

Appendix I. Point Load Test Data

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Appendix I-1 Point Load Index Test Data – Dam Site

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Point Load Index Summary Table

Boring Number	Depth Interval		Rock Type ¹	Diameter (D)		Distance Between Contact Points (in)	Distance Between Contact Points (cm)	Length - Contact Points to End of Sample, L (in)	L/D ²	Test Type ³	Failure Load, P (kN) ⁴	Uncorrected Point Load, I _s (Mpa) ⁵	Size Correction Factor, F ⁶	Point Load, I _{s(50)} (MPa) ⁷	Uniaxial Compressive Strength, s _c (Mpa) ⁸	Uniaxial Compressive Strength, psi	Weathering
	Top	Bottom		(mm)	(in)												
CB-01	109.7	110.1	Basalt	60.00	2.38	2.36	6.00	1.00	0.42	d	4.92	1.37	1.09	1.48	33	4856	Mod Wx
CB-01	124.4	124.8	Basalt	60.00	2.39	2.36	6.00	1.25	0.53	d	2.17	0.60	1.09	0.65	15	2142	SI-Mod Wx
CB-01	135.5	136.1	Basalt	60.00	2.39	2.36	6.00	1.00	0.42	d	19.74	5.48	1.09	5.95	134	19485	SI Wx
CB-01	160.0	160.7	Basalt	60.00	2.39	2.36	6.00	2.25	0.95	d	24.83	6.90	1.09	7.49	169	24509	Fr
CB-02	17.0	17.8	Basalt	61.00	2.39	2.40	6.10	4.00	1.67	d	22.01	5.92	1.09	6.47	145	21019	SI Wx
CB-02	32.5	33.1	Basalt	61.00	2.39	2.40	6.10	3.00	1.25	d	33.69	9.05	1.09	9.90	222	32173	Fr
CB-02	46.3	47.0	Basalt	61.00	2.38	2.40	6.10	3.00	1.25	d	25.89	6.96	1.09	7.61	170	24724	Fr
CB-03	38.1	38.4	Basalt	60.00	2.31	2.36	6.00	2.00	0.85	d	36.95	10.26	1.09	11.14	251	36472	SI Wx
CB-03	68.7	69.2	Basalt	56.00	2.38	2.20	5.60	7.55	3.42	d	13.77	4.39	1.05	4.62	108	15603	Mod Wx
CB-03	100.1	100.6	Basalt	60.00	2.31	2.36	6.00	3.25	1.38	d	32.22	8.95	1.09	9.72	219	31803	SI Wx
CB-03	121.7	122.1	Basalt	60.00	2.38	2.36	6.00	1.58	0.67	d	17.16	4.77	1.09	5.17	117	16938	Mod Wx
CB-03	123.3	123.9	Basalt	60.00	2.33	2.36	6.00	2.31	0.98	d	8.27	2.30	1.09	2.49	56	8163	SI-Mod Wx
CB-03	160.4	161.0	Basalt	60.00	2.38	2.36	6.00	3.25	1.38	d	20.29	5.64	1.09	6.12	138	20027	SI Wx
CB-04	12.3	12.7	Basalt	54.00	2.00	2.13	5.40	2.56	1.20	d	3.95	1.35	1.04	1.40	33	4813	Mod Wx
CB-04	16.0	16.6	Basalt	60.00	2.25	2.36	6.00	3.50	1.48	d	39.45	10.96	1.09	11.90	268	38940	SI Wx
CB-04	28.0	28.3	Basalt	60.00	2.38	2.36	6.00	2.00	0.85	d	14.56	4.04	1.09	4.39	99	14372	SI Wx
CB-04	37.6	38.0	Basalt	60.00	2.31	2.36	6.00	2.19	0.93	d	31.75	8.82	1.09	9.57	216	31339	SI Wx
CB-04	70.5	70.9	Basalt	59.00	2.38	2.32	5.90	2.50	1.08	d	2.39	0.69	1.08	0.74	17	2440	Mod Wx
CB-04	80.5	81.1	Basalt	60.00	2.38	2.36	6.00	5.40	2.29	d	2.14	0.59	1.09	0.65	15	2112	Mod Wx
CB-04	80.9	81.3	Basalt	59.00	2.38	2.32	5.90	2.75	1.18	d	3.72	1.07	1.08	1.15	26	3797	Mod Wx
CB-04	83.0	83.6	Basalt	60.00	2.50	2.36	6.00	3.63	1.53	d	2.02	0.56	1.09	0.61	14	1994	Mod Wx
CB-04	95.1	95.5	Basalt	60.00	2.30	2.36	6.00	2.49	1.05	d	2.14	0.59	1.09	0.65	15	2112	Mod Wx
CB-04	124.1	124.7	Basalt	60.00	2.38	2.36	6.00	3.38	1.43	d	40.30	11.19	1.09	12.15	274	39779	SI Wx

