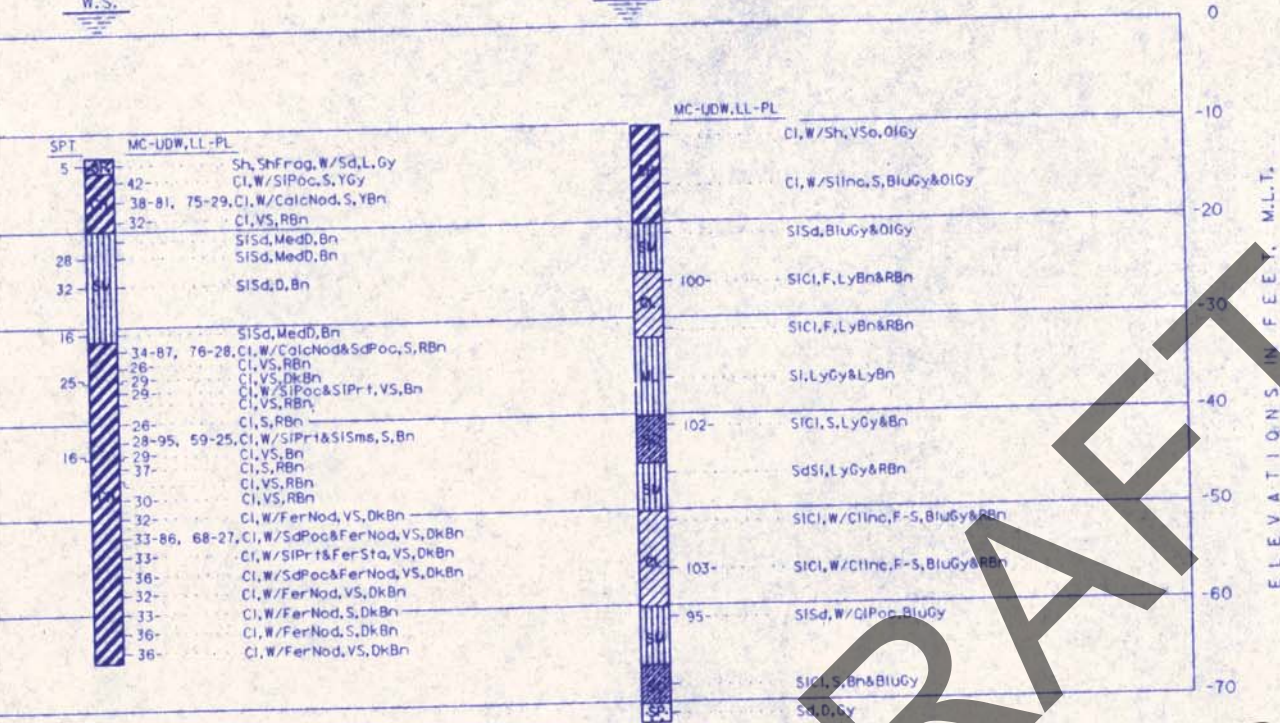
STA. 41+50-498 FT. RT)

W.S.

B19

(STA. 41+97-525 FT. LT)

W.S. at 13 ft.



3ST-86

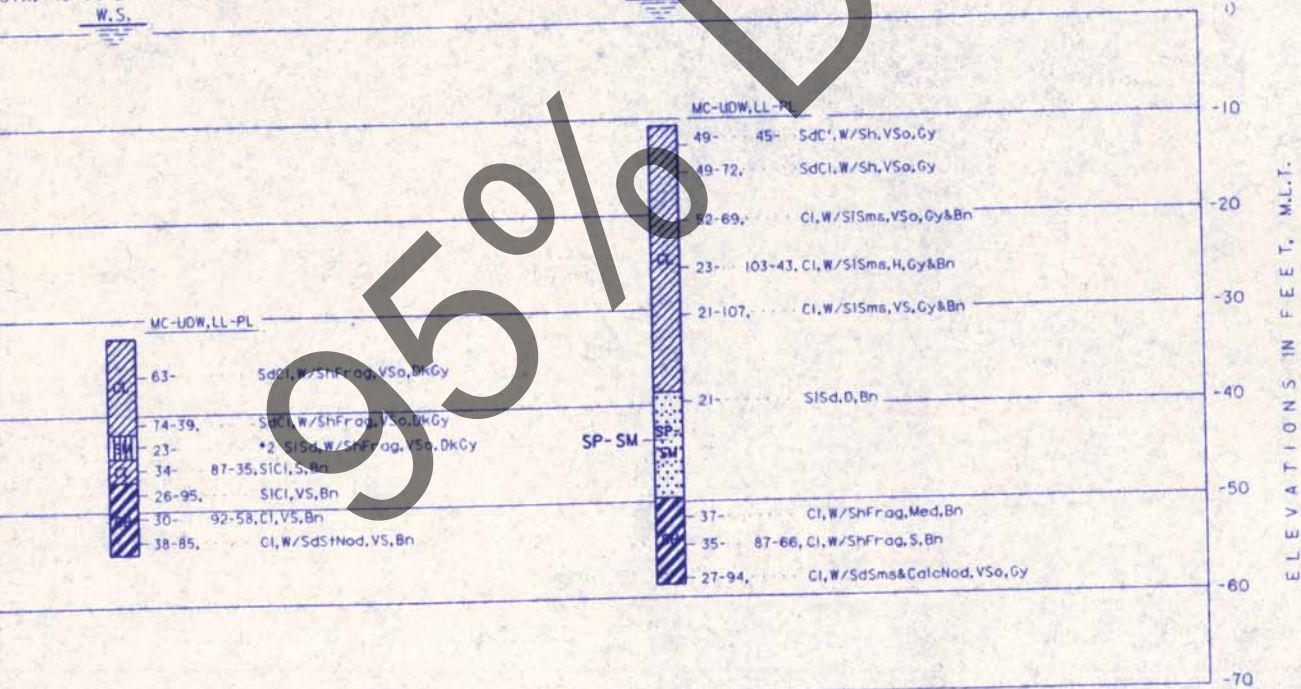
STA. 43+90-205 FT. LT)

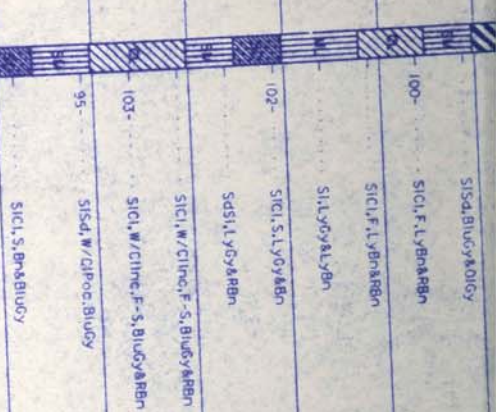
W.S.

72-48

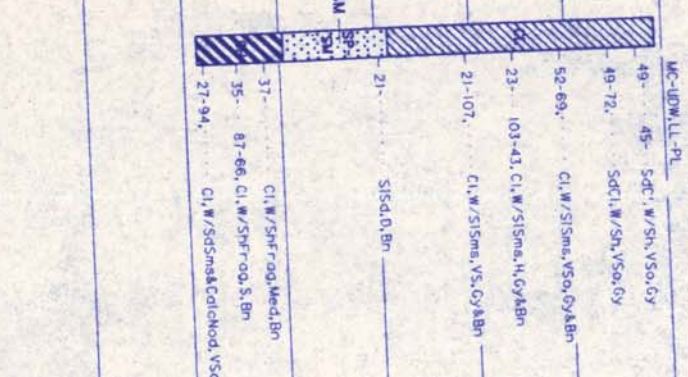
(STA. 44+90-451 FT. RT)

W.S.





72-48
(STA. 44+90-45) FT. RT)
W.S.



93-28
(STA. 46+50-499 FT. RT)
W.S.

3-27

30-497 FT. LT)

W.S.

3ST-81

(STA. 48+90-203 FT. RT)

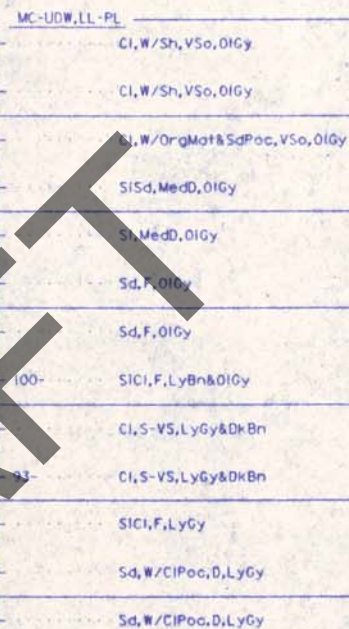
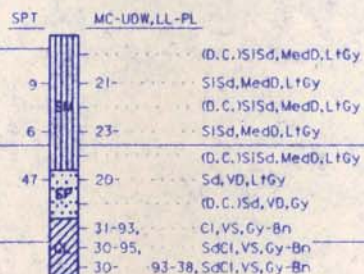
W.S.

B22

(STA. 49+03-63) FT. RT)

W.S. at 14 ft.

(STA. 49



3-26

50-501 FT. RT)

W.S.

3ST-78

(STA. 51+90-198 FT. LT)

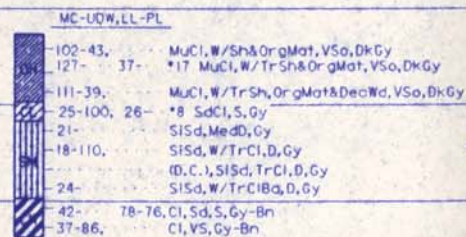
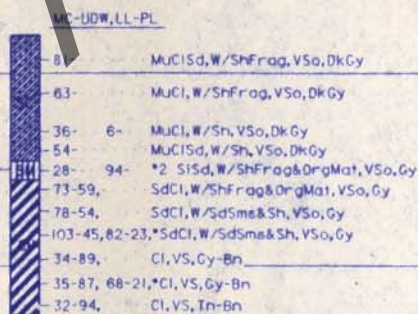
W.S.

3ST-77

(STA. 52+90-200 FT. RT)

W.S.

(STA. 53+



3T-75

92-195 FT. RT)

W.S.

3ST-74

(STA. 55+89-207 FT. LT)

W.S.

0

-10

3ST-72

(STA. 57+88-206 FT. LT)

W.S.

B23

(STA. 58+02-603 FT. LT)

W.S. at 12 ft.

3ST-71

(STA. 58+91-208 FT. RT)

W.S.

3ST

(STA. 59+90)

3ST-68

(STA. 61+86-204 FT. LT)

W 5

B24

DZ4
(STA. 61+99-613 FT. RT)

W.S. at 11 ft.

93-23

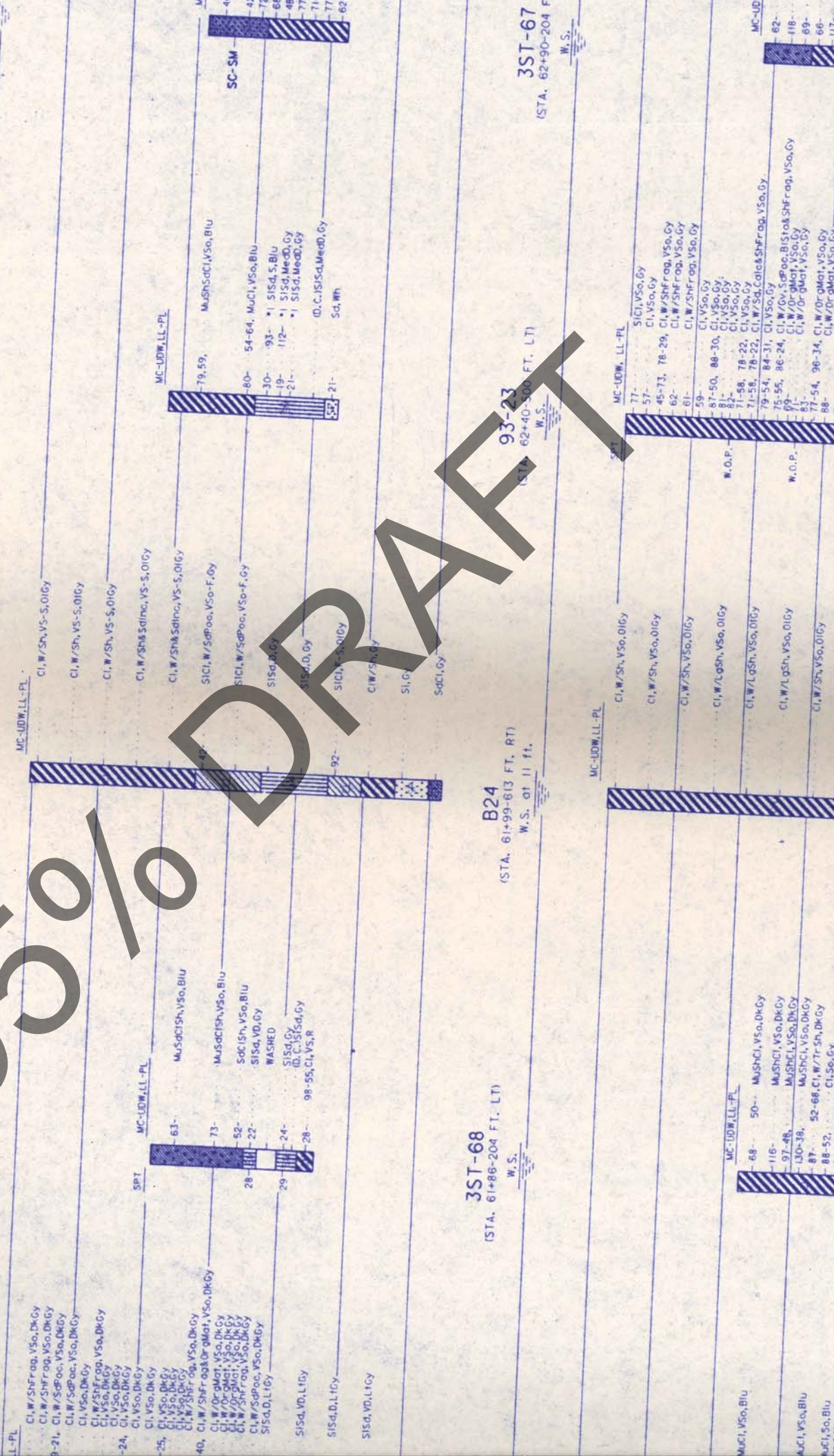
(STA. 62+40-500 FT. LT)

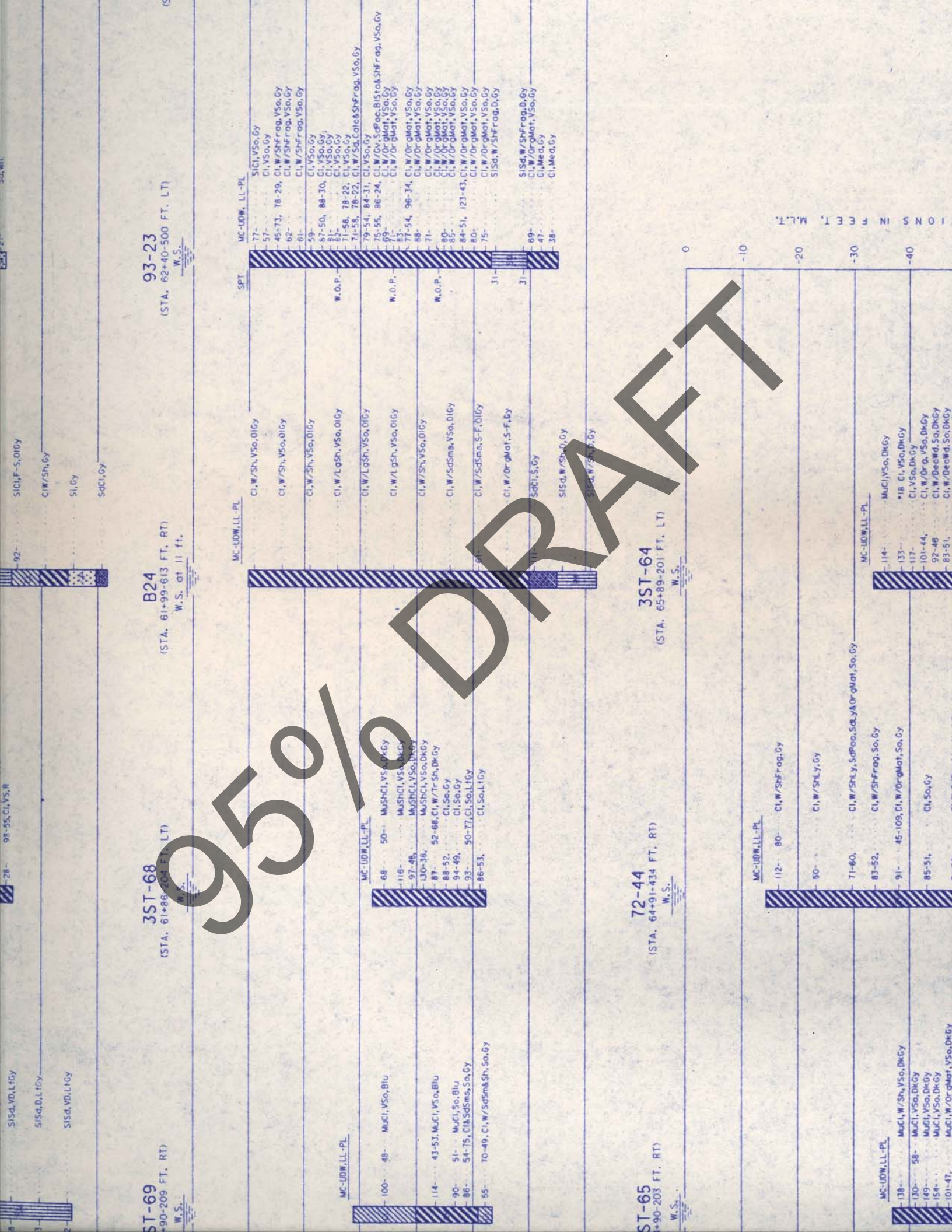
W.S.

3ST-6

STA. 62+90-204

W. C.





(STA. 66+17-592 FT. LT)
W.S. at 12 ft.

(STA. 66+90-198 FT. RT)

STA. 67+90-197 FT. LT)

(STA. 67+90-501 FT. RT)



(STA. 69+90-253 FT. LT)

(STA. 70+91-199 FT. RT)

(STA. 71+00-571 FT. RT)

(STA. 71+91-201 FT. LT)



21- SDSISh.Gy
M.C. SDSISh.Gy

 $\text{MnCl}_2 \cdot \text{W/SH} \cdot \text{VSO}_2 \cdot \text{R}$

(D. C.) SHSISd, VL

- 21- SdS/SH₂Gy

MuCl, W/Sh, VSo, R

10



— 35- 86-20, *SdClSh, VSo, Gy
— 71-66. — ClW/Sh, VSo, 1 + 0

MuCl, W/Sh, VSO, R
MuCl, W/Sh, VSO, R

71-55,



67-65, CI, W/Sh, So, LtGy -
- 68- 64-69, CI, W/Sh, So, LtGy -

CI, 0kGy

02-50,

2	41-	CI, W/ShFrag, So, Gy
	46-	CI, W/ShFrag, VSo, Gy
	70-	CI, W/ShFrag, VSo, Gy
	40-78,	74-20, CI, W/Sd, CalcShFrag, VSo, Gy
1-12	39-83,	47-18, SdCI, W/ShFrag&SdPrt, VS, Gy
	39-	SdCI, W/ShFrag, VSo, Gy
	67-	CI, W/ShFrag, VSo, Gy
	90-	CI, VSo, Gy
	78-	CI, VSo, Gy
	74-55,	103-37, CI, W/ShFrag&SdPrt, VSo, Gy
	69-	CI, W/ShFrag, VSo, Gy
	33-	CI, W/ShFrag, VSo, Gy
	21-	CI, W/ShFrag, VSo, Gy
	58-65,	82-25, CI, W/ShFrag, VSo, Gy
	58-	CI, W/ShFrag&SdPrt, VSo, Gy
	65-	CI, W/OrgMat, VSo, Gy
	77-	CI, W/OrgMat, VSo, Gy

93
(STA. 72+40-

MC, DDN, LL-PL	
33	(D.C.)SHSISd, VL SHSISd, VL (D.C.)SHSISd, VL
26	SHSISd, VL (D.C.)SHSISd, VL SHSISd, VL
31	*IS SHSISd, W/SH, VSo, Gy (D.C.)SHSISd, VSo, Gy 40, SHCISd, VSo, Gy
40	Cl, So, Gy
71-55,	Cl, So, Gy
82-49, 84-26,	*Cl, So, Gy
82-50,	Cl, So, Gy
84-50,	Cl, So, Gy
81-52, 75-24,	*Cl, So, Gy
67-59,	Cl, So, Gy

B27
(STA. 74+96-647 FT. LT)
W.S. at 19 ft.

MC-UDW,LL-PL	
	Cl,W/Sh,VSo-So,0IGy
	Cl,W/Sh,VSo-So,0IGy
	Cl,W/Sh,VSo-So,0IGy
	Cl,W/Sh,VSo-So,0IGy
	Cl,W/0rgMat&SdSms,VSo-So,0IGy
	Cl,W/0rgMat&SdSms,VSo-So,0IGy
	Cl,W/0rgMat&SdSms,VSo-So,0IGy
77	Cl,W/Sh,S,0IGy
	Cl,W/Sh,F-S,0IGy
87	Cl,W/SIPoc,F-S,0IGy
	Sd,D,Gy
	Sd,D,Gy

LOG OF SOIL BORING

Project Name: Bayport Flare Site

Boring No.: BF-1

Water Depth: 10 feet

Time Water Depth Measured: 20:45

Date: 7/04/00

Station: 155+00

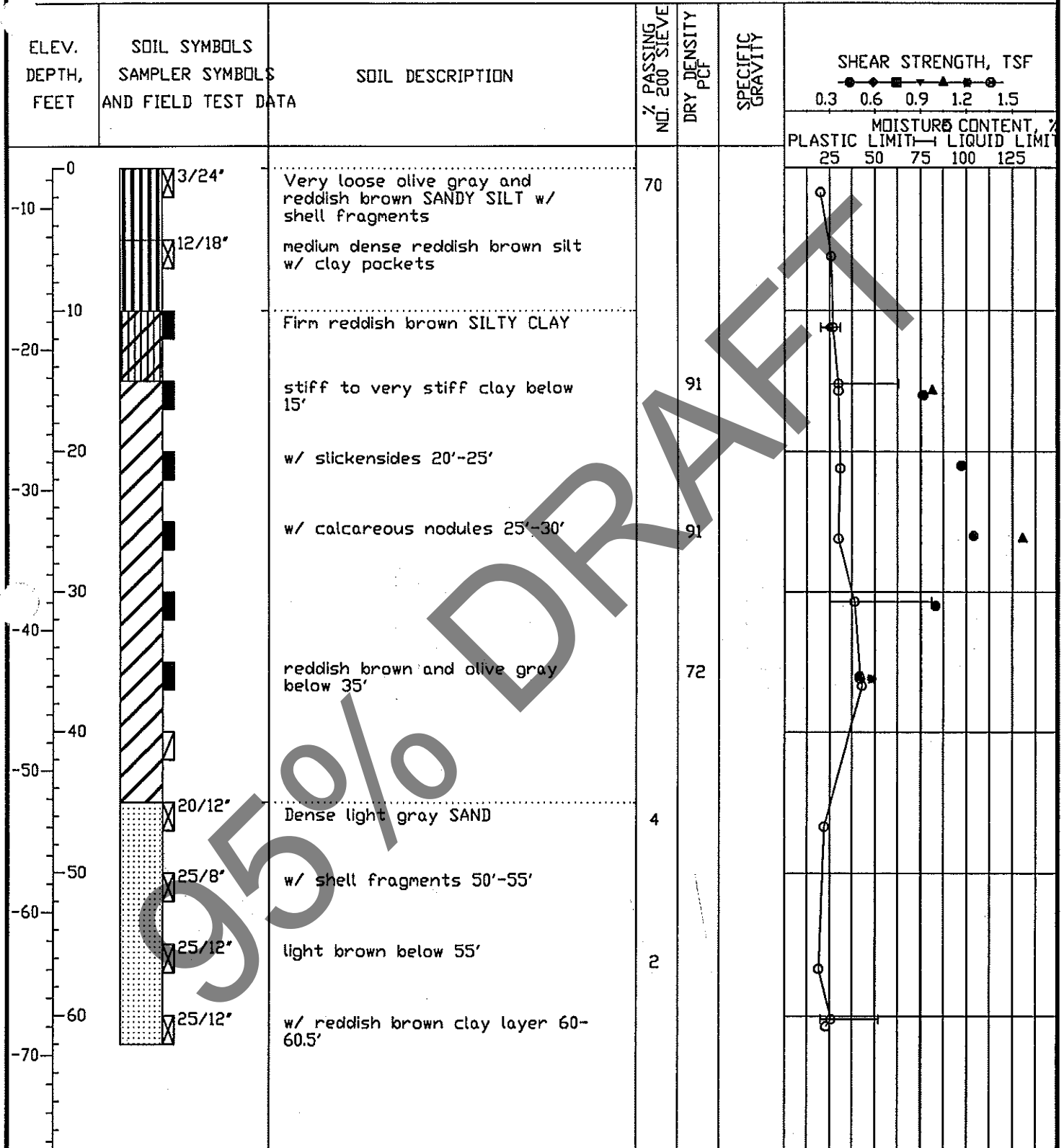
Offset: 550

Project No. 99-217G-01

Approx. Elev.: -7.2 MLT

Northing: 669727.1

Easting: 3276020.1



Shear Types: ●=Hand Penetrometer

◆=Torvane

■=Minivane

▼=Field Vane

▲=Unconfined Compression

■=UU Triaxial Compression

⊗=CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (See Key to Terms and Symbols Used on Boring Logs).

See Plate 1 for boring location.

