ATTACHMENT 1

BORING LOGS

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)

BORING NUMBER	DATE:
RC-18-001	07-10-2018

DIST.	CO.	RTE.	P.M. (K.P.)	BRIDGE #
01	DN	101	13.5	

LOCATION (STA/OFFSET or NORTHING/EASTING)
41.615649°, -124.106458°

BRIDGE NAME
Last Chance Grade Bypass

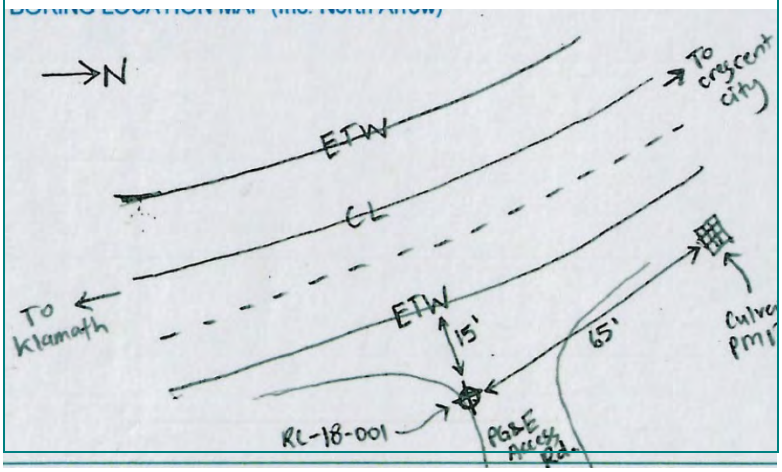
EFIS NUMBER
0115000099

TOP HOLE ELEVATION
341 feet

CREW	EQUIPTMENT	CHC NUMBER
D. Douglas/R. Gingell/M. Brown	B-80 Mobile Drill	7006361

HAMMER ID# 1.61 N_{60} Adjust

SITE LOCATION MAP (Inc. North Arrow & Benchmark Datum)



LOGGER
L.W.P

GWS	DATE
13.7 feet bgs	07-24-2018
GWS	DATE
16.6 feet bgs	08-28-2018
CASING SIZE	CASING DEPTH
1.75" Solid	To 35' bgs
CASING SIZE	CASING DEPTH
1.75" perf.	To 85"
SLURRY TYPE	Water

SURFACE CONDITIONS (Ground Slope, Water, Vegetation, etc)
Gravelly Route 101 Shoulder Adjacent to Parks Access Road

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc.) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION: Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Dry core with 4.5" finger bit to 5' then set-up					0		GRAVELLY SILT (ML), stiff, very dark brown, moist, mostly low
for mud-rotary					1		Plasticity fines, little fine to coarse gravel, trace coarse sand (FILL)
					2		
							Below 2' becomes soft
					3		
					4		
					5		
Standard Penetration Test 5-6.5'		2					
	S01	2			6		SILTY SAND with GRAVEL (SM), loose, yellowish brown, moist,
		2	4				mostly fine to coarse sand, some low plasticity fines, little fine to
					7		coarse gravel, (Colluvium).
					8		
Punch Core 6.5-10'							
					9		
					10		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	10-9-2018	01	HUM	101	88.3
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-001					
LOCATION (STA/OFFSET or NORTHING/EASTING)		TOP HOLE ELEVATION		BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Standard Penetration Test 10-10.5’	S02	70/6"					
No Recovery					11		SEDIMENTARY ROCK (GREYWACKE), fine grained, very thickly
							bedded, very dark gray, fresh, moderately hard, slightly fractured
Very Hard Drilling, Crew Switch to Diamond					12		
Core							
Diamond Core Run 11.5-15’					13		
54% Recovery							
21.4% RQD					14		
					15		
Standard Penetration Test 15-16.5’	S03	1					METAMORPHIC ROCK (SHALE MELANGE), fine grained,
		2			16		massive, black, decomposed to GRAVELLY LEAN CLAY (CL),
		2	4				mostly medium plasticity fines, little fine to coarse gravel, trace fine
Switch Back to Punch Core					17		to coarse sand
Punch Core 16.5-20’							
					18		
					19		
					20		
Standard Penetration Test 20-21.5’		6					
	S04	5			21		
		7	12				
					22		
					23		
Punch Core 21.5-25’							
					24		
					25		
Standard Penetration Test 25-26.5’		11					
	S05	15			26		
		18	33				
					27		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	10-9-2018	01	HUM	101	88.3
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-001					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION NUMBER	BRIDGE #	EFIS

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Punch Core 25.5-30'							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
					28		massive, black, decomposed to GRAVELLY LEAN CLAY (CL),
							mostly medium plasticity fines, little fine to coarse gravel, trace
					29		fine to coarse sand
					30		
Standard Penetration Test 30-31.5'		5					
	S06	7			31		
		8	15				
					32		
Punch Core 25.5-30'							
No Recovery					33		
					34		
					35		
Standard Penetration Test 35-36.5'		20					
	S07	27			36		
		18	45				METAMORPHIC ROCK (SHALE MELANGE), fine grained,
					37		massive, black, decomposed to SILTY GRAVEL with SAND (GM),
Punch Core 25.5-30'							mostly fine to coarse gravel, some medium to coarse sand, little
					38		low plasticity fines
					39		
					40		
Standard Penetration Test 40-41.5'		19					
	S08	21			41		METAMORPHIC ROCK (SHALE MELANGE), fine grained,
		27	48				massive, black, intensely weathered, soft, very intensely fractured,
Punch Core 41.5-45'					42		pervasively sheared and foliated shale matrix containing some
							coarse sand to bounder sized porphyroclasts, often rounded,
					43		sometimes polished and slicked.
					44		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	10-9-2018	01	HUM	101	88.3
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-001					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	FIELD TESTING: BLOWS PER 6"	FIELD TESTING: SPT (N)	DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
						METAMORPHIC ROCK (SHALE MELANGE), fine grained,
				45		massive, black, intensely weathered, soft, very intensely fractured,
Standard Penetration Test 45-46.5'		12				pervasively sheared and foliated shale matrix containing some
	S09	24		46		coarse sand to bounder sized porphyroclasts, often rounded,
		36	60			sometimes polished and slicked.
				47		
Punch Core 46.5-50'						
				48		
				49		
				50		
Standard Penetration Test 50-51.5'		16				
	S10	20		51		
		22	42			
				52		
				53		
Punch Core 51.5-55'						METAMORPHIC ROCK (SHALE MELANGE), fine grained,
				54		massive, black, decomposed to SILTY GRAVEL with SAND (GM),
						mostly fine to coarse gravel, some medium to coarse sand, little
				55		low plasticity fines
		11				
Standard Penetration Test 55-56.5'	S11	15		56		
		17	32			
				57		
Punch Core 56.5-60'				58		
				59		
				60		
		14				
Standard Penetration Test 60-61.5'	S12	12		61		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	10-9-2018	01	HUM	101	88.3
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-001					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
		12	24				METAMORPHIC ROCK (SHALE MELANGE), fine grained,
					62		massive, black, decomposed to SILTY GRAVEL with SAND (GM),
							mostly fine to coarse gravel, some medium to coarse sand, little
Punch Core 61.5-65'					63		low plasticity fines
					64		
							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
					65		massive, black, intensely weathered, soft, very intensely fractured,
		11					pervasively sheared and foliated shale matrix containing some
Standard Penetration Test 65-66.5'	S13	17			66		coarse sand to bounder sized porphyroclasts, often rounded,
		20	37				sometimes polished and slicked.
					67		
Punch Core 66.5-70'					68		
					69		
					70		
		14					METAMORPHIC ROCK (SHALE MELANGE), fine grained,
Standard Penetration Test 70-71.5'	S14	22			71		massive, black, decomposed to SILTY GRAVEL with SAND (GM),
		31	53				mostly fine to coarse gravel, some medium to coarse sand, little
					72		low plasticity fines
Punch Core 71.5-75'					73		
					74		
					75		
		14					
Standard Penetration Test 75-76.5'	S15	22			76		
		24	46				
					77		
Punch Core 76.5-80'					78		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	10-9-2018	01	HUM	101	88.3
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-001					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	FIELD TESTING: BLOWS PER 6"	FIELD TESTING: SPT (N)	DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
						METAMORPHIC ROCK (SHALE MELANGE), fine grained,
				79		massive, black, decomposed to SILTY GRAVEL with SAND (GM),
						mostly fine to coarse gravel, some medium to coarse sand, little
				80		low plasticity fines
Standard Penetration Test 80-80.9'	S16	20				
		50 /5"		81		METAMORPHIC ROCK (SHALE MELANGE), fine grained,
						massive, black, intensely weathered, soft, very intensely fractured,
				82		pervasively sheared and foliated shale matrix containing some
						coarse sand to bounder sized porphyroclasts, often rounded,
Punch Core 80-85'				83		sometimes polished and slicked.
Difficult Drilling to 85'						
				84		
				85		
Standard Penetration Test 85-85.3'	S17	50 /3"				
				86		Bottom of Boring 85.25'
				87		
				88		
				89		
				90		
				91		
				92		
				93		
				94		
				95		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)

