BARNARD
BARNARD-PENNECON J.V.

June 30, 2015

Mr. Ed Over
Sr. Advisor – Commercial Strategies
Muskrat Falls Corporation
350 Torbay Road Plaza, Suite 2
St. John's, NL, Canada
A1A 4E1

Subject: RFP No. CH0009 – Revised Proposal Options

Dear Mr. Over:

Barnard-Pennecon J.V. (BPJV) is pleased to offer a best and final proposal for the North and South Dams project. As requested we have provided pricing based on two scenarios: the first, Option 1, Spillway Ready for Diversion July 15, 2016; and the second, Option 2, Delayed River Diversion June 1, 2017.

In our revised proposals, we have accounted for and incorporated all of the changes requested by Nalcor. Per your request, we have also updated Appendix A17 with clarifications and responses for our revised proposals. We have maintained our approach to the Project with a Craft Labour Target model as detailed below.

> Craft Labour Target – Craft labour shall be reimbursed to BPJV on an actual cost basis, including all labour costs associated with the Collective Labour Agreement, plus G&A and Fee, as detailed herein. G&A will be paid as a Fixed Fee at 7.9% of the Craft Labour Target. BPJV Fee will be paid at 8.3% of the Craft Labour Target with a 50/50 Risk/Reward for underrunning or overrunning the Craft Labour Target Price, until the fee is exhausted.

Craft Labour Target Price Model:

Craft Labour Target Price	$	52,183,863.65	
7.9% G&A Fixed Fee	$	4,122,525.23	G&A fixed at Craft Labour Target, no adjustment
8.3% At Risk Fee	$	4,331,260.68	Risk/Reward = 50/50
	$	60,637,649.56	

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BPJV is committed to accelerating the project schedule by any means necessary. Our proposal includes double-shifting and overtime of all critical path activities, however due to the delay of the spillway; we could not meet the 2017 completion date. As detailed in our schedule, we have included winter shutdown periods from November to May each season and we would be willing to work later into the winter and/or earlier in the spring if weather permits.

For Option 2, the Delayed River Diversion, it is anticipated that BPJV will be told by Nalcor whether the spillway will be completed by the July 15, 2016, milestone by December 31, 2015. The Delayed River Diversion Schedule has increased risk as it compresses the amount of time to complete the critical path. More activities are running concurrently and more are double-shifted, thus, translating into requiring more Foremen and oversight. BPJV believes all of the North Dam work can be completed by the end of 2018 barring unexpected river flows and weather. Crews will need to mobilize in May 2019 to complete final site cleanup, punch list activities and demobilization. Although we wouldn't be performing the river closure work in the 2016 season, BPJV would still plan for and perform construction activities that are available. These would include crushing of aggregate, South Dam excavation and grouting, installation of the temporary bridge, and installation of the intake cofferdam.

In closing, as detailed in our Organizational Chart and Key Personnel, we will provide an experienced North American staff that has the expertise necessary to properly execute the Project. We have excellent cost control and project management systems that even the world's largest competitors cannot match. Nalcor will know exactly where the Project is at all times, without surprise. Should Nalcor decide to consider alternate contract deliveries, BPJV would also entertain a Time and Materials approach to this project. We look forward to working with you on this Project. If you have any questions, please contact me at (406) 586-1995.

Kind Regards,

Derek Tisdel
Barnard-Pennecon J.V.

TABLE OF CONTENTS

* SAME FOR DELAYED RIVER CLOSURE PROPOSAL

LOWER CHURCHILL PROJECT
MUSKRAT FALLS
CH0009 - CONSTRUCTION OF NORTH AND SOUTH DAMS

SCHEDULE OF PRICE BREAKDOWN

ISSUED FOR: BID DATE: 6 - Jun - 2015

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	2	0000		INDIRECT COSTS							
1	2.1		0000.01	Mobilization	LS	1	130,514	$ 14,480,506.98	$ 45,519,493.02	$ 60,000,000.00	$ 60,000,000.00
2	2.2		0000.02	Site Installation	LS	1	86,318	$ 8,294,976.69	$ 35,405,023.31	$ 43,700,000.00	$ 43,700,000.00
3	2.3		0000.03	Management, Staff, employees and Consultants	LS	1	236,717	$ -	$ 45,000,000.00	$ 45,000,000.00	$ 45,000,000.00
4	2.4		0000.04	Health and Safety, Environmental and Quality Requirements	LS	1	4,503	$ 1,139,570.04	$ 1,860,429.96	$ 3,000,000.00	$ 3,000,000.00
5	2.5		0000.05	Credit, Guarantee and Insurance	LS	1	-	$ -	$ 5,000,000.00	$ 5,000,000.00	$ 5,000,000.00
6	2.6		0000.06	Warranty, per Article 17 of the Agreement	LS	1	-	$ -	$ 300,000.00	$ 300,000.00	$ 300,000.00
7	2.7		0000.07	Demobilization	LS	1	1,600	$ 146,560.56	$ 768,439.44	$ 915,000.00	$ 915,000.00
				SUB-TOTAL INDIRECT COSTS							$ 157,915,000.00
	3	1100		GENERAL							
	3.1		1110	DEWATERING OF STRUCTURE AREAS							
8	3.1.1		1110.01	Dewatering of Structure Areas	LS	1	3,450	$ 313,809.38	$ 1,836,190.62	$ 2,150,000.00	$ 2,150,000.00
	3.2		1111	EXCAVATION OF EXISTING COFFERDAMS							
9	3.2.1		1111.01	Excavation of Existing Embankment cofferdams 1, 2 and 3, and Existing Ramps	m^3	177,000	0.02	$ 1.87	$ 8.89	$ 10.76	$ 1,904,520.00
10	3.2.2		1111.02	Excavation of Downstream section of RCC riverside cofferdam	m^3	20,000	0.05	$ 4.63	$ 17.06	$ 21.69	$ 433,800.00
	3.3		1112	PERMANENT ROADS AND PARKING AREA							
11	3.3.1		1112.01	Overburden Excavation	m^3	8,000	0.03	$ 2.54	$ 6.21	$ 8.75	$ 70,000.00
12	3.3.2		1112.02	Other Material or Rockfill	m^3	44,000	0.02	$ 1.99	$ 1.76	$ 3.75	$ 165,000.00
13	3.3.3		1112.03	Maintenance Grade 3 material	m^3	6,000	0.08	$ 7.19	$ 59.81	$ 67.00	$ 402,000.00
14	3.3.6		1112.04	CSP culvert, dia. 900 mm	m	48	2.50	$ 228.85	$ 271.15	$ 500.00	$ 24,000.00
15	3.3.7		1112.05	Guide Rails	m	400	1.24	$ 113.54	$ 76.46	$ 190.00	$ 76,000.00
16	3.3.8		1112.06	Gate Type 1	unit	2	60.00	$ 5,563.68	$ 2,436.32	$ 8,000.00	$ 16,000.00
	3.5		1114	DITCHES							
17	3.5.1		1114.01	Overburden Excavation	m^3	2,000	0.24	$ 21.97	$ 20.03	$ 42.00	$ 84,000.00
18	3.5.2		1114.02	Non-woven Geotextile, min 300 g/m^2	m^2	2,500	0.03	$ 2.93	$ 4.07	$ 7.00	$ 17,500.00
19	3.5.3		1114.03	Rockfill Protection, 100 - 250 mm	m^3	1,000	0.12	$ 10.88	$ 66.12	$ 77.00	$ 77,000.00
	3.6		1115	SLOPE PROTECTION							
20	3.6.1		1115.01	Rockfill Protection, Zone 3E Material	m^3	2,500	0.13	$ 12.14	$ 77.86	$ 90.00	$ 225,000.00
21	3.6.2		1115.02	Non-woven Geotextile, min 530 g/m^2	m^2	4,500	0.04	$ 3.64	$ 4.86	$ 8.50	$ 38,250.00
	3.7		1116	CHAIN LINK FENCES AND GATES							
22	3.7.1		1116.01	Chain Link Fence and Gates	m	720	2.95	$ 278.67	$ 41.33	$ 320.00	$ 230,400.00
	3.8		1150	TEMPORARY UPSTREAM BRIDGE OVER SPILLWAY APPROACH CHANNEL							
23	3.8.1		1150.01	Engineering of Temporary Upstream Bridge	LS	1	-	$ -	$ 50,000.00	$ 50,000.00	$ 50,000.00
24	3.8.2		1150.02	Supply of Temporary Upstream Bridge	LS	1	-	$ -	$ 7,500,000.00	$ 7,500,000.00	$ 7,500,000.00
25	3.8.3		1150.03	Installation, removal and handover of Temporary Upstream Bridge	LS	1	16,250	$ 1,527,505.01	$ 1,197,494.99	$ 2,725,000.00	$ 2,725,000.00
				SUB-TOTAL GENERAL							$ 16,188,470.00

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CH0009 - CONSTRUCTION OF NORTH AND SOUTH DAMS

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APPENDIX A2.1
Rev. B3

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	4	2300		DAMS AND COFFERDAMS - GENERAL							
	4.1	2340	2341	UPSTREAM COFFERDAM							
				CIVIL WORK							
				Excavation							
26	4.1.1		2341.01	Overburden excavation	m^3	2,500	0.03	$ 2.57	$ 2.03	$ 4.60	$ 11,500.00
				Foundation Preparation in dry condition							
27	4.1.2		2341.02	Foundation Cleaning (water/air jets and Vacuum trucks)	m^2	1,200	0.28	$ 25.84	$ 12.16	$ 38.00	$ 45,600.00
28	4.1.3		2341.03	Rock Excavation including dental excavation and Scaling	m^3	500	0.52	$ 47.45	$ 77.55	$ 125.00	$ 62,500.00
29	4.1.4		2341.04	Dental Concrete	m^3	800	2.29	$ 209.56	$ 390.44	$ 600.00	$ 480,000.00
30	4.1.5		2341.05	Slush Grout	m^2	1,200	0.42	$ 38.14	$ 9.86	$ 48.00	$ 57,600.00
31	4.1.6		2341.06	Dry Pack	m^3	6	39.25	$ 3,598.54	$ 801.46	$ 4,400.00	$ 26,400.00
				Embankment Materials							
32	4.1.7		2341.07	Compacted Till - Zones 1 and 1C Materials	m^3	19,000	0.16	$ 14.90	$ 26.21	$ 41.11	$ 781,090.00
33	4.1.8		2341.08	Dumped Till - Zone 1A Material	m^3	134,000	0.10	$ 8.65	$ 20.35	$ 29.00	$ 3,886,000.00
34	4.1.9		2341.09	Compacted Granular - Zone 2A Material	m^3	20,700	0.17	$ 15.65	$ 43.35	$ 59.00	$ 1,221,300.00
35	4.1.10		2341.10	Compacted Granular - Zone 2C Material	m^3	8,700	0.18	$ 16.06	$ 43.94	$ 60.00	$ 522,000.00
36	4.1.11		2341.11	Dumped Granular - Zone 2E Material	m^3	26,300	0.13	$ 11.80	$ 38.20	$ 50.00	$ 1,315,000.00
37	4.1.12		2341.12	Dumped Rockfill- Zone 3 Material	m^3	143,000	0.02	$ 1.98	$ 9.02	$ 11.00	$ 1,573,000.00
38	4.1.13		2341.13	Dumped Large Blocks (300-1000 mm) - Zone 3 Class 1	m^3	37,000	0.02	$ 1.98	$ 9.02	$ 11.00	$ 407,000.00
39	4.1.14		2341.14	Dumped Large Blocks (≥1000 mm) - Zone 3 Class 2	m^3	65,000	0.05	$ 4.89	$ 22.11	$ 27.00	$ 1,755,000.00
40	4.1.15		2341.15	Dumped Large Blocks (≥1300 mm) - Zone 3 Class 3	m^3	15,000	0.05	$ 4.48	$ 22.52	$ 27.00	$ 405,000.00
41	4.1.16		2341.16	Compacted Crushed Stone - Zone 3A Material	m^3	10,950	0.18	$ 16.23	$ 43.77	$ 60.00	$ 657,000.00
42	4.1.17		2341.17	Compacted Rockfill - Zone 3C Material	m^3	33,740	0.11	$ 10.07	$ 33.93	$ 44.00	$ 1,484,560.00
43	4.1.18		2341.18	Compacted Rockfill - Zone 3D Material	m^3	33,900	0.05	$ 4.18	$ 11.82	$ 16.00	$ 542,400.00
44	4.1.19		2341.19	Dumped Crushed Stone- Zone 3F Material	m^3	21,000	0.13	$ 11.80	$ 38.20	$ 50.00	$ 1,050,000.00
				SUB-TOTAL UPSTREAM COFFERDAM							$ 16,282,950.00
	4.2	2340	2342	DOWNSTREAM COFFERDAM							
				CIVIL WORK							
				Excavation							
48	4.2.1		2342.01	Overburden excavation	m^3	500	0.08	$ 7.26	$ 13.74	$ 21.00	$ 10,500.00
				Foundation Preparation							
49	4.2.2		2342.02	Foundation cleaning (water/ait jets and Vacuum trucks)	m^2	1,250	0.28	$ 25.84	$ 12.16	$ 38.00	$ 47,500.00
50	4.2.3		2342.03	Rock excavation including dental excavation and scaling	m^3	500	0.52	$ 47.45	$ 77.55	$ 125.00	$ 62,500.00
51	4.2.4		2342.04	Dental Concrete	m^3	200	2.29	$ 209.56	$ 390.44	$ 600.00	$ 120,000.00
52	4.2.5		2342.05	Slush Grout	m^2	1,250	0.42	$ 38.14	$ 9.86	$ 48.00	$ 60,000.00

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53	4.2.6		2342.06	Dry Pack	m^3	6	39.25	$ 3,598.54	$ 801.46	$ 4,400.00	$ 26,400.00
				Embankment Materials							
54	4.2.7		2342.07	Compacted Till - Zones 1 and 1C	m^3	2,000	0.16	$ 14.90	$ 22.10	$ 37.00	$ 74,000.00
55	4.2.8		2342.08	Compacted Granular - Zone 2C	m^3	2,500	0.18	$ 16.37	$ 41.63	$ 58.00	$ 145,000.00
56	4.2.9		2342.09	Compacted Rockfill - Zone 3C	m^3	4,600	0.11	$ 10.30	$ 28.70	$ 39.00	$ 179,400.00
57	4.2.10		2342.10	Compacted Rockfill - Zone 3D	m^3	2,000	0.05	$ 4.18	$ 11.82	$ 16.00	$ 32,000.00
				SUB-TOTAL DOWNSTREAM COFFERDAM							$ 757,300.00
	4.3	2340	2343	INTAKE CHANNEL COFFERDAM							
				CIVIL WORK							
				Excavation							
58	4.3.1		2343.01	Overburden excavation	m^3	8,800	0.03	$ 2.64	$ 6.36	$ 9.00	$ 79,200.00
				Foundation Preparation							
59	4.3.2		2343.02	Foundation cleaning (water/ait jets and Vacuum trucks)	m^2	1,700	0.28	$ 25.84	$ 18.16	$ 44.00	$ 74,800.00
60	4.3.3		2343.03	Rock excavation including dental excavation and scaling	m^3	700	0.52	$ 47.45	$ 82.55	$ 130.00	$ 91,000.00
61	4.3.4		2343.04	Dental Concrete	m^3	250	2.29	$ 209.56	$ 390.44	$ 600.00	$ 150,000.00
62	4.3.5		2343.05	Slush Grout	m^2	1,700	0.42	$ 38.14	$ 9.86	$ 48.00	$ 81,600.00
63	4.3.6		2343.06	Dry Pack	m^3	9	39.24	$ 3,597.67	$ 802.33	$ 4,400.00	$ 39,600.00
				Embankment Materials							
64	4.3.7		2343.07	Compacted Till - Zones 1 and 1C	m^3	6,300	0.16	$ 14.90	$ 25.10	$ 40.00	$ 252,000.00
65	4.3.8		2343.08	Compacted Granular - Zone 2C	m^3	4,900	0.18	$ 16.27	$ 48.73	$ 65.00	$ 318,500.00
66	4.3.9		2343.09	Compacted Rockfill - Zone 3C	m^3	5,200	0.11	$ 10.05	$ 34.95	$ 45.00	$ 234,000.00
67	4.3.10		2343.10	Compacted Rockfill - Zone 3D	m^3	1,400	0.05	$ 4.18	$ 14.82	$ 19.00	$ 26,600.00
				SUB-TOTAL INTAKE CHANNEL COFFERDAM							$ 1,347,300.00
	4.4		2330	SOUTH DAM							
				CIVIL WORK							
				Excavation							
68	4.4.1		2330.01	Overburden excavation	m^3	94,000	0.03	$ 2.64	$ 5.36	$ 8.00	$ 752,000.00
				Foundation Preparation							
69	4.4.2		2330.02	Foundation cleaning (water/ait jets and Vacuum trucks)	m^2	3,400	0.28	$ 25.84	$ 18.16	$ 44.00	$ 149,600.00
70	4.4.3		2330.03	Rock excavation including dental excavation and scaling	m^3	2,000	0.52	$ 47.45	$ 82.55	$ 130.00	$ 260,000.00
71	4.4.4		2330.04	Dental Concrete	m^3	1,200	2.29	$ 209.56	$ 390.44	$ 600.00	$ 720,000.00
72	4.4.5		2330.05	Slush Grout	m^2	3,400	0.42	$ 38.14	$ 9.86	$ 48.00	$ 163,200.00
73	4.4.6		2330.06	Dry Pack	m^3	20	39.24	$ 3,597.66	$ 802.34	$ 4,400.00	$ 88,000.00
74	4.4.7		2330.07	Drilling Holes for Grouting	m	1,200	0.29	$ 26.78	$ 178.22	$ 205.00	$ 246,000.00
75	4.4.8		2330.08	Dry cement incorported in the grout	kg	42,000	-	$ -	$ 8.00	$ 8.00	$ 336,000.00
76	4.4.9		2330.09	Cored Drill Check Holes	m	30	-	$ -	$ 400.00	$ 400.00	$ 12,000.00

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77	4.4.10		2330.10	Percussion Drilling Check holes	m	60	-	$ -	$ 175.00	$ 175.00	$ 10,500.00
78	4.4.11		2330.11	Grouting - Successful connections	unit	250	-	$ -	$ 156.00	$ 156.00	$ 39,000.00
79	4.4.12		2330.12	Water pressure test (Lugeon - 5 Stages)	hour	8	-	$ -	$ 855.00	$ 855.00	$ 6,840.00
80	4.4.13		2330.13	Water test - Successful connections	unit	18	-	$ -	$ 380.00	$ 380.00	$ 6,840.00
81	4.4.14		2330.14	Uplift gauges	m	20	-	$ -	$ 788.00	$ 788.00	$ 15,760.00
82	4.4.15		2330.15	Thermistors (measure rock temperature in grout holes)	unit	1	-	$ -	$ 13,000.00	$ 13,000.00	$ 13,000.00
				Embankment Materials							
83	4.4.16		2330.16	Compacted Till - Zones 1 and 1C	m^3	26,000	0.15	$ 13.91	$ 21.09	$ 35.00	$ 910,000.00
84	4.4.17		2330.17	Compacted Granular - Zone 2A	m^3	28,000	0.19	$ 16.92	$ 45.08	$ 62.00	$ 1,736,000.00
85	4.4.18		2330.18	Compacted Crushed Stone - Zone 3A	m^3	12,000	0.19	$ 16.92	$ 45.08	$ 62.00	$ 744,000.00
86	4.4.19		2330.19	Compacted Crushed Stone - Zone 3B	m^3	16,000	0.19	$ 16.92	$ 45.08	$ 62.00	$ 992,000.00
87	4.4.20		2330.20	Compacted Rockfill - Zone 3C	m^3	21,000	0.10	$ 9.42	$ 32.58	$ 42.00	$ 882,000.00
88	4.4.21		2330.21	Compacted Rockfill - Zone 3D	m^3	46,000	0.04	$ 3.55	$ 14.45	$ 18.00	$ 828,000.00
89	4.4.22		2330.22	Riprap - Zone 4	m^3	6,000	0.11	$ 10.39	$ 65.61	$ 76.00	$ 456,000.00
90	4.4.23		2330.23	Compacted Crushed Stone - Zone 5	m^3	310	0.24	$ 22.04	$ 69.96	$ 92.00	$ 28,520.00
91	4.4.24		2330.24	Jersey Barrier	m	600	0.08	$ 7.60	$ 7.40	$ 15.00	$ 9,000.00
				Geotechnical Instrumentation							
92	4.4.25		2330.25	V-Notch Weirs, excluding Shelters	unit	2	134	$ 12,297.14	$ 23,702.86	$ 36,000.00	$ 72,000.00
93	4.4.26		2330.26	Shelters for V-Notch Weirs	unit	2	20	$ 1,905.85	$ 15,094.15	$ 17,000.00	$ 34,000.00
94	4.4.27		2330.27	Survey Monuments at South Dam Crest	unit	3	-	$ -	$ 2,000.00	$ 2,000.00	$ 6,000.00
				SUB-TOTAL SOUTH DAM							$ 9,516,260.00

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	4.5		2320	NORTH DAM							
				CIVIL WORK							
				Clearing							
95	4.5.1		2320.01	Clearing of the North Abutment	Ha	3	267	$ 24,466.26	$ 50,533.74	$ 75,000.00	$ 225,000.00
				Excavation							
96	4.5.2		2320.02	Overburden Excavation	m^3	72,000	0.03	$ 3.02	$ 6.98	$ 10.00	$ 720,000.00
				Foundation Preparation							
97	4.5.3		2320.03	Foundation Cleaning (water/air jets and vacuum)	m^2	13,500	0.35	$ 32.29	$ 17.71	$ 50.00	$ 675,000.00
98	4.5.4		2320.04	Rock Excavation including Dental Excavation and Scaling	m^3	6,000	0.52	$ 47.45	$ 71.55	$ 119.00	$ 714,000.00
99	4.5.5		2320.05	Dental Concrete	m^3	500	2.29	$ 209.43	$ 390.57	$ 600.00	$ 300,000.00
99A				Leveling CVC	m^3	3,500	0.99	$ 90.14	$ 389.86	$ 480.00	$ 1,680,000.00
100	4.5.6		2320.06	Slush Grout	m^2	13,500	0.42	$ 38.14	$ 9.86	$ 48.00	$ 648,000.00
101	4.5.7		2320.07	Dry Pack	m^3	70	39.24	$ 3,597.66	$ 802.34	$ 4,400.00	$ 308,000.00
102	4.5.8		2320.08	Drilling Holes in RCC and Bedrock for Grouting	m	4,200	0.31	$ 28.69	$ 272.31	$ 301.00	$ 1,264,200.00
103	4.5.9		2320.09	Grouting - Successful Connections	unit	720	-	$ -	$ 126.00	$ 126.00	$ 90,720.00
104	4.5.10		2320.10	Dry Cement incorported in the grout	kg	126,000	-	$ -	$ 5.00	$ 5.00	$ 630,000.00
105	4.5.11		2320.11	Cored Drill Check Holes	m	60	-	$ -	$ 450.00	$ 450.00	$ 27,000.00
106	4.5.12		2320.12	Percussion Drilling Check Holes	m	120	-	$ -	$ 336.00	$ 336.00	$ 40,320.00
107	4.5.13		2320.13	Water pressure test (lugeon - 5 Stages)	hour	15	-	$ -	$ 778.00	$ 778.00	$ 11,670.00
108	4.5.14		2320.14	Water Pressure Test - Successful connections	unit	36	-	$ -	$ 325.00	$ 325.00	$ 11,700.00
109	4.5.15		2320.15	Uplift gauges	m	60	-	$ -	$ 665.00	$ 665.00	$ 39,900.00
110	4.5.16		2320.16	Thermistor (measure temperature in grout holes)	unit	1	-	$ -	$ 11,800.00	$ 11,800.00	$ 11,800.00
				Drainage Holes							
111	4.5.17		2320.17	Drilling Holes for Drainage in Foundation from Drainage Gallery, Φ76 mm	m	3,200	-	$ -	$ 267.00	$ 267.00	$ 854,400.00
112	4.5.18		2320.18	PVC Caps for Drainage Holes	unit	125	-	$ -	$ 28.00	$ 28.00	$ 3,500.00
113	4.5.19		2320.19	Drilling Holes Upward for Drainage from Drainage Gallery into RCC, Φ76 mm	m	3,200	-	$ -	$ 375.00	$ 375.00	$ 1,200,000.00
				Instrumentation							
114	4.5.20		2320.20	Drilling Holes for piezometers	m	100	-	$ -	$ 296.00	$ 296.00	$ 29,600.00
115	4.5.21		2320.21	Vibrating Wire and Standpipe Piezometers TYPE - 1, excluding Cables	unit	8	-	$ -	$ 13,600.00	$ 13,600.00	$ 108,800.00
116	4.5.22		2320.22	Vibrating Wire and Standpipe Piezometers TYPE - 2, excluding Cables	unit	2	-	$ -	$ 3,000.00	$ 3,000.00	$ 6,000.00
117	4.5.23		2320.23	Instrument Cable including PVC Conduits and Pull Boxes	m	2,700	-	$ -	$ 28.00	$ 28.00	$ 75,600.00
118	4.5.24		2320.24	Thermistors Cable in RCC	unit	8	-	$ -	$ 5,000.00	$ 5,000.00	$ 40,000.00
119	4.5.25		2320.25	V-notch Weirs	unit	4	-	$ -	$ 14,243.00	$ 14,243.00	$ 56,972.00
120	4.5.26		2320.26	Vibrating Wire Weir Monitors.	unit	4	-	$ -	$ 16,000.00	$ 16,000.00	$ 64,000.00
121	4.5.27		2320.27	Data logger, Terminal Box, Barometer Box including Grounding	LS	1	-	$ -	$ 150,000.00	$ 150,000.00	$ 150,000.00
122	4.5.28		2320.28	Crest Survey Monuments	unit	4	-	$ -	$ 2,000.00	$ 2,000.00	$ 8,000.00
				Concrete and RCC operations							
123	4.5.29		2320.29	Roller Compacted Concrete (RCC)	m^3	192,869	0.90	$ 82.80	$ 207.20	$ 290.00	$ 55,932,010.00
123A				Trial Demonstration Sections	m^3	4,612	0.36	$ 32.99	$ 257.01	$ 290.00	$ 1,337,480.00
124	4.5.30		2320.30	Conventional Vibrated Concrete (CVC) (Crest and Flip Bucket)	m^3	11,100	2.46	$ 226.49	$ 373.51	$ 600.00	$ 6,660,000.00

LOWER CHURCHILL PROJECT
MUSKRAT FALLS
CH0009 - CONSTRUCTION OF NORTH AND SOUTH DAMS

SCHEDULE OF PRICE BREAKDOWN

APPENDIX A2.1
Rev. B3

ISSUED FOR: BID DATE: 6 - Jun - 2015

BIDDER'S NAME: Barnard-Pennecon JV

PRICE ITEM No	PRICE ITEM REFERENCE Exhibit 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT ($ CAN) B	STAFF, MATERIAL, EQUIPMENT & SUBCONTRACT COST/UNIT ($ CAN)	UNIT PRICE| ($ CAN) F= (B+C+D+E)	TOTAL PRICE ($ CAN) G= A x F
125	4.5.31		2320.31	Facing Concrete	m^3	16,469	1.20	$ 111.77	$ 388.23	$ 500.00	$ 8,234,500.00
126	4.5.32		2320.32	GERCC or GEVR - Formed Faces	L	1	0.01	$ 0.55	$ 1.11	$ 1.66	$ 1.66
126.1				Facing in Place of GERCC	m^3	4,650	1.67	$ 153.90	$ 346.10	$ 500.00	$ 2,325,000.00
127	4.5.33		2320.33	Conventional Vibrated Concrete (North Abutment Crest Surface and Training Wall)	m^3	270	6.45	$ 593.46	$ 606.54	$ 1,200.00	$ 324,000.00
128	4.5.34		2320.34	Increase or decrease in quantity of cement - Bid Mix (rate only)	Kg	1	-	$ -	$ 0.38	$ 0.38	$ 0.38
129	4.5.35		2320.35	Increase or decrease in quantity of flyash - Bid Mix (rate only)	Kg	1	-	$ -	$ 0.38	$ 0.38	$ 0.38
130	4.5.36		2320.36	Increase or decrease in quantity of cement - Source B (rate only)	Kg	1	-	$ -	$ 0.38	$ 0.38	$ 0.38
131	4.5.37		2320.37	Increase or decrease in quantity of flyash - Source B (rate only)	Kg	1	-	$ -	$ 0.38	$ 0.38	$ 0.38
132	4.5.38		2320.38	Air-entraining Admixture	litre	315,000	-	$ -	$ 1.50	$ 1.50	$ 472,500.00
133	4.5.39		2320.39	Retarder Admixture	litre	336,000	-	$ -	$ 1.53	$ 1.53	$ 514,080.00
134	4.5.40		2320.40	Precast Concrete	LS	1	520	$ 46,870.31	$ 1,703,129.69	$ 1,750,000.00	$ 1,750,000.00
135	4.5.41		2320.41	Gallery Floor CVC Concrete	m^3	275	13.59	$ 1,244.24	$ 955.76	$ 2,200.00	$ 605,000.00
136	4.5.42		2320.42	Steel Reinforcement	kg	500,000	0.004	$ 0.34	$ 4.86	$ 5.20	$ 2,600,000.00
137	4.5.43		2320.43	Steel Guardrails	kg	5,200	0.03	$ 3.06	$ 14.94	$ 18.00	$ 93,600.00
138	4.5.44		2320.44	Waterstop	m	1,350	0.66	$ 60.16	$ 20.84	$ 81.00	$ 109,350.00
	4.6		2370	NORTH DAM - Auxiliary Services							
				ELECTRICAL WORK							
139	4.6.1		2370.01	Exothermic Connections.	unit	20	-	$ -	$ 1,710.00	$ 1,710.00	$ 34,200.00
140	4.6.2		2370.02	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	815	-	$ -	$ 137.00	$ 137.00	$ 111,655.00
141	4.6.3		2370.03	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	16	-	$ -	$ 75.00	$ 75.00	$ 1,200.00
142	4.6.4		2370.04	Embedded Copper Grounding Plates	unit	7	-	$ -	$ 1,710.00	$ 1,710.00	$ 11,970.00
				SUB-TOTAL NORTH DAM							$ 91,110,730.18
	5	3100		Powerhouse Channels							
	5.1		3120.00	Tailrace							
				CIVIL WORK							
				Tailrace Rock Plug - Overburden Excavation							
143	5.1.1		3120.01	Overburden Excavation, excluding excavation of Cofferdam 3 - Dry Conditions	m^3	12,000	0.02	$ 1.67	$ 6.33	$ 8.00	$ 96,000.00
				Tailrace Rock Plug - Rock Excavation							
144	5.1.2		3120.02	Tailrace Rock Plug Excavation including access ramp to powerhouse -Dry Conditions	m^3	170,000	0.07	$ 6.41	$ 18.91	$ 25.32	$ 4,304,400.00
145	5.1.3		3120.03	Tailrace Rock Plug - Underwater Excavation	m^3	34,000	0.17	$ 15.31	$ 47.05	$ 62.36	$ 2,120,240.00
				Tailrace Rock Plug - Stabilization and Rock Surface Protection							
146	5.1.4		3120.04	Grouted Rock Bolts Type A	unit	70	2.50	$ 230.49	$ 269.51	$ 500.00	$ 35,000.00
147	5.1.5		3120.05	Grouted Rock Bolts Type C	unit	20	5.00	$ 454.81	$ 440.19	$ 895.00	$ 17,900.00
148	5.1.6		3120.06	Chain Link Wire Mesh - Installation	m^2	2,500	0.36	$ 32.90	$ 35.50	$ 68.40	$ 171,000.00
149	5.1.7		3120.07	Chain Link Wire Mesh - Removal	m^2	20,300	0.04	$ 3.64	$ 0.26	$ 3.90	$ 79,170.00
150	5.1.8		3120.08	Existing Temporary Safety Fence - Removal	m	1,200	0.13	$ 12.21	$ 4.04	$ 16.25	$ 19,500.00
				SUB-TOTAL TAILRACE							$ 6,843,210.00

LOWER CHURCHILL PROJECT
MUSKRAT FALLS
CH0009 - CONSTRUCTION OF NORTH AND SOUTH DAMS

SCHEDULE OF PRICE BREAKDOWN

APPENDIX A2.1
Rev. B3

ISSUED FOR: BID DATE: 6 - Jun - 2015

BIDDER'S NAME: Barnard-Pennecon JV

PRICE ITEM		WBS CODE									
No	REFERENCE Exhibit 2 - ATT 1	CODE	SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT ($ CAN) B	STAFF, MATERIAL, EQUIPMENT & SUBCONTRACT COST/UNIT ($ CAN)	UNIT PRICE| ($ CAN) F= (B+C+D+E)	TOTAL PRICE ($ CAN) G= A x F
	6	1100		Borrow Areas							
	6.1		1117.00	Borrowed Construction Material							
151	6.1.1		1117.01	Overhaul of Borrowed Construction Material (rate only)	m3/km						$ 2.00

ROW A	**CALCULATED TOTAL OF LUMP SUM AND UNIT PRICE ITEMS (BASED ON APPROXIMATE QUANTITIES)**	$ 299,961,222.18

LOWER CHURCHILL PROJECT
MUSKRAT FALLS
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SCHEDULE OF PRICE BREAKDOWN

APPENDIX A2.1
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BIDDER'S NAME: Barnard-Pennecon JV

PRICE ITEM No	REFERENCE Exhibit 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT ($ CAN) B	STAFF, MATERIAL, EQUIPMENT & SUBCONTRACT COST/UNIT ($ CAN)	UNIT PRICE| ($ CAN) F= (B+C+D+E)	TOTAL PRICE ($ CAN) G= A x F
	7	1100		Optional Pricing for Temporary Access Road and Quarry							
	7.1		1113	ACCESS ROAD TO LAYDOWN AREA C1, If required							
152	7.1.1		1113.01	Other Material or Rockfill	m^3	28,000	0.04	$ 3.80	$ 8.70	$ 12.50	$ 350,000.00
153	7.1.2		1113.02	Maintenance Grade No 3	m^3	4,000	0.08	$ 7.19	$ 67.81	$ 75.00	$ 300,000.00
	7.2		1118	Quarry Q5							
154	7.2.1		1118.01	Production of blasted rockfill from the quarry Q5	m^3	50,000	0.04	$ 3.28	$ 11.72	$ 15.00	$ 750,000.00
	8	2300		Optional Pricing for Temporary Access Road and Quarry							
	8.1	2340	2341	UPSTREAM COFFERDAM - Cut Off Wall							
				Jet Grouting cut off wall, If required							
155	8.1.1		2341.23	Mobilization and demobilization	LS	1	-	$ -	$ -	$ 1,100,000.00	$ 1,100,000.00
156	8.1.2		2341.24	Drilling Holes for Jet Grouting in embankment, river sediments and bedrock	m	9,600	-	$ -	$ -	$ 160.00	$ 1,536,000.00
157	8.1.3		2341.25	Jet Grouted Cut-off wall	m^2	2,800	0.47	$ 43.04	$ -	$ 1,053.00	$ 2,948,400.00
				Bedrock Grouting beneath the Jet Grouted Cut-off Wall, if required							
158	8.1.4		2341.26	Drilling Holes for Grouting in embankment , jet grouting cut-off wall and bedrock, if required	m	1,300	-	$ -	$ -	$ 23.00	$ 29,900.00
159	8.1.5		2341.27	Dry cement incorported in the grout, if required	kg	11,000	-	$ -	$ -	$ 1.00	$ 11,000.00
160	8.1.6		2341.28	Grouting - Succesful connections, if required	unit	60	-	$ -	$ 845.00	$ 845.00	$ 50,700.00
				Investigation for Jet Grouted Cut-off Wall and Bedrock Grouting							
45	4.1.20		2341.20	Percussion Drill Holes in embankments, river sediments and bedrock	m	1,000	-	$ -	$ 126.00	$ 126.00	$ 126,000.00
46	4.1.21		2341.21	Verification Core Drilling in jet grouting cut-off wall and bedrock	m	200	-	$ -	$ 469.00	$ 469.00	$ 93,800.00
47	4.1.22		2341.22	Core Diamond Drill Rig in Standby	hour	140	-	$ -	$ 132.00	$ 132.00	$ 18,480.00

NOTES

Note 1 : If there has been an error in the calculation to establish the total of Column G (Total Price) or Column F (UNIT PRICE), then the figures of column A (Estimated Quantity of Units), column B (Man Hours), column C (Manpower), column D (Equipment) and column E (Profits) will prevail.

Note 2 : This Document is provided to the bidders in Native Excel File format. It is the bidders responsibility to verify cell formats and formulas.

Note 3 : Bidders shall not include any HST/GST from any source (whether from Bidder, subcontractor, vendors or suppliers) in the unit and lump sum prices in this Schedule of Price Breakdown. Bidders shall claim input tax credits on taxable supplies received from vendors, suppliers and subcontractors and thereof Bidders shall exclude HST/GST payable to the vendors, suppliers and subcontractors from the unit and lump sum prices in the Schedule. Bidders shall exclude HST/GST on the total listed in Row A.

Note 4: Items 152 to 160 are optional and will not be included in the total Bid price. However, Bidders shall provide price for each item as if they are included in the Scope. The work will be included in the contract, if required.

