

CDOT Forms Applicable for Geology Testing - 15

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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		
Top hole elevation 4586.2			Geologist John Doe			Bent 1		
			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	

CDOT Form #334 3/04

**COLORADO DEPARTMENT OF TRANSPORTATION
INSPECTOR'S REPORT OF CAISSON INSTALLATION**

Page 1 of 1

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	

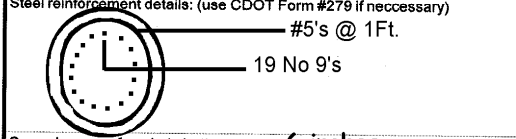
Structure number: E - 17- ZW	Depth & time: Geology & comments (i.e. water, caving, slurry loss, obstructions)
Shaft location/number: Pier 2 / Shaft 4	

Caisson details (designate units)	Plan	As built
Shaft diameter	54 inch	54 inch
Casing diameter		N/A
Top of shaft elevation	5354.49	5354.49
Bottom of casing elevation		N/A
Top of socket elevation	5326	5328
Tip elevation	5309	5307
Socket length (in bedrock)	17 ft.	21 ft.
Shaft length	45.5 ft.	48 ft.

0 ft. 8:20 am Drilling started, dark grey clay fill encountered to 3 ft. Then native brown silty clay with sand.

10 ft @8:30 am Driller noted firmer drilling after 11 ft. Cuttings consist of moist, brown, sandy & silty clay.

17 ft @ 8:45 am Drilling Stopped to move soil cuttings with bobcat.



9:20 am Drilling resumed @ 17 ft
Increase in drilling resistance @ 18' cuttings consist of blocky, weathered grey claystone. (incompetent bedrock)

Cage clearance from hole bottom= **6 inches**

25 ft @ 10:15 am Drilling halted briefly to remove cutting piles.

Concrete observations (attach load tickets & test results)

Concrete placement method: **Tremie**

Design volume: **27 yds**

Actual volume: **28.5 yds**

Class & slump: **BZ / 5 3/4"**

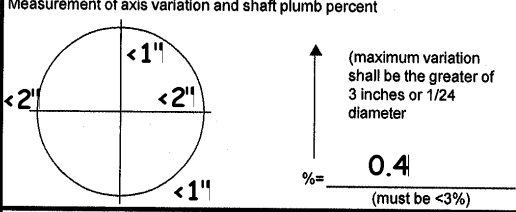
Placement start time and date: **2-9-05 12:40 P.M.**

Placement end time and date: **2-9-05 1:30 P.M.**

Water depth at start of concrete placement: **< 2 Inches**

28 ft @ 10:30 am Significant increase in drill resistance cuttings consist of very hard, grey & rusty claystone bedrock. -top of rock socket.

35 ft @ 10:55am 5 min stop to change teeth on auger



40.5 ft @ 11:20am Fine Grained sandstone in cuttings

48 ft @ 12:20 pm Driller over drilled to 48 ft. Some water infiltration occurring in sandstone @41 ft. Hole cleaned w/ mudbucket @ 12:30 pm.

Shaft conditions:

Bottom	Perimeter	Elevations
<input type="checkbox"/> Clean	<input type="checkbox"/> Smooth	
<input checked="" type="checkbox"/> Clean with fragments	<input checked="" type="checkbox"/> Rough	Above 5336
<input checked="" type="checkbox"/> Wet	<input checked="" type="checkbox"/> Grooved	Below 5336
<input type="checkbox"/> Not observable	<input type="checkbox"/> Shear rings	
<input type="checkbox"/> Other		

Groundwater conditions:

None Intermittent Continuous

Pay length= **45.5 ft**

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.

Rock hardness	Fractures	Particle size
<p>Very plastic Claystone, clayey fault gouge & rocks altered to clay Knife: easily cut</p> <p>Plastic Claystone, clayey fault gouge & rocks altered to clay Knife: can be cut</p> <p>Friable Brittle rocks which can be broken in the hand or by light blows w/ pick point.</p> <p>Very low Knife: Easily gouged deeply or carved</p> <p>Low Knife: Deep gouges or scrapes are difficult</p> <p>Moderate Knife: Readily scratched (leaves dust & scratch is readily visible when dust blown away)</p> <p>Hard Knife: Can be scratched w/ difficulty (leaves only little dust & often only faintly visible)</p> <p>Very Hard Knife: Cannot be scratched</p>	<p>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.</p> <p>Bedding A surface parallel to the surface of disposition, 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.</p> <p>Foliation The parallel orientation of platy minerals, or mineral banding in metamorphic rock.</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p><3/4 in. Sand 3/4 in. - 3 in. Gravel 3 in. - 1 ft. Cobble >1 ft. Boulder</p>
<p>Shale bedrock hardness</p> <p><i>N</i> <u>Field Approximation</u></p> <p><20 Clay (weathered claystone) 20 - 30 Firm 30 - 50 Med hard 50 - 80 Hard >80 Very hard</p> <p>Weathering</p> <p>UnW Unweathered except for joints, fresh fabric 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</p> <p>Discontinuities</p> <p>1. Very wide > 3m > 10 ft. 2. Wide 90cm - 3m 36 in. - 10 ft. 3. Mod close 30cm - 90cm 12 in. - 36 in. 4. Close 5cm - 30cm 2 in. - 12 in. 5. Very close < 5cm < 2 in.</p>	<p>Relative density of granular soils</p> <p><i>N</i> <u>Desc</u> <u>Field Approximation</u></p> <p>0 - 4 V Loose Easily penetrated many inches (>12) with 1/2 in. rebar pushed by hand 4 - 10 Loose Easily penetrated several inches with 1/2 in. rebar pushed by hand 10 - 30 MDense Easily to moderately penetrated with 1/2 in. rebar driven with 5 lb. hammer 30 - 50 Dense Penetrated 1 ft. with difficulty using 1/2 in. rebar driven with 5 lb. hammer >50 VDense Penetrated only a few inches with 1/2 in. rebar driven with 5 lb. hammer</p> <p>Consistency of cohesive soils</p> <p><i>N</i> <u>Desc</u> <u>Field Approximation</u></p> <p><2 VSoft Squeezes between fingers when fist is closed; easily penetrated several inches by fist 2 - 4 Soft Easily molded by fingers; easily penetrated several inches by thumb 4 - 8 MStiff Molded by strong pressure of fingers; can be penetrated several inches by thumb with moderate effort 8 - 15 Stiff Deformed by strong pressure of fingers; readily indented by thumb but can be penetrated only with great effort 15 - 30 VStiff Readily indented by thumb nail 30 - 60 Hard Indented with difficulty by thumb nail >60 VHard</p>	

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