Notes:

¹ Based on Drill Logs

² ASTM D5731 calls for L/D > 0.5 for diametral test.

³ d = diametral, a = axial, b = block, ir = irregular lump

Reading from testing apparatus

⁵ I_s = P/D² (ASTM D5731 - for diametral test)

⁶ F = (D/50)^{0.5} (ASTM D5731 - for diametral test)

⁷ I_{s(50)} = I_s x F (ASTM D5731)

⁸ s_c = I_s x K; I_s is uncorrected point load index; K=24.5 for ~60 mm diameter cores (ASTM D5731)

⁹ Tests conducted on site at Nevada Irrigation District on November 18th and 23rd, 2015

POINT LOAD INDEX SUMMARY TABLE

Test Number	Test Order	Depth of Test	Boring Number	Date	Depth Interval		Rock Type ¹	Diameter (D)		Distance Between Contact Points (cm)	Distance Between Contact Points (in)	Length - Contact Points to End of Sample, L (in)	L/D ²	Test Type ³	Failure Load, P (kN) ⁴	Uncorrected Point Load, I _s (Mpa) ⁵	Size Correction Factor, F ⁶	Point Load, I _{s(50)} (MPa) ⁷	Uniaxial Compressive Strength, s _c (Mpa) ⁸	Uniaxial Compressive Strength, psi	Weathering	Notes
					Bottom	Top		(mm)	(in)													
CB10-1-26.1	1	26.1	CB-10	8/10/2016	25.9	26.3	Basalt	60.45	2.38	6.00	2.36	2.8	1.18	d	0.7	0.19	1.09	0.21	5	681	HW	
CB10-2-48.3	2	48.3	CB-10	8/10/2016	48.0	48.6	Basalt	58.67	2.31	6.00	2.36	1.7	0.74	d	NA		1.07				MW	Broke on preexisting plane; no load measured
CB10-3-35.8	3	35.8	CB-10	8/10/2016	35.7	36.0	Basalt	60.45	2.38	6.00	2.36	1.7	0.71	d	0.99	0.27	1.09	0.30	7	963	MW	
CB10-4-57.5	4	57.5	CB-10	8/10/2016	57.2	57.7	Basalt	60.45	2.38	6.00	2.36	2.5	1.05	d	15.26	4.18	1.09	4.55	102	14838	SW	Broke surificially
CB11-5-28.7	5	28.7	CB-11	8/10/2016	28.5	28.9	Basalt	60.45	2.38	6.00	2.36	2.0	0.84	d	18.23	4.99	1.09	5.43	122	17726	SW	Broke surificially on top and bottom
CB11-6-54.2	6	54.2	CB-11	8/10/2016	54.0	54.4	Basalt	60.45	2.38	6.00	2.36	2.2	0.92	d	22.13	6.06	1.09	6.60	148	21518	SW	Broke surificially on top
CB11-7-61.1	7	61.1	CB-11	8/10/2016	61.0	61.2	Basalt	60.45	2.38	6.00	2.36	1.4	0.59	d	2.24	0.61	1.09	0.67	15	2178	MW	Uneven surface
CB12-8-36.2	8	36.2	CB-12	8/10/2016	35.9	36.4	Basalt	60.71	2.39	6.00	2.36	2.7	1.13	d	23.4	6.35	1.09	6.93	156	22563	SW	Broke surificially on top and bottom
CB12-9-49.6	9	49.6	CB-12	8/10/2016	49.5	49.7	Breccia	60.45	2.38	6.00	2.36	1.4	0.59	d	16.79	4.59	1.09	5.00	113	16326	SW	Broke quasi surificially
CB13-19-54.3	19	54.3	CB-13	8/10/2016	54.0	54.5	Basalt	60.45	2.38	6.00	2.36	2.8	1.18	d	33.5	9.17	1.09	9.98	225	32574	SW	
