

Hirata & Associates, Inc.

GEOTECHNICAL ENGINEERING

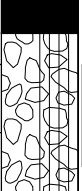
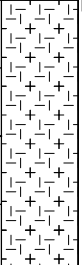
Boring No.
B1

BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/21/18

SURFACE ELEV. 325 ±* DROP 30 in. END DATE 9/21/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			72	119	7			☐	GRAVEL (GP-GM) - Gray, moist, dense, with silt and sand. Covered by 6.5 inches of AC.
		10/No Penetration				5		☐	BASALT (WM-WS) - Gray, hard, moderately to slightly weathered.
						10			End boring at 7.0 feet.
						15			Neither groundwater nor seepage water encountered.
						20			* Elevation based on Topographic Survey provided by SSFM International, Inc. received on September 2, 2018.



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GEOTECHNICAL ENGINEERING

Boring No.

B2

BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/18/18

SURFACE ELEV. 329 ± DROP 30 in. END DATE 9/18/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
		10/No Penetration						☐	BASALT (WM-WS) - Gray, hard, moderately to slightly weathered. Covered by 7 inches of AC.
						5			End boring at 4.0 feet.
						10			Neither groundwater nor seepage water encountered.
						15			
						20			

Plate A4.2



Hirata & Associates, Inc.

GEOTECHNICAL ENGINEERING

Boring No.
B3

BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/20/18

SURFACE ELEV. 328 ± DROP 30 in. END DATE 9/20/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
									GRAVEL (GP-GM) - Gray, moist, dense, with silt and sand. Covered by 7.5 inches of AC.
		10/No Penetration							BASALT (WM-WS) - Gray, hard, moderately to slightly weathered.
						5			End boring at 4.5 feet.
						10			Neither groundwater nor seepage water encountered.
						15			
						20			

Plate A4.3

BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/18/18

SURFACE ELEV. 338 ± DROP 30 in. END DATE 9/18/18

[illegible]



BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/20/18

SURFACE ELEV. 347 ± DROP 30 in. END DATE 9/20/18

[illegible]



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GEOTECHNICAL ENGINEERING

Boring No.
B6

BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/5/18

SURFACE ELEV. 345 ± DROP 30 in. END DATE 9/5/18

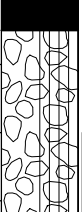
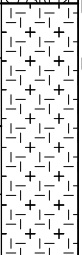
REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			87/10"	99	8			☐	GRAVEL (GP-GM) - Gray, moist, dense, with silt and sand. Covered by 6 inches of AC.
			10/No Penetration			5		☐	BASALT (WM-WS) - Gray, hard, moderately to slightly weathered.
						10			End boring at 7.0 feet.
						15			Neither groundwater nor seepage water encountered.
						20			

Plate A4.6



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GEOTECHNICAL ENGINEERING

Boring No.
B8

BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213

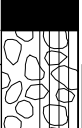
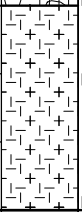
DRIVING WT. 140 lb.

START DATE 9/6/18

SURFACE ELEV. 355 ±

DROP 30 in.

END DATE 9/6/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			57/6"	106	8			☐	GRAVEL (GP-GM) - Gray, moist, dense, with silt and sand. Covered by 6 inches of AC.
			10/No Penetration					☐	BASALT (WM-WS) - Gray, hard, moderately to slightly weathered.
			10/No Penetration			5		☐	End boring at 5.0 feet.
									Neither groundwater nor seepage water encountered.
						10			
						15			
						20			



BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/18/18

SURFACE ELEV. 387 ± DROP 30 in. END DATE 9/18/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			69	116	11				GRAVEL (GW) - Gray, moist, dense, with sand. Covered by 8.5 inches of AC.
			70/9"	77	26				BASALT (WM-WS) - Gray, hard, moderately to slightly weathered.
		10/No Penetration				5			End boring at 5.0 feet.
						10			Neither groundwater nor seepage water encountered.
						15			
						20			



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GEOTECHNICAL ENGINEERING

Boring No.
B11

BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213

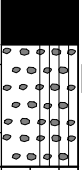
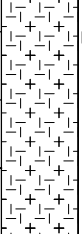
DRIVING WT. 140 lb.

START DATE 9/7/18

SURFACE ELEV. 406 ±

DROP 30 in.

END DATE 9/7/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			10/No Penetration					☐	GRAVEL (GW-GM) - Gray, moist, dense, with silt and sand. Covered by 8.5 inches of AC.
			10/No Penetration			5		☐	BASALT (WM-WS) - Gray, hard, moderately to slightly weathered.
						10			End boring at 6.0 feet.
						15			Neither groundwater nor seepage water encountered.
						20			



BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/18/18

SURFACE ELEV. 421 ± DROP 30 in. END DATE 9/18/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
								☐	GRAVEL (GW-GM) - Gray, moist, dense, with silt and sand. Covered by 8 inches of AC.
			10/No Penetration					☐	BASALT (WM-WS) - Gray, hard, moderately to slightly weathered.
			10/No Penetration			5			End boring at 4.5 feet.
						10			Neither groundwater nor seepage water encountered.
						15			
						20			



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GEOTECHNICAL ENGINEERING

Boring No.
B13

BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/20/18

SURFACE ELEV. 436 ± DROP 30 in. END DATE 9/20/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
									GRAVEL (GW-GM) - Gray, moist, dense, with silt and sand. Covered by 9 inches of AC.
		10/No Penetration							BASALT (WM-WS) - Gray, hard, moderately to slightly weathered.
						5			End boring at 4.5 feet.
						10			Neither groundwater nor seepage water encountered.
						15			
						20			

BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/19/18

SURFACE ELEV. 434 ± DROP 30 in. END DATE 9/19/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			50/5"	90	8				GRAVEL (GW-GM) - Gray, moist, dense, with silt and sand. Covered by 9 inches of AC.
			10/No Penetration						BASALT (WM-WS) - Gray, hard, moderately to slightly weathered.
						5			End boring at 4.5 feet. Neither groundwater nor seepage water encountered.
						10			
						15			
						20			

Plate A4.14



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GEOTECHNICAL ENGINEERING

Boring No.
B15

BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213

DRIVING WT. 140 lb.

