

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-O-02-18M	2018	32	33

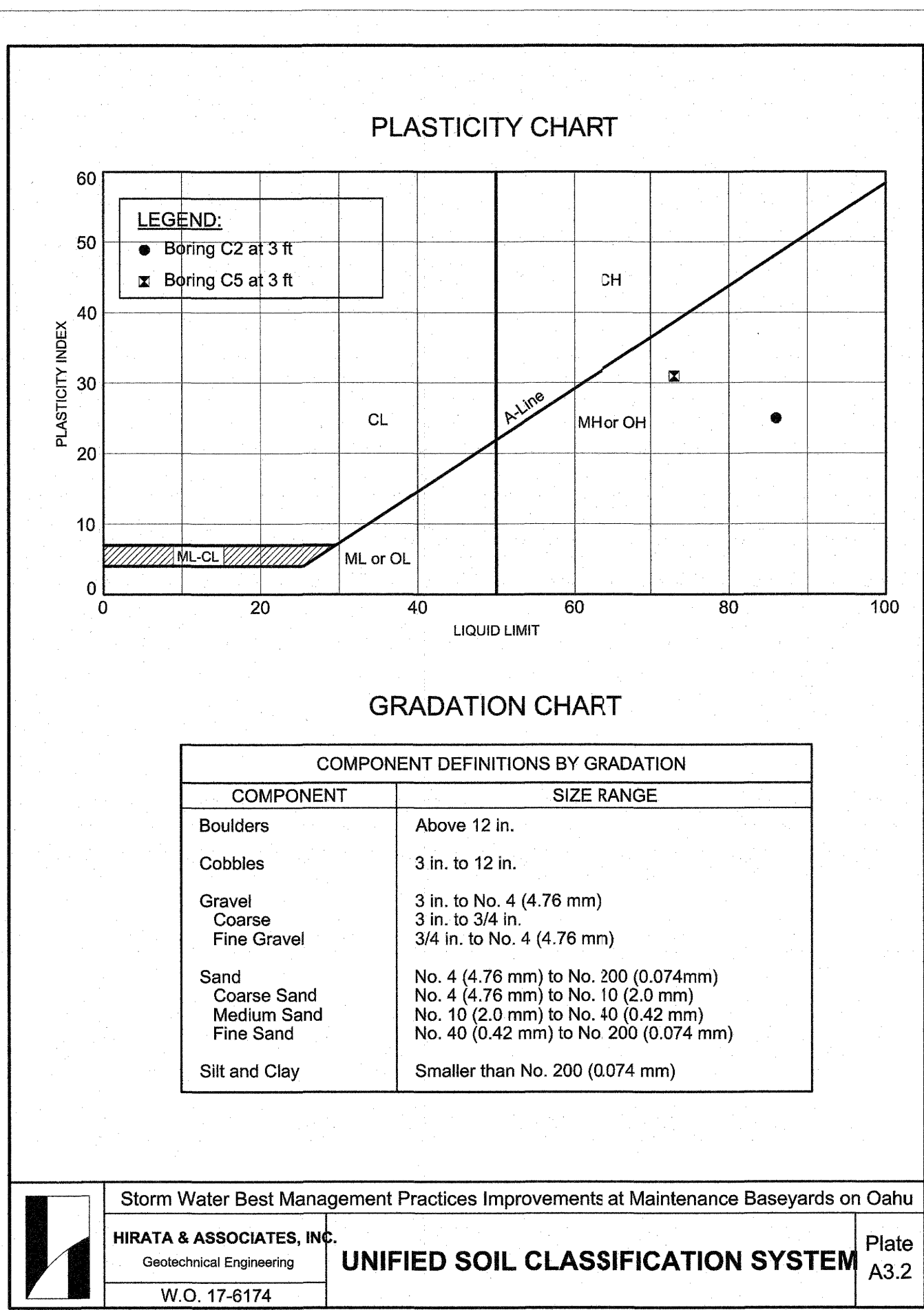
MAJOR DIVISIONS		GROUP DIVISIONS	TYPICAL NAMES	
COARSE GRAINED SOILS (More than 50% of the material is larger than the No. 200 sieve size.)	GRAVELS (More than 50% of coarse fraction is larger than the No. 4 sieve size.)	CLEAN GRAVELS (Little or no fines.)	GW Well graded gravels, gravel-sand mixtures, little or no fines.	
		GRAVELS WITH FINES (Appreciable amt. of fines.)	GP Poorly graded gravels or gravel-sand mixtures, little or no fines.	
			GM Silty gravels, gravel-sand-silt mixtures.	
			GC Clayey gravels, gravel-sand-clay mixtures.	
	SANDS (More than 50% of coarse fraction is smaller than the No. 4 sieve size.)	CLEAN SANDS (Little or no fines.)	SW Well graded sands, gravelly sands, little or no fines.	
			SP Poorly graded sands or gravelly sands, little or no fines.	
			SM Silty sands, sand-silt mixtures.	
			SC Clayey sands, sand-clay mixtures.	
	FINE GRAINED SOILS (More than 50% of the material is smaller than the No. 200 sieve size.)	SILTS AND CLAYS (Liquid limit LESS than 50.)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of high plasticity, lean clays.
OL			Organic silts and organic silty clays of low plasticity.	
MH			Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.	
SILTS AND CLAYS (Liquid limit GREATER than 50.)		CH	Inorganic clays of high plasticity, fat clays.	
		OH	Organic clays of medium to high plasticity, organic silts.	
		PT	Peat and other highly organic silts.	
HIGHLY ORGANIC SOILS				
FORMATIONS			FRESH TO MODERATELY WEATHERED BASALT VOLCANIC TUFF / HIGHLY TO COMPLETELY WEATHERED BASALT CCRAL	