BORING NUMBER	DATE:
RC-18-003	07-18-2018

DIST.	CO.	RTE.	P.M. (K.P.)	BRIDGE #
01	DN	101	13.5 to 16.0	

LOCATION (STA/OFFSET or NORTHING/EASTING): 41.63419°, -124.10223°

BRIDGE NAME: Last Chance Grade Bypass

EFIS NUMBER: 0115000099

TOP HOLE ELEVATION: 997 feet

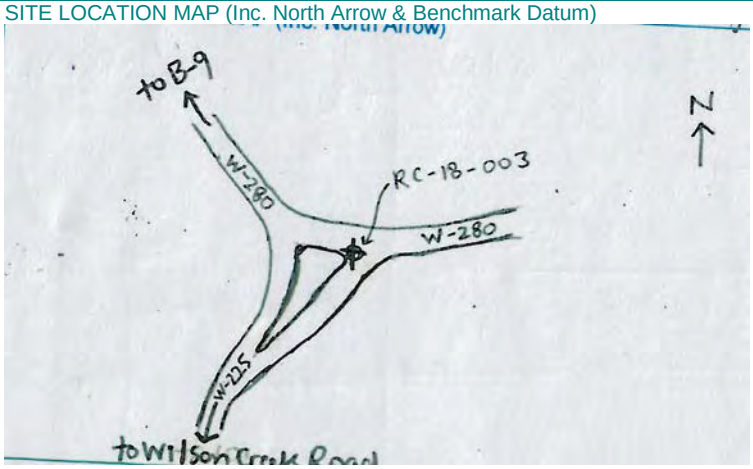
CREW: D. Douglas/R. Gingell/M. Brown

EQUIPTMENT: B-80 Mobile Drill

CHC NUMBER: 7006361

HAMMER ID# 1.61 N_{60} Adjust

SITE LOCATION MAP (Inc. North Arrow & Benchmark Datum)



LOGGER: L.Winkler

GWS	DATE
14’	07/24/18
GWS	DATE
6’	07/26/18
CASING SIZE	CASING DEPTH
1.75” Solid	0-20’ And 40-80’
CASING SIZE	CASING DEPTH
1.75” Perf.	20-40’ and 80-100’
SLURRY TYPE	Water

SURFACE CONDITIONS (Ground Slope, Water, Vegetation, etc): Flat, gravelly logging road surface, on ridge-top, and three way intersection

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc.) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6”	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION: Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Dry core with 4.5” finger bit to 5’ then set-up					0		CLAYEY GRAVEL with SAND (GC), yellowish brown, dry, mostly
for mud-rotary					1		fine gravel, some medium plasticity fines, little coarse sand,
							(FILL)
					2		
							GRAVELLY LEAN CLAY (CL), stiff, yellowish brown, dry, mostly
					3		low plasticity fines, little fine gravel, few sand
					4		
					5		
Standard Penetration Test 5-6.5’		2					
	S01	10			6		Mottled below 5.5’
		13	23				
					7		
Pocket Pen 1.5 tsf							
					8		
Punch Core 6.5-10’							
					9		
					10		METAMORPHIC ROCK (SHALE MELANGE), fine grained,

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	7-18-2018	01	HUM	101	13.5 to 16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-003					
LOCATION (STA/OFFSET or NORTHING/EASTING)		TOP HOLE ELEVATION		BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Standard Penetration Test 10-11.5'		5					massive, decomposed to SILT with GRAVEL (ML), stiff, black, moist,
	S02	6			11		mostly low plasticity fines, little fine to coarse gravel, few coarse
		9	15				sand
					12		
Pocket Pen 1.5 tsf							
Punch Core 11.5-15'					13		
					14		
					15		
Standard Penetration Test 15-15.8'		7					
	S03	14			16		
		14	28				
Pocket Pen 3.5 tsf					17		Becomes very stiff
Punch Core 15.8-20'							
No Recovery					18		
							SEDIMENTARY ROCK (GRAYWACKE), fine grained, massive,
					19		yellowish brown, intensely weathered, soft, very intensely fractured
					20		
Standard Penetration Test 20-20.7'	S04	12					
		50/ 3.5"			21		
					22		
Punch Core 21.2-25'							
					23		
					24		
							SEDIMENTARY ROCK (GRAYWACKE), fine grained, massive,
					25		dark grey, fresh, moderately hard, intensely to very intensely
Standard Penetration Test 25-25.2'		50 /2"					fractured, scattered quartz veining
	S05				26		
Switch to Diamond Core							
					27		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	7-18-2018	01	HUM	101	13.5 to 16.0
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RC-18-003					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION NUMBER	BRIDGE #	EFIS

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
							SEDIMENTARY ROCK (GRAYWACKE), fine grained, massive,
Diamond Core Run 25-30’					28		dark grey, fresh, moderately hard, intensely to very intensely
80% Recovery							fractured, scattered quartz veining
0% RQD					29		
					30		
					31		
Diamond Core Run 30-35’					32		
63% Recovery							
7% RQD					33		
					34		
					35		
					36		
Diamond Core Run 35-40’							
60% Recovery					37		
0% RQD							SEDIMENTARY ROCK (SILTSTONE), fine grained, massive,
					38		black, fresh, grading from very soft to moderately soft, very
							Intensely fractured
					39		
					40		
							SEDIMENTARY ROCK (GRAYWACKE), fine grained, massive,
					41		dark grey, fresh, moderately hard, intensely to very intensely
							fractured, scattered quartz veining
Diamond Core Run 40-45’					42		
37% Recovery							
0% RQD					43		
					44		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	7-18-2018	01	HUM	101	13.5 to 16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-003					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	FIELD TESTING: BLOWS PER 6"	FIELD TESTING: SPT (N)	DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
				45		
						SEDIMENTARY ROCK (SILTSTONE), fine grained, massive,
Diamond Core Run 45-48'				46		black, fresh, moderately soft, intensely to very intensely fractured
31% Recovery						
0% RQD				47		
				48		
Diamond Core Run 48-50'						
42% Recovery				49		
0% RQD						
				50		
Diamond Core Run 50-55'				51		Moderately hard
42% Recovery						
0% RQD				52		
				53		
				54		
				55		
Diamond Core Run 55-57.5'				56		SEDIMENTARY ROCK (GRAYWACKE), fine grained, massive,
73% Recovery						dark grey, fresh, moderately hard, intensely fractured, scattered
27% RQD				57		quartz veining
				58		
Diamond Core Run 55-57.5'						SEDIMENTARY ROCK (SILTSTONE), fine grained, massive,
100% Recovery				59		black, fresh, moderately hard, intensely to very intensely fractured
0% RQD						
				60		
				61		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	7-18-2018	01	HUM	101	13.5 to 16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-003					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Diamond Core Run 60-62.5’							
97% Recovery					62		
0% RQD							SEDIMENTARY ROCK (GRAYWACKE), fine grained, massive,
					63		dark grey, fresh, moderately hard, moderately to intensely
Diamond Core Run 62.5-65’							fractured, scattered quartz veining
100% Recovery					64		
27% RQD							
					65		SEDIMENTARY ROCK (SHALE) fine grained, massive, black,
							Fresh, moderately hard, intensely fractured, pervasive foliation
Diamond Core Run 65-67.5’					66		20 degree angle.
93% Recovery							
0% RQD					67		
					68		
Diamond Core Run 67.5’-70							
33% Recovery					69		
0% RQD							
					70		
Diamond Core Run 70-72.5’					71		
33% Recovery							
17% RQD					72		
					73		
Diamond Core Run 72.5’-75							
13% Recovery					74		
0% RQD							
					75		
Diamond Core Run 75-80’					76		
No Recovery							
0% RQD					77		
					78		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	7-18-2018	01	HUM	101	13.5 to 16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-003					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
							SEDIMENTARY ROCK (SHALE) fine grained, massive, black,
					79		Fresh, moderately hard, intensely fractured, pervasive foliation
							20 degree angle.
					80		
Diamond Core Run 80-82.5'					81		
27% Recovery							
0% RQD					82		
					83		
Diamond Core Run 82.5'-85							
47% Recovery					84		
0% RQD							
					85		
							SEDIMENTARY ROCK (GREYWACKE), medium grained, very
Diamond Core Run 85-87.5'					86		thickly bedded, dark bluish grey, fresh, hard, intensely fractured,
40% Recovery							numerous offset healed fractured with interstitial shale seams.
0% RQD					87		
					88		
Diamond Core Run 87.5'-90							
67% Recovery					89		
23% RQD							SEDIMENTARY ROCK (SHALE), fine grained, very thickly bedded
					90		black, fresh, moderately hard, very intensely fractured, pervasive
							foliation cleavage approximately 10 degrees, scattered thin
Diamond Core Run 90-92.5'					91		sandstone interbeds often appearing as boudinage
80% Recovery							
0% RQD					92		
					93		
Diamond Core Run 92.5'-95							
10% Recovery					94		
0% RQD							
					95		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	7-18-2018	01	HUM	101	13.5 to 16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-003					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Diamond Core Run 95-97.5'					96		
67% Recovery							
0% RQD					97		METAMORPHIC ROCK (SHALE MELANGE), fine grained, very
							thickly bedded, black, intensely weathered, very soft, pervasively
					98		sheared and altered shale matrix, locally containing coarse sand
Diamond Core Run 97.5'-100							coarse gravel sized sandstone porphyroclasts
100% Recovery					99		
0% RQD							
					100		
							Bottom of Boring 100 Feet
					101		
					102		
					103		
					104		
					105		
					106		
					107		
					108		
					109		
					110		
					111		
					112		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)