FOR THE LOWER CHURCHILL PROJECT - MUSKRAT FALLS

This Appendix forms part of the Proposal submitted by:

Name of Bidder: Barnard-Pennecon JV

Request For Proposal, Package No: CH0009 - Schedule Delay Option 1 (Spillway Ready for Diversion July 15, 2016)

LOWER CHURCHILL PROJECT
MUSKRAT FALLS
CH0009 - CONSTRUCTION OF NORTH AND SOUTH DAMS

SCHEDULE OF PRICE BREAKDOWN

ISSUED FOR: BID DATE: 6 - Jun - 2015

BIDDER'S NAME: Barnard-Pennecon JV

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT ($ CAN) B	STAFF, MATERIAL, EQUIPMENT & SUBCONTRACT COST/UNIT ($ CAN)	UNIT PRICE| ($ CAN) F= (B+C+D+E)	TOTAL PRICE ($ CAN) G= A x F
No	REFERENCE Exhibit 2 - ATT 1	CODE	SUBCODE								

Signature:

Date of Proposal: 30-JUN-2015

MONTHLY PAYMENT FORECAST SCHEDULE
Schedule Delay Option 1 (Spillway Ready for Diversion July 15, 2016)

Month	Estimated Monthly Payment	Percentage of Work	Description of Work associated with Payment
1	$ 6,000,000.00	2.00%	EQ Procurement / Submittals / Mobilization
2	$ 6,000,000.00	2.00%	Mobilization / Submittals / Setup Crusher / Procurement
3	$ 9,700,000.00	3.23%	Setup Crusher / Screen Aggregates
4	$ 7,656,520.40	2.55%	Screen Crush AG / Starter Groin / Intake Cofferdam / RCC Stage 2 Trials
5	$ 3,000,000.00	1.00%	F/P/S Bridge Abutments / RCC Stage 2 Trials
6	$ 2,000,000.00	0.67%	Winter Shutdown / RCC Stage 2 Trials
7	$ 2,000,000.00	0.67%	Winter Shutdown
8	$ 2,000,000.00	0.67%	Winter Shutdown
9	$ 4,000,000.00	1.33%	Winter Shutdown / RCC Batch Plant Delivery
10	$ 5,100,000.00	1.70%	Excavate South Dam Footprint
11	$ 9,500,000.00	3.17%	Crush AG/ Install Temp Bridge / Setup Batch Plant
12	$ 10,500,000.00	3.50%	Crush AG/ Install Temp Bridge / Setup Batch Plant / South Dam / Rock Plug Ex
13	$ 11,000,000.00	3.67%	Crush AG/ Setup Batch Plant / Rock Plug Ex / Remove Cofferdams
14	$ 11,000,000.00	3.67%	Crush AG/ Remove Cofferdams / Upstream CD / Setup Batch Plant
15	$ 12,400,000.00	4.13%	Crush AG/ Upstream CD / Setup Batch Plant / Clear and Grub N. Abutment
16	$ 13,687,231.00	4.56%	Crush AG/ Upstream CD / Downstream CD / South Dam / Foundation Cleaning
17	$ 5,000,000.00	1.67%	Foundation Cleaning
18	$ 2,000,000.00	0.67%	Winter Shutdown
19	$ 2,000,000.00	0.67%	Winter Shutdown
20	$ 2,000,000.00	0.67%	Winter Shutdown
21	$ 2,000,000.00	0.67%	Winter Shutdown
22	$ 4,000,000.00	1.33%	Spring Mob
23	$ 12,000,000.00	4.00%	South Dam / RCC Proof Demostration / Foundation Cleaning / Leveling Concrete
24	$ 12,127,998.00	4.04%	South Dam / Leveling Concrete / RCC
25	$ 12,000,000.00	4.00%	RCC
26	$ 13,000,000.00	4.33%	RCC / Flip Bucket / Grout Curtain
27	$ 16,100,000.00	5.37%	RCC / Flip Bucket / Grout Curtain
28	$ 15,000,000.00	5.00%	RCC / Flip Bucket / Grout Curtain
29	$ 7,000,000.00	2.33%	Winter Shutdown
30	$ 2,000,000.00	0.67%	Winter Shutdown
31	$ 2,000,000.00	0.67%	Winter Shutdown
32	$ 2,000,000.00	0.67%	Winter Shutdown
33	$ 2,000,000.00	0.67%	Winter Shutdown
34	$ 2,000,000.00	0.67%	Winter Shutdown
35	$ 16,100,000.00	5.37%	RCC / Flip Bucket / Grout Curtain / Drain Holes
36	$ 15,000,000.00	5.00%	RCC / Drain Holes / Ogee Crest
37	$ 14,000,000.00	4.67%	Drain Holes / Ogee Crest / Gallery Floor / Rock Plug
38	$ 13,549,663.00	4.52%	Ogee Crest / Rock Plug / Remove Temp Bridge & Intake CD
39	$ 5,557,765.00	1.85%	Remove Temp Bridge & Intake CD / Demob
40	$ 5,982,045.00	1.99%	Demob
	$ 299,961,222.40		

****This table is approximate and will be finalized upon award and a resource loaded schedule is developed.

BARNARD

BARNARD-PENNECON J.V.

Appendix A2.4
Personnel Rate Schedule

Effective from 01 May 2015 to 30 April 2016

Trade of Classification	Base Rate	Vacation & Holiday Pay	LCP Premium	Union Burdens	Government Burdens	Small Tools	Consumables & PPE	Overhead & Profit *	Straight Time Rate	Overtime Rate	Double Time Rate	Shift Premium + Gov't Burdens + Markup
Operating Engineers (Group 1)												
General Foreman	$ 43.32	$ 5.63	$ 3.50	$ 11.75	$ 6.06	$ 2.50	$ 2.25	$ 9.00	$ 84.01	$ 123.36	$ 162.70	$ 4.24
Operator Foreman (Group 1)	$ 41.52	$ 5.40	$ 3.50	$ 11.75	$ 5.82	$ 2.50	$ 2.25	$ 8.73	$ 81.46	$ 119.53	$ 157.61	$ 4.24
Journeyman	$ 36.10	$ 4.69	$ 3.50	$ 11.75	$ 5.12	$ 2.50	$ 2.25	$ 7.91	$ 73.82	$ 108.07	$ 142.32	$ 4.24
OEs (Group 1) Heavy Lift												
General Foreman	$ 50.52	$ 6.57	$ 3.50	$ 11.75	$ 7.00	$ 2.50	$ 2.25	$ 10.09	$ 94.18	$ 138.60	$ 183.03	$ 4.24
Operator Foreman (Group 1)	$ 48.42	$ 6.29	$ 3.50	$ 11.75	$ 6.72	$ 2.50	$ 2.25	$ 9.77	$ 91.20	$ 134.15	$ 177.09	$ 4.24
Journeyman	$ 42.10	$ 5.47	$ 3.50	$ 11.75	$ 5.90	$ 2.50	$ 2.25	$ 8.82	$ 82.29	$ 120.77	$ 159.26	$ 4.24
OEs (Group 1) Mechanics												
General Foreman	$ 45.12	$ 5.87	$ 3.50	$ 11.75	$ 6.29	$ 2.50	$ 2.25	$ 9.27	$ 86.55	$ 127.17	$ 167.78	$ 4.24
Operator Foreman (Group 1)	$ 43.24	$ 5.62	$ 3.50	$ 11.75	$ 6.05	$ 2.50	$ 2.25	$ 8.99	$ 83.90	$ 123.19	$ 162.48	$ 4.24
Journeyman	$ 37.60	$ 4.89	$ 3.50	$ 11.75	$ 5.31	$ 2.50	$ 2.25	$ 8.14	$ 75.94	$ 111.24	$ 146.55	$ 4.24
Operating Engineers (Group 2)												
General Foreman	$ 42.12	$ 5.48	$ 3.50	$ 11.75	$ 5.90	$ 2.50	$ 2.25	$ 8.82	$ 82.32	$ 120.82	$ 159.31	$ 4.24
Operator Foreman (Group 2)	$ 40.37	$ 5.25	$ 3.50	$ 11.75	$ 5.67	$ 2.50	$ 2.25	$ 8.55	$ 79.84	$ 117.10	$ 154.36	$ 4.24
Journeyman	$ 35.10	$ 4.56	$ 3.50	$ 11.75	$ 4.99	$ 2.50	$ 2.25	$ 7.76	$ 72.41	$ 105.95	$ 139.49	$ 4.24
Apprentice - First Year	$ 21.06	$ 2.74	$ 3.50	$ 11.75	$ 3.15	$ 2.50	$ 2.25	$ 5.63	$ 52.58	$ 76.22	$ 99.85	$ 4.24
Apprentice - Second Year	$ 22.82	$ 2.97	$ 3.50	$ 11.75	$ 3.38	$ 2.50	$ 2.25	$ 5.90	$ 55.07	$ 79.94	$ 104.82	$ 4.24
Apprentice - Third Year	$ 24.57	$ 3.19	$ 3.50	$ 11.75	$ 3.61	$ 2.50	$ 2.25	$ 6.17	$ 57.54	$ 83.65	$ 109.76	$ 4.24
Apprentice - Fourth Year	$ 26.33	$ 3.42	$ 3.50	$ 11.75	$ 3.84	$ 2.50	$ 2.25	$ 6.43	$ 60.02	$ 87.38	$ 114.73	$ 4.24
Apprentice - Fifth Year	$ 28.08	$ 3.65	$ 3.50	$ 11.75	$ 4.07	$ 2.50	$ 2.25	$ 6.70	$ 62.50	$ 91.08	$ 119.67	$ 4.24
Apprentice - Sixth Year	$ 31.59	$ 4.11	$ 3.50	$ 11.75	$ 4.53	$ 2.50	$ 2.25	$ 7.23	$ 67.45	$ 98.52	$ 129.58	$ 4.24
Operating Engineers (Group 3)												
General Foreman	$ 41.64	$ 5.41	$ 3.50	$ 11.75	$ 5.84	$ 2.50	$ 2.25	$ 8.75	$ 81.64	$ 119.80	$ 157.96	$ 4.24
Operator Foreman (Group 3)	$ 39.91	$ 5.19	$ 3.50	$ 11.75	$ 5.61	$ 2.50	$ 2.25	$ 8.48	$ 79.19	$ 116.12	$ 153.06	$ 4.24
Journeyman	$ 34.70	$ 4.51	$ 3.50	$ 11.75	$ 4.93	$ 2.50	$ 2.25	$ 7.70	$ 71.84	$ 105.10	$ 138.36	$ 4.24
Operating Engineers (Group 4)												
General Foreman	$ 40.45	$ 5.26	$ 3.50	$ 11.75	$ 5.68	$ 2.50	$ 2.25	$ 8.57	$ 79.96	$ 117.28	$ 154.60	$ 4.24
Operator Foreman (Group 4)	$ 38.77	$ 5.04	$ 3.50	$ 11.75	$ 5.46	$ 2.50	$ 2.25	$ 8.31	$ 77.58	$ 113.71	$ 149.84	$ 4.24
Journeyman	$ 33.71	$ 4.38	$ 3.50	$ 11.75	$ 4.80	$ 2.50	$ 2.25	$ 7.55	$ 70.44	$ 103.01	$ 135.57	$ 4.24
Operating Engineers (Group 5)												
General Foreman	$ 39.56	$ 5.14	$ 3.50	$ 11.75	$ 5.57	$ 2.50	$ 2.25	$ 8.43	$ 78.71	$ 115.40	$ 152.10	$ 4.24
Operator Foreman (Group 5)	$ 37.92	$ 4.93	$ 3.50	$ 11.75	$ 5.35	$ 2.50	$ 2.25	$ 8.18	$ 76.38	$ 111.91	$ 147.44	$ 4.24
Journeyman	$ 32.97	$ 4.29	$ 3.50	$ 11.75	$ 4.71	$ 2.50	$ 2.25	$ 7.44	$ 69.40	$ 101.44	$ 133.48	$ 4.24
Operating Engineers Clerical												
Group 1	$ 27.74	$ 3.61	$ 3.50	$ 11.75	$ 4.02	$ 2.50	$ 2.25	$ 6.64	$ 62.02	$ 90.36	$ 118.71	$ 4.24
Group 2	$ 29.96	$ 3.89	$ 3.50	$ 11.75	$ 4.31	$ 2.50	$ 2.25	$ 6.98	$ 65.15	$ 95.06	$ 124.98	$ 4.24
Group 3	$ 31.31	$ 4.07	$ 3.50	$ 11.75	$ 4.49	$ 2.50	$ 2.25	$ 7.18	$ 67.06	$ 97.92	$ 128.79	$ 4.24
Electricians Local 2330												
Working Foreman	$ 40.78	$ 5.30	$ 3.50	$ 9.44	$ 5.73	$ 2.50	$ 2.25	$ 8.34	$ 77.84	$ 114.10	$ 150.36	$ 4.24
Non-Working Foreman	$ 42.72	$ 5.55	$ 3.50	$ 9.44	$ 5.98	$ 2.50	$ 2.25	$ 8.63	$ 80.58	$ 118.20	$ 155.83	$ 4.24
General Foreman	$ 44.67	$ 5.81	$ 3.50	$ 9.44	$ 6.23	$ 2.50	$ 2.25	$ 8.93	$ 83.33	$ 122.33	$ 161.34	$ 4.24
Journeyman	$ 38.84	$ 5.05	$ 3.50	$ 9.44	$ 5.47	$ 2.50	$ 2.25	$ 8.05	$ 75.10	$ 109.99	$ 144.88	$ 4.24

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Appendix A2.4
Personnel Rate Schedule

Effective from 01 May 2015 to 30 April 2016

Trade of Classification	Base Rate	Vacation & Holiday Pay	LCP Premium	Union Burdens	Government Burdens	Small Tools	Consumables & PPE	Overhead & Profit *	Straight Time Rate	Overtime Rate	Double Time Rate	Shift Premium + Gov't Burdens + Markup
Apprentice - First Year	$ 21.36	$ 2.78	$ 3.50	$ 9.44	$ 3.19	$ 2.50	$ 2.25	$ 5.40	$ 50.42	$ 72.97	$ 95.52	$ 4.24
Apprentice - Second Year	$ 25.25	$ 3.28	$ 3.50	$ 9.44	$ 3.70	$ 2.50	$ 2.25	$ 5.99	$ 55.91	$ 81.21	$ 106.51	$ 4.24
Apprentice - Third Year	$ 27.19	$ 3.53	$ 3.50	$ 9.44	$ 3.95	$ 2.50	$ 2.25	$ 6.28	$ 58.65	$ 85.32	$ 111.98	$ 4.24
Apprentice - Fourth Year	$ 31.07	$ 4.04	$ 3.50	$ 9.44	$ 4.46	$ 2.50	$ 2.25	$ 6.87	$ 64.13	$ 93.53	$ 122.94	$ 4.24
Ironworkers Local 764 Rebar												
General Foreman	$ 43.26	$ 5.84	$ 3.50	$ 10.28	$ 6.08	$ 2.50	$ 2.25	$ 8.84	$ 82.55	$ 121.17	$ 159.78	$ 4.24
Foreman	$ 41.46	$ 5.60	$ 3.50	$ 10.28	$ 5.84	$ 2.50	$ 2.25	$ 8.57	$ 80.00	$ 117.34	$ 154.68	$ 4.24
Journeyman	$ 36.05	$ 4.87	$ 3.50	$ 10.28	$ 5.13	$ 2.50	$ 2.25	$ 7.75	$ 72.33	$ 105.83	$ 139.33	$ 4.24
Apprentice - First Year	$ 25.24	$ 3.41	$ 3.50	$ 10.28	$ 3.71	$ 2.50	$ 2.25	$ 6.11	$ 57.00	$ 82.84	$ 108.67	$ 4.24
Apprentice - Second Year	$ 28.84	$ 3.89	$ 3.50	$ 10.28	$ 4.18	$ 2.50	$ 2.25	$ 6.65	$ 62.10	$ 90.49	$ 118.88	$ 4.24
Apprentice - Third Year	$ 32.45	$ 4.38	$ 3.50	$ 10.28	$ 4.66	$ 2.50	$ 2.25	$ 7.20	$ 67.22	$ 98.17	$ 129.12	$ 4.24
Apprentice - Fourth Year	$ 34.25	$ 4.62	$ 3.50	$ 10.28	$ 4.89	$ 2.50	$ 2.25	$ 7.48	$ 69.77	$ 102.00	$ 134.23	$ 4.24
Carpenters Local 579												
General Foreman	$ 41.78	$ 5.43	$ 3.50	$ 10.35	$ 5.86	$ 2.50	$ 2.25	$ 8.60	$ 80.27	$ 117.74	$ 155.22	$ 4.24
Non-Working Foreman	$ 40.04	$ 5.21	$ 3.50	$ 10.35	$ 5.63	$ 2.50	$ 2.25	$ 8.34	$ 77.81	$ 114.06	$ 150.30	$ 4.24
Journeyman	$ 34.82	$ 4.53	$ 3.50	$ 10.35	$ 4.95	$ 2.50	$ 2.25	$ 7.55	$ 70.44	$ 103.00	$ 135.57	$ 4.24
Apprentice - First Year	$ 22.63	$ 2.94	$ 3.50	$ 10.35	$ 3.36	$ 2.50	$ 2.25	$ 5.70	$ 53.23	$ 77.19	$ 101.15	$ 4.24
Apprentice - Second Year	$ 24.37	$ 3.17	$ 3.50	$ 10.35	$ 3.58	$ 2.50	$ 2.25	$ 5.97	$ 55.69	$ 80.87	$ 106.06	$ 4.24
Apprentice - Third Year	$ 27.86	$ 3.62	$ 3.50	$ 10.35	$ 4.04	$ 2.50	$ 2.25	$ 6.49	$ 60.62	$ 88.27	$ 115.91	$ 4.24
Apprentice - Fourth Year	$ 31.34	$ 4.07	$ 3.50	$ 10.35	$ 4.49	$ 2.50	$ 2.25	$ 7.02	$ 65.53	$ 95.63	$ 125.74	$ 4.24
Labourers - General												
General Foreman Class 1	$ 35.98	$ 4.68	$ 3.50	$ 10.84	$ 5.10	$ 2.50	$ 2.25	$ 7.78	$ 72.63	$ 106.28	$ 139.94	$ 4.24
Non-Working Foreman - Class 1	$ 35.23	$ 4.58	$ 3.50	$ 10.84	$ 5.00	$ 2.50	$ 2.25	$ 7.67	$ 71.57	$ 104.70	$ 137.82	$ 4.24
Journeyman - Class 1	$ 33.48	$ 4.35	$ 3.50	$ 10.84	$ 4.77	$ 2.50	$ 2.25	$ 7.40	$ 69.10	$ 100.99	$ 132.88	$ 4.24
Cement Finishers - Class 10	$ 34.53	$ 4.49	$ 3.50	$ 10.84	$ 4.91	$ 2.50	$ 2.25	$ 7.56	$ 70.58	$ 103.21	$ 135.84	$ 4.24
Vibrator Operators - Class 5	$ 33.68	$ 4.38	$ 3.50	$ 10.84	$ 4.80	$ 2.50	$ 2.25	$ 7.43	$ 69.38	$ 101.41	$ 133.44	$ 4.24
Pipe Layer - Class 7	$ 33.91	$ 4.41	$ 3.50	$ 10.84	$ 4.83	$ 2.50	$ 2.25	$ 7.47	$ 69.71	$ 101.90	$ 134.09	$ 4.24
Powder man - Class 8	$ 33.98	$ 4.42	$ 3.50	$ 10.84	$ 4.84	$ 2.50	$ 2.25	$ 7.48	$ 69.81	$ 102.05	$ 134.29	$ 4.24
Survey Foreman	$ 41.28	$ 5.37	$ 3.50	$ 10.84	$ 5.79	$ 2.50	$ 2.25	$ 8.58	$ 80.11	$ 117.51	$ 154.90	$ 4.24
Surveyor - Class 11	$ 39.53	$ 5.14	$ 3.50	$ 10.84	$ 5.56	$ 2.50	$ 2.25	$ 8.32	$ 77.64	$ 113.80	$ 149.96	$ 4.24
Teamsters Group 1 & 4												
General Foreman	$38.52	$5.01	$3.50	$7.55	$5.43	$ 2.50	$ 2.25	$7.77	$72.53	$106.14	$139.74	$ 4.24
Non-Working/Working Foreman	$38.02	$4.94	$3.50	$7.55	$5.37	$ 2.50	$ 2.25	$7.70	$71.82	$105.08	$138.33	$ 4.24
Journeyman / Warehousing	$36.52	$4.75	$3.50	$7.55	$5.17	$ 2.50	$ 2.25	$7.47	$69.71	$101.90	$134.09	$ 4.24
Cement Masons - Group 1												
General Foreman	$46.39	$4.64	$3.50	$8.85	$6.30	$ 2.50	$ 2.25	$8.93	$83.36	$122.38	$161.40	$ 4.24
Non-Working Foreman	$44.46	$4.45	$3.50	$8.85	$6.05	$ 2.50	$ 2.25	$8.65	$80.70	$118.40	$156.09	$ 4.24
Journeyman	$38.66	$3.87	$3.50	$8.85	$5.32	$ 2.50	$ 2.25	$7.79	$72.74	$106.44	$140.15	$ 4.24
Apprentice - First Six Months	$21.65	$2.16	$3.50	$8.85	$3.15	$ 2.50	$ 2.25	$5.29	$49.36	$71.38	$93.40	$ 4.24
Apprentice - Second Six Month	$23.97	$2.40	$3.50	$8.85	$3.45	$ 2.50	$ 2.25	$5.63	$52.55	$76.16	$99.77	$ 4.24
Apprentice - Third Six Months	$26.29	$2.63	$3.50	$8.85	$3.74	$ 2.50	$ 2.25	$5.97	$55.73	$80.94	$106.15	$ 4.24
Apprentice - Fourth Six Months	$28.61	$2.86	$3.50	$8.85	$4.04	$ 2.50	$ 2.25	$6.31	$58.92	$85.72	$112.52	$ 4.24
Apprentice - Fifth Six Months	$30.93	$3.09	$3.50	$8.85	$4.33	$ 2.50	$ 2.25	$6.65	$62.11	$90.50	$118.90	$ 4.24

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Appendix A2.4
Personnel Rate Schedule

Effective from 01 May 2015 to 30 April 2016

Trade of Classification	Base Rate	Vacation & Holiday Pay	LCP Premium	Union Burdens	Government Burdens	Small Tools	Consumables & PPE	Overhead & Profit *	Straight Time Rate	Overtime Rate	Double Time Rate	Shift Premium + Gov't Burdens + Markup
Apprentice - Sixth Six Months	$32.86	$3.29	$3.50	$8.85	$4.58	$ 2.50	$ 2.25	$6.94	$64.77	$94.49	$124.21	$ 4.24
Apprentice - Seventh Six Months	$34.79	$3.48	$3.50	$8.85	$4.82	$ 2.50	$ 2.25	$7.22	$67.42	$98.47	$129.52	$ 4.24
Apprentice - Eight Six Months	$36.73	$3.67	$3.50	$8.85	$5.07	$ 2.50	$ 2.25	$7.51	$70.08	$102.46	$134.84	$ 4.24
Pipefitters Local 740												
General Foreman	$46.86	$4.69	$3.50	$12.08	$6.36	$ 2.50	$ 2.25	$9.39	$87.62	$128.77	$169.92	$ 4.24
Non-Working Foreman	$44.91	$4.49	$3.50	$12.08	$6.11	$ 2.50	$ 2.25	$9.10	$84.94	$124.75	$164.56	$ 4.24
Journeyman	$39.05	$3.91	$3.50	$12.08	$5.37	$ 2.50	$ 2.25	$8.24	$76.89	$112.67	$148.46	$ 4.24
Apprentice - Second Year (65%)	$25.38	$2.54	$3.50	$12.08	$3.63	$ 2.50	$ 2.25	$6.23	$58.10	$84.49	$110.88	$ 4.24
Apprentice - Third Year (75%)	$29.29	$2.93	$3.50	$12.08	$4.13	$ 2.50	$ 2.25	$6.80	$63.48	$92.55	$121.63	$ 4.24
Apprentice - Fourth Year (85%)	$33.19	$3.32	$3.50	$12.08	$4.62	$ 2.50	$ 2.25	$7.38	$68.84	$100.59	$132.35	$ 4.24

1. Room, Board and Travel are not included in the Rates.
2. All Union and Government Burdens are based on hours earned
3. * Subject to Negotiation

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Appendix A2.4
Personnel Rate Schedule

Effective from 01 May 2016 to 30 April 2017

Trade of Classification	Base Rate	Vacation & Holiday Pay	LCP Premium	Union Burdens	Government Burdens	Small Tools	Consumables & PPE	Overhead & Profit *	Straight Time Rate	Overtime Rate	Double Time Rate	Shift Premium (incl Gov't Burdens + Markup)
Operating Engineers (Group 1)												
General Foreman	$ 45.97	$ 5.98	$ 3.50	$ 11.75	$ 6.40	$ 2.50	$ 2.25	$ 9.40	$ 87.75	$ 128.97	$ 170.19	$ 4.24
Operator Foreman (Group 1)	$ 44.06	$ 5.73	$ 3.50	$ 11.75	$ 6.15	$ 2.50	$ 2.25	$ 9.11	$ 85.05	$ 124.92	$ 164.78	$ 4.24
Journeyman	$ 38.31	$ 4.98	$ 3.50	$ 11.75	$ 5.40	$ 2.50	$ 2.25	$ 8.24	$ 76.94	$ 112.75	$ 148.56	$ 4.24
OEs (Group 1) Heavy Lift												
General Foreman	$ 53.17	$ 6.91	$ 3.50	$ 11.75	$ 7.34	$ 2.50	$ 2.25	$ 10.49	$ 97.92	$ 144.22	$ 190.52	$ 4.24
Operator Foreman (Group 1)	$ 50.96	$ 6.62	$ 3.50	$ 11.75	$ 7.05	$ 2.50	$ 2.25	$ 10.16	$ 94.79	$ 139.53	$ 184.26	$ 4.24
Journeyman	$ 44.31	$ 5.76	$ 3.50	$ 11.75	$ 6.19	$ 2.50	$ 2.25	$ 9.15	$ 85.41	$ 125.45	$ 165.50	$ 4.24
OEs (Group 1) Mechanics												
General Foreman	$ 47.77	$ 6.21	$ 3.50	$ 11.75	$ 6.64	$ 2.50	$ 2.25	$ 9.67	$ 90.30	$ 132.78	$ 175.27	$ 4.24
Operator Foreman (Group 1)	$ 45.78	$ 5.95	$ 3.50	$ 11.75	$ 6.38	$ 2.50	$ 2.25	$ 9.37	$ 87.49	$ 128.57	$ 169.65	$ 4.24
Journeyman	$ 39.81	$ 5.18	$ 3.50	$ 11.75	$ 5.60	$ 2.50	$ 2.25	$ 8.47	$ 79.06	$ 115.92	$ 152.79	$ 4.24
Operating Engineers (Group 2)												
General Foreman	$ 44.77	$ 5.82	$ 3.50	$ 11.75	$ 6.25	$ 2.50	$ 2.25	$ 9.22	$ 86.06	$ 126.43	$ 166.80	$ 4.24
Operator Foreman (Group 2)	$ 42.91	$ 5.58	$ 3.50	$ 11.75	$ 6.00	$ 2.50	$ 2.25	$ 8.94	$ 83.43	$ 122.48	$ 161.53	$ 4.24
Journeyman	$ 37.31	$ 4.85	$ 3.50	$ 11.75	$ 5.27	$ 2.50	$ 2.25	$ 8.09	$ 75.53	$ 110.63	$ 145.73	$ 4.24
Apprentice - First Year	$ 22.39	$ 2.91	$ 3.50	$ 11.75	$ 3.33	$ 2.50	$ 2.25	$ 5.84	$ 54.46	$ 79.03	$ 103.60	$ 4.24
Apprentice - Second Year	$ 24.25	$ 3.15	$ 3.50	$ 11.75	$ 3.57	$ 2.50	$ 2.25	$ 6.12	$ 57.09	$ 82.97	$ 108.86	$ 4.24
Apprentice - Third Year	$ 26.12	$ 3.40	$ 3.50	$ 11.75	$ 3.81	$ 2.50	$ 2.25	$ 6.40	$ 59.73	$ 86.93	$ 114.14	$ 4.24
Apprentice - Fourth Year	$ 27.98	$ 3.64	$ 3.50	$ 11.75	$ 4.06	$ 2.50	$ 2.25	$ 6.68	$ 62.35	$ 90.87	$ 119.39	$ 4.24
Apprentice - Fifth Year	$ 29.85	$ 3.88	$ 3.50	$ 11.75	$ 4.30	$ 2.50	$ 2.25	$ 6.96	$ 64.99	$ 94.83	$ 124.67	$ 4.24
Apprentice - Sixth Year	$ 33.58	$ 4.37	$ 3.50	$ 11.75	$ 4.79	$ 2.50	$ 2.25	$ 7.53	$ 70.26	$ 102.73	$ 135.20	$ 4.24
Operating Engineers (Group 3)												
General Foreman	$ 44.29	$ 5.76	$ 3.50	$ 11.75	$ 6.19	$ 2.50	$ 2.25	$ 9.15	$ 85.38	$ 125.41	$ 165.45	$ 4.24
Operator Foreman (Group 3)	$ 42.45	$ 5.52	$ 3.50	$ 11.75	$ 5.94	$ 2.50	$ 2.25	$ 8.87	$ 82.78	$ 121.51	$ 160.24	$ 4.24
Journeyman	$ 36.91	$ 4.80	$ 3.50	$ 11.75	$ 5.22	$ 2.50	$ 2.25	$ 8.03	$ 74.96	$ 109.78	$ 144.60	$ 4.24
Operating Engineers (Group 4)												
General Foreman	$ 43.10	$ 5.60	$ 3.50	$ 11.75	$ 6.03	$ 2.50	$ 2.25	$ 8.97	$ 83.71	$ 122.90	$ 162.09	$ 4.24
Operator Foreman (Group 4)	$ 41.31	$ 5.37	$ 3.50	$ 11.75	$ 5.80	$ 2.50	$ 2.25	$ 8.70	$ 81.17	$ 119.10	$ 157.02	$ 4.24
Journeyman	$ 35.92	$ 4.67	$ 3.50	$ 11.75	$ 5.09	$ 2.50	$ 2.25	$ 7.88	$ 73.56	$ 107.69	$ 141.81	$ 4.24
Operating Engineers (Group 5)												
General Foreman	$ 42.22	$ 5.49	$ 3.50	$ 11.75	$ 5.91	$ 2.50	$ 2.25	$ 8.83	$ 82.45	$ 121.02	$ 159.58	$ 4.24
Operator Foreman (Group 5)	$ 40.46	$ 5.26	$ 3.50	$ 11.75	$ 5.68	$ 2.50	$ 2.25	$ 8.57	$ 79.97	$ 117.29	$ 154.62	$ 4.24
Journeyman	$ 35.18	$ 4.57	$ 3.50	$ 11.75	$ 5.00	$ 2.50	$ 2.25	$ 7.77	$ 72.52	$ 106.12	$ 139.72	$ 4.24
Operating Engineers Clerical												
Group 1	$ 29.95	$ 3.89	$ 3.50	$ 11.75	$ 4.31	$ 2.50	$ 2.25	$ 6.98	$ 65.14	$ 95.04	$ 124.95	$ 4.24
Group 2	$ 32.17	$ 4.18	$ 3.50	$ 11.75	$ 4.60	$ 2.50	$ 2.25	$ 7.31	$ 68.27	$ 99.74	$ 131.22	$ 4.24
Group 3	$ 33.51	$ 4.36	$ 3.50	$ 11.75	$ 4.78	$ 2.50	$ 2.25	$ 7.52	$ 70.16	$ 102.58	$ 135.00	$ 4.24
Electricians Local 2330												
Working Foreman	$ 43.10	$ 5.60	$ 3.50	$ 9.44	$ 6.03	$ 2.50	$ 2.25	$ 8.69	$ 81.11	$ 119.01	$ 156.91	$ 4.24
Non-Working Foreman	$ 45.16	$ 5.87	$ 3.50	$ 9.44	$ 6.30	$ 2.50	$ 2.25	$ 9.00	$ 84.02	$ 123.37	$ 162.72	$ 4.24
General Foreman	$ 47.21	$ 6.14	$ 3.50	$ 9.44	$ 6.57	$ 2.50	$ 2.25	$ 9.31	$ 86.92	$ 127.71	$ 168.51	$ 4.24
Journeyman	$ 41.05	$ 5.34	$ 3.50	$ 9.44	$ 5.76	$ 2.50	$ 2.25	$ 8.38	$ 78.22	$ 114.67	$ 151.12	$ 4.24
Apprentice - First Year	$ 22.58	$ 2.94	$ 3.50	$ 9.44	$ 3.35	$ 2.50	$ 2.25	$ 5.59	$ 52.14	$ 75.56	$ 98.97	$ 4.24

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Appendix A2.4
Personnel Rate Schedule

Effective from 01 May 2016 to 30 April 2017

Trade of Classification	Base Rate	Vacation & Holiday Pay	LCP Premium	Union Burdens	Government Burdens	Small Tools	Consumables & PPE	Overhead & Profit *	Straight Time Rate	Overtime Rate	Double Time Rate	Shift Premium (incl Gov't Burdens + Markup)
Apprentice - Second Year	$ 26.68	$ 3.47	$ 3.50	$ 9.44	$ 3.89	$ 2.50	$ 2.25	$ 6.21	$ 57.93	$ 84.24	$ 110.54	$ 4.24
Apprentice - Third Year	$ 28.74	$ 3.74	$ 3.50	$ 9.44	$ 4.16	$ 2.50	$ 2.25	$ 6.52	$ 60.84	$ 88.60	$ 116.36	$ 4.24
Apprentice - Fourth Year	$ 32.84	$ 4.27	$ 3.50	$ 9.44	$ 4.69	$ 2.50	$ 2.25	$ 7.14	$ 66.63	$ 97.28	$ 127.94	$ 4.24
Ironworkers Local 764 Rebar												
General Foreman	$ 45.90	$ 6.20	$ 3.50	$ 10.28	$ 6.42	$ 2.50	$ 2.25	$ 9.25	$ 86.29	$ 126.78	$ 167.27	$ 4.24
Foreman	$ 43.99	$ 5.94	$ 3.50	$ 10.28	$ 6.17	$ 2.50	$ 2.25	$ 8.96	$ 83.59	$ 122.72	$ 161.85	$ 4.24
Journeyman	$ 38.25	$ 5.16	$ 3.50	$ 10.28	$ 5.42	$ 2.50	$ 2.25	$ 8.08	$ 75.45	$ 110.51	$ 145.57	$ 4.24
Apprentice - First Year	$ 26.78	$ 3.62	$ 3.50	$ 10.28	$ 3.91	$ 2.50	$ 2.25	$ 6.34	$ 59.18	$ 86.11	$ 113.04	$ 4.24
Apprentice - Second Year	$ 30.60	$ 4.13	$ 3.50	$ 10.28	$ 4.42	$ 2.50	$ 2.25	$ 6.92	$ 64.60	$ 94.24	$ 123.88	$ 4.24
Apprentice - Third Year	$ 34.43	$ 4.65	$ 3.50	$ 10.28	$ 4.92	$ 2.50	$ 2.25	$ 7.50	$ 70.03	$ 102.38	$ 134.74	$ 4.24
Apprentice - Fourth Year	$ 36.34	$ 4.91	$ 3.50	$ 10.28	$ 5.17	$ 2.50	$ 2.25	$ 7.79	$ 72.74	$ 106.45	$ 140.15	$ 4.24
Carpenters Local 579												
General Foreman	$ 44.44	$ 5.78	$ 3.50	$ 10.35	$ 6.20	$ 2.50	$ 2.25	$ 9.00	$ 84.02	$ 123.38	$ 162.73	$ 4.24
Non-Working Foreman	$ 42.59	$ 5.54	$ 3.50	$ 10.35	$ 5.96	$ 2.50	$ 2.25	$ 8.72	$ 81.41	$ 119.46	$ 157.50	$ 4.24
Journeyman	$ 37.03	$ 4.81	$ 3.50	$ 10.35	$ 5.24	$ 2.50	$ 2.25	$ 7.88	$ 73.56	$ 107.68	$ 141.81	$ 4.24
Apprentice - First Year	$ 24.07	$ 3.13	$ 3.50	$ 10.35	$ 3.55	$ 2.50	$ 2.25	$ 5.92	$ 55.27	$ 80.24	$ 105.21	$ 4.24
Apprentice - Second Year	$ 25.92	$ 3.37	$ 3.50	$ 10.35	$ 3.79	$ 2.50	$ 2.25	$ 6.20	$ 57.88	$ 84.16	$ 110.44	$ 4.24
Apprentice - Third Year	$ 29.63	$ 3.85	$ 3.50	$ 10.35	$ 4.27	$ 2.50	$ 2.25	$ 6.76	$ 63.12	$ 92.01	$ 120.91	$ 4.24
Apprentice - Fourth Year	$ 33.33	$ 4.33	$ 3.50	$ 10.35	$ 4.75	$ 2.50	$ 2.25	$ 7.32	$ 68.34	$ 99.85	$ 131.36	$ 4.24
Labourers - General												
General Foreman Class 1	$ 38.19	$ 4.96	$ 3.50	$ 10.84	$ 5.39	$ 2.50	$ 2.25	$ 8.12	$ 75.75	$ 110.96	$ 146.18	$ 4.24
Non-Working Foreman - Class 1	$ 37.44	$ 4.87	$ 3.50	$ 10.84	$ 5.29	$ 2.50	$ 2.25	$ 8.00	$ 74.69	$ 109.38	$ 144.06	$ 4.24
Journeyman - Class 1	$ 35.69	$ 4.64	$ 3.50	$ 10.84	$ 5.06	$ 2.50	$ 2.25	$ 7.74	$ 72.22	$ 105.67	$ 139.12	$ 4.24
Cement Finishers - Class 10	$ 36.74	$ 4.78	$ 3.50	$ 10.84	$ 5.20	$ 2.50	$ 2.25	$ 7.90	$ 73.70	$ 107.89	$ 142.08	$ 4.24
Vibrator Operators - Class 5	$ 35.89	$ 4.67	$ 3.50	$ 10.84	$ 5.09	$ 2.50	$ 2.25	$ 7.77	$ 72.50	$ 106.09	$ 139.68	$ 4.24
Pipe Layer - Class 7	$ 36.12	$ 4.70	$ 3.50	$ 10.84	$ 5.12	$ 2.50	$ 2.25	$ 7.80	$ 72.83	$ 106.58	$ 140.33	$ 4.24
Powder man - Class 8	$ 36.19	$ 4.70	$ 3.50	$ 10.84	$ 5.13	$ 2.50	$ 2.25	$ 7.81	$ 72.93	$ 106.73	$ 140.53	$ 4.24
Survey Foreman	$ 43.49	$ 5.65	$ 3.50	$ 10.84	$ 6.08	$ 2.50	$ 2.25	$ 8.92	$ 83.23	$ 122.19	$ 161.14	$ 4.24
Surveyor - Class 11	$ 41.74	$ 5.43	$ 3.50	$ 10.84	$ 5.85	$ 2.50	$ 2.25	$ 8.65	$ 80.76	$ 118.48	$ 156.20	$ 4.24
Teamsters Group 1 & 4												
General Foreman	$ 40.73	$ 5.29	$ 3.50	$ 7.55	$ 5.72	$ 2.50	$ 2.25	$ 8.11	$ 75.65	$ 110.82	$ 145.98	$ 4.24
Non-Working/Working Foreman	$ 40.23	$ 5.23	$ 3.50	$ 7.55	$ 5.65	$ 2.50	$ 2.25	$ 8.03	$ 74.94	$ 109.76	$ 144.57	$ 4.24
Journeyman / Warehousing	$ 38.73	$ 5.03	$ 3.50	$ 7.55	$ 5.46	$ 2.50	$ 2.25	$ 7.80	$ 72.83	$ 106.58	$ 140.33	$ 4.24
Cement Masons - Group 1												
General Foreman	$ 49.12	$ 4.91	$ 3.50	$ 8.85	$ 6.64	$ 2.50	$ 2.25	$ 9.33	$ 87.10	$ 128.00	$ 168.89	$ 4.24
Non-Working Foreman	$ 47.07	$ 4.71	$ 3.50	$ 8.85	$ 6.38	$ 2.50	$ 2.25	$ 9.03	$ 84.29	$ 123.78	$ 163.26	$ 4.24
Journeyman	$ 40.93	$ 4.09	$ 3.50	$ 8.85	$ 5.60	$ 2.50	$ 2.25	$ 8.13	$ 75.85	$ 111.12	$ 146.39	$ 4.24
Apprentice - First Six Months	$ 22.92	$ 2.29	$ 3.50	$ 8.85	$ 3.32	$ 2.50	$ 2.25	$ 5.48	$ 51.10	$ 74.00	$ 96.89	$ 4.24
Apprentice - Second Six Month	$ 25.38	$ 2.54	$ 3.50	$ 8.85	$ 3.63	$ 2.50	$ 2.25	$ 5.84	$ 54.48	$ 79.06	$ 103.64	$ 4.24
Apprentice - Third Six Months	$ 27.83	$ 2.78	$ 3.50	$ 8.85	$ 3.94	$ 2.50	$ 2.25	$ 6.20	$ 57.85	$ 84.12	$ 110.39	$ 4.24
Apprentice - Fourth Six Months	$ 30.29	$ 3.03	$ 3.50	$ 8.85	$ 4.25	$ 2.50	$ 2.25	$ 6.56	$ 61.23	$ 89.18	$ 117.14	$ 4.24
Apprentice - Fifth Six Months	$ 32.74	$ 3.27	$ 3.50	$ 8.85	$ 4.56	$ 2.50	$ 2.25	$ 6.92	$ 64.60	$ 94.25	$ 123.89	$ 4.24
Apprentice - Sixth Six Months	$ 34.79	$ 3.48	$ 3.50	$ 8.85	$ 4.82	$ 2.50	$ 2.25	$ 7.22	$ 67.42	$ 98.47	$ 129.51	$ 4.24
Apprentice - Seventh Six Months	$ 36.84	$ 3.68	$ 3.50	$ 8.85	$ 5.08	$ 2.50	$ 2.25	$ 7.52	$ 70.23	$ 102.68	$ 135.14	$ 4.24

