

LOGGED BY T. Carroll	BEGIN DATE 5-31-08	COMPLETION DATE 6-1-08	BOREHOLE LOCATION (Lat/Long or North/East and Datum) N2120407.628 / E5994505.431 (NAD83)	HOLE ID BTNB-R2
DRILLING CONTRACTOR Gregg Drilling and Testing, Inc.			BOREHOLE LOCATION (Offset, Station, Line) Offset 70ft R Sta 81+44 NB Alignment	SURFACE ELEVATION 89.420 ft (NAVD88)
DRILLING METHOD Mud Rotary			DRILL RIG Fraste Multi-drill (truck)	BOREHOLE DIAMETER 5 in. (soil); 4 in. (rock)
SAMPLER TYPE(S) AND SIZE(S) (ID) MC (2.4"), SPT (1.4"), Bulk, Shelby (2.87"), 101-Sampler			SPT HAMMER TYPE Automatic, 140 lbs., 30-inch drop	HAMMER EFFICIENCY, ERI 76.2%
BOREHOLE BACKFILL AND COMPLETION Neat Cement Grout backfill			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS	TOTAL DEPTH OF BORING 71.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		4" ASPHALT CONCRETE. 7-8" UNREINFORCED CONCRETE.												
87.42	2		3" Poorly graded SAND (SP), yellowish brown, dry to moist, fine, clean, frequent roots up to 1/4" diameter. [FILL]		B1										
	3		SILTY SAND (SM), poorly compacted, yellowish brown, moist, fine, GRAVEL is fine to coarse, slight horizontal laminations (from compaction?).		S2	4 7 9	16	83							
85.42	4		SANDY SILT (ML), moderately compacted, yellowish brown, moist, SAND is fine to medium, piece of coarse GRAVEL.		S3	3 4 16	20	78				PP = 1.5			
83.42	6		CLAYEY GRAVEL (GC), loose, yellowish brown and green, moist, GRAVEL is coarse, rounded, serpentinite fragment (up to 3" diameter in shoe at 8.5'), CLAY is stiff.												
81.42	8				S4	4 5 10	15	67							
79.42	10		CLAYEY SAND (SC), loose to medium dense, yellowish brown, fine with coarse SAND, fine GRAVEL (subrounded to rounded, serpentinite fragments in CLAYEY SAND matrix).		S5	4 4 6	10	44							
77.42	13		Lean CLAY with GRAVEL and SAND (CL), soft, brown and greenish gray, moist to wet, GRAVEL is angular serpentinite fragments, GRAVEL is fine to coarse, SAND is fine to coarse.		S6	4 8 7	15	47							
75.42	14				S7	3 2 4	6	44							
73.42	16		16.5', rig chatter.												
71.42	17		SILTY SAND (SM), loose, very dark brown, wet, fine, very strong hydrocarbon/oily odor. [BURIED SOIL HORIZON]		S8	3 3 3	6	72							
	18		Fat CLAY with SAND, medium stiff to stiff, very dark brown, wet, SAND is fine, with rootlets, very strong hydrocarbon odor. [COLMA FORMATION]		U9		500 psi, last 18"	67				PP = 1.63, 1.63, 1.75			
69.42	21		20.5', grades grayish brown, stiff, without odor, without organics.												
67.42	23				U10		1000 psi	100							
65.42	24				S11	9 19 42	61	67							

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REPORT TITLE BORING RECORD				HOLE ID BTNB-R2
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project				
BRIDGE NUMBER 34-0161R	PREPARED BY T. Carroll	DATE 11-3-08	SHEET 1 of 3	