BORING NUMBER	DATE:	DIST.	CO.	RTE.	P.M. (K.P.)	BRIDGE #
RC-18-004	07-25-2018	01	DN	101	13.5 to 16.0	

LOCATION (STA/OFFSET or NORTHING/EASTING): 41.63825°, -124.10344°

BRIDGE NAME: Last Chance Grade Bypass

EFIS NUMBER: 0115000099

TOP HOLE ELEVATION: 937 feet

CREW: D. Douglas/R. Gingell/M. Brown

EQUIPTMENT: B-80 Mobile Drill

CHC NUMBER: 7006361

HAMMER ID# 1.61 N_{60} Adjust

SITE LOCATION MAP (Inc. North Arrow & Benchmark Datum)

LOGGER: E.Wilson

GWS	DATE
15’	07/26/18
44.6’	10-21-18
CASING SIZE: 1.75” Solid	CASING DEPTH: 0-30 and 50 to 100
CASING SIZE: 1.75” Perf.	CASING DEPTH: 30-50’
SLURRY TYPE: Water	

SURFACE CONDITIONS (Ground Slope, Water, Vegetation, etc): Gently east facing slope off north side of gravel logging road

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc.) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6”	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION: Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Dry core with 4.5” finger bit to 2’ then set-up					0		SANDY SILT with GRAVEL (ML), very stiff, dark yellowish brown
for mud-rotary					1		Moist, mostly low plasticity fines, some fine sand, few fine to
Bulk Grab From Core 1-2’							coarse gravel up to 2”, consisting of intensely weathered
	B01				2		sandstone (FILL)
Punch Core 2-5’							
17% Recovery					3		
							SANDY LEAN CLAY with GRAVEL (CL), dark yellowish brown
					4		with pale olive mottling, moist, mostly medium plasticity fines,
							little sand grading from fine to coarse, few fine to coarse gravel
					5		consisting of decomposed sandstone rock fragments, (Colluvium).
Standard Penetration Test 5-6.5’		5					
78% Recovery	S02	2			6		
		5	7				
					7		
					8		
Punch Core 6.5-10’							CLAYEY GRAVEL with SAND (GC), medium dense, dark grayish
57% Recovery					9		brown, mostly fine to coarse gravel consisting of decomposed
							siltstone rock fragments, some coarse sand, little low plasticity
					10		fines, (Residual Soil)

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	07-25-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-004					
LOCATION (STA/OFFSET or NORTHING/EASTING)		TOP HOLE ELEVATION		BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Standard Penetration Test 10-11.5’		7					Continues
44% Recovery	S03	7			11		
		8	15				
Punch Core 11.5-15’					12		
100% Recovery							SEDIMENTARY ROCK (SANDSTONE), fine grained, massive, light
0% RQD					13		Yellowish brown with very dark brown surface coatings, intensely
							Weathered, moderately soft, intensely fractured.
					14		
					15		
Standard Penetration Test 15-16.5’	S04	11					
89% Recovery		12			16		SEDIMENTARY ROCK (SILTSTONE), fine grained, massive,
		15	27				light olive brown, intensely weathered, soft, very intensely fractured.
					17		
Punch Core 16.5-20’							
71% Recovery					18		
0% RQD							18 to 19 feet, decomposed to SANDY LEAN CLAY (CL), very stiff
					19		
							Color change to dark bluish grey
					20		
Standard Penetration Test 20-21.5’		14					
61% Recovery	S05	10			21		
		11	21				
					22		
Punch Core 21.5-25’							
38% Recovery					23		
Heavy Drill Chatter 21.5 to 22							
0% RQD					24		
					25		
Standard Penetration Test 25-26.5’		9					
83% Recovery	S07	13			26		
		19	32				
					27		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	07-25-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-004					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION NUMBER	BRIDGE #	EFIS

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Punch Core 25.5-30'							
55% Recovery					28		
0% RQD							
					29		
					30		
Standard Penetration Test 30-31.5'		8					
33% Recovery	S07	14			31		
		20	34				
					32		SEDIMENTARY ROCK (SILTSTONE), fine grained, massive,
Punch Core 31.5-35'							decomposed to SANDY LEAN CLAY with GRAVEL (CL), very stiff
52% Recovery					33		dark grey, moist, mostly medium plasticity fines, some sand
0% RQD							grading from fine to coarse, little fine gravel consisting of argillite
					34		Rock fragments.
					35		SEDIMENTARY ROCK (SILTSTONE), fine grained, massive, dark
Standard Penetration Test 35-36.5'		18					gray, intensely weathered, soft, very intensely fractured.
83% Recovery	S08	45			36		
		46	91				
					37		
Punch Core 36.5-40'							
29% Recovery					38		
0% RQD							
					39		
					40		
Standard Penetration Test 40-41.5'		16					
50% Recovery	S09	25			41		
		28	53				
Punch Core 41.5-45'					42		
48% Recovery							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
0% RQD					43		massive, very dark grey, intensely weathered, soft, very intensely
							fractured, pervasively sheared and foliated shale matrix
					44		containing little coarse sand to boulder sized sandstone

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	07-25-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-004					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
							porphyroclasts, often rounded, sometimes polished and slicked.
					45		
Standard Penetration Test 45-46.5'		18					
78% Recovery	S10	34			46		
		36	70				
					47		
Punch Core 46.5-50'							
21% Recovery					48		
Heavy Drill Chatter 48-50'							Sandstone porphyroclast 48 to 50.5
Switch to Diamond Coring at 50'					49		
					50		
Diamond Core Run 50-52.5'					51		
100% Recovery							
0% RQD					52		
					53		
Diamond Core Run 52.5-55'							
80% Recovery					54		
0% RQD							
					55		
					56		SEDIMENTARY ROCK (GREYWACKE), fine grained, massive,
Diamond Core Run 55-60'							dark grey, moderately weathered, moderately hard, intensely
70% Recovery					57		fractured, scattered calcite veining up to 1/8" thick.
0% RQD							
					58		
					59		
					60		
					61		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	07-25-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-004					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Diamond Core Run 60-65'					62		METAMORPHIC ROCK (SHALE MELANGE), fine grained,
70% Recovery							massive, very dark grey, intensely weathered, soft, very intensely
0% RQD					63		fractured, pervasively sheared and foliated shale matrix
							containing, little coarse sand to bounder sized porphyroclasts,
					64		often rounded, sometimes polished and slicked.
					65		
Diamond Core Run 65-70'					66		SEDIMENTARY ROCK (GREYWACKE), fine grained, very thickly
90% Recovery							bedded, slightly weathered, hard, intensely fractured
0% RQD					67		
					68		
					69		METAMORPHIC ROCK (SHALE MELANGE), fine grained,
							massive, very dark grey, intensely weathered, soft, very intensely
					70		fractured, pervasively sheared and foliated shale matrix
							containing, little coarse sand to bounder sized porphyroclasts,
					71		often rounded, sometimes polished and slicked.
Diamond Core Run 70-75'							
27% Recovery					72		
0% RQD							
					73		
					74		
					75		
Diamond Core Run 75-77.5'					76		SEDIMENTARY ROCK (GREYWACKE), fine grained, dark grey,
60% Recovery							very thickly bedded, slightly weathered, hard, intensely fractured
23.3% RQD					77		
					78		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	07-25-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-004					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Diamond Core Run 77.5-80'							continues
80% Recovery					79		
0% RQD							
					80		Shale Melange layer 79.7 to 80.5
Diamond Core Run 80-82.5'					81		
13% Recovery							
0% RQD					82		
					83		
Diamond Core Run 82.5-85'							
23% Recovery					84		
0% RQD							
					85		
Diamond Core Run 85-87.5'					86		
80% Recovery							
0% RQD					87		
					88		
Diamond Core Run 87.5-90'							
80% Recovery					89		
0% RQD							
					90		
							SEDIMENTARY ROCK (SHALE), fine grained, thickly bedded,
Diamond Core Run 90-92.5'					91		black, slightly weathered, moderately hard, very intensely fractured
78% Recovery							
0% RQD					92		
							SEDIMENTARY ROCK (GREYWACKE), fine grained, thickly
					93		bedded, dark grey, slightly weathered, hard, intensely fractured
Diamond Core Run 92.5-95'							scattered layers/seams of sheared shale up to 6 inches thick.
100% Recovery					94		
0% RQD							
					95		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	07-25-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-004					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Diamond Core Run 95-97.5'					96		
73% Recovery							
0% RQD					97		METAMORPHIC ROCK (SHALE MELANGE), fine grained,
							thickly bedded, dark grey, decomposed to GRAVELLY LEAN
					98		CAY (CL), very stiff, mostly low plasticity fines, some fine to coarse
Diamond Core Run 97.5-100'							gravel up to 3 inches, few cobble and boulders.
33% Recovery					99		
0% RQD							
					100		
							Bottom of Boring 100 Feet
					101		
					102		
					103		
					104		
					105		
					106		
					107		
					108		
					109		
					110		
					111		
					112		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)