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Appendix A2.4
Personnel Rate Schedule

Effective from 01 May 2016 to 30 April 2017

Trade of Classification	Base Rate	Vacation & Holiday Pay	LCP Premium	Union Burdens	Government Burdens	Small Tools	Consumables & PPE	Overhead & Profit *	Straight Time Rate	Overtime Rate	Double Time Rate	Shift Premium (incl Gov't Burdens + Markup)
Apprentice - Eight Six Months	$ 38.88	$ 3.89	$ 3.50	$ 8.85	$ 5.34	$ 2.50	$ 2.25	$ 7.83	$ 73.04	$ 106.90	$ 140.76	$ 4.24
Pipefitters Local 740												
General Foreman	$ 49.58	$ 4.96	$ 3.50	$ 12.08	$ 6.70	$ 2.50	$ 2.25	$ 9.79	$ 91.36	$ 134.38	$ 177.40	$ 4.24
Non-Working Foreman	$ 41.52	$ 4.15	$ 3.50	$ 12.08	$ 5.68	$ 2.50	$ 2.25	$ 8.60	$ 80.28	$ 117.76	$ 155.25	$ 4.24
Journeyman	$ 41.32	$ 4.13	$ 3.50	$ 12.08	$ 5.65	$ 2.50	$ 2.25	$ 8.57	$ 80.01	$ 117.35	$ 154.70	$ 4.24
Apprentice - Second Year (65%)	$ 26.86	$ 2.69	$ 3.50	$ 12.08	$ 3.82	$ 2.50	$ 2.25	$ 6.44	$ 60.14	$ 87.54	$ 114.95	$ 4.24
Apprentice - Third Year (75%)	$ 30.99	$ 3.10	$ 3.50	$ 12.08	$ 4.34	$ 2.50	$ 2.25	$ 7.05	$ 65.81	$ 96.06	$ 126.30	$ 4.24
Apprentice - Fourth Year (85%)	$ 35.12	$ 3.51	$ 3.50	$ 12.08	$ 4.87	$ 2.50	$ 2.25	$ 7.66	$ 71.49	$ 104.57	$ 137.66	$ 4.24

1. Room, Board and Travel are not included in the Rates.
2. All Union and Government Burdens are based on hours earned
3. * Subject to Negotiation

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Appendix A2.4
Personnel Rate Schedule

Effective from 01 May 2017 to 30 April 2018

Trade of Classification	Base Rate	Vacation & Holiday Pay	LCP Premium	Union Burdens	Government Burdens	Small Tools	Consumables & PPE	Overhead & Profit *	Straight Time Rate	Overtime Rate	Double Time Rate	Shift Premium (incl Gov't Burdens + Markup
Operating Engineers (Group 1)												
General Foreman	$ 48.10	$ 6.25	$ 3.50	$ 11.75	$ 6.68	$ 2.50	$ 2.25	$ 9.72	$ 90.75	$ 133.47	$ 176.19	$ 4.24
Operator Foreman (Group 1)	$ 46.09	$ 5.99	$ 3.50	$ 11.75	$ 6.42	$ 2.50	$ 2.25	$ 9.42	$ 87.92	$ 129.23	$ 170.53	$ 4.24
Journeyman	$ 40.08	$ 5.21	$ 3.50	$ 11.75	$ 5.64	$ 2.50	$ 2.25	$ 8.51	$ 79.44	$ 116.50	$ 153.55	$ 4.24
OEs (Group 1) Heavy Lift												
General Foreman	$ 55.30	$ 7.19	$ 3.50	$ 11.75	$ 7.62	$ 2.50	$ 2.25	$ 10.81	$ 100.92	$ 148.72	$ 196.52	$ 4.24
Operator Foreman (Group 1)	$ 52.99	$ 6.89	$ 3.50	$ 11.75	$ 7.32	$ 2.50	$ 2.25	$ 10.46	$ 97.67	$ 143.84	$ 190.01	$ 4.24
Journeyman	$ 46.08	$ 5.99	$ 3.50	$ 11.75	$ 6.42	$ 2.50	$ 2.25	$ 9.42	$ 87.91	$ 129.20	$ 170.49	$ 4.24
OEs (Group 1) Mechanics												
General Foreman	$ 49.90	$ 6.49	$ 3.50	$ 11.75	$ 6.92	$ 2.50	$ 2.25	$ 10.00	$ 93.29	$ 137.28	$ 181.27	$ 4.24
Operator Foreman (Group 1)	$ 47.82	$ 6.22	$ 3.50	$ 11.75	$ 6.65	$ 2.50	$ 2.25	$ 9.68	$ 90.36	$ 132.88	$ 175.40	$ 4.24
Journeyman	$ 41.58	$ 5.41	$ 3.50	$ 11.75	$ 5.83	$ 2.50	$ 2.25	$ 8.74	$ 81.55	$ 119.67	$ 157.79	$ 4.24
Operating Engineers (Group 2)												
General Foreman	$ 46.90	$ 6.10	$ 3.50	$ 11.75	$ 6.52	$ 2.50	$ 2.25	$ 9.54	$ 89.06	$ 130.93	$ 172.80	$ 4.24
Operator Foreman (Group 2)	$ 44.94	$ 5.84	$ 3.50	$ 11.75	$ 6.27	$ 2.50	$ 2.25	$ 9.25	$ 86.30	$ 126.79	$ 167.28	$ 4.24
Journeyman	$ 39.08	$ 5.08	$ 3.50	$ 11.75	$ 5.50	$ 2.50	$ 2.25	$ 8.36	$ 78.02	$ 114.38	$ 150.73	$ 4.24
Apprentice - First Year	$ 23.45	$ 3.05	$ 3.50	$ 11.75	$ 3.46	$ 2.50	$ 2.25	$ 6.00	$ 55.96	$ 81.28	$ 106.60	$ 4.24
Apprentice - Second Year	$ 25.40	$ 3.30	$ 3.50	$ 11.75	$ 3.72	$ 2.50	$ 2.25	$ 6.29	$ 58.71	$ 85.41	$ 112.10	$ 4.24
Apprentice - Third Year	$ 27.36	$ 3.56	$ 3.50	$ 11.75	$ 3.98	$ 2.50	$ 2.25	$ 6.59	$ 61.48	$ 89.56	$ 117.64	$ 4.24
Apprentice - Fourth Year	$ 29.31	$ 3.81	$ 3.50	$ 11.75	$ 4.23	$ 2.50	$ 2.25	$ 6.88	$ 64.23	$ 93.69	$ 123.14	$ 4.24
Apprentice - Fifth Year	$ 31.26	$ 4.06	$ 3.50	$ 11.75	$ 4.48	$ 2.50	$ 2.25	$ 7.18	$ 66.98	$ 97.82	$ 128.65	$ 4.24
Apprentice - Sixth Year	$ 35.17	$ 4.57	$ 3.50	$ 11.75	$ 4.99	$ 2.50	$ 2.25	$ 7.77	$ 72.50	$ 106.10	$ 139.69	$ 4.24
Operating Engineers (Group 3)												
General Foreman	$ 46.42	$ 6.03	$ 3.50	$ 11.75	$ 6.46	$ 2.50	$ 2.25	$ 9.47	$ 88.38	$ 129.91	$ 171.44	$ 4.24
Operator Foreman (Group 3)	$ 44.48	$ 5.78	$ 3.50	$ 11.75	$ 6.21	$ 2.50	$ 2.25	$ 9.18	$ 85.65	$ 125.82	$ 165.98	$ 4.24
Journeyman	$ 38.68	$ 5.03	$ 3.50	$ 11.75	$ 5.45	$ 2.50	$ 2.25	$ 8.30	$ 77.46	$ 113.53	$ 149.60	$ 4.24
Operating Engineers (Group 4)												
General Foreman	$ 45.23	$ 5.88	$ 3.50	$ 11.75	$ 6.31	$ 2.50	$ 2.25	$ 9.29	$ 86.70	$ 127.40	$ 168.09	$ 4.24
Operator Foreman (Group 4)	$ 43.34	$ 5.63	$ 3.50	$ 11.75	$ 6.06	$ 2.50	$ 2.25	$ 9.00	$ 84.04	$ 123.41	$ 162.77	$ 4.24
Journeyman	$ 37.69	$ 4.90	$ 3.50	$ 11.75	$ 5.32	$ 2.50	$ 2.25	$ 8.15	$ 76.06	$ 111.43	$ 146.81	$ 4.24
Operating Engineers (Group 5)												
General Foreman	$ 44.34	$ 5.76	$ 3.50	$ 11.75	$ 6.19	$ 2.50	$ 2.25	$ 9.16	$ 85.45	$ 125.52	$ 165.58	$ 4.24
Operator Foreman (Group 5)	$ 42.49	$ 5.52	$ 3.50	$ 11.75	$ 5.95	$ 2.50	$ 2.25	$ 8.88	$ 82.84	$ 121.60	$ 160.37	$ 4.24
Journeyman	$ 36.95	$ 4.80	$ 3.50	$ 11.75	$ 5.23	$ 2.50	$ 2.25	$ 8.04	$ 75.02	$ 109.87	$ 144.72	$ 4.24
Operating Engineers Clerical												
Group 1	$ 31.72	$ 4.12	$ 3.50	$ 11.75	$ 4.54	$ 2.50	$ 2.25	$ 7.25	$ 67.63	$ 98.79	$ 129.95	$ 4.24
Group 2	$ 33.94	$ 4.41	$ 3.50	$ 11.75	$ 4.83	$ 2.50	$ 2.25	$ 7.58	$ 70.77	$ 103.49	$ 136.22	$ 4.24
Group 3	$ 35.28	$ 4.59	$ 3.50	$ 11.75	$ 5.01	$ 2.50	$ 2.25	$ 7.79	$ 72.66	$ 106.33	$ 140.00	$ 4.24
Electricians Local 2330												
Working Foreman	$ 44.96	$ 5.84	$ 3.50	$ 9.44	$ 6.27	$ 2.50	$ 2.25	$ 8.97	$ 83.74	$ 122.95	$ 162.16	$ 4.24
Non-Working Foreman	$ 47.10	$ 6.12	$ 3.50	$ 9.44	$ 6.55	$ 2.50	$ 2.25	$ 9.30	$ 86.76	$ 127.48	$ 168.20	$ 4.24
General Foreman	$ 49.24	$ 6.40	$ 3.50	$ 9.44	$ 6.83	$ 2.50	$ 2.25	$ 9.62	$ 89.78	$ 132.01	$ 174.24	$ 4.24
Journeyman	$ 42.82	$ 5.57	$ 3.50	$ 9.44	$ 5.99	$ 2.50	$ 2.25	$ 8.65	$ 80.72	$ 118.42	$ 156.12	$ 4.24
Apprentice - First Year	$ 23.55	$ 3.06	$ 3.50	$ 9.44	$ 3.48	$ 2.50	$ 2.25	$ 5.73	$ 53.51	$ 77.61	$ 101.71	$ 4.24

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Appendix A2.4
Personnel Rate Schedule

Effective from 01 May 2017 to 30 April 2018

Trade of Classification	Base Rate	Vacation & Holiday Pay	LCP Premium	Union Burdens	Government Burdens	Small Tools	Consumables & PPE	Overhead & Profit *	Straight Time Rate	Overtime Rate	Double Time Rate	Shift Premium (incl Gov't Burdens + Markup
Apprentice - Second Year	$ 27.83	$ 3.62	$ 3.50	$ 9.44	$ 4.04	$ 2.50	$ 2.25	$ 6.38	$ 59.56	$ 86.67	$ 113.79	$ 4.24
Apprentice - Third Year	$ 29.97	$ 3.90	$ 3.50	$ 9.44	$ 4.32	$ 2.50	$ 2.25	$ 6.70	$ 62.58	$ 91.20	$ 119.83	$ 4.24
Apprentice - Fourth Year	$ 34.26	$ 4.45	$ 3.50	$ 9.44	$ 4.88	$ 2.50	$ 2.25	$ 7.35	$ 68.63	$ 100.29	$ 131.95	$ 4.24
Ironworkers Local 764 Rebar												
General Foreman	$ 48.01	$ 6.48	$ 3.50	$ 10.28	$ 6.70	$ 2.50	$ 2.25	$ 9.57	$ 89.29	$ 131.27	$ 173.25	$ 4.24
Foreman	$ 46.01	$ 6.21	$ 3.50	$ 10.28	$ 6.44	$ 2.50	$ 2.25	$ 9.26	$ 86.45	$ 127.01	$ 167.58	$ 4.24
Journeyman	$ 40.01	$ 5.40	$ 3.50	$ 10.28	$ 5.65	$ 2.50	$ 2.25	$ 8.35	$ 77.94	$ 114.25	$ 150.56	$ 4.24
Apprentice - First Year	$ 28.01	$ 3.78	$ 3.50	$ 10.28	$ 4.08	$ 2.50	$ 2.25	$ 6.53	$ 60.93	$ 88.73	$ 116.53	$ 4.24
Apprentice - Second Year	$ 32.01	$ 4.32	$ 3.50	$ 10.28	$ 4.60	$ 2.50	$ 2.25	$ 7.14	$ 66.60	$ 97.24	$ 127.87	$ 4.24
Apprentice - Third Year	$ 36.01	$ 4.86	$ 3.50	$ 10.28	$ 5.12	$ 2.50	$ 2.25	$ 7.74	$ 72.27	$ 105.74	$ 139.22	$ 4.24
Apprentice - Fourth Year	$ 38.01	$ 5.13	$ 3.50	$ 10.28	$ 5.39	$ 2.50	$ 2.25	$ 8.05	$ 75.11	$ 110.00	$ 144.89	$ 4.24
Carpenters Local 579												
General Foreman	$ 47.49	$ 6.17	$ 3.50	$ 9.48	$ 6.60	$ 2.50	$ 2.25	$ 9.36	$ 87.36	$ 128.37	$ 169.39	$ 4.24
Non-Working Foreman	$ 45.51	$ 5.92	$ 3.50	$ 9.48	$ 6.34	$ 2.50	$ 2.25	$ 9.06	$ 84.56	$ 124.18	$ 163.80	$ 4.24
Journeyman	$ 39.57	$ 5.14	$ 3.50	$ 9.48	$ 5.57	$ 2.50	$ 2.25	$ 8.16	$ 76.17	$ 111.60	$ 147.03	$ 4.24
Apprentice - First Year	$ 25.72	$ 3.34	$ 3.50	$ 9.48	$ 3.76	$ 2.50	$ 2.25	$ 6.07	$ 56.62	$ 82.27	$ 107.92	$ 4.24
Apprentice - Second Year	$ 27.70	$ 3.60	$ 3.50	$ 9.48	$ 4.02	$ 2.50	$ 2.25	$ 6.37	$ 59.42	$ 86.46	$ 113.51	$ 4.24
Apprentice - Third Year	$ 31.66	$ 4.12	$ 3.50	$ 9.48	$ 4.54	$ 2.50	$ 2.25	$ 6.97	$ 65.01	$ 94.85	$ 124.69	$ 4.24
Apprentice - Fourth Year	$ 35.61	$ 4.63	$ 3.50	$ 9.48	$ 5.05	$ 2.50	$ 2.25	$ 7.56	$ 70.58	$ 103.22	$ 135.85	$ 4.24
Labourers - General												
General Foreman Class 1	$ 39.96	$ 5.19	$ 3.50	$ 10.84	$ 5.62	$ 2.50	$ 2.25	$ 8.38	$ 78.25	$ 114.71	$ 151.18	$ 4.24
Non-Working Foreman - Class 1	$ 39.21	$ 5.10	$ 3.50	$ 10.84	$ 5.52	$ 2.50	$ 2.25	$ 8.27	$ 77.19	$ 113.12	$ 149.06	$ 4.24
Journeyman - Class 1	$ 37.46	$ 4.87	$ 3.50	$ 10.84	$ 5.29	$ 2.50	$ 2.25	$ 8.01	$ 74.72	$ 109.42	$ 144.12	$ 4.24
Cement Finishers - Class 10	$ 38.51	$ 5.01	$ 3.50	$ 10.84	$ 5.43	$ 2.50	$ 2.25	$ 8.16	$ 76.20	$ 111.64	$ 147.08	$ 4.24
Vibrator Operators - Class 5	$ 37.66	$ 4.90	$ 3.50	$ 10.84	$ 5.32	$ 2.50	$ 2.25	$ 8.04	$ 75.00	$ 109.84	$ 144.68	$ 4.24
Pipe Layer - Class 7	$ 37.89	$ 4.93	$ 3.50	$ 10.84	$ 5.35	$ 2.50	$ 2.25	$ 8.07	$ 75.33	$ 110.33	$ 145.33	$ 4.24
Powder man - Class 8	$ 37.96	$ 4.93	$ 3.50	$ 10.84	$ 5.36	$ 2.50	$ 2.25	$ 8.08	$ 75.42	$ 110.48	$ 145.53	$ 4.24
Survey Foreman	$ 45.26	$ 5.88	$ 3.50	$ 10.84	$ 6.31	$ 2.50	$ 2.25	$ 9.19	$ 85.73	$ 125.94	$ 166.14	$ 4.24
Surveyor - Class 11	$ 43.51	$ 5.66	$ 3.50	$ 10.84	$ 6.08	$ 2.50	$ 2.25	$ 8.92	$ 83.26	$ 122.23	$ 161.20	$ 4.24
Teamsters Group 1 & 4												
General Foreman	$ 42.50	$ 5.53	$ 3.50	$ 7.55	$ 5.95	$ 2.50	$ 2.25	$ 8.37	$ 78.15	$ 114.56	$ 150.98	$ 4.24
Non-Working/Working Foreman	$ 42.00	$ 5.46	$ 3.50	$ 7.55	$ 5.89	$ 2.50	$ 2.25	$ 8.30	$ 77.44	$ 113.51	$ 149.57	$ 4.24
Journeyman / Warehousing	$ 40.50	$ 5.26	$ 3.50	$ 7.55	$ 5.69	$ 2.50	$ 2.25	$ 8.07	$ 75.33	$ 110.33	$ 145.33	$ 4.24
Cement Masons - Group 1												
General Foreman	$ 51.30	$ 5.13	$ 3.50	$ 8.85	$ 6.92	$ 2.50	$ 2.25	$ 9.65	$ 90.11	$ 132.50	$ 174.89	$ 4.24
Non-Working Foreman	$ 49.16	$ 4.92	$ 3.50	$ 8.85	$ 6.65	$ 2.50	$ 2.25	$ 9.34	$ 87.17	$ 128.09	$ 169.02	$ 4.24
Journeyman	$ 42.75	$ 4.28	$ 3.50	$ 8.85	$ 5.84	$ 2.50	$ 2.25	$ 8.40	$ 78.36	$ 114.87	$ 151.39	$ 4.24
Apprentice - First Six Months	$ 23.94	$ 2.39	$ 3.50	$ 8.85	$ 3.45	$ 2.50	$ 2.25	$ 5.63	$ 52.51	$ 76.10	$ 99.69	$ 4.24
Apprentice - Second Six Month	$ 26.51	$ 2.65	$ 3.50	$ 8.85	$ 3.77	$ 2.50	$ 2.25	$ 6.00	$ 56.03	$ 81.39	$ 106.74	$ 4.24
Apprentice - Third Six Months	$ 29.07	$ 2.91	$ 3.50	$ 8.85	$ 4.10	$ 2.50	$ 2.25	$ 6.38	$ 59.56	$ 86.67	$ 113.79	$ 4.24
Apprentice - Fourth Six Months	$ 31.64	$ 3.16	$ 3.50	$ 8.85	$ 4.42	$ 2.50	$ 2.25	$ 6.76	$ 63.08	$ 91.96	$ 120.84	$ 4.24
Apprentice - Fifth Six Months	$ 34.20	$ 3.42	$ 3.50	$ 8.85	$ 4.75	$ 2.50	$ 2.25	$ 7.14	$ 66.61	$ 97.25	$ 127.89	$ 4.24
Apprentice - Sixth Six Months	$ 36.34	$ 3.63	$ 3.50	$ 8.85	$ 5.02	$ 2.50	$ 2.25	$ 7.45	$ 69.54	$ 101.65	$ 133.77	$ 4.24
Apprentice - Seventh Six Months	$ 38.48	$ 3.85	$ 3.50	$ 8.85	$ 5.29	$ 2.50	$ 2.25	$ 7.77	$ 72.48	$ 106.06	$ 139.64	$ 4.24

BARNARD

BARNARD-PENNECON J.V.

Appendix A2.4
Personnel Rate Schedule

Effective from 01 May 2017 to 30 April 2018

Trade of Classification	Base Rate	Vacation & Holiday Pay	LCP Premium	Union Burdens	Government Burdens	Small Tools	Consumables & PPE	Overhead & Profit *	Straight Time Rate	Overtime Rate	Double Time Rate	Shift Premium (incl Gov't Burdens + Markup
Apprentice - Eight Six Months	$ 40.61	$ 4.06	$ 3.50	$ 8.85	$ 5.56	$ 2.50	$ 2.25	$ 8.08	$ 75.42	$ 110.47	$ 145.52	$ 4.24
Pipefitters Local 740												
General Foreman	$ 51.77	$ 5.18	$ 3.50	$ 12.08	$ 6.98	$ 2.50	$ 2.25	$ 10.11	$ 94.37	$ 138.89	$ 183.42	$ 4.24
Non-Working Foreman	$ 49.61	$ 4.96	$ 3.50	$ 12.08	$ 6.71	$ 2.50	$ 2.25	$ 9.79	$ 91.40	$ 134.44	$ 177.48	$ 4.24
Journeyman	$ 43.14	$ 4.31	$ 3.50	$ 12.08	$ 5.89	$ 2.50	$ 2.25	$ 8.84	$ 82.51	$ 121.10	$ 159.70	$ 4.24
Apprentice - Second Year (65%)	$ 28.04	$ 2.80	$ 3.50	$ 12.08	$ 3.97	$ 2.50	$ 2.25	$ 6.62	$ 61.76	$ 89.98	$ 118.20	$ 4.24
Apprentice - Third Year (75%)	$ 32.36	$ 3.24	$ 3.50	$ 12.08	$ 4.52	$ 2.50	$ 2.25	$ 7.25	$ 67.69	$ 98.88	$ 130.07	$ 4.24
Apprentice - Fourth Year (85%)	$ 36.67	$ 3.67	$ 3.50	$ 12.08	$ 5.06	$ 2.50	$ 2.25	$ 7.89	$ 73.62	$ 107.77	$ 141.92	$ 4.24

1. Room, Board and Travel are not included in the Rates.
2. All Union and Government Burdens are based on hours earned
3. * Subject to Negotiation

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BARNARD-PENNECON J.V.

Appendix A2.5
Equipment Rate Schedule

			First Shift				Second Shift			
Equipment	**Manufacturer & Model Number**	**Size**	**Hour $CAD**	**Day $CAD**	**Week $CAD**	**Month $CAD**	**Hour $CAD**	**Day $CAD**	**Week $CAD**	**Month $CAD**
Articulated Truck	Cat 740	40T	$230	$2,300	$11,500	$40,480	$196	$1,955	$9,775	$34,408
Boom Truck	International	30 Ton	$190	$1,900	$9,500	$33,440	$162	$1,615	$8,075	$28,424
Compressor	TBD	185 CFM	$45	$450	$2,250	$7,920	$38	$383	$1,913	$6,732
Concrete Mixer Truck	TBD		$140	$1,400	$7,000	$24,640	$119	$1,190	$5,950	$20,944
Crane	TBD	250 Ton	$425	$4,250	$21,250	$74,800	$361	$3,613	$18,063	$63,580
Crane	TBD	275 Ton	$445	$4,450	$22,250	$78,320	$378	$3,783	$18,913	$66,572
Crane	TBD	60 Ton	$220	$2,200	$11,000	$38,720	$187	$1,870	$9,350	$32,912
Crane	TBD	90 Ton	$300	$3,000	$15,000	$52,800	$255	$2,550	$12,750	$44,880
Aggregate Proccessing Plant	TBD		$3,600	$36,000	$180,000	$633,600	$3,060	$30,600	$153,000	$538,560
Dozer	Cat D5		$185	$1,850	$9,250	$32,560	$157	$1,573	$7,863	$27,676
Dozer	Cat D6	20T	$214	$2,140	$10,700	$37,664	$182	$1,819	$9,095	$32,014
Dozer	Cat D8/Kom 155	40T	$350	$3,500	$17,500	$61,600	$298	$2,975	$14,875	$52,360
Dozer	Cat D9		$450	$4,500	$22,500	$79,200	$383	$3,825	$19,125	$67,320
Excavator	Takeuchi	3T	$72	$720	$3,600	$12,672	$61	$612	$3,060	$10,771
Excavator	Cat 308	8T	$100	$1,000	$5,000	$17,600	$85	$850	$4,250	$14,960
Excavator	Cat 315		$160	$1,600	$8,000	$28,160	$136	$1,360	$6,800	$23,936
Excavator	Cat 320	20T	$180	$1,800	$9,000	$31,680	$153	$1,530	$7,650	$26,928
Excavator	Cat 330/336		$230	$2,300	$11,500	$40,480	$196	$1,955	$9,775	$34,408
Excavator	John Deere	30T	$230	$2,300	$11,500	$40,480	$196	$1,955	$9,775	$34,408
Excavator	Cat 345	45T	$350	$3,500	$17,500	$61,600	$298	$2,975	$14,875	$52,360
Excavator	Cat 365/374		$380	$3,800	$19,000	$66,880	$323	$3,230	$16,150	$56,848
Excavator	Cat 385/390		$500	$5,000	$25,000	$88,000	$425	$4,250	$21,250	$74,800
Excavator	Cat 430		$100	$1,000	$5,000	$17,600	$85	$850	$4,250	$14,960
Excavator	Komatsu PC600	65T	$380	$3,800	$19,000	$66,880	$323	$3,230	$16,150	$56,848
Excavator	Komatsu PC1250		$600	$6,000	$30,000	$105,600	$510	$5,100	$25,500	$89,760
Forklift Variable Reach	TBD	varies	$125	$1,250	$6,250	$22,000	$106	$1,063	$5,313	$18,700
Front End Loader 216Hp	Cat 950	2.68	$165	$1,650	$8,250	$29,040	$140	$1,403	$7,013	$24,684
Front End Loader 283Hp	Cat 966	3.6	$200	$2,000	$10,000	$35,200	$170	$1,700	$8,500	$29,920
Front End Loader 392Hp	Cat 980	4.2	$350	$3,500	$17,500	$61,600	$298	$2,975	$14,875	$52,360
Front End Loader 555Hp	Cat 988	6	$390	$3,900	$19,500	$68,640	$332	$3,315	$16,575	$58,344
Generator	TBD	10 KW	$20	$200	$1,000	$3,520	$17	$170	$850	$2,992
Generator	TBD	15 KW	$29	$290	$1,450	$5,104	$25	$247	$1,233	$4,338
Generator	TBD	25 KW	$33	$330	$1,650	$5,808	$28	$281	$1,403	$4,937
Generator	TBD	45 KW	$45	$450	$2,250	$7,920	$38	$383	$1,913	$6,732
Generator	TBD	185 KW	$150	$1,500	$7,500	$26,400	$128	$1,275	$6,375	$22,440
Heater	TBD	350,000 BTU	$32	$320	$1,600	$5,632	$27	$272	$1,360	$4,787
Heater	TBD	400,000 BTU	$32	$320	$1,600	$5,632	$27	$272	$1,360	$4,787
Heater	TBD	500,000 BTU	$33	$330	$1,650	$5,808	$28	$281	$1,403	$4,937
Haul Truck	Cat 773	60 Ton	$310	$3,100	$15,500	$54,560	$264	$2,635	$13,175	$46,376
Haul Truck	Cat 775	70 Ton	$350	$3,500	$17,500	$61,600	$298	$2,975	$14,875	$52,360
Hydraulic Breaker for 330 Exc.	Cat	H-140	$155	$1,550	$7,750	$27,280	$132	$1,318	$6,588	$23,188
Hydraulic Breaker for 345 Exc.	Cat		$200	$2,000	$10,000	$35,200	$170	$1,700	$8,500	$29,920
JLG (Boom Lift)	TBD	60 ft.	$60	$600	$3,000	$10,560	$51	$510	$2,550	$8,976
JLG (Boom Lift)	TBD	80 ft.	$128	$1,280	$6,400	$22,528	$109	$1,088	$5,440	$19,149
Light Towers	TBD	4000W	$34	$340	$1,700	$5,984	$29	$289	$1,445	$5,086
Motor Grader	Cat 14H	14H	$120	$1,200	$6,000	$21,120	$102	$1,020	$5,100	$17,952

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BARNARD-PENNECON J.V.

