


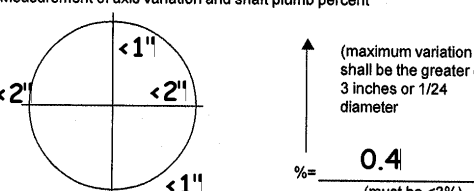
CDOT Forms Applicable for Geology Testing - 05

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COLORADO DEPARTMENT OF TRANSPORTATION PENETROMETER LOG			Project No. BR 139A-028		Project code (SA#) 15110	
Structure location I-70 @ M.M. 15.08			Project location Loma / I-70 Overpass			
Route I-70		County Mesa		Structure # H-1-AA		Bent 1
Top hole elevation 4586.2		Geologist John Doe		Station 3+00		Date drilled 2-9-93
				Boring # LOEB-1		

Elevation	Depth	Blows	Elevation	Depth	Blows	Elevation	Depth	Blows	Elevation	Depth	Blows
	1	-		26	67		51			76	
	2	2		27	69		52			77	
	3	12		28	62		53			78	
	4	20		29	70		54			79	
4581	5	23	4556	30	101		55			80	
	6	27		31			56			81	
	7	37		32			57			82	
	8	37		33			58			83	
	9	34		34			59			84	
4576	10	37		35			60			85	
	11	42		36			61			86	
	12	39		37			62			87	
	13	47		38			63			88	
	14	57		39			64			89	
4571	15	47		40			65			90	
	16	55		41			66			91	
	17	46		42			67			92	
	18	54		43			68			93	
	19	69		44			69			94	
4566	20	57		45			70			95	
	21	70		46			71			96	
	22	62		47			72			97	
	23	59		48			73			98	
	24	64		49			74			99	
4561	25	70		50			75			100	

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COLORADO DEPARTMENT OF TRANSPORTATION			Page 1 of 1	
INSPECTOR'S REPORT OF CAISSON INSTALLATION				
Project No.: IM 0253-173		Project Code:		Date: 2-9-05
Completed by: Mark Vessely		Contractor: Jalisco International		
Geotechnical report reviewed: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Subcontractor: LMS Drilling		
Drilling start date & time: 1-9-05 @8:20 A.M.		Onsite representative: Jane Doe		
Drilling completed date & time: 1-9-05 @ 12:30 P.M.		Drill rig details: Piradrill Wheel Rig		
Structure number: E - 17- ZW		Depth & time: Geology & comments (i.e. water, caving, slurry loss, obstructions)		
Shaft location/number: Pier 2 / Shaft 4				
Caisson details (designate units)		Plan	As built	
Shaft diameter		54 inch	54 inch	0 ft.
Casing diameter			N/A	8:20 am
Top of shaft elevation		5354.49	5354.49	Drilling started , dark grey clay fill encountered to 3 ft. Then native brown silty clay with sand.
Bottom of casing elevation			N/A	
Top of socket elevation		5326	5328	10 ft @8:30 am
Tip elevation		5309	5307	Driller noted firmer drilling after 11 ft. Cuttings consist of moist, brown, sandy & silty clay.
Socket length (in bedrock)		17 ft.	21 ft.	17 ft @ 8:45 am
Shaft length		45.5 ft.	48 ft.	Drilling Stopped to move soil cuttings with bobcat.
Steel reinforcement details: (use CDOT Form #279 if necessary)				
 #5's @ 1Ft. 19 No 9's		9:20 am		
Cage clearance from hole bottom= 6 inches		Drilling resumed @ 17 ft		
Concrete observations (attach load tickets & test results)		Increase in drilling resistance @ 18' cuttings consist of blocky, weathered grey claystone. (incompetent bedrock)		
Concrete placement method: Tremie		25 ft @ 10:15 am		
Design volume: 27 yds		Drilling halted briefly to remove cutting piles.		
Actual volume: 28.5 yds		28 ft @ 10:30 am		
Class & slump: BZ / 5 3/4"		Significant increase in drill resistance cuttings consist of very hard, grey & rusty claystone bedrock. -top of rock socket.		
Placement start time and date: 2-9-05 12:40 P.M.		35 ft @ 10:55am		
Placement end time and date: 2-9-05 1:30 P.M.		5 min stop to change teeth on auger		
Water depth at start of concrete placement: < 2 Inches		40.5 ft @ 11:20am		
Measurement of axis variation and shaft plumb percent		Fine Grained sandstone in cuttings		
 (maximum variation shall be the greater of 3 inches or 1/24 diameter)		48 ft @ 12:20 pm		
Shaft conditions:		Driller over drilled to 48 ft. Some water infiltration occurring in sandstone @ 41 ft. Hole cleaned w/ mudbucket @ 12:30 pm.		
Bottom		Perimeter		
Elevations				
<input type="checkbox"/> Clean	<input type="checkbox"/> Smooth	Above 5336		
<input checked="" type="checkbox"/> Clean with fragments	<input checked="" type="checkbox"/> Rough	Below 5336		
<input checked="" type="checkbox"/> Wet	<input checked="" type="checkbox"/> Grooved			
<input type="checkbox"/> Not observable	<input type="checkbox"/> Shear rings			
<input type="checkbox"/> Other				
Groundwater conditions:		Pay length= 45.5 ft		
<input type="checkbox"/> None		<input checked="" type="checkbox"/> Intermittent		
		<input type="checkbox"/> Continuous		
Other comments (drilling equipment changes, contractor communication, out of roundness, change in cage elevation, weather, changes to design): Top of Caisson is about 5.5 ft below current grade. Rock Socket is defined as competent bedrock below weathered material. Cage length was over by 3 ft. and was extended into pier.				
Notes: 1) For any caisson in shale, if concrete is not placed within 4 hours of drilling, an additional 1/3 of penetration shall be drilled. 2) A hole may be considered dry at time of concrete placement, if without dewatering, water depth is less than 2 inches.				