BORING NUMBER	DATE:
RC-18-005	08-01-2018

DIST.	CO.	RTE.	P.M. (K.P.)	BRIDGE #
01	DN	101	13.5 to 16.0	

LOCATION (STA/OFFSET or NORTHING/EASTING)
41.63256°, -124.10346°

BRIDGE NAME
Last Chance Grade Bypass

EFIS NUMBER
0115000099

TOP HOLE ELEVATION
890 feet

CREW	EQUIPTMENT	CHC NUMBER
D. Douglas/R. Gingell/M. Brown	B-80 Mobile Drill	7006361

HAMMER ID# 1.61 N_{60} Adjust

SITE LOCATION MAP (Inc. North Arrow & Benchmark Datum)

LOGGER
E.Wilson

GWS	DATE
13’	08-02-18
GWS	DATE
7’	08-07-18
CASING SIZE	CASING DEPTH
SI	To 100
CASING SIZE	CASING DEPTH
SLURRY TYPE	Water

SURFACE CONDITIONS (Ground Slope, Water, Vegetation, etc)
Gently south east facing slope off east side of gravel logging road

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc.) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6”	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION: Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
					0		GRAVELLY LEAN CLAY with SAND (CL), soft, variegated
					1		brownish yellow and dark yellowish brown, moist, mostly low
							plasticity fines, little fine to coarse gravel, little sand grading from
					2		fine to coarse, trace charcoal, trace wood fragments, (FILL)
Punch Core 0-5’							
25% Recovery					3		
					4		
					5		
Standard Penetration Test 5-6.5’		2					
28% Recovery	S01	2			6		
		2	4				
					7		
					8		
Punch Core 6.5-10’							
43% Recovery					9		
					10		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-01-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-005					

LOCATION (STA/OFFSET or NORTHING/EASTING) | TOP HOLE ELEVATION | BRIDGE # | EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Standard Penetration Test 10-11.5'		2					
11% Recovery	S02	2			11		LEAN CLAY with SAND and GRAVEL (CL), medium stiff, mottled
		3	5				grey and olive grey, moist, mostly medium plasticity fines, few fine
					12		to coarse gravels, few sand grading from fine to coarse, trace
Pocket Pen 0.6 tsf							roots, (Colluvium).
Punch Core 11.5-15'					13		
57% Recovery							
					14		
							LEAN CLAY (CL), hard, light olive brown with olive yellow mottling,
					15		dry, mostly medium plasticity fines, trace gravel consisting of
Standard Penetration Test 15-16.5'		22					decomposed shale fragments, weak rock texture, (Residual Soil).
50% Recovery	S03	30			16		
		27	57				
					17		
Punch Core 16.5-20'							
45% Recovery					18		
					19		
					20		
Standard Penetration Test 20-21.5'		3					Color change to dark gray, moist
28% Recovery	S04	4			21		
		9	13				
					22		
Punch Core 21.5-25'							CLAYEY GRAVEL with SAND (GC), medium dense, dark gray,
No Recovery					23		moist, mostly fine to coarse gravel up to 3" consisting of angular,
Light Drill Chatter from 22'							fresh sandstone, few medium to coarse sand, little medium
					24		plasticity fines, (Residual Soil)
					25		
Standard Penetration Test 25-26.5'		9					
6% Recovery	S05	9			26		
		14	23				
					27		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-01-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-005					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION NUMBER	BRIDGE #	EFIS

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Punch Core 25.5-30'							SEDIMENTARY ROCK (SHALE MELANGE), fine grained,
Heavy Drill Chatter					28		Massive, dark grey, intensely weathered, soft, very intensely
0% RQD							Fractured, pervasively sheared and foliated shale matrix
					29		containing some coarse sand to boulder sized sandstone
							porphyroclasts
					30		
Standard Penetration Test 30-31.5'		14					
72% Recovery	S06	17			31		
		25	42				
					32		
Punch Core 31.5-35'							
No Recovery					33		
0% RQD							
Heavy Drill Chatter from 33'					34		
					35		
Standard Penetration Test 35-36.5'		58					
50% Recovery	S07	33			36		
		22	55				
					37		
Punch Core 36.5-40'							
26% Recovery					38		
0% RQD							
					39		
					40		
Standard Penetration Test 40-41.5'		17					
61% Recovery	S08	26			41		
		26	52				
Punch Core 41.5-45'					42		
57% Recovery							
0% RQD					43		
Heavy Drill Chatter from 44'							
					44		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-01-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-005					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
							SEDIMENTARY ROCK (SHALE MELANGE), fine grained,
					45		Massive, dark grey, intensely weathered, soft, very intensely
Standard Penetration Test 45-46.5'		99					Fractured, pervasively sheared and foliated shale matrix
83% Recovery	S09	26			46		containing some coarse sand to boulder sized sandstone
		28	54				porphyroclasts
					47		
Punch Core 46.5-50'							
71% Recovery					48		
					49		
					50		
Standard Penetration Test 50-51.5'		43					
56% Recovery	S10	19			51		
		44	63				
					52		
					53		
Diamond Core Run 51.5-55'							
74% Recovery					54		
0% RQD							
					55		
					56		
Diamond Core Run 55-60'							
100% Recovery					57		
0% RQD							
					58		
					59		
					60		
					61		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-01-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-005					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
Diamond Core Run 60-65'					62		massive, very dark grey, intensely weathered, soft, very intensely
82% Recovery							fractured, pervasively sheared and foliated shale matrix
0% RQD					63		containing, little coarse sand to bounder sized porphyroclasts,
							often rounded, sometimes polished and slicked.
					64		
					65		
Diamond Core Run 65-70'					66		
72% Recovery							
0% RQD					67		
					68		
					69		
					70		
					71		
Diamond Core Run 70-75'							
72% Recovery					72		
0% RQD							
					73		
					74		
					75		
Diamond Core Run 75-77.5'					76		
60% Recovery							
0% RQD					77		
					78		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-01-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-005					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Diamond Core Run 77.5-80'							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
83% Recovery					79		massive, very dark grey, intensely weathered, soft, very intensely
0% RQD							fractured, pervasively sheared and foliated shale matrix
					80		containing, little coarse sand to bounder sized porphyroclasts,
							often rounded, sometimes polished and slicked.
Diamond Core Run 80-85'					81		
45% Recovery							
0% RQD					82		
					83		
					84		
					85		
Diamond Core Run 85-87.5'					86		
No Recovery							
0% RQD					87		
					88		
Diamond Core Run 87.5-90'							
No Recovery					89		
0% RQD							
					90		
Diamond Core Run 90-92.5'					91		
77% Recovery							
0% RQD					92		
					93		
Diamond Core Run 92.5-95'							
97% Recovery					94		
0% RQD							
					95		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-01-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-005					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Diamond Core Run 95-97.5'					96		
100% Recovery							
0% RQD					97		
							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
					98		massive, very dark gray, decomposed to equivalent; CLAYEY
Diamond Core Run 97.5-100'							SAND with GRAVEL (SC), very stiff, moist, mostly sand grading
93% Recovery					99		from fine to coarse, some fine to coarse gravel, little low plasticity
0% RQD							fine
					100		
							Bottom of Boring 100 Feet
					101		
					102		
					103		
					104		
					105		
					106		
					107		
					108		
					109		
					110		
					111		
					112		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)