Appendix A2.5
Equipment Rate Schedule

Equipment	Manufacturer & Model Number	Size	Hour $CAD	Day $CAD	Week $CAD	Month $CAD	Hour $CAD	Day $CAD	Week $CAD	Month $CAD
Oil/Fuel Truck	TBD		$220	$2,200	$11,000	$38,720	$187	$1,870	$9,350	$32,912
Pickup	Ford F-150	3/4 T	$25	$250	$1,250	$4,400	$21	$213	$1,063	$3,740
Pressure Washer	TBD	10,000 PSI	$75	$750	$3,750	$13,200	$64	$638	$3,188	$11,220
Pump	TBD	4"	$20	$200	$1,000	$3,520	$17	$170	$850	$2,992
Pump	TBD	6"	$28	$280	$1,400	$4,928	$24	$238	$1,190	$4,189
RCC Batch Plant Only	TBD		$2,000	$20,000	$100,000	$352,000	$1,700	$17,000	$85,000	$299,200
Rock Drill	TBD		$220	$2,200	$11,000	$38,720	$187	$1,870	$9,350	$32,912
Shuttle Bus (20 Passenger)	TBD	TBD	$50	$500	$2,500	$8,800	$43	$425	$2,125	$7,480
Skid Steer Loader	Cat	279	$45	$450	$2,250	$7,920	$38	$383	$1,913	$6,732
Tandem	Various	15T	$150	$1,500	$7,500	$26,400	$128	$1,275	$6,375	$22,440
Tandem Tandem	Various	20T	$175	$1,750	$8,750	$30,800	$149	$1,488	$7,438	$26,180
Telebelt	Putzmiester		$250	$2,500	$12,500	$44,000	$213	$2,125	$10,625	$37,400
Tractor	John Deere	9520	$150	$1,500	$7,500	$26,400	$128	$1,275	$6,375	$22,440
Tractor/Trailer	TBD	TBD	$175	$1,750	$8,750	$30,800	$149	$1,488	$7,438	$26,180
Van (12 Passenger)	TBD	TBD	$28	$280	$1,400	$4,928	$24	$238	$1,190	$4,189
Vacuum Truck	TBD		$160	$1,600	$8,000	$28,160	$136	$1,360	$6,800	$23,936
Vibratory Roller	Cat CS56	12T	$92	$920	$4,600	$16,192	$78	$782	$3,910	$13,763
Vibratory Roller	Cat CS583		$140	$1,400	$7,000	$24,640	$119	$1,190	$5,950	$20,944
Water Truck	International	TBD	$80	$800	$4,000	$14,080	$68	$680	$3,400	$11,968

Notes:

1. The rates include:
   - Cost of equipment rental
   - fuel and lubricants
   - labour & equipment for fueling
   - spare parts and installation
   - transportation and handling of equipment
   - general overhead, mark-up and profit
   - insurance
2. The rates exclude operator's labour costs
3. Daily Rates are based on 10 hours
4. Weekly Rates are based on 50 hours
5. Standby rates to be negotiated upon award

Trade Type	Trade Classification	Number of LOA Person-Days	Travel KMs	Regular Time Person-Hours	Overtime (1.5x) Person-Hours	Overtime (2.0x) Person-Hours	Second Shift Person-Hours	Third Shift Person-Hours	Travel Time Hours	Total Person-Hours
Boilermakers	General Foreperson	4	5	14	3	7	20	0	0	44
	Foreperson	13	15	41	10	21	59	0	0	131
	Assistant Foreperson									
	Journeyperson	131	151	410	101	209	589	0	0	1,309
	Helper									
	Apprentice - 3rd year									
	Apprentice - 2nd year									
	Apprentice - 1st year									
Bricklayers	Group 1 - General Foreperson	45	51	140	34	71	201	0	0	446
	Group 1 - Foreperson	134	154	419	103	213	602	0	0	1,337
	Journeyperson - Group 2	1,337	1,541	4,192	1,030	2,133	6,017	0	0	13,372
	Journeyperson - Group 3									
	Journeyperson - Group 4									
	Apprentice - 1st 6 months									
	Apprentice - 2nd 6 months									
	Apprentice - 3rd 6 months									
	Apprentice - 4th 6 months									
	Apprentice - 5th 6 months									
	Apprentice - 6th 6 months									
	Apprentice - 7th 6 months									
	Apprentice - 8th 6 months									
Refractory	Group 1 – General Foreperson									
	Group 1 – Refractory Foreperson									
	Journeyperson - Group 5									
	Journeyperson - Group 6									
	Apprentice - 1st 1,200 hours									
	Apprentice - 2nd 1,200 hours									
	Apprentice - 3rd 1,200 hours									
	Apprentice - 4th 1,200 hours									

Trade Type	Trade Classification	Number of LOA Person-Days	Travel KMs	Regular Time Person-Hours	Overtime (1.5x) Person-Hours	Overtime (2.0x) Person-Hours	Second Shift Person-Hours	Third Shift Person-Hours	Travel Time Hours	Total Person-Hours
Carpenters	General Foreperson	276	318	865	212	440	1,241	0	0	2,758
	Non-working Foreperson									
	Working Foreperson	828	954	2,594	637	1,320	3,724	0	0	8,275
	JourneyPerson, Carpenter, Welder, Scaffolder	8,275	9,536	25,942	6,372	13,199	37,238	0	0	82,750
	Apprentice – 1st									
	Apprentice – 2nd									
	Apprentice – 3rd									
	Apprentice – 4th									
Electricians	General Foreperson	31	36	97	24	49	139	0	0	309
	Non-working Foreperson									
	Working Foreperson	93	107	290	71	148	416	0	0	925
	Apprentice/JourneyPerson Electrician Welder/Welder									
	Journeyperson	925	1,066	2,901	712	1,476	4,163	0	0	9,252
	Apprentice - 1st year									
	Apprentice - 2nd year									
	Apprentice - 3rd year									
	Apprentice - 4th year									
Labourers	General Foreperson	457	527	1,434	352	729	2,058	0	0	4,573
	Foreperson	1,372	1,581	4,301	1,056	2,188	6,173	0	0	13,718
	Class 1	2,376	2,738	7,449	1,829	3,790	10,692	0	0	23,759
	Class 2									
	Class 3									
	Class 4	7,258	8,364	22,754	5,589	11,577	32,661	0	0	72,580
	Class 5									
	Class 6	2,205	2,541	6,913	1,698	3,517	9,923	0	0	22,050
	Class 7									
	Class 8	1,637	1,887	5,133	1,261	2,611	7,367	0	0	16,372
	Class 9									
	Class 10	242	279	758	186	386	1,088	0	0	2,417
	Class 11									
	Class 12									

Trade Type	Trade Classification	Number of LOA Person-Days	Travel KMs	Regular Time Person-Hours	Overtime (1.5x) Person-Hours	Overtime (2.0x) Person-Hours	Second Shift Person-Hours	Third Shift Person-Hours	Travel Time Hours	Total Person-Hours
Insulators	General Foreperson									
	Foreperson									
	Working Foreperson									
	JourneyPerson Mechanic									
	Apprentice - 1st year									
	Apprentice - 2nd year									
	Apprentice - 3rd year									
	Apprentice - 4th year									
Hotel Employees and Restaurant Employees	Chef (General Foreperson)									
	1st Cook (Foreperson)									
	Baker, Meat Cutter & Foreperson									
	2nd Cook, Inventory Attendant, Service Attendant & Front Desk Attendant									
	3rd Cook, Baker's Helper & Bartender									
	Salad/Sandwich Person & Commissary									
	General Help									
	Foreperson									
	Camp Attendant Housekeeping									
	Security Crew Chief (General Foreperson)									
	Security Assistant Crew Chief (Foreperson)									
	Security Officer, Communications/Dispatch									
	Janitor									

Trade Type	Trade Classification	Number of LOA Person-Days	Travel KMs	Regular Time Person-Hours	Overtime (1.5x) Person-Hours	Overtime (2.0x) Person-Hours	Second Shift Person-Hours	Third Shift Person-Hours	Travel Time Hours	Total Person-Hours
Electrical Line Workers	General Foreperson									
	Non-working Foreperson									
	Lead Lineperson									
	Utility Worker									
	Journey (Lineperson and/or Cable Splicer)									
	Apprentice - 1st year									
	Apprentice - 2nd year									
	Apprentice - 3rd year									
	Apprentice - 4th year									
Ironworkers - Structural	General Foreperson									
	Foreperson									
	Connectors									
	Journeyperson									
	Apprentice - 1st 1,000 hrs									
	Apprentice - 2nd 1,000 hrs									
	Apprentice - 3rd 1,000 hrs									
	Apprentice - 4th 1,000 hrs									
Ironworkers - Rodman (Rebar)	General Foreperson	68	79	214	53	109	307	0	0	682
	Foreperson	204	236	641	157	326	920	0	0	2,044
	Journeyperson	2,044	2,356	6,408	1,574	3,260	9,199	0	0	20,442
	Apprentice - 1st 1,000 hrs									
	Apprentice - 2nd 1,000 hrs									
	Apprentice - 3rd 1,000 hrs									
	Apprentice - 4th 1,000 hrs									

Trade Type	Trade Classification	Number of LOA Person-Days	Travel KMs	Regular Time Person-Hours	Overtime (1.5x) Person-Hours	Overtime (2.0x) Person-Hours	Second Shift Person-Hours	Third Shift Person-Hours	Travel Time Hours	Total Person-Hours
Millwrights	General Foreperson									
	Non-working Foreperson									
	Working Foreperson									
	Journeyperson Millwright – Welder Machinist									
	Apprentice 1st Year									
	Apprentice 2nd Year									
	Apprentice 3rd Year									
	Apprentice 4th Year									
Operating Engineers	General Foreperson	606	697	1,900	467	967	2,727	0	0	6,061
	Foreperson	1,818	2,091	5,700	1,400	2,900	8,182	0	0	18,182
	Operating Engineer – Group 1	3,420	3,933	10,722	2,633	5,455	15,390	0	0	34,200
	Operating Engineer – Group 2	9,158	10,531	28,710	7,052	14,607	41,210	0	0	91,578
	Operating Engineer – Group 3									
	Operating Engineer – Group 4									
	Operating Engineer – Group 5	3,665	4,214	11,488	2,822	5,845	16,491	0	0	36,646
	Apprentice – 1st Period									
	Apprentice – 2nd Period									
	Apprentice – 3rd Period									
	Apprentice – 4th Period									
	Apprentice – 5th Period									
	Apprentice – 6th Period									
	Clerical – Group 1									
	Clerical – Group 2									
	Clerical – Group 3	1,940	2,231	6,081	1,494	3,094	8,729	0	0	19,398
Painters and Allied Trades	Painter/Glazier									
	Drywall Taper, Spray Painter, Sand Blaster, Vinyl Hangers, Fireproofers									
	Foreperson									
	General Foreperson									
	Apprentice - 1st year									
	Apprentice - 2nd year									
	Apprentice - 3rd year									

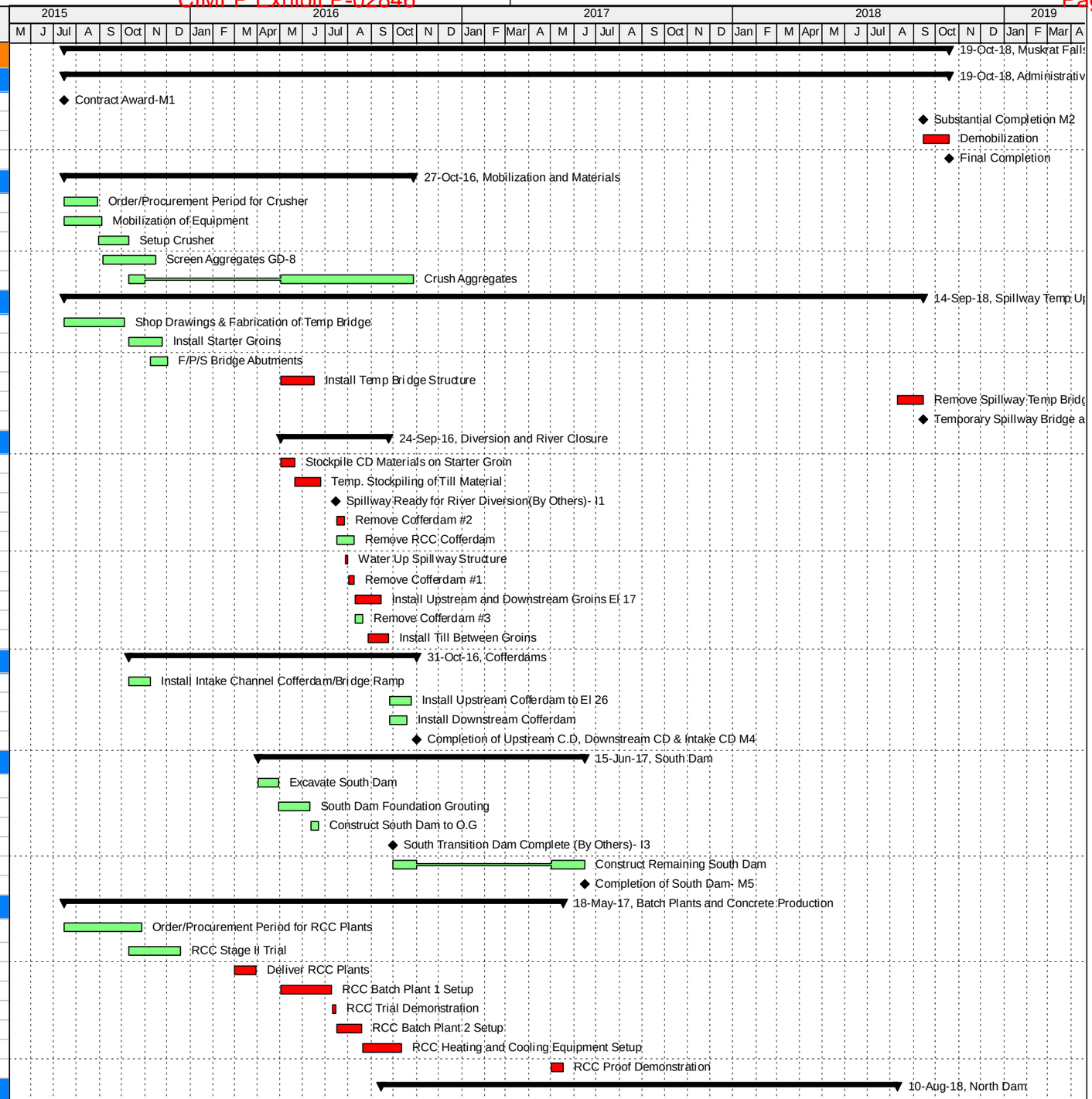
Trade Type	Trade Classification	Number of LOA Person-Days	Travel KMs	Regular Time Person-Hours	Overtime (1.5x) Person-Hours	Overtime (2.0x) Person-Hours	Second Shift Person-Hours	Third Shift Person-Hours	Travel Time Hours	Total Person-Hours
Plumbers and pipefitters	General Foreperson									
	Foreperson									
	Journeyperson									
	Welding Inspector									
	Apprentice – 1st year									
	Apprentice - 2nd year									
	Apprentice - 3rd year									
	Apprentice - 4th year									
Sheet Metal Workers	General Foreperson									
	Working Foreperson									
	Non-working Foreperson									
	Journeyperson									
	Apprentice - 2nd year									
	Apprentice - 3rd year									
	Apprentice - 4th year									
Teamsters	General Foreperson	336	387	1,054	259	536	1,513	0	0	3,362
	Foreperson	1,009	1,160	3,162	777	1,609	4,538	0	0	10,085
	Group 1 (Single Axle)	3,882	4,465	12,171	2,989	6,192	17,470	0	0	38,822
	Group 2 (Dual Axle/Tandem Axle)	6,202	7,133	19,445	4,776	9,893	27,911	0	0	62,024
	Group 3 (Heavy Trucks & Warehouse)									
	Group 4 (Emergency, Medical Technicians & First Mates)									
	Group 5 (Duty Nurse, Fire Prevention Officer, Captains & Engineers)									
	Group 6 (Tandem Axle)									
	Group 6 (Tandem Tandem Axle)									

Trade Type	Trade Classification	Number of LOA Person-Days	Travel KMs	Regular Time Person-Hours	Overtime (1.5x) Person-Hours	Overtime (2.0x) Person-Hours	Second Shift Person-Hours	Third Shift Person-Hours	Travel Time Hours	Total Person-Hours
Elevator Constructors	Mechanic									
	Mechanic in-charge (4 or more)									
	Mechanic in-charge (30 or more)									
	Probationary Helper I									
	Probationary Helper II									
	Helper I									
	Helper II									
	Improver Helper									

*LOA = Living Out Allowance.

29-Jun-15 08:14

Activity ID	Activity Name	Original Duration	Early Start	Early Finish
Muskrat Falls N&S Dam-Spillway July 15 2016		851	15-Jul-15	19-Oct-18
Administrative		851	15-Jul-15	19-Oct-18
A1010	Contract Award-M1	0	15-Jul-15	
A1040	Substantial Completion M2	0		14-Sep-18
A1160	Demobilization	30	14-Sep-18	19-Oct-18
A1150	Final Completion	0		19-Oct-18
Mobilization and Materials		335	15-Jul-15	27-Oct-16
A1200	Order/Procurement Period for Crusher	40	15-Jul-15	29-Aug-15
A1060	Mobilization of Equipment	45	15-Jul-15	04-Sep-15
A1500	Setup Crusher	35	31-Aug-15	10-Oct-15
A1080	Screen Aggregates GD-8	61	05-Sep-15	16-Nov-15
A1070	Crush Aggregates	172	10-Oct-15	27-Oct-16
Spillway Temp Upstream Bridge and Ramps		826	15-Jul-15	14-Sep-18
A1390	Shop Drawings & Fabrication of Temp Bridge	70	15-Jul-15	05-Oct-15
A1330	Install Starter Groins	38	10-Oct-15	24-Nov-15
A1440	F/P/S Bridge Abutments	20	09-Nov-15	02-Dec-15
A1120	Install Temp Bridge Structure	40	02-May-16	16-Jun-16
A1140	Remove Spillway Temp Bridge and Intake CD	30	10-Aug-18	14-Sep-18
A1170	Temporary Spillway Bridge and Intake CD Removed	0		14-Sep-18
Diversion and River Closure		105	02-May-16	24-Sep-16
A1119	Stockpile CD Materials on Starter Groin	17	02-May-16	20-May-16
A1129	Temp. Stockpiling of Till Material	30	21-May-16	24-Jun-16
A1109	Spillway Ready for River Diversion(By Others)- I1	0		15-Jul-16
A1350	Remove Cofferdam #2	10	16-Jul-16	27-Jul-16
A1360	Remove RCC Cofferdam	20	16-Jul-16	08-Aug-16
A1680	Water Up Spillway Structure	3	28-Jul-16	30-Jul-16
A1340	Remove Cofferdam #1	8	01-Aug-16	09-Aug-16
A1370	Install Upstream and Downstream Groins El 17	30	10-Aug-16	13-Sep-16
A1510	Remove Cofferdam #3	10	10-Aug-16	20-Aug-16
A1380	Install Till Between Groins	25	27-Aug-16	24-Sep-16
Cofferdams		276	10-Oct-15	31-Oct-16
A1430	Install Intake Channel Cofferdam/Bridge Ramp	25	10-Oct-15	09-Nov-15
A1400	Install Upstream Cofferdam to El 26	25	26-Sep-16	24-Oct-16
A1450	Install Downstream Cofferdam	20	26-Sep-16	18-Oct-16
A1220	Completion of Upstream C.D, Downstream CD & Inta	0		31-Oct-16
South Dam		315	01-Apr-16	15-Jun-17
A1630	Excavate South Dam	24	01-Apr-16	28-Apr-16
A1640	South Dam Foundation Grouting	37	29-Apr-16	10-Jun-16
A1690	Construct South Dam to O.G	10	11-Jun-16	22-Jun-16
A1240	South Transition Dam Complete (By Others)- I3	0		30-Sep-16
A1460	Construct Remaining South Dam	67	30-Sep-16	15-Jun-17
A1250	Completion of South Dam- M5	0		15-Jun-17
Batch Plants and Concrete Production		480	15-Jul-15	18-May-17
A1720	Order/Procurement Period for RCC Plants	90	15-Jul-15	28-Oct-15
A1650	RCC Stage II Trial	60	10-Oct-15	19-Dec-15
A1600	Deliver RCC Plants	25	01-Mar-16	29-Mar-16
A1410	RCC Batch Plant 1 Setup	60	02-May-16	09-Jul-16
A1420	RCC Trial Demonstration	5	11-Jul-16	15-Jul-16
A1730	RCC Batch Plant 2 Setup	30	16-Jul-16	19-Aug-16
A1810	RCC Heating and Cooling Equipment Setup	45	20-Aug-16	11-Oct-16
A1470	RCC Proof Demonstration	15	01-May-17	18-May-17
North Dam		497	14-Sep-16	10-Aug-18



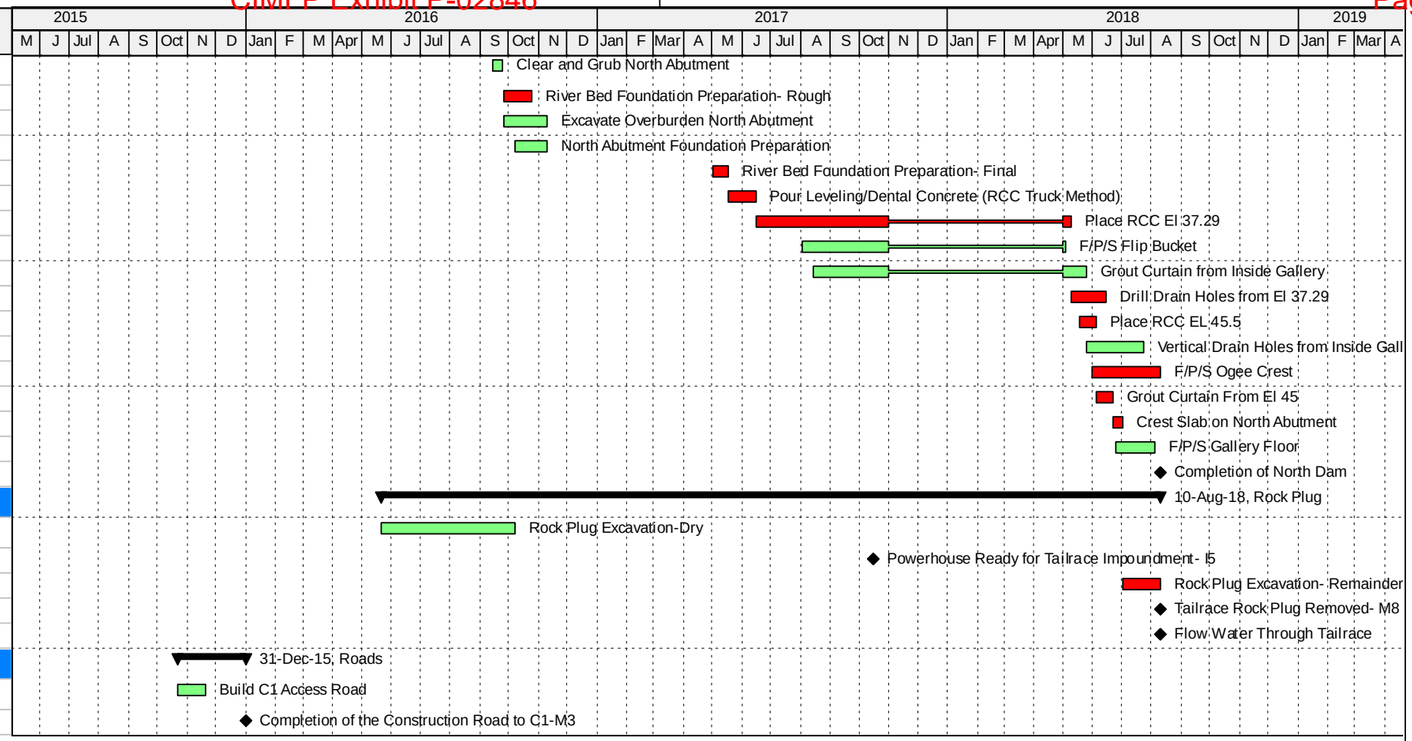
Remaining Level of Effort | Actual Work | Critical Remaining ...
Actual Level of Effort | Remaining Work | Milestone

July 15, 2016 Spillway Complete

TASK filter: All Activities

29-Jun-15 08:14

Activity ID	Activity Name	Original Duration	Early Start	Early Finish
A1530	Clear and Grub North Abutment	10	14-Sep-16	24-Sep-16
A1540	River Bed Foundation Preparation- Rough	25	26-Sep-16	24-Oct-16
A1550	Excavate Overburden North Abutment	40	26-Sep-16	10-Nov-16
A1840	North Abutment Foundation Preparation	30	07-Oct-16	10-Nov-16
A1850	River Bed Foundation Preparation- Final	15	01-May-17	18-May-17
A1750	Pour Leveling/Dental Concrete (RCC Truck Method)	25	18-May-17	16-Jun-17
A1480	Place RCC El 37.29	125	16-Jun-17	09-May-18
A1780	F/P/S Flip Bucket	80	02-Aug-17	03-May-18
A1760	Grout Curtain from Inside Gallery	90	14-Aug-17	26-May-18
A1560	Drill Drain Holes from El 37.29	32	09-May-18	15-Jun-18
A1580	Place RCC EL 45.5	15	18-May-18	05-Jun-18
A1770	Vertical Drain Holes from Inside Gallery	50	26-May-18	24-Jul-18
A1570	F/P/S Ogee Crest	60	01-Jun-18	10-Aug-18
A1660	Grout Curtain From El 45	15	05-Jun-18	22-Jun-18
A1670	Crest Slab on North Abutment	8	22-Jun-18	02-Jul-18
A1790	F/P/S Gallery Floor	35	25-Jun-18	04-Aug-18
A1270	Completion of North Dam	0		10-Aug-18
Rock Plug		579	21-May-16	10-Aug-18
A1490	Rock Plug Excavation-Dry	120	21-May-16	07-Oct-16
A1300	Powerhouse Ready for Tailrace Impoundment- I5	0		15-Oct-17
A1820	Rock Plug Excavation- Remainder	34	02-Jul-18	10-Aug-18
A1310	Tailrace Rock Plug Removed- M8	0		10-Aug-18
A1860	Flow Water Through Tailrace	0		10-Aug-18
Roads		51	22-Oct-15	31-Dec-15
A1710	Build C1 Access Road	25	22-Oct-15	20-Nov-15
A1320	Completion of the Construction Road to C1-M3	0		31-Dec-15



A13 Attachment 1
Execution Plan

EXECUTION PLAN

OVERVIEW / METHOD STATEMENT

This Execution Plan is a broad overview indicating Barnard-Pennecon J.V.'s intentions, interpretations and expectations for successful contract performance on Lower Churchill Request for Proposal CH0009 Construction of North and South Dams. Our successful execution of the construction works will involve the effective planning, management and coordination of numerous resources, which we describe below.

This Execution Plan contains a summary and complete discussion of Barnard-Pennecon J.V.'s approach to installing the work, in detailed narrative, supplemented by three-dimensional and non-three-dimensional layouts and plans included within and listed as attachment. We believe it conveys our complete understanding of this project and demonstrates our knowledge of the technical issues involved. We discuss the major components of the work where the complexity and scheduling of the work warrant a detailed discussion. Elements of the work that are minor or the construction of which is generally understood to be within normal industry practices are not discussed here.

The following topics outline the requirements of the Appendix A13 Execution Plan:

- Mobilization / Demobilization Plan
- List of Subcontractors and Scope of Work – Reference Appendix A16
- List and Details of all Equipment and Standby – Reference Appendix A2.5
- Construction Execution Philosophy and Approach. This includes:
    - Cofferdam Construction
    - Bridge Construction
    - Aggregate Processing
    - Roller-Compacted Concrete (RCC)
    - CVC Plant
    - South Dam Construction
    - Crane Layout
- Site Layout and Temporary Facilities
- Labour Strategy – Reference Appendix A13, Attachment 2
- Organization Chart – Key Personnel – Reference Appendix A13, Attachments 3 and 4
- List of Projects – Reference Appendix A13, Attachment 5
- Technology Assessment – Reference Appendix A13, Attachment 6
- Power Requirements – Reference Appendix A13, Attachment 7

MOBILIZATION / DEMOBILIZATION PLAN

MOBILIZATION

Upon notice of Award, Barnard-Pennecon J.V. will work on an execution plan that finalizes the project schedule, work plans, safety and environmental plans.

We will likely temporary set up an office in St. John's until we are ready to access the site. This will allow us to work closely with Nalcor and the Engineer to plan out the project as well and thoroughly as we can before we mobilize to the site.

Following Notice to Proceed, we will mobilize to the site with our office facilities and earthmoving equipment. We will also be finalizing our procurement for fixed plant equipment.

DEMOBILIZATION

We have planned for a majority of our work areas in locations where we will be out of the way while the powerhouse is watered up to its final elevations. We anticipate storing some remaining equipment in Work Area A until it is removed from the site. We plan to keep some rolling stock equipment and a majority of our fixed plant equipment onsite through our Warranty period.

LIST OF SUBCONTRACTORS AND SCOPE OF WORK

See list provided in Appendix A16.

EQUIPMENT LIST

See list provided in Appendix A 2.5. We have also identified the equipment we intend to use to construct the project within our discussion of the Key Construction Activities below.

CONSTRUCTION EXECUTION PHILOSOPHY AND APPROACH

SAFETY

Safety will be the number one priority every day, by everyone. Barnard-Pennecon J.V. crews are trained to provide themselves with a safe workplace and to plan their work with safety as the top priority. To assist the crews, we will have multiple Safety Advisors, who will coordinate daily with the work crews, as well as Nalcor and SNC Lavalin's (SLI's) Safety Representatives. The Safety Advisors will work with the Project Team and will also have a direct, open line of communication with the Joint Venture Management Committee. These persons will have the authority to shut down the project, or a portion of the project, if safety is being compromised.

Barnard-Pennecon J.V. has included the Joint Venture Safety, Occupational Health, and Environmental Protection Policy within Appendix A5 and as Exhibit 1 and within Appendix A6 in this proposal submission. These policies provide an overview of our requirements for the project's safety plan and will serve as the basis for developing a project-specific safety plan.

Due to its complexity, this project presents many safety challenges that will require communication and coordination among all parties. Barnard-Pennecon J.V. understands this and plans to perform all activities safely and in accordance with federal, Provincial, and local regulations, in addition to the general safety and health plans Nalcor has provided:

- SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-I-0001)
- SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002)
- SNC-Lavalin Global Power Health and Safety Management System (SN-0008/6801-EN)

- SNC-Lavalin Global Power Health and Safety Standards Manual (SN-0007/503011-0000-68GA-0001)
- SNC-Lavalin Critical Risk Control Protocols (SN-0004/6845.2.1.1-EN)

On this project, a Job Hazard Analysis (JHA) will be implemented by our Foremen prior to working on any specific work activity. The JHA will identify all potential hazards to the activity and provide preventative measures to address those potential hazards. Each JHA will be reviewed by a Safety Specialist, Project Superintendent, General Foreman and Foremen, prior to the commencement of the work activity. The JHA will then be reviewed and signed off on by the crew. Nalcor and SLI's personnel are welcome and encouraged to attend and participate in any and all JHA reviews and discussions.

ENVIRONMENTAL MEASURES

Barnard-Pennecon J.V. has reviewed the environmental requirements of the project and will comply with all Provincial, local, and project requirements. We will use Best Management Practices (BMPs) to prevent sediment from leaving the site.

Erosion and sediment control features for each work activity will be installed prior to disturbing the land and will be regularly inspected and repaired, as necessary. All erosion and sedimentation control features will be inspected immediately after a significant rain event.

SURVEY CONTROL AND RECORD DOCUMENTS

Barnard-Pennecon J.V.'s Survey Manager is responsible for reviewing all alignments before staking in the field. Discrepancies found in the drawings will immediately be brought to the attention of Nalcor and SLI. The Survey Manager will meet with the survey crews at the beginning of shift to discuss the survey requirements. In addition, the Survey Manager will plan ahead for upcoming survey needs with work crews, and will develop a weekly survey plan.

Survey field books will be kept up-to-date and in accordance with common surveying practices. Survey equipment will be maintained in good working order with a sufficient supply of backup components, such as batteries and data collectors. Global Positioning System (GPS) surveying accuracy will be checked every morning, before staking out points or alignments, using known control points, and periodically throughout the day, if initialization has been lost. Raw survey data in data collectors will be recorded and transferred to a Personal Computer (PC) hard drive daily. Following a day's worth of layout, the Survey Manager will review the recorded points and double-check the survey given to the crews for accuracy.

Layout of the work, boundary surveys, quantity surveys, instrumentation surveys, Contractor surveys, and record documents will all be performed in accordance with the Contract Documents. Strict attention will be paid to ensuring that we achieve proper survey and record documentation of the work.

PROJECT COMMUNICATIONS AND COORDINATION

Project Coordination is essential for a safe and productive work site. Pennecon and Barnard have always maintained teamwork and partnering as a focal point of each project.

This commitment to open communication and teamwork has been a key to the success of both contractors. Barnard-Pennecon J.V. looks forward to working with each and every member of the Project Team to maintain open lines of communication among Nalcor and SLI.

In addition to day-to-day communication, the following site meetings reflect our commitment to sharing information and planning the work. The format of these meetings has been developed over time; the meetings are an integral part of the success of each project. Barnard-Pennecon J.V. will encourage representatives of the Project Team to attend and participate in these meetings.

Preconstruction Meeting

The “Preconstruction Meeting” is held at the beginning of the project, prior to mobilization to the project site location. This meeting is a tool to establish an open line of communication among Nalcor, SLI, Barnard-Pennecon J.V., and Subcontractors, to familiarize everyone with the members of the Project Team.

Tool Box Meetings

The “Tool Box Meeting” is an informal meeting at the commencement of each working shift. It is a tool to be used in the field to help facilitate communication between the Foremen and their crews. The primary objective of this meeting is to discuss the upcoming day’s activities, safety, and quality.

End-of-Shift Team Meeting

The “End-of-Shift Meeting” is an informal meeting at the end of each working shift. This tool is used in the field to help facilitate communication among the Project Manager, Project Superintendent, Field Superintendents, Project Engineers, General Foreman, Foremen, and crews.

Weekly Subcontractor Meeting

The “Weekly Subcontractor Meeting” is a formal meeting once a week with any subcontractors that are onsite. The intent of this meeting is to review the progress of the subcontractors and discuss the following:

- Safety (Near Misses, Upcoming Hazards, Inspections and Training)
- Schedule (On Schedule? If not, why not? Any impacts by Contractor, Owner or other Subs?)
- Coordination Efforts (General, Testing and other subcontractors)
- Potential Changes or Claims
- Submittals, RFI’s
- Quality (Any issues, Testing and Inspection discussion)

Weekly Submittal Meeting

The “Weekly Submittal Meeting” is an internal meeting consisting of the Project Manager, Project Superintendent, and Project Engineers. The intent of this meeting is to review the status of all required submittals for the project and identify upcoming critical submittals so they can be submitted to Nalcor and the Engineer in sufficient time for review.

Pre-Task Kickoff Meeting

All new activities will require a pre-task kickoff meeting which will include the Project Manager, Project Superintendent, lead Project Engineer and supervising Field Superintendent to explain our task work plan to Nalcor and SLI prior to starting the work. They will review all aspects of the work ahead of time and discuss safety, quality and anticipated productions expected.

Weekly Progress Meeting

The “Weekly Progress Meeting” is an onsite meeting that takes place once a week with representatives of Nalcor, SLI, Barnard-Pennecon J.V., and any pertinent Subcontractor or Supplier. The purpose of the meeting is to discuss progress of the work, submittal status, potential or existing change orders, coordination issues, and any other activities that need to be discussed with the parties involved. The primary objective of the meeting is to communicate and coordinate among all parties involved in the project.

Monthly Project Safety Meeting

The “Monthly Project Safety Meeting” is held at the beginning of each month. This is a global workforce meeting with all employees and subcontractors per shift being present. This meeting is held to discuss any safety issues that were experienced in the last month and to make everyone aware of safety issues in the upcoming new phases of work. At this meeting, Barnard-Pennecon J.V. also recognizes individuals for outstanding safety compliance. Nalcor and SLI’s representatives are encouraged to attend and participate.

Quarterly Partnering Meeting

The “Quarterly Partnering Meeting” is a formal meeting of Nalcor, SLI, and Barnard-Pennecon J.V. The intent of the meeting is to create an open forum, where all parties can discuss areas that are progressing and areas requiring improvement. The goal is to increase communication among the parties and implement effective solutions to issues identified as potential or existing “roadblocks” to the success of the project.

PROJECT CONTROLS

Barnard-Pennecon J.V. has a proven system of cost controls that not only manage the revenue side of our business, but, most importantly, track our costs in the field. We will track costs on a daily basis with crews filling out daily cost sheets. Daily costs are summarized and emailed daily to the JV Management Team and executive members of both Barnard and Pennecon. The daily summary is broken down into each item of work performed the prior day. On a weekly basis, our system will track work progress from the prior week using measured and estimated quantities, actual labour and equipment timecards and invoices received during the week. On a monthly basis, we will measure all quantities to validate our weekly quantities. This also correlates to our monthly pay request to Nalcor. The Project Management team assembles a monthly projection that includes a cost projection, schedule, change order / issues report, risks and opportunities report, equipment utilization report, and subcontractor and supplier summary.

Our management will know their costs on a daily basis during construction. We will be able to quickly recognize any impacts to the project on a daily basis rather than recognizing them on a monthly basis and wondering “what just happened”. With rotating schedules and multiple shifts, it’s crucial that the general contractor have a handle on the costs and productions being achieved on a daily basis.

Our look-ahead schedules and coordination efforts will be appreciated by Nalcor when discussing schedules and activities because our staff will be educated on daily work activities being performed, costs and units completed. This will allow Nalcor and SLI to make better decisions.

COLD WEATHER STRATEGY

In general, we are performing minor work during the winter periods. We identify the winter periods between November 1 and May 1.

The only activities we are considering are foundation dewatering maintenance and moving aggregates in the winter to capture the benefits of cooling.

ROTATIONS

A significant amount of manpower and management is required for this project. The schedule given requires non-stop work on the project. To accomplish this, we will have two shifts working a rotation of 20 days straight and then 10 days off. The project will be worked in 10 hours per shift.

We have provided manpower and management loading in other sections within this submission.

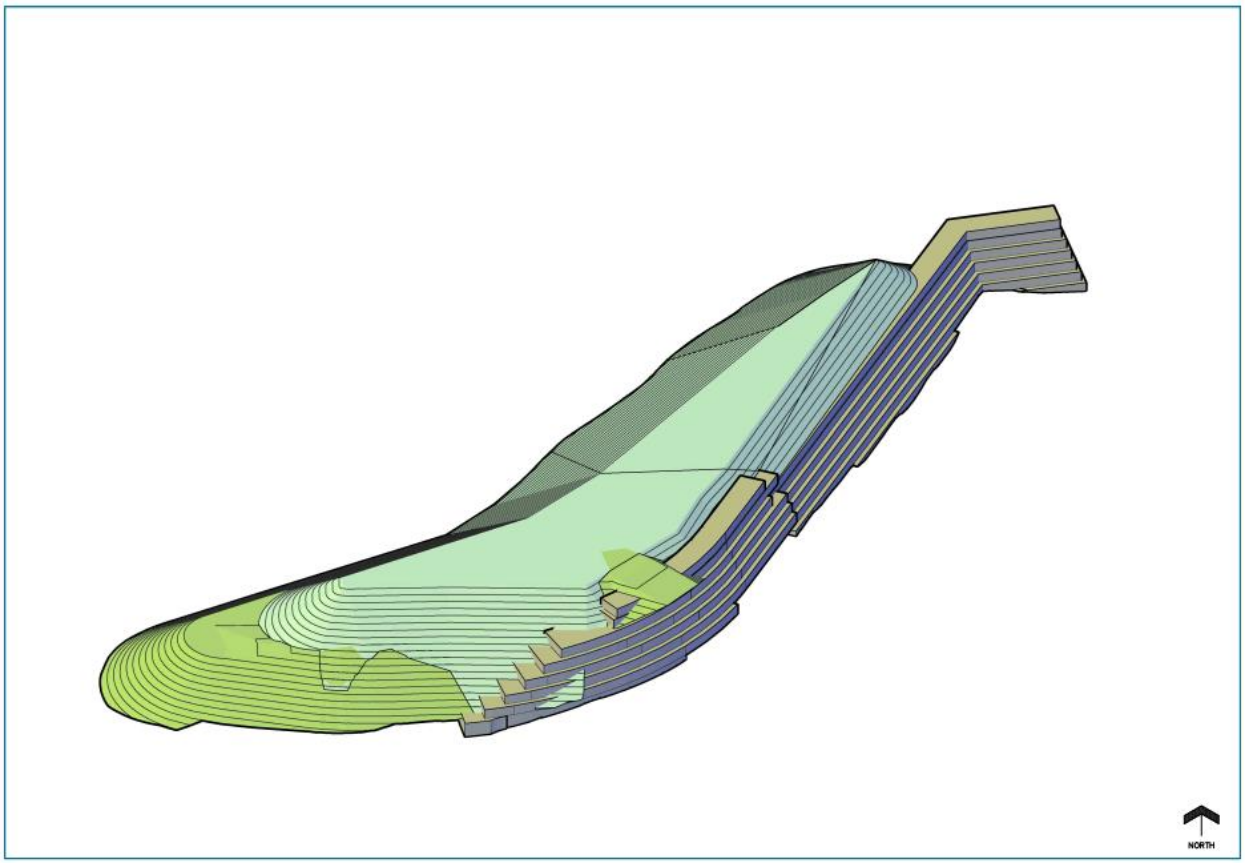
KEY CONSTRUCTION ACTIVITIES

This discussion will be divided into the following sections:

- Cofferdam Construction
- Bridge Construction
- Aggregate Processing
- Roller-Compacted Concrete (RCC)
- CVC Plant
- South Dam Construction
- Crane Layout

COFFERDAM CONSTRUCTION

We have followed the sequence requirements for the cofferdam construction with the exception of overbuilding the initial starter groin. Our approach to this work is to get as much rock stockpiled next to the wet side of the RCC Diversion Cofferdam as possible prior to restricting access across the bridge.



Overbuilt Starter Groin – Light Green

Equipment

Overall the construction of the cofferdam will be completed with two fleets: a Komatsu 1250 and CAT 775s, which will haul the rock, and a CAT 390 excavator loading CAT 740 articulated haul trucks to haul the Class 3 and Till material. The size and type of equipment are subject to change during final planning.

Till

Till will be hauled from the borrow area to a stockpile near the powerhouse. This will allow for faster access to material and will use equipment capable of accessing the work area. There is a possibility that we will progress the till material following the rock groins as they progress, which has potential to create increased sediment in the river. Our plan is different than waiting for the groins to be closed prior to starting the till placement.

