

From: kenmcclintock@lowerchurchillproject.ca
Sent: Thursday, July 9, 2015 9:02 AM
To: johnmulcahy@lowerchurchillproject.ca; edover@lowerchurchillproject.ca
Subject: Fw: LCP CH0009 - Response to Items Discussed on July 7th Conference Call

Attachments: 1. Revised Pricing Schedule A2.1 - Option 1 - Diversion in 2016.xlsx; 5. Revised Pricing Schedule A2.1 - Option 2 - Diversion in 2017.xlsx; CH0009 O'Connell-Dragados Response - Jul 8, 2015.docx; CH0009 O'Connell-Dragados Response - Jul 8, 2015.pdf; Grab for CAT390 Excavator.jpg; RCC Bridge Abutment July 7 Rev 1.pdf; US DS Access MFA-SN-CD-2340-CV-PL-0005-01.jpg

Gents

Please review and provide your comments as soon as possible. I will be in Halifax tomorrow but we should plan to talk.

How about noon Halifax time?

Cheers

Ken

Ken McClintock
Consultant
PROJECT DELIVERY TEAM
Lower Churchill Project
t. 902 802-1206

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You owe it to yourself, and your family, to make it home safely every day. What have you done today so that nobody gets hurt?

----- Forwarded by Ken McClintock/NLHydro on 07/09/2015 08:58 AM -----

From:

Nolan Jenkins <NJenkins@hjoc.com>

To:

"EdOver@lowerchurchillproject.ca" <EdOver@lowerchurchillproject.ca>, "ken.mcclintock@lowerchurchillproject.ca" <ken.mcclintock@lowerchurchillproject.ca>,

Cc:

Leonard Knox <LKnox@hjoc.com>, Jim Brennan <jbrennan@hjoc.com>, "Don Strickland" <don.strickland@bird.ca>, "Botero, Jose Daniel" <jbotero@dragados-canada.com>, "Hirji, Mahmoud" <MHirji@Dragados-Canada.com>, "Ibanez-de-Aldecoa, Rafael" <ribanez@Dragados-USA.com>

Date:

07/09/2015 12:12 AM

Subject:

LCP CH0009 - Response to Items Discussed on July 7th Conference Call

Ed / Ken:

Please see attached response to the outstanding action items raised on our call on the 7th along with revised / updated supporting documentation.

Any questions please don't hesitate to contact me.

Regards,

Nolan

Nolan Jenkins, P.Eng., PQS

VP, Strategic Development and Aboriginal Affairs

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2016.xlsx

- Diversion in 2017.xlsx

Jul 8, 2015.docx

2015.pdf



Abutment July 7 Rev 1.pdf

DS Access MFA-SN-CD-2340-CV-PL-0005-01.jpg



Grab for CAT390 Excavator.jpg



1. Revised Pricing Schedule A2.1 - Option 1 - Diversion in

5. Revised Pricing Schedule A2.1 - Option 2

CH0009 O'Connell-Dragados Response -

CH0009 O'Connell-Dragados Response - Jul 8,



RCC Bridge

US

ISSUED FOR: BID

DATE: 6 - Jun - 2015

BIDDER'S NAME: H.J. O'Connell Construction Ltd - Dragados Canada Inc Joint Venture