BORING NUMBER	DATE:
RC-18-007	08-14-2018

LOCATION (STA/OFFSET or NORTHING/EASTING)
41.629967°, -124.104676°

TOP HOLE ELEVATION
848 feet

DIST.	CO.	RTE.	P.M. (K.P.)	BRIDGE #
01	DN	101	13.5 to 16.0	

BRIDGE NAME: Last Chance Grade Bypass
EFIS NUMBER: 0115000099

CREW	EQUIPTMENT	CHC NUMBER
D. Douglas/R. Gingell/M. Brown	B-80 Mobile Drill	7006361

HAMMER ID# 1.61 N_{60} Adjust

SITE LOCATION MAP (Inc. North Arrow & Benchmark Datum)

LOGGER: L. Winkler-Prins

GWS	DATE
11’	08-15-18
7’	08-07-18

CASING SIZE	CASING DEPTH
SI	To 100

SLURRY TYPE: Water

SURFACE CONDITIONS (Ground Slope, Water, Vegetation, etc)
Gently south facing slope off south side of logging road

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc.) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6”	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION: Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
					0		GRAVELLY LEAN CLAY (CL), yellowish brown, moist, mostly
					1		low plasticity fines, some fine to coarse gravel, few medium to
							coarse sand, (FILL).
					2		
Punch Core 0-5’							LEAN CLAY (CL), yellowish brown with reddish brown mottling,
					3		Moist, mostly medium plasticity fines, trace coarse sand (FILL)
					4		
							Trace, fine roots and wood fragments 4.5’
					5		
Standard Penetration Test 5-6.5’		2					
	S01	1			6		
		2	3				
					7		
					8		
Punch Core 6.5-10’							
					9		
							Trace wood fragments 9.5’
					10		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-14-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-007					

LOCATION (STA/OFFSET or NORTHING/EASTING) | TOP HOLE ELEVATION | BRIDGE # | EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING				DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
	SAMPLE #	BLOWS PER 6"	SPT (N)				
Standard Penetration Test 10-11.5’		0					LEAN CLAY (CL), gray, moist, mostly medium plasticity fines, few
	S02	0			11		coarse angular gravel, (Colluvium)
		1	1				
					12		
Punch Core 11.5-15’					13		LEAN CLAY with SAND (CL), light brownish gray, moist, mostly
							Medium plasticity fines, little medium to coarse sand, few fine
					14		To coarse gravel (Colluvium)
					15		
Standard Penetration Test 15-16.5’		1					
	S03	6			16		
		9	15				
					17		
Punch Core 16.5-20’							
No Return Circulation					18		
							LEAN CLAY (CL), light brownish gray, moist, mostly medium
					19		plasticity fines, trace coarse sand
					20		
Standard Penetration Test 20-21.5’		8					METAMORPHIC ROCK (SHALE MELANGE), fine grained,
	S04	9			21		Massive, very dark gray, decomposed to; LEAN CLAY with SAND
		27	36				(CL), moist, mostly medium plasticity fines, little medium to coarse
					22		Sand, few fine to coarse gravel
Punch Core 21.5-25’							
No Return Circulation					23		
					24		
					25		
Standard Penetration Test 25-26.5’		10					
	S05	10			26		
		8	18				
					27		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-14-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-007					

LOCATION (STA/OFFSET or NORTHING/EASTING) | TOP HOLE ELEVATION NUMBER | BRIDGE # | EFIS

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Punch Core 25.5-30'							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
No Return Circulation					28		Massive, very dark gray, decomposed to; LEAN CLAY with SAND
							(CL), moist, mostly medium plasticity fines, little medium to coarse
					29		Sand, few fine to coarse gravel
					30		
Standard Penetration Test 30-30.6'	S06	50/2.5"					
					31		
					32		
Punch Core 31.5-35'							
No Return Circulation					33		
					34		
					35		
Standard Penetration Test 35-36.5'		22					
	S07	19			36		
		16	35				
					37		
Punch Core 36.5-40'							
No Recovery					38		
No Return Circulation							
					39		
					40		
Standard Penetration Test 40-41.5'		11					
	S08	11			41		
		29	40				
Punch Core 41.5-45'					42		
Drill Chatter 44-45'							
					43		
					44		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-14-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-007					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	FIELD TESTING: BLOWS PER 6"	FIELD TESTING: SPT (N)	DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
				45		SEDIMENTARY ROCK (SHALE MELANGE), fine grained,
Standard Penetration Test 45-45.2'		50 /2"				Massive, dark grey, intensely weathered, soft, very intensely
	S09			46		Fractured, pervasively sheared and foliated shale matrix
Switch to Diamond Core						containing some coarse sand to boulder sized sandstone
				47		porphyroclasts
Diamond Core Run 46.5-50'						
17% Recovery				48		
0% RQD						
				49		
				50		
Diamond Core Run 50-52.5'				51		
58% Recovery						
0% RQD				52		
				53		
Diamond Core Run 52.5'-55						
33% Recovery				54		
13% RQD						
				55		
						METAMORPHIC ROCK (SHALE MELANGE), fine grained,
				56		Massive, very dark gray, decomposed to; SANDY LEAN CLAY
Diamond Core Run 55-60'						(CL), moist, mostly medium plasticity fines, some coarse sand
50% Recovery				57		trace fine to coarse gravel
0% RQD						
				58		
				59		
				60		
				61		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-14-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-007					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Diamond Core Run 60-62.5’							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
33% Recovery					62		Massive, very dark gray, decomposed to; SANDY LEAN CLAY
0% RQD							(CL), moist, mostly medium plasticity fines, some coarse sand
					63		trace fine to coarse gravel
Diamond Core Run 62.5’-65							
47% Recovery					64		
0% RQD							
					65		
							SEDIMENTARY ROCK (SHALE), fine grained, very thickly
Diamond Core Run 65-70’					66		bedded, black, fresh, hard, intensely fractured, few fine siltstone
95% Recovery							and quartzite gravel clasts, trace quartz veining up to ¼ inch thick
0% RQD					67		
					68		
					69		
							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
					70		very thickly bedded, dark gray, decomposed to; SANDY LEAN
							CLAY (CL) mostly low plasticity fines, some coarse sand
					71		
Diamond Core Run 70-75’							
18% Recovery					72		
0% RQD							SEDIMENTARY ROCK (SHALE), fine grained, very thickly
					73		bedded, black, fresh, hard, intensely fractured, trace quartz and
							calcite veining up to ¼ inches thick, scattered limestone lenses
					74		
					75		
Diamond Core Run 75-77.5’					76		
83% Recovery							
0% RQD					77		
					78		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-14-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-007					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Diamond Core Run 77.5-80'							SEDIMENTARY ROCK (SHALE), fine grained, very thickly
67% Recovery					79		bedded, black, fresh, hard, intensely fractured, trace quartz and
13% RQD							calcite veining up to ¼ inches thick, scattered limestone lenses
					80		
Diamond Core Run 80-82.5'					81		
100% Recovery							
0% RQD					82		
					83		
Diamond Core Run 82.5'-85							
90% Recovery					84		
0% RQD							
					85		
							METAMORPHIC ROCK (SHALE MELANGE), fine grained, very
Diamond Core Run 85-87.5'					86		thickly bedded, dark gray, decomposed to; GRAVELLY LEAN
37% Recovery							CLAY with SAND (CL), mostly low plasticity fines, some fine to
0% RQD					87		coarse gravel up to 3 inches, little sand grading from fine to
							coarse.
					88		
Diamond Core Run 87.5-90'							
53% Recovery					89		
0% RQD							
					90		
Diamond Core Run 90-92.5'					91		
77% Recovery							
0% RQD					92		
					93		
Diamond Core Run 92.5-95'							
100% Recovery					94		
0% RQD							
					95		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-14-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-007					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
							SEDIMENTARY ROCK (SHALE), fine grained, massive, black,
Diamond Core Run 95-97.5'					96		fresh, hard, intensely fractured
70% Recovery							
0% RQD					97		
					98		
Diamond Core Run 97.5-100'							
33% Recovery					99		
0% RQD							
					100		
							Bottom of Boring 100 Feet
					101		
					102		
					103		
					104		
					105		
					106		
					107		
					108		
					109		
					110		
					111		
					112		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)

BORING NUMBER	DATE:	DIST.	CO.	RTE.	P.M. (K.P.)	BRIDGE #
RC-18-009	08-28-2018	01	DN	101	13.5 to 16.0	

LOCATION (STA/OFFSET or NORTHING/EASTING): 41.628414°, -124.103682°

BRIDGE NAME: Last Chance Grade Bypass

EFIS NUMBER: 0115000099

TOP HOLE ELEVATION: 773 feet

CREW: D. Douglas/R. Gingell/M. Brown

EQUIPTMENT: B-80 Mobile Drill

CHC NUMBER: 7006361

HAMMER ID# 1.61 N_{60} Adjust

SITE LOCATION MAP (Inc. North Arrow & Benchmark Datum)