Rock Groins

The large rock requirements have led us to identify three large excavators: 1-each Komatsu 1250 and 2-each CAT 390s. The haul trucks to be used will be CAT 775s with a D9 placement dozer. We do not envision turnouts in the groin section since they are wide enough to turn the trucks around. The size and type of equipment are subject to change during final planning.

Keeyask Powerhouse Cofferdam, Dual Groin, September 2014

Transition Fill

Transition fill is a processed material that will be end-dumped and pushed to the toe with a long-stick excavator. The floor between the rock groins will be cleaned from the downstream rock groin. We have identified in the table shown on 0009-4G05 Plate 06 that the head difference between the upstream and downstream water elevations would allow us to reach the area between the rock groins with a long reach-long stick excavator. We intend to use a CAT 390 with a specialty fabricated stick. It will have a 70-foot boom and stick with a CAT 345-sized bucket. This is the only foundation cleaning and verification we have included. The size and type of equipment are subject to change during final planning.

Transition Placement on Dual Groin Cofferdam at Keeyask, August 2014

Jet Grouting

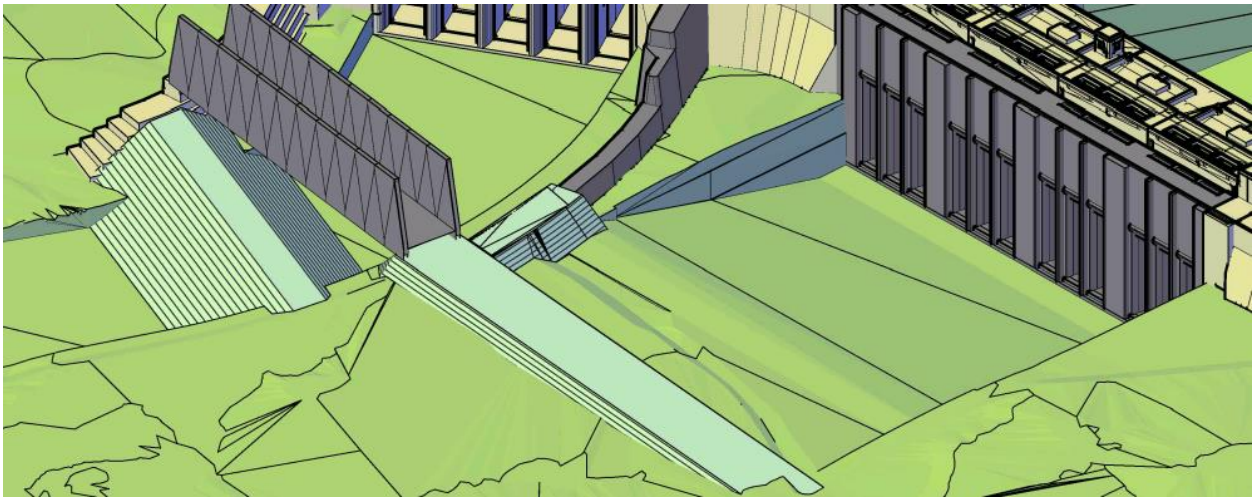
Jet grouting has been provided on an optional basis per Nalcor. It will take approximately four months to provide submittals and mobilize jet grouting equipment and personnel to the site and then, depending on the effort required to seal the foundation, an additional three months of work. It is BPJV's opinion that Nalcor should mobilize the Jet Grouting Subcontractor to minimize the impact to the Project's critical path.

BRIDGE CONSTRUCTION

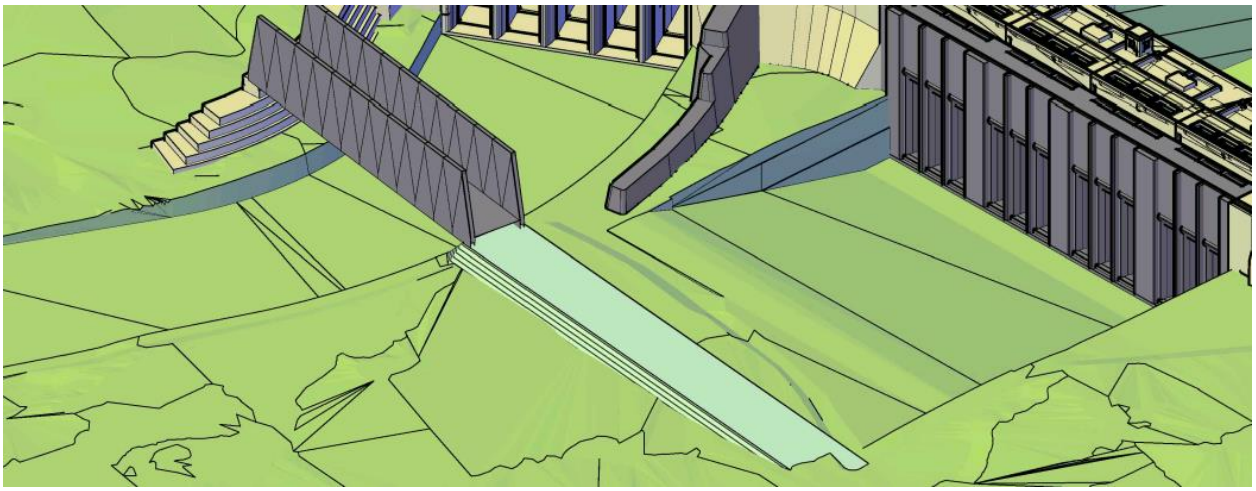
We are using an exclusive subcontractor, Structal-Bridges, for a two-lane, clear span bridge across the intake channel of the spillway. Our method avoids the need for a costly center pier and the risky removal of the center pier after the bridge is removed.

We have realigned the location of this bridge to benefit the final removal of the bridge after the RCC and Crest are completed. The relocation includes a revised cofferdam design that allows for easier removal after the powerhouse is

watered up for wet testing.
The thumbnail sketches below show the process:



Revised Powerhouse Cofferdam, tied into the Separation Wall



The cofferdam between the Bridge Abutment and Separation Wall is removed for Powerhouse watering up

The bridge and approach will be removed after all work upstream of the North Dam is complete. Our method allows for watering up the powerhouse to elevation 25.0.

AGGREGATE PROCESSING

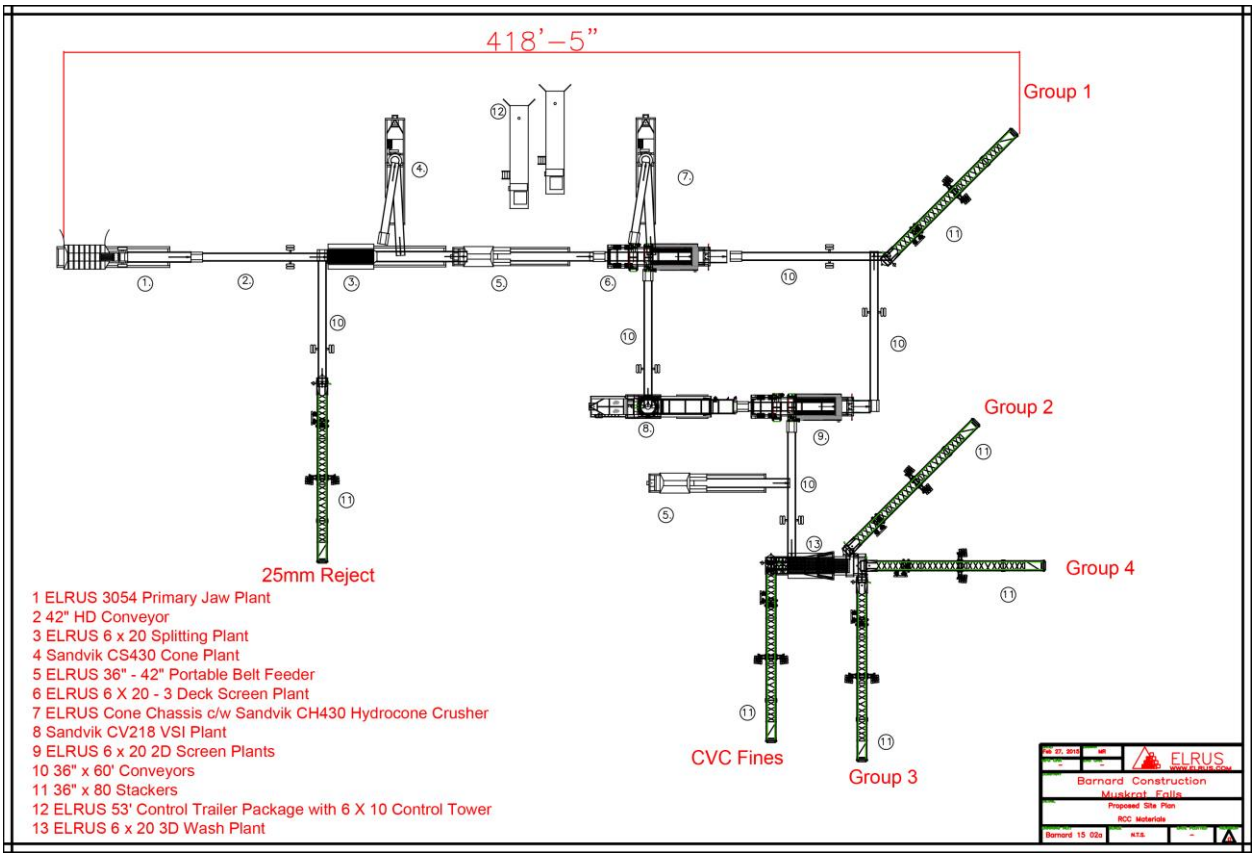
Borrow Material

We will utilize rock from Rock Area A for the RCC aggregates. We have assumed that Nalcor has calculated the total quantity of rock that we will need for our work and that it is available in Area A. For the filter materials within the dams, we intend to perform screening operations at GD-8.

Crushing Plant

To ensure the aggregate produced is competent, durable stone with good shape and that sufficient manufactured fines are generated in the crushing process, it will be necessary to establish a three-stage crushing plant onsite. The crushing facility will have the capacity to produce approximately 3,000 tonnes of aggregate per shift.

The sketch below is a rough layout of the crushing plant we plan to use.

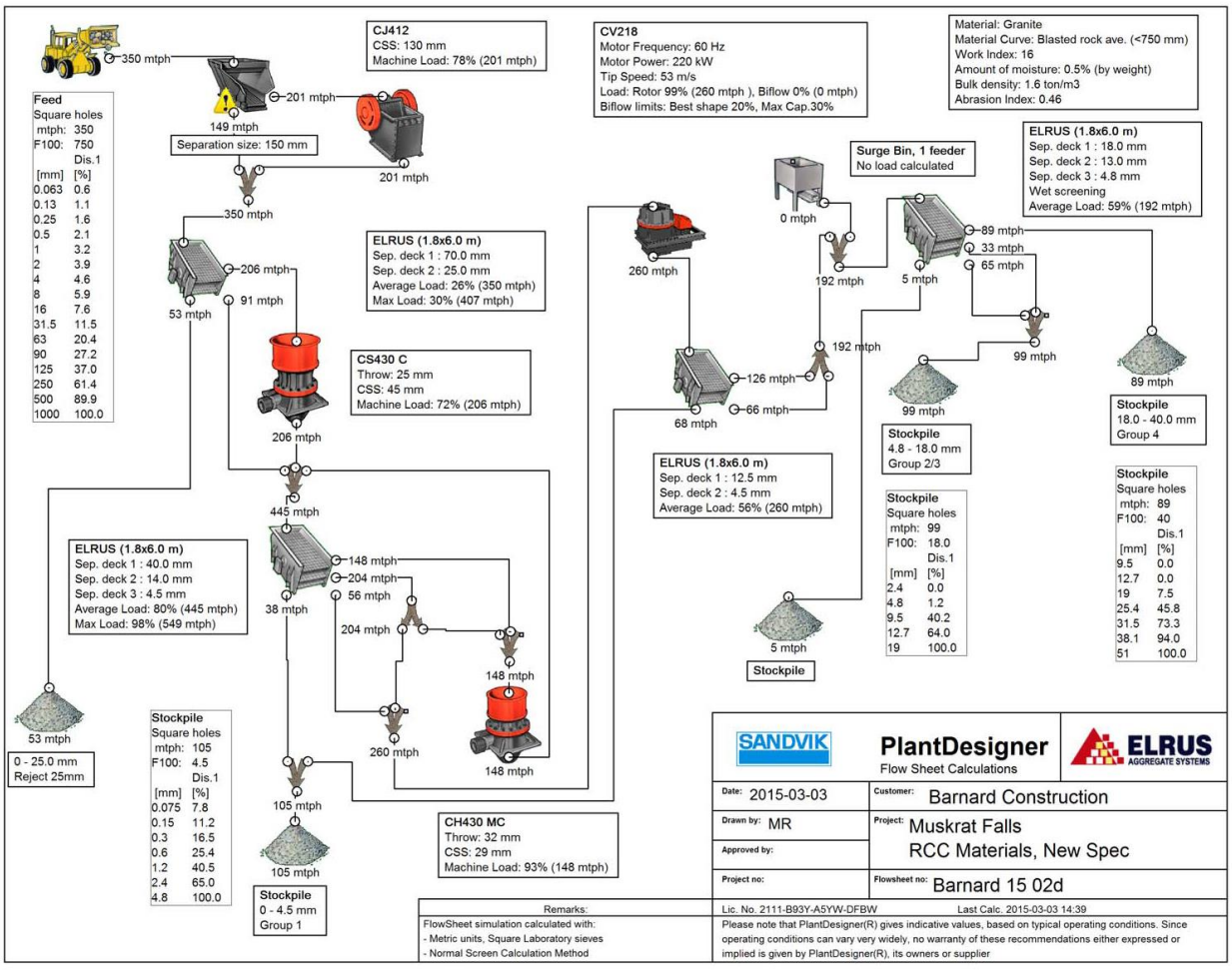


Aggregate Processing Configuration

A13 Attachment 1
Execution Plan

Our plan is to utilize the following equipment for producing the aggregate for the RCC materials:

- CJ612 Primary Jaw Plant
- Elrus 6 x 20 Splitting Plant
- Sandvik CS440 Cone Plant
- Elrus 36-inch x 42-inch Portable Belt Feeder
- Elrus 6 x 20 – 3-Deck Twin Screen Plant
- Elrus Cone Chassis c/w Sandvik CH660 Hydrocone Crusher
- Sandvik CV229 VSI Plant
- Elrus 8 x 20 2-Deck Screen Plant
- Multiple 36-inch x 60-foot Conveyors
- Multiple 36-inch x 80-foot Stackers
- Elrus 53-foot Control Trailer and Control Tower

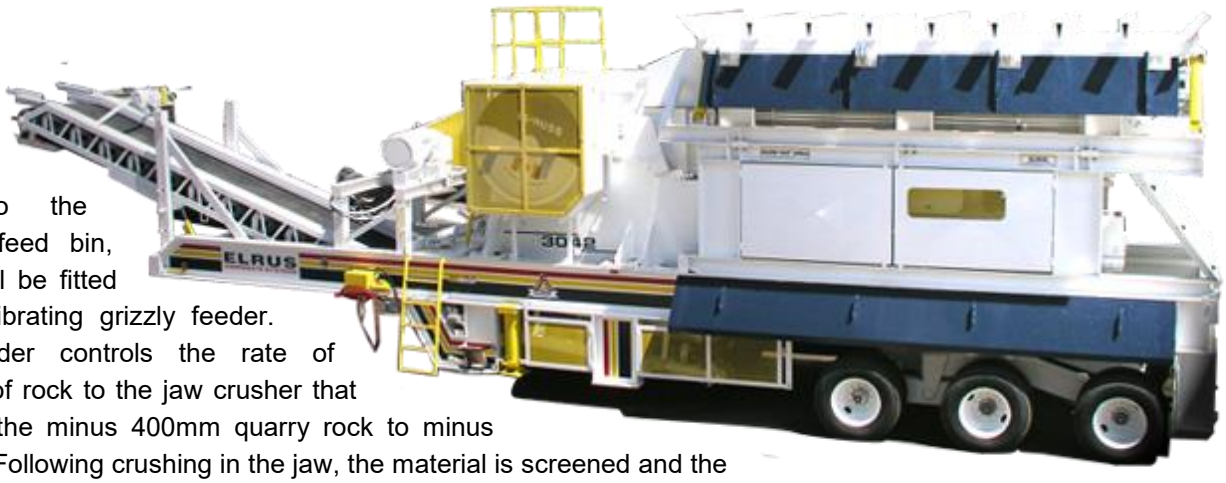


Theoretical Crusher Flow – RCC Aggregates Mode

A13 Attachment 1
Execution Plan

The following highlights each of the four crushing stages:

PRIMARY STAGE



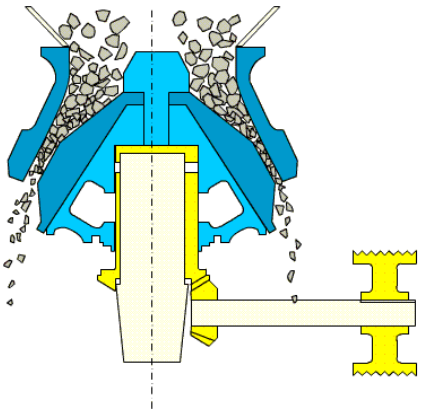
Quarry rock is loader- or truck-fed into the primary feed bin, which will be fitted with a vibrating grizzly feeder. The feeder controls the rate of delivery of rock to the jaw crusher that reduces the minus 400mm quarry rock to minus 200mm. Following crushing in the jaw, the material is screened and the minus 10mm fines fraction can be discarded if they are found to contain excessive clay.

CJ612 Primary Jaw Plant

SECONDARY STAGE

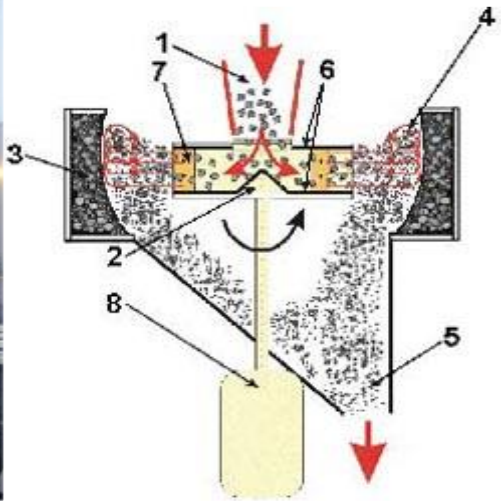
Minus 200mm plus 37.5mm material from the screen is then passed into the secondary gyratory/cone crusher to crush the stone to minus 75mm. The crushed product is then recombined with the crusher fines from the primary crushing.

Sandvik CS440 Cone Plant



TERTIARY STAGE

The third stage of crushing involves screening off minus 37.5mm fines and feeding the oversize to a tertiary vertical shaft impact (VSI) crusher, which crushes the stone to minus 50mm. The entire crushed product is then recombined.



Sandvik CV229 VSI Plant

FINAL SIZING

The last stage involves screening to separate the crushed product into the three aggregates for use in RCC production. These are:

- 0 to 5 mm
- 5 to 20 mm
- 20 to 40 mm

Stockpiling of Aggregates

Aggregates will be stockpiled using radial stackers and loaders. They will be stacked in a way that minimises any segregation to the piles. We successfully used this method on the Tongue River Dam in Montana, which had aggregate much softer than what we will see on the Muskrat Falls project. Should we find that the rock breaks down to the point of putting our combined gradation out of the specified gradation limits, we will switch to stockpiling with a stacking conveyor.

Quality Control of Aggregate Production

All aggregate used in the RCC and conventional concrete will be tested onsite to verify conformance to the Specification requirements. An important note is that the combined gradation of the aggregate is the ultimate conformance measure. Strict testing and compliance at the split levels are the only way to guarantee conformance of the combined.

Quality Control

We expect that Nalcor will provide quality control sampling of the process aggregates on a daily basis for both shifts while in operation. In addition, setup sampling for plant shakeout will require more samples to ensure the plant is set up properly.

ROLLER-COMPACTED CONCRETE (RCC)

This section describes our general approach to Roller-Compacted Concrete (RCC). In general, our approach is to minimise interruptions in the placement of RCC. We have looked at placing the RCC in two ways to prevent extended downtime while forms are jumped. Ultimately, we determined that the slope layer method is preferred over the conventional horizontal lifts.

RCC Production

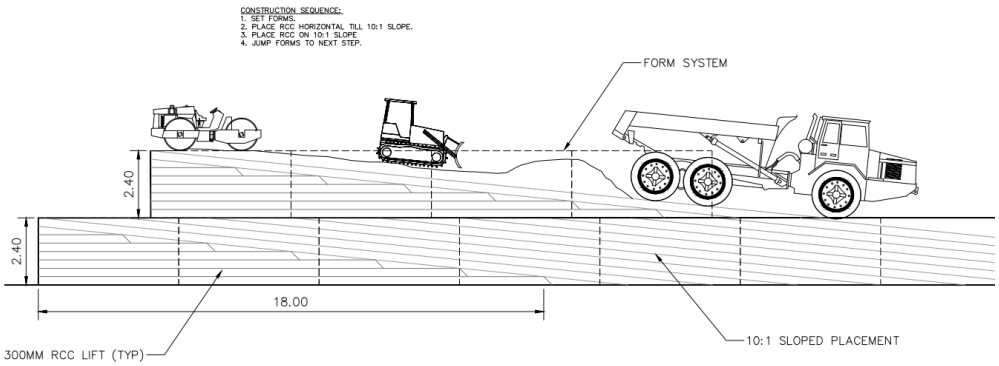
We currently complete the RCC construction in 140 days, with a winter break between November 1, 2017, and May 2018. The average production is approximately 85 m^3/hour.

Horizontal Lifts

The formwork on this RCC section will drive the production. If we place RCC in a conventional way, we will have significant delays when the RCC crew finishes the top of one step while waiting for the form crew to jump the forms. You can either build the RCC in monoliths bottom up at each contraction joint, or you can incorporate a slope layer method. We have chosen to utilize the slope layer method on this project to minimise the impacts the formwork will have on the project.

Slope Layer

The slope layer method is widely used in China and Australia. This method will ensure that the formwork is caught up as close as possible to the RCC placement, essentially taking it off the critical path. The slope layer method also minimises the use of admixtures in the mix, minimizing form pressure and joint cleaning. The overall RCC produced is a much higher quality when placed in mass blocks.



Mix Design

Nalcor and the Engineer provided a base mix design for this project:

- MPa = 15 to 17
- Nominal Maximum Aggregate Site = 40 mm
- Cement Type I = 60 - 85 kg/m³ (We used 70 kg/m³ in our estimate)
- Flyash = 110 – 160 kg/m³ (We used 135 kg/m³ in our estimate)
- Water = Variable – To be established with more lab testing and trial placement
- Admixtures = WRA = to be determined
- AEA = to be determined
- Aggregates = 3 pile mix

RCC mixes for the project will be determined once sufficient data are available from crushing and screening trials. Barnard-Pennecon J.V. is familiar with the trial mix procedure. For the Muskrat Falls project, we will need to start with the crushing equipment and its effectiveness in crushing the rock. We have discussed our approach to crushing in the previous section.

A13 Attachment 1
Execution Plan

It is understood that stage one has been completed, verifying the RCC aggregate and fly ash sources. Barnard will utilize these findings in further developing the RCC mix design for use in the construction of the North Dam.

Barnard will consult with an RCC specialist during the development of the mix design. The onsite laboratory will be utilized by and staffed with experienced lab technicians from a firm with a proven track record of RCC mix design development. This team will analyze the stage one data and begin the mix design process. This process will include mixing numerous designed batches. From these batches, the team will cast, cure and break cylinders as well as perform gradation tests and verify vebe times. The results of these tests will narrow the mix design to one or two that will be use in the trial section. This trial section will be constructed to test the workability of the RCC mix design that was chosen and the RCC placement method.

Trial Placement

The Specifications state that a trial placement will be performed with at least 600 m³ roughly 30 days prior to full RCC production. The trial placement will provide training for our crews and will allow Nalcor to evaluate the top RCC mixes from the Laboratory Mix program and any subsequent Onsite Mix Program. The purpose of the trial RCC placement is to develop the following:

- Effectiveness of the equipment, construction materials and process of the delivery method.
- Effectiveness of the equipment, construction materials (i.e., formwork) and process of the placement method.
- Training of the workers regarding the importance of safety, timing and quality of work required during the RCC placement.
- Training of the quality control and inspection personnel as to safety, timing and quality of their work during the RCC placement.
- Developing expectations for and from Nalcor and SLI on specific work practices to satisfy the design.
- Expectations on facing finished looks, not only for the workforce, for but Nalcor and SLI.

A13 Attachment 1
Execution Plan

Following the setup and shake-out of the crushing plant, aggregate will be produced to the gradation bands stated earlier.

Following a consistent run period, producing approximately 3,000-5,000 tonnes of each aggregate, an onsite trial batch program could be run by Nalcor and SLI with Barnard-Pennecon J.V.'s selected materials. This is normally done to optimize the mix with the materials planned for use prior to the Trial Placement.

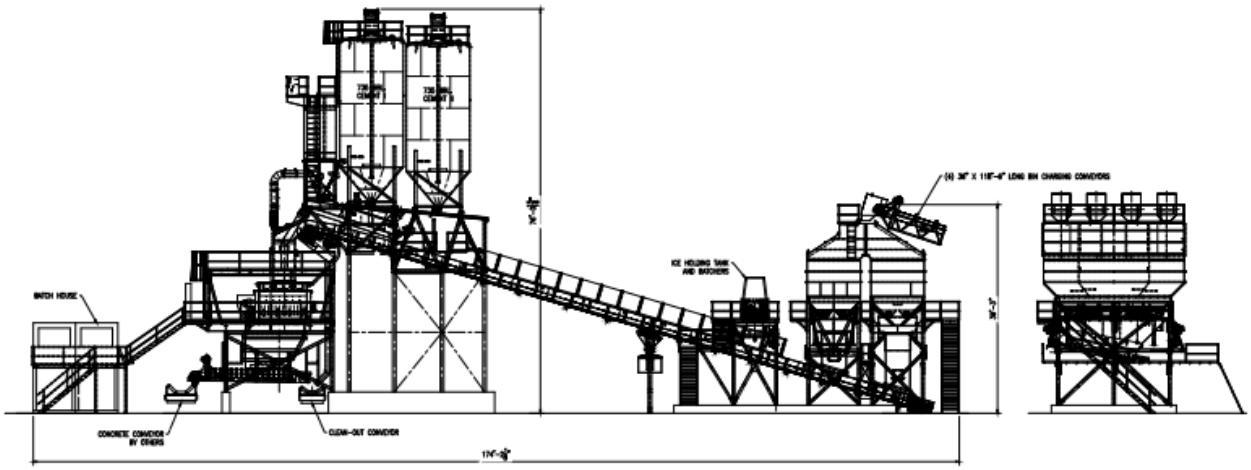
Provided Nalcor is happy with the results from the lab trials, the top five or so mixes would be tested in the field. The Trial Placement would be made using the full-sized equipment envisioned during full production. We have planned for a two-day trial placement period.

We plan to utilise the following equipment:

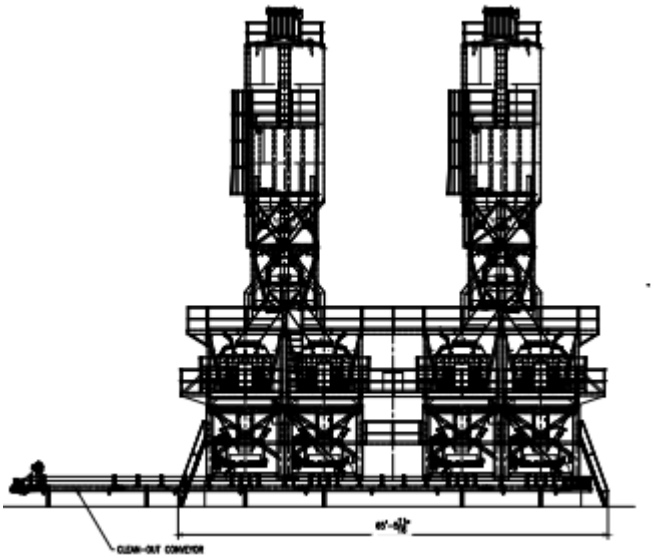
- CAT D-5 spreading dozer
- CAT 563CS roller
- 40-tonne articulated haul trucks
- Con-e-co Dual Mix Plant with Twin-shaft Compulsory Mixers
- CAT 980 loader to feed the plant
- Gang formwork
- Small vibrator double-drum roller
- Wacker packers
- GERCC mixer and hand-held concrete vibrators
- Waterstop demonstration
- Curing equipment

Mixing Plants

We will utilise two Con-e-co weigh batch plants with two separate Liebherr or Simoma compulsory mixers. These plants provide the most accurate and thoroughly mixed RCC. We are currently utilizing one plant similar to this on our Gilboa Dam Reconstruction Project in New York State.



Con-e-co Plant Profile



Con-e-co Front View

Single Plant – Dual Mix Capability at Barnard's Gilboa Dam Project, New York

Aggregate Handling

When loading aggregate out of stockpiles into the RCC mixing plant surge bin, we anticipate using four aggregate bins to handle the required four-pile mix.

Aggregate will be individually or cumulatively weighed. Cement and flyash will also be weighed separately before entering each mixer. Mixer times will be determined from the mixer performance testing; however, we expect a mix time of approximately 30 seconds. Computer monitors and individual weigh tickets will be generated for each mixed product. The plant will automatically reject and record mixes that exceed the mix tolerance requirements.

Cement Handling

Cement will be stored in either vertical silos or horizontal silos meeting the four-day storage requirements of the Specifications. We have allowed for rapid unloading capabilities so that cement trucks can achieve quick unloading times. We expect to unload trucks in 15 minutes with our system.

Currently, we have two options for supply of Cement and Flyash.

Plant Control Room at Gilboa Dam – Command Alkon Controls System

Temperature Control

The control of temperature could become critical during the summer months. To maintain the cool temperatures, we will rely on several techniques and methods.

Wet belt at Saluda Dam, South Carolina

Wet Belt: We are considering using either a wet belt or dry flake ice as an additional cooling method. Wet belts use near freezing water to spray and cool the aggregates. A final rinse screen will be utilised to remove any excess water off the material prior to entering the plant. One problem with using wet belts is that we cannot run all of the coarse aggregate on the wet belt because of the sizing required by the Specifications. This means the wet belts will become less effective.

Flake Ice: Although a higher initial investment, the flake ice plants provide for a smaller footprint and lower operating costs overall. We would look to have the storage and plant capacity to run 200 m³/hour using flake ice directly added to the aggregates before entering the mixer.

During hot summer months, the RCC production will need to be slowed, mainly because of the cooling systems needed to maintain a cool RCC temperature. We may need to shift RCC production to only a night shift if daytime temperatures are too hot.

Delivery of RCC to the Cofferdam

Barnard-Pennecon J.V. has experience with multiple delivery methods for RCC. It is not uncommon on a project that has a long crest to employ multiple placement methods.

For the Muskrat Falls North Dam, Barnard-Pennecon J.V. will have two methods of placement available. The first will utilise a truck-loading gob hopper at the RCC plant, trucking the RCC to the North Dam and then driving onto the lift where the CAT 740 ejector trucks will dispense the material. This system is sized to take the maximum available production from the RCC plants, which is approximately 300 m^3/hour.

The secondary option will be to utilise a truck-loading gob hopper at the RCC plant, trucking the RCC to the upstream side of the North Dam in CAT 740 Ejector trucks, dumping it into a surge-crete hopper, and feeding a conveyor placer that fills trucks on the dam surface.

It is likely both methods maybe utilised at the same time to maximize production in multiple areas of the North Dam.

Plant Area

We have looked at many areas on the site to establish our RCC and CVC plants. The only area that makes sense to us is Area A & B. The primary reason is that this area is above the high water mark of El 39.0; we would not have time to remove all of the equipment in time if everything were located in Area G & F. Work Area G & F would be better if Nalcor could provide some schedule relief on when the water-up period begins.

Other works areas, such as Area J, are too small to accommodate the RCC/CVC Plants and their required cooling equipment and stockpiles. Plus, many of these areas are already utilised by Astaldi. Any remaining area in this location will be used for laydown for formwork, rebar and crane erection.

Gob Hopper on the Lift at Cotters Dam, NSW Australia

A gob hopper loads a haul truck from the RCC plant at the Saluda Dam Project

Foundation Preparation

The existing foundation surface is very irregular. We anticipate that it will be shaped as contemplated in the Specifications. A minimum work area of 1800 m² is required before we can utilize RCC.

Levelling Concrete to Dam Foundations

Prior to full production RCC placement, it will be necessary to provide a platform onto which the RCC can be placed. We anticipate that significant rock shaping and levelling/dental concrete will be required to meet the minimum area requirements to start RCC.

Often when large areas of levelling concrete are required on an abutment, the placements are formed. Levelling is typically required to fix holes or faults along an abutment. In this case, the Engineer may require a staged approach where lifts and placement rates are dictated to avoid generating excess heat in the block. It is important to get this work done prior to RCC so it does not influence the placement schedule or project schedule. No bid item has been included for levelling concrete, and, therefore, we added an item in anticipation of separate payment for this work.

Levelling concrete on the left abutment at San Vicente Dam

Dental Concrete Placement

We anticipate performing this work in isolated spots, as directed by the Engineer. We have planned for a small placement crew and concrete placed by pump or crane and bucket.

Dental concrete crew on the San Vicente Dam

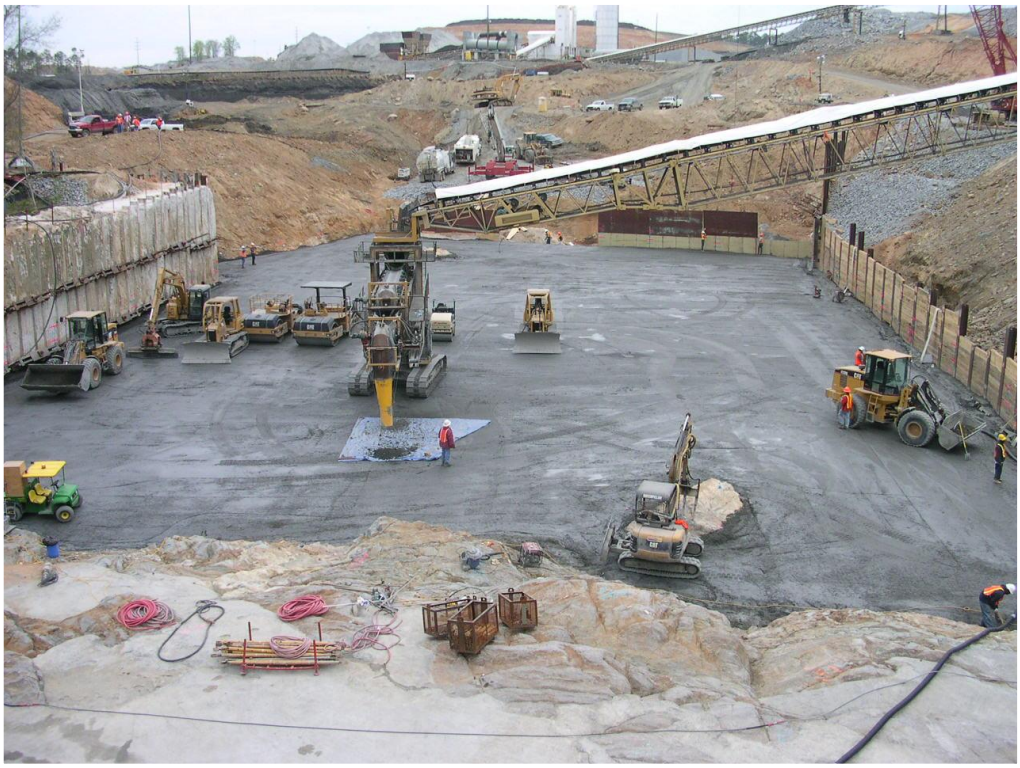
RCC Placement and Compaction

This section describes the RCC placement means and methods. All of these practices will be demonstrated at the trial placement and adjusted according to preferences of Nalcor and SLI.

Preparation Prior to Placement

Prior to placement, the lift surface will be air blown or light pressure-washed. Depending on the lift joint maturity, the surface will receive a bedding mix layer. This bedding mix layer is anticipated to be a grout mixture, the same as used for the GERCC water-stop detail.

Prior to starting, all equipment will be tested and cleaned. Dry material from the plant, conveyors, etc. will be collected and removed from the lift surface.



A crew uses a tarp to collect dry RCC as they prepare the lift surface for treatment

Spreading

The RCC will be spread evenly to ensure a 300-mm thick compacted layer by use of a Caterpillar D5-sized tracked dozer. These will be equipped with a laser level to keep the blade parallel to the previous layer and at the correct elevation and by using paint marks on the formwork. This method is the same for the slope layer method, except that the lift will be sloped between a 10:1 or 20:1 angled surface.

The D5 will also be equipped with a power angle and tilt (PAT) blade to enable detailed placement and handling in tight locations. The RCC will be spread in a series of lanes, probably 6m to 8m wide, working from side to side on the sloped placement.

Spreading RCC with a Cat D5 dozer at North Fork Hughes River Dam. The laser detector is mounted on the blade for grade control.

In order for the RCC to commence uninterrupted, the Quality Control staff on the project need the resources to accurately and rapidly perform the quality control testing. There are two streams of quality testing on the RCC that will occur throughout placement operations.

One stream of the testing procedure identifies the quantities of cement and flyash being fed into the mix. As the material is batched and placed, the in situ compaction level is verified by nuclear densometers and strength by hot curing at one and seven days with cold curing tests at 7, 14, 28, 56, 180 and 365 days. The Hot 1d (one day) tests give a reasonable indication of the Cold 7d (7 day) while the Hot 7d give an indication of the Cold 28d (28 day). The Hot 1d are our first line of defense against low strengths from a strength perspective alone.