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT (\$ CAN) B	MATERIALS COST/UNIT (\$ CAN) C	EQUIPMENT COST/UNIT (\$ CAN) D	PROFIT COST/UNIT (\$ CAN) E	UNIT PRICE (\$ CAN) F= (B+C+D+E)	TOTAL PRICE (\$ CAN) G= A x F
No	REFERENCE Exhibit 2 - ATT 1	CODE	SUBCODE										
				Excavation									
55	4.3.1		2343.01	Overburden excavation	m ³	8,800	0.06	\$ 6.58	\$ -	\$ 7.92	\$ -	\$ 14.50	\$ 127,600.00
				Foundation Preparation									
56	4.3.2		2343.02	Foundation cleaning (water/ait jets and Vacuum trucks)	m ²	1,700	0.90	\$ 96.73	\$ -	\$ 18.27	\$ -	\$ 115.00	\$ 195,500.00
57	4.3.3		2343.03	Rock excavation including dental excavation and scaling	m ³	700	1.11	\$ 117.13	\$ 24.83	\$ 95.04	\$ -	\$ 237.00	\$ 165,900.00
58	4.3.4		2343.04	Dental Concrete	m ³	250	1.90	\$ 197.95	\$ 482.45	\$ 19.60	\$ -	\$ 700.00	\$ 175,000.00
59	4.3.5		2343.05	Slush Grout	m ²	1,700	0.20	\$ 21.17	\$ 8.49	\$ 0.83	\$ -	\$ 30.50	\$ 51,850.00
60	4.3.6		2343.06	Dry Pack	m ³	9	50.00	\$ 5,499.90	\$ 1,283.69	\$ 216.41	\$ -	\$ 7,000.00	\$ 63,000.00
				Embankment Materials									
61	4.3.7		2343.07	Compacted Till - Zones 1 and 1C	m ³	6,300	0.29	\$ 30.49	\$ 2.02	\$ 38.49	\$ -	\$ 71.00	\$ 447,300.00
62	4.3.8		2343.08	Compacted Granular - Zone 2C	m ³	4,900	0.31	\$ 35.17	\$ 1.00	\$ 49.33	\$ -	\$ 85.50	\$ 418,950.00
63	4.3.9		2343.09	Compacted Rockfill - Zone 3C	m ³	5,200	0.19	\$ 20.69	\$ 2.02	\$ 24.79	\$ -	\$ 47.50	\$ 247,000.00
64	4.3.10		2343.10	Compacted Rockfill - Zone 3D	m ³	1,400	0.19	\$ 20.69	\$ 2.02	\$ 24.79	\$ -	\$ 47.50	\$ 66,500.00
SUB-TOTAL INTAKE CHANNEL COFFERDAM													\$ 1,958,600.00
				SOUTH DAM									
				CIVIL WORK									
				Excavation									
65	4.4.1		2330.01	Overburden excavation	m ³	94,000	0.06	\$ 6.41	\$ -	\$ 7.59	\$ -	\$ 14.00	\$ 1,316,000.00
				Foundation Preparation									
66	4.4.2		2330.02	Foundation cleaning (water/ait jets and Vacuum trucks)	m ²	3,400	0.90	\$ 103.97	\$ -	\$ 16.03	\$ -	\$ 120.00	\$ 408,000.00
67	4.4.3		2330.03	Rock excavation including dental excavation and scaling	m ³	2,000	1.11	\$ 117.90	\$ 24.67	\$ 94.43	\$ -	\$ 237.00	\$ 474,000.00
68	4.4.4		2330.04	Dental Concrete	m ³	1,200	1.92	\$ 203.98	\$ 475.66	\$ 20.36	\$ -	\$ 700.00	\$ 840,000.00
69	4.4.5		2330.05	Slush Grout	m ²	3,400	0.20	\$ 21.40	\$ 8.29	\$ 0.81	\$ -	\$ 30.50	\$ 103,700.00
70	4.4.6		2330.06	Dry Pack	m ³	20	50.00	\$ 5,541.23	\$ 1,248.33	\$ 210.45	\$ -	\$ 7,000.00	\$ 140,000.00
71	4.4.7		2330.07	Drilling Holes for Grouting	m	1,200	0.70	\$ 96.00	\$ -	\$ 24.00	\$ -	\$ 120.00	\$ 144,000.00
72	4.4.8		2330.08	Dry cement incorporated in the grout	kg	42,000	0.04	\$ 3.69	\$ 1.54	\$ 0.92	\$ -	\$ 6.15	\$ 258,300.00
73	4.4.9		2330.09	Cored Drill Check Holes	m	30	1.79	\$ 482.55	\$ -	\$ 82.45	\$ -	\$ 565.00	\$ 16,950.00
74	4.4.10		2330.10	Percussion Drilling Check holes	m	60	0.80	\$ 92.00	\$ -	\$ 23.00	\$ -	\$ 115.00	\$ 6,900.00
75	4.4.11		2330.11	Grouting - Successful connections	unit	250	2.93	\$ 369.03	\$ -	\$ 30.97	\$ -	\$ 400.00	\$ 100,000.00
76	4.4.12		2330.12	Water pressure test (Lugeon - 5 Stages)	hour	8	3.00	\$ 412.50	\$ -	\$ 212.50	\$ -	\$ 625.00	\$ 5,000.00
77	4.4.13		2330.13	Water test - Successful connections	unit	18	1.33	\$ 181.50	\$ -	\$ 93.50	\$ -	\$ 275.00	\$ 4,950.00
78	4.4.14		2330.14	Uplift gauges	m	20	2.40	\$ 292.50	\$ 210.60	\$ 81.90	\$ -	\$ 585.00	\$ 11,700.00
79	4.4.15		2330.15	Thermistors (measure rock temperature in grout holes)	unit	1	48.00	\$ -	\$ 7,360.00	\$ 4,140.00	\$ -	\$ 11,500.00	\$ 11,500.00
				Embankment Materials									
80	4.4.16		2330.16	Compacted Till - Zones 1 and 1C	m ³	26,000	0.22	\$ 23.98	\$ -	\$ 30.02	\$ -	\$ 54.00	\$ 1,404,000.00
81	4.4.17		2330.17	Compacted Granular - Zone 2A	m ³	28,000	0.24	\$ 24.49	\$ -	\$ 30.51	\$ -	\$ 55.00	\$ 1,540,000.00
82	4.4.18		2330.18	Compacted Crushed Stone - Zone 3A	m ³	12,000	0.30	\$ 33.08	\$ 0.27	\$ 32.64	\$ -	\$ 66.00	\$ 792,000.00
83	4.4.19		2330.19	Compacted Crushed Stone - Zone 3B	m ³	16,000	0.30	\$ 32.83	\$ 0.27	\$ 31.90	\$ -	\$ 65.00	\$ 1,040,000.00
84	4.4.20		2330.20	Compacted Rockfill - Zone 3C	m ³	21,000	0.09	\$ 10.24	\$ -	\$ 11.76	\$ -	\$ 22.00	\$ 462,000.00
85	4.4.21		2330.21	Compacted Rockfill - Zone 3D	m ³	46,000	0.09	\$ 10.24	\$ -	\$ 11.76	\$ -	\$ 22.00	\$ 1,012,000.00