Plate 2

LOG OF SOIL BORING

Project Name: Bayport Flare Site

Boring No.: BF-2

Water Depth: 10 feet

Time Water Depth Measured: 0:50

Date: 7/04/00

Station: 175+00

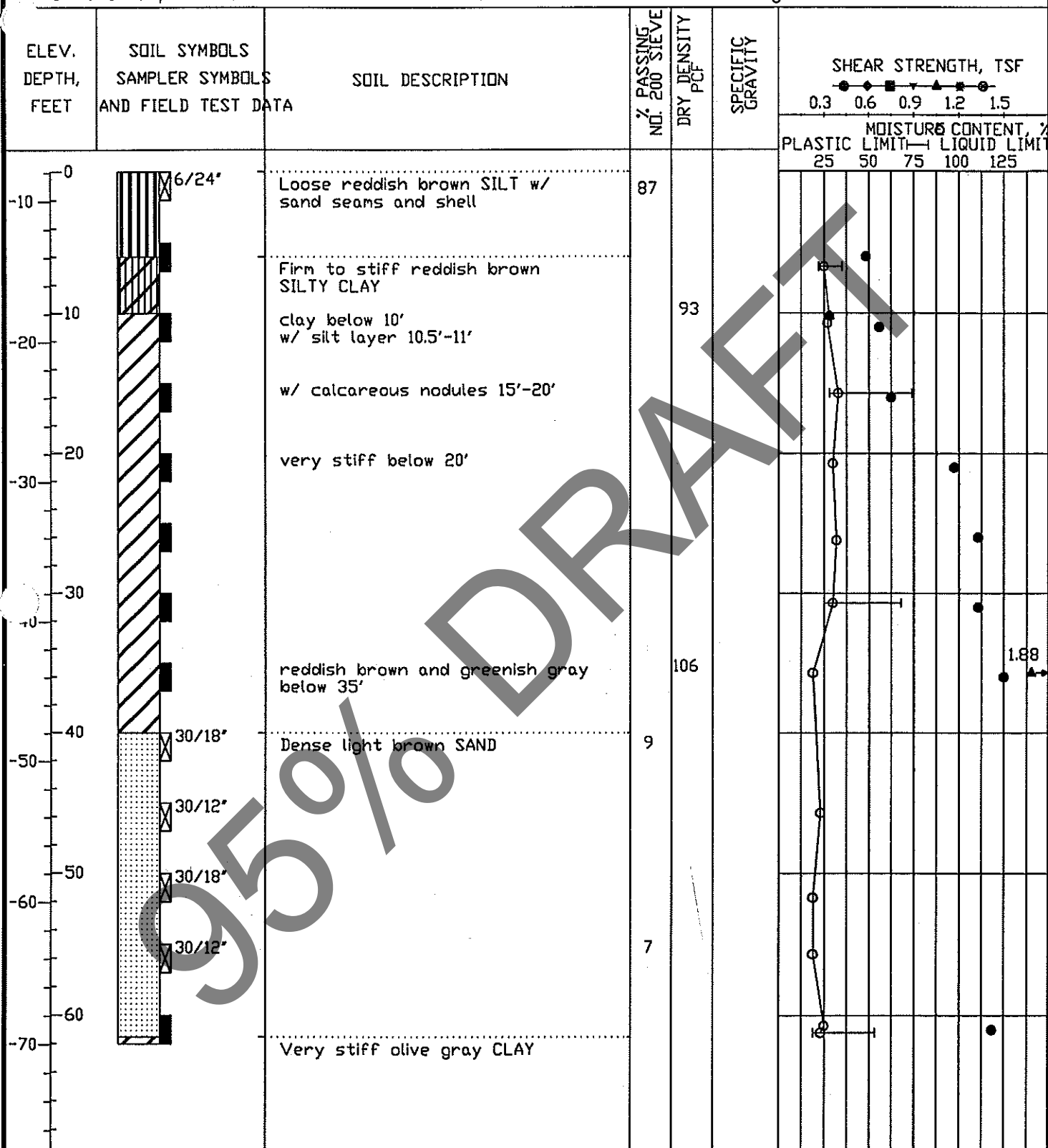
Offset: -550

Project No. 99-217G-01

Approx. Elev.: -7.9 MLT

Northing: 668797.1

Easting: 3278094.5



Shear Types: ●=Hand Penetrometer
▲=Unconfined Compression

◆=Torvane
■=UU Triaxial Compression

■=Minivane
▼=Field Vane
⊗=CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

See Plate 1 for boring location.

Plate 3

LOG OF SOIL BORING

Project Name: Bayport Flare Site

Boring No.: BF-3

Water Depth: 10 feet

Time Water Depth Measured: 3:50

Date: 7/04/00

Station: 190+00

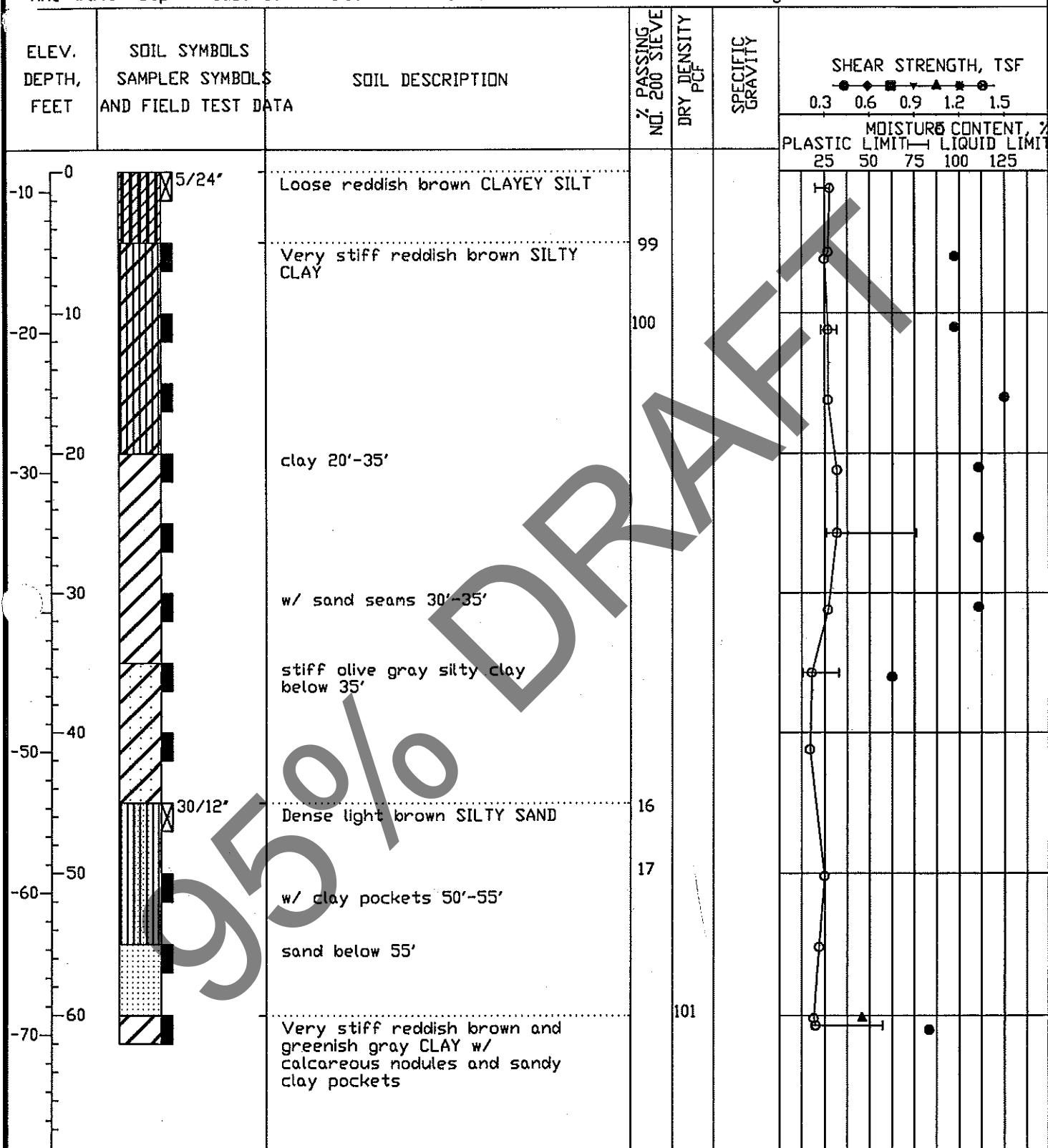
Offset: 550

Project No. 99-217G-01

Approx. Elev.: -8.6 MLT

Northing: 669931.3

Easting: 3279534.1



Shear Types: ●=Hand Penetrometer ◆=Torvane ■=Minivane ▼=Field Vane
 ▲=Unconfined Compression ■=UU Triaxial Compression ⊗=CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

See Plate 1 for boring location.

Plate 4

LOG OF SOIL BORING

Project Name: Bayport Flare Site

Boring No.: BF-4

Water Depth: 11 feet

Time Water Depth Measured: 7:00

Date: 7/04/00

Station: 215+00

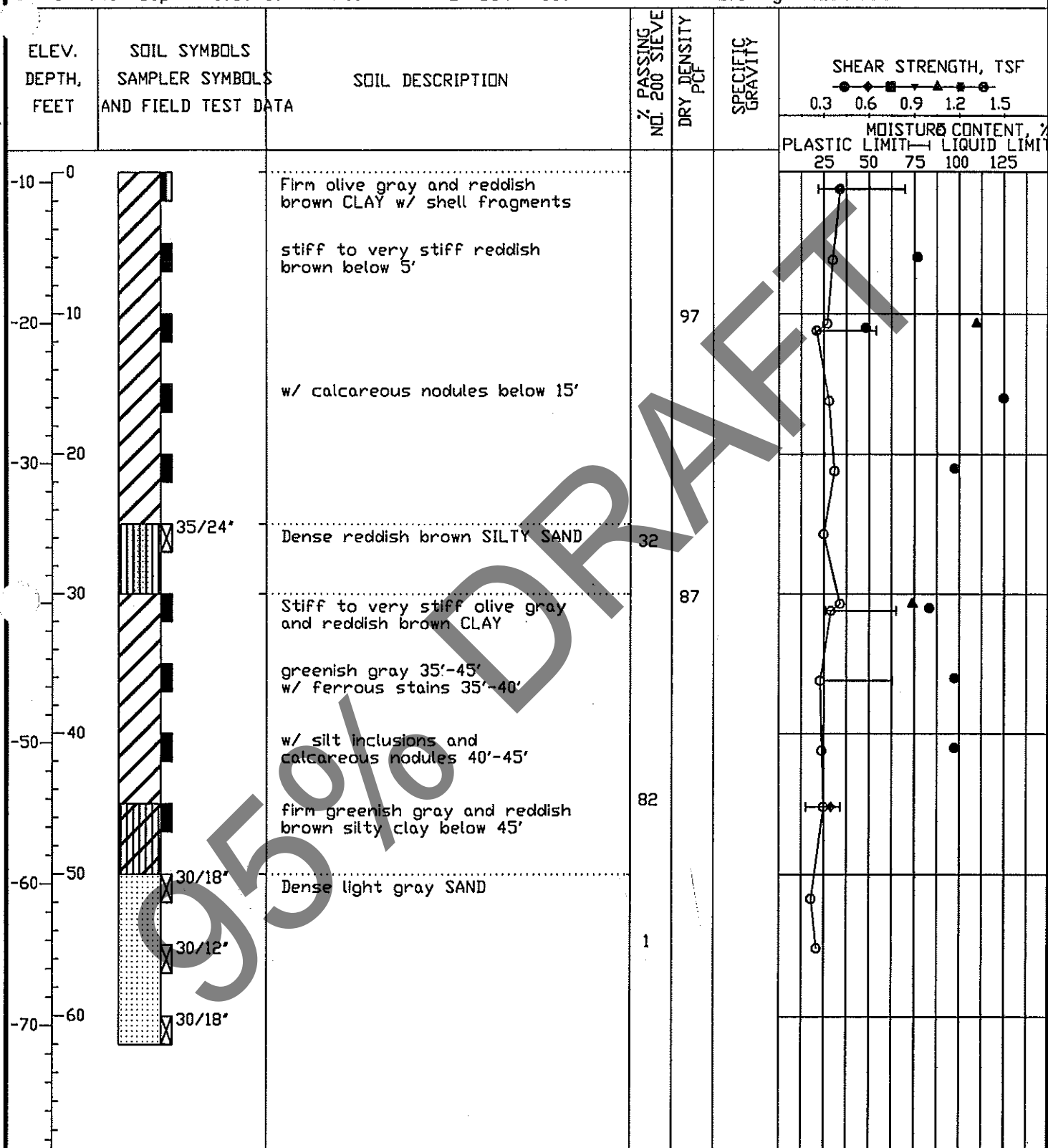
Offset: -550

Project No. 99-217G-01

Approx. Elev.: -9.3 MLT

Northing: 669001.8

Easting: 3282096.0



Shear Types: ●=Hand Penetrometer

◆=Torvane

■=Minivane

▼=Field Vane

▲=Unconfined Compression

■=UU Triaxial Compression

⊗=CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

See Plate 1 for boring location.

Plate 5

LOG OF SOIL BORING

Project Name: Bayport Flare Site

Boring No.: BF-5

Water Depth: 12 feet

Time Water Depth Measured: 9:47

Date: 7/04/00

Station: 230+00

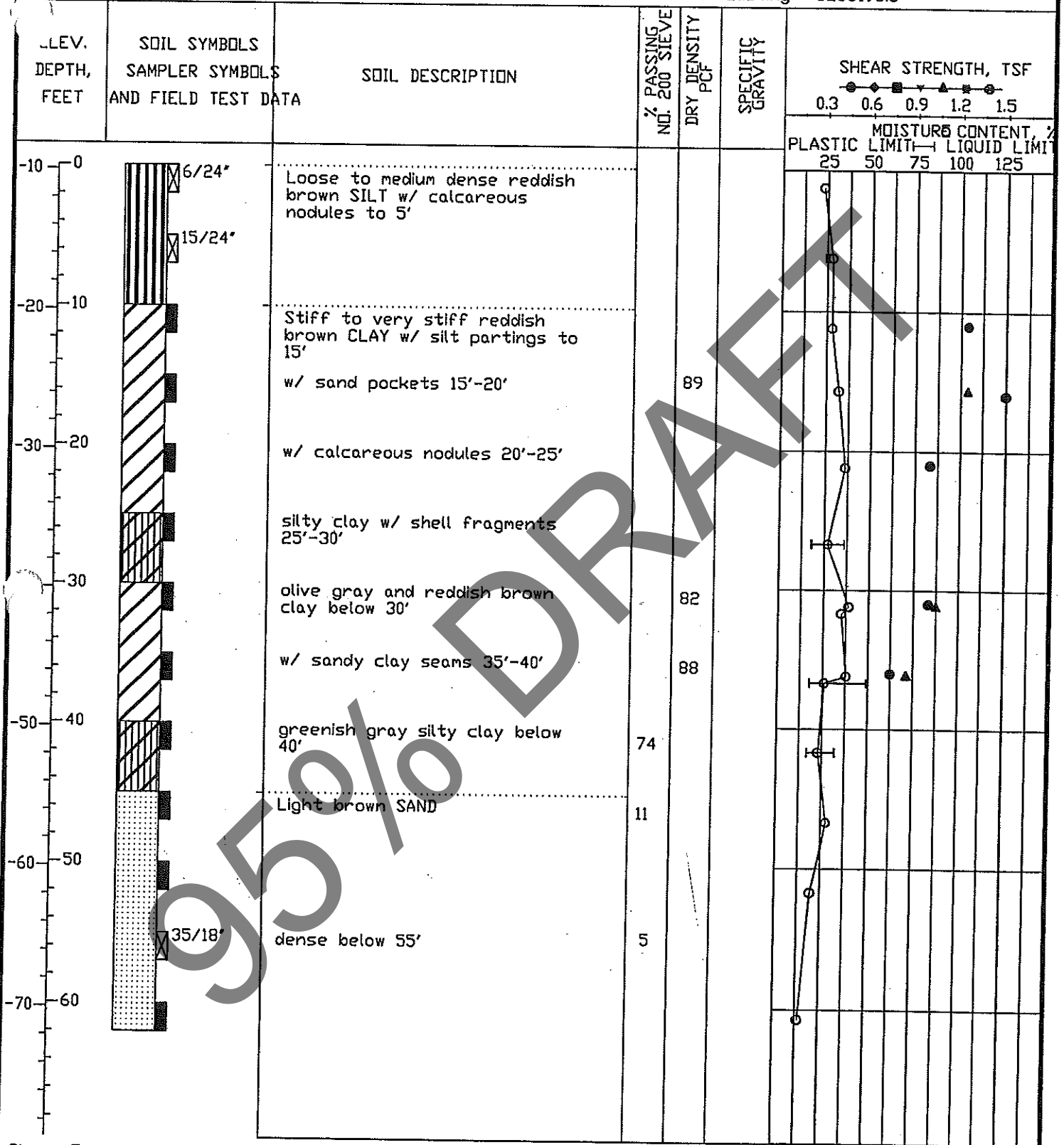
Offset: 738

Project No. 99-217G-01

Approx. Elev.: -9.7 MLT

Northing: 670794.2

Easting: 3283198.5



Shear Types: ●=Hand Penetrometer

▲=Unconfined Compression

◆=Torvane

■=UU Triaxial Compression

■=Minivane

▼=Field Vane

⊗=CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

See Plate 1 for boring location.

Plate 6

HVJ ASSOCIATES, INC.

LOG OF SOIL BORING

Project Name: Bayport Flare Site

Boring No.: BF-6

Water Depth: 44 feet

Time Water Depth Measured: 12:37

Date: 7/04/00

Station: 230+00

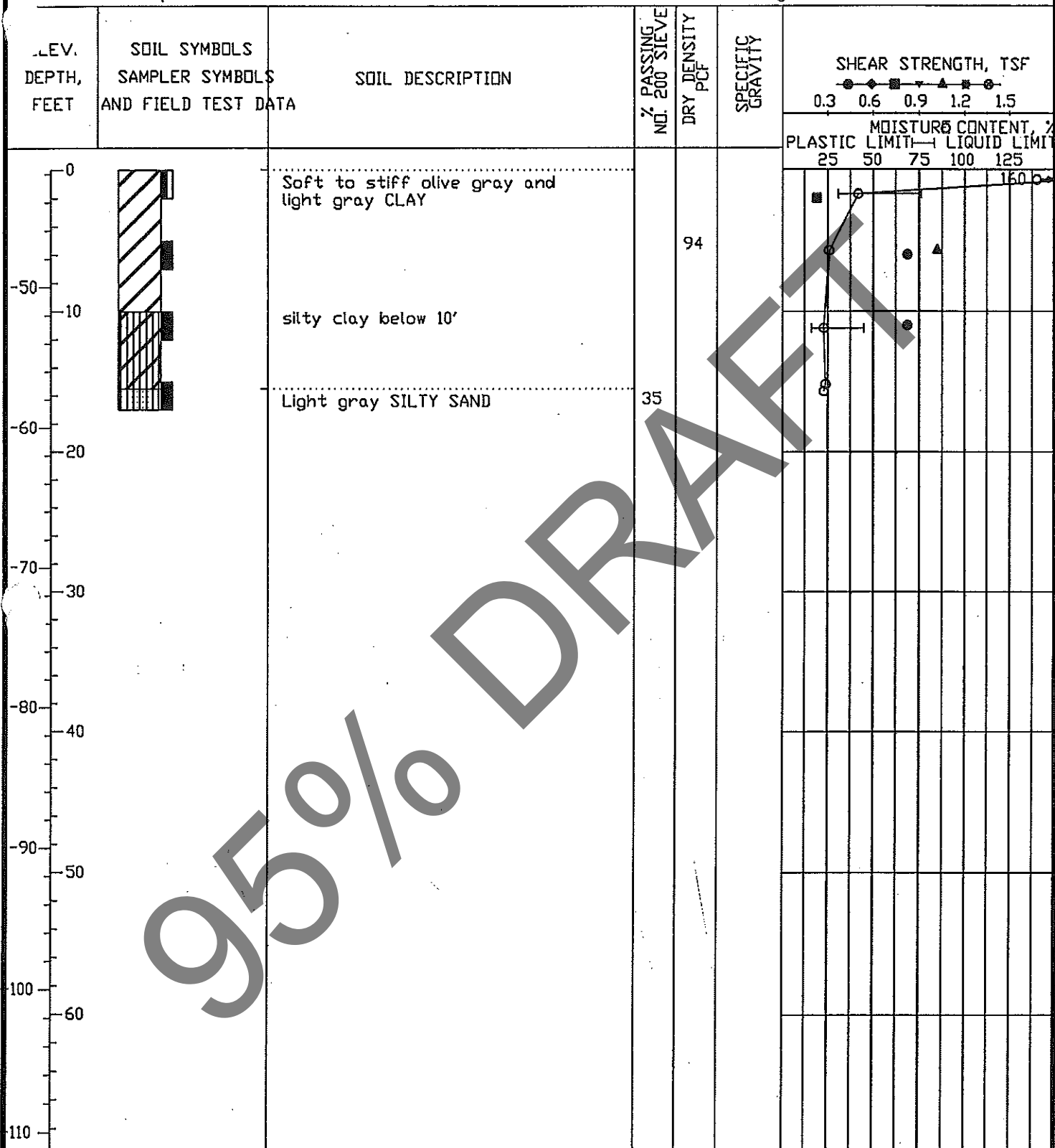
Offset: 198

Project No. 99-217G-01

Approx. Elev.: -41.7 MLT

Northing: 670274.5

Easting: 3283314.3



Shear Types: ●=Hand Penetrometer

◆=Torvane

■=Minivane

▼=Field Vane

▲=Unconfined Compression

■=UU Triaxial Compression

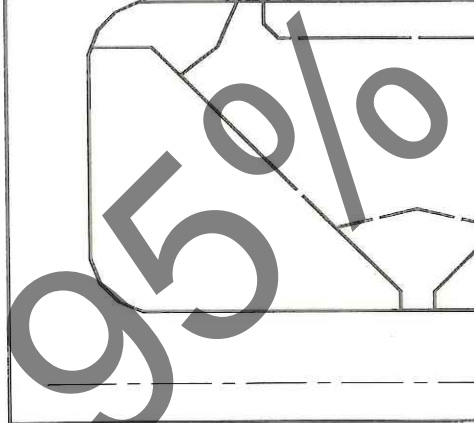
⊙=CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

See Plate 1 for boring location.

Plate 7

October 2001



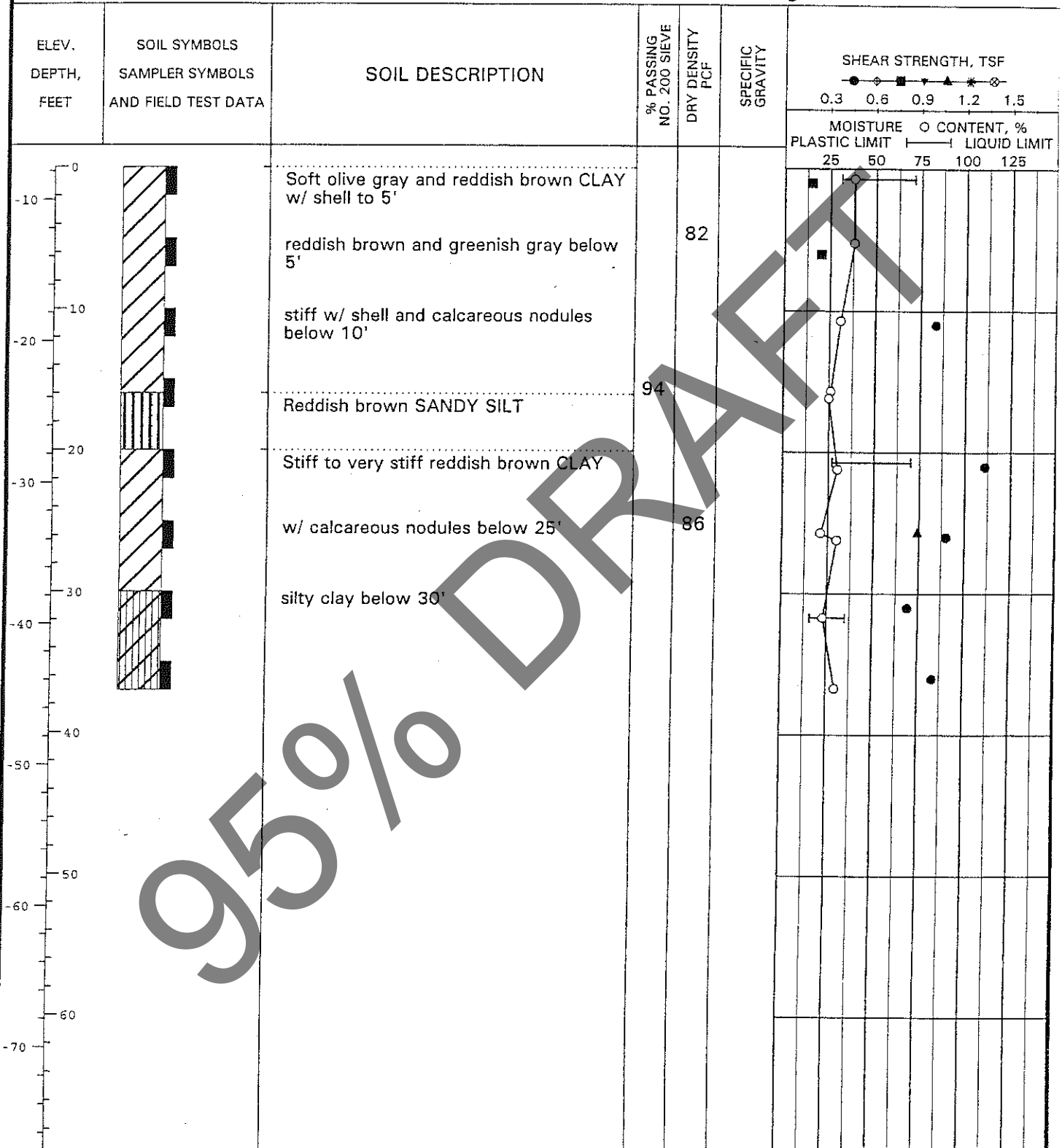
Turner Collie & Braden Inc. GAHAGAN & BRYANT ASSOCIATES, INC.

LOG OF SOIL BORING

Project Name: Mid Bay Marsh Site
 Boring No.: MB-7
 Water Depth: 10 feet
 Time Water Depth Measured: 09:05

Date: 7/03/00
 Station: 42+778
 Offset: 1006.2

Project No. 99-217G-00
 Approx. Elev.: -7.7 MLT
 Northing: 656496.6
 Easting: 3294822.3



Shear Types: ● = Hand Penetrometer ♦ = Torvane ■ = Minivane ▼ = Field Vane
 ▲ = Unconfined Compression * = UU Triaxial Compression ⊗ = CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

See Plate 2 for boring location.