Our second stream of QA checking involves looking at the material properties, which will verify that the mix is performing as intended and that all components have been properly combined. This stream verifies that the correct gradings have been used in the mix and then that the vebe time and density are correct. The mix is subjected to the human eye and feel; this is a very important step. It is absolutely certain that if the vebe time is varying without adequate explanation or that the vebe density is incorrect or that the mix “looks wrong,” then something has been incorrectly dosed into the mix. Over time, an experienced crew and placement supervisor will notice differences in the mix and shut the operation down until the mix has been replaced and the problem is identified.

This testing redundancy is vital to ensuring the repeatability of each lot and layer and the entire structure.

We have teamed with Kleinfelder on this project, which will provide the RCC Specialist(s) and additional technicians working at the RCC, CVC and Aggregate plants.

Joints between Layers

Three levels of joint treatment are proposed for the RCC:

1. **A fresh (or hot) joint:** The surface of all hot joints should be lightly cleaned prior to the placement of the next layer to remove all loose materials or other foreign matter. This is often done with light blowing or vacuuming with a vacuum truck. We believe that many of the slope layers will have this type of joint between lifts – the best quality.

2. **A prepared (or warm) joint**: The surface of all warm joints should be lightly washed with low-volume, low-pressure washers. This washes the surface and provides for enough pressure to move loose material across the lift. Water and loose debris are pushed off the dam face or picked up by vacuum. We only anticipate this at the end of each placing shift, prior to the next day shift if we exceed 16 hours. *Following preparation, the entire surface receives a bedding mix layer*. The bedding mix is placed just ahead of the next RCC lift. Bedding is easily spread by hand and tractor-mounted squeegee.

3. **A cold joint:** The surfaces of all cold joints should be treated to expose the surface aggregates. A planned joint may be treated early by either brooming or low-pressure washing. An un-planned joint should be treated with diligent cleaning using high-pressure washing equipment. After treatment, the joint should be lightly washed and cleaned by vacuum. The entire lift is covered with bedding mix just prior to the next RCC lift. With the slope layer placement, we anticipate preparing a small section of green cutting on a daily basis between each major step.

Typical joint preparation of warm joints

Typical surface of a treated cold joint

Bedding mix placement on the top lifts at Saluda Dam

Contraction Joints in the RCC

Typical waterstop and rear drain detail surrounded by either conventional concrete or grout-enriched RCC

Contraction joints through the RCC will be formed by vibrating steel crack initiators along a specified line in the RCC. We have successfully used vibrated fabric as well. The distance between control joints on the Riverside RCC Cofferdam are spaced farther than we typically see; however, joints are easy to add if required.

The contraction joints through the dam will be sealed in a way similar to that proven on a significant number of RCC dams constructed to date.

Grout and RCC (GERCC) will be place around the waterstop, which will be installed adjacent to the upstream facing element. A pipe drain can be easily installed as well downstream of the waterstop and used to grout if substantial leaks in the joint develop. All of these components will be incorporated within a fixed template to maintain their alignment throughout the RCC placement operation. Following RCC compaction and well before any initial set, the template will be removed to ensure the induced joint maintains its correct alignment with the waterstop.

Curing

Water curing will be used for all RCC and adjacent steps. For the placement area, water curing using water trucks will be combined with curing by hand-held hose-pipe and misting or a combination of all three. Curing will start almost immediately after the concrete has been roller-compacted. The surface of a well-designed high-cementitious content RCC is impermeable as soon as it is roller-compacted. Curing will be continued until just before placement of the next layer of RCC. Excess water will be removed by vacuum truck or compressed air.

Proper curing of an RCC lift surface.

Temperature Control

The primary sources for cooling will be chilled water, dry-flake ice, and winter-stockpiled sands and aggregates. We have allowed for these costs in our bid.

Cement/Flyash

Currently we have two options for supply of Cement and Flyash for the project.

Quality Control

Quality Control at the CVC plant will be provided by Nalcor with testing in its onsite lab.

Ogee Crest placed over RCC at the North Fork Hughes River Dam

Ogee with Flip Bucket placed at the Crest of the Blue Lake Dam in Alaska, August 2014

SOUTH DAM

Schedule

We plan to start this work in the second year, to balance our equipment fleet. We also have the ability to get this work out of the way, so we can focus on the South Dam later in the project schedule. It also provides material for the C-1 Access Road. We will use the excavated foundation material as the base of the access road.

Zone Fill Emankment

The zones identied are big enough for many methods of placement. We will likely utilise the large fleet of CAT 775s for the rock and CAT 740s for the filters and till placement. Till will be stockpiled for the South Dam area similar to the cofferdam work using on-road trucks from the designated borrow area.

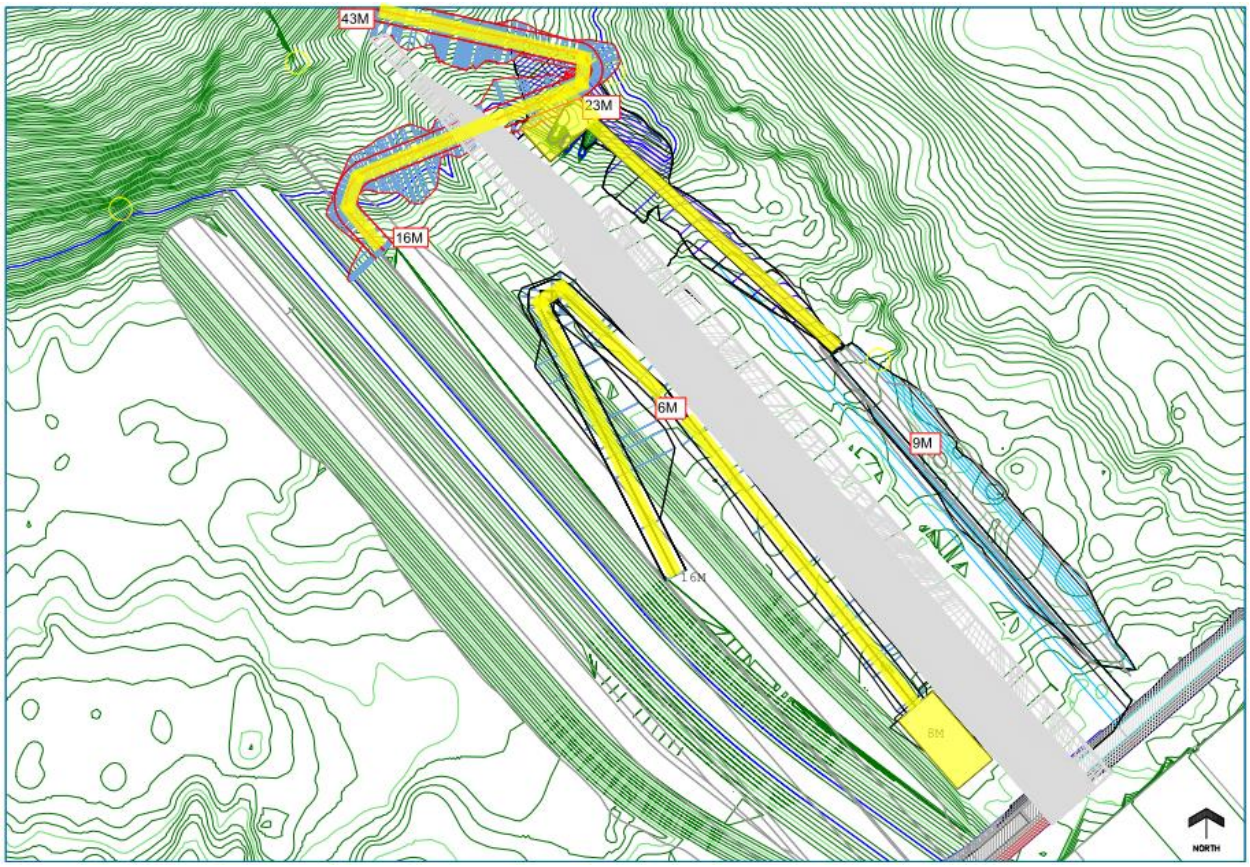
Multi-zone placement at Saluda Dam

CRANE LAYOUT

Aside from the setup crane needed for erecting plants and equipment, our project will be supported with two crawler cranes located for the North Dam work. At 275-tonne crawler will be located upstream of the dam. This is equivalent to a Manitowoc 999. It will have the capacity to pick a truck off the RCC lift surface.

A second crane will be located downstream of the dam. This crane will be sized for a 230-tonne, similar to a Manitowoc 888. It will likely have a luffing jib, to provide reach to the far left abutment for picking downstream forms.

Crane pads have been designed both upstream and downstream of the North Dam, and we have assumed that these can be left in place.



Crane Access Pads and Ramps, Upstream and Downstream of the North Dam

SITE LAYOUT

As stated above, we plan to utilise Work Area A & B as our main staging and work area. We will use Work Area J for form and materials staging. Work Areas G & F will be utilised temporarily until the water is elevated. We will use other Work Areas as allowed by the RFP. Contractor's Facilities

MECHANIC & WORK SHOPS

We will be installing one large fabric structure to house work on equipment during the winter months. The structure will be well lit and heated and able to accommodate two 70-ton Rock Trucks with dimensions of 25.4m wide x 31.7m long. Doors will be bi-fold with dimensions of 18.2m wide x 6.1m high.

MISCELLANEOUS OFFICES AND SHACKS

We will ensure that multiple work offices, break shacks and a lunch shack will be available onsite for work crews to take breaks, hold pre- and post-work meetings, and provide equipment storage.

nalcor energy

BARNARD

BARNARD-PENNECON J.V.

SITE ORGANIZATION CHART

BARNARD-PENNECON J.V. OVERSIGHT
Derek Tisdel
Brad Cole

PROJECT MANAGER
Matt Wagley
Alternate: Sam Gunlock

PROJECT GENERAL SUPERINTENDENT
Tracey Chambers
Alternate: RJ Roos

ASSISTANT PROJECT MANAGER
Rob Hewitt

HEALTH & SAFETY MANAGER (OFF-SITE)
Mike Flynn

QUALITY MANAGER (OFF-SITE)
Erin Hickey

ENVIRONMENTAL COMPLIANCE (OFF-SITE)
Kathi Jenkins

SURVEY MANAGER
Andrew Normore

- SURVEY TECHNICIAN / AUTOCADD
- SURVEY LEAD DAY
- SURVEY LEAD NIGHT

PROJECT CONTROLS
Sam Gunlock

- PLANNING & SCHEDULING MNGR
- LABOUR RELATIONS
- TRAVEL ADMINISTRATION

EQUIPMENT MANAGER
Lorne Jackson

- EQUIPMENT MECHANICS

EARTHWORKS SUPERINTENDENT
Dave Hunt
Alternate: John Lehman

- MATERIAL PROCESSING MGMT TEAM
  - QUARRY & BORROW AREA DEVELOPMENT MGMT TEAM
    - DRILLING/BLASTING MGMT TEAM
- SOUTH DAM MGMT TEAM
  - DEWATERING & MAINTENANCE
    - FOUNDATION PREPARATION

NORTH DAM MANAGEMENT
Dustin Burke
Shawn Perrin

- RCC BATCH PLANT MGMT TEAM
  - RCC PLACEMENT DAY & NIGHT MGMT TEAM
    - CVC BATCH PLANT MGMT TEAM
      - CONCRETE PLACEMENT MGMT TEAM

SAFETY MANAGER
Neville Kean

- SAFETY SPECIALIST
  Lee Costello
  - SAFETY SPECIALIST
    - SAFETY SPECIALIST

SITE QC MANAGER
Shawn Dunn

- RCC QC INSPECTOR
  - AGGREGATE PROCESSING
    - ENVIRONMENTAL MONITOR DAY & NIGHT

EDUCATION

- *Bachelor of Science, Civil Engineering, Bio Resource Engineering Option*
  Montana State University, Bozeman, Montana, 2007

AWARDS / ACCOMPLISHMENTS

- 30 Hour OSHA Training, 2014
- 10 Hour OSHA Training, 2011
- 2011 AON Build America Award: Environmental New Construction – Round Butte
- Best of 2010 Award, Northwest Construction – Round Butte
- 2010 Edison Award, electric utility industry's highest honor – Round Butte
- Member, Bio Resource Engineering Club

CONTINUING EDUCATION

- Crane Regulation Change Overview Training, 2010

Sam Gunlock
PROJECT MANAGER

WORK EXPERIENCE

Barnard Companies, Bozeman, Montana (April 2007-Present)
SCOPE: Project Manager. Responsibilities include quality control, purchasing, scheduling, manpower and equipment management, subcontract administration and contract negotiations. Also assists in preparing bids ranging from $1 million to $600 million involving tunnels, underground utility work, earthwork, concrete structures, bridges, inland-marine work, riprap, dam rehabilitation, electric transmission, soil cement and roller-compacted concrete. When not assigned to a project, leads an Estimating Team at the Home Office.

REPRESENTATIVE PROJECTS

Gilboa Dam Reconstruction Project (2011-2015)
Gilboa, New York. $138 million. This project required reconstruction of the spillway control section of an early 1900s-era dam, including phased water diversion management, selective demolition, and placement of nearly 124,000 CY of concrete. The new spillway face was buttressed with nearly 66,000 CY of mass concrete and the spillway channel and plunge pool were completely demolished and reconstructed with a new underdrain system, 22,000 CY of dental/leveling concrete, 1,900-ea. rock anchors, and 24,000 CY of reinforced concrete slabs. The project also included modification and strengthening of spillway training walls, the addition of upstream embankment stone fill from barges, refurbishing the upper gate chamber, and further improving the dam's instrumentation and surveillance systems. In addition, the Team performed significant site repairs to damage sustained by flooding from Hurricane Irene. This was a joint venture with D.A. Collins Construction Co., Inc.

SCOPE: Project Engineer. Performs a wide range of engineering/management functions, including planning, estimating, quality control, cost control, progress reporting, surveying, quantity tracking, purchasing, and subcontractor coordination. Responsible for obtaining, reviewing, and forwarding product submittals. When not assigned to a project, works with the Estimating Team at the Home Office.

Round Butte Dam Selective Water Withdrawal (2007-2009)
Madras, Oregon. Value confidential at owner's request. This project included a one-year Design-Assist phase during which Barnard, Owner PGE, and CH2MHill worked to improve the design and cost of the facility. Steel structure fabrication and erection: 700-ton steel bottom structure – 68 FT long by 57 FT wide by 67 FT high, submerged 270 FT; 270-ton, 40-FT-diameter steel conduit structure submerged to connect top and bottom; 1,316-ton floating structure – 150 FT long by 90 FT wide by 50 FT high; 287-FT-long access bridge. These large steel structures were assembled over water and attached to the existing powerhouse intake structure. The project also included underwater excavation, drilling, concrete, and structural work at 270 FT deep.

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Sam Gunlock
PROJECT MANAGER

OTHER WORK EXPERIENCE

Montana Installation Plus, Bozeman, Montana (2003-2007)
SCOPE: Owner. Installed cabinets, appliances and general carpentry. Managed all business details for billing, scheduling and consulting.

Windows of the World, Shepherd, Montana (1997-2003)
SCOPE: Installer. Installed cabinets, appliances and general carpentry. Diagnosed problems, managed all installation for Sears account, provided customer service follow-up.

EDUCATION

- *Bachelor of Science, Mining Engineering, Graduated with Honors* Montana Tech of the University of Montana, Butte, Montana 2002

AWARDS / ACCOMPLISHMENTS

- 2012 New York City Department of Environmental Protection “EHS Site Management” Employee Award - Gilboa Dam Reconstruction Project

AREAS OF EXPERTISE

- Zoned Embankment Construction
- Mass Concrete
- Blasting
- Aggregate Plant Design and Operation
- Concrete Plant Operation
- Dewatering and Water Treatment Methods
- Marine Work
- Soil Cement
- Large-Diameter Pipe Installation

CONTINUING EDUCATION

- Crane Regulation Change Overview Training, 2010
- OSHA 10-Hour Training
- Breakthrough Production Management Workshop, 2004
- Primavera Training, 2003
- Karrass Effective Negotiating Seminar

Richard J. Roos
SUPERINTENDENT

WORK EXPERIENCE

Barnard Companies, Bozeman, Montana (2006-Present)
SCOPE: Project Superintendent. Responsible for supervision of company foremen and crews; scheduling and tracking of subcontractors and suppliers; daily cost controls; acquisition of equipment, material and labor; work with the Owner, the Owner’s agents, inspectors, public and private parties, as necessary; supervise implementation of all safety, quality control, environmental, drug testing, or other project-specific programs. When not assigned to a project, works with the Estimating Team at the Home Office.

REPRESENTATIVE PROJECTS

Keeyask Generating Station (2014-Present)
Winnipeg, Manitoba. $1.4 billion CAN. This ambitious project for Manitoba Hydro involves the construction of a new 695 MW powerhouse; a new spillway structure with seven bays; three zoned rockfill dams with till core; cofferdams that reroute the powerful lower Nelson River during construction; and earthfill dykes totaling 23 km to contain the powerhouse forebay, among other technical project requirements. More specifically, the powerhouse will house seven Voith Hydro units with 18 meters of head. Plant discharge will be approximately 4,000 m3/s. The new spillway will include motorized vertical lift gates, bridge for permanent roadway on top and seven ogee sections poured following diversion of the river. North Dam will be 99 meters long; Center Dam will be 1600 meters long; and South Dam will be 565 meters long. Dyke elevations will range from 13 to 20 meters and will include a roadway on top for maintenance and inspection access. The project’s remote location requires construction of a 2,000-person camp as well as challenging logistics for material and personnel scheduling and delivery. Barnard is a partner in BBE Hydro Constructors LP, working with Bechtel and EllisDon.

Gilboa Dam Reconstruction Project (2011-2014)
Gilboa, New York. $138 million. This project required reconstruction of the spillway control section of an early 1900s-era dam, including phased water diversion management, selective demolition, and placement of nearly 124,000 CY of concrete. The new spillway face was buttressed with nearly 66,000 CY of mass concrete and the spillway channel and plunge pool were completely demolished and reconstructed with a new underdrain system, 22,000 CY of dental/leveling concrete, 1,900-ea. rock anchors, and 24,000 CY of reinforced concrete slabs. The project also included modification and strengthening of spillway training walls, the addition of upstream embankment stone fill from barges, refurbishing the upper gate chamber, and further improving the dam’s instrumentation and surveillance systems. In addition, the Team performed significant site repairs to damage sustained by flooding from Hurricane Irene. This was a joint venture with D.A. Collins Construction Co., Inc.

San Vicente Foundation Preparatory Work (2009-2010)
Lakeside, California. $27.35 million. This challenging preparatory project included: 111,000 CY of drilling and blasting and 167,000 CY of rock excavation, including excavation of steep abutments; 330,000 CY of crushing and processing; 325,000 CY of embankment construction; 1,800 CY of concrete demolition and another 145,000 SF of hydro demolition to 3-inch

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Richard J. Roos
SUPERINTENDENT

depth; underwater and heavy-lift construction to install 111-foot-tall, 500,000-lb. cofferdam; 100-foot-long tunnel penetration through the existing dam; 250 LF of 108-inch-diameter steel pipe; 160 LF of 42- and 48-inch steel pipe; 5,100 CY of foundation dental and shaping concrete; and 2,600 CY of reinforced concrete.

EAA Reservoir (A-1) (2007-2008)

South of South Bay, Florida. Construction Management @ Risk, not to exceed $400 million. Completed three contracts as part of state and federal effort to restore the Everglades. GMPs 1 through 3 included constructability and design review, clearing and grubbing, 5 million cy of muck removal, dewatering, drilling and blasting, excavation for a 15-mile seepage control canal, various embankment test sections, and construction and operation of an complex, large-scale aggregate production plant. Barnard self-performed 75 percent of the contracts while also conducting a very successful subcontracting and local hiring program, which included an onsite training program for operators.

Manatee Plant Drainage Improvements Project (2006-2007)

Parrish, Florida. Value confidential at owner's request. Design-Build project to eliminate standing water in the drainage swales surrounding the cooling pond at Florida Power & Light's Manatee Power Plant. The project eliminated several wet areas on the embankment and standing water in the surrounding swales through design and construction of an improved surface and underdrain system. The project involved design, followed by installation primarily of 18-inch drainpipe (11,860 LF) as well as improvements to the toe drain system and remediation of the sump system.

C-43 West Storage Reservoir Test Cell Pilot Project (2006)

Hendry County, Florida. $10.25 million. Constructed two separate test cells using primarily onsite materials. Groundwater elevation is two feet below surface. Accelerated schedule. Cleared and grubbed 267 acres of orange grove, cell stripping 8-inch – 113,000 CY; zoned embankment 555,000 CY; filter blanket and chimney 36,000 CY; canal excavation 325,000 CY; soil-bentonite cutoff wall 96,000 SF; soil cement 2,500 CY; piezometers – 133 each; electrical and instrumentation; installed temporary pumping and piping systems.

Los Osos Wastewater Project – Schedule 2 (2005)

Los Osos, California. $45.49 million. Wastewater collection system consisting of 117,000 LF of gravity sewer mains ranging in size from 8 to 18 inches in diameter; 434 manholes; 3,045 laterals; and 19,300 LF of force mains ranging in size from 2 to 14 inches in diameter. Construction of five pump stations; 11 pocket pump stations; 48 disposal wells, harvest wells, and temporary power stations. Site consists of sandy unstable soils. Project is located within a city currently exclusively on septic systems. Environmentally sensitive as it borders on Morro Bay. This project was suspended by the Owner in October 2005.

Bisbee Wastewater Improvements Project (2004-2005)

Bisbee, Arizona. $23.75 million. Replaced 82,700 LF of existing sanitary sewer collection systems; installed and replaced 51,600 LF of sanitary sewer interceptors; installed 5,800 LF of force main. Constructed new treatment facility and lift station. Decommissioned current wastewater treatment plants

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Richard J. Roos
SUPERINTENDENT

and lagoons. Techniques used to bury pipe included direct bury, jack and bore casing and pipe bursting. Conditions encountered ranged from cross-country work to narrow city streets. Slopes ranged up to 20 percent. Pipe inverts ranged from 2 to 20 feet.

Martin Plant Cooling Pond Underdrain Rehabilitation Project (2004)
Martin County, Florida. $8.38 million. Sliplined 65,000 LF of 8-inch perforated HDPE pipe wrapped with geonet fabric into existing 12-inch asphaltic fiber pipe. Installed 25,000 LF of cure-in-place pipe and robotically perforated lined pipe. Rehabilitated 29 manhole sumps. Extensive dewatering required.

Tampa Bay Regional Reservoir (2003-2004)
Tampa, Florida. $84.2 million. 12 million CY reservoir embankment; 2 million CY waste clay (slime) removal and disposal; 820,000 SF soil bentonite cut-off wall; 100-foot water tower control structure and bridge; drilled concrete caissons; 10,028 LF of 84-inch and 72-inch diameter steel pipe; 600 LF of 42-inch steel pipe; over 1 million SY geomembrane and geotextile fabric; 350,000 CY soil cement; construction of two reservoir access roads; treatment facilities area with chemical and compressor buildings and chemical containment storage area; 30,094 LF of 8-foot chain link fence; 800 acres and 1 million CY grading for three new wetland mitigation areas. Work was performed in extreme weather conditions: wettest December (2002) in recorded Florida history and three hurricanes (2004). Heavily monitored by the Department of Environmental Protection.

Pleasant Valley Pipeline (2003)
Fort Collins, Colorado. $25.3 million. Barnard was selected under an alternative procurement process that included significant value engineering. The raw water pipeline extended from the Monroe Canal to the Horsetooth Reservoir. Project included approximately 45,500 feet of 67-inch welded steel pipe; nine air-vacuum valves; nine blowoffs; connections to Fort Collins, Greeley, and Soldier Canyon treatment plants; diversion on the Monroe Canal; river crossing; drilling and blasting; dewatering; and boring.

OTHER WORK EXPERIENCE

Granite Construction, Bakersfield, California (Jan. 2003-March 2003)
SCOPE: Bakersfield Area Plant Engineer. Duties included: plant budget analysis for 2003, month-end physical inventory tracking, maintain various permits for plants, plant production tracking, and plant equipment tracking.

Granite Construction, Sacramento, California (June 2002-Dec. 2002)
SCOPE: Branch Division Plant Engineer. Performed mine plan analysis for quarries, plant production tracking, and plant equipment cost tracking.

Granite Construction, Santa Barbara and Escondido, California (May 2001-Aug. 2001) (Jan. 2000-Aug. 2000)
SCOPE: Plant Engineering Intern. Assisted manager with daily operations and design at various locations. Maintained various permits for the plant operations. Substituted as salesman and quality control technician at Santa Barbara. Performed design/economic analysis of hard rock quarry and assisted plant engineer with design projects at Escondido.

PENNECON HEAVY CIVIL

Lorne Jackson
[redacted]
Business: (709) 782-3404
Cell: (709) [redacted]630
Email: lorne.jackson@pennecon.com

Education

Journeymen Certificate for Heavy Equipment Repair
Red Seal inter-provincial designation — 1989

Heavy Equipment Repair Course
College of Trades and Technology
(College of the North Atlantic)
St. John's, NL — 1984

High School Graduate
St. Georges High School
New Harbour, NL — 1981

Professional Experience

Pennecon Heavy Civil Ltd.
Maintenance Superintendent
Muskrat Falls Project — **June 2012- Present**
Vale Long Harbour Project — **June 2011- June 2012**

- Member of the site management team.
- Ensuring conformance with applicable engineering, quality and safety standards, in support of company safety programs.
- Work cooperatively with management and site supervisory staff as well as unionized employees maintaining a positive labour relations climate.
- Maintain a preventative maintenance program, scheduling resources, including manpower and equipment, to ensure a high standard of productivity and efficiency.
- Prioritize daily repairs and prepare reports on equipment operating status and required maintenance.

Pennecon Heavy Civil Ltd. — **September 2010 – June 2011**
Heavy Equipment Mechanic

- Duties included maintenance and repair of all types of heavy equipment.

Modern Paving Ltd.
Heavy Equipment Mechanic/Supervisor — **March 2005 – Sept 2010**
Heavy Equipment Mechanic — **May 1985 - August 1997**

- Responsible for organizing, planning and scheduling of repairs and maintenance of a fleet of approximately 100 pieces of equipment.
- Responsible for ordering, stocking parts, and assigning work duties to other employees to complete equipment repairs.
- As both supervisor and mechanic duties included maintenance and repair of all types of heavy equipment.
- Knowledgeable in the repair, operation, and working of trucks, off-road trucks, excavators, bulldozers, air tracks, compressors, graders, spreaders, rollers, curb and gutter slip form pavers, rubber tire back hoes, portable welding machines, generators, plate tampers, Wirtgen cold planer scarifiers, boom trucks, and rock crushers.
- Perform welding duties related to heavy equipment repairs.

City Paving Ltd. **February 2001 – December 2004**
Heavy Equipment Mechanic/Foreman **August 1997 - October 1998**

- Duties included maintenance and repair of all types of heavy equipment.
- Responsible for maintenance schedules and good working condition of all the equipment.
- Operate excavator and drive dump trucks when needed.
- Involvement with day to day operations of the company, assigning and monitoring work schedules and tasks for other employees

Federal Equipment Inc. **October 1998 – February 2001**
Mechanic

- Performed mechanic, warranty, and customer service
- Worked on Komatsu and competitor's heavy equipment, Atlas Copco compressors as well as some tools such as welders, compressors, air tools, etc.
- Performed welding repairs as necessary.
- Completed appropriate paper work and maintained files of equipment maintenance schedules.

Training/Skills

- Experience in construction projects, water and sewer, curb and gutter, paving, etc.
- Experience in electronic equipment troubleshooting
- Can road test most types of heavy equipment
- Working knowledge of hydraulic components
- Operation of rubber tire back hoe, dozer, loader, skidsteer, excavator, and dump truck
- Class 03 license with 08 and 09A endorsements and 01 authorized instructions
- Experience in industrial spray painting
- Experience in testing and troubleshooting hydraulic equipment
- Experience in electric over hydraulic equipment
- Experience in arc welding, oxyacetylene welding, and Mig welding
- Supervisory and excellent time management experience
- Member of Operating Engineers Union, Local 904
- Fall Arrest Safety Training
- Emergency First Aid Certificate (St. John Ambulance)
- Occupational Health and Safety Committee Training
- Basic Fire Fighting
- Transportation of Dangerous Goods Certificate
- Power Line Hazardous Safety Program
- Workplace Hazardous Materials Information System
- Komatsu Advanced Training - Excavators

BARNARD

AREAS OF EXPERTISE

- Supervision of Work Crews
- Heavy Equipment Operator
- Pipe Layer
- Dewatering
- Scheduling of work
- Tunneling
- Earthwork
- Concrete Finisher
- Semi and Dump Truck Driver
- Microtunneling
- Asphalt Work
- Explosives
- Landscaping
- Estimating

CONTINUING EDUCATION

- Erosion Protection/SWPPP
- Confined Space Procedures
- Competent Person Training
- First Aid / CPR
- Microtunneling
- Tunnel Training
- Red Cross Standard First Aid
- Hazard Communication Training
- Managing People
- New Miner/Inexperienced Miner
- Crane Safety Seminar
- Rigging Safety Seminar
- Management Skills for Supervisors
- Budinger Soil Compaction Seminar
- Job Profits Program

John Lehman
SUPERINTENDENT

WORK EXPERIENCE

Barnard Companies, Bozeman, Montana (1989-2002; 2012-Present)

SCOPE: Superintendent. Responsible for supervision of company foremen and crews; scheduling and tracking of subcontractors and suppliers; daily cost controls; acquisition of equipment, material and labor; work with the Owner, the Owner's agents, inspectors, public and private parties, as necessary; supervise implementation of all safety, quality control, environmental, drug testing, or other project-specific programs. When not assigned to a project, serves as an Estimator at the Home Office.

REPRESENTATIVE PROJECTS

Keeyask Generating Station (2014-Present)

Winnipeg, Manitoba. $1.4 billion CAN. This ambitious project for Manitoba Hydro involves the construction of a new 695 MW powerhouse; a new spillway structure with seven bays; three zoned rockfill dams with till core; cofferdams that reroute the powerful lower Nelson River during construction; and earthfill dykes totaling 23 km to contain the powerhouse forebay, among other technical project requirements. More specifically, the powerhouse will house seven Voith Hydro units with 18 meters of head. Plant discharge will be approximately 4,000 m3/s. The new spillway will include motorized vertical lift gates, bridge for permanent roadway on top and seven ogee sections poured following diversion of the river. North Dam will be 99 meters long; Center Dam will be 1600 meters long; and South Dam will be 565 meters long. Dyke elevations will range from 13 to 20 meters and will include a roadway on top for maintenance and inspection access. The project's remote location requires construction of a 2,000-person camp as well as challenging logistics for material and personnel scheduling and delivery. Barnard is a partner in BBE Hydro Constructors LP, working with Bechtel and EllisDon.

Barnard Construction of Canada Ltd. Montrose Penstock Repair. (2013)

Toba Valley, British Columbia, Canada. Barnard contracted with Toba Montrose General Partnership (Alterra Power Corp.) to remove and replace approximately 1,100 LF of 96-inch-diameter steel penstock that was damaged in a naturally occurring rockslide. This repair project included rock removal, slope stabilization and drilling and blasting in addition to the penstock construction. The project took place in the remote Sunshine Coast region of British Columbia where the logistics of material and equipment delivery were solely by ocean delivery. The project also required establishment of a temporary remote camp for living quarters.

BARNARD OF AUSTRALIA PTY LTD, Connors River Dam ECI Contract. (2011-2012)

Mackay, Queensland, Australia. Over $6 million. Under a competitive qualification and bid process, Barnard was selected, in Joint Venture with local partner Thiess Pty Ltd, to perform Early Contractor Involvement (ECI) services for SunWater. The construction entailed a new RCC dam in a remote area of Queensland, requiring a camp, onsite quarry, extensive river diversion and a multi-season work program. The project required substantial costs for attracting talented labour, which included a 10-day-work, 4-day-off, fly-in/fly-out policy. This contract covered more than a year's worth of design review,

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constructability review, environmental concessions, and federal and state permit applications. At the end of our ECI services, the contract value for the project exceeded $550 million, under the Owner's original cost estimate, with a three-year commitment for construction. Due to a change in global demand for coal, the major coal companies that sponsored the project could not secure financing for the project at that time. The Owner has put the project on hold.

OTHER WORK EXPERIENCE

Quest Civil Constructors, Inc., Phoenix, Arizona (2002-2011)

SCOPE: Vice President of Operations/Operations Manager. Provided oversight for overall project execution and project scheduling; client communications; and quality and safety at company projects. Oversaw and coordinated company labor and equipment. Organized, supervised and executed all aspects of the bidding process, among other duties.

Representative projects include:

Lift Stations, Metering Stations and Sewer Rehabilitation (2010-2011)

Phoenix, Arizona. $15 million. This contract consisted of construction of lift stations, metering stations, and sewer and water lines at various City of Phoenix locations.

Wastewater Plant Construction Services (2009)

Pima County, Arizona. $19.5 million. This rehabilitation project included installation of 750 LF of CIPP while maintaining ongoing wastewater treatment plant operations.

Water and Wastewater Facilities (2009)

Phoenix, Arizona. $30 million. This general construction contract included multiple job orders, some requiring trenchless technology on sewer rehabilitation. One job order included design through installation of 50 MGD gravity sewer diversion and installation of 170 LF each of 42- and 36-inch-diameter CIPP.

Offsite Water, Sewer, Reclamation and Storm Line Projects (2008)

Peoria, Illinois. $4.15 million. These emergency repair projects involved value engineering and devising alternate approaches.

Water, Wastewater Treatment and Offsite Facilities Project (2008)

Peoria, Illinois. $422,000. Construction services contract for the City of Peoria. Mr. Lehman was responsible for risk identification and mitigation, value engineering, constructability review, alternate approaches and cost estimating. This contract led to a construction project noted above.

Lift Stations, Metering Stations and Sewer Rehabilitation (2007)

Phoenix, Arizona. $15 million. This project involved improvements and rehab of lift stations, metering stations and sewers at various locations throughout the City of Phoenix.

Wastewater Plant Construction Services (2007)

Pima County, Arizona. $21.5 million. Repaired, rehabilitated and constructed various wastewater systems and facilities, primarily at the Roger Road Wastewater Treatment Plant.

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Water and Wastewater Facilities Project (2007)
Phoenix, Arizona. $30 million. Improvements, rehabilitation and replacement of water and sewer facilities at various locations throughout the City of Phoenix.

Avra Valley Augmentation 96-inch Turnout (2006)
Tucson, Arizona. $715,000. Furnished and installed fabricated steel 96-inch by 96-inch by 72-inch tee and butterfly valve (turnout assembly) into an existing 96-inch transmission main. Construction included draining the existing pipe section, removing approximately 40 feet of existing pre-stressed concrete cylinder pipe, excavating, grading and 100 CY of concrete thrust restraint.

3A-B2 Booster Station Upgrades (2006)
Phoenix, Arizona. $1.8 million. This project required replacement of the entire booster station system, including 36-inch-diameter underground yard piping, electrical duct banks, utility relocates, concrete foundations, booster pumps, hydro-pneumatic tank systems, mechanical piping and electrical equipment.

Dead Horse Ranch State Park Improvements (2004)
Arizona State Parks. $3.6 million. This project required construction of two new lakes covering more than 11 acres of water surface area; reconstruction of an existing lake; installation of geosynthetic clay liner; 2 miles of gravity flow sewer lines; 1 mile of sewer force mains; utility service upgrades; and 4 miles of water line distribution system providing service to 126 campsites.

PRV Station 4A & 6A (2004)
Phoenix, Arizona. $1.4 million. This project involved construction of two complete 3 MGD pressure-reducing water distribution facilities; 36- and 42-inch water transmission mains; mechanical piping; instrumentation systems; site security fencing; and miscellaneous site grading.

Barnard Companies, Bozeman, Montana (1989-2002)
SCOPE: Superintendent. Responsible for supervision of company foremen and crews; scheduling and tracking of subcontractors and suppliers; daily cost controls; acquisition of equipment, material and labor; work with the Owner, the Owner's agents, inspectors, public and private parties, as necessary; supervise implementation of all safety, quality control, environmental, drug testing, or other project-specific programs. When not assigned to a project, serves as an Estimator at the Home Office.

Representative projects include:
Lakewood Raw Water Pipeline Reconstruction, Phase III. (2002)
Boulder, Colorado. $21.89 million. Installation of 42,000 LF of 27- to 36-inch welded steel pipe; narrow right-of-way; extensive drilling and blasting; dewatering; wetlands crossings; stream crossing; steep slope construction; environmentally sensitive; USFS property for 12,000 LF of pipeline; fiber optic line; 42,000 LF miscellaneous pipeline appurtenances; concrete diversion structure.

2002 Owens Lake Managed Vegetation Dust Mitigation Project. (2001)
Owens Lake, California. $56.23 million. Installation of more than 20 million LF of drip tube irrigation for dust control purposes; 33,103 LF of large-diameter steel pipe (54- and 60-inch); 2,385 acres of soil preparation; 300,000 LF of small- to medium-diameter HDPE and PVC pipe; four stainless steel

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fertigation and filtration systems; 15 secondary water filtration stations; 16 drainage recirculation pump stations; 150-day maximum project duration; cathodic protection; fiber optic communications systems, computerized (SCADA) control; 521,100 LF collector and lateral drain tile systems; 500,000 CY earthwork for roads and berms; largest drip irrigation project in the United States; extensive environmental concerns including Western Snowy Plover, a sensitive species; remote job site with hazardous atmospheric conditions and adverse hydrologic conditions.