LOWER CHURCHILL PROJECT MUSKRAT FALLS CH0009 - CONSTRUCTION OF NORTH AND SOUTH DAMS				CIMFP Exhibit P-02853 SCHEDULE OF PRICE BREAKDOWN - For River Diversion in 2016							APPENDIX A2.1 Page 7		
				ISSUED FOR: BID				DATE: 6 - Jun - 2015			BIDDER'S NAME: H.J. O'Connell Construction Ltd - Dragados Canada Inc Joint Venture		
PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT (\$ CAN) B	MATERIALS COST/UNIT (\$ CAN) C	EQUIPMENT COST/UNIT (\$ CAN) D	PROFIT COST/UNIT (\$ CAN) E	UNIT PRICE (\$ CAN) F= (B+C+D+E)	TOTAL PRICE (\$ CAN) G= A x F
No	REFERENCE Exhibit 2 - ATT 1	CODE	SUBCODE										
86	4.4.22		2330.22	Riprap - Zone 4	m ³	6,000	0.18	\$ 20.46	\$ -	\$ 28.54	\$ -	\$ 49.00	\$ 294,000.00
87	4.4.23		2330.23	Compacted Crushed Stone - Zone 5	m ³	310	0.32	\$ 37.19	\$ 0.28	\$ 38.53	\$ -	\$ 76.00	\$ 23,560.00
88	4.4.24		2330.24	Jersey Barrier	m	600	0.65	\$ 74.31	\$ 90.41	\$ 25.29	\$ -	\$ 190.00	\$ 114,000.00
				Geotechnical Instrumentation									
89	4.4.25		2330.25	V-Notch Weirs, excluding Shelters	unit	2	67.75	\$ 7,584.94	\$ 3,566.55	\$ 348.52	\$ -	\$ 11,500.00	\$ 23,000.00
90	4.4.26		2330.26	Shelters for V-Notch Weirs	unit	2	33.30	\$ 3,831.62	\$ 1,538.93	\$ 254.46	\$ -	\$ 5,625.00	\$ 11,250.00
91	4.4.27		2330.27	Survey Monuments at South Dam Crest	unit	3	5.33	\$ 583.64	\$ 340.89	\$ 25.47	\$ -	\$ 950.00	\$ 2,850.00
				SUB-TOTAL SOUTH DAM									\$ 10,559,660.00
4.5				2320	NORTH DAM								
					CIVIL WORK								
					Clearing								
92	4.5.1		2320.01	Clearing of the North Abutment	Ha	3	74.67	\$ 20,218.82	\$ -	\$ 26,781.18	\$ -	\$ 47,000.00	\$ 141,000.00
					Excavation								
93	4.5.2		2320.02	Overburden Excavation	m ³	72,000	0.08	\$ 9.03	\$ -	\$ 10.97	\$ -	\$ 20.00	\$ 1,440,000.00
					Foundation Preparation								
94	4.5.3		2320.03	Foundation Cleaning (water/air jets and vacuum)	m ²	13,500	1.50	\$ 161.40	\$ -	\$ 28.60	\$ -	\$ 190.00	\$ 2,565,000.00
95	4.5.4		2320.04	Rock Excavation including Dental Excavation and Scaling	m ³	6,000	1.34	\$ 131.66	\$ 22.86	\$ 102.48	\$ -	\$ 257.00	\$ 1,542,000.00
96	4.5.5		2320.05	Dental Concrete	m ³	4,000	1.92	\$ 198.91	\$ 480.52	\$ 20.56	\$ -	\$ 700.00	\$ 2,800,000.00
97	4.5.6		2320.06	Slush Grout	m ²	13,500	0.20	\$ 21.11	\$ 8.44	\$ 0.95	\$ -	\$ 30.50	\$ 411,750.00
98	4.5.7		2320.07	Dry Pack	m ³	70	50.00	\$ 5,478.32	\$ 1,274.56	\$ 247.12	\$ -	\$ 7,000.00	\$ 490,000.00
99	4.5.8		2320.08	Drilling Holes in RCC and Bedrock for Grouting	m	4,200	1.39	\$ 220.00	\$ -	\$ 55.00	\$ -	\$ 275.00	\$ 1,155,000.00