Plate A-7

LOG OF SOIL BORING

Project Name: Mid Bay Marsh Site

Boring No.: MB-8

Water Depth: 9 feet

Time Water Depth Measured: 00:30

Date: 7/03/00

Station: 45+059

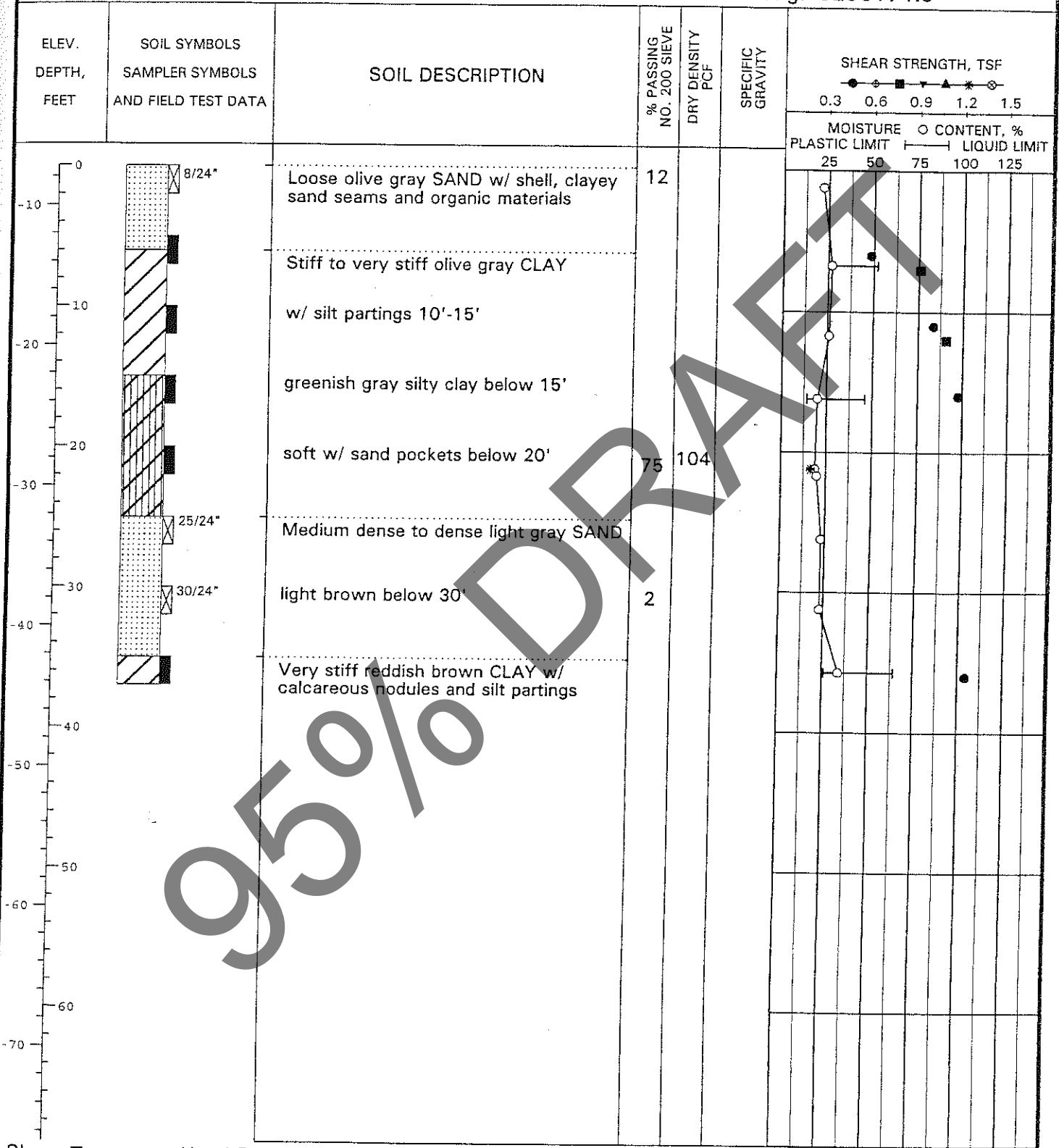
Offset: 1048.2

Project No. 99-217G-00

Approx. Elev.: -7.2 MLT

Northing: 654686.0

Easting: 3296174.9



Shear Types: ● = Hand Penetrometer ♦ = Torvane ■ = Minivane ▼ = Field Vane
 ▲ = Unconfined Compression * = UU Triaxial Compression ⊗ = CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

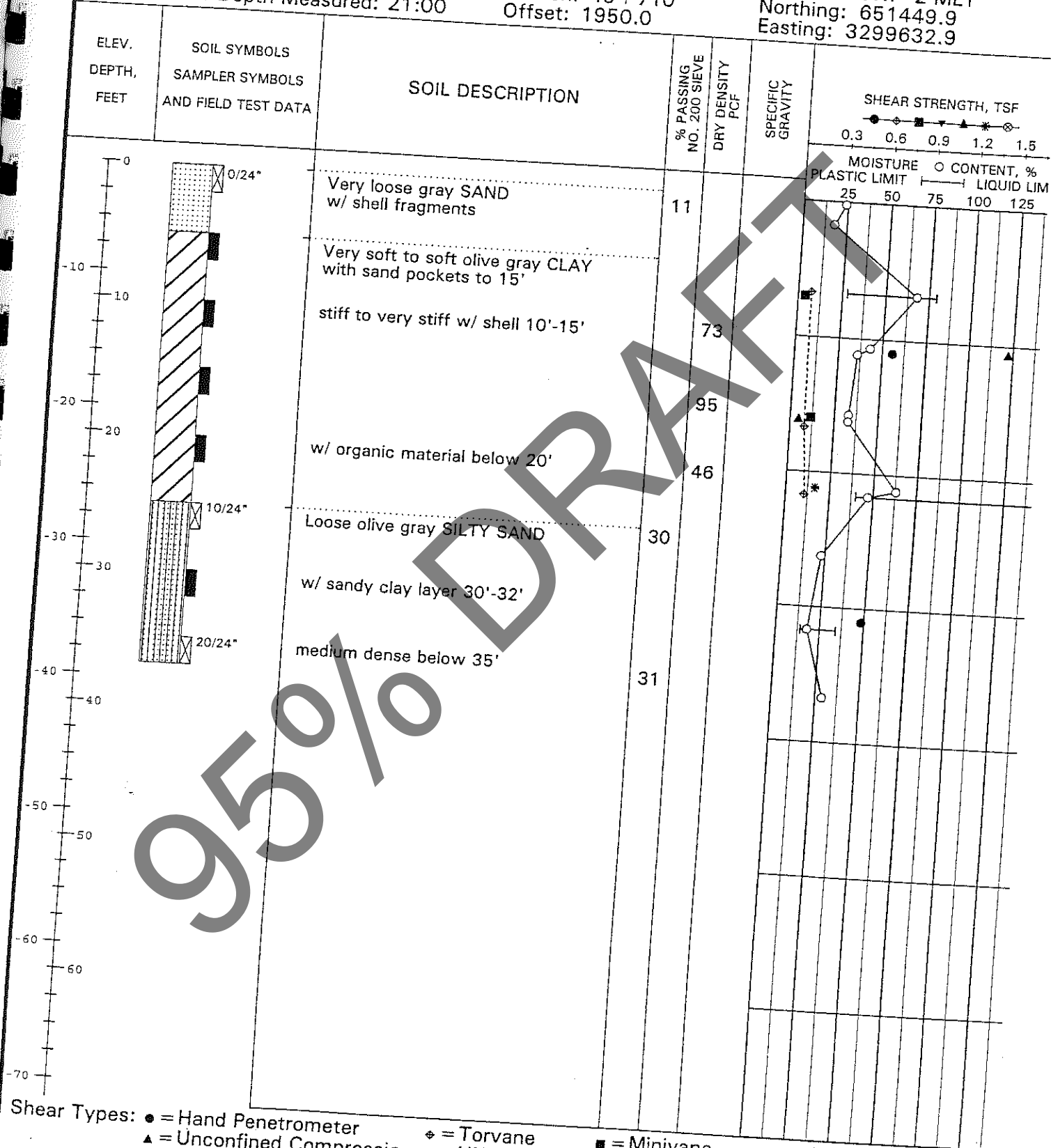
See Plate 2 for boring location.

LOG OF SOIL BORING

Project Name: Mid Bay Marsh Site
 Boring No.: MB-16
 Water Depth: 4 feet
 Time Water Depth Measured: 21:00

Date: 6/30/00
 Station: 49+710
 Offset: 1950.0

Project No. 99-217G-00
 Approx. Elev.: -2 MLT
 Northing: 651449.9
 Easting: 3299632.9



Shear Types: ● = Hand Penetrometer ♦ = Torvane ■ = Minivane ▼ = Field Vane
 ▲ = Unconfined Compression * = UU Triaxial Compression ⊗ = CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

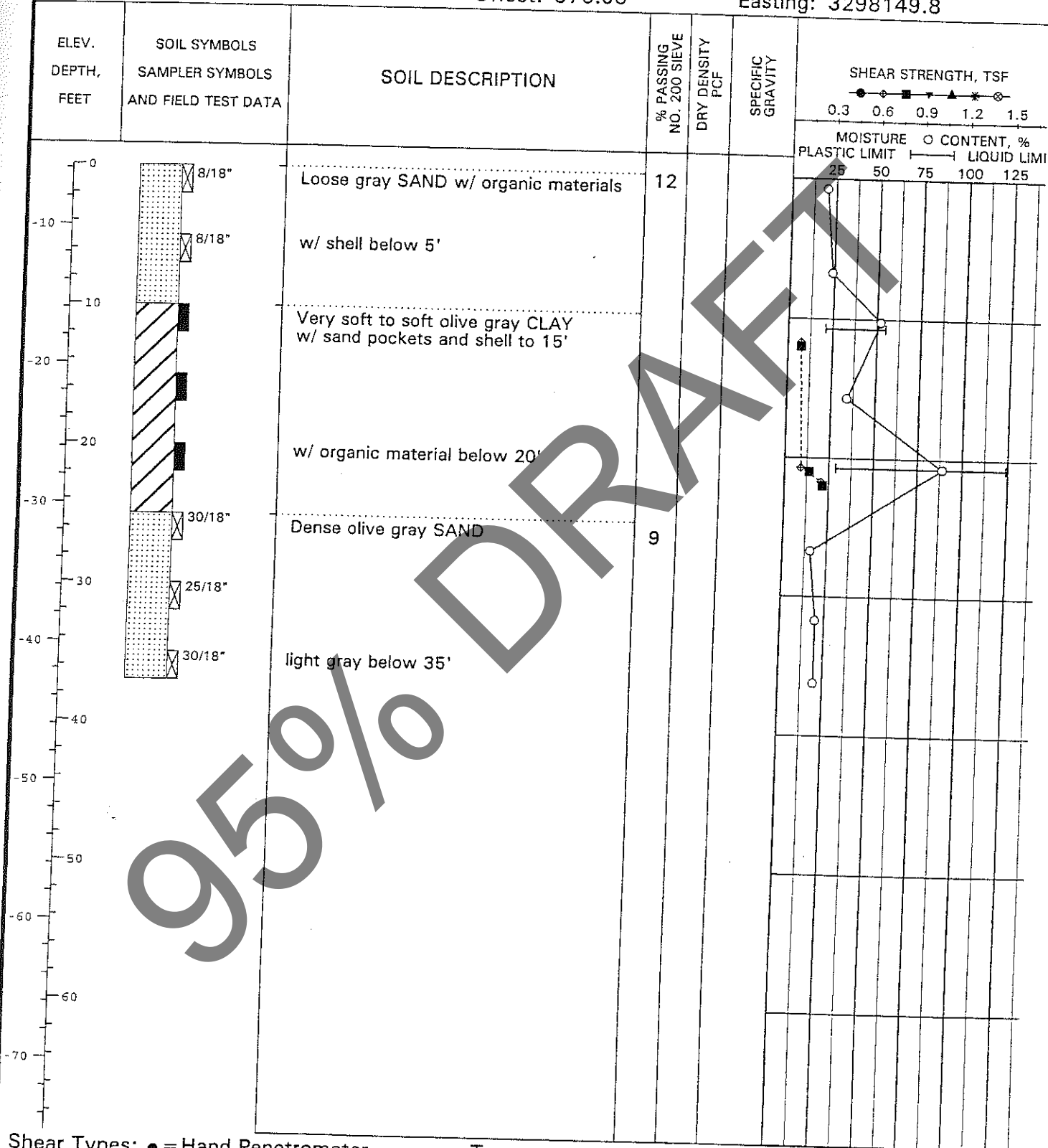
See Plate 2 for boring location.

LOG OF SOIL BORING

Project Name: Mid Bay Marsh Site
 Boring No.: MB-17
 Water Depth: 8 feet
 Time Water Depth Measured: 18:35

Date: 6/30/00
 Station: 48+532
 Offset: 976.50

Project No. 99-217G-00
 Approx. Elev.: -5.7 MLT
 Northing: 651832.2
 Easting: 3298149.8



Shear Types: ● = Hand Penetrometer ♦ = Torvane ■ = Minivane ▼ = Field Vane
 ▲ = Unconfined Compression * = UU Triaxial Compression ⊗ = CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

See Plate 2 for boring location.

LOG OF SOIL BORING

Project Name: Houston Ship Channel, Galveston Bay

Boring No.: MB-18

Water Depth: 10 feet

Time Water Depth Measured: 18:00

Date: 7/03/00

Station: 34+537

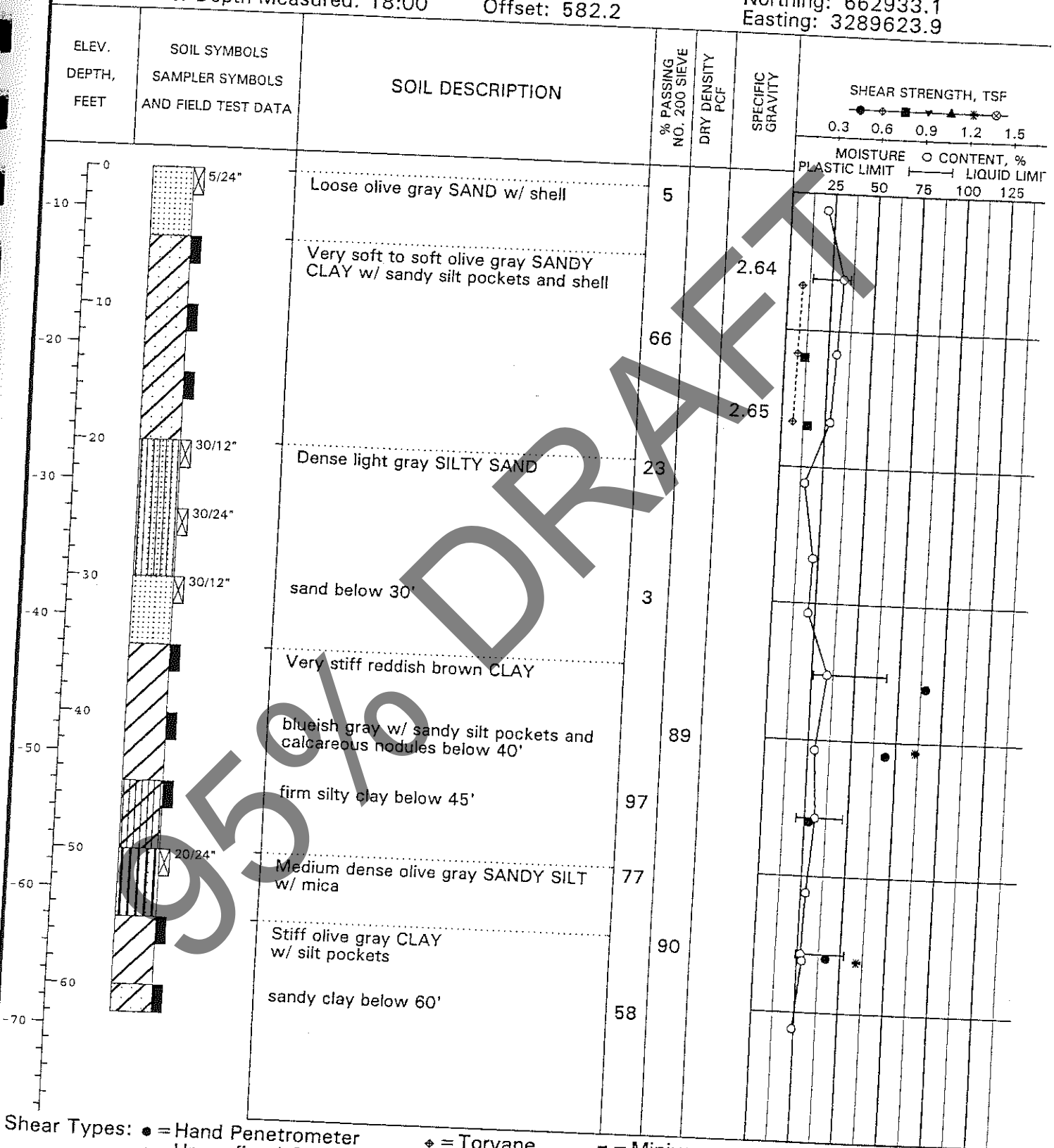
Offset: 582.2

Project No. 99-217G-00

Approx. Elev.: -7.1 MLT

Northing: 662933.1

Easting: 3289623.9



Shear Types: ● = Hand Penetrometer

◆ = Torvane

■ = Minivane

▼ = Field Vane

▲ = Unconfined Compression

* = UU Triaxial Compression

⊗ = CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

See Plate 2 for boring location.

LOG OF SOIL BORING

Project Name: Houston Ship Channel, Galveston Bay
 Boring No.: MB-19
 Water Depth: 13 feet
 Time Water Depth Measured: 11:55
 Date: 7/03/00
 Station: 41+973
 Offset: 525.1

Project No. 99-217G-00
 Approx. Elev.: -10.2 MLT
 Northing: 656866.4
 Easting: 3293960.9

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL DESCRIPTION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF	SPECIFIC GRAVITY	MOISTURE PLASTIC LIMIT 25 50 75 100 125	SHEAR STRENGTH, TSF 0.3 0.6 0.9 1.2 1.5	CONTENT, % LIQUID LIMIT
0		Very soft olive gray CLAY w/ shell to 5'			2.66			
-20		stiff blueish gray and olive gray w/ silt inclusions	98					
-30		Blueish gray and olive gray SANDY SILT	68					
-40		Firm light brown and reddish brown SILTY CLAY	100					
-50		Light gray and light brown SILT	98					
-60		Stiff light gray and brown SILTY CLAY	102					
-70		Light gray and reddish brown SANDY SILT	60					
		Firm to stiff blueish gray and reddish brown SILTY CLAY w/ clay inclusions below 40'	103					
		Blueish gray SILTY SAND w/ clay pockets	95					
		Stiff brown and blueish gray SILTY CLAY						
		Dense gray SAND	4					

Shear Types: ● = Hand Penetrometer ♦ = Torvane ■ = Minivane ▼ = Field Vane
 ▲ = Unconfined Compression * = UU Triaxial Compression ⊙ = CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

See Plate 2 for boring location.

LOG OF SOIL BORING

Project Name: Houston Ship Channel, Galveston Bay
 Boring No.: MB-20
 Water Depth: 13 feet
 Time Water Depth Measured: 05:26
 Date: 7/03/00
 Station: 43+570
 Offset: -582.0

Project No. 99-217G-00
 Approx. Elev.: -11.6 MLT
 Northing: 654934.3
 Easting: 3293980.7

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL DESCRIPTION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF	SPECIFIC GRAVITY	SHEAR STRENGTH, TSF 0.3 0.6 0.9 1.2 1.5 MOISTURE CONTENT, % PLASTIC LIMIT LIQUID LIMIT 25 50 75 100 125
0		Very soft olive gray CLAY w/ shell and sandy clay seams to 5'	78		2.70	
5		stiff to very stiff reddish brown below 5'			2.69	
10	15/24"					
20	30/24"	Medium dense to dense reddish brown SILT	99			
30	25/24"				2.59	
40	25/24"		99			
50	30/24"	w/ clay inclusions below 30'				
60		Stiff reddish brown and olive gray CLAY w/ silt inclusions	86			
70		olive gray w/ calcareous nodules below 40'	89			
80		Gray SILTY SAND	40			
90		dense light brown sand below 60'	5			

Bear Types: ● = Hand Penetrometer ♦ = Torvane ■ = Minivane ▼ = Field Vane
 ▲ = Unconfined Compression * = UU Triaxial Compression ⊗ = CU Triaxial Compression
 Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).
 See Plate 2 for boring location.

LOG OF SOIL BORING

Project Name: Houston Ship Channel, Galveston Bay

Boring No.: MB-21

Water Depth: 11 feet

Time Water Depth Measured: 20:35

Date: 7/02/00

Station: 45 + 857

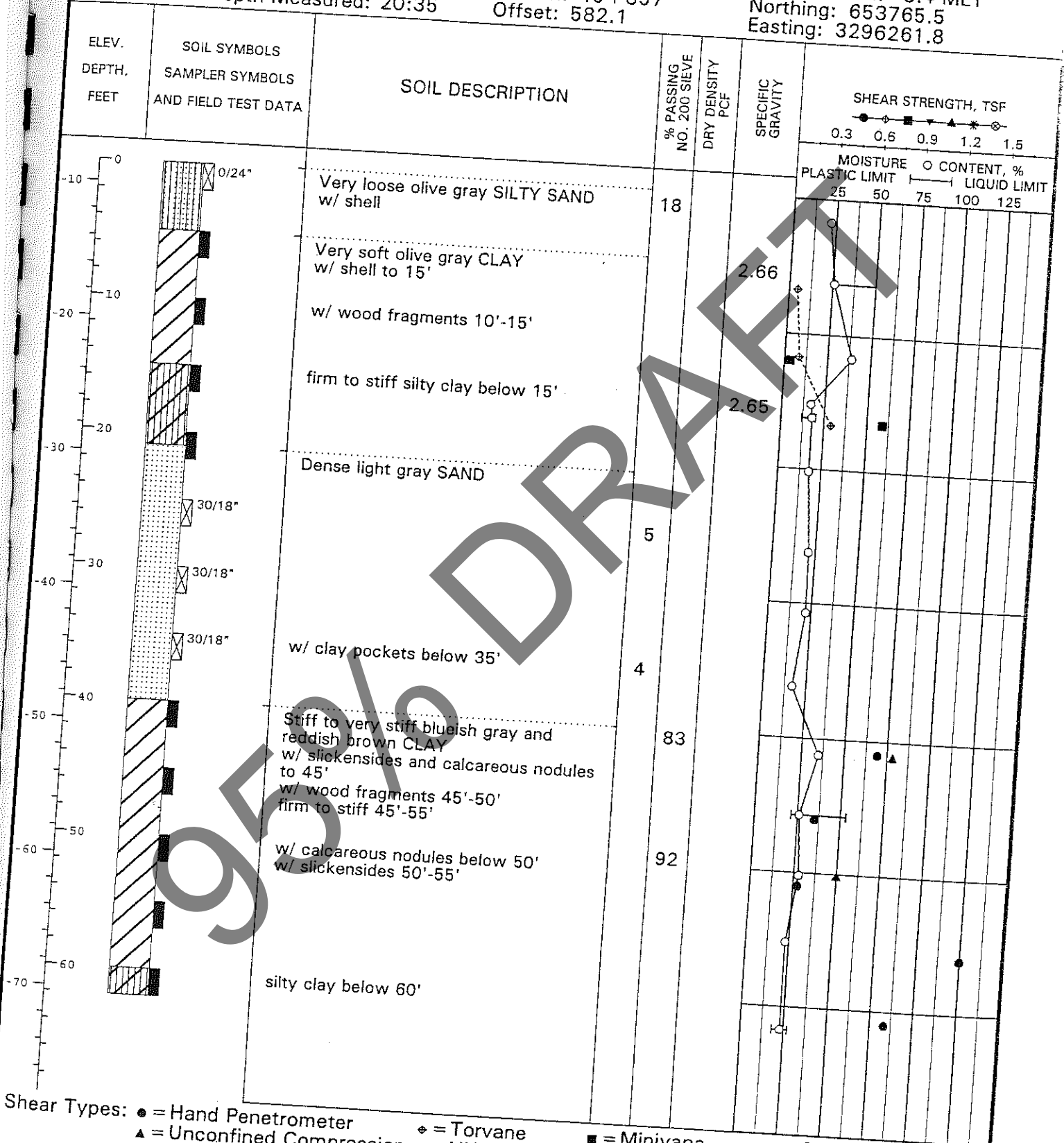
Offset: 582.1

Project No. 99-217G-00

Approx. Elev.: -8.4 MLT

Northing: 653765.5

Easting: 3296261.8



Shear Types: ● = Hand Penetrometer

▲ = Unconfined Compression

◆ = Torvane

■ = Minivane

▼ = Field Vane

* = UU Triaxial Compression

⊗ = CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

See Plate 2 for boring location.

LOG OF SOIL BORING

Project Name: Houston Ship Channel, Galveston Bay

Boring No.: MB-22

Water Depth: 14 feet

Time Water Depth Measured: 12:05

Date: 6/30/00

Station: 49 +034

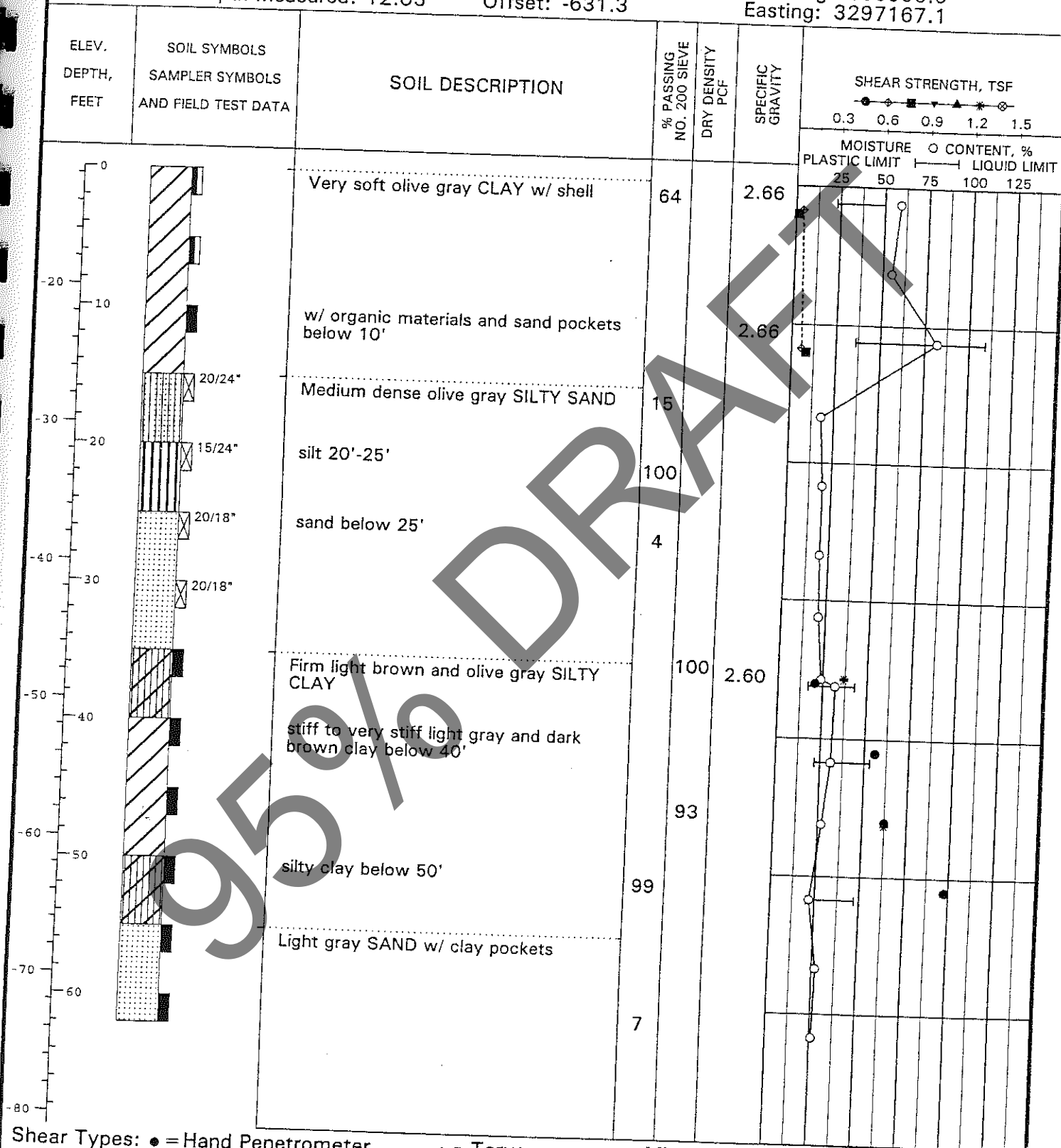
Offset: -631.3

Project No. 99-217G-00

Approx. Elev.: -11.5 MLT

Northing: 650506.0

Easting: 3297167.1



Shear Types: ● = Hand Penetrometer

◆ = Torvane

■ = Minivane

▼ = Field Vane

▲ = Unconfined Compression

* = UU Triaxial Compression

⊗ = CU Triaxial Compression

Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

See Plate 2 for boring location.

