

**CDOT Forms Applicable for Geology Testing - 05**


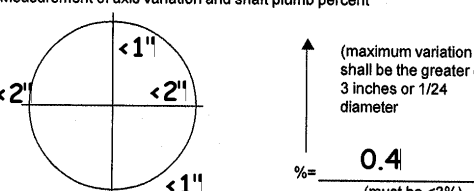
<b>Form</b>	<b>Title</b>	<b>Page</b>
CDOT Form 334	Penetrometer Log.....	2
CDOT Form 1333	Inspector's Report of Caisson Installation.....	3
CDOT Form 1334	Geological Boring Log.....	4-5

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

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

CDOT Form #334 3/04

COLORADO DEPARTMENT OF TRANSPORTATION			Page 1 of 1	
INSPECTOR'S REPORT OF CAISSON INSTALLATION				
Project No.: <b>IM 0253-173</b>		Project Code:		Date: <b>2-9-05</b>
Completed by: <b>Mark Vessely</b>		Contractor: <b>Jalisco International</b>		
Geotechnical report reviewed: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Subcontractor: <b>LMS Drilling</b>		
Drilling start date & time: <b>1-9-05 @8:20 A.M.</b>		Onsite representative: <b>Jane Doe</b>		
Drilling completed date & time: <b>1-9-05 @ 12:30 P.M.</b>		Drill rig details: <b>Piradrill Wheel Rig</b>		
Structure number: <b>E - 17- ZW</b>		Depth & time: Geology & comments (i.e. water, caving, slurry loss, obstructions)		
Shaft location/number: <b>Pier 2 / Shaft 4</b>				
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= <b>6 inches</b>		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: <b>Tremie</b>		25 ft @ 10:15 am		
Design volume: <b>27 yds</b>		Drilling halted briefly to remove cutting piles.		
Actual volume: <b>28.5 yds</b>		28 ft @ 10:30 am		
Class & slump: <b>BZ / 5 3/4"</b>		Significant increase in drill resistance cuttings consist of very hard, grey & rusty claystone bedrock. -top of rock socket.		
Placement start time and date: <b>2-9-05 12:40 P.M.</b>		35 ft @ 10:55am		
Placement end time and date: <b>2-9-05 1:30 P.M.</b>		5 min stop to change teeth on auger		
Water depth at start of concrete placement: <b>&lt; 2 Inches</b>		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= <b>45.5 ft</b>		
<input type="checkbox"/> None		<input checked="" type="checkbox"/> Intermittent		
		<input type="checkbox"/> Continuous		
<b>Other comments</b> (drilling equipment changes, contractor communication, out of roundness, change in cage elevation, weather, changes to design): <b>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.</b>				
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 <b>GEOLOGICAL BORING LOG</b>																				
Project Code: <b>14834</b>		Project Description: <b>Mroon Creek Bridge</b>																		
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																		
6.5'	5'/min	0			5 7	12 19	12A	X												
10	5'/min	0																		
13	2'/min	25	100	50*			12B	X	X	X	X	X	X	X	X	X	X	X	X	X
16.5	1'/min	0	100	60			12C	X	X	X	X	X	X	X	X	X	X	X	X	X
21.5	1'/min	0	100	63*																
										As Above										
										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										
										Shale, Bedrock, Very Hard, Slightly Weathered, Steep Jointing >45 deg. relative To Near Horizontal bedding, Slight alterations, Dark Grey. *RQD Likely Higher Due to Fracturing That Occurred During extraction.										
										As Above										
										Boring stopped @ 21.5 Ft. Piezometer Set With Screen From 5 to 21.5 Ft. Hole Backfilled With Cuttings.										

Boring #:	B-I2	Page:	1 of 1
Start date:	11-18-04	Finish date:	11-18-04
Engr/Geol:	M. Vessely	Driller:	D. Novak
Rig:	CME 550	<input type="checkbox"/> Auger	<input checked="" type="checkbox"/> Wireline <input type="checkbox"/> Other
Description			
Sand, Medium to Coarse Grained With Gravel, Medium Dense, Moist to Wet @ 6 ft. Light Brown, Tan, Frequent Cobbles Below 10 ft.			
As Above			
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			
Shale, Bedrock, Very Hard, Slightly Weathered, Steep Jointing >45 deg. relative To Near Horizontal bedding, Slight alterations, Dark Grey. *RQD Likely Higher Due to Fracturing That Occurred During extraction.			
As Above			
Boring stopped @ 21.5 Ft. Piezometer Set With Screen From 5 to 21.5 Ft. Hole Backfilled With Cuttings.			

Date:	11-18-04	11-19-04	
Depth:	7.6 Ft.	7.1 Ft.	
SPT		<input checked="" type="checkbox"/> California <input type="checkbox"/> Continuous	
Grab		<input checked="" type="checkbox"/> Shelby <input type="checkbox"/> Core	

CDOT Form #1334 205

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.	<b>Relative density of granular soils</b>	
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)	<b>Rock alteration</b>	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
<b>Shale bedrock hardness</b>		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	VDense
20-30	Firm	<b>Discontinuities</b>			
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.	
<b>Weathering</b>		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				
<b>Consistency of cohesive soils</b>					
<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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