LOGGER: E.Wilson

GWS	DATE
28’	08-30-18
GWS	DATE
CASING SIZE	CASING DEPTH
SI	To 100
CASING SIZE	CASING DEPTH
SLURRY TYPE	Water

SURFACE CONDITIONS (Ground Slope, Water, Vegetation, etc)
Gently north facing slope off north side of logging road

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc.) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6”	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION (Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Dry Core to 5’ then set up for Mud-Rotary	G01				0		SILTY GRAVEL with SAND (GM), dark brownish gray,
Grab Sample From Dry Core 0-1’					1		moist, mostly fine to coarse gravel up to 3 inches, little sand
							grading from fine to coarse, little low plasticity fines, (FILL)
					2		
					3		
Grad Sample From Dry Core 3-4’	G02						CLAYEY GRAVEL (GC), variegated brownish yellow and dark
					4		yellowish brown, moist, mostly fine to coarse gravel up to 3 inch
							some medium plasticity fines, (FILL)
Pocket Pen 3.2 tsf					5		LEAN CLAY with SAND, very stiff, strong brown, moist, mostly
Standard Penetration Test 5-6.5’		1					low plasticity fines, few fine to coarse sand (Colluvium)
78% Recovery	S03	6			6		
		8	14				
					7		
					8		
Punch Core 6.5-10’							
17% Recovery					9		
					10		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-28-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-009					

LOCATION (STA/OFFSET or NORTHING/EASTING) | TOP HOLE ELEVATION | BRIDGE # | EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Standard Penetration Test 10-11.5'		9					
No Recovery	S04	10			11		
		11	21				
					12		
Pocket Pen 3.3 tsf							
Punch Core 11.5-15'					13		
88% Recovery							
					14		
					15		
Standard Penetration Test 15-16.5'		4					
100% Recovery	S05	4			16		CLAYEY SAND with GRAVEL (SC), medium dense, light olive
		6	10				brown, moist, mostly coarse sand, some fine gravel consisting of
					17		intensely weathered argillite, little low plasticity fines, weak rock
Punch Core 16.5-20'							texture (Residual Soil).
55% Recovery					18		
					19		
					20		
Standard Penetration Test 20-21.5'		4					
56% Recovery	S06	3			21		
		3	6				
					22		
Punch Core 21.5-25'							
24% Recovery					23		
					24		
					25		
Standard Penetration Test 25-26.5'		5					
89% Recovery	S06	6			26		
		9	15				
					27		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-28-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-009					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION NUMBER	BRIDGE #	EFIS

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Punch Core 25.5-30'							
12% Recovery					28		
0% RQD							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
					29		massive, dark gray, decomposed to; GRAVELLY LEAN CLAY
							(CL), very stiff, dark grey
					30		
Standard Penetration Test 30-31.5'		62					
67% Recovery	S07	23			31		
		21	44				
					32		
Punch Core 31.5-35'							
No Recovery					33		
0% RQD							
					34		
					35		
Standard Penetration Test 35-36.5'		6					
50% Recovery	S08	9			36		
		9	18				
					37		
Punch Core 36.5-40'							
No Recovery					38		
0% RQD							
					39		
					40		
Standard Penetration Test 40-41.5'		5					
No Recovery	S09	5			41		
		9	14				
Punch Core 41.5-45'					42		
21% Recovery							
0% RQD					43		
Drill Chatter from 43'-45'							
					44		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-28-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-009					

LOCATION (STA/OFFSET or NORTHING/EASTING) | TOP HOLE ELEVATION | BRIDGE # | EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
					45		massive, dark gray, decomposed to; GRAVELLY LEAN CLAY
Standard Penetration Test 45-46.5'		20					(CL), very stiff, dark grey
11% Recovery	S10	9			46		
		11	20				
					47		
Punch Core 46.5-50'							
No Recovery					48		
0% RQD							
					49		
					50		
Standard Penetration Test 50-51.5'		7					
67% Recovery	S11	11			51		
		14	25				
					52		
Punch Core 51.5-55'					53		
14% Recovery							
0% RQD					54		
					55		
Standard Penetration Test 55-56.5'		5					
44% Recovery	S12	5			56		
		10	15				
					57		
Punch Core 56.5'-60'					58		
33% Recovery							
0% RQD					59		
					60		
Standard Penetration Test 60-61.5		11					
56% Recovery	S13	13			61		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-28-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-009					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
		20	33				
					62		
Punch Core 61.5'-65'							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
29% Recovery					63		massive, dark gray, intensely weathered, moderately soft, very
0% RQD							intensely fractured, pervasively sheared shale matrix, some
Harder Drilling from 62'					64		medium sand to coarse gravel sized sandstone porphyroclasts.
Shale Powder Appears in Mud-Tub							
					65		
Standard Penetration Test 65-66.5		10					
94% Recovery	S14	21			66		
		47	68				
					67		
Punch Core 66.5-70'					68		
No Recovery							
0% RQD					69		
					70		
Standard Penetration Test 70-71.5		13					
67% Recovery	S15	25			71		
		41	66				
					72		
Punch Core 71.5-75'					73		
No Recovery							
0% RQD					74		
Heavy Drill Chatter 73-74'							
					75		METAMORPHIC ROCK (SAHEL MELANGE), fine grained,
Standard Penetration Test 75-76.5		13					massive, decomposed to; CLAYEY GRAVEL (GC), very stiff,
67% Recovery	S16	20			76		mostly fine to coarse gravel up to 3 inches, some coarse sand,
		20	40				little low plasticity fines.
					77		
					78		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-28-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-009					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION: Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Punch Core 76.5-80'							
36% Recovery					79		
0% RQD							
					80		
Standard Penetration Test 80-81.5							
17% Recovery	S17				81		
					82		
Punch Core 81.5-85'							
No Recovery					83		
0% RQD							
Light Drill Chatter 83-84'					84		
					85		METAMORPHIC ROCK (SHALE MELANGE), fine grained,
Standard Penetration Test 85-86.5		27					massive, dark gray, intensely weathered, moderately soft, very
83% Recovery	S18	52			86		intensely fractured, pervasively sheared shale matrix containing
		64/2"					some coarse sand to cobble sized porphyroclasts of fresh hard
					87		sandstone.
Punch Core 86.5-90'							
No Recovery					88		
0% RQD							
					89		
					90		
Standard Penetration Test 90-91.5		37					
50% Recovery	S19	107/3"			91		
					92		
Moderate Drill Chatter 92-93'					93		
Punch Core 91.5-95'							
No Recovery					94		
0% RQD							
					95		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	08-28-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-009					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Standard Penetration Test 95-96.5		109 /4"					METAMORPHIC ROCK (SHALE MELANGE), fine grained,
75% Recovery	S20				96		massive, dark gray, intensely weathered, moderately soft, very
							intensely fractured, pervasively sheared shale matrix containing
					97		some coarse sand to cobble sized porphyroclasts of fresh hard
							sandstone.
Punch Core 96.5-100'					98		
No Recovery							
0% RQD					99		
					100		
Standard Penetration Test 100-101.5		23					
78% Recovery	S21	27			101		
		43	70				
					102		Bottom of Boring 101.5 Feet
					103		
					104		
					105		
					106		
					107		
					108		
					109		
					110		
					111		
					112		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)

BORING NUMBER	DATE:
RC-18-011	09-18-2018

LOCATION (STA/OFFSET or NORTHING/EASTING)
41.621324°, -124.096863°

TOP HOLE ELEVATION
599 feet

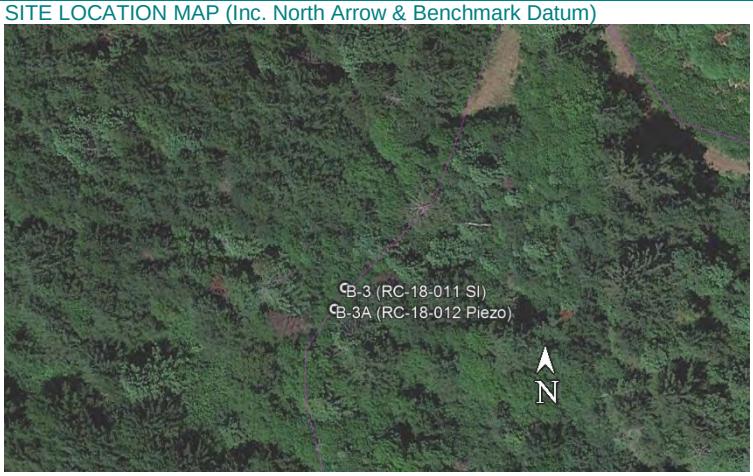
DIST.	CO.	RTE.	P.M. (K.P.)	BRIDGE #
01	DN	101	13.5 to 16.0	