SAMPLE DEFINITION		
<input checked="" type="checkbox"/> 2" O.D. Standard Split Spoon Sampler	<input checked="" type="checkbox"/> Shelby Tube	RQD: Rock Quality Designation
<input type="checkbox"/> 3" O.D. Split Tube Sampler	<input type="checkbox"/> Core Sample	<input type="checkbox"/> Water Table

Hirata & Associates, Inc.
Geotechnical Engineering
W.O. 17-6174

BORING LOG LEGEND

Plate A3.1



Boring No. B1

BORING LOG

PROJECT NAME Storm Water Best Management Practices Improvements at Maintenance Baseyards on Oahu
WORK ORDER NO. 17-6174 DRIVING WT. 140 lb. START DATE 12/28/17
SURFACE ELEV. 7.5 ± DROP 30 in. END DATE 12/28/17

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			10/No Penetration			5			CORAL - Tan, hard. Covered by 4.5 inches of AC over 5.5 inches of base material and 2 inches of silty sand.
			10/No Penetration	54	98	19			Silty Coralline GRAVEL (GM) - Tan, moist, dense, with sand. (Coral Rubblestone)
				58	101	19			Groundwater encountered at 6.8 feet on 12/28/17 at 9:05 am.
						10.5			End boring at 10.5 feet.

Hirata & Associates, Inc.
Geotechnical Engineering
W.O. 17-6174

BORING LOG

Plate A4.5

Boring No. B2

BORING LOG

PROJECT NAME Storm Water Best Management Practices Improvements at Maintenance Baseyards on Oahu
WORK ORDER NO. 17-6174 DRIVING WT. 140 lb. START DATE 12/28/17
SURFACE ELEV. 7.7 ± DROP 30 in. END DATE 12/28/17

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			33/6" 10/No Penetration	70	9	5			CORAL - Tan, slightly moist, hard, with coralline sand pockets. Covered by 4 inches of AC over 5 inches of base material and 3 inches of silty sand.
			10/No Penetration	101	91	19			Silty Coralline GRAVEL (GM) - Tan, medium dense to loose, with sand. Groundwater encountered at 7 feet on 12/28/17 at 10:15 am.
				10	94	14			
				7	76	38			End boring at 14.5 feet.