LOG OF SOIL BORING

Project Name: Houston Ship Channel, Galveston Bay

Boring No.: MB-23

Water Depth: 12 feet

Time Water Depth Measured: 08:40

Date: 6/30/00

Station: 58+022

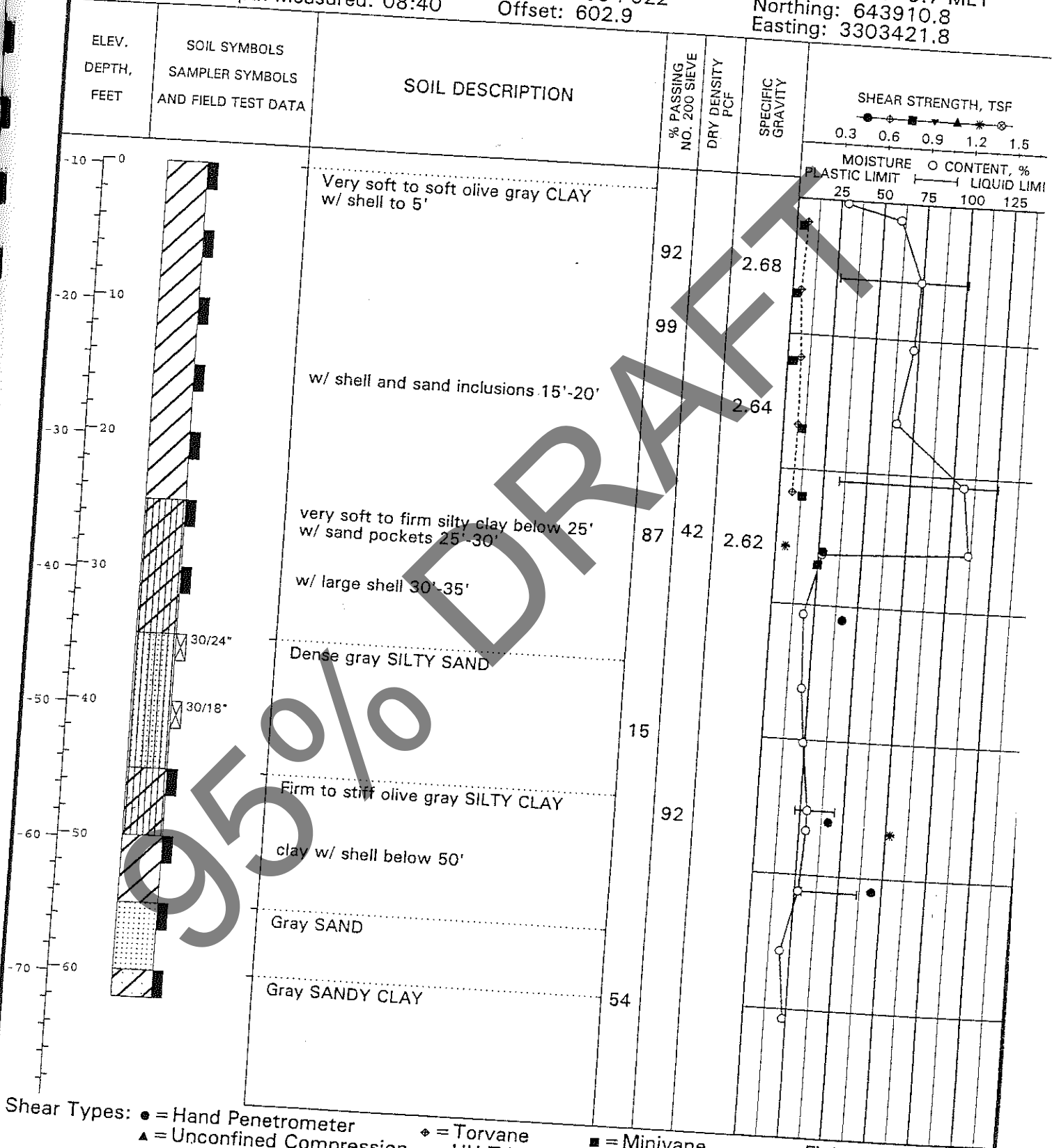
Offset: 602.9

Project No. 99-217G-00

Approx. Elev.: -9.7 MLT

Northing: 643910.8

Easting: 3303421.8



Shear Types: ● = Hand Penetrometer ◆ = Torvane ■ = Minivane ▼ = Field Vane
 ▲ = Unconfined Compression * = UU Triaxial Compression ⊗ = CU Triaxial Compression

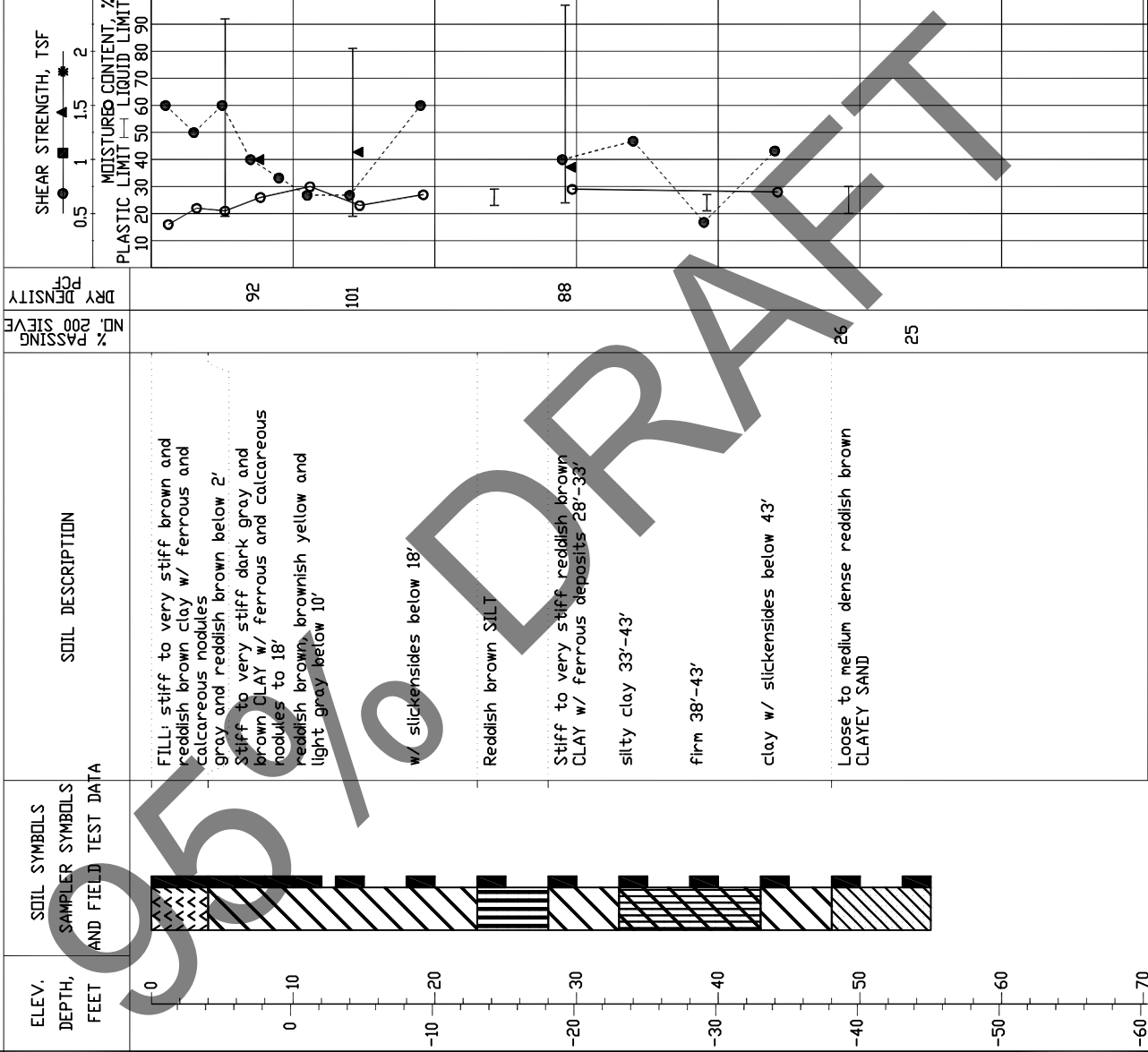
Note: The blow counts shown are for wire line hammer sampler penetration, not for the Standard Penetration Test (see Key to Terms and Symbols Used on Boring Logs).

See Plate 2 for boring location.

LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection
Boring No.: B-1
Groundwater during drilling: none

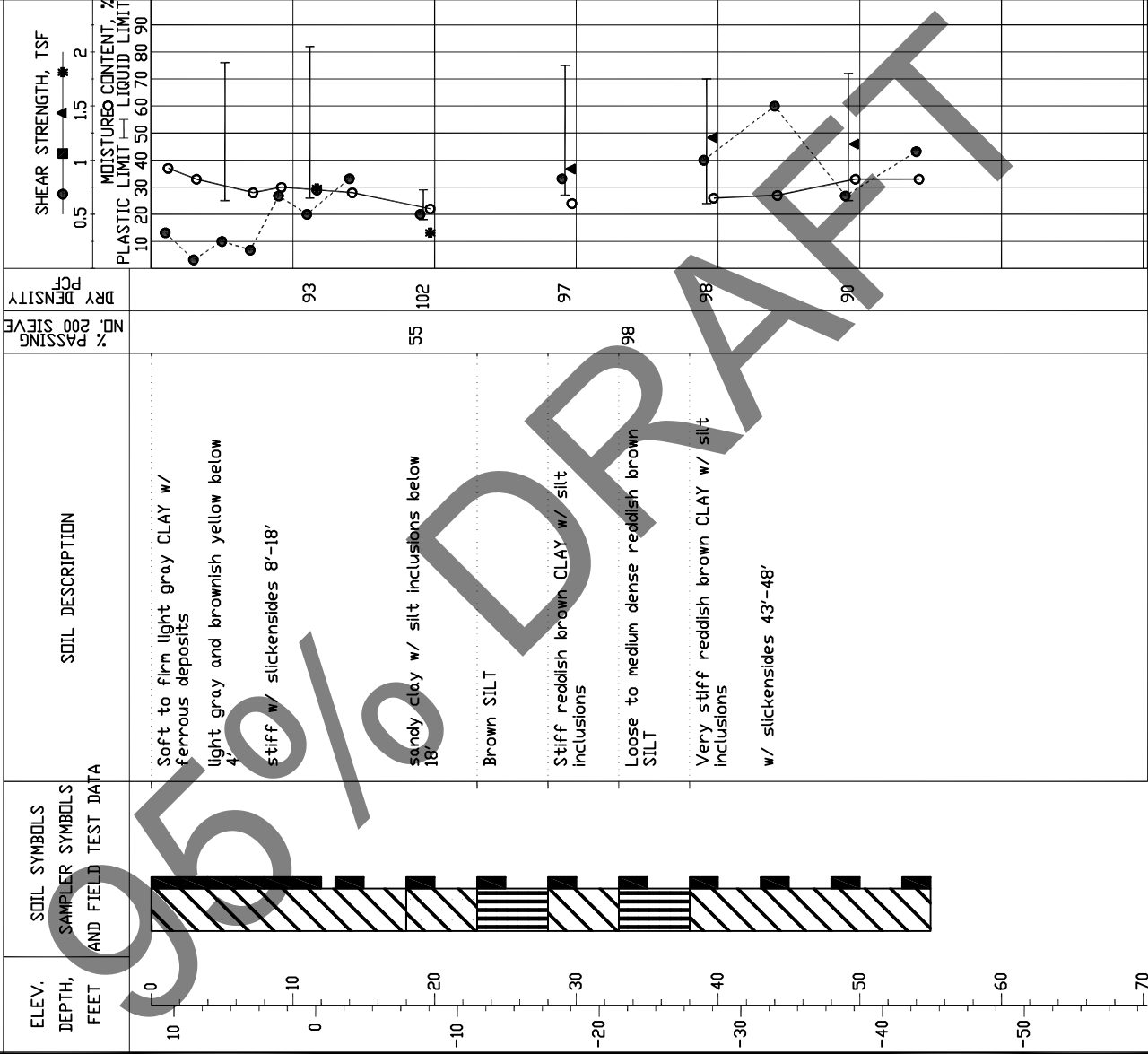
Project No. 98-279G-00
Elevation: 982 feet
Station: 36+18
Offset: 113.82 R

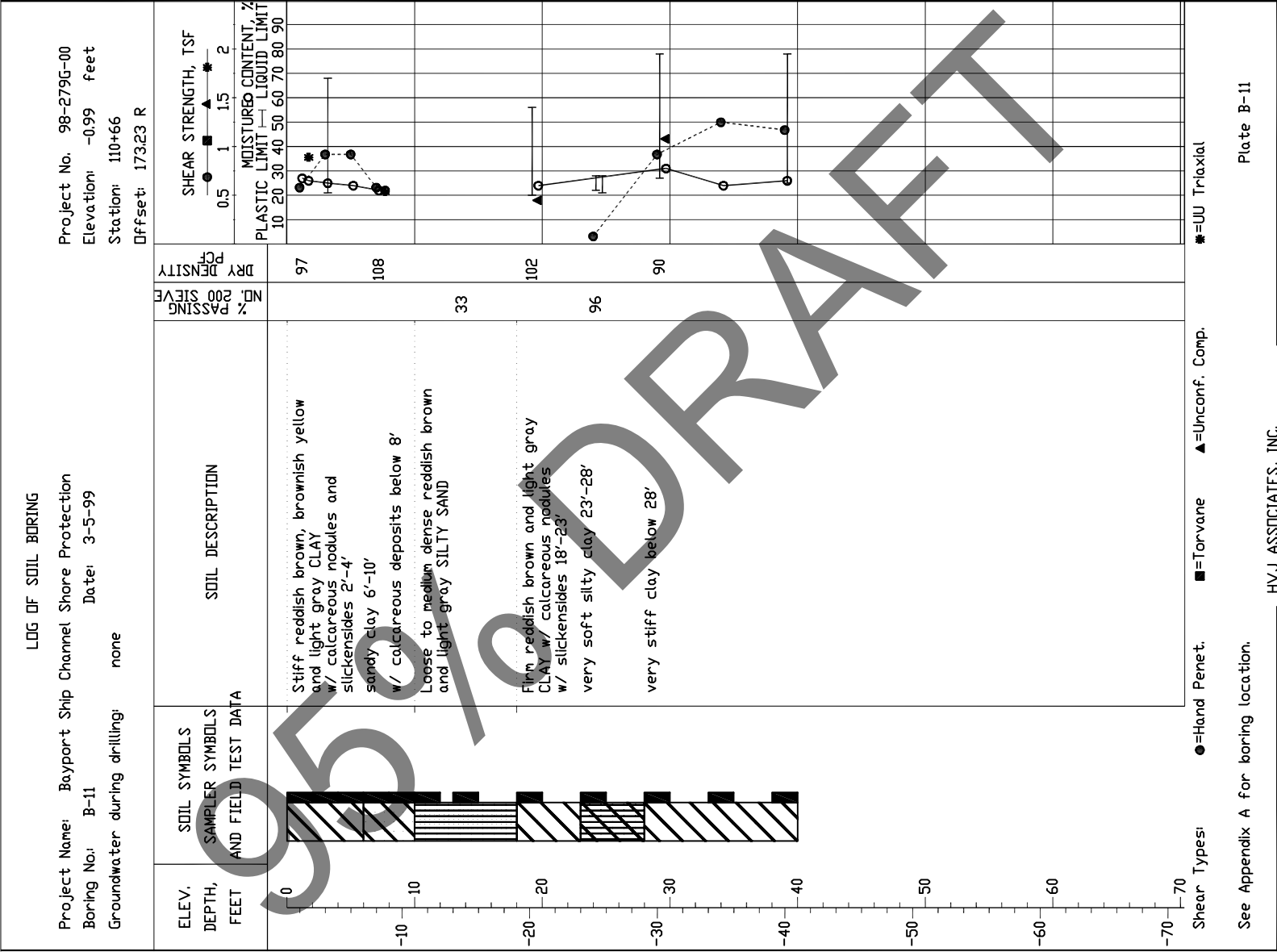


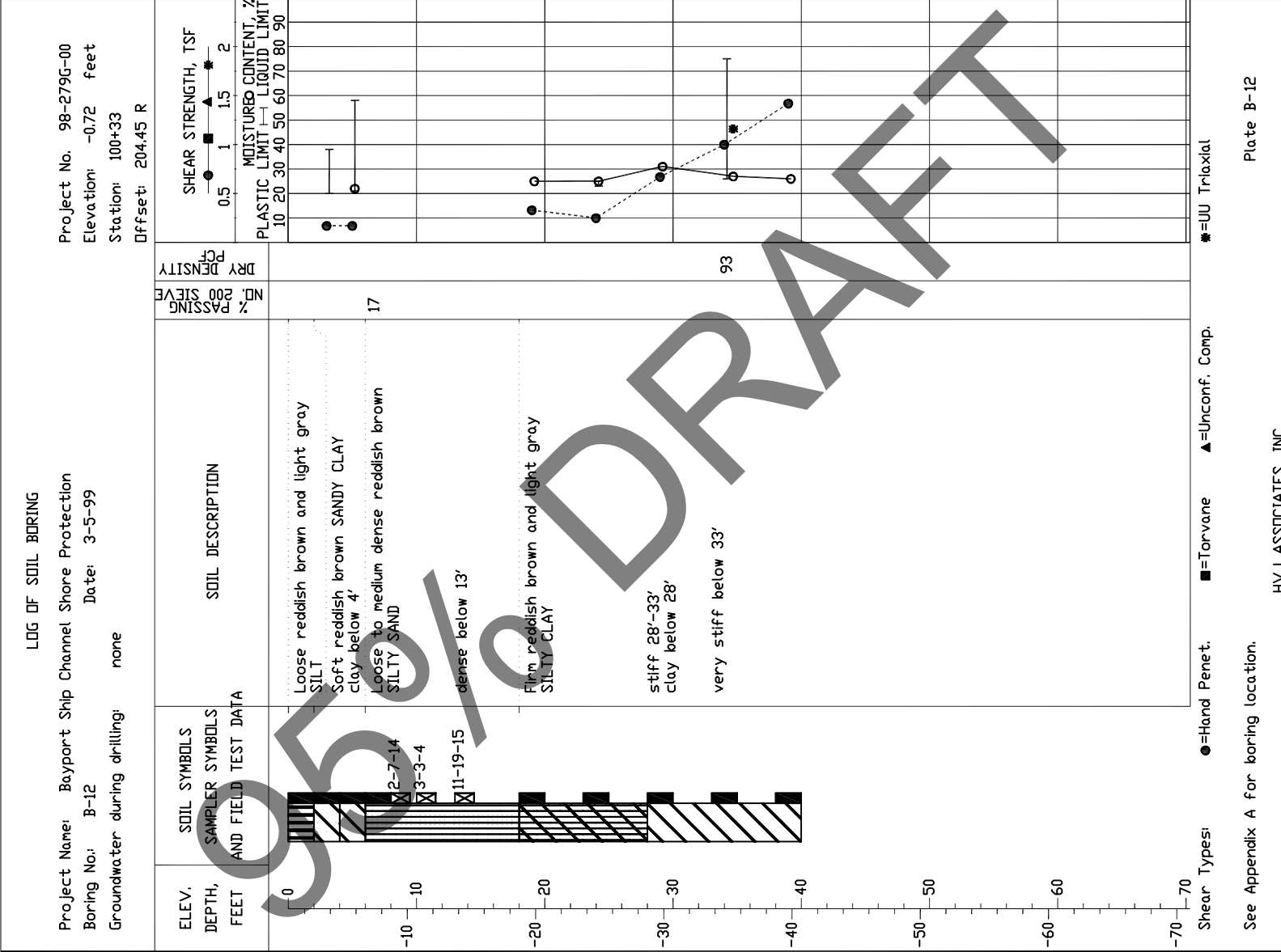
LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection
Boring No.: B-10
Groundwater during drilling: none

Project No. 98-279G-00
Elevation: 1161 feet
Station: 110+14
Offset: 51.01 R







LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection

Project No. 98-279G-00

Boring No.: B-13

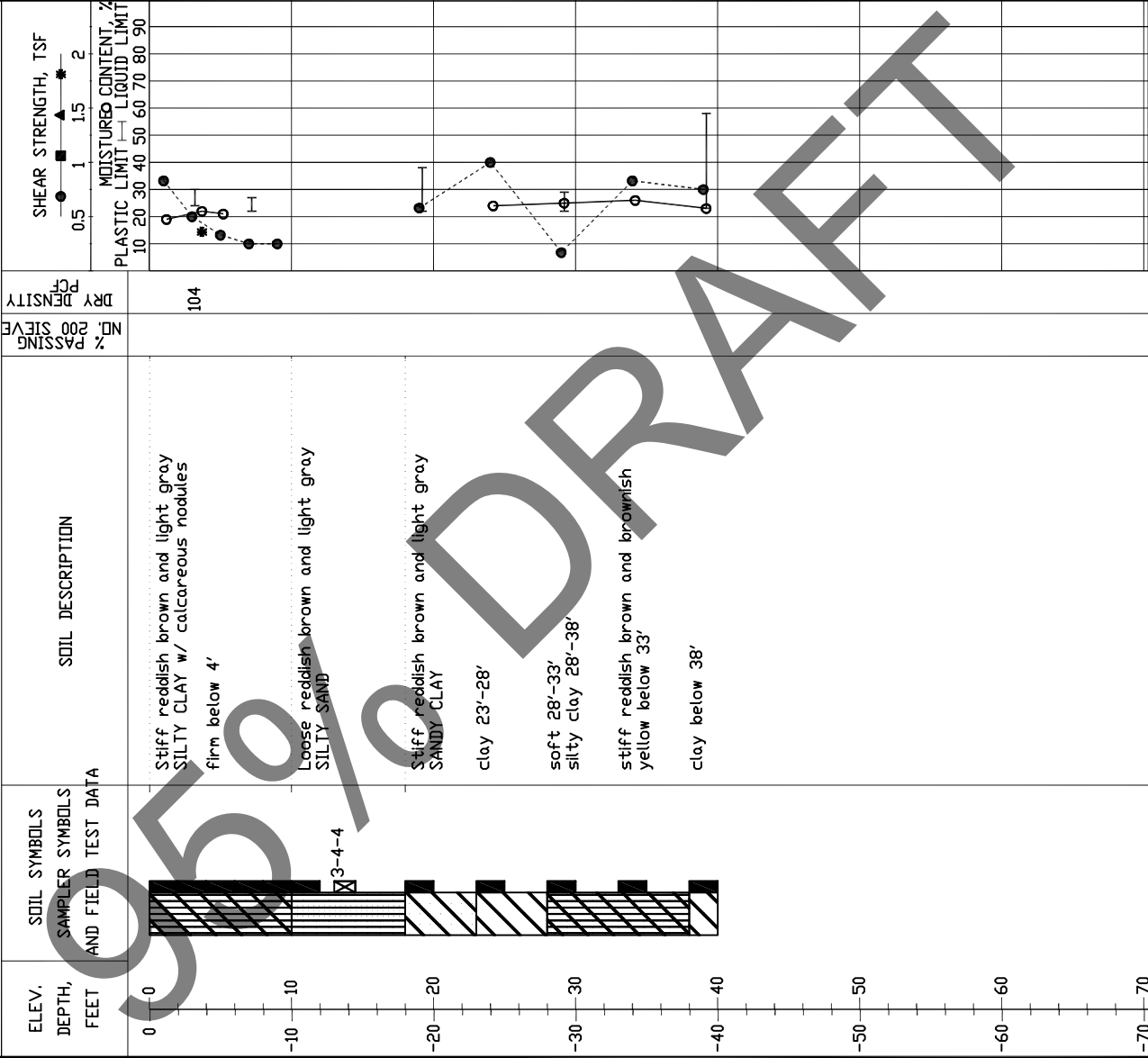
Elevation: 0.04 feet

Groundwater during drilling: none

Date: 3-5-99

Station: 89+25

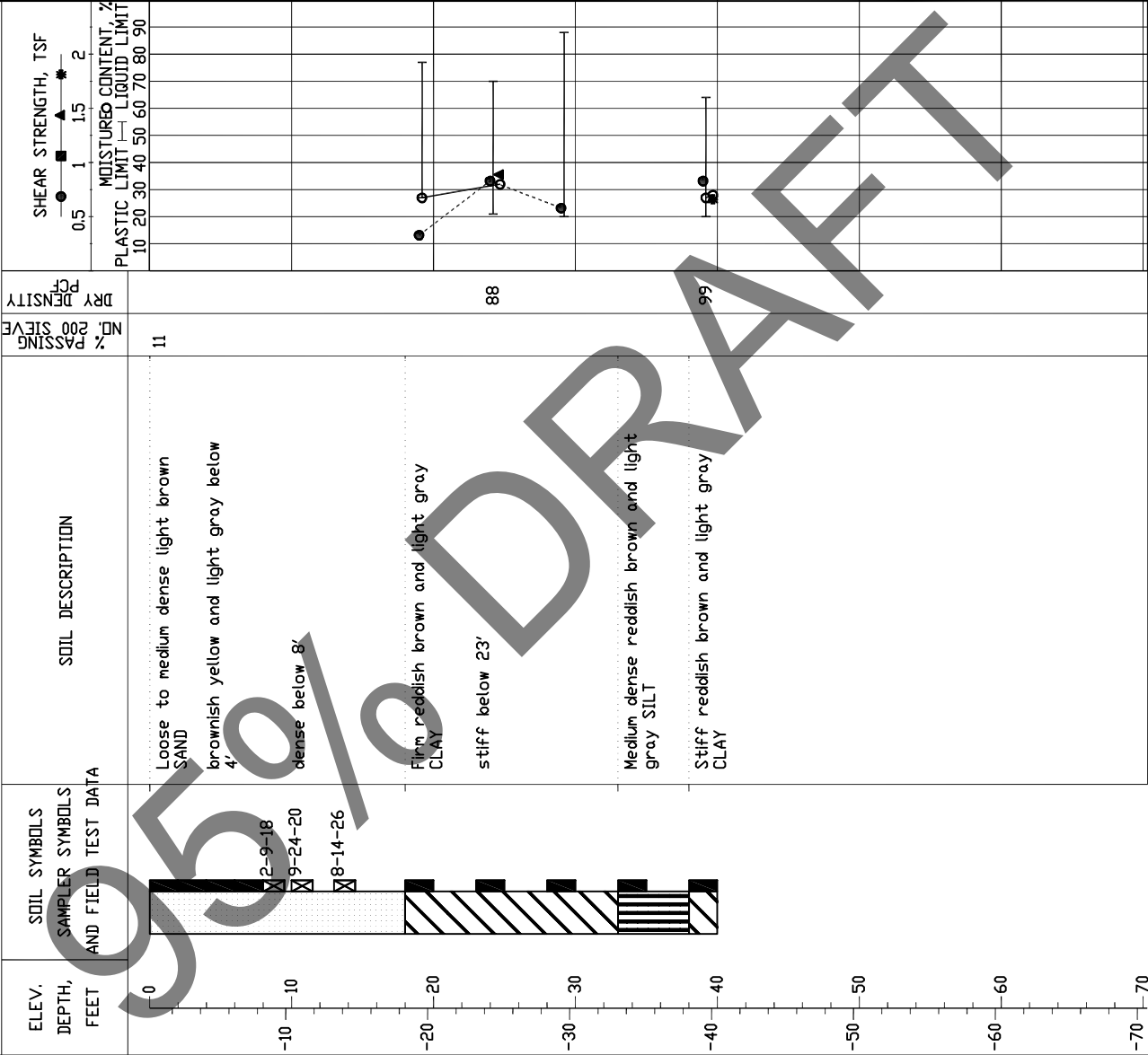
Offset: 191.23 R



LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection
Boring No: B-14
Groundwater during drilling: none