BRIDGE NAME: Last Chance Grade Bypass
EFIS NUMBER: 0115000099

CREW	EQUIPTMENT	CHC NUMBER
D. Douglas/R. Gingell/M. Brown	B-80 Mobile Drill	7006361

HAMMER ID# 1.61 N_{60} Adjust

SITE LOCATION MAP (Inc. North Arrow & Benchmark Datum)



LOGGER: E.Wilson

GWS	DATE
8’	09-18-18
GWS	DATE
CASING SIZE	CASING DEPTH
SI	To 100
CASING SIZE	CASING DEPTH
SLURRY TYPE	Water

SURFACE CONDITIONS (Ground Slope, Water, Vegetation, etc)
Gently east facing slope off east side of logging road

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc.) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6”	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION: Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Dry Core to 5’ then set up for Mud-Rotary					0		CLAYEY GRAVEL with SAND (GC), dark yellowish brown, moist,
					1		mostly fine to coarse gravel consisting of intensely weathered
Grab Sample From Dry Core 1-2’	G01						angular sandstone and argillite rock fragments, some low plasticity
					2		fines, few sand grading from fine to coarse, heterogenous
							texture (FILL)
					3		
Pocket Pen 2.8 tsf							LEAN CLAY with GRAVEL (CL), very stiff, light yellowish brown,
					4		moist, mostly low plasticity fines, little fine gravel, few medium to
Grad Sample From Dry Core 4-5’	G02						coarse sand (Colluvium).
					5		
Standard Penetration Test 5-6.5’		5					
100% Recovery	S03	8			6		
		14	22				
					7		
					8		
Punch Core 6.5-10’							
No Recovery					9		
					10		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	09-18-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-011					
LOCATION (STA/OFFSET or NORTHING/EASTING)		TOP HOLE ELEVATION		BRIDGE #	EFIS NUMBER

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Standard Penetration Test 10-11.5’		0					
44% Recovery	S04	5			11		METAMORPHIC ROCK (SHALE MELANGE), fine grained,
		6	11				Massive, dark gray, decomposed to; SANDY LEAN CLAY (CL),
					12		Stiff, moist, mostly low plasticity fines, little coarse sand consisting
							Of sub-rounded sandstone in a sheared clay matrix.
Punch Core 11.5-15’					13		
No Recovery							
					14		
					15		
Standard Penetration Test 15-16.5’		11					
100% Recovery	S05	20			16		
		11	31				
					17		
Punch Core 16.5-20’							
No Recovery					18		
					19		
					20		
Standard Penetration Test 20-21.5’		4					
39% Recovery	S06	3			21		
		4	7				
					22		
Punch Core 21.5-25’							
No Recovery					23		
Very Soft Drilling							
					24		
					25		
Standard Penetration Test 25-26.5’		10					
11% Recovery	S07	11			26		
		8	19				
					27		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	09-18-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-011					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION NUMBER	BRIDGE #	EFIS

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Punch Core 25.5-30'							
29% Recovery					28		METAMORPHIC ROCK (SHALE MELANGE), fine grained,
0% RQD							massive, dark gray, decomposed to; GRAVELLY LEAN CLAY
Very Soft Drilling					29		(CL), stiff, moist, mostly low plasticity fines, some fine to coarse
							gravel, consisting of sub-angular sandstone clasts in a sheared,
					30		clay matrix, few coarse sand
Standard Penetration Test 30-31.5'		8					
No Recovery	S08	7			31		
		9	16				
					32		
Punch Core 31.5-35'							
71% Recovery					33		
0% RQD							
Pocket Pen 1.5 tsf					34		
					35		
Standard Penetration Test 35-36.5'		5					
No Recovery	S09	6			36		
		9	13				
Pocket Pen 1.3 tsf					37		
Punch Core 36.5-40'							
40% Recovery					38		
0% RQD							
					39		
					40		
Standard Penetration Test 40-41.5'		10					
22% Recovery	S10	15			41		
		17	32				
Punch Core 41.5-45'					42		
57% Recovery							
0% RQD					43		
Very Soft Drilling							
					44		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	09-18-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-011					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

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							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
					45		massive, dark gray, decomposed to; GRAVELLY LEAN CLAY
Standard Penetration Test 45-46.5'		5					(CL), stiff, moist, mostly low plasticity fines, some fine to coarse
72% Recovery	S11	11			46		gravel, consisting of sub-angular sandstone clasts in a sheared,
		14	25				clay matrix, few coarse sand
					47		
Punch Core 46.5-50'							
21% Recovery					48		
0% RQD							
Soft Drilling					49		
					50		
Standard Penetration Test 50-51.5'		10					
67% Recovery	S12	21			51		
		25	46				
					52		
Punch Core 51.5-55'					53		
No Recovery							
0% RQD					54		
Soft Drilling							
					55		
Standard Penetration Test 55-56.5'		6					
89% Recovery	S13	17			56		
		14	31				
					57		
Punch Core 55-56.5'					58		
No Recovery							
0% RQD					59		
Soft Drilling							
					60		
Standard Penetration Test 60-61.5		65					
28% Recovery	S14	50/1"			61		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	09-18-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
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LOCATION (STA/OFFSET or NORTHING/EASTING) | TOP HOLE ELEVATION | BRIDGE # | EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
					62		
Punch Core 61.5-65'							METAMORPHIC ROCK (SHALE MELANGE), fine grained,
No Recovery					63		massive, dark gray, intensely weathered, soft, very
0% RQD							intensely fractured, pervasively sheared shale matrix, some
Harder Drilling					64		medium sand to coarse gravel sized sandstone porphyroclasts.
Drill Chatter 62-64'							
					65		
Standard Penetration Test 65-66.5		19					
100% Recovery	S15	17			66		
		23	40				
					67		
Punch Core 66.5-70'					68		
No Recovery							
0% RQD					69		
					70		
Standard Penetration Test 70-71.5		16					
No Recovery	S16	20			71		
		28	48				
					72		METAMORPHIC ROCK (SAHEL MELANGE), fine grained,
							massive, decomposed to; GRAVELLY CLAY (CL), very stiff,
Punch Core 71.5-75'					73		mostly low plasticity fines, some fine to coarse gravel up to 3
12% Recovery							inches, little coarse sand
0% RQD					74		
					75		
Standard Penetration Test 75-76.5		14					
50% Recovery	S17	20			76		
		26	46				
					77		
Pocket Pen 3.5 tsf					78		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	09-18-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-011					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION	BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Punch Core 76.5-80'							METAMORPHIC ROCK (SAHEL MELANGE), fine grained,
24% Recovery					79		massive, decomposed to; GRAVELLY CLAY (CL), very stiff,
0% RQD							mostly low plasticity fines, some fine to coarse gravel up to 3
					80		inches, little coarse sand
Standard Penetration Test 80-81.5		19					
44% Recovery	S18	25			81		
		24	49				
					82		
Punch Core 81.5-85'							
7% Recovery					83		
0% RQD							
					84		
					85		
Standard Penetration Test 85-86.5		16					
67% Recovery	S19	15			86		
		27	42				
					87		
Punch Core 86.5-90'							
No Recovery					88		
0% RQD							
Light Drill Chatter 87-90'					89		
					90		
Standard Penetration Test 90-91.5		32					
50% Recovery	S20	49			91		
		33					
					92		
					93		
Punch Core 91.5-95'							
No Recovery					94		
0% RQD							
					95		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	09-18-2018	01	DN	101	13.5/16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-011					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Standard Penetration Test 95-96.5		26					METAMORPHIC ROCK (SAHEL MELANGE), fine grained,
44% Recovery	S21	41			96		massive, decomposed to; GRAVELLY CLAY (CL), very stiff,
		26	67				mostly low plasticity fines, some fine to coarse gravel up to 3
					97		inches, little coarse sand
Punch Core 96.5-100'					98		
5% Recovery							
0% RQD					99		
					100		
							Bottom of Boring 100 Feet
					101		
					102		
					103		
					104		
					105		
					106		
					107		
					108		
					109		
					110		
					111		
					112		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)