Distribution: Project file (original)

CDOT Form #1333 2/05

COLORADO DEPARTMENT OF TRANSPORTATION GEOLOGICAL BORING LOG																		
Project Code: 14834		Project Description: Mroon Creek Bridge																
Depth M	Boring Operation (min./ft.)	% Drilling fluid recovery	% Core recovery	% RQD	SPT results	N Value	Sample #	Sample type	Discontinuities									
									Spacing		Orientation		Description					
0	50	/ /	/ /	/ /	/ /	/ /	/ /	/ /	1	2	3	4	5	H	45	V	Description	
6.5'	5'/min	0			5 7	12	19	12A	X									As Above
10	5'/min	0			/ /	/ /	/ /	/ /										More difficult Drilling after 10'; Cobbles Fragments Observed in Core Barrel when pulled @ 11.5 ft Sub rounded Pieces Ranging from 4" to 6" in Diameter
13	2'/min	25	100	50*	/ /	/ /	/ /	/ /	X	X	X	X	X	X	X	X	X	Shale, Bedrock, Very Hard, Slightly Weathered. Steep Jointing >45 deg. relative To Near Horizontal bedding, Slight alterations, Dark Grey.
16.5	1'/min	0	100	60	/ /	/ /	/ /	/ /	X	X	X	X	X	X	X	X	X	*RQD Likely Higher Due to Fracturing That Occurred During extraction.
21.5	1'/min	0	100	63*	/ /	/ /	/ /	/ /	X	X	X	X	X	X	X	X	X	As Above
Boring stopped @ 21.5 Ft. Piezometer Set With Screen From 5 to 21.5 Ft. Hole Backfilled With Cuttings.																		

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Rock hardness		Fractures		Particle size	
Very plastic	Claystone, clayey fault gouge & rocks altered to clay Knife: easily cut	Fault	A fracture along which there has been an observable displacement. Faults are rarely single planar units; normally they occur as parallel or sub-parallel sets of fractures along which movement has taken place to a greater or lesser extent.	<3/4 in.	Sand
Plastic	Claystone, clayey fault gouge & rocks altered to clay Knife: can be cut	Bedding	A surface parallel to the surface of deposition, which may or may not have a physical expression. Note that the original attitude of the bedding plane should not be assumed to be horizontal.	3/4 in. - 3 in.	Gravel
Friable	Brittle rocks which can be broken in the hand or by light blows w/ pick point.	Foliation	The parallel orientation of platy minerals, or mineral banding in metamorphic rock.	3 in. - 1 ft.	Cobble
Very low	Knife: Easily gouged deeply or carved	Joint	A fracture in which there has been no observable relative movement. In general joints intersect primary surfaces such as bedding, cleavage & schistosity. A series of parallel joints is called a joint set; two or more intersecting sets produce a joint system; two sets of joints nearly at right angles to one another are said to be conjugate.	>1 ft.	Boulder
Low	Knife: Deep gouges or scrapes are difficult	Cleavage	Parallel fractures formed in incompetent layers in a series of beds of varying degrees of competency. In general, the term implies that the cleavage planes are not controlled by mineral particles in parallel orientation.	Relative density of granular soils	
Moderate	Knife: Readily scratched (leaves dust & scratch is readily visible when dust blown away)	Schistosity	The foliation in schist or other coarse-grained crystalline rock do to the arrangement of mineral grains of the platy or prismatic type. Usually mica.	<i>N</i>	<i>Field Approximation</i>
Hard	Knife: Can be scratched w/ difficulty (leaves only little dust & often only faintly visible)	Rock alteration	Unaltered	0-4	V Loose
Very Hard	Knife: Cannot be scratched	Slight	Rock shows no discoloration, loss of strength or other effects of weathering or alteration	4-10	Loose
Shale bedrock hardness		Moderate	Rock is slightly discolored but not noticeably lower in strength than fresh rock	10-30	MDense
<i>N</i>	<i>Field Approximation</i>	High	Rock is discolored & noticeably weakened, but a 50mm core cannot usually be broken by hand across the rock fabric	30-50	Dense
<20	Clay (weathered claystone)	Extreme	Rock is weakened to such an extent that a 50mm core can be broken readily by hand across the rock fabric	>50	V Dense
20-30	Firm	Discontinuities			
30-50	Med hard	1. Very wide	> 3m	> 10 ft.	
50-80	Hard	2. Wide	90cm - 3m	36 in. - 10 ft.	
>80	Very hard	3. Mod close	30cm - 90cm	12 in. - 36 in.	
Weathering		4. Close	5cm - 30cm	2 in. - 12 in.	
UnW	Unweathered except for joints, fresh fabric	5. Very close	< 5cm	< 2 in.	
SW	Slightly weathered, not indented by steel nail				
MdW	Moderately weathered, breaks with difficulty				
HW	Highly weathered, rock-like, easily broken				
Dec	Decomposed, soil-like				
Consistency of cohesive soils					
<i>N</i>	<i>Field Approximation</i>				
<2	VSoft				
2-4	Soft				
4-8	MStiff				
8-15	Stiff				
15-30	VStiff				
30-60	Hard				
>60	VHard				

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