Figure

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
63.42	25		METAMORPHIC ROCK (SERPENTINITE), very soft, yellowish brown, greenish gray and dark gray, moist, decomposed, very intensely fractured (SANDY SILT (ML), medium stiff, sand is fine - moist).		C12			15	0						101-Coring System
61.42	26		METAMORPHIC ROCK (SERPENTINITE), dark greenish gray and dark gray, moderately to intensely weathered, very soft, very intensely fractured, common iron-oxide staining (localized), occasional small moderately soft zones.		C13			50	N/A						
59.42	27		29.0', grades soft, intensely sheared throughout, fibrous texture common throughout (ML - SANDY SILT, SAND is fine, moist).		C14			100	N/A						C14, shoe plugged, replaced with smaller shoe
	28				C15			68	N/A						
57.42	29		32.0', slight iron-oxide staining, slightly weathered, harder fragments (angular) of SERPENTINITE with softer material washed away, fragments are moderately hard, up to 0.1' in diameter (SM - SILTY SAND, fine to coarse, angular, with fine GRAVEL fragments, angular to subangular, moist).		C16			37	N/A						
55.42	30				C17			50	N/A						
53.42	31		37.4', soft to moderately soft, faint iron-oxide staining on fracture surfaces. 37.7', fibrous texture noted as long as 0.02'. 37.9', moderately soft, bluish gray. 38.0', soft. 38.0', dark bluish gray with infilling of light greenish gray. 38.65', fibrous texture noted as long as 0.02'. 39.15', thin (0.01' thick) white mineral (talc?) vein dipping 50°. 40.0', moderately weathered with common iron-oxide staining. 41.3', slightly weathered, very soft.		C18			100	N/A						Slower drilling at 38'
51.42	32				C19			100	N/A						
49.42	33		44.35', angular fragments up to 0.1' diameter.		C20			100	N/A						End Box #1 at 42'
47.42	34				C21			50	N/A						
45.42	35		47.9' - 48.6', moderately hard, very intensely fractured, fragments of harder rock, dark gray.		C22			65	N/A						
43.42	36				C23			40	N/A						
41.42	37		50.0', soft to moderately soft.		C24			100	N/A						
39.42	38				C25			70	N/A						
37.42	39		51.5', very soft.		C26			32	N/A						
35.42	40				C27			75	N/A						
	41		54.2', very intensely fractured zone, fragments are moderately hard, dark bluish gray, overall matrix is very soft												

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PROJECT OR BRIDGE NAME Doyle Drive Replacement Project				
BRIDGE NUMBER 34-0161R	PREPARED BY T. Carroll	DATE 11-3-08	SHEET 2 of 3	

Figure

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
33.42	56		54.7', fibrous texture noted. METAMORPHIC ROCK (SERPENTINITE), dark greenish gray and dark gray, moderately to intensely weathered, very soft, very intensely fractured, common iron-oxide staining (localized), occasional small moderately soft zones.		C28			40	N/A						
	57		55.7', concentration of white mineral.		C29			50	0						
31.42	58		57.5' - 59.5', recovery is light gray meta-sandstone and gabbro, moderately weathered, hard, 0.1' to 0.2' fragments, significant iron-oxide staining, hard to moderately hard.		C30			33	0						
	59														
29.42	60		59.5', moderately weathered, soft, light greenish gray and orangish brown, heavy iron-oxide staining.		C31			75	N/A						
	61		59.7', concentrated iron-oxide weathering along shear planes.												
27.42	62		61.5', moderately soft, slightly weathered, greenish gray to olive gray, with moderately hard, white and dark gray minerals (white mineral has very fine, fibrous texture developed along planar surfaces, asbestos? White mineral also common with powdery texture disseminated through rock mass).		C32			100	0						
	63				C33			100	N/A						
25.42	64		61.8', horizontal buff sheared seam (0.01' thick), fibrous texture noted.		C34			20	N/A						
	65		62.5', bluish gray, clayey, with green chlorite? minerals, moderately to slightly weathered, very soft.		C35			89	N/A						
23.42	66														
	67														
21.42	68		67.0', moderately weathered, increase in iron-oxide staining.		C36			54	N/A						
	69		67.4' - 67.7', moderately hard rock fragments (gabbro?).												
19.42	70				C37			43	N/A						
	71		70.2', moderately to slightly weathered, increase in white mineral (talc) disseminated throughout.		C38			75	N/A						
	72		71.5', hard rock fragments.		C39			100	N/A						Switch to HQ at 71'
17.42	72		Borehole terminated at a depth of 71.5 feet on 6/1/2008.		C40										
	73		See Boring Record Legend for soil classification chart and key to test data and sampler type.												
15.42	74														
	75														
13.42	76														
	77														
11.42	78														
	79														
9.42	80														
	81														
7.42	82														
	83														
5.42	84														
	85														

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Figure