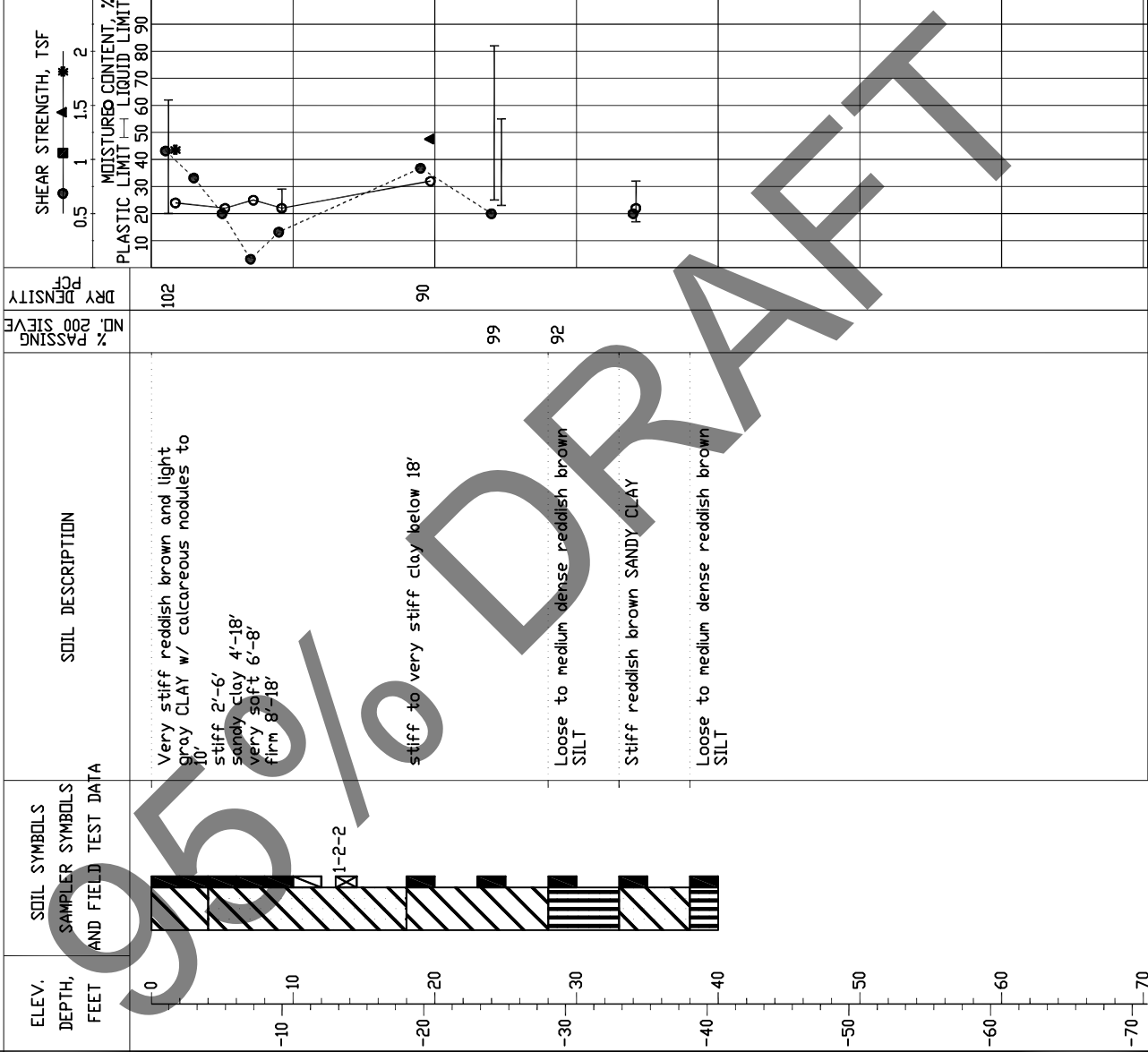
Project No. 98-279G-00
Elevation: -0.41 feet
Station: 79+74
Offset: 131.94 R



LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection
Boring No.: B-15
Groundwater during drilling: none

Project No. 98-279G-00
Elevation: -0.78 feet
Station: 67+86
Offset: 236.42 R



LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection

Project No. 98-279G-00

Boring No.: B-16

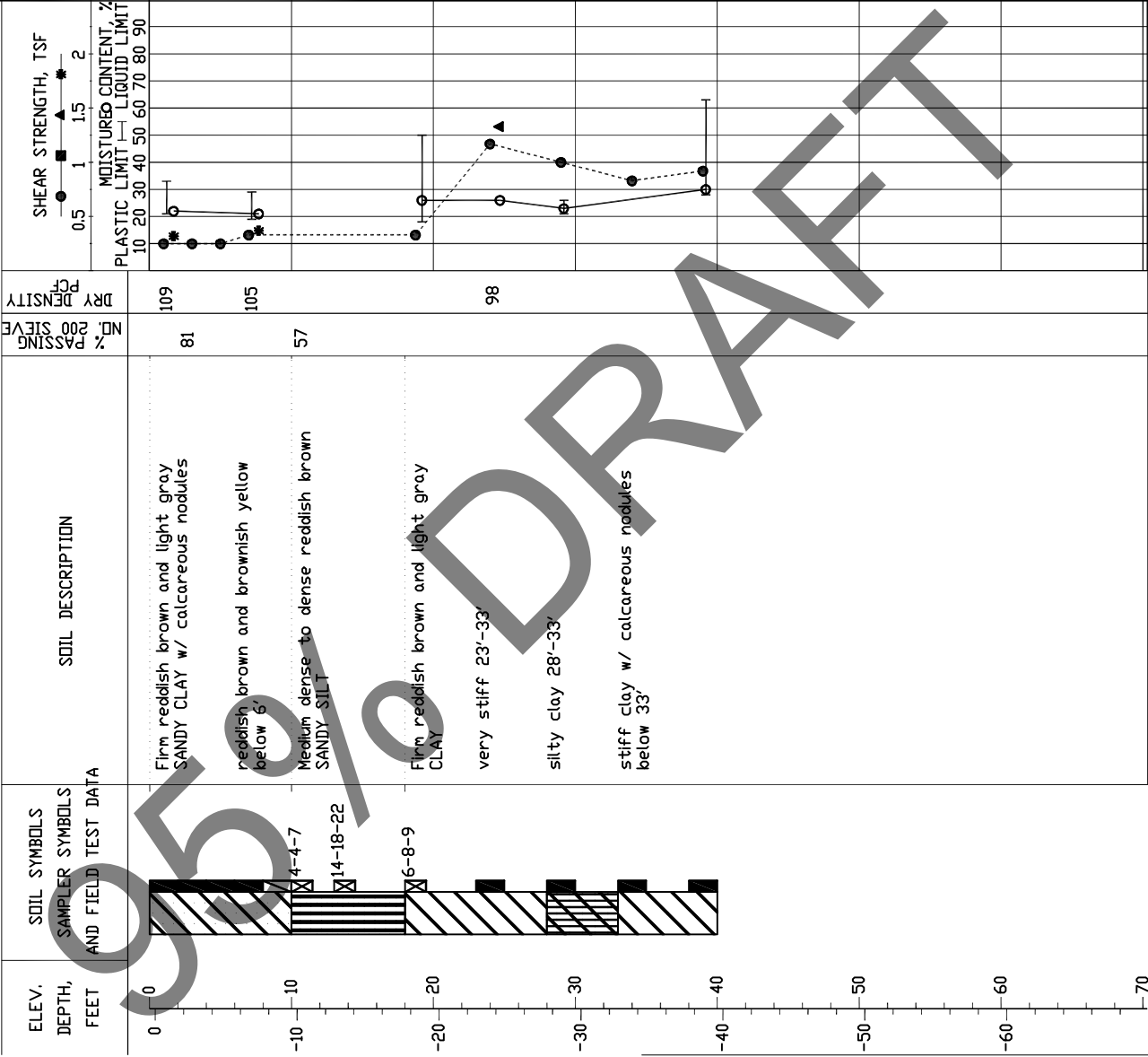
Elevation: 0.40 feet

Groundwater during drilling: none

Date: 3-4-99

Station: 60+18

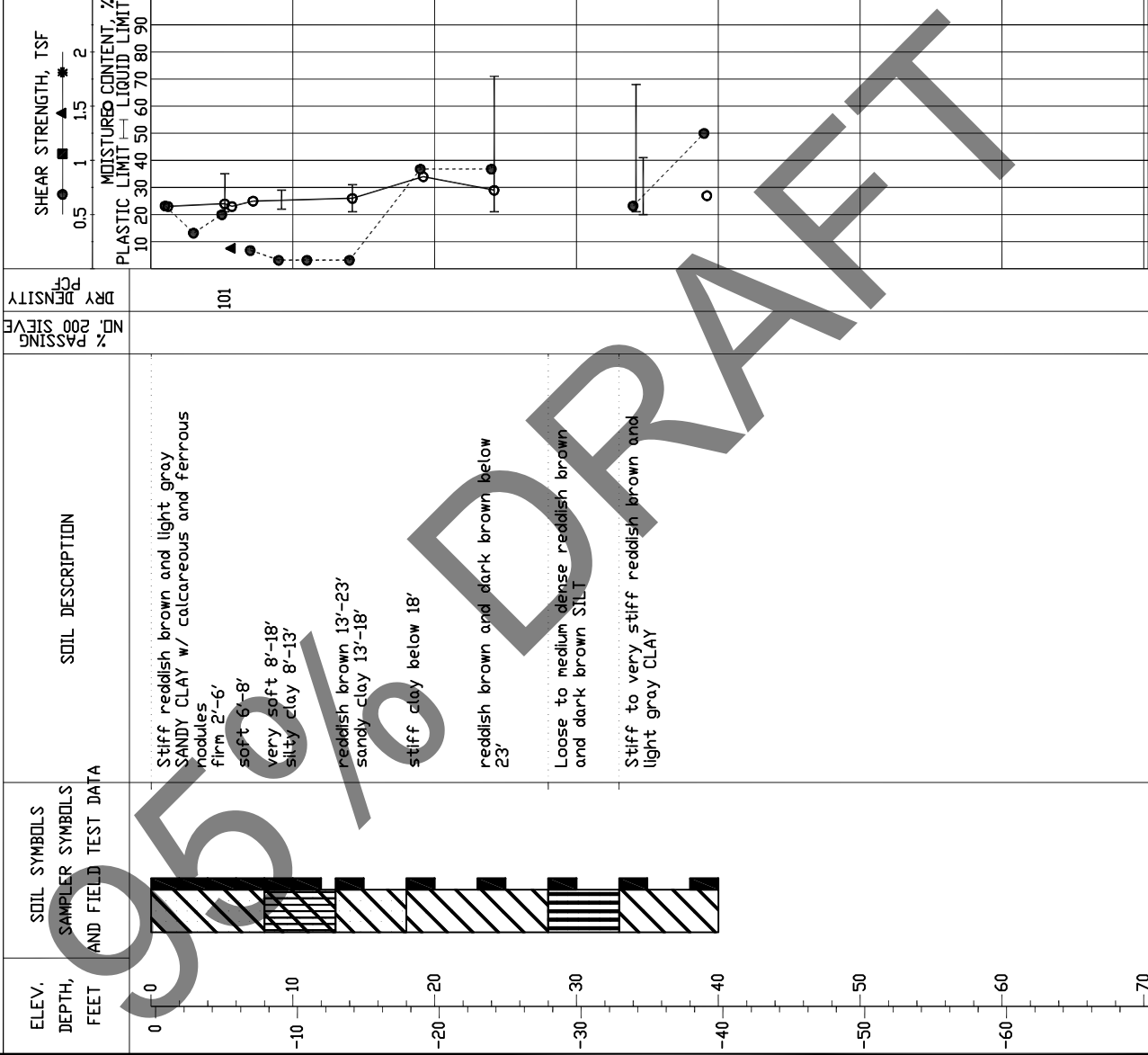
Offset: 108.79 R



LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection
Boring No.: B-17
Groundwater during drilling: none

Project No. 98-279G-00
Elevation: 0.32 feet
Station: 49+69
Offset: 93.63 R



LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection
Boring No: B-18
Groundwater during drilling: none

Project No. 98-279G-00
Elevation: -0.28 feet
Station: 39+05
Offset: 251.94 R



LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection

Project No: 98-279G-00

Groundwater during drilling: none

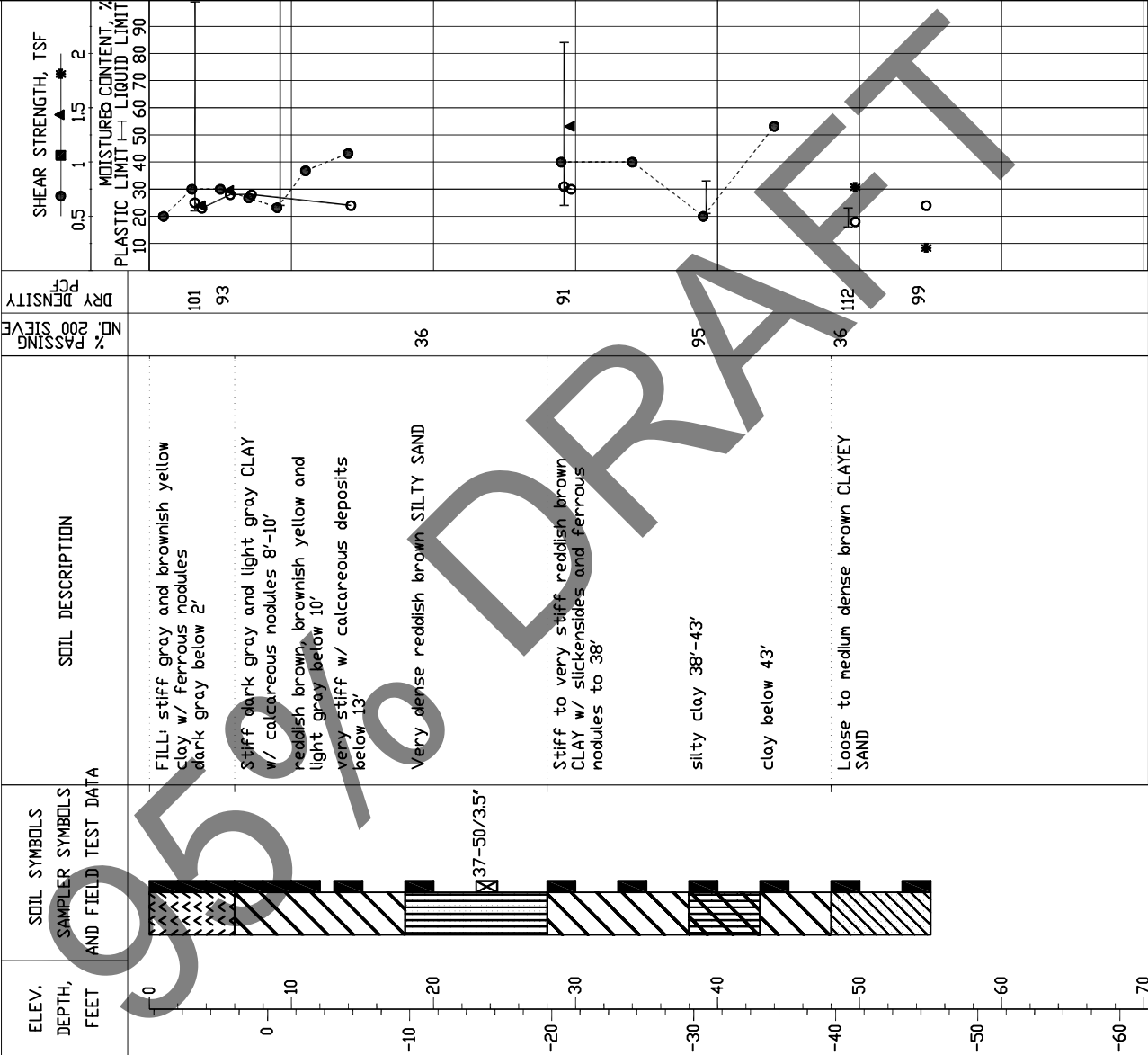
Boring No: B-2

Elevation: 8.32 feet

Station: 44+64

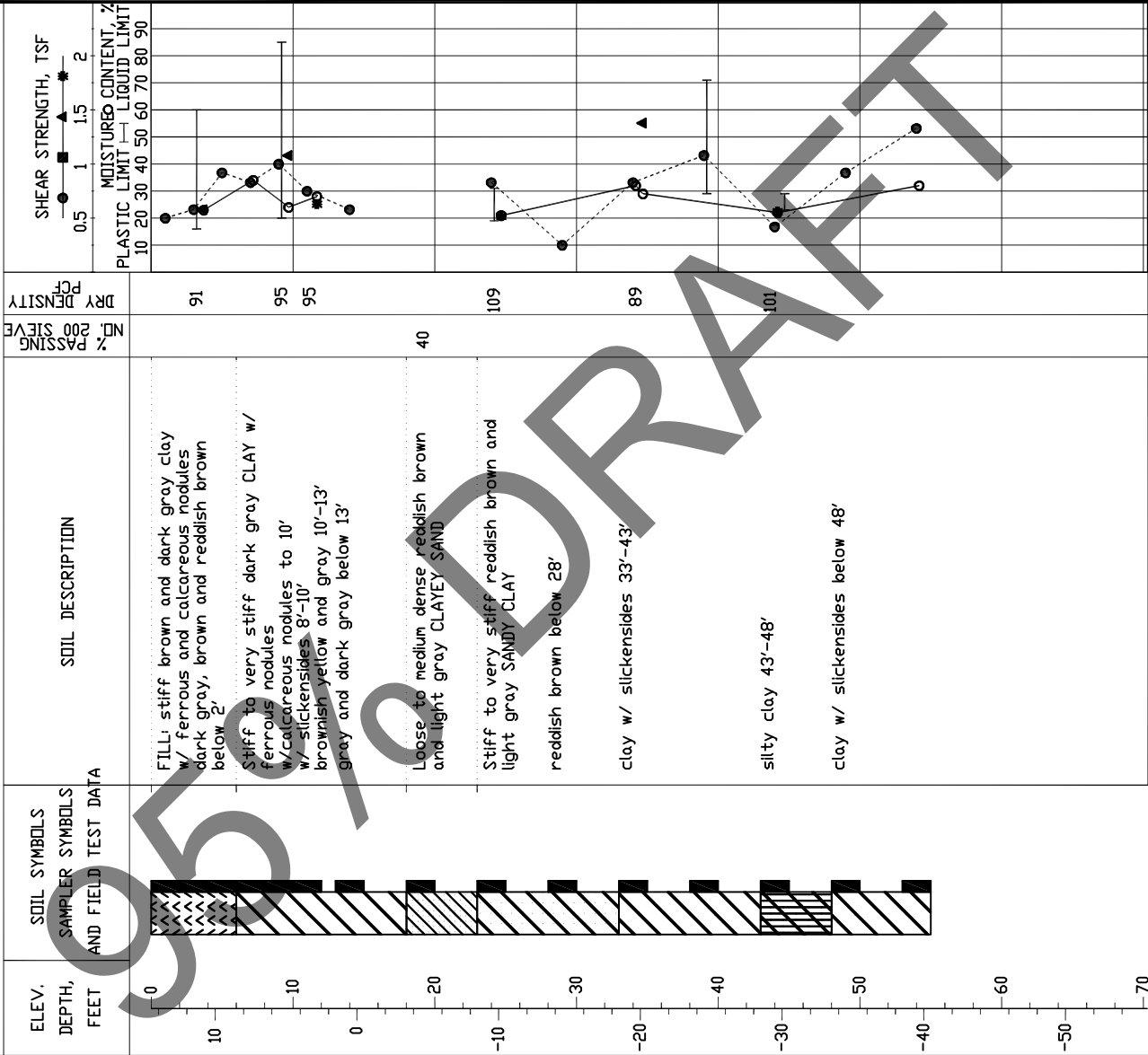
Offset: 31.02 R

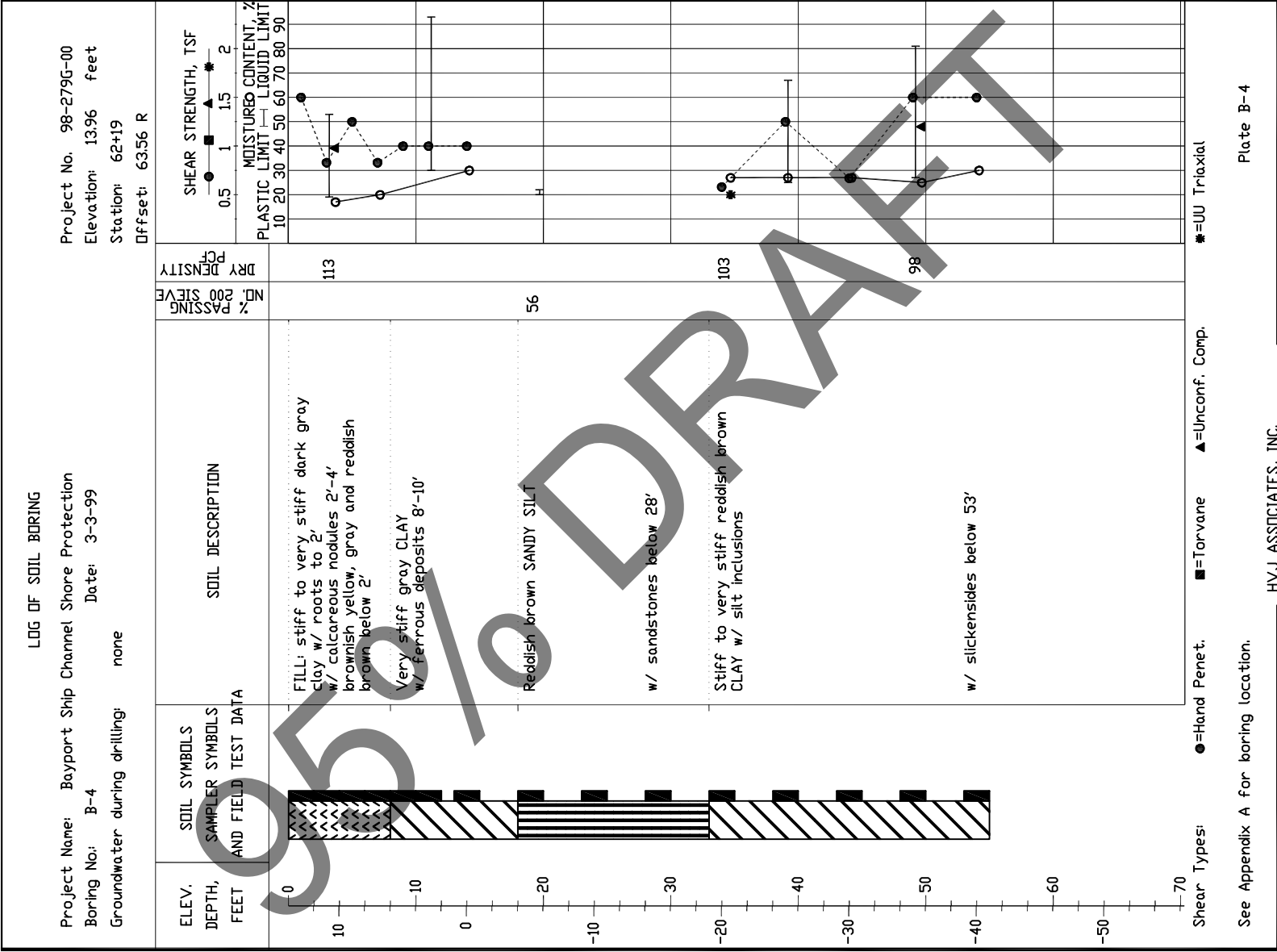
Date: 3-4-99



LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection
Boring No.: B-3
Groundwater during drilling: none
Project No. 98-279G-00
Elevation: 14.51 feet
Station: 53+16
Offset: 40.06 R
Date: 3-3-99

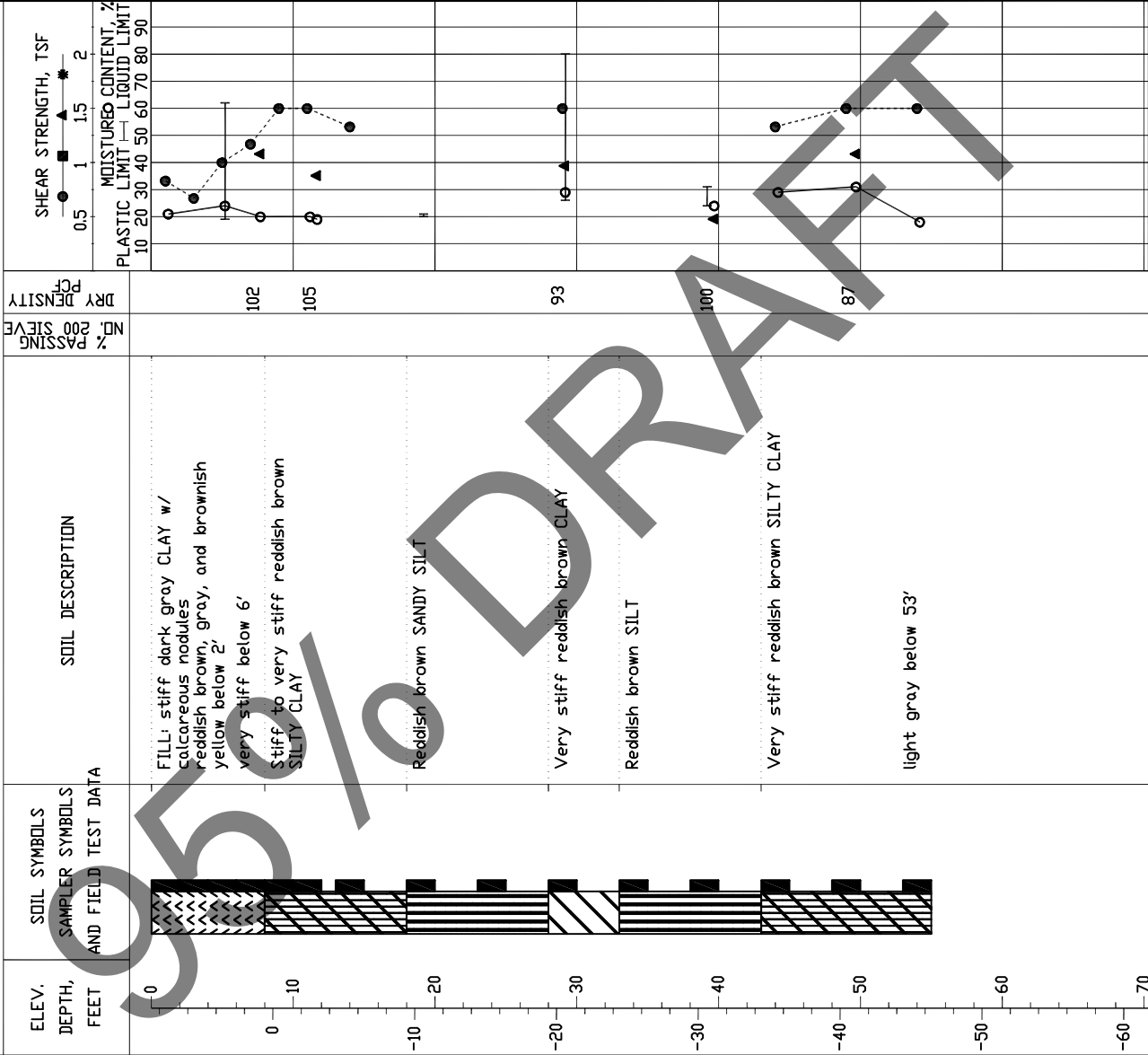




LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection
Boring No: B-5
Groundwater during drilling: none

Project No. 98-279G-00
Elevation: 8.57 feet
Station: 70+47
Offset: 158.99 R



Shear Types: ●=Hand Penet, ■=Torvane ▲=Unconf. Comp. *UU Triaxial

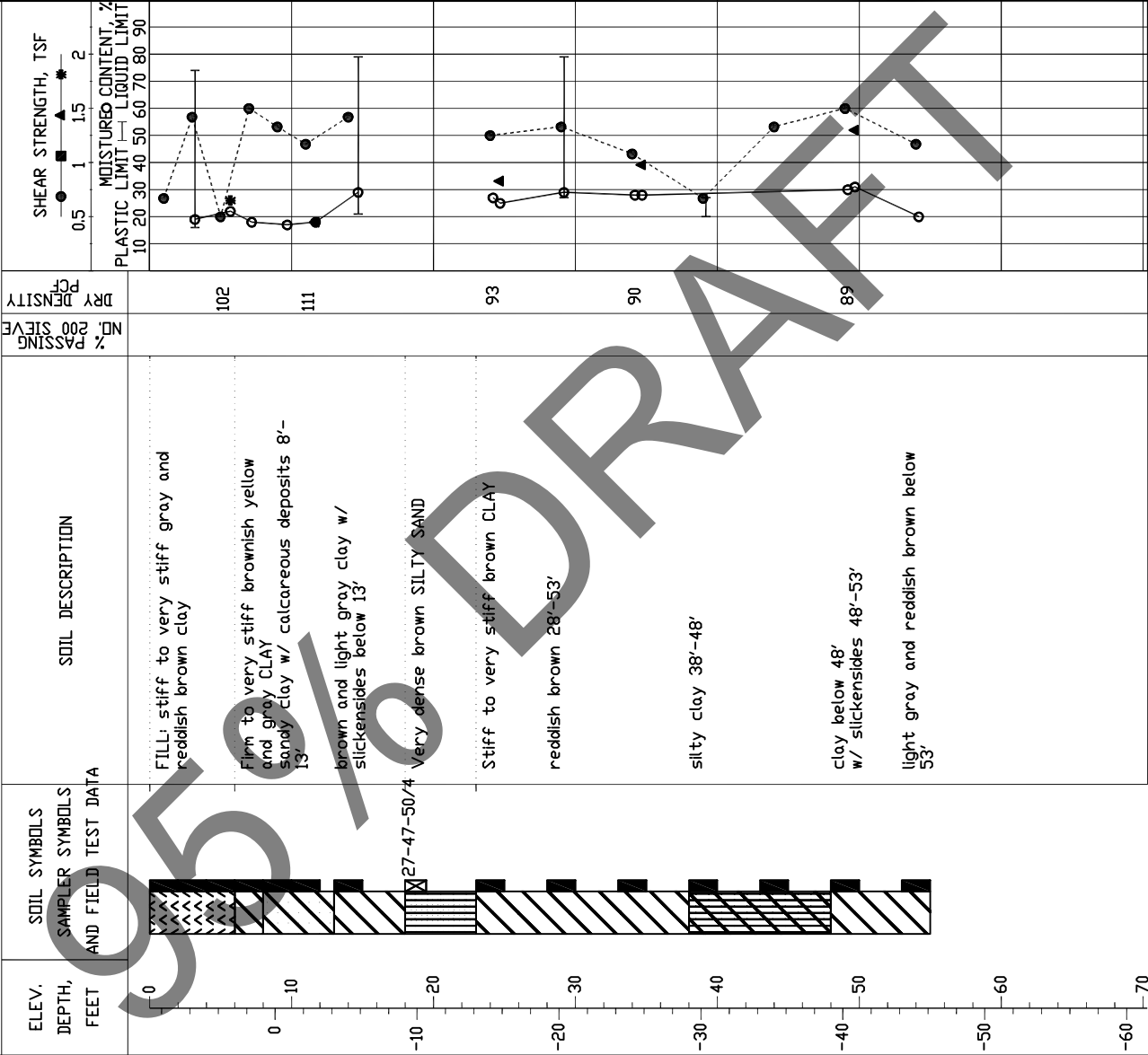
See Appendix A for boring location.