100	4.5.9		2320.09	Grouting - Successful Connections	unit	720	2.43	\$ 331.96	\$ 30.90	\$ 37.15	\$ -	\$ 400.00	\$ 288,000.00
101	4.5.10		2320.10	Dry Cement incorporated in the grout	kg	126,000	0.01	\$ 4.00	\$ -	\$ 0.71	\$ -	\$ 4.70	\$ 592,200.00
102	4.5.11		2320.11	Cored Drill Check Holes	m	60	1.80	\$ 268.00	\$ -	\$ 67.00	\$ -	\$ 335.00	\$ 20,100.00
103	4.5.12		2320.12	Percussion Drilling Check Holes	m	120	1.40	\$ 220.50	\$ -	\$ 24.50	\$ -	\$ 245.00	\$ 29,400.00
104	4.5.13		2320.13	Water pressure test (lugeon - 5 Stages)	hour	15	3.20	\$ 382.80	\$ -	\$ 197.20	\$ -	\$ 580.00	\$ 8,700.00
105	4.5.14		2320.14	Water Pressure Test - Successful connections	unit	36	1.33	\$ 161.70	\$ -	\$ 83.30	\$ -	\$ 245.00	\$ 8,820.00
106	4.5.15		2320.15	Uplift gauges	m	60	1.80	\$ 292.50	\$ 210.60	\$ 81.90	\$ -	\$ 585.00	\$ 35,100.00
107	4.5.16		2320.16	Thermistor (measure temperature in grout holes)	unit	1	48.00	\$ -	\$ 7,360.00	\$ 4,140.00	\$ -	\$ 11,500.00	\$ 11,500.00
					Drainage Holes								
108	4.5.17		2320.17	Drilling Holes for Drainage in Foundation from Drainage Gallery, Φ76 mm	m	3,200	1.44	\$ 278.80	\$ -	\$ 61.20	\$ -	\$ 340.00	\$ 1,088,000.00
109	4.5.18		2320.18	PVC Caps for Drainage Holes	unit	125	0.00	\$ -	\$ 32.00	\$ -	\$ -	\$ 32.00	\$ 4,000.00
110	4.5.19		2320.19	Drilling Holes Upward for Drainage from Drainage Gallery into RCC, Φ76 mm	m	3,200	1.74	\$ 388.56	\$ 3.58	\$ 72.86	\$ -	\$ 465.00	\$ 1,488,000.00
					Instrumentation								
111	4.5.20		2320.20	Drilling Holes for piezometers	m	100	1.02	\$ 115.94	\$ 18.41	\$ 15.65	\$ -	\$ 150.00	\$ 15,000.00
112	4.5.21		2320.21	Vibrating Wire and Standpipe Piezometers TYPE - 1, excluding Cables	unit	8	34.00	\$ 3,450.00	\$ 2,300.00	\$ -	\$ -	\$ 5,750.00	\$ 46,000.00
113	4.5.22		2320.22	Vibrating Wire and Standpipe Piezometers TYPE - 2, excluding Cables	unit	2	34.00	\$ 3,450.00	\$ 2,300.00	\$ -	\$ -	\$ 5,750.00	\$ 11,500.00
114	4.5.23		2320.23	Instrument Cable including PVC Conduits and Pull Boxes	m	2,700	0.15	\$ 20.13	\$ -	\$ 37.38	\$ -	\$ 57.50	\$ 155,250.00
115	4.5.24		2320.24	Thermistors Cable in RCC	unit	8	25.00	\$ 2,250.00	\$ 2,250.00	\$ -	\$ -	\$ 4,500.00	\$ 36,000.00
116	4.5.25		2320.25	V-notch Weirs	unit	4	114.01	\$ 12,521.95	\$ 3,511.62	\$ 1,466.43	\$ -	\$ 17,500.00	\$ 70,000.00
117	4.5.26		2320.26	Vibrating Wire Weir Monitors.	unit	4	25.00	\$ 1,437.50	\$ -	\$ 4,312.50	\$ -	\$ 5,750.00	\$ 23,000.00
118	4.5.27		2320.27	Data logger, Terminal Box, Barometer Box including Grounding	LS	1	225.00	\$ 11,400.00	\$ 45,600.00	\$ -	\$ -	\$ 57,000.00	\$ 57,000.00