BORING NUMBER	DATE:	DIST.	CO.	RTE.	P.M. (K.P.)	BRIDGE #
RC-18-013	09-27-2018	01	DN	101	13.5 to 16.0	

LOCATION (STA/OFFSET or NORTHING/EASTING): 41.617317°, -124.096664°

BRIDGE NAME: Last Chance Grade Bypass

EFIS NUMBER: 0115000099

TOP HOLE ELEVATION: 636 feet

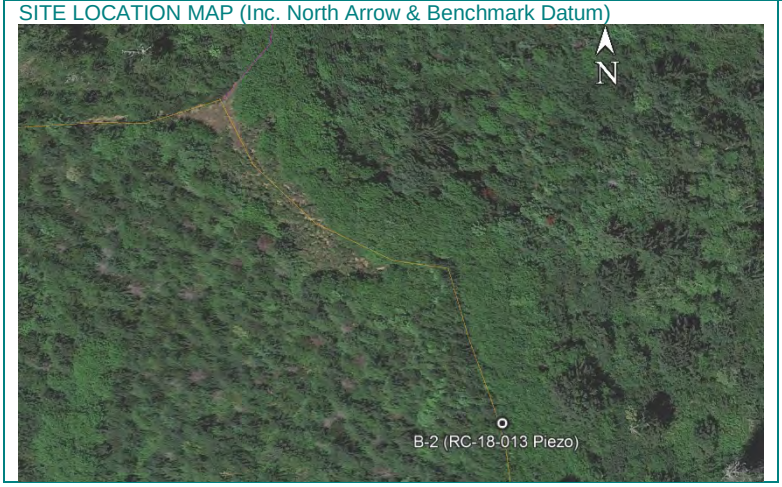
CREW: D. Douglas/R. Gingell/M. Brown

EQUIPTMENT: B-80 Mobile Drill

CHC NUMBER: 7006361

HAMMER ID# 1.61 N_{60} Adjust

SITE LOCATION MAP (Inc. North Arrow & Benchmark Datum)



LOGGER: E.Wilson

GWS	DATE
GWS	DATE
CASING SIZE: SI	CASING DEPTH: To 100’
CASING SIZE	CASING DEPTH
SLURRY TYPE: Water	

SURFACE CONDITIONS (Ground Slope, Water, Vegetation, etc)
Gently south east facing slope off east side of logging road

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc.) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6”	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION: Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Dry core with 4.5” finger bit to 5’ then set-up	G01				0		SANDY SILT with GRAVEL (ML), greyish brown, moist, mostly
for mud-rotary					1		low plasticity fines, some sand grading from fine to coarse, little to
							few fine to coarse gravel (FILL)
	G02				2		
							SILT with SAND (ML), dark yellowish brown, moist, mostly low
	G03				3		plasticity fines, little fine to coarse sand, trace gravel, (FILL)
	G04				4		
					5		
Standard Penetration Test 5-6.5’		4					SILTY SAND (SM), medium dense, yellowish brown, moist, mostly
	S05	4			6		Fine sand, some non-plastic fines, (Colluvium)
		9	13				
					7		
					8		
Punch Core 6.5-10’							
					9		
							LEAN CLAY (CL), stiff, yellowish brown with very dark brown and
					10		Light olive brown mottling and variegation, mostly medium

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	9-27-2018	01	HUM	101	13.5 to 16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-013					
LOCATION (STA/OFFSET or NORTHING/EASTING)		TOP HOLE ELEVATION		BRIDGE #	EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Standard Penetration Test 10-11.5'		5					plasticity fines, few fine to course sand, weak rock texture, (Residual
	S06	10			11		Soil)
		12	22				
					12		
Punch Core 11.5-15'					13		
					14		
					15		
Standard Penetration Test 15-15.8'	S07	25					
		6/3"			16		
					17		
Punch Core 15.8-20'							
No Recovery					18		
					19		
					20		
Standard Penetration Test 20-21.2'		18					
	S08	41			21		
		6/3"					
					22		
Punch Core 21.2-25'							
					23		
							CLAYEY SAND (SC), very dense, yellowish brown, moist, mostly
					24		fine sand, little low plasticity fines, few fine gravels, weak rock
							texture, (Residual Soil)
					25		
Standard Penetration Test 25-26.1'		7					
	S09	28			26		
		50/ 0.5"	27				
					27		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	9-27-2018	01	HUM	101	13.5 to 16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-013					

LOCATION (STA/OFFSET or NORTHING/EASTING)	TOP HOLE ELEVATION NUMBER	BRIDGE #	EFIS

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
Punch Core 26.1-30’					28		
					29		
					30		
Standard Penetration Test 30-30.6’	S10	20					
		60/1”			31		
Punch Core 30.6-35’					32		
					33		
					34		
					35		
Standard Penetration Test 35-35.4’	S11	50/5”					
					36		
					37		
Punch Core 35.4-40’							
					38		
					39		
					40		
Standard Penetration Test 40-40.3’	S12	60/3.5”					SEDIMENTARY ROCK (GREYWACKY), medium grained,
					41		massive, light yellowish brown with black oxide fracture coatings,
							intensely weathered, soft, intensely to very intensely
Switch to Diamond Coring					42		fractured
Diamond Core Run 40.3-45’							
					43		
					44		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	9-27-2018	01	HUM	101	13.5 to 16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-013					

LOCATION (STA/OFFSET or NORTHING/EASTING) | TOP HOLE ELEVATION | BRIDGE # | EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
							SEDIMENTARY ROCK (GREYWACKY), medium grained,
					45		massive, light yellowish brown with black oxide fracture coatings,
							intensely weathered, soft, intensely to very intensely
					46		fractured (F1, 70 degrees, 1' apparent spacing, open, very thin
							oxide filling/staining, moderately soft, moderately rough)
					47		
Diamond Core Run 45-50'							
100% Recovery					48		
0% RQD							
					49		
					50		
Diamond Core Run 50-55'					51		
57% Recovery							
0% RQD					52		
					53		
					54		
					55		Moderately soft
					56		
Diamond Core Run 55-60'							
73% Recovery					57		
25% RQD							
					58		
					59		
					60		
					61		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	9-27-2018	01	HUM	101	13.5 to 16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-013					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
							SEDIMENTARY ROCK (GREYWACKY), medium grained,
Diamond Core Run 60-65'					62		massive, light yellowish brown with black oxide fracture coatings,
80% Recovery							moderately weathered, moderately soft, moderately to intensely
0% RQD					63		fractured
					64		
					65		
							Moderately hard
Diamond Core Run 65-70'					66		
90% Recovery							
16.7% RQD					67		
					68		
					69		
					70		
					71		
Diamond Core Run 70-75'							
88% Recovery					72		
0% RQD							
					73		
					74		
					75		
Diamond Core Run 75-80'					76		
100% Recovery							
31.7% RQD					77		
					78		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	9-27-2018	01	HUM	101	13.5 to 16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-013					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING: SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
							SEDIMENTARY ROCK (GREYWACKY), medium grained,
					79		massive, light yellowish brown with black oxide fracture coatings,
							moderately weathered, moderately hard, moderately to intensely
					80		Fractured (F2, 50 degrees, 0.5' spacing, slightly open, very thin
							Oxide coating, moderately hard, not healed, moderately rough).
Diamond Core Run 80-85'					81		
100% Recovery							
28% RQD					82		
					83		
					84		
					85		
Diamond Core Run 85-90'					86		
100% Recovery							
20% RQD					87		
					88		
					89		
					90		
Diamond Core Run 90-95'					91		
100% Recovery							
0% RQD					92		
					93		
					94		
					95		

ROTARY FIELD NOTES

TL-1271a (REV. 05/04/08)	9-27-2018	01	HUM	101	13.5 to 16.0
BORING NUMBER	DATE	DIST.	CO.	RTE.	P.M. (K.P.)
RC-18-013					

LOCATION (STA/OFFSET or NORTHING/EASTING) TOP HOLE ELEVATION BRIDGE # EFIS NUMBER

REMARKS (Tool Sizes/Type - Rods & Bits, etc) (Hole Condition – Caving, Squeezing, Loss of Circulation, etc) RECOVERY & RQD Drill Rig reactions – slowing, chattering, skipping, blocking off)	FIELD TESTING SAMPLE #	BLOWS PER 6"	SPT (N)		DEPTH	GRAPHIC LOG	DESCRIPTION Soil Classification *(group name, group symbol, consistency/relative density, color, moisture, percent of cobbles or boulders, particle size range, plasticity, cementation, description of cobbles and boulders. Take q_u, s_u, Additional Comments)* Rock Classification *(Rock name, bedding spacing, color, weathering descriptors, rock hardness, fracture density, discontinuity characteristic: type, weathering, dip & magnitude. Slaking, odor, other characteristics)*
							SEDIMENTARY ROCK (GREYWACKY), medium grained,
Diamond Core Run 95-100'					96		massive, light yellowish brown with black oxide fracture coatings,
100% Recovery							moderately weathered, moderately hard, moderately to intensely
33% RQD					97		Fractured (F2, 50 degrees, 0.5' spacing, slightly open, very thin
							Oxide coating, moderately hard, not healed, moderately rough).
					98		
					99		
					100		
							Bottom of Boring 100 Feet
					101		
					102		
					103		
					104		
					105		
					106		
					107		
					108		
					109		
					110		
					111		
					112		