Plateau Creek Pipeline Replacement-Phase 2. (1999-2001)
Grand Junction, Colorado. $44.5 million. Installed 39,197 LF of 48-inch and 36,793 LF of 54-inch cement mortar-lined tape-coated welded-steel water line; constructed 13,260 LF of 10-foot tunnels using Tunnel Boring Machine; 12 river crossings; rock blasting for pipeline excavation and portal construction; concrete vaults and tunnel portals; extensive dewatering.

Lake Source Cooling Project, Chilled Water Transmission Piping (1999)
Ithaca, New York. $19.6 million. Barnard was selected under an alternative procurement process, based on experience, work plans, value engineering, and personnel. Installed 28,000 LF of 42-inch API steel pipe with welded joints. Installed controlled density fill around 42-inch chilled water pipeline. Installed new sanitary sewer, new water main, and new storm sewer. New paving, sidewalks, granite curb, and landscaping along the pipeline route. Shored excavations with sheetpile, H-beams, lagging. River crossing with steel pipe suspended under a bridge. Worked in residential, public, private and wooded areas. Extensive traffic control.

Sewer Improvement District No. 1 (1998-1999)
Bullhead City, Arizona. $21 million. Project involved taking 3,350 residences off septic tank services and installing a new gravity sewer system. Installing 235,720 LF of 6-inch through 36-inch PVC sewer mains and 365,000 LF of service laterals. Surface improvements included street restoration and paving and three sewage lift stations.

Sewer Improvement District No. 1 - Contract 2 (1998)
Bullhead City, Arizona. 4-inch sewer service lines to 245 lots. Funded by Community Development Block Grant (CDBG). 20,200 LF 4-inch PVC.

North Outfall Sewer Tunnel Rehabilitation (1997-1998)
Los Angeles, California. $5.3 million. Structural rehabilitation of approximately three miles of North Outfall Sewer Tunnel. Established and maintained 70,000 CFM air ventilation and scrubber system. Shored, excavated, and built an access structure. Installed five sewage bypass systems using gravity diversions as well as an internal dam and force main to divert live sewage flow from the work area. Cleaned existing debris from the tunnel invert. Extensive measuring and cataloguing of structural integrity and dimensions of existing tunnel. Designed and manufactured special forming system and Liner Garment Train. Hydro demolition of unsound concrete. Removed and disposed of existing temporary rib and lagging systems.

8th and Colorado Storm Drainage Improvements - Project M517; Repair and Replace Steam Distribution System - Project M924V-B (1997) 1
Boulder, Colorado (on University of Colorado campus, Boulder). $1.9 million.

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Demolition of 505 LF existing utility tunnel roof, renovation of steam lines, chilled water lines and utilities within the tunnel. Concrete repairs, mechanical work, ventilation systems, painting, all new tunnel lighting and electrical systems completed within the tunnel. Replaced tunnel roof with 5,000 psi micro-silica concrete. Installed RCP storm drain system.

47th Avenue Sewer and Tunnel (1997)

Phoenix, Arizona. $4.18 million. Installed 16,000 LF PVC lined 36-inch RCP sanitary sewer line. Excavated 1,770 LF of 90-inch-diameter hard rock tunnel using a Tunnel Boring Machine. Pipe buried to depths up to 42 feet, with an average pipe depth of 13 feet. Construction of a 20-foot-deep screening facility and overflow structure. Demolition of an existing sewage pumping facility.

Southwest Water Project Segment 2 - Uintah South (1995)

Colorado Springs, Colorado. $8.2 million. Project included: construction of 12,000 LF each 36- and 42-inch parallel cement mortar-lined tape-coated welded steel waterline; 940 LF of 54-inch microtunnel through contaminated soil and groundwater; and various domestic utilities. Shoring systems included sheetpiling and heavy duty trench boxes to accommodate the 20-foot working depth in loose, saturated soils. Work also included: storm drains, sidewalks, curb and gutter, and paving. Extensive temporary measures were necessary for sewer, water, gas and traffic in urban setting.

Underground Utility Phase II (1994)

Montana State University, Bozeman, Montana. $4.95 million. Construction of 1,850 LF of 8- by 10-foot underground reinforced concrete utility tunnel. Construction of 660 LF of 6- by 6-foot and 6- by 8-foott branch tunnels. Installation of steam piping and irrigation piping in tunnel. Project also included dewatering and five acres of surface restoration. Achieved substantial completion one year ahead of schedule.

McDowell Mountain Ranch Community Facilities District (1994)

Scottsdale, Arizona. $8.14 million. Construction of 0.81 miles of Thompson Peak Parkway, 0.48 miles of McDowell Mountain Road, and 1.31 miles of collector roads. Project included 3.34 miles of 8- to 16-inch ductile iron waterline; 1.28 miles of 8- to 16-inch sewer line; 1.1 miles of drainage channel; underground power and telephone conduits; aggregate base, asphaltic pavement, curb and gutter, sidewalk, landscaping, and utility trenching.

Bell Road Improvement District No. I3704 (1994)

Scottsdale, Arizona. $13.61 million. Constructed 2.5 miles of Bell Road, 1.2 miles of McDowell Mountain Ranch Road, and 2.1 miles of flood control works. Project also included: aggregate base; asphalt concrete pavement; curb and gutter; sidewalk; drainage culvert pipes; concrete box culverts; catch basin; 270-foot bridge; 35,000 LF of steel and ductile iron waterline; 2.5-million-gallon reservoir; and booster stations, landscaping, utility trenching and conduits.

Low Flow Structures, Phase III (1993)

Middle Rio Grande Project. Socorro, New Mexico. $1.4 million. This project included: extensive dewatering; 27,000 CY of excavation; removal, 2 each, 9-foot by 14-foot by 600-foot multi-plate culvert; installation of 1,800 LF of 108-inch-diameter concrete pipe; and 426 CY concrete structure. Crossed the Socorro Flood Diversion Channel.

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SUPERINTENDENT

Barrick Goldstrike Mines Inc. 72-inch Dewatering Pipeline (1993)
Carlin, Nevada. $6 Million. The project included: installation of 17,600 LF of 72-inch bell and spigot steel pipe and 3,300 LF 72-inch welded-steel pipe; installation of large-diameter sluice gates, slide gates, flap gates, valves and associated structures; 150,000 CY (2 miles) of cooling channel excavation; 190,000 CY of topsoil stripping and replacement; 60,000 CY of settlement pond embankment; and 24,000 CY of riprap. All pipe and appurtenances furnished by Owner.

Evergreen Wastewater Collection System (1992)
Kalispell, Montana. $2.52 million. The project involved: 22 area lift stations; one main lift station; extensive dewatering at all lift stations; 650 CY of cast-in-place concrete; 25 raw sewage pumps; 23 standby generators; 23 precast manholes; and telemetry and controls.

Lower North Interceptor/Horn Rapids Connection Project (1992)
Richland, Washington. $6.75 million. Installed 7,900 LF of 54-inch, 800 LF of 42-inch, and 1,100 LF of 30-inch RCP gravity sewer. Installed 35,000 LF of 54-inch and smaller RCP and DIP. The project also included: extensive dewatering utilizing 93 deep wells; converting existing gravity sewer to storm drain; installing 40,000 LF of conduit and 32 utility vaults for miscellaneous utilities; removal and replacement of a complete roadway including curb, gutter, asphalt and grading. Extensive traffic control. The project ran through the City's business district.

Madison Flowline Replacement (1991)
McAllister, Montana. $6.5 million. The project included: installation of 6,660 LF of 13-foot-diameter welded-steel penstock; 1,680 CY of structural concrete; 1,500 CY of excavation; 7,400 CY of geogrid reinforced earthfill; drainage facilities; bridge demolition; painting; and access road improvements. The site offered tight access in a remote mountainous location.

City of Black Diamond (1991)
Black Diamond, Washington. $6.9 million. Pumping and conveyance facilities; 1.5 mgd sewage pumping station; 37,000 LF small-diameter gravity sewer; 6,000 LF small-diameter pressure sewer; various small structures and surface restoration, jacking pit.

Floyd Light Sanitary Sewer System (1991)
Portland, Oregon. $4.7 million. 53,000 LF of 8-inch PVC mainline pipe; 30,000 LF 6-inch PVC service pipe; 200 manholes; pavement restoration; traffic control.

Shoshone Municipal Water Supply Line (1989)
Cody, Wyoming. $26.8 million. 67.5 miles of water line 36- to 8-inch, 11 buildings, 2 elevated water tanks and 1 buried tank; 199,200 CY excavated and removed unsuitable soil; 199,200 CY hauled and replaced soil; 1500 CY riprap.

OTHER WORK EXPERIENCE

Lehman Construction Company, Inc., Great Falls, Montana (1979-1988)
SCOPE: Superintendent . City of Great Falls O. F. 912, and City of Great Falls Beebe Tracts Sewer Improvements; City of Choteau Water Main Extension; T & T Subdivision.

BARNARD
BARNARD-PENNECON J.V.

DELAYED RIVER CLOSURE PROPOSAL

LOWER CHURCHILL PROJECT
MUSKRAT FALLS
CH0009 - CONSTRUCTION OF NORTH AND SOUTH DAMS

SCHEDULE OF PRICE BREAKDOWN

ISSUED FOR: BID DATE: 6 - Jun - 2015

BIDDER'S NAME: Barnard-Pennecon JV

PRICE ITEM No	PRICE ITEM REFERENCE Exhibit 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT ($ CAN) B	STAFF, MATERIAL, EQUIPMENT & SUBCONTRACT COST/UNIT ($ CAN)	UNIT PRICE| ($ CAN) F= (B+C+D+E)	TOTAL PRICE ($ CAN) G= A x F
	2	0000		INDIRECT COSTS							
1	2.1		0000.01	Mobilization	LS	1	130,514	$ 14,480,506.98	$ 53,519,493.02	$ 68,000,000.00	$ 68,000,000.00
2	2.2		0000.02	Site Installation	LS	1	86,318	$ 8,294,976.69	$ 41,705,023.31	$ 50,000,000.00	$ 50,000,000.00
3	2.3		0000.03	Management, Staff, employees and Consultants	LS	1	236,717	$ -	$ 55,000,000.00	$ 55,000,000.00	$ 55,000,000.00
4	2.4		0000.04	Health and Safety, Environmental and Quality Requirements	LS	1	4,503	$ 1,139,570.04	$ 2,060,429.96	$ 3,200,000.00	$ 3,200,000.00
5	2.5		0000.05	Credit, Guarantee and Insurance	LS	1	-	$ -	$ 5,500,000.00	$ 5,500,000.00	$ 5,500,000.00
6	2.6		0000.06	Warranty, per Article 17 of the Agreement	LS	1	-	$ -	$ 300,000.00	$ 300,000.00	$ 300,000.00
7	2.7		0000.07	Demobilization	LS	1	1,600	$ 146,560.56	$ 768,439.44	$ 915,000.00	$ 915,000.00
				SUB-TOTAL INDIRECT COSTS							$ 182,915,000.00
	3	1100		GENERAL							
	3.1		1110	DEWATERING OF STRUCTURE AREAS							
8	3.1.1		1110.01	Dewatering of Structure Areas	LS	1	3,450	$ 313,809.38	$ 1,836,190.62	$ 2,150,000.00	$ 2,150,000.00
	3.2		1111	EXCAVATION OF EXISTING COFFERDAMS							
9	3.2.1		1111.01	Excavation of Existing Embankment cofferdams 1, 2 and 3, and Existing Ramps	m^3	177,000	0.02	$ 1.87	$ 8.89	$ 10.76	$ 1,904,520.00
10	3.2.2		1111.02	Excavation of Downstream section of RCC riverside cofferdam	m^3	20,000	0.05	$ 4.63	$ 17.06	$ 21.69	$ 433,800.00
	3.3		1112	PERMANENT ROADS AND PARKING AREA							
11	3.3.1		1112.01	Overburden Excavation	m^3	8,000	0.03	$ 2.54	$ 6.21	$ 8.75	$ 70,000.00
12	3.3.2		1112.02	Other Material or Rockfill	m^3	44,000	0.02	$ 1.99	$ 1.76	$ 3.75	$ 165,000.00
13	3.3.3		1112.03	Maintenance Grade 3 material	m^3	6,000	0.08	$ 7.19	$ 59.81	$ 67.00	$ 402,000.00
14	3.3.6		1112.04	CSP culvert, dia. 900 mm	m	48	2.50	$ 228.85	$ 271.15	$ 500.00	$ 24,000.00
15	3.3.7		1112.05	Guide Rails	m	400	1.24	$ 113.54	$ 76.46	$ 190.00	$ 76,000.00
16	3.3.8		1112.06	Gate Type 1	unit	2	60.00	$ 5,563.68	$ 2,436.32	$ 8,000.00	$ 16,000.00
	3.5		1114	DITCHES							
17	3.5.1		1114.01	Overburden Excavation	m^3	2,000	0.24	$ 21.97	$ 20.03	$ 42.00	$ 84,000.00
18	3.5.2		1114.02	Non-woven Geotextile, min 300 g/m^2	m^2	2,500	0.03	$ 2.93	$ 4.07	$ 7.00	$ 17,500.00
19	3.5.3		1114.03	Rockfill Protection, 100 - 250 mm	m^3	1,000	0.12	$ 10.88	$ 66.12	$ 77.00	$ 77,000.00
	3.6		1115	SLOPE PROTECTION							
20	3.6.1		1115.01	Rockfill Protection, Zone 3E Material	m^3	2,500	0.13	$ 12.14	$ 77.86	$ 90.00	$ 225,000.00
21	3.6.2		1115.02	Non-woven Geotextile, min 530 g/m^2	m^2	4,500	0.04	$ 3.64	$ 4.86	$ 8.50	$ 38,250.00
	3.7		1116	CHAIN LINK FENCES AND GATES							
22	3.7.1		1116.01	Chain Link Fence and Gates	m	720	2.95	$ 278.67	$ 41.33	$ 320.00	$ 230,400.00
	3.8		1150	TEMPORARY UPSTREAM BRIDGE OVER SPILLWAY APPROACH CHANNEL							
23	3.8.1		1150.01	Engineering of Temporary Upstream Bridge	LS	1	-	$ -	$ 50,000.00	$ 50,000.00	$ 50,000.00
24	3.8.2		1150.02	Supply of Temporary Upstream Bridge	LS	1	-	$ -	$ 7,500,000.00	$ 7,500,000.00	$ 7,500,000.00
25	3.8.3		1150.03	Installation, removal and handover of Temporary Upstream Bridge	LS	1	16,250	$ 1,527,505.01	$ 1,197,494.99	$ 2,725,000.00	$ 2,725,000.00
				SUB-TOTAL GENERAL							$ 16,188,470.00

LOWER CHURCHILL PROJECT
MUSKRAT FALLS
CH0009 - CONSTRUCTION OF NORTH AND SOUTH DAMS

SCHEDULE OF PRICE BREAKDOWN

APPENDIX A2.1
Rev. B3

ISSUED FOR: BID — DATE: 6 - Jun - 2015

BIDDER'S NAME: Barnard-Pennecon JV

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	4	2300		DAMS AND COFFERDAMS - GENERAL							
	4.1	2340	2341	UPSTREAM COFFERDAM							
				CIVIL WORK							
				Excavation							
26	4.1.1		2341.01	Overburden excavation	m^3	2,500	0.03	$ 2.57	$ 2.03	$ 4.60	$ 11,500.00
				Foundation Preparation in dry condition							
27	4.1.2		2341.02	Foundation Cleaning (water/air jets and Vacuum trucks)	m^2	1,200	0.28	$ 25.84	$ 12.16	$ 38.00	$ 45,600.00
28	4.1.3		2341.03	Rock Excavation including dental excavation and Scaling	m^3	500	0.52	$ 47.45	$ 77.55	$ 125.00	$ 62,500.00
29	4.1.4		2341.04	Dental Concrete	m^3	800	2.29	$ 209.56	$ 390.44	$ 600.00	$ 480,000.00
30	4.1.5		2341.05	Slush Grout	m^2	1,200	0.42	$ 38.14	$ 9.86	$ 48.00	$ 57,600.00
31	4.1.6		2341.06	Dry Pack	m^3	6	39.25	$ 3,598.54	$ 801.46	$ 4,400.00	$ 26,400.00
				Embankment Materials							
32	4.1.7		2341.07	Compacted Till - Zones 1 and 1C Materials	m^3	19,000	0.16	$ 14.90	$ 26.21	$ 41.11	$ 781,090.00
33	4.1.8		2341.08	Dumped Till - Zone 1A Material	m^3	134,000	0.10	$ 8.65	$ 20.35	$ 29.00	$ 3,886,000.00
34	4.1.9		2341.09	Compacted Granular - Zone 2A Material	m^3	20,700	0.17	$ 15.65	$ 43.35	$ 59.00	$ 1,221,300.00
35	4.1.10		2341.10	Compacted Granular - Zone 2C Material	m^3	8,700	0.18	$ 16.06	$ 43.94	$ 60.00	$ 522,000.00
36	4.1.11		2341.11	Dumped Granular - Zone 2E Material	m^3	26,300	0.13	$ 11.80	$ 38.20	$ 50.00	$ 1,315,000.00
37	4.1.12		2341.12	Dumped Rockfill- Zone 3 Material	m^3	143,000	0.02	$ 1.98	$ 9.02	$ 11.00	$ 1,573,000.00
38	4.1.13		2341.13	Dumped Large Blocks (300-1000 mm) - Zone 3 Class 1	m^3	37,000	0.02	$ 1.98	$ 9.02	$ 11.00	$ 407,000.00
39	4.1.14		2341.14	Dumped Large Blocks (≥1000 mm) - Zone 3 Class 2	m^3	65,000	0.05	$ 4.89	$ 22.11	$ 27.00	$ 1,755,000.00
40	4.1.15		2341.15	Dumped Large Blocks (≥1300 mm) - Zone 3 Class 3	m^3	15,000	0.05	$ 4.48	$ 22.52	$ 27.00	$ 405,000.00
41	4.1.16		2341.16	Compacted Crushed Stone - Zone 3A Material	m^3	10,950	0.18	$ 16.23	$ 43.77	$ 60.00	$ 657,000.00
42	4.1.17		2341.17	Compacted Rockfill - Zone 3C Material	m^3	33,740	0.11	$ 10.07	$ 33.93	$ 44.00	$ 1,484,560.00
43	4.1.18		2341.18	Compacted Rockfill - Zone 3D Material	m^3	33,900	0.05	$ 4.18	$ 11.82	$ 16.00	$ 542,400.00
44	4.1.19		2341.19	Dumped Crushed Stone- Zone 3F Material	m^3	21,000	0.13	$ 11.80	$ 38.20	$ 50.00	$ 1,050,000.00
				SUB-TOTAL UPSTREAM COFFERDAM							$ 16,282,950.00
	4.2	2340	2342	DOWNSTREAM COFFERDAM							
				CIVIL WORK							
				Excavation							
48	4.2.1		2342.01	Overburden excavation	m^3	500	0.08	$ 7.26	$ 13.74	$ 21.00	$ 10,500.00
				Foundation Preparation							
49	4.2.2		2342.02	Foundation cleaning (water/ait jets and Vacuum trucks)	m^2	1,250	0.28	$ 25.84	$ 12.16	$ 38.00	$ 47,500.00
50	4.2.3		2342.03	Rock excavation including dental excavation and scaling	m^3	500	0.52	$ 47.45	$ 77.55	$ 125.00	$ 62,500.00
51	4.2.4		2342.04	Dental Concrete	m^3	200	2.29	$ 209.56	$ 390.44	$ 600.00	$ 120,000.00
52	4.2.5		2342.05	Slush Grout	m^2	1,250	0.42	$ 38.14	$ 9.86	$ 48.00	$ 60,000.00

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53	4.2.6		2342.06	Dry Pack	m^3	6	39.25	$ 3,598.54	$ 801.46	$ 4,400.00	$ 26,400.00
				Embankment Materials							
54	4.2.7		2342.07	Compacted Till - Zones 1 and 1C	m^3	2,000	0.16	$ 14.90	$ 22.10	$ 37.00	$ 74,000.00
55	4.2.8		2342.08	Compacted Granular - Zone 2C	m^3	2,500	0.18	$ 16.37	$ 41.63	$ 58.00	$ 145,000.00
56	4.2.9		2342.09	Compacted Rockfill - Zone 3C	m^3	4,600	0.11	$ 10.30	$ 28.70	$ 39.00	$ 179,400.00
57	4.2.10		2342.10	Compacted Rockfill - Zone 3D	m^3	2,000	0.05	$ 4.18	$ 11.82	$ 16.00	$ 32,000.00
				SUB-TOTAL DOWNSTREAM COFFERDAM							$ 757,300.00
	4.3	2340	2343	INTAKE CHANNEL COFFERDAM							
				CIVIL WORK							
				Excavation							
58	4.3.1		2343.01	Overburden excavation	m^3	8,800	0.03	$ 2.64	$ 6.36	$ 9.00	$ 79,200.00
				Foundation Preparation							
59	4.3.2		2343.02	Foundation cleaning (water/ait jets and Vacuum trucks)	m^2	1,700	0.28	$ 25.84	$ 18.16	$ 44.00	$ 74,800.00
60	4.3.3		2343.03	Rock excavation including dental excavation and scaling	m^3	700	0.52	$ 47.45	$ 82.55	$ 130.00	$ 91,000.00
61	4.3.4		2343.04	Dental Concrete	m^3	250	2.29	$ 209.56	$ 390.44	$ 600.00	$ 150,000.00
62	4.3.5		2343.05	Slush Grout	m^2	1,700	0.42	$ 38.14	$ 9.86	$ 48.00	$ 81,600.00
63	4.3.6		2343.06	Dry Pack	m^3	9	39.24	$ 3,597.67	$ 802.33	$ 4,400.00	$ 39,600.00
				Embankment Materials							
64	4.3.7		2343.07	Compacted Till - Zones 1 and 1C	m^3	6,300	0.16	$ 14.90	$ 25.10	$ 40.00	$ 252,000.00
65	4.3.8		2343.08	Compacted Granular - Zone 2C	m^3	4,900	0.18	$ 16.27	$ 48.73	$ 65.00	$ 318,500.00
66	4.3.9		2343.09	Compacted Rockfill - Zone 3C	m^3	5,200	0.11	$ 10.05	$ 34.95	$ 45.00	$ 234,000.00
67	4.3.10		2343.10	Compacted Rockfill - Zone 3D	m^3	1,400	0.05	$ 4.18	$ 14.82	$ 19.00	$ 26,600.00
				SUB-TOTAL INTAKE CHANNEL COFFERDAM							$ 1,347,300.00
	4.4		2330	SOUTH DAM							
				CIVIL WORK							
				Excavation							
68	4.4.1		2330.01	Overburden excavation	m^3	94,000	0.03	$ 2.64	$ 5.36	$ 8.00	$ 752,000.00
				Foundation Preparation							
69	4.4.2		2330.02	Foundation cleaning (water/ait jets and Vacuum trucks)	m^2	3,400	0.28	$ 25.84	$ 18.16	$ 44.00	$ 149,600.00
70	4.4.3		2330.03	Rock excavation including dental excavation and scaling	m^3	2,000	0.52	$ 47.45	$ 82.55	$ 130.00	$ 260,000.00
71	4.4.4		2330.04	Dental Concrete	m^3	1,200	2.29	$ 209.56	$ 390.44	$ 600.00	$ 720,000.00
72	4.4.5		2330.05	Slush Grout	m^2	3,400	0.42	$ 38.14	$ 9.86	$ 48.00	$ 163,200.00
73	4.4.6		2330.06	Dry Pack	m^3	20	39.24	$ 3,597.66	$ 802.34	$ 4,400.00	$ 88,000.00
74	4.4.7		2330.07	Drilling Holes for Grouting	m	1,200	0.29	$ 26.78	$ 178.22	$ 205.00	$ 246,000.00
75	4.4.8		2330.08	Dry cement incorported in the grout	kg	42,000	-	$ -	$ 8.00	$ 8.00	$ 336,000.00
76	4.4.9		2330.09	Cored Drill Check Holes	m	30	-	$ -	$ 400.00	$ 400.00	$ 12,000.00

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77	4.4.10		2330.10	Percussion Drilling Check holes	m	60	-	$ -	$ 175.00	$ 175.00	$ 10,500.00
78	4.4.11		2330.11	Grouting - Successful connections	unit	250	-	$ -	$ 156.00	$ 156.00	$ 39,000.00
79	4.4.12		2330.12	Water pressure test (Lugeon - 5 Stages)	hour	8	-	$ -	$ 855.00	$ 855.00	$ 6,840.00
80	4.4.13		2330.13	Water test - Successful connections	unit	18	-	$ -	$ 380.00	$ 380.00	$ 6,840.00
81	4.4.14		2330.14	Uplift gauges	m	20	-	$ -	$ 788.00	$ 788.00	$ 15,760.00
82	4.4.15		2330.15	Thermistors (measure rock temperature in grout holes)	unit	1	-	$ -	$ 13,000.00	$ 13,000.00	$ 13,000.00
				Embankment Materials							
83	4.4.16		2330.16	Compacted Till - Zones 1 and 1C	m^3	26,000	0.15	$ 13.91	$ 21.09	$ 35.00	$ 910,000.00
84	4.4.17		2330.17	Compacted Granular - Zone 2A	m^3	28,000	0.19	$ 16.92	$ 45.08	$ 62.00	$ 1,736,000.00
85	4.4.18		2330.18	Compacted Crushed Stone - Zone 3A	m^3	12,000	0.19	$ 16.92	$ 45.08	$ 62.00	$ 744,000.00
86	4.4.19		2330.19	Compacted Crushed Stone - Zone 3B	m^3	16,000	0.19	$ 16.92	$ 45.08	$ 62.00	$ 992,000.00
87	4.4.20		2330.20	Compacted Rockfill - Zone 3C	m^3	21,000	0.10	$ 9.42	$ 32.58	$ 42.00	$ 882,000.00
88	4.4.21		2330.21	Compacted Rockfill - Zone 3D	m^3	46,000	0.04	$ 3.55	$ 14.45	$ 18.00	$ 828,000.00
89	4.4.22		2330.22	Riprap - Zone 4	m^3	6,000	0.11	$ 10.39	$ 65.61	$ 76.00	$ 456,000.00
90	4.4.23		2330.23	Compacted Crushed Stone - Zone 5	m^3	310	0.24	$ 22.04	$ 69.96	$ 92.00	$ 28,520.00
91	4.4.24		2330.24	Jersey Barrier	m	600	0.08	$ 7.60	$ 7.40	$ 15.00	$ 9,000.00
				Geotechnical Instrumentation							
92	4.4.25		2330.25	V-Notch Weirs, excluding Shelters	unit	2	134	$ 12,297.14	$ 23,702.86	$ 36,000.00	$ 72,000.00
93	4.4.26		2330.26	Shelters for V-Notch Weirs	unit	2	20	$ 1,905.85	$ 15,094.15	$ 17,000.00	$ 34,000.00
94	4.4.27		2330.27	Survey Monuments at South Dam Crest	unit	3	-	$ -	$ 2,000.00	$ 2,000.00	$ 6,000.00
				SUB-TOTAL SOUTH DAM							$ 9,516,260.00

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	4.5		2320	NORTH DAM							
				CIVIL WORK							
				Clearing							
95	4.5.1		2320.01	Clearing of the North Abutment	Ha	3	267	$ 24,466.26	$ 50,533.74	$ 75,000.00	$ 225,000.00
				Excavation							
96	4.5.2		2320.02	Overburden Excavation	m^3	72,000	0.03	$ 3.02	$ 6.98	$ 10.00	$ 720,000.00
				Foundation Preparation							
97	4.5.3		2320.03	Foundation Cleaning (water/air jets and vacuum)	m^2	13,500	0.35	$ 32.29	$ 17.71	$ 50.00	$ 675,000.00
98	4.5.4		2320.04	Rock Excavation including Dental Excavation and Scaling	m^3	6,000	0.52	$ 47.45	$ 71.55	$ 119.00	$ 714,000.00
99	4.5.5		2320.05	Dental Concrete	m^3	500	2.29	$ 209.43	$ 390.57	$ 600.00	$ 300,000.00
99A				Leveling CVC	m^3	3,500	0.99	$ 90.14	$ 389.86	$ 480.00	$ 1,680,000.00
100	4.5.6		2320.06	Slush Grout	m^2	13,500	0.42	$ 38.14	$ 9.86	$ 48.00	$ 648,000.00
101	4.5.7		2320.07	Dry Pack	m^3	70	39.24	$ 3,597.66	$ 802.34	$ 4,400.00	$ 308,000.00
102	4.5.8		2320.08	Drilling Holes in RCC and Bedrock for Grouting	m	4,200	0.31	$ 28.69	$ 272.31	$ 301.00	$ 1,264,200.00
103	4.5.9		2320.09	Grouting - Successful Connections	unit	720	-	$ -	$ 126.00	$ 126.00	$ 90,720.00
104	4.5.10		2320.10	Dry Cement incorported in the grout	kg	126,000	-	$ -	$ 5.00	$ 5.00	$ 630,000.00
105	4.5.11		2320.11	Cored Drill Check Holes	m	60	-	$ -	$ 450.00	$ 450.00	$ 27,000.00
106	4.5.12		2320.12	Percussion Drilling Check Holes	m	120	-	$ -	$ 336.00	$ 336.00	$ 40,320.00
107	4.5.13		2320.13	Water pressure test (lugeon - 5 Stages)	hour	15	-	$ -	$ 778.00	$ 778.00	$ 11,670.00
108	4.5.14		2320.14	Water Pressure Test - Successful connections	unit	36	-	$ -	$ 325.00	$ 325.00	$ 11,700.00
109	4.5.15		2320.15	Uplift gauges	m	60	-	$ -	$ 665.00	$ 665.00	$ 39,900.00
110	4.5.16		2320.16	Thermistor (measure temperature in grout holes)	unit	1	-	$ -	$ 11,800.00	$ 11,800.00	$ 11,800.00
				Drainage Holes							
111	4.5.17		2320.17	Drilling Holes for Drainage in Foundation from Drainage Gallery, Φ76 mm	m	3,200	-	$ -	$ 267.00	$ 267.00	$ 854,400.00
112	4.5.18		2320.18	PVC Caps for Drainage Holes	unit	125	-	$ -	$ 28.00	$ 28.00	$ 3,500.00
113	4.5.19		2320.19	Drilling Holes Upward for Drainage from Drainage Gallery into RCC, Φ76 mm	m	3,200	-	$ -	$ 375.00	$ 375.00	$ 1,200,000.00
				Instrumentation							
114	4.5.20		2320.20	Drilling Holes for piezometers	m	100	-	$ -	$ 296.00	$ 296.00	$ 29,600.00
115	4.5.21		2320.21	Vibrating Wire and Standpipe Piezometers TYPE - 1, excluding Cables	unit	8	-	$ -	$ 13,600.00	$ 13,600.00	$ 108,800.00
116	4.5.22		2320.22	Vibrating Wire and Standpipe Piezometers TYPE - 2, excluding Cables	unit	2	-	$ -	$ 3,000.00	$ 3,000.00	$ 6,000.00
117	4.5.23		2320.23	Instrument Cable including PVC Conduits and Pull Boxes	m	2,700	-	$ -	$ 28.00	$ 28.00	$ 75,600.00
118	4.5.24		2320.24	Thermistors Cable in RCC	unit	8	-	$ -	$ 5,000.00	$ 5,000.00	$ 40,000.00
119	4.5.25		2320.25	V-notch Weirs	unit	4	-	$ -	$ 14,243.00	$ 14,243.00	$ 56,972.00
120	4.5.26		2320.26	Vibrating Wire Weir Monitors.	unit	4	-	$ -	$ 16,000.00	$ 16,000.00	$ 64,000.00
121	4.5.27		2320.27	Data logger, Terminal Box, Barometer Box including Grounding	LS	1	-	$ -	$ 150,000.00	$ 150,000.00	$ 150,000.00
122	4.5.28		2320.28	Crest Survey Monuments	unit	4	-	$ -	$ 2,000.00	$ 2,000.00	$ 8,000.00
				Concrete and RCC operations							
123	4.5.29		2320.29	Roller Compacted Concrete (RCC)	m^3	192,869	0.90	$ 82.80	$ 207.20	$ 290.00	$ 55,932,010.00
123A				Trial Demonstration Sections	m^3	4,612	0.36	$ 32.99	$ 257.01	$ 290.00	$ 1,337,480.00
124	4.5.30		2320.30	Conventional Vibrated Concrete (CVC) (Crest and Flip Bucket)	m^3	11,100	2.46	$ 226.49	$ 373.51	$ 600.00	$ 6,660,000.00

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125	4.5.31		2320.31	Facing Concrete	m^3	16,469	1.20	$ 111.77	$ 388.23	$ 500.00	$ 8,234,500.00
126	4.5.32		2320.32	GERCC or GEVR - Formed Faces	L	1	0.01	$ 0.55	$ 1.11	$ 1.66	$ 1.66
126.1				Facing in Place of GERCC	m^3	4,650	1.67	$ 153.90	$ 346.10	$ 500.00	$ 2,325,000.00
127	4.5.33		2320.33	Conventional Vibrated Concrete (North Abutment Crest Surface and Training Wall)	m^3	270	6.45	$ 593.46	$ 606.54	$ 1,200.00	$ 324,000.00
128	4.5.34		2320.34	Increase or decrease in quantity of cement - Bid Mix (rate only)	Kg	1	-	$ -	$ 0.38	$ 0.38	$ 0.38
129	4.5.35		2320.35	Increase or decrease in quantity of flyash - Bid Mix (rate only)	Kg	1	-	$ -	$ 0.38	$ 0.38	$ 0.38
130	4.5.36		2320.36	Increase or decrease in quantity of cement - Source B (rate only)	Kg	1	-	$ -	$ 0.38	$ 0.38	$ 0.38
131	4.5.37		2320.37	Increase or decrease in quantity of flyash - Source B (rate only)	Kg	1	-	$ -	$ 0.38	$ 0.38	$ 0.38
132	4.5.38		2320.38	Air-entraining Admixture	litre	315,000	-	$ -	$ 1.50	$ 1.50	$ 472,500.00
133	4.5.39		2320.39	Retarder Admixture	litre	336,000	-	$ -	$ 1.53	$ 1.53	$ 514,080.00
134	4.5.40		2320.40	Precast Concrete	LS	1	520	$ 46,870.31	$ 1,703,129.69	$ 1,750,000.00	$ 1,750,000.00
135	4.5.41		2320.41	Gallery Floor CVC Concrete	m^3	275	13.59	$ 1,244.24	$ 955.76	$ 2,200.00	$ 605,000.00
136	4.5.42		2320.42	Steel Reinforcement	kg	500,000	0.004	$ 0.34	$ 4.86	$ 5.20	$ 2,600,000.00
137	4.5.43		2320.43	Steel Guardrails	kg	5,200	0.03	$ 3.06	$ 14.94	$ 18.00	$ 93,600.00
138	4.5.44		2320.44	Waterstop	m	1,350	0.66	$ 60.16	$ 20.84	$ 81.00	$ 109,350.00
	4.6		2370	NORTH DAM - Auxiliary Services							
				ELECTRICAL WORK							
139	4.6.1		2370.01	Exothermic Connections.	unit	20	-	$ -	$ 1,710.00	$ 1,710.00	$ 34,200.00
140	4.6.2		2370.02	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	815	-	$ -	$ 137.00	$ 137.00	$ 111,655.00
141	4.6.3		2370.03	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	16	-	$ -	$ 75.00	$ 75.00	$ 1,200.00
142	4.6.4		2370.04	Embedded Copper Grounding Plates	unit	7	-	$ -	$ 1,710.00	$ 1,710.00	$ 11,970.00
				SUB-TOTAL NORTH DAM							$ 91,110,730.18
	5	3100		Powerhouse Channels							
	5.1		3120.00	Tailrace							
				CIVIL WORK							
				Tailrace Rock Plug - Overburden Excavation							
143	5.1.1		3120.01	Overburden Excavation, excluding excavation of Cofferdam 3 - Dry Conditions	m^3	12,000	0.02	$ 1.67	$ 6.33	$ 8.00	$ 96,000.00
				Tailrace Rock Plug - Rock Excavation							
144	5.1.2		3120.02	Tailrace Rock Plug Excavation including access ramp to powerhouse -Dry Conditions	m^3	170,000	0.07	$ 6.41	$ 18.91	$ 25.32	$ 4,304,400.00
145	5.1.3		3120.03	Tailrace Rock Plug - Underwater Excavation	m^3	34,000	0.17	$ 15.31	$ 47.05	$ 62.36	$ 2,120,240.00
				Tailrace Rock Plug - Stabilization and Rock Surface Protection							
146	5.1.4		3120.04	Grouted Rock Bolts Type A	unit	70	2.50	$ 230.49	$ 269.51	$ 500.00	$ 35,000.00
147	5.1.5		3120.05	Grouted Rock Bolts Type C	unit	20	5.00	$ 454.81	$ 440.19	$ 895.00	$ 17,900.00
148	5.1.6		3120.06	Chain Link Wire Mesh - Installation	m^2	2,500	0.36	$ 32.90	$ 35.50	$ 68.40	$ 171,000.00
149	5.1.7		3120.07	Chain Link Wire Mesh - Removal	m^2	20,300	0.04	$ 3.64	$ 0.26	$ 3.90	$ 79,170.00
150	5.1.8		3120.08	Existing Temporary Safety Fence - Removal	m	1,200	0.13	$ 12.21	$ 4.04	$ 16.25	$ 19,500.00
				SUB-TOTAL TAILRACE							$ 6,843,210.00

LOWER CHURCHILL PROJECT
MUSKRAT FALLS
CH0009 - CONSTRUCTION OF NORTH AND SOUTH DAMS

SCHEDULE OF PRICE BREAKDOWN

APPENDIX A2.1
Rev. B3

ISSUED FOR: BID | DATE: 6 - Jun - 2015 | BIDDER'S NAME: Barnard-Pennecon JV

PRICE ITEM		WBS CODE									
No	REFERENCE Exhibit 2 - ATT 1	CODE	SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT ($ CAN) B	STAFF, MATERIAL, EQUIPMENT & SUBCONTRACT COST/UNIT ($ CAN)	UNIT PRICE| ($ CAN) F= (B+C+D+E)	TOTAL PRICE ($ CAN) G= A x F
	6	1100		Borrow Areas							
	6.1		1117.00	Borrowed Construction Material							
151	6.1.1		1117.01	Overhaul of Borrowed Construction Material (rate only)	m3/km						$ 2.00

ROW A	**CALCULATED TOTAL OF LUMP SUM AND UNIT PRICE ITEMS (BASED ON APPROXIMATE QUANTITIES)**	$ 324,961,222.18

LOWER CHURCHILL PROJECT
MUSKRAT FALLS
CH0009 - CONSTRUCTION OF NORTH AND SOUTH DAMS

SCHEDULE OF PRICE BREAKDOWN

APPENDIX A2.1
Rev. B3

ISSUED FOR: BID DATE: 6 - Jun - 2015

BIDDER'S NAME: Barnard-Pennecon JV

PRICE ITEM No	REFERENCE Exhibit 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT ($ CAN) B	STAFF, MATERIAL, EQUIPMENT & SUBCONTRACT COST/UNIT ($ CAN)	UNIT PRICE| ($ CAN) F= (B+C+D+E)	TOTAL PRICE ($ CAN) G= A x F
	7	1100		Optional Pricing for Temporary Access Road and Quarry							
	7.1		1113	ACCESS ROAD TO LAYDOWN AREA C1, If required							
152	7.1.1		1113.01	Other Material or Rockfill	m^3	28,000	0.04	$ 3.80	$ 8.70	$ 12.50	$ 350,000.00
153	7.1.2		1113.02	Maintenance Grade No 3	m^3	4,000	0.08	$ 7.19	$ 67.81	$ 75.00	$ 300,000.00
	7.2		1118	Quarry Q5							
154	7.2.1		1118.01	Production of blasted rockfill from the quarry Q5	m^3	50,000	0.04	$ 3.28	$ 11.72	$ 15.00	$ 750,000.00
	8	2300		Optional Pricing for Temporary Access Road and Quarry							
	8.1	2340	2341	UPSTREAM COFFERDAM - Cut Off Wall							
				Jet Grouting cut off wall, If required							
155	8.1.1		2341.23	Mobilization and demobilization	LS	1	-	$ -	$ -	$ 1,100,000.00	$ 1,100,000.00
156	8.1.2		2341.24	Drilling Holes for Jet Grouting in embankment, river sediments and bedrock	m	9,600	-	$ -	$ -	$ 160.00	$ 1,536,000.00
157	8.1.3		2341.25	Jet Grouted Cut-off wall	m^2	2,800	0.47	$ 43.04	$ -	$ 1,053.00	$ 2,948,400.00
				Bedrock Grouting beneath the Jet Grouted Cut-off Wall, if required							
158	8.1.4		2341.26	Drilling Holes for Grouting in embankment , jet grouting cut-off wall and bedrock, if required	m	1,300	-	$ -	$ -	$ 23.00	$ 29,900.00
159	8.1.5		2341.27	Dry cement incorported in the grout, if required	kg	11,000	-	$ -	$ -	$ 1.00	$ 11,000.00
160	8.1.6		2341.28	Grouting - Succesful connections, if required	unit	60	-	$ -	$ 845.00	$ 845.00	$ 50,700.00
				Investigation for Jet Grouted Cut-off Wall and Bedrock Grouting							
45	4.1.20		2341.20	Percussion Drill Holes in embankments, river sediments and bedrock	m	1,000	-	$ -	$ 126.00	$ 126.00	$ 126,000.00
46	4.1.21		2341.21	Verification Core Drilling in jet grouting cut-off wall and bedrock	m	200	-	$ -	$ 469.00	$ 469.00	$ 93,800.00
47	4.1.22		2341.22	Core Diamond Drill Rig in Standby	hour	140	-	$ -	$ 132.00	$ 132.00	$ 18,480.00

NOTES

Note 1 : If there has been an error in the calculation to establish the total of Column G (Total Price) or Column F (UNIT PRICE), then the figures of column A (Estimated Quantity of Units), column B (Man Hours), column C (Manpower), column D (Equipment) and column E (Profits) will prevail.