LOWER CHURCHILL PROJECT MUSKRAT FALLS CH0009 - CONSTRUCTION OF NORTH AND SOUTH DAMS				CIMFP Exhibit P-02853 SCHEDULE OF PRICE BREAKDOWN - For River Diversion in 2016							APPENDIX A2.1		Page 8	
				ISSUED FOR: BID				DATE: 6 - Jun - 2015			BIDDER'S NAME: H.J. O'Connell Construction Ltd - Dragados Canada Inc Joint Venture			
PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT (\$ CAN) B	MATERIALS COST/UNIT (\$ CAN) C	EQUIPMENT COST/UNIT (\$ CAN) D	PROFIT COST/UNIT (\$ CAN) E	UNIT PRICE (\$ CAN) F= (B+C+D+E)	TOTAL PRICE (\$ CAN) G= A x F	
No	REFERENCE Exhibit 2 - ATT 1	CODE	SUBCODE											
119	4.5.28		2320.28	Crest Survey Monuments	unit	4	6.80	\$ 746.36	\$ 340.51	\$ 38.14	\$ -	\$ 1,125.00	\$ 4,500.00	
Concrete and RCC operations														
120	4.5.29		2320.29	Roller Compacted Concrete (RCC)	m ³	210,000	1.59	\$ 184.17	\$ 116.09	\$ 74.73	\$ -	\$ 375.00	\$ 78,750,000.00	
	4.5.29a			RCC Coarse Aggregates (Rate Only)	Tonne							\$ 15.25		
	4.5.29b			RCC Fine Aggregates (Rate Only)	Tonne							\$ 15.25		
121	4.5.30		2320.30	Conventional Vibrated Concrete (CVC) (Crest and Flip Bucket)	m ³	11,100	7.85	\$ 902.63	\$ 348.33	\$ 249.04	\$ -	\$ 1,500.00	\$ 16,650,000.00	
122	4.5.31		2320.31	Facing Concrete	m ³	8,600	5.79	\$ 604.55	\$ 192.27	\$ 203.18	\$ -	\$ 1,000.00	\$ 8,600,000.00	
123	4.5.32		2320.32	GERCC or GEVR - Formed Faces	m ³	4,650	4.36	\$ 462.24	\$ 124.71	\$ 213.05	\$ -	\$ 800.00	\$ 3,720,000.00	
124	4.5.33		2320.33	Conventional Vibrated Concrete (North Abutment Crest Surface and Training Wall)	m ³	270	7.91	\$ 853.80	\$ 294.14	\$ 152.06	\$ -	\$ 1,300.00	\$ 351,000.00	
125	4.5.34		2320.34	Increase or decrease in quantity of cement - Bid Mix (rate only)	Kg	N/A					\$ -	\$ 0.38		
126	4.5.35		2320.35	Increase or decrease in quantity of flyash - Bid Mix (rate only)	Kg	N/A					\$ -	\$ 0.38		
127	4.5.36		2320.36	Increase or decrease in quantity of cement - Source B (rate only)	Kg	N/A					\$ -	\$ -		
128	4.5.37		2320.37	Increase or decrease in quantity of flyash - Source B (rate only)	Kg	N/A					\$ -	\$ -		
129	4.5.38		2320.38	Air-entraining Admixture	litre	315,000	0.00	\$ -	\$ 1.30	\$ -	\$ -	\$ 1.30	\$ 409,500.00	
130	4.5.39		2320.39	Retarder Admixture	litre	336,000	0.00	\$ -	\$ 1.75	\$ -	\$ -	\$ 1.75	\$ 588,000.00	
131	4.5.40		2320.40	Precast Concrete	m ³	1,150	2.75	\$ 286.85	\$ 1,658.55	\$ 104.60	\$ -	\$ 2,050.00	\$ 2,357,500.00	
132	4.5.41		2320.41	Gallery Floor CVC Concrete	m ³	275	15.30	\$ 1,734.80	\$ 346.20	\$ 269.00	\$ -	\$ 2,350.00	\$ 646,250.00	
133	4.5.42		2320.42	Steel Reinforcement	kg	500,000	0.02	\$ 4.76	\$ 2.67	\$ 0.37	\$ -	\$ 7.80	\$ 3,900,000.00	
134	4.5.43		2320.43	Steel Guardrails	kg	5,200	0.30	\$ 34.47	\$ 6.25	\$ 2.03	\$ -	\$ 42.75	\$ 222,300.00	
135	4.5.44		2320.44	Waterstop	m	1,350	1.50	\$ 168.85	\$ 21.15	\$ -	\$ -	\$ 190.00	\$ 256,500.00	
	4.6		2370	NORTH DAM - Auxiliary Services										
ELECTRICAL WORK														
136	4.6.1		2370.01	Exothermic Connections.	unit	20	8.00	\$ 862.50	\$ 287.50	\$ -	\$ -	\$ 1,150.00	\$ 23,000.00	
137	4.6.2		2370.02	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	815	0.85	\$ 92.00	\$ 23.00	\$ -	\$ -	\$ 115.00	\$ 93,725.00	
138	4.6.3		2370.03	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	16	0.80	\$ 92.00	\$ 23.00	\$ -	\$ -	\$ 115.00	\$ 1,840.00	
139	4.6.4		2370.04	Embedded Copper Grounding Plates	unit	7	0.30	\$ 34.50	\$ 310.50	\$ -	\$ -	\$ 345.00	\$ 2,415.00	
SUB-TOTAL NORTH DAM													\$ 131,108,850.00	
	5	3100		Powerhouse Channels										
	5.1		3120.00	Tailrace										
CIVIL WORK														
Tailrace Rock Plug - Overburden Excavation														
140	5.1.1		3120.01	Overburden Excavation, excluding excavation of Cofferdam 3 - Dry Conditions	m ³	12,000	0.08	\$ 8.60	\$ -	\$ 10.15	\$ -	\$ 18.75	\$ 225,000.00	
Tailrace Rock Plug - Rock Excavation														
141	5.1.2		3120.02	Tailrace Rock Plug Excavation including access ramp to powerhouse -Dry Conditions	m ³	170,000	0.11	\$ 16.25	\$ 3.66	\$ 16.84	\$ -	\$ 36.75	\$ 6,247,500.00	
142	5.1.3		3120.03	Tailrace Rock Plug - Underwater Excavation	m ³	34,000	0.40	\$ 42.93	\$ 22.17	\$ 39.89	\$ -	\$ 105.00	\$ 3,570,000.00	
Tailrace Rock Plug - Stabilization and Rock Surface Protection														
143	5.1.4		3120.04	Grouted Rock Bolts Type A	unit	70	19.20	\$ 2,112.36	\$ 1,033.12	\$ 454.52	\$ -	\$ 3,600.00	\$ 252,000.00	
144	5.1.5		3120.05	Grouted Rock Bolts Type C	unit	20	35.20	\$ 3,862.78	\$ 1,909.30	\$ 827.92	\$ -	\$ 6,600.00	\$ 132,000.00	
145	5.1.6		3120.06	Chain Link Wire Mesh - Installation	m ²	2,500	0.25	\$ 27.36	\$ 14.98	\$ 5.92	\$ -	\$ 48.25	\$ 120,625.00	
146	5.1.7		3120.07	Chain Link Wire Mesh - Removal	m ²	20,300	0.05	\$ 5.58	\$ -	\$ 1.92	\$ -	\$ 7.50	\$ 152,250.00	
147	5.1.8		3120.08	Existing Temporary Safety Fence - Removal	m	1,200	0.39	\$ 43.17	\$ -	\$ 14.83	\$ -	\$ 58.00	\$ 69,600.00	