CB13-20-81.5	20	81.5	CB-13	8/10/2016	81.3	81.6	Basalt	60.45	2.38	6.00	2.36	1.7	0.71	d	27.3	7.47	1.09	8.14	183	26545	SW	Broke surificially then loaded to 27.3 kN
CB13-21-87.2	21	87.2	CB-13	8/10/2016	86.9	87.5	Basalt	60.45	2.38	6.00	2.36	3.3	1.39	d	9	2.46	1.09	2.68	60	8751	SW	Broke on preexisting fracture
CB13-22-90.2	22	90.2	CB-13	8/10/2016	89.9	90.5	Basalt	60.45	2.38	6.00	2.36	2.6	1.09	d	24.28	6.64	1.09	7.24	163	23609	SW	Broke on preexisting fracture
CB13-23-114.5	23	114.5	CB-13	8/10/2016	114.2	114.8	Basalt	60.45	2.38	6.00	2.36	2.9	1.22	d	26.31	7.20	1.09	7.84	176	25583	SW	
CB14-24-62.7	24	62.7	CB-14	8/10/2016	62.4	63.0	Basalt	60.45	2.38	6.00	2.36	2.2	0.92	d	17.24	4.72	1.09	5.14	116	16763	SW	Broke surificially; L possibly too small due to inclined ends of sample
CB15-10-12.7	10	12.7	CB-15	8/10/2016	12.5	13.0	Basalt	60.20	2.37	6.00	2.36	2.9	1.22	d	17.09	4.72	1.09	5.13	116	16758	SW	Broke surificially
CB15-11-21.1	11	21.1	CB-15	8/10/2016	20.9	21.2	Basalt	60.20	2.37	6.00	2.36	1.2	0.51	d	18.36	5.07	1.09	5.51	124	18003	SW	Broke through short end; L possibly too small
CB15-12-25.3	12	25.3	CB-15	8/10/2016	24.9	25.5	Basalt	60.45	2.38	6.00	2.36	2.2	0.92	d	16.36	4.48	1.09	4.88	110	15908	SW	Broke surificially
CB15-13-28.3	13	28.3	CB-15	8/10/2016	28.0	28.6	Basalt	60.45	2.38	6.00	2.36	3.5	1.47	d	21.74	5.95	1.09	6.48	146	21139	SW	Broke surificially
CB15-14-43.8	14	43.8	CB-15	8/10/2016	43.6	44.0	Basalt	60.45	2.38	6.00	2.36	1.8	0.76	d	23.49	6.43	1.09	7.00	157	22841	SW	Broke surificially @ 18.69 kN continued loading till sample broke @ 23.49 kN
CB17-15-16.5	15	16.5	CB-17	8/10/2016	16.2	16.7	Basalt	60.45	2.38	6.00	2.36	2.3	0.97	d	25.04	6.85	1.09	7.46	168	24348	SW	Broke surificially @ 16.67 kN continued loading till sample broke @ 25.04 kN
CB18-25-10.6	25	10.6	CB-18	8/11/2016	10.3	10.8	Basalt	60.20	2.37	6.00	2.36	2.3	0.97	d	11.57	3.19	1.09	3.47	78	11345	SW	Broke on preexisting fracture
CB18-26-33.7	26	33.7	CB-18	8/11/2016	33.4	34.1	Basalt	60.45	2.38	6.00	2.36	3.5	1.47	d	17.19	4.70	1.09	5.12	115	16715	SW	Broke Surificially
CB19-16-20.9	16	20.9	CB-19	8/10/2016	20.5	21.2	Basalt	60.45	2.38	6.00	2.36	3.7	1.55	d	14.19	3.88	1.09	4.23	95	13798	SW	Broke surificially @ 14.19 kN continued loading till sample broke @ 14.19 kN on preexisting plane
CB19-17-26.5	17	26.5	CB-19	8/10/2016	26.3	26.8	Basalt	60.45	2.38	6.00	2.36	2.6	1.09	d	20.66	5.65	1.09	6.16	139	20089	SW	Broke surificially
CB19-18-42.4	18	42.4	CB-19	8/10/2016	42.0	42.7	Basalt	60.45	2.38	6.00	2.36	4.3	1.81	d	21.67	5.93	1.09	6.46	145	21071	SW	Broke surificially