HVJ ASSOCIATES, INC.

LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection
Boring No: B-6
Groundwater during drilling: none

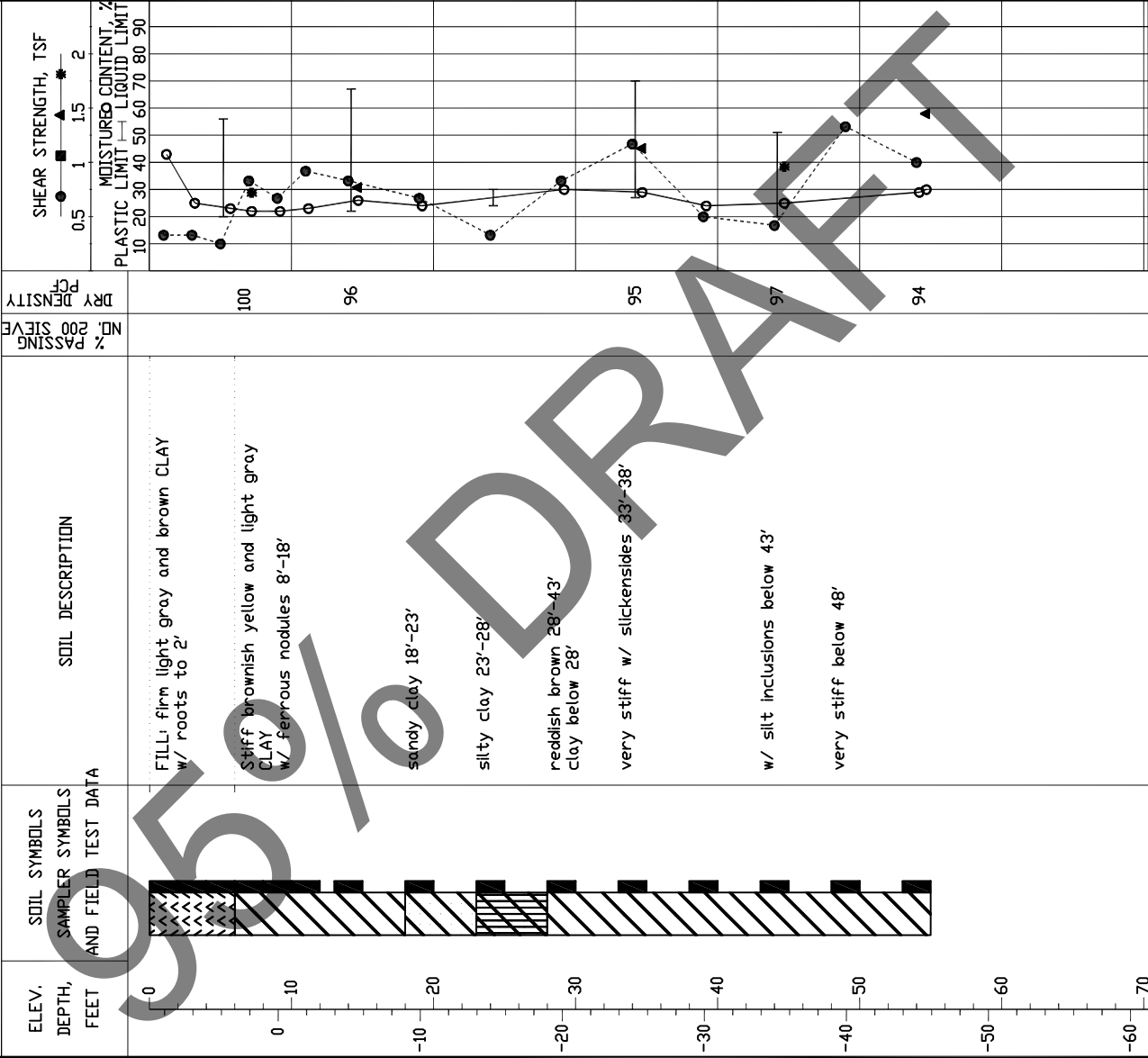
Project No. 98-279G-00
Elevation: 8.84 feet
Station: 76+33
Offset: 19.38 R



LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection
Boring No.: B-7
Groundwater during drilling: none

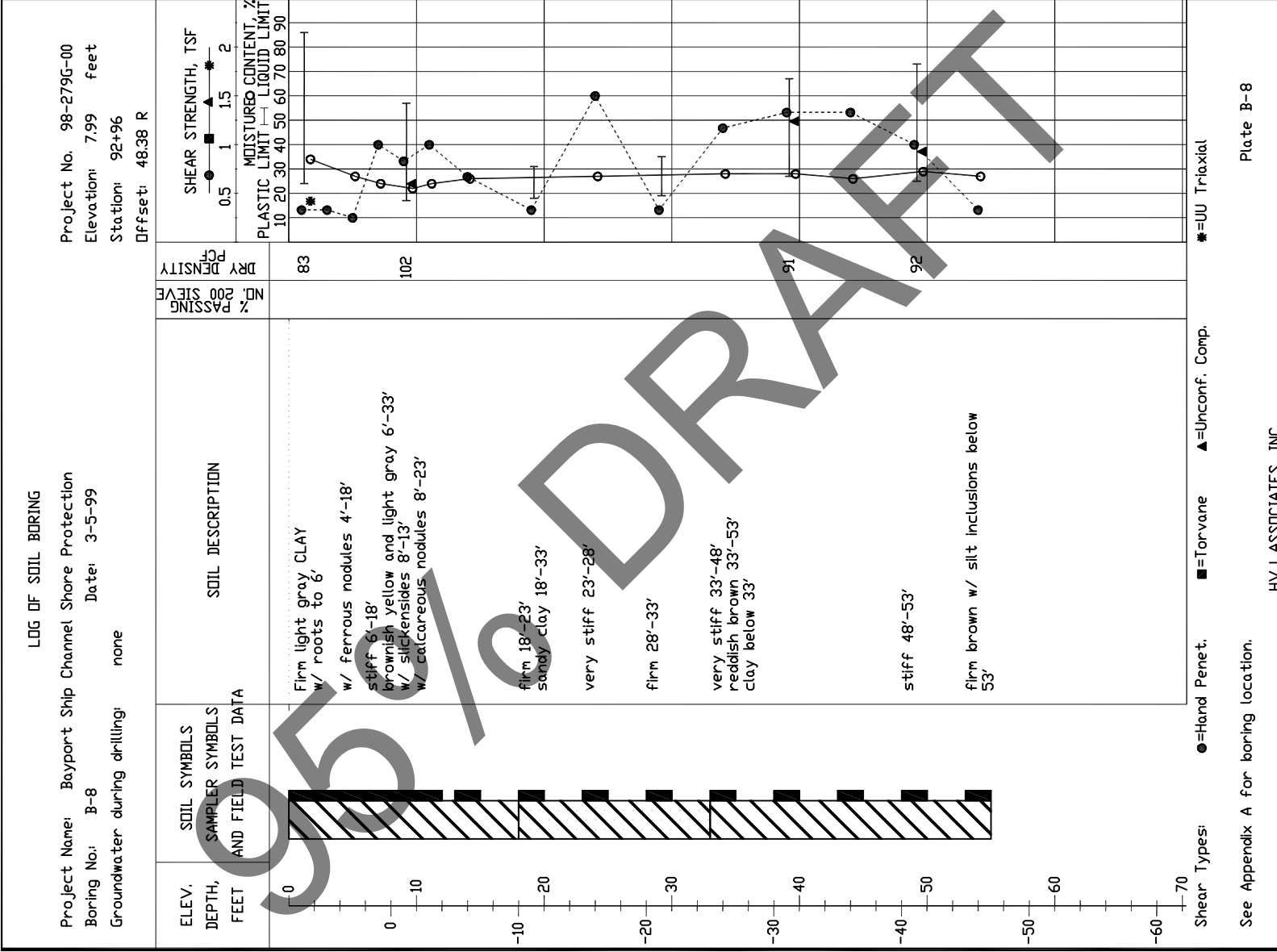
Project No. 98-279G-00
Elevation: 9.06 feet
Station: 85+58
Offset: 161.42 R



Shear Types: ●=Hand Penet. ■=Torvane ▲=Unconf. Comp. *UU Triaxial

See Appendix A for boring location.

HVJ ASSOCIATES, INC.



LOG OF SOIL BORING

Project Name: Bayport Ship Channel Shore Protection

Boring No: B-9

Groundwater during drilling: none

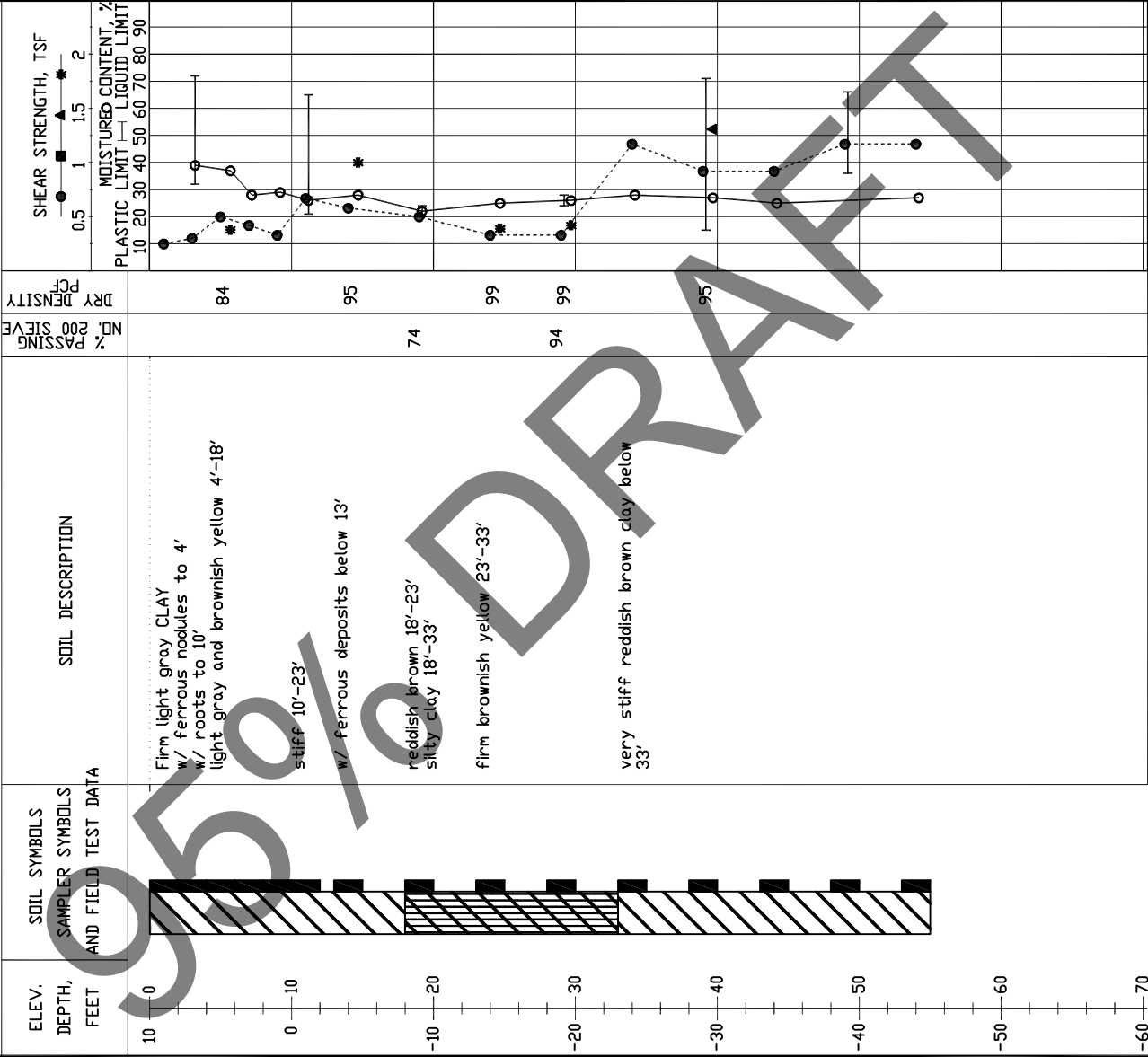
Project No. 98-279G-00

Elevation: 10.00 feet

Station: 100+62

Offset: 46.46 R

Date: 3-5-99



BAYOU REACH BAY REACH
H.S.C.

STA. 0+00 (HSC BAYOU)
UPSTREAM LIMIT OF DREDGING

ATKINSON ISLAND
STA. 0+00 (HSC BAYOU)
UPSTREAM LIMIT OF DREDGING

SECTION 1

SECTION 2

SECTION 3

SECTION 4

SECTION 5

SECTION 6

SECTION 7

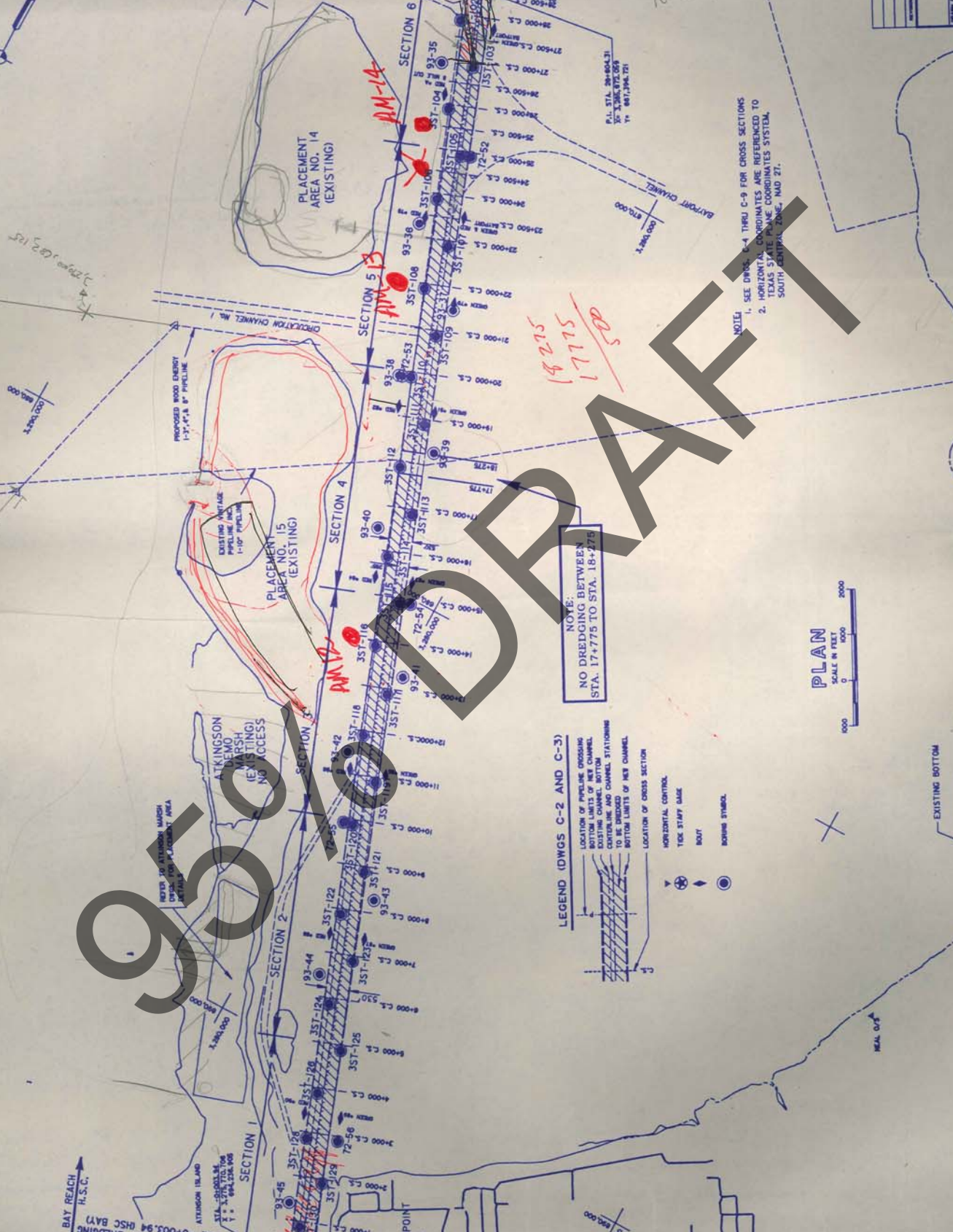
SECTION 8

SECTION 9

SECTION 10

SECTION 11

SECTION 12



3700' LONG
150' WIDE

PROPOSED WOOD ENERGY
1-1/2' x 1-1/2' x 8' PIPELINE

EXISTING MARSH
PIPELINE AND
1-10' PIPELINE

PLACEMENT AREA NO. 15
(EXISTING)

PLACEMENT AREA NO. 14
(EXISTING)

DOWNSTREAM LIMIT OF DREDGING
STA. 29+00

THE MILE OF CHANNEL

STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00

STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00

STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00

STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00

STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00

STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00

STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00
P.L. STA. 29+00

NOTE:
NO DREDGING BETWEEN
STA. 17+775 TO STA. 18+275

LEGEND (DWGS C-2 AND C-3)
LOCATION OF PIPELINE CROSSING
BOTTOM LIMITS OF NEW CHANNEL
EXISTING CHANNEL BOTTOM
CENTERLINE AND CHANNEL STATIONING
TO NEW CHANNEL
BOTTOM LIMITS OF NEW CHANNEL

HORIZONTAL CONTROL
TIDE STAFF GAGE
BOAT
BOAT STATION

PLAN
SCALE IN FEET
0 1000 2000

NOTE:
1. SEE DWGS. C-4 THRU C-9 FOR CROSS SECTIONS
2. HORIZONTAL COORDINATES ARE REFERENCED TO
TEXAS STATE PLANE COORDINATES SYSTEM,
SOUTH CENTRAL ZONE, NAD 27.

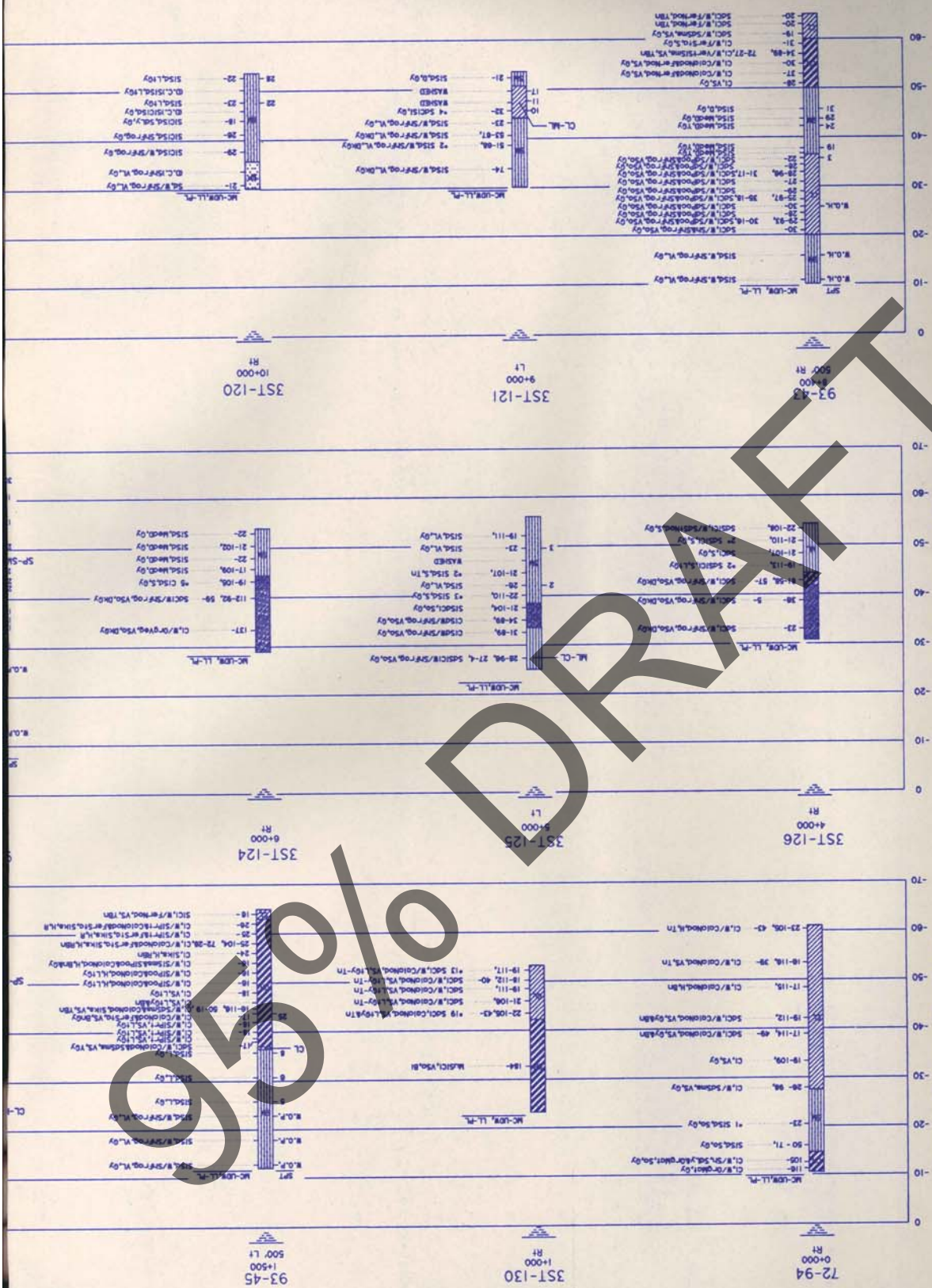
OFFICE OF THE DISTRICT ENGINEER
U.S. ARMY ENGINEER DISTRICT
HOUSTON-GALVESTON
G.R.
41

EXISTING BOTTOM
STA. 29+00 (TYP. FOR STA. 0+00 TO 94)

ELEVATIONS IN FEET, M.L.T.

ELEVATIONS IN FEET, M.L.T.

ELEVATIONS IN FEET, M.L.T.