Hirata & Associates, Inc.
Geotechnical Engineering
W.O. 17-6174

BORING LOG

Plate A4.6

Boring No. B3

BORING LOG

PROJECT NAME Storm Water Best Management Practices Improvements at Maintenance Baseyards on Oahu
WORK ORDER NO. 17-6174 DRIVING WT. 140 lb. START DATE 12/28/17
SURFACE ELEV. 8 ± DROP 30 in. END DATE 12/28/17

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			61	118	11	5			Silty SAND (SM) - Mottled grayish brown, slightly moist, dense, with gravel. (Fill) Covered by 4 inches of AC over 5 inches of base material and 3 inches of silty sand.
			10/No Penetration	38/6" 85/6"	95	19			CORAL - Tan, slightly moist, dense to hard, with silty sand pocket.
				11	85	28			Silty Coralline GRAVEL (GM) - Tan, medium dense to loose, with sand. (Coral Rubblestone) Groundwater encountered at 7.1 feet on 12/28/17 at 11:15 am.
						10.5			End boring at 10.5 feet.

Hirata & Associates, Inc.
Geotechnical Engineering
W.O. 17-6174

BORING LOG

Plate A4.7

Boring No. C1

BORING LOG

PROJECT NAME Storm Water Best Management Practices Improvements at Maintenance Baseyards on Oahu
WORK ORDER NO. 17-6174 DRIVING WT. 140 lb. START DATE 1/2/18
SURFACE ELEV. 206 ± DROP 30 in. END DATE 1/2/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			22	59	67	5			Clayey SILT (MH) - Mottled brown, moist, medium stiff to stiff, with weathered rock fragments. Covered by 2 inches of AC over 12 inches of base and subbase material.
			28	63	56	5			
						5.5			End boring at 5.5 feet.
						10			Neither groundwater nor seepage water encountered.

Hirata & Associates, Inc.
Geotechnical Engineering
W.O. 17-6174

BORING LOG

Plate A4.8

Note:
Boring log data included for information only.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
QUANTITIES BY	DESIGNED BY	
CHECKED BY		

3/20/2018 8:02:36 AM

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

STORM WATER BEST MANAGEMENT PRACTICES
IMPROVEMENTS AT MAINTENANCE BASEYARDS ON OAHU

Project No. HWY-O-02-18M

Scale: None Date: March 2018

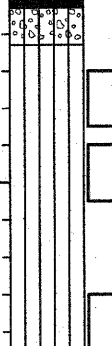
SHEET No. EC-22 OF 23 SHEETS

32

 **Hirata & Associates, Inc.**
GEOTECHNICAL ENGINEERING

BORING LOG

PROJECT NAME Storm Water Best Management Practices Improvements at Maintenance Baseyards on Oahu
 WORK ORDER NO. 17-6174 DRIVING WT. 140 lb. START DATE 1/3/18
 SURFACE ELEV. 200 ± DROP 30 in. END DATE 1/3/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	ROD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			31	74	43	0			Clayey SILT (MH) - Mottled brown, moist, stiff. Covered by 3.5 inches of AC over 12 inches of base and subbase material.
			36	64	54	5			
			30	68	55	10			
						15			
						20			
						25			
						30			
						35			
						40			
						45			
						50			
						55			
						60			
						65			
						70			
						75			
						80			
						85			
						90			
						95			
						100			


Hirata & Associates, Inc.
 GEOTECHNICAL ENGINEERING

Boring No.
C7

BORING LOG

PROJECT NAME Storm Water Best Management Practices Improvements at Maintenance Baseyards on Oahu
 WORK ORDER NO. 17-6174 DRIVING WT. 140 lb. START DATE 1/2/18
 SURFACE ELEV. 197 ± DROP 30 in. END DATE 1/2/18

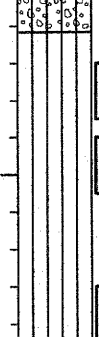



REMARKS SAMPLING	CORE RECOVERY (%)	ROD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			64	95	23	0			Clayey SILT (MH) - Brown, moist, stiff, with weathered rock fragments. Covered by 2.5 inches of AC over 11.5 inches of base and subbase material.
			40	80	32	5			
			24	66	52	10			End boring at 9.5 feet. Neither groundwater nor seepage water encountered.
						15			
						20			
						25			
						30			
						35			

Plate A4.14



4/30/18

EXP. DATE

[Signature]

This work was prepared by
me or under my supervisor

BORING LOGS

STORM WATER BEST MANAGEMENT PRACTICES
IMPROVEMENTS AT MAINTENANCE BASEYARDS ON OAHU
Project No. HWY-O-02-18M
Scale: None Date: March 2018

SHEET No. *EC-23* OF *23* SHEETS