ISSUED FOR: BID

DATE: 6 - Jun - 2015

BIDDER'S NAME: H.J. O'Connell Construction Ltd - Dragados Canada Inc Joint Venture

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT (\$ CAN) B	MATERIALS COST/UNIT (\$ CAN) C	EQUIPMENT COST/UNIT (\$ CAN) D	PROFIT COST/UNIT (\$ CAN) E	UNIT PRICE (\$ CAN) F= (B+C+D+E)	TOTAL PRICE (\$ CAN) G= A x F	
No	REFERENCE Exhibit 2 - ATT 1	CODE	SUBCODE											
SUB-TOTAL TAILRACE														\$ 10,768,975.00
6		1100		Borrow Areas										
6.1		1117.00		Borrowed Construction Material										
148	6.1.1		1117.01	Overhaul of Borrowed Construction Material (rate only)	m3/km	N/A						\$ 1.50		
ROW A	CALCULATED TOTAL OF LUMP SUM AND UNIT PRICE ITEMS (BASED ON APPROXIMATE QUANTITIES)												\$ 284,887,190.00	
7		1100		Optional Pricing for Temporary Access Road and Quarry										
7.1		1113		ACCESS ROAD TO LAYDOWN AREA C1, If required										
149	7.1.1		1113.01	Other Material or Rockfill	m³	28,000	0.05	\$ 4.75	\$ -	\$ 6.50	\$ -	\$ 11.25	\$ 315,000.00	
150	7.1.2		1113.02	Maintenance Grade No 3	m³	4,000	0.19	\$ 17.52	\$ 0.27	\$ 18.21	\$ -	\$ 36.00	\$ 144,000.00	
7.2		1118		Quarry Q5										
151	7.2.1		1118.01	Production of blasted rockfill from the quarry Q5	m³	50,000	0.05	\$ 2.90	\$ 1.30	\$ 2.00	\$ -	\$ 6.20	\$ 310,000.00	
8		2300		Optional Pricing for Temporary Access Road and Quarry										
8.1		2340		UPSTREAM COFFERDAM - Cut Off Wall										
				Jet Grouting cut off wall, If required										
152	8.1.1		2341.01	Mobilization and demobilization	LS	1	2,342	\$ 402,500.00	\$ 39,000.00	\$ 753,500.00	\$ -	\$ 1,195,000.00	\$ 1,195,000.00	
153	8.1.2		2341.02	Drilling Holes for Jet Grouting in embankment, river sediments and bedrock	m	9,600	0.56	\$ 81.50	\$ 5.20	\$ 63.30	\$ -	\$ 150.00	\$ 1,440,000.00	
154	8.1.3		2341.03	Jet Grouted Cut-off wall	m²	2,800	1.55	\$ 200.00	\$ 596.00	\$ 354.00	\$ -	\$ 1,150.00	\$ 3,220,000.00	
				Bedrock Grouting beneath the Jet Grouted Cut-off Wall, if required										
155	8.1.4		2341.04	Drilling Holes for Grouting in embankment , jet grouting cut-off wall and bedrock, if required	m	1,300	0.05	\$ 5.70	\$ -	\$ 17.05	\$ -	\$ 22.75	\$ 29,575.00	
156	8.1.5		2341.05	Dry cement incorporated in the grout, if required	kg	11,000	0.03	\$ 3.30	\$ 1.25	\$ 0.70	\$ -	\$ 5.25	\$ 57,750.00	
157	8.1.6		2341.06	Grouting - Succesful connections, if required	unit	60	2.50	\$ 308.00	\$ -	\$ 462.00	\$ -	\$ 770.00	\$ 46,200.00	
				Investigation for Jet Grouted Cut-off Wall and Bedrock Grouting										
158	4.1.20		2341.07	Percussion Drill Holes in embankments, river sediments and bedrock	m	1,000	0.25	\$ 32.20	\$ -	\$ 82.80	\$ -	\$ 115.00	\$ 115,000.00	
159	4.1.21		2341.08	Verification Core Drilling in jet grouting cut-off wall and bedrock	m	200	0.72	\$ 93.00	\$ 13.95	\$ 358.05	\$ -	\$ 465.00	\$ 93,000.00	
160	4.1.22		2341.09	Core Diamond Drill Rig in Standby	hour	140	0.00	\$ -	\$ -	\$ 150.00	\$ -	\$ 150.00	\$ 21,000.00	
				Additional Items Inserted by HJOC-Dragados as Requested by Nalcor										
161	9.1.1		2341.10	Levelling Concrete for RCC Including Formwork	m³	1	1.87	\$ 194.00	\$ 495.00	\$ 21.00	\$ -	\$ 710.00	\$ 710.00	
162	9.1.2		2341.11	RCC Trial Sections	m³	2,500	3.42	\$ 390.00	\$ 136.50	\$ 103.50	\$ -	\$ 630.00	\$ 1,575,000.00	
SUB-TOTAL OPTIONAL PRICING													\$ 8,562,235.00	

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.