3ST-129

2+000

Lt

3ST-128

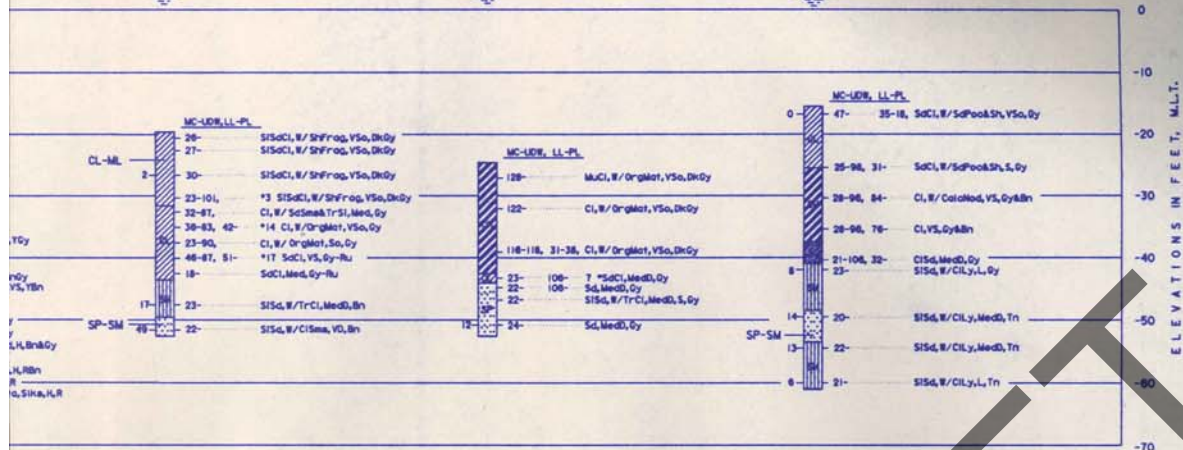
3+000

Rt

72-56

3+000

300' Lt



93-44

8+600

500' Lt

3ST-123

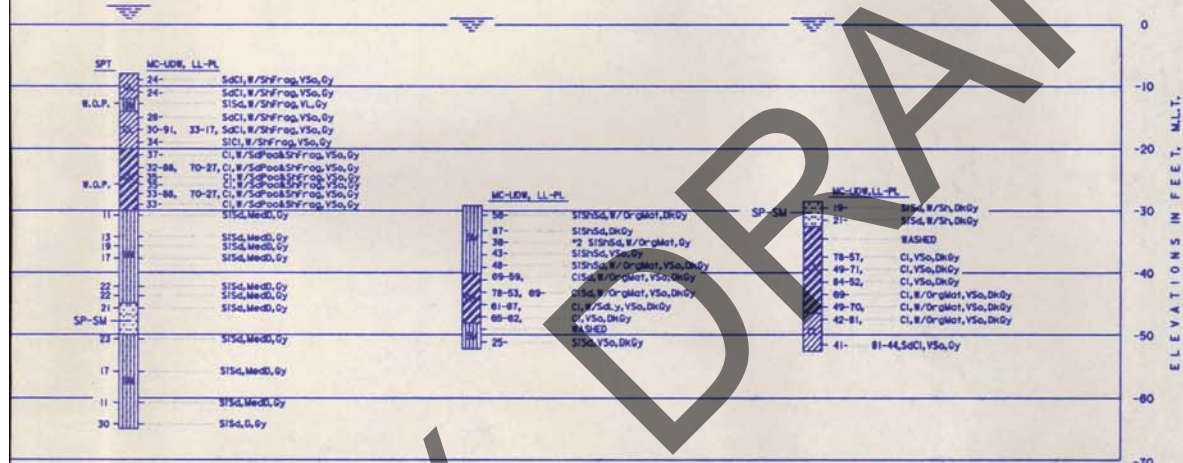
7+000

Lt

3ST-122

8+000

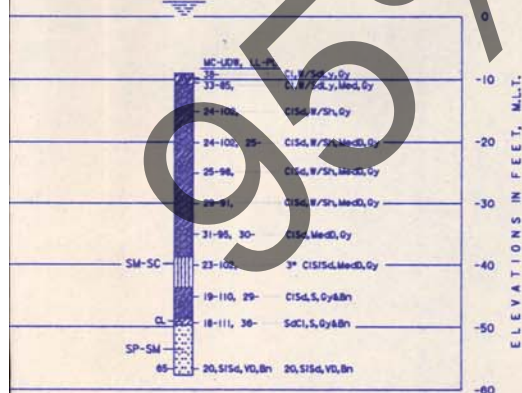
Rt



72-55

10+000

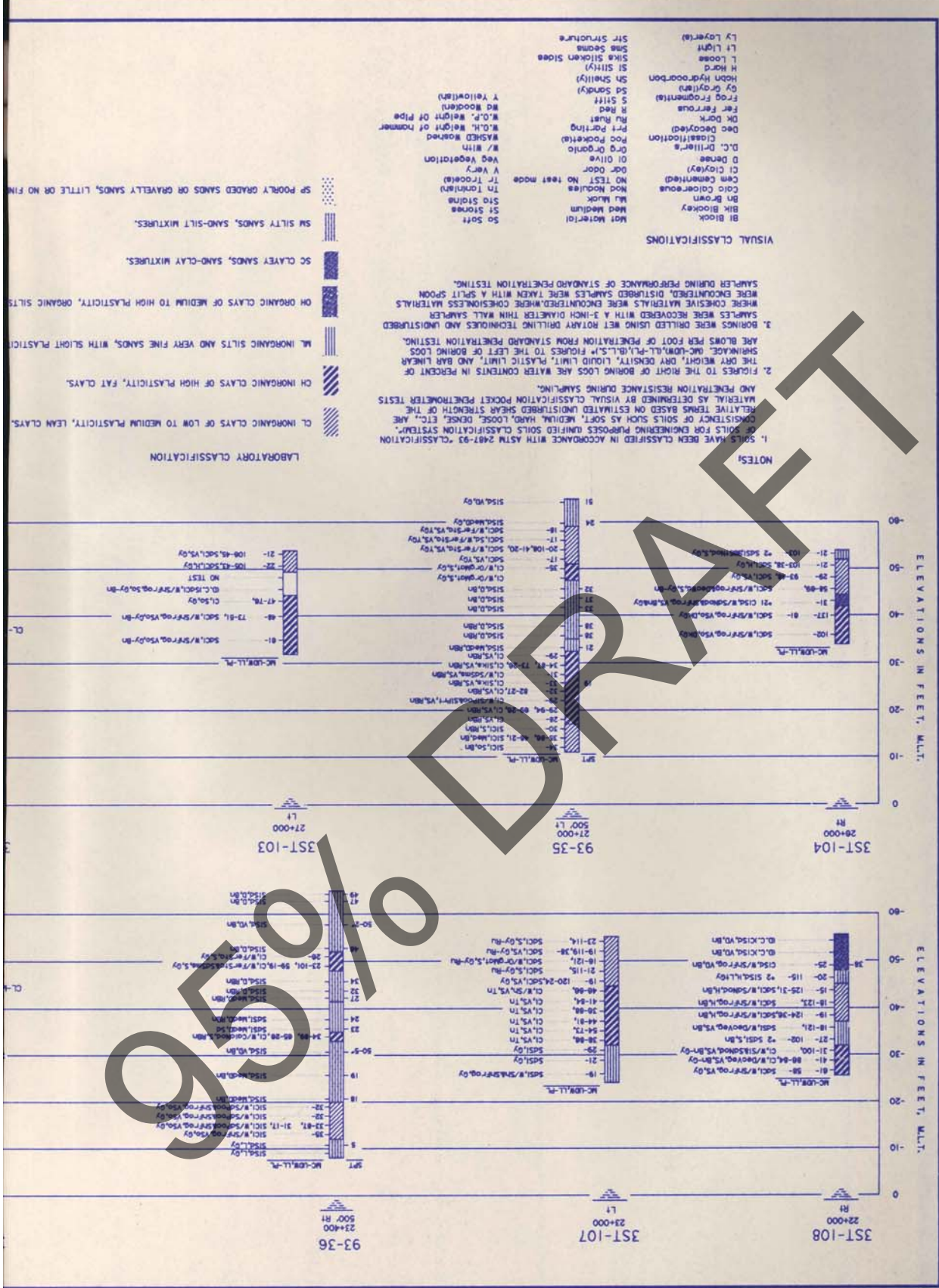
200' Rt



NOTE:
SEE SHEET X OF X FOR BORING NOTES
AND LEGEND.

REVISION	DATE	DESCRIPTION	BY
OFFICE OF THE DISTRICT ENGINEER U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS HOUSTON-GALVESTON NAVIGATION CHANNELS, TEXAS 45-FOOT PROJECT DREDGING UPPER BAY LOGS OF BORINGS STA. 0+000 TO STA. 10+000 APPROVED BY: H. SUTCLIFFE, P.E. DIST. ENGINEER, DISTRICT APPROVED BY: HARRY G. KOHLER, P.E. DIST. ENGINEER AND CONSTRUCTION ENGINEER DATE: NOVEMBER 1999 Prepared under the direction of Nicholas J. Buehler, Col., C.E. District Engineer FIG. NO. 15C-401-475			





3ST-106

24+000

Rt

3ST-105

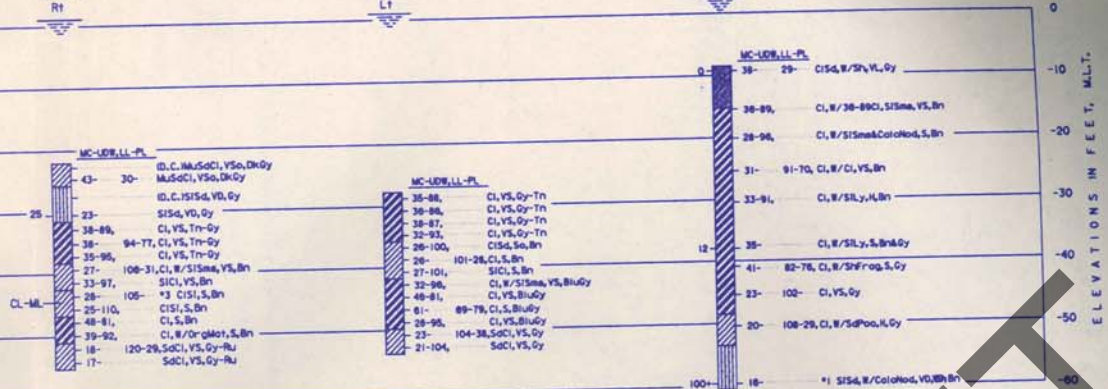
25+000

Lt

72-52

25+000

400' Lt



3ST-101

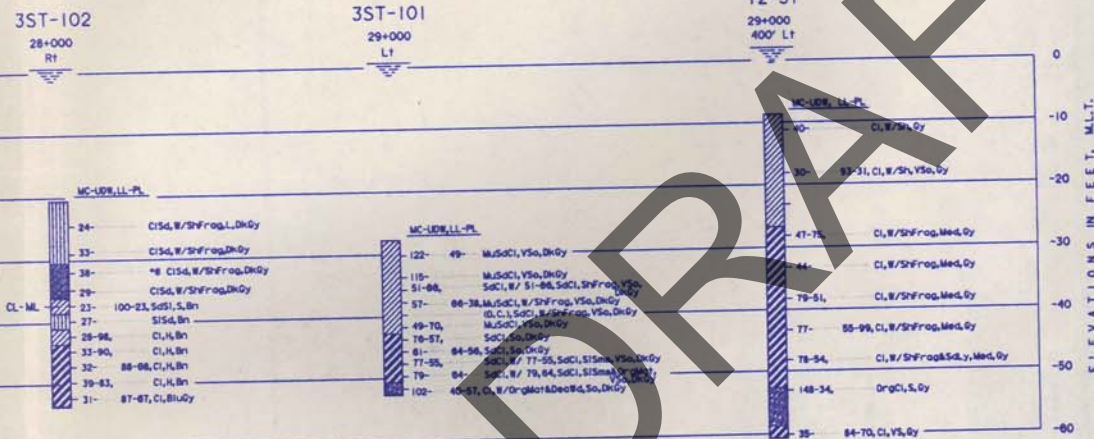
29+000

Lt

72-51

29+000

400' Lt



NOTE:
SEE SHEET X OF X FOR BORING NOTES
AND LEGEND.

TY, LEAN CLAYS.

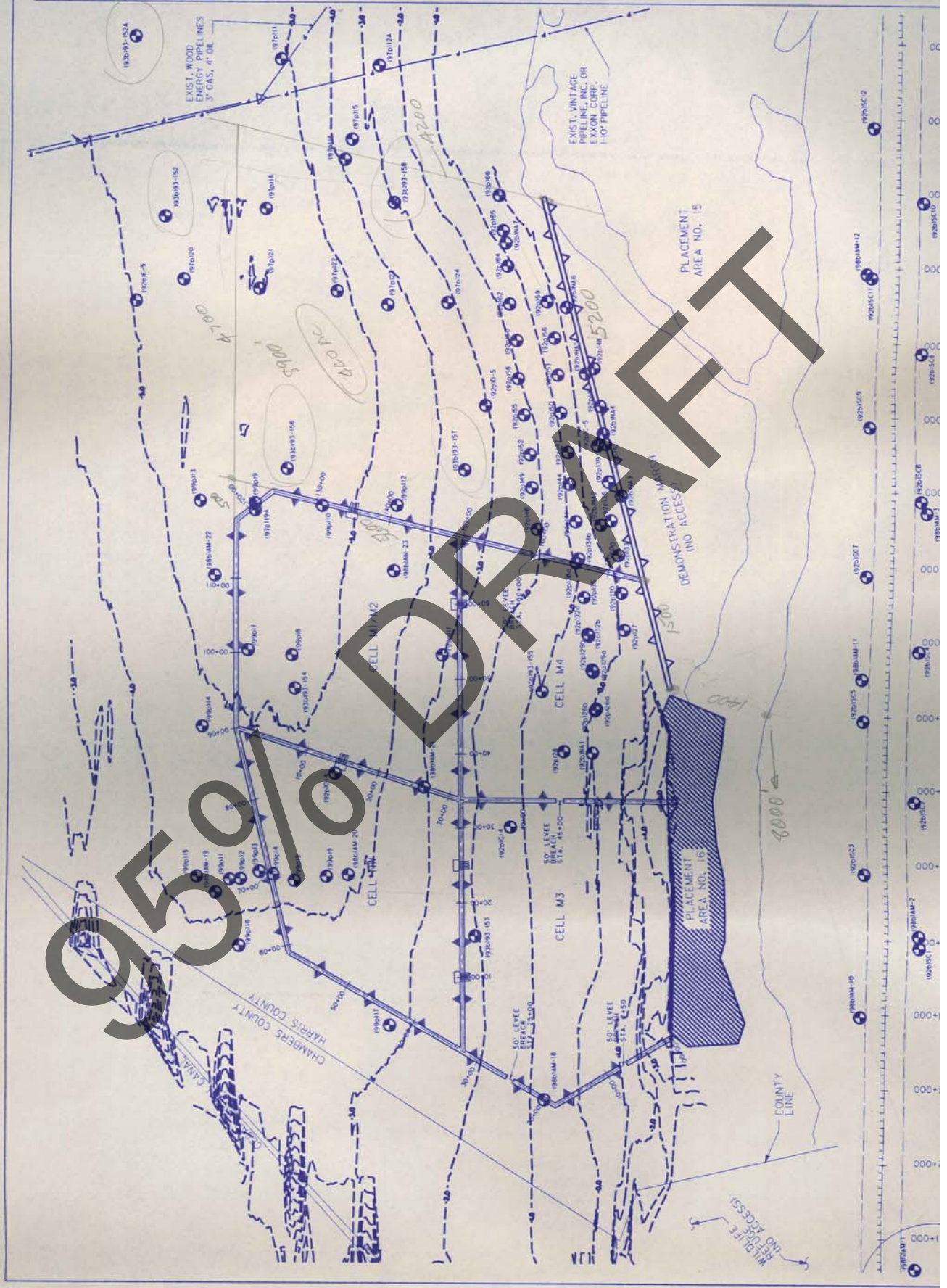
AYS.

SLIGHT PLASTICITY.

TY, ORGANIC SILTS

LITTLE OR NO FINES.

REVISION	DATE	DESCRIPTION	BY
OFFICE OF THE DISTRICT ENGINEER U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS			
DRAWN BY * P.M.		HOUSTON-GALVESTON NAVIGATION CHANNELS, TEXAS 45-FOOT PROJECT DREDGING UPPER RAY	
CHECKED BY * T.F.		LOGS OF BORINGS STA. 22+000 TO STA. 29+000	
SUBMITTED BY * H. SUTCLIFFE, P.E. CHIEF, DISTRICT ENGINEERING SECTION		APPROVED * HARRY G. KOHLER, P.E. CHIEF, DISTRICT ENGINEERING SECTION	
PREPARED BY * E. H. WITTING II, P.E.		DATE NOVEMBER 1999	
* IS REQUIRED BY DISTRICT REGULATION 11-10-1-10-1		SCALE: AS SHOWN	
Prepared under the direction of Nicholas J. Buehler, Col., C.E., District Engineer		BORING NUMBER F-3 SHEET 25 OF 36 (25-100 USC 401-173)	



DRAFT

02/14
52/04
04/04
0000
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000

95%

MATCHLINE SHEET F - 40

EXIST. WOOD
ENERGY PIPELINES
3" GAS, 4" OIL

TEXAS CRUDE 126
PRODUCTION
PLATFORM

NOTE:
SEE SP
BORING
DRAWING

James C. Boaden Inc. ARMAR & BENTLEY ASSOCIATES 2000 WEST 10TH AVENUE SUITE 1000 DENVER, COLORADO 80202	HOUSTON 15
--	----------------------

[illegible]

1

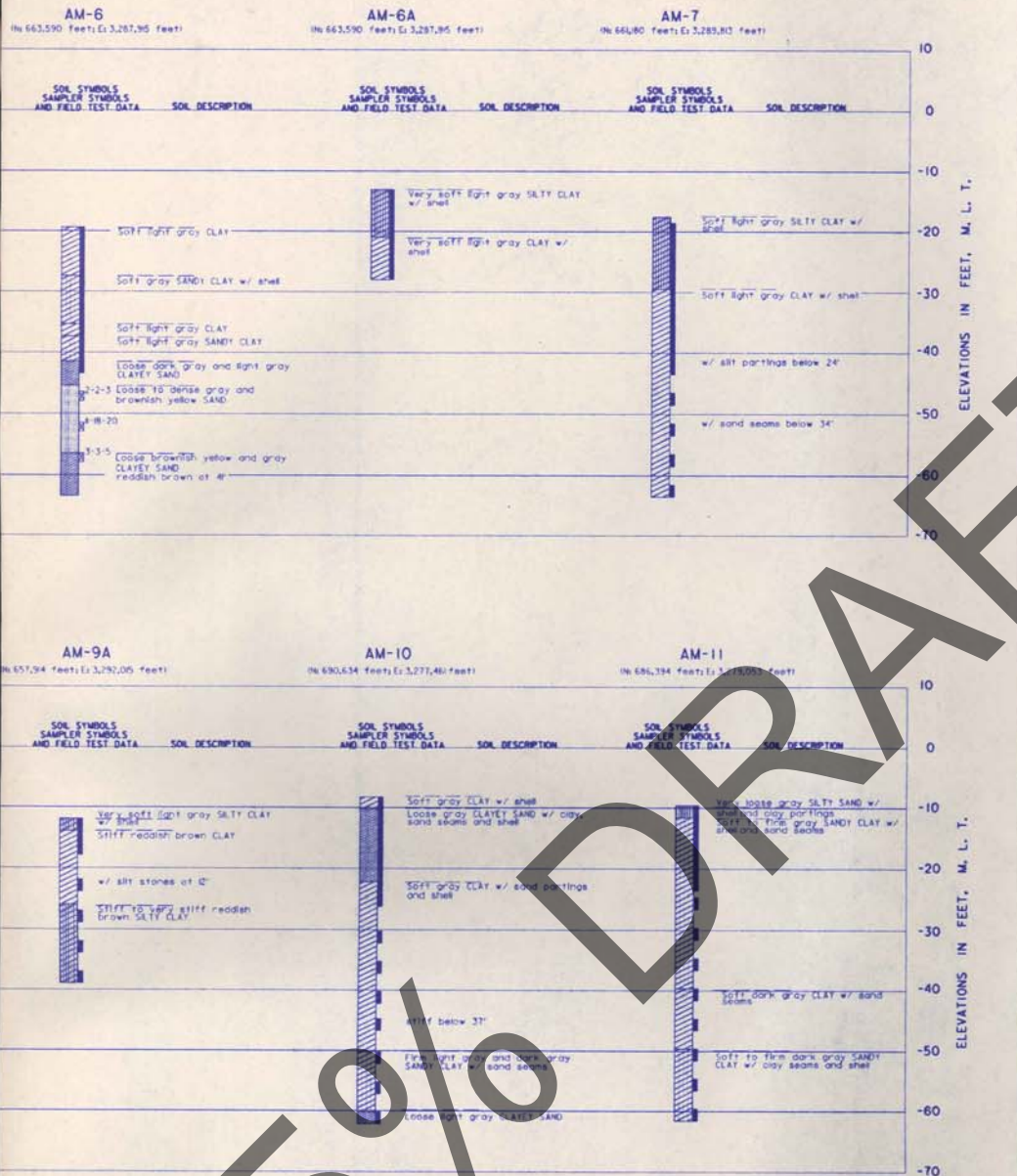
FOR

10

SPLIT SPOON SAMPLE WITH
BLOW COUNTS PER SIX INCHES

参考文献





THE ORIGINAL SEALED DOCUMENTS HAVE BEEN TRANSMITTED PREVIOUSLY TO THE USER. PRINTS ARE AVAILABLE UPON REQUEST. THIS ELECTRONIC VERSION OF THE DRAWING IS RELEASED FOR BIDDING PURPOSES ONLY. UNDER THE AUTHORITY OF LEON WRASIDSKY, P.E., #07342, AND ANTHONY G. SARTORI, P.E., #58351, DATE: OCT. 20, 1999.

REVISION	DATE	DESCRIPTION	BY
TurnerCollins & Braden Inc. GALVESTON & BAYVIEW ASSOCIATES		OFFICE OF THE DISTRICT ENGINEER U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS	
Drawn By:	BF	HOUSTON-GALVESTON NAVIGATION CHANNELS, TEXAS 45-FOOT PROJECT DREDGING UPPER BAY ATKINSON ISLAND MARSH LOGS OF BORINGS 1 OF 4	
Designed By:	GEC		
Checked By:	TS		
Submitted By:			
Approved - Engineer		Approved - Chief Engineering Officer	DATE: NOVEMBER 1999
C. & AS REQUIRED BY DISTRICT ENGINEER, GALVESTON DISTRICT		SCALE: AS SHOWN	SHEET: 28 OF 36 FILE NO. HSC 401-475
Prepared under the direction of Nicolas J. Buechter, Lt. Col., C.E., District Engineer		DRAWING NUMBER F-5	

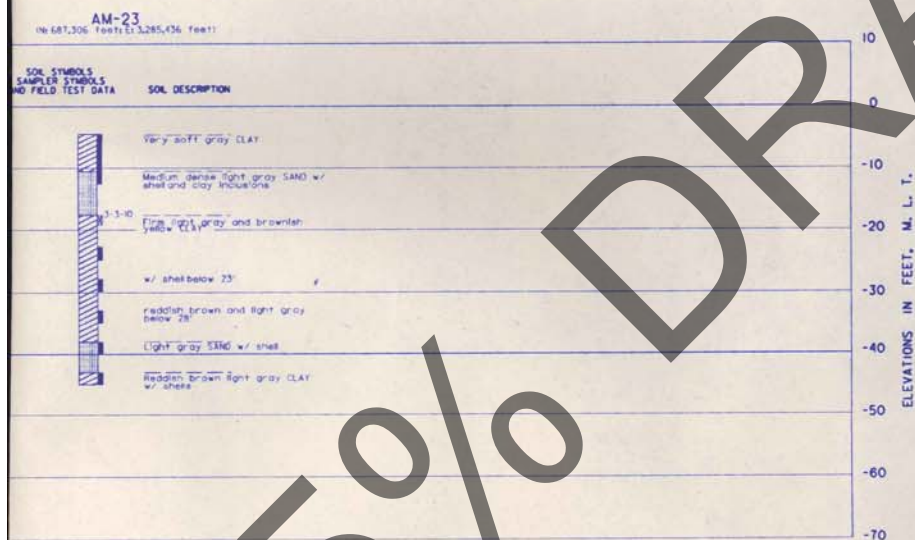
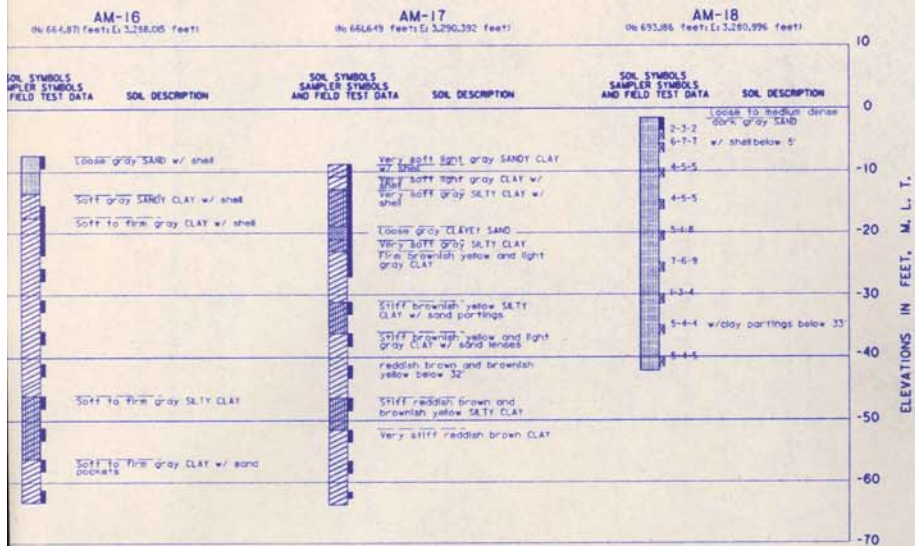
NOTES:

1. SEE DRAWING F-4 FOR BORING LOCATION.
2. THE BORING INFORMATION ON THIS DRAWING IS PROVIDED FOR INFORMATION PURPOSES. LOGS OF BORINGS ARE ATTACHED TO APPENDIX OF SPECIFICATION.

LEGEND:

 SHELBY TUBE SAMPLE
 SPLIT SPOON SAMPLE WITH BLOW COUNTS PER SIX INCHES





THE ORIGINAL SEALED DOCUMENTS HAVE BEEN TRANSMITTED PREVIOUSLY TO THE USER. PRINTS ARE AVAILABLE UPON REQUEST. THIS ELECTRONIC VERSION OF THE DRAWING IS RELEASED FOR BIDDING PURPOSES ONLY. UNDER THE AUTHORITY OF LEON HIRABOVSKY, P.E., #27342, AND ANTHONY G. SARTORI, P.E., #58251, DATE: OCT. 20, 1999.

REVISION		DATE	DESCRIPTION	BY
Turner Collier & Braden Inc. DAVIDMAN & NEWBY ASSOCIATES				
DRAWING BY: *		OFFICE OF THE DISTRICT ENGINEER U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS		
DESIGNED BY: *		HOUSTON-GALVESTON NAVIGATION CHANNELS, TEXAS 45-FOOT PROJECT DREDGING UPPER BAY ATKINSON ISLAND MARSH LOGS OF BORINGS 2 OF 4		
CHECKED BY: *				
SUBMITTED BY: *				
APPROVED BY: *				
PROJECT ENGINEER		APPROVED BY: *		DATE: NOVEMBER 1999
UNIT DESIGN NUMBER: _____ * AS REQUIRED BY DISTRICT ORDER NO. 1100-1-100		SCALE: AS SHOWN DRAWING NUMBER: F-6		SHEET 29 OF 36 FILE NO. HSC 401-475
Prepared under the direction of Nicolas J. Buechler, Lt. Col., C.E., District Engineer				

NOTES

1. SEE DRAWING F-4 FOR BORING LOCATION.
2. THE BORING INFORMATION ON THIS DRAWING IS PROVIDED FOR INFORMATION PURPOSES. LOGS OF BORINGS ARE ATTACHED TO APPENDIX OF SPECIFICATION.