Notes:

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- ³ d = diametral, a = axial, b = block, ir = irregular lump
- ⁴ Reading from testing apparatus
- ⁵ I_s = P/D² (ASTM D5731 - for diametral test)
- ⁶ F = (D/50)^{0.45} (ASTM D5731 - for diametral test)
- ⁷ I_{s(50)} = I_s x F (ASTM D5731)
- ⁸ s_c = I_s x K; I_s is uncorrected point load index; K=24.5 for ~60 mm diameter cores (ASTM D5731)

F	Fresh
SW	Slightly Weathered
MW	Moderately Weathered
HW	Highly Weathered
CW	Completely Weathered

Appendix I-2 Point Load Index Test Data – Rock Borrow Areas

Appendix I-2 Point Load Index Test Data – Rock Borrow Areas

POINT LOAD TEST RESULTS
OW Borings

Test Number	Test Order	Depth of Test	Boring Number	Date	Depth Interval		Rock Type ¹	Diameter (D)		Distance Between Contact Points (cm)	Distance Between Contact Points (in)	Length - Contact Points to End of Sample, L (in)	L/D ²	Test Type ³	Failure Load, P (kN) ⁴	Uncorrected Point Load, I _s (Mpa) ⁵	Size Correction Factor, F ⁶	Point Load, I _{s(50)} (MPa) ⁷	Uniaxial Compressive Strength, s _c (Mpa) ⁸	Uniaxial Compressive Strength, psi	Weathering	Notes
					Bottom	Top		(mm)	(in)													
CBB1-27-38.6	27	38.6	CB-B1	8/11/2016	38.5	38.8	Basalt	60.45	2.38	6.00	2.36	1.4	0.59	d	18.05	4.94	1.09	5.38	121	17551	MW	
CBB3-28-34.7	28	34.7	CB-B3	8/11/2016	34.5	34.9	Basalt	60.45	2.38	6.00	2.36	2.3	0.97	d	25.51	6.98	1.09	7.60	171	24805	SW-MW	Broke surificially
CBB3-29-45.2	29	45.2	CB-B3	8/11/2016	45.0	45.3	Basalt	60.45	2.38	6.00	2.36	1.6	0.67	d	20.23	5.54	1.09	6.03	136	19671	SW	Broke along fabric
CbB6-30-42.3	30	42.3	Cb-B6	8/11/2016	42.0	42.6	Basalt	60.45	2.38	6.00	2.36	2.5	1.05	d	23.6	6.46	1.09	7.03	158	22948	SW	Broke surificially @ 19.36 kN continued loading till sample broke surificially @ 23.6 kN
CBB7-31-3.2	31	3.2	CB-B7	8/11/2016	3.0	3.5	Basalt	60.45	2.38	6.00	2.36	2.1	0.88	d	10.98	3.00	1.09	3.27	74	10676	SW	Broke surificially
CBB8-32-51.3	32	51.3	CB-B8	8/11/2016	51.0	51.6	Basalt	60.45	2.38	6.00	2.36	2.4	1.01	d	27.34	7.48	1.09	8.15	183	26584	SW	

Notes:

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- ² ASTM D5731 calls for L/D > 0.5 for diametral test.
- ³ d = diametral, a = axial, b = block, lr = irregular lump
- ⁴ Reading from testing apparatus
- ⁵ I_s = P/D² (ASTM D5731 - for diametral test)
- ⁶ F = (D/50)^{0.45} (ASTM D5731 - for diametral test)
- ⁷ I_{s(50)} = I_s x F (ASTM D5731)
- ⁸ s_c = I_s x K; I_s is uncorrected point load index; K=24.5 for ~60 mm diameter cores (ASTM D5731)

- F Fresh
- SW Slightly Weathered
- MW Moderately Weathered
- HW Highly Weathered
- CW Completely Weathered