ISSUED FOR: BID

DATE: 6 - Jun - 2015

BIDDER'S NAME: H.J. O'Connell Construction Ltd - Dragados Canada Inc Joint Venture

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

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: H.J. O'Connell Construction Ltd - Dragados Canada Inc Joint Venture
Name of Bidder: H.J. O'Connell Construction Ltd - Dragados Canada Inc Joint Venture
Request For Proposal, Package No: CH0009
Signature:
Date of Proposal: 8-JUL-2015

ISSUED FOR: BID DATE: 6 - Jun - 2015

BIDDER'S NAME: H.J. O'Connell Construction Ltd - Dragados Canada Inc Joint Venture

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT (\$ CAN) B	MATERIALS COST/UNIT (\$ CAN) C	EQUIPMENT COST/UNIT (\$ CAN) D	PROFIT COST/UNIT (\$ CAN) E	UNIT PRICE (\$ CAN) F= (B+C+D+E)	TOTAL PRICE (\$ CAN) G= A x F
No	REFERENCE Exhibit 2 - ATT 1	CODE	SUBCODE										
27	4.1.2		2341.02	Foundation Cleaning (water/air jets and Vacuum trucks)	m ²	1,200	0.90	\$ 104.20	\$ -	\$ 15.80	\$ -	\$ 120.00	\$ 144,000.00
28	4.1.3		2341.03	Rock Excavation including dental excavation and Scaling	m ³	500	1.12	\$ 122.32	\$ 24.77	\$ 94.91	\$ -	\$ 242.00	\$ 121,000.00
29	4.1.4		2341.04	Dental Concrete	m ³	800	1.92	\$ 206.90	\$ 482.46	\$ 20.65	\$ -	\$ 710.00	\$ 568,000.00
30	4.1.5		2341.05	Slush Grout	m ²	1,200	0.20	\$ 22.39	\$ 8.64	\$ 0.97	\$ -	\$ 32.00	\$ 38,400.00
31	4.1.6		2341.06	Dry Pack	m ³	6	50.00	\$ 5,638.30	\$ 1,266.21	\$ 245.50	\$ -	\$ 7,150.00	\$ 42,900.00
Embankment Materials													
32	4.1.7		2341.07	Compacted Till - Zones 1 and 1C Materials	m ³	19,000	0.24	\$ 26.16	\$ -	\$ 30.84	\$ -	\$ 57.00	\$ 1,083,000.00
33	4.1.8		2341.08	Dumped Till - Zone 1A Material	m ³	134,000	0.13	\$ 13.88	\$ -	\$ 22.12	\$ -	\$ 36.00	\$ 4,824,000.00
34	4.1.9		2341.09	Compacted Granular - Zone 2A Material	m ³	20,700	0.28	\$ 29.37	\$ -	\$ 30.63	\$ -	\$ 60.00	\$ 1,242,000.00
35	4.1.10		2341.10	Compacted Granular - Zone 2C Material	m ³	8,700	0.28	\$ 29.44	\$ -	\$ 30.56	\$ -	\$ 60.00	\$ 522,000.00
36	4.1.11		2341.11	Dumped Granular - Zone 2E Material	m ³	26,300	0.17	\$ 16.54	\$ -	\$ 25.46	\$ -	\$ 42.00	\$ 1,104,600.00
37	4.1.12		2341.12	Dumped Rockfill- Zone 3 Material	m ³	143,000	0.06	\$ 6.91	\$ -	\$ 8.09	\$ -	\$ 15.00	\$ 2,145,000.00
38	4.1.13		2341.13	Dumped Large Blocks (300-1000 mm) - Zone 3 Class 1	m ³	37,000	0.08	\$ 9.11	\$ -	\$ 12.39	\$ -	\$ 21.50	\$ 795,500.00
39	4.1.14		2341.14	Dumped Large Blocks (≥1000 mm) - Zone 3 Class 2	m ³	65,000	0.17	\$ 18.88	\$ -	\$ 26.12	\$ -	\$ 45.00	\$ 2,925,000.00
40	4.1.15		2341.15	Dumped Large Blocks (≥1300 mm) - Zone 3 Class 3	m ³	15,000	0.20	\$ 22.70	\$ -	\$ 34.55	\$ -	\$ 57.25	\$ 858,750.00
41	4.1.16		2341.16	Compacted Crushed Stone - Zone 3A Material	m ³	10,950	0.32	\$ 36.19	\$ 0.28	\$ 33.53	\$ -	\$ 70.00	\$ 766,500.00
42	4.1.17		2341.17	Compacted Rockfill - Zone 3C Material	m ³	33,740	0.10	\$ 11.74	\$ -	\$ 13.76	\$ -	\$ 25.50	\$ 860,370.00
43	4.1.18		2341.18	Compacted Rockfill - Zone 3D Material	m ³	33,900	0.10	\$ 11.74	\$ -	\$ 13.76	\$ -	\$ 25.50	\$ 864,450.00
44	4.1.19		2341.19	Dumped Crushed Stone- Zone 3F Material	m ³	21,000	0.19	\$ 20.94	\$ 0.28	\$ 25.28	\$ -	\$ 46.50	\$ 976,500.00
SUB-TOTAL UPSTREAM COFFERDAM													\$ 19,963,845.00