LEGEND

SHELBY TUBE SAMPLE

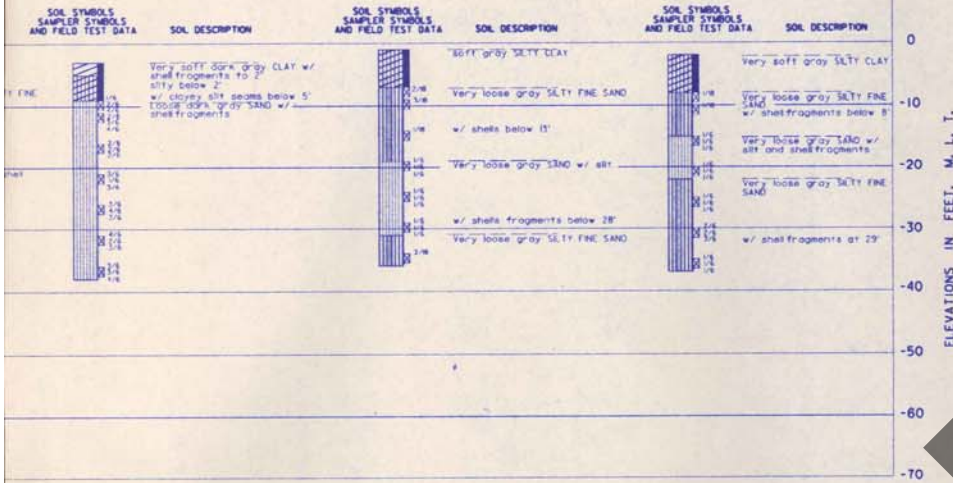
SPLIT SPOON SAMPLE WITH BLOW COUNTS PER SIX INCHES



NA5
(N 683,923 Feet; E 3,284,009 Feet)

NA6
(N 683,88 Feet; E 3,284,575 Feet)

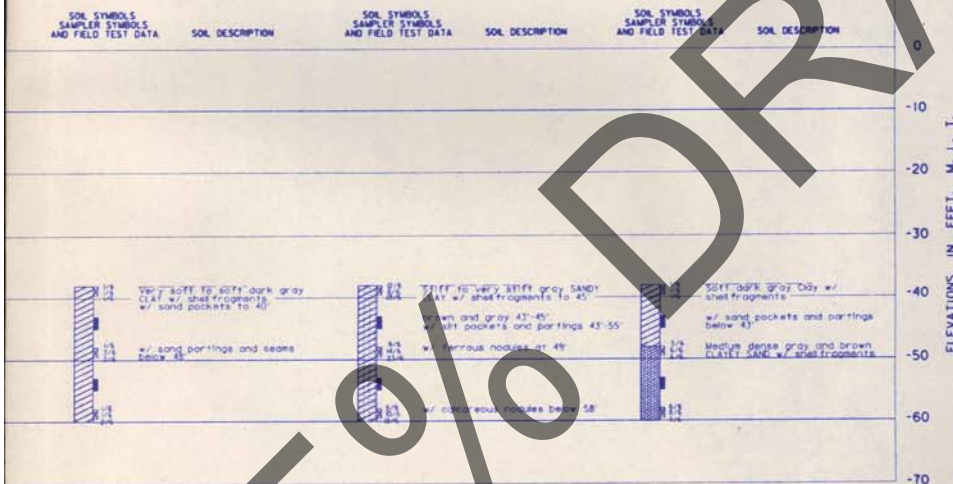
NA7
(N 682,686 Feet; E 3,285,638 Feet)



SC5
(N 686,905 Feet; E 3,278,878 Feet)

SC6
(N 685,502 Feet; E 3,279,320 Feet)

SC7
(N 685,096 Feet; E 3,278,822 Feet)



95%

THE ORIGINAL SEALED DOCUMENTS HAVE BEEN TRANSMITTED PREVIOUSLY TO THE USACE. PRINTS ARE AVAILABLE UPON REQUEST. THIS ELECTRONIC VERSION OF THE DRAWING IS RELEASED FOR BIDDING PURPOSES ONLY. UNDER THE AUTHORITY OF LEON HRABOVSKY, P.E., #27342, AND ANTHONY G. SARTORI, P.E., #58351. DATE: OCT. 20, 1999.

REVISION	DATE	DESCRIPTION	BY
TurnerCollins & Braden Inc. MARSH & BENTLEY ASSOCIATES OFFICE OF THE DISTRICT ENGINEER U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS			
HOUSTON-GALVESTON NAVIGATION CHANNELS, TEXAS 45-FOOT PROJECT DREDGING UPPER BAY ATKINSON ISLAND MARSH LOGS OF BORINGS 3 OF 4			
DRAWN BY: * DESIGNED BY: * CHECKED BY: * SUBMITTED BY: * ARCHITECT - ENGINEER APPROVED: *	DATE: NOVEMBER 1999		
PREPARED UNDER THE DIRECTION OF Nicolas J. Buehler, Lt. Col., C.E., District Engineer		SHEET 30 OF 36 FILE NO. HSC 401-475	

NOTES

1. SEE DRAWING F-4 FOR BORING LOCATION.
2. THE BORING INFORMATION ON THIS DRAWING IS PROVIDED FOR INFORMATION PURPOSES. LOGS OF BORINGS ARE ATTACHED TO APPENDIX OF SPECIFICATION.

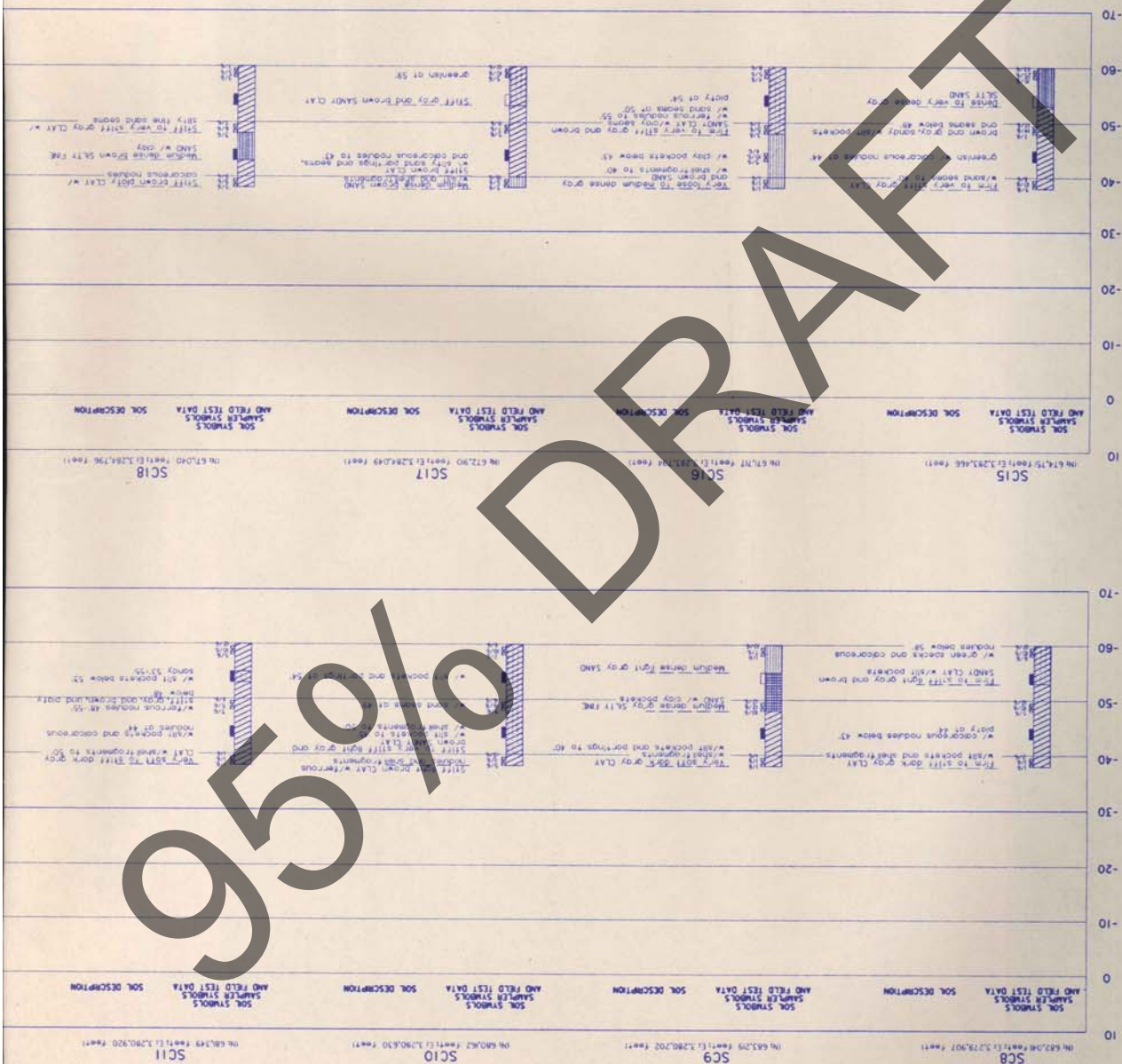
LEGEND

SHELBY TUBE SAMPLE

SPLIT SPOON SAMPLE WITH BLOW COUNTS PER SIX INCHES

ELEVATIONS IN FEET, M. L. T.

ELEVATIONS IN FEET, M. L. T.



SC12

(N: 679,462 Feet; E: 3,286,607 Feet)

SC13

(N: 675,467 Feet; E: 3,282,406 Feet)

SC14

(N: 673,622 Feet; E: 3,283,308 Feet)

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL DESCRIPTION

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL DESCRIPTION

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL DESCRIPTION

10

0

-10

-20

-30

-40

-50

-60

-70

ELEVATIONS IN FEET, M. L. T.



STIFF TO VERY STIFF gray and brown CLAY w/ calcareous nodules w/ shell fragments to 40

w/ silty pockets and shell fragments below 40

STIFF gray and brown SANDY CLAY w/ sand pockets and partings w/ shell fragments below 50



Very STIFF Brown CLAY w/ calcareous and ferrous nodules

Very STIFF gray SANDY CLAY w/ partings and calcareous and ferrous nodules

Medium dense TO dense brownish gray SAND w/ clay to 50



STIFF gray clay w/ shell fragments to 40

platy w/ ferrous nodules below 40

Medium dense gray SAND

10

0

-10

-20

-30

-40

-50

-60

-70

ELEVATIONS IN FEET, M. L. T.

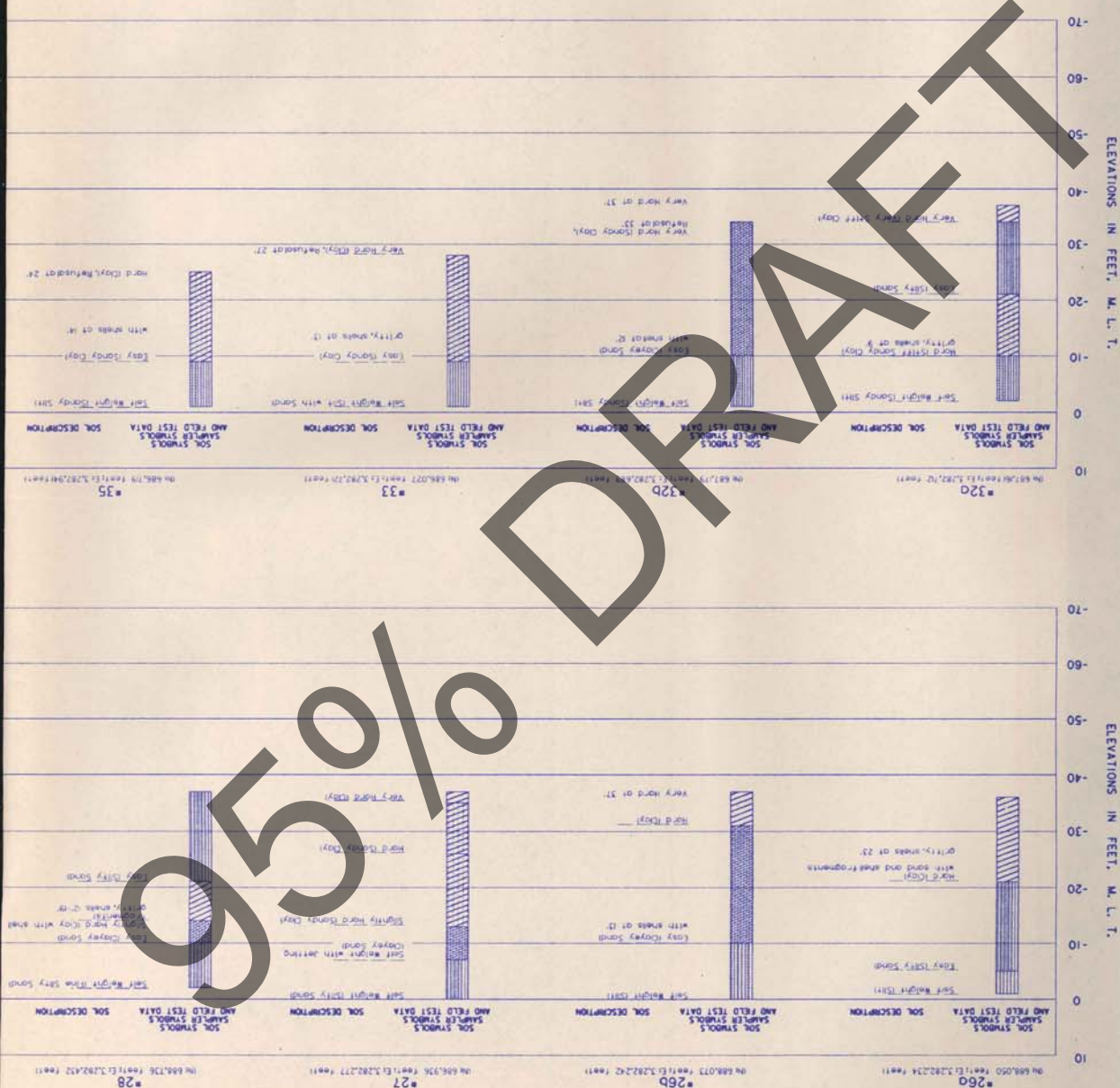
REVISION	DATE	DESCRIPTION	BY
Turner Cole & Braden Inc. BIRMINGHAM & DENVER ASSOCIATES		OFFICE OF THE DISTRICT ENGINEER U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS	
HOUSTON-GALVESTON NAVIGATION CHANNELS, TEXAS 45-FOOT PROJECT DREDGING UPPER BAY ATKINSON ISLAND MARSH LOGS OF BORINGS 4 OF 4			
DESIGNED BY: *	BF	APPROVED: *	
DRAWN BY: *	CEC	DATE: NOVEMBER 1999	
CHECKED BY: *	TS	SCALE: AS SHOWN	
SUBMITTED BY: *		SPEED DATED	
ARCHITECT - ENGINEER		DRAWING NUMBER	
DESIGNED BY: *		F-8	
Prepared under the direction of Nicolae J. Buehler, Lt. Col., C.E., District Engineer		SHEET 31 OF 36 FILE NO. HSC 401-475	

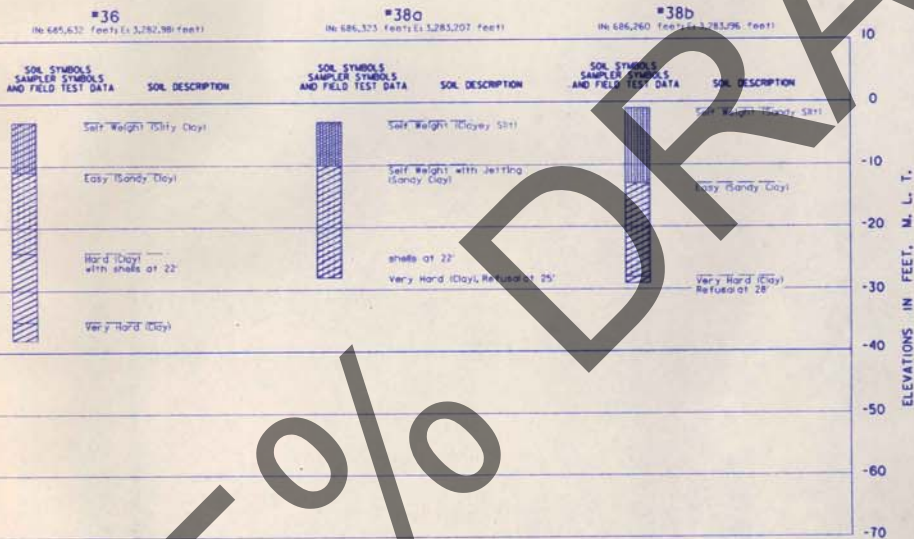
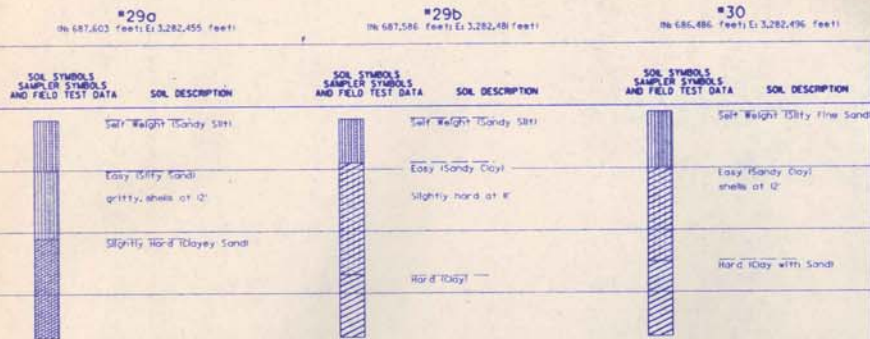
THE ORIGINAL SEALED DOCUMENTS HAVE BEEN TRANSMITTED PREVIOUSLY TO THE USACE. PRINTS ARE AVAILABLE UPON REQUEST. THIS ELECTRONIC VERSION OF THE DRAWING IS RELEASED FOR BIDDING PURPOSES ONLY, UNDER THE AUTHORITY OF LEON HRABOVSKY, P.E., #07342, AND ANTHONY G. SARTORI, P.E., #08351. DATE: OCT. 20, 1999.

NOTES:

SHELBY TUBE SAMPLE
SPLIT SPOON SAMPLE WITH
BLOW COUNTS PER SIX INCHES

LEGEND:





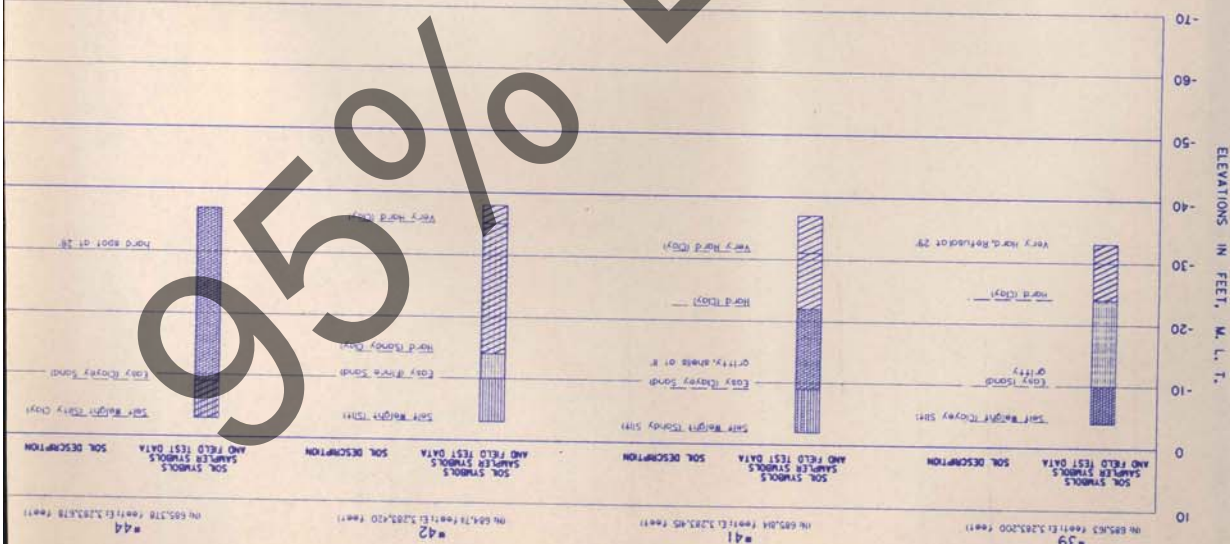
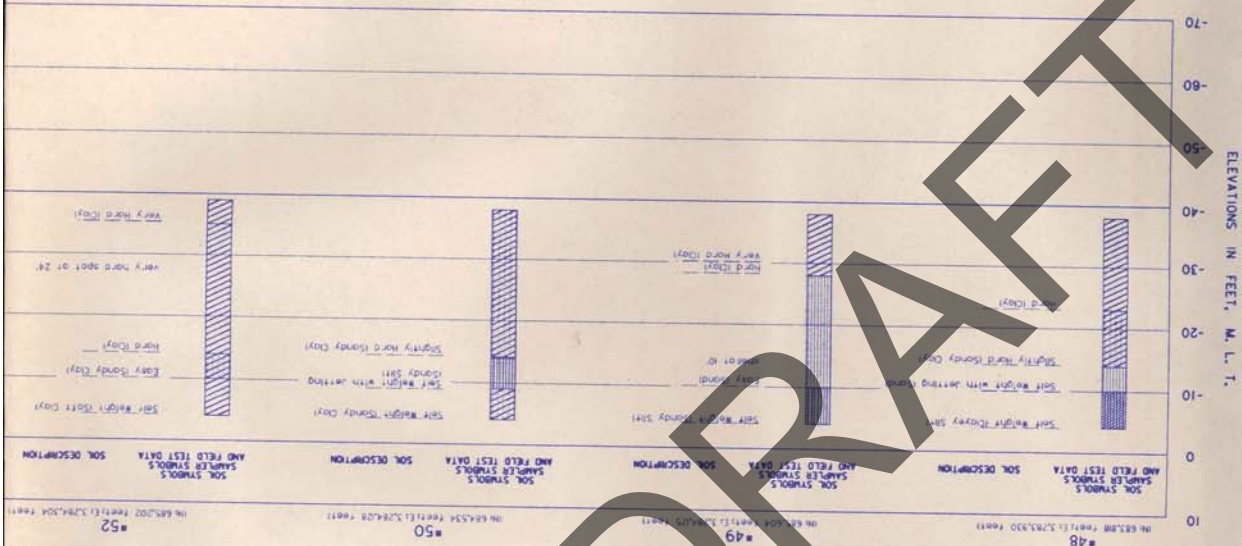
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 Turner Construction Group, Inc. A SOUTHWEST ASSOCIATE		OFFICE OF THE DISTRICT ENGINEER U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS	
HOUSTON-GALVESTON NAVIGATION CHANNELS, TEXAS 45-FOOT PROJECT DREDGING UPPER BAY ATKINSON ISLAND MARSH LOGS OF PROBINGS 1 OF 3			
DRAWN BY: BF DESIGNED BY: GEC CHECKED BY: TS SUBMITTED BY: TS ARCHITECT - ENGINEER	APPROVED BY: DATE: NOVEMBER 1999		
PREPARED UNDER THE DIRECTION OF Nicolas J. Buehler, Lt. Col., C.E., District Engineer		DRAWING NUMBER F-9 SHEET 32 OF 36 FILE NO. HSC 401-475	

1. SEE DRAWING F-4 FOR BORING LOCATION.
2. THE BORING INFORMATION ON THIS DRAWING IS PROVIDED FOR INFORMATION PURPOSES.
LOGS OF BORINGS ARE ATTACHED TO APPENDIX OF SPECIFICATION.

SHELBY TUBE SAMPLE
SPLIT SPOON SAMPLE WITH
BLOW COUNTS PER SIX INCHES

LEGEND



#45
(N 684,250 Feet; E 3,283,667 Feet)

#46
(N 686,095 Feet; E 3,283,858 Feet)

#47
(N 684,998 Feet; E 3,283,847 Feet)

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL DESCRIPTION

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL DESCRIPTION

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL DESCRIPTION



Soft Weight (Clayey Silt)
Easy (Sandy Clay)
Slightly Hard (Clay)



Soft Weight (Sandy Silt)
Easy (Sand)
Slightly Hard (Sandy Clay)
Hard (Clay)
Refusal at 32'



Soft Weight (Silty Clay)
Self Weight with Jetting (Clayey Sand)
Slightly Hard (Sandy Clay)
Very Hard (Clay)
Refusal at 20'

ELEVATIONS IN FEET, M. L. T.

#53
(N 684,074 Feet; E 3,284,349 Feet)

#55
(N 684,736 Feet; E 3,284,573 Feet)

#56
(N 683,628 Feet; E 3,284,517 Feet)

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL DESCRIPTION

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL DESCRIPTION

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL DESCRIPTION



Soft Weight (Silty Clay)
Easy (Sandy Clay)
with shale at 1'
Hard (Clay)
Refusal at 34'



Soft Weight (Clayey Sand)
Easy (Sandy Clay)
with shale at 10'
Hard (Clay)
Refusal at 32'



Soft Weight (Silt with Clay)
Easy (Silty Clay)
Slightly Hard (Sandy Clay)
Hard (Clay)
Very Hard (Clay)

ELEVATIONS IN FEET, M. L. T.

95% DRAFT

REVISION	DATE	DESCRIPTION	BY
 TURNER COLLIER & BEADEN INC. 6000 WEST 19TH AVE HOUSTON, TEXAS 77058-0001		OFFICE OF THE DISTRICT ENGINEER U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS	
HOUSTON-GALVESTON NAVIGATION CHANNELS, TEXAS 45-FOOT PROJECT DREDGING UPPER BAY ATKINSON ISLAND MARSH LOGS OF PROBINGS 2 OF 3			
DESIGNED BY *	BF		
DRAWN BY *	GEC		
CHECKED BY *	TS		
SUBMITTED BY *			
APPROVED BY *			
DIST. DESIGN REVIEW (* AS REQUIRED BY ENGINEER CIRCULAR NO. 1050-1-80)		DESIGNED AS SHOWN SPECIAL NOTES F-10	DATE NOVEMBER 1999
Prepared under the direction of Nicolas J. Buechler, Lt. C., C.E., District Engineer		SHEET 33 OF 36 FILE NO. HSC 401-475	

THE ORIGINAL SEALED DOCUMENTS HAVE BEEN TRANSMITTED PREVIOUSLY TO THE USER. PRINTS ARE AVAILABLE UPON REQUEST. THIS ELECTRONIC VERSION OF THE DRAWING IS RELEASED FOR BIDDING PURPOSES ONLY. UNDER THE AUTHORITY OF LEON HRABOVSKY, P.E., #67342, AND ANTHONY G. SARTORI, P.E., #58351, DATE: OCT. 20, 1999.

#64
(N 682,963 feet) E: 3,285,503 feet

#65
(N 682,544 feet) E: 3,285,729 feet

#66
(N 682,226 feet) E: 3,285,953 feet

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL DESCRIPTION

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL DESCRIPTION

SOIL SYMBOLS
SAMPLER SYMBOLS
AND FIELD TEST DATA

SOIL DESCRIPTION



Self Weight (Sand)
Easy (Sandy Clay)
Slightly Hard (Clay)
with shells
Very Hard (Clay)



Self Weight (Sand)
Self Weight with Jetting
(Sandy Clay)
Easy (Sandy Clay)
Very Hard (Clay)
Refusal at 33'



Self Weight (Silt with Clay)
Easy (Silty Clay)
with shell at 10'
Slightly Hard (Silty Clay)
Very Hard (Clay),
Refusal at 31'

ELEVATIONS IN FEET, M. L. T.
10
0
-10
-20
-30
-40
-50
-60
-70

95% DRAFT

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REVISION		DATE	DESCRIPTION	BY
Turner Collier & Braden Inc. BAGANIAN & BRADY ASSOCIATES		OFFICE OF THE DISTRICT ENGINEER U.S. ARMY ENGINEER DISTRICT, GALVESTON CORPS OF ENGINEERS GALVESTON, TEXAS		
DRAWN BY: * BF		HOUSTON-GALVESTON NAVIGATION CHANNELS, TEXAS 45-FOOT PROJECT DREDGING UPPER BAY ATKINSON ISLAND MARSH LOGS OF PROBINGS 3 OF 3		
DESIGNED BY: * CEC				
CHECKED BY: * TS				
SUBMITTED BY: *				
ARCHITECT - ENGINEER APPROVED: *		APPROVED: *		DATE: NOVEMBER 1999
CHIEF, DESIGN BRANCH		CHIEF, ENGINEERING DIVISION		SCALE: AS SHOWN
* AS REQUIRED BY ENGINEER DISCUSS IN NO. 100-1-100-1		PREPARED UNDER THE DIRECTION OF Nicolas J. Buechler, Lt. C., C.E., District Engineer		SHEET 34 OF 36 FILE NO. HSC 401-475