START DATE 9/20/18

SURFACE ELEV. 432 ±

DROP 30 in.

END DATE 9/20/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			50/4"	95	13				GRAVEL (GW-GM) - Brownish gray, moist, dense, with silt and sand. Covered by 9 inches of AC.
									BASALT (WM-WS) - Gray, hard, moderately to slightly weathered.
						5			End boring at 4.5 feet.
						10			Neither groundwater nor seepage water encountered.
						15			
						20			

BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/19/18

SURFACE ELEV. 443 ± DROP 30 in. END DATE 9/19/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			72	119	12				GRAVEL (GP-GM) - Gray, moist, dense, with silt and sand. Covered by 9 inches of AC.
									BASALT (WM-WS) - Gray, hard, moderately to slightly weathered.
						5			End boring at 4.5 feet.
						10			Neither groundwater nor seepage water encountered.
						15			
						20			



BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/19/18

SURFACE ELEV. 458 ± DROP 30 in. END DATE 9/19/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
		10/No Penetration						☐	BASALT (WM-WS) - Gray, hard, moderately to slightly weathered. Covered by 8.5 inches of AC over 3.5 inches of base material.
						5			End boring at 4.0 feet. Neither groundwater nor seepage water encountered.



BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213

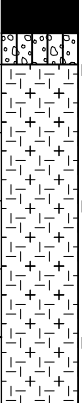
DRIVING WT. 140 lb.

START DATE 9/6/18

SURFACE ELEV. 475 ±

DROP 30 in.

END DATE 9/6/18

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		☐	BASALT (WM-WS) - Gray, hard, moderately to slightly weathered. Covered by 6.5 inches of AC over 5.5 inches of base material.
		10/No Penetration						☐	
		10/No Penetration						☐	
						10			End boring at 6.0 feet.
						15			Neither groundwater nor seepage water encountered.
						20			



BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213

DRIVING WT. 140 lb.

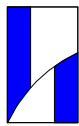
START DATE 9/19/18

SURFACE ELEV. 489 ±

DROP 30 in.

END DATE 9/19/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
									GRAVEL (GP-GM) - Gray, moist, dense, with silt and sand. Covered by 9 inches of AC.
		10/No Penetration							BASALT (WM-WS) - Gray, hard, moderately to slightly weathered.
						5			End boring at 4.0 feet.
						10			Neither groundwater nor seepage water encountered.
						15			
						20			



Hirata & Associates, Inc.

GEOTECHNICAL ENGINEERING

Boring No.
B20

BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 9/19/18

SURFACE ELEV. 497 ± DROP 30 in. END DATE 9/19/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
		10/No Penetration						☐	BASALT (WM-WS) - Gray, hard, moderately to slightly weathered. Covered by 8.5 inches of AC over 5 inches of base material.
		10/No Penetration				5		☐	End boring at 4.0 feet.
						10			Neither groundwater nor seepage water encountered.
						15			
						20			

Plate A4.20



BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 10/1/18

SURFACE ELEV. 320 ± DROP 30 in. END DATE 10/1/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
									Silty GRAVEL (GM) - Grayish brown, moist, dense.
Begin NX coring at 1 foot.	100	81				5			BASALT (WM-WS) - Gray, hard, vesicular, moderately to slightly weathered.
	87	62				10			
	97	57				15			
									End boring at 15.5 feet.
									Neither groundwater nor seepage water encountered.
						20			



BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 10/2/18

SURFACE ELEV. 334 ± DROP 30 in. END DATE 10/2/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
Begin NX coring at 0.5 feet.	98	98				5			BASALT (WM-WS) - Gray, hard, vesicular, moderately to slightly weathered. Covered by 6 inches of grayish brown silty gravel.
	100	90				10			
	80	73				15			
									End boring at 15.5 feet.
									Neither groundwater nor seepage water encountered.
						20			



BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213 DRIVING WT. 140 lb. START DATE 10/3/18

SURFACE ELEV. 356 ± DROP 30 in. END DATE 10/3/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
									Silty GRAVEL (GM) - Gray, moist, dense.
Begin NX coring at 1.5 feet.	98	80				5			BASALT (WM-WS) - Gray, hard, vesicular, moderately to slightly weathered.
	100	67				10			
	100	73				15			
						20			End boring at 16.0 feet.
									Neither groundwater nor seepage water encountered.



BORING LOG

PROJECT NAME Keaau-Pahoa Road Improvements - Route 130

WORK ORDER NO. 18-6213

DRIVING WT. 140 lb.

START DATE 10/4/18

SURFACE ELEV. 325 ±

DROP 30 in.

END DATE 10/4/18

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
									Silty GRAVEL (GM) - Grayish brown, moist, dense.
Begin NX coring at 3 feet.	88	47	10/No Penetration			5			BASALT (WM-WS) - Gray, hard, vesicular, moderately to slightly weathered.
	100	47				10			
						15			End boring at 13.0 feet.
						20			Neither groundwater nor seepage water encountered.