Note 2 : This Document is provided to the bidders in Native Excel File format. It is the bidders responsibility to verify cell formats and formulas.

Note 3 : Bidders shall not include any HST/GST from any source (whether from Bidder, subcontractor, vendors or suppliers) in the unit and lump sum prices in this Schedule of Price Breakdown. Bidders shall claim input tax credits on taxable supplies received from vendors, suppliers and subcontractors and thereof Bidders shall exclude HST/GST payable to the vendors, suppliers and subcontractors from the unit and lump sum prices in the Schedule. Bidders shall exclude HST/GST on the total listed in Row A.

Note 4: Items 152 to 160 are optional and will not be included in the total Bid price. However, Bidders shall provide price for each item as if they are included in the Scope. The work will be included in the contract, if required.

FOR THE LOWER CHURCHILL PROJECT - MUSKRAT FALLS

This Appendix forms part of the Proposal submitted by:

Name of Bidder: Barnard-Pennecon JV

Request For Proposal, Package No: CH0009 - Schedule Delay Option 2 (Delayed River Diversion June 1, 2017)

LOWER CHURCHILL PROJECT
MUSKRAT FALLS
CH0009 - CONSTRUCTION OF NORTH AND SOUTH DAMS

SCHEDULE OF PRICE BREAKDOWN

ISSUED FOR: BID DATE: 6 - Jun - 2015

BIDDER'S NAME: Barnard-Pennecon JV

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT ($ CAN) B	STAFF, MATERIAL, EQUIPMENT & SUBCONTRACT COST/UNIT ($ CAN)	UNIT PRICE| ($ CAN) F= (B+C+D+E)	TOTAL PRICE ($ CAN) G= A x F
No	REFERENCE Exhibit 2 - ATT 1	CODE	SUBCODE								

Signature:

Date of Proposal: 30-JUN-2015

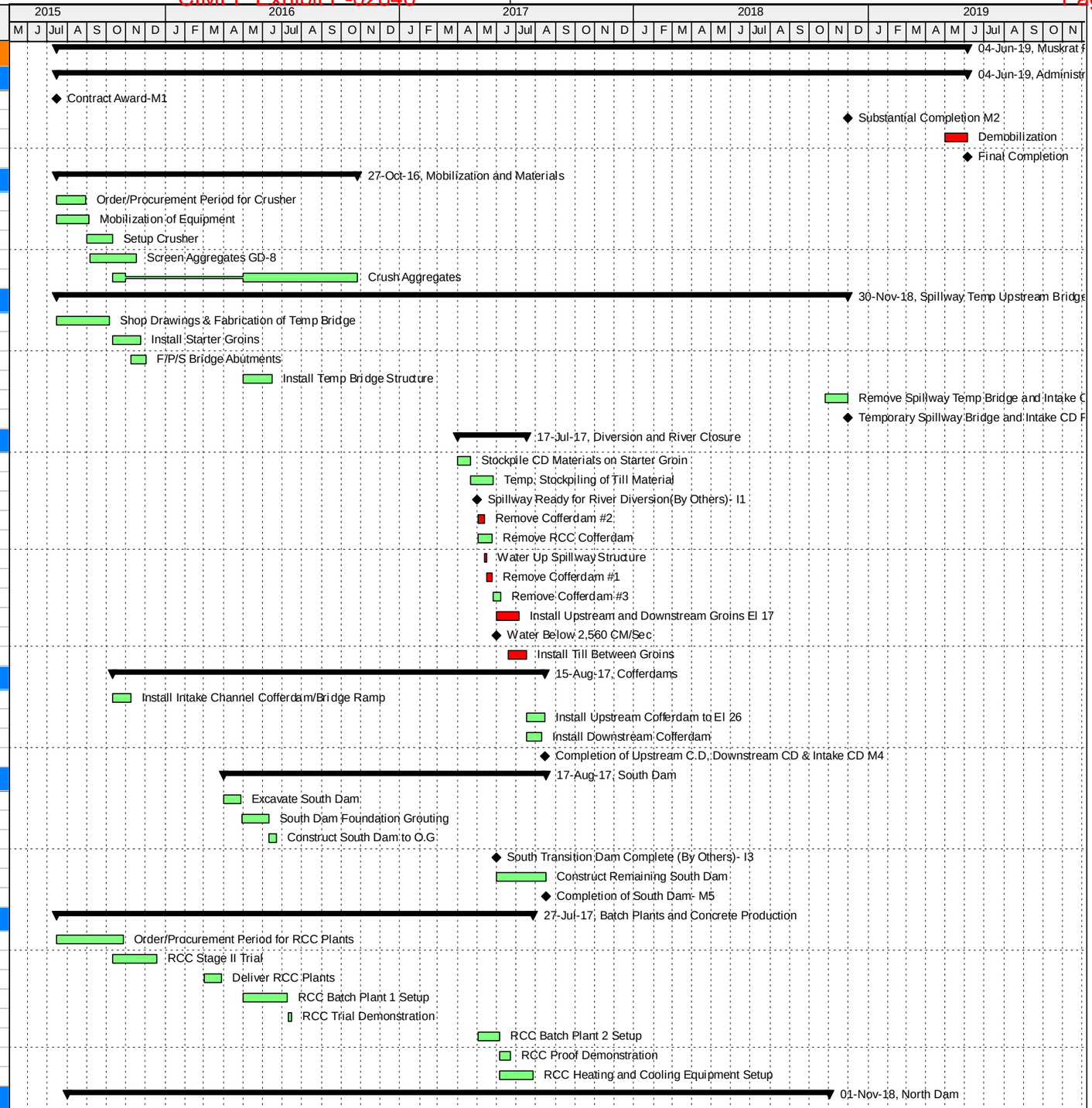
MONTHLY PAYMENT FORECAST SCHEDULE
Schedule Delay Option 2 (Delayed River Diversion June 1, 2017)

Month	Estimated Monthly Payment	Percentage of Work	Description of Work associated with Payment
1	$ 6,000,000.00	1.85%	EQ Procurement / Submittals / Mobilization
2	$ 6,000,000.00	1.85%	Mobilization / Submittals / Setup Crusher / Procurement
3	$ 9,700,000.00	2.98%	Setup Crusher / Screen Aggregates
4	$ 7,656,520.40	2.36%	Screen Crush AG / Starter Groin / Intake Cofferdam / RCC Stage 2 Trials
5	$ 3,000,000.00	0.92%	F/P/S Bridge Abutments / RCC Stage 2 Trials
6	$ 2,000,000.00	0.62%	Winter Shutdown / RCC Stage 2 Trials
7	$ 2,000,000.00	0.62%	Winter Shutdown
8	$ 2,000,000.00	0.62%	Winter Shutdown
9	$ 4,000,000.00	1.23%	Winter Shutdown / RCC Batch Plant Delivery
10	$ 5,100,000.00	1.57%	Excavate South Dam Footprint
11	$ 9,500,000.00	2.92%	Crush AG/ Install Temp Bridge / Setup Batch Plant
12	$ 9,500,000.00	2.92%	Crush AG/ Install Temp Bridge / Setup Batch Plant / South Dam / Rock Plug Ex
13	$ 8,000,000.00	2.46%	Crush AG/ Setup Batch Plant / Rock Plug Ex
14	$ 7,000,000.00	2.15%	Crush AG
15	$ 6,000,000.00	1.85%	Crush AG
16	$ 5,000,000.00	1.54%	Crush AG
17	$ 3,000,000.00	0.92%	Winter Shutdown
18	$ 2,000,000.00	0.62%	Winter Shutdown
19	$ 2,000,000.00	0.62%	Winter Shutdown
20	$ 2,000,000.00	0.62%	Winter Shutdown
21	$ 2,000,000.00	0.62%	Winter Shutdown
22	$ 4,000,000.00	1.23%	Spring Mob
23	$ 10,000,000.00	3.08%	Remove Cofferdams / Batch Plant Setup
24	$ 9,127,998.00	2.81%	Upstream Cofferdam / South Dam / Rock Plug Ex
25	$ 16,900,000.00	5.20%	Upstream Cofferdam / South Dam / Rock Plug Ex / C&G N. Abutment / FDN Cleaning
26	$ 18,434,574.00	5.67%	Upstream Cofferdam / South Dam / Rock Plug Ex / FDN Cleaning / Leveling
27	$ 17,000,000.00	5.23%	RCC / Rock Plug Ex
28	$ 16,752,657.00	5.16%	RCC / Flip Bucket
29	$ 2,000,000.00	0.62%	Winter Shutdown
30	$ 2,000,000.00	0.62%	Winter Shutdown
31	$ 2,000,000.00	0.62%	Winter Shutdown
32	$ 2,000,000.00	0.62%	Winter Shutdown
33	$ 2,000,000.00	0.62%	Winter Shutdown
34	$ 2,000,000.00	0.62%	Winter Shutdown
35	$ 16,100,000.00	4.95%	RCC / Flip Bucket / Grout Curtain
36	$ 15,000,000.00	4.62%	RCC / Flip Bucket / Grout Curtain
37	$ 15,000,000.00	4.62%	RCC / Flip Bucket / Grout Curtain
38	$ 15,000,000.00	4.62%	RCC / Grout Curtain / Drain Holes / Ogee Crest
39	$ 15,995,521.00	4.92%	Drain Holes / Ogee Crest
40	$ 15,000,000.00	4.62%	Drain Holes / Ogee Crest / Gallery Floor / Rock Plug
41	$ 14,699,060.00	4.52%	Remove Temp Bridge & Intake CD / Demob
42	$ 5,000,000.00	1.54%	Demob
43	$ 5,494,892.00	1.69%	Demob
	$ 324,961,222.40		

****This table is approximate and will be finalized upon award and a resource loaded schedule is developed.

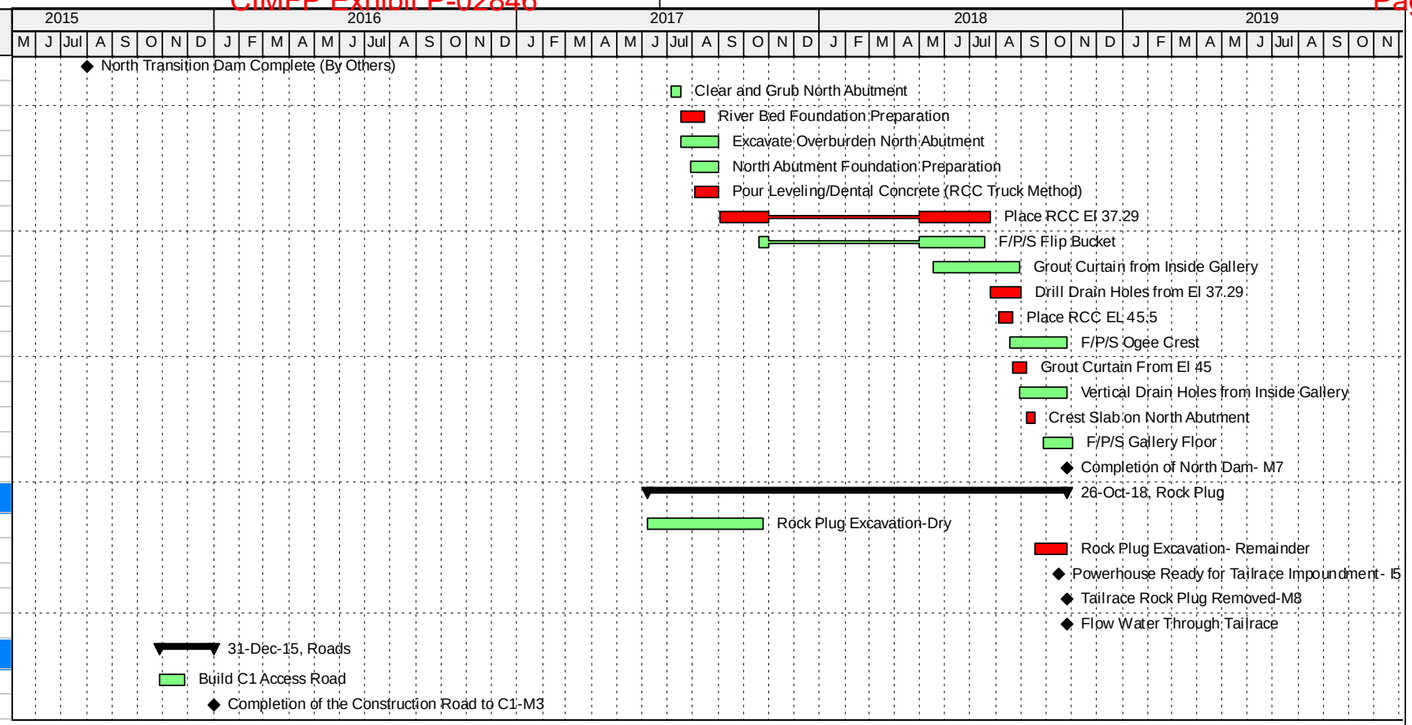
30-Jun-15 06:51

Activity ID	Activity Name	Original Duration	Early Start	Early Finish
Muskrat Falls N&S Dam-River Div June 1 2017		1014	15-Jul-15	04-Jun-19
Administrative		1014	15-Jul-15	04-Jun-19
A1010	Contract Award-M1	0	15-Jul-15	
A1040	Substantial Completion M2	0		30-Nov-18
A1050	Demobilization	30	01-May-19	04-Jun-19
A1090	Final Completion	0		04-Jun-19
Mobilization and Materials		335	15-Jul-15	27-Oct-16
A1200	Order/Procurement Period for Crusher	40	15-Jul-15	29-Aug-15
A1060	Mobilization of Equipment	45	15-Jul-15	04-Sep-15
A1500	Setup Crusher	35	31-Aug-15	10-Oct-15
A1080	Screen Aggregates GD-8	61	05-Sep-15	16-Nov-15
A1070	Crush Aggregates	172	10-Oct-15	27-Oct-16
Spillway Temp Upstream Bridge and Ramps		882	15-Jul-15	30-Nov-18
A1390	Shop Drawings & Fabrication of Temp Bridge	70	15-Jul-15	05-Oct-15
A1330	Install Starter Groins	38	10-Oct-15	24-Nov-15
A1440	F/P/S Bridge Abutments	20	09-Nov-15	02-Dec-15
A1120	Install Temp Bridge Structure	40	02-May-16	16-Jun-16
A1140	Remove Spillway Temp Bridge and Intake CD	30	27-Oct-18	30-Nov-18
A1130	Temporary Spillway Bridge and Intake CD Removed	0		30-Nov-18
Diversion and River Closure		76	01-Apr-17	17-Jul-17
A1119	Stockpile CD Materials on Starter Groin	17	01-Apr-17	21-Apr-17
A1129	Temp. Stockpiling of Till Material	30	21-Apr-17	26-May-17
A1109	Spillway Ready for River Diversion(By Others)- I1	0		01-May-17
A1350	Remove Cofferdam #2	10	02-May-17	12-May-17
A1360	Remove RCC Cofferdam	20	02-May-17	24-May-17
A1680	Water Up Spillway Structure	3	13-May-17	16-May-17
A1340	Remove Cofferdam #1	8	17-May-17	25-May-17
A1510	Remove Cofferdam #3	10	26-May-17	06-Jun-17
A1370	Install Upstream and Downstream Groins El 17	30	01-Jun-17	05-Jul-17
A1520	Water Below 2,560 CM/Sec	0	01-Jun-17	
A1380	Install Till Between Groins	25	19-Jun-17	17-Jul-17
Cofferdams		482	10-Oct-15	15-Aug-17
A1430	Install Intake Channel Cofferdam/Bridge Ramp	25	10-Oct-15	09-Nov-15
A1400	Install Upstream Cofferdam to El 26	25	18-Jul-17	15-Aug-17
A1450	Install Downstream Cofferdam	20	18-Jul-17	09-Aug-17
A1220	Completion of Upstream C.D, Downstream CD & Int	0		15-Aug-17
South Dam		360	01-Apr-16	17-Aug-17
A1630	Excavate South Dam	24	01-Apr-16	28-Apr-16
A1640	South Dam Foundation Grouting	37	29-Apr-16	10-Jun-16
A1690	Construct South Dam to O.G	10	11-Jun-16	22-Jun-16
A1240	South Transition Dam Complete (By Others)- I3	0		01-Jun-17
A1460	Construct Remaining South Dam	67	01-Jun-17	17-Aug-17
A1250	Completion of South Dam- M5	0		17-Aug-17
Batch Plants and Concrete Production		531	15-Jul-15	27-Jul-17
A1720	Order/Procurement Period for RCC Plants	90	15-Jul-15	28-Oct-15
A1650	RCC Stage II Trial	60	10-Oct-15	19-Dec-15
A1600	Deliver RCC Plants	25	01-Mar-16	29-Mar-16
A1410	RCC Batch Plant 1 Setup	60	02-May-16	09-Jul-16
A1420	RCC Trial Demonstration	5	11-Jul-16	15-Jul-16
A1730	RCC Batch Plant 2 Setup	30	02-May-17	05-Jun-17
A1470	RCC Proof Demonstration	15	06-Jun-17	22-Jun-17
A1810	RCC Heating and Cooling Equipment Setup	45	06-Jun-17	27-Jul-17
North Dam		848	31-Jul-15	01-Nov-18



Remaining Level of Effort | Actual Work | Critical Remaining ...
Actual Level of Effort | Remaining Work | Milestone

Activity ID	Activity Name	Original Duration	Early Start	Early Finish
A1260	North Transition Dam Complete (By Others)	0		31-Jul-15
A1530	Clear and Grub North Abutment	10	06-Jul-17	17-Jul-17
A1540	River Bed Foundation Preparation	25	18-Jul-17	15-Aug-17
A1550	Excavate Overburden North Abutment	40	18-Jul-17	01-Sep-17
A1840	North Abutment Foundation Preparation	30	29-Jul-17	01-Sep-17
A1750	Pour Leveling/Dental Concrete (RCC Truck Method)	25	04-Aug-17	01-Sep-17
A1480	Place RCC El 37.29	125	02-Sep-17	25-Jul-18
A1780	F/P/S Flip Bucket	80	19-Oct-17	19-Jul-18
A1760	Grout Curtain from Inside Gallery	90	17-May-18	29-Aug-18
A1560	Drill Drain Holes from El 37.29	32	26-Jul-18	31-Aug-18
A1580	Place RCC EL 45.5	15	04-Aug-18	21-Aug-18
A1570	F/P/S Ogee Crest	60	18-Aug-18	26-Oct-18
A1660	Grout Curtain From El 45	15	22-Aug-18	07-Sep-18
A1770	Vertical Drain Holes from Inside Gallery	50	30-Aug-18	26-Oct-18
A1670	Crest Slab on North Abutment	8	08-Sep-18	17-Sep-18
A1790	F/P/S Gallery Floor	35	28-Sep-18	01-Nov-18
A1270	Completion of North Dam- M7	0		26-Oct-18
Rock Plug		363	07-Jun-17	26-Oct-18
A1490	Rock Plug Excavation-Dry	120	07-Jun-17	24-Oct-17
A1820	Rock Plug Excavation- Remainder	34	18-Sep-18	26-Oct-18
A1300	Powerhouse Ready for Tailrace Impoundment- I5	0		15-Oct-18
A1310	Tailrace Rock Plug Removed-M8	0		26-Oct-18
A1850	Flow Water Through Tailrace	0		26-Oct-18
Roads		47	28-Oct-15	31-Dec-15
A1710	Build C1 Access Road	25	28-Oct-15	26-Nov-15
A1320	Completion of the Construction Road to C1-M3	0		31-Dec-15



APPENDIX A17

RESPONSE TO BIDDER EXCEPTIONS

&

COMPANY IDENTIFIED ISSUES/CLARIFICATIONS

Category: Exhibits

Item	Reference	Description	Proposed Wording	Reason	Change in Price if exception is approved by Company		Company Response (date)
					Increase	Decrease	
1.	Exhibit 2 – General	Exhibit 2 should include a right of Contractor to renegotiate unit rates in the event of a material change in quantities, including a provision for additional time and reasonable compensation for performance.	See description.	Material changes in quantities will affect overall recovery of overheads and profits. It is commercially reasonable to re-price major items that have significant variances in quantities.	Significant contingencies will be added to the Contract Price if the Company does not accept this principle.		Covered under Commercial discussions
2.	Exhibit 12 - 2.1.1	This provision should be amended to reflect that any outage should be considered a Change. We have provided generators to run our key activities; however, fuel has not been included.	See description.	The Company should be responsible for impacts due to lost power.	Significant contingencies will be added to the Contract Price if the Company does not accept this principle.		Company confirms that Bidder shall make necessary provisions to limit impacts as stated in Exhibit 12 Sect. 2.1. Company agrees, however, to reimburse the actual cost of fuel consumed in the event of power outage. See Item 15 below.

Category: **TECHNICAL**

Reference	Description	Proposed Wording	Reason	Change in Price if exception is approved by Company		Company Response (date)
				Increase	Decrease	
1	Zone materials 1, 1A, 3, 3 Class 1-3, 3F 2E and 1A used to construct the upstream cofferdam will be paid for by the tonne.					Measurement of dumped rock fill Zone 3 and dumped large blocks, in water, will be measured from stockpile.
2	Barnard-Pennecon J.V. is assuming that major equipment can be purchased and reimbursed by the Company upon the LNTP date stated in Appendix 9.					Issue is withdrawn pending acceptance of revised payment schedule.
3	Barnard-Pennecon J.V. excludes removal of any upstream crane pads.					Crane pad and any temporary works must be removed from area downstream of North Dam.
4	Zones 2 and 3 materials will be crushed from material located in stockpile A, not GD-8.					This item is superseded by Item 2 of BPJV letter March 6, 2015. See Item 8 of **Company Identified Items** below.
5	Barnard-Pennecon J.V. has not accounted for any royalties or fees associated with mining and aggregate					Agreed

Reference	Description	Proposed Wording	Reason	Change in Price if exception is approved by Company		Company Response (date)
				Increase	Decrease	
6	All waste material generated will be hauled to Stockpile Area A.					Agreed
7	Barnard-Pennecon J.V. has assumed there will be no presplitting for underwater excavation.					Agreed
8	Barnard-Pennecon J.V. takes exception that leveling concrete is incidental to RCC and has added a unit price item to Appendix 2.1.					Agreed
9	Barnard-Pennecon J.V. has eliminated all GERCC against the upstream face and substituted it with facing concrete. See new bid item 136.1. The overall RCC bid quantity has been deducted accordingly. All other GERCC/GEVR required shall be paid according to Bid Item 136 by the liter.					Agreed
10	Bid Item 144, Precast Concrete, has been changed to Lump Sum.					Agreed

Reference	Description	Proposed Wording	Reason	Change in Price if exception is approved by Company		Company Response (date)
				Increase	Decrease	
11	Barnard-Pennecon J.V. has excluded HST from its bid per Exhibit A2 paragraph 10. We also have not included the .16 per liter for HST tax on fuel. We have included $.90 per liter.					Agreed
12	Barnard-Pennecon J.V. has not anticipated the need for the box culvert drainage tunnel below the North Dam.					Agreed
13	Barnard-Pennecon J.V. has not anticipated the need for jet grouting and has not included any time within our CPM schedule.					Agreed
14	Barnard-Pennecon J.V. excludes 3.1.9 of Exhibit 12 Fuel Supply. If Company's fuel supply is interrupted, additional cost incurred by J.V. will be reimbursed by Company.					As detailed in Exhibit 12, Section 3.0 (Fuel Station and Fuel Management), the Site's fuel supply is being provided by a third party supplier. Company is not responsible for the provision of fuel. Bidder must satisfy itself that on-site fuel storage and capacity is adequate for its needs.

Reference	Description	Proposed Wording	Reason	Change in Price if exception is approved by Company		Company Response (date)
				Increase	Decrease	
15	Barnard-Pennecon J.V. excludes any fuel required to power generators due to an interruption in power supply provided by Company.					Agreed. Also included above under Item 2. of the Exhibits Category.
16	Barnard-Pennecon J.V. excludes 4.0 e) of Exhibit 7, Offices for Engineer staff.					Agreed
17	Barnard-Pennecon J.V. has combined the Intake Cofferdam with our Temporary Bridge approach ramp. We are assuming that all materials used for this cofferdam/ramp will be paid for by the unit prices.					Agreed
18	Barnard-Pennecon J.V. assumes Company is providing all QA/QC testing.					Company operates a materials laboratory on site and will perform QC activities to validate that concrete and aggregates conform to technical specifications.

Reference	Description	Proposed Wording	Reason	Change in Price if exception is approved by Company		Company Response (date)
				Increase	Decrease	
19	Barnard-Pennecon J.V. reserves the right to renegotiate the mark-up percentages in Exhibit 2 Section 4.0 Reimbursable Work for significant changes in scope.					This item has been resolved during commercial discussions.
20	With regard to Scope of Work Doc. No. MFA-SN-CD-2000-CV-SP-0002-01 Section 3.8, Barnard-Pennecon J.V. takes exception to Item 3.8.1.2. In order to maintain the construction schedule, a 21-day turnaround time for Engineer's review of drawings (or other technical documentation) is not acceptable. A 10-day review turnaround time is required.					The turnaround time for Engineer's review of drawings will be 21 calendar days, as specified in Section 3.8 of the Scope of Work. However, Engineer will endeavor to reduce this duration where possible, and will prioritize the processing of documents identified by Contractor.
21	Barnard-Pennecon J.V. will not be responsible for any dewatering activities required in the Tailrace Channel during rock plug excavation in the dry.					Agreed

Reference	Description	Proposed Wording	Reason	Change in Price if exception is approved by Company		Company Response (date)
				Increase	Decrease	
22	Barnard-Pennecon J.V. excludes a source B for cement and fly ash for the purpose of this bid; however, we will provide a source B and price until after the Award of this Contract and after the supply contracts are negotiated with potential suppliers.					Agreed
23	Barnard-Pennecon J.V. has four (4) weather days scheduled per working month.					Acknowledged

Category: Company Identified Items

Item	Reference	Description June 3, 2015	Description June 10, 2015	Bidder Response (date)
1.	General	Provide confirmation of your proposed Project Team. Provide CV's for any key personnel not previously supplied.		An updated organization chart and CV have been included with this submission.
2.	General	Company requests that Bidder employ the "selection" method for Zone 3C material. Please identify corresponding cost savings.		3C material will be raked from the source. Pricing is reflected in updated Appendix A2.1
3.	General	Provide a unit rate (per M^3) for RCC Trial Test Sections		A unit rate has been provided under item 123A in Appendix A2.1
4.	General	Please confirm that the unit rate (per M^3) provided for Leveling Concrete, applies to actual measured quantities in place and includes any associated formwork.		Confirmed
5.	Bidder's Execution Plan	The Transmission Line ROW is not available for use by Contractor for any purpose.		Acknowledged

Item	Reference	Description June 3, 2015	Description June 10, 2015	Bidder Response (date)
6.	Bidder's Execution Plan	Bidder indicates use of a bedding mix on warm joints. Bidder will be required to demonstrate this method in accordance with Specification 03 37 23 (RCC) Section 4.2.1.8		Acknowledged
7.	Bidder's Execution Plan	Bidder Document C-010 indicates ramp to the permanent downstream bridge. Company notes that access to this bridge will not be free and clear. Access will be subject to coordination with other entities.		Bidder acknowledges that bridge will not be free and clear but as this is our only access to the downstream side of the dam it is critical to the success of the project that the bridge is complete and can be utilized for construction of the project.

Item	Reference	Description June 3, 2015	Description June 10, 2015	Bidder Response (date)
8.	Bidder letter (March 6, 2015) Value/Engineering & Cost Savings	Item 1. is accepted in principle. Item 2. is accepted in principle. Company notes that screening of filter material from GD8 may be required to meet the specification. Please identify the credit (included in the $2.7M) resulting from filter material selection from GD8 in lieu of crushing. Item 3. is accepted provided equipment is mobilized (risk reduction) Item 4. Is accepted. Item 5. is still under review.	Item 3. – Jet Grouting is now considered Optional. All equipment, materials and operators will only be mobilized on an as-required basis. Please remove all Jet Grouting items from Schedule A2.1. and provide Optional pricing should this activity be necessary. In addition, identify the mobilization period required.	Item 3.- Jet Grouting has been priced out as an optional Item. The Jet Grouting subcontractor will require approximately 4 months' notice to complete submittals and mobilize to the site. If we are unable to advance the critical path during the 4 month submittal and mobilization process and during the Jet Grouting, potentially 3 months, then a potential 7 month delay could occur. Barnard-Pennecon has made no adjustment to price to account for extending the duration of the project due to jet grouting and if required, we will require compensation for project staff and other overhead items that are impacted. In order to minimize the impact in the event jet grouting is required Item 155, Jet Grouting Mobilization and Demobilization, should be required.

Item	Reference	Description June 3, 2015	Description June 10, 2015	Bidder Response (date)
9.	Telecon June 4, 2015		The (temporary) upper access road to C1 should now be proposed as an Option. The specification and quantities for the permanent roads and the temporary road have been changed and will be issued by June 10. The culvert specification has also changed. Appendix A2.1 to be updated to remove Class B and C materials. These will no longer be used based on updated road specification referred to above.	Acknowledged

Item	Reference	Description June 3, 2015	Description June 10, 2015	Bidder Response (date)
10.	Telecon June 4, 2015		Company to provide Bidder with cement and fly ash rates to be utilized in Bidder's revised pricing. Company to propose a formula to be used for updating these rates post award and following confirmation of the mix design. Bidder to proceed with mix design activities after contract award, on an agreed basis of compensation.	BPJV has used $380/tonne in our bid for cement and fly ash FOB onsite silos. Any increase in material or delivery price shall be reimbursed by the Owner. In the event of a decrease in price then BPJV will provide a credit. BPJV has used 70 tonnes/CM of cement and 135 tonnes/CM of Flyash for the bid RCC mix design. Any increase in quantities of cement or fly ash used in final mix design shall be reimbursed by the Owner. In the event of a decrease in quantity then BPJV will provide a credit. An allowance item shall be set up upon contract award and BPJV will reconcile the cement/flyash price and quantity differences on a monthly basis on the pay applications.
11.	Telecon June 4, 2015		In event Laydown Area A cannot fulfill needs, provide optional pricing for drilling and blasting at Quarry 5 for up to 50,000 m^3 of rock fill.	A unit rate has been provided under in Appendix A2.1

Item	Reference	Description June 3, 2015	Description June 10, 2015	Bidder Response (date)
12.	Telecon June 4, 2015		Although it is expected that the upstream cofferdam size has been reduced, no quantity adjustments need to be considered at this time. The successful Bidder will participate in post award value engineering discussions to review the upstream cofferdam as well as other structures.	Acknowledged
13.	Telecon June 4, 2015		WRT the delayed river closure option, Company suggested Bidder use two or more time windows during which Company can exercise its option to delay river closure by one season. Cost/schedule/execution impacts would then relate to these time windows.	BPJV expects Nalcor to provide notice by December 31, 2015 as to whether the spillway will be complete by July 15, 2016.

Item	Reference	Description June 3, 2015	Description June 10, 2015	Bidder Response (date)
14.	Telecon June 9, 2015		Company confirmed that the transmission line ROW is not available for any purpose. Alternative areas were discussed. Company will check environmental acceptability/requirements for raising the elevation of Area G above El. 26 and the expansion of Area J which may result in materials entering the river.	Acknowledged
15.	Telecon June 9, 2015		Bidder indicated that although it would take responsibility for the RCC concrete mix design, Company still has the responsibility for the placement specification wrt temperature control. Company agrees that it will confirm the RCC placement temperature range and joint spacing based on its review of the RCC mix design.	Acknowledged

Item	Reference	Description June 3, 2015	Description June 10, 2015	Bidder Response (date)
16.	Telecon June 9, 2015		As a clarification related to the delayed river closure option, the Spillway and other items necessary to begin river closure will be completed in advance of 01-June-17. Accordingly, environmental conditions will dictate the start of river closure operations.	Acknowledged
17.	Telecon June 9, 2015		Company will provide: 1. Photos of Quarry 5 by Jun 12. 2. Updated topographical and quantity information for stockpile A by Jun 10. 3. Revised road and culvert specs by Jun 10.	Received
18.	General		As an Option, please provide the credit to Company for Bidder to take over the ownership of the upstream temporary bridge after its removal.	Pricing has been adjusted to reflect this change
19.	Facing Concrete to be measured and paid by the CM placed. **Measured by the batch ticket quantity**			

Item	Reference	Description June 3, 2015	Description June 10, 2015	Bidder Response (date)
60020.	Exhibit 2 Section 9- Liquidated Damages, has been deleted.	Exhibit 2 will be redlined and provided to Nalcor at a later date.		
21.	Staff Travel expenses have been included in Bid Item 003, craft travel expenses are excluded.			
22.	We have removed the tailrace bridge per Nalcor's direction.			
23.	Labor rates for craft labor have not been escalated beyond May 2018 as they were not part of the current labor agreement provided.	Any work performed beyond May 2018 that is subject to escalation shall be reimbursed at actual cost.		

Item	Reference	Description June 3, 2015	Description June 10, 2015	Bidder Response (date)
24.	BPJV had requested but has not received a copy of the Builders Risk policy that will be provided by the Owner.			
25.	In addition to the two power drops for the Crusher and RCC Batch plant, BPJV will need an addition 600 volt service located at laydown area J.			
26.	All craft labor cost associated with the SPO Labor agreement shall be reimbursable including but not limited to: direct labor, burdens, meal premiums, holiday premiums, shift premiums, etc.			

Item	Reference	Description June 3, 2015	Description June 10, 2015	Bidder Response (date)
27.	Facing test section has been deleted			
28.	Milestones dates in Exhibit 9 to be mutually agreed upon prior to award.			