4.2		2340	2342	DOWNSTREAM COFFERDAM									
CIVIL WORK													
Excavation													
45	4.2.1		2342.01	Overburden excavation	m ³	500	0.15	\$ 17.01	\$ -	\$ 16.49	\$ -	\$ 33.50	\$ 16,750.00
Foundation Preparation													
46	4.2.2		2342.02	Foundation cleaning (water/ait jets and Vacuum trucks)	m ²	1,250	0.90	\$ 101.83	\$ -	\$ 18.17	\$ -	\$ 120.00	\$ 150,000.00
47	4.2.3		2342.03	Rock excavation including dental excavation and scaling	m ³	500	1.13	\$ 123.04	\$ 24.56	\$ 94.40	\$ -	\$ 242.00	\$ 121,000.00
48	4.2.4		2342.04	Dental Concrete	m ³	200	1.92	\$ 201.36	\$ 468.63	\$ 40.00	\$ -	\$ 710.00	\$ 142,000.00
49	4.2.5		2342.05	Slush Grout	m ²	1,250	0.20	\$ 22.39	\$ 8.64	\$ 0.97	\$ -	\$ 32.00	\$ 40,000.00
50	4.2.6		2342.06	Dry Pack	m ³	6	50.00	\$ 5,638.30	\$ 1,266.21	\$ 245.50	\$ -	\$ 7,150.00	\$ 42,900.00
Embankment Materials													
51	4.2.7		2342.07	Compacted Till - Zones 1 and 1C	m ³	2,000	0.23	\$ 25.99	\$ -	\$ 31.01	\$ -	\$ 57.00	\$ 114,000.00
52	4.2.8		2342.08	Compacted Granular - Zone 2C	m ³	2,500	0.28	\$ 29.08	\$ -	\$ 32.92	\$ -	\$ 62.00	\$ 155,000.00
53	4.2.9		2342.09	Compacted Rockfill - Zone 3C	m ³	4,600	0.12	\$ 13.12	\$ -	\$ 13.88	\$ -	\$ 27.00	\$ 124,200.00
54	4.2.10		2342.10	Compacted Rockfill - Zone 3D	m ³	2,000	0.12	\$ 13.12	\$ -	\$ 13.88	\$ -	\$ 27.00	\$ 54,000.00
SUB-TOTAL DOWNSTREAM COFFERDAM													\$ 959,850.00

4.3		2340	2343	INTAKE CHANNEL COFFERDAM									
CIVIL WORK													

ISSUED FOR: BID

DATE: 6 - Jun - 2015

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No	REFERENCE Exhibit 2 - ATT 1	CODE	SUBCODE										
				Excavation									
55	4.3.1		2343.01	Overburden excavation	m ³	8,800	0.06	\$ 6.94	\$ -	\$ 8.06	\$ -	\$ 15.00	\$ 132,000.00
				Foundation Preparation									
56	4.3.2		2343.02	Foundation cleaning (water/ait jets and Vacuum trucks)	m ²	1,700	0.90	\$ 101.49	\$ -	\$ 18.51	\$ -	\$ 120.00	\$ 204,000.00
57	4.3.3		2343.03	Rock excavation including dental excavation and scaling	m ³	700	1.11	\$ 121.96	\$ 24.87	\$ 95.17	\$ -	\$ 242.00	\$ 169,400.00
58	4.3.4		2343.04	Dental Concrete	m ³	250	1.90	\$ 205.91	\$ 484.41	\$ 19.68	\$ -	\$ 710.00	\$ 177,500.00
59	4.3.5		2343.05	Slush Grout	m ²	1,700	0.20	\$ 22.45	\$ 8.69	\$ 0.85	\$ -	\$ 32.00	\$ 54,400.00
60	4.3.6		2343.06	Dry Pack	m ³	9	50.00	\$ 5,659.97	\$ 1,275.08	\$ 214.96	\$ -	\$ 7,150.00	\$ 64,350.00
				Embankment Materials									
61	4.3.7		2343.07	Compacted Till - Zones 1 and 1C	m ³	6,300	0.29	\$ 31.75	\$ 2.05	\$ 39.19	\$ -	\$ 73.00	\$ 459,900.00
62	4.3.8		2343.08	Compacted Granular - Zone 2C	m ³	4,900	0.31	\$ 36.62	\$ 1.02	\$ 50.36	\$ -	\$ 88.00	\$ 431,200.00
63	4.3.9		2343.09	Compacted Rockfill - Zone 3C	m ³	5,200	0.19	\$ 21.55	\$ 2.07	\$ 25.39	\$ -	\$ 49.00	\$ 254,800.00
64	4.3.10		2343.10	Compacted Rockfill - Zone 3D	m ³	1,400	0.19	\$ 21.55	\$ 2.07	\$ 25.39	\$ -	\$ 49.00	\$ 68,600.00
				SUB-TOTAL INTAKE CHANNEL COFFERDAM									\$ 2,016,150.00
				SOUTH DAM									
				CIVIL WORK									
				Excavation									
65	4.4.1		2330.01	Overburden excavation	m ³	94,000	0.06	\$ 7.02	\$ -	\$ 7.98	\$ -	\$ 15.00	\$ 1,410,000.00
				Foundation Preparation									
66	4.4.2		2330.02	Foundation cleaning (water/ait jets and Vacuum trucks)	m ²	3,400	0.90	\$ 104.54	\$ -	\$ 15.46	\$ -	\$ 120.00	\$ 408,000.00
67	4.4.3		2330.03	Rock excavation including dental excavation and scaling	m ³	2,000	1.11	\$ 123.45	\$ 24.56	\$ 93.99	\$ -	\$ 242.00	\$ 484,000.00
68	4.4.4		2330.04	Dental Concrete	m ³	1,200	1.92	\$ 213.05	\$ 476.55	\$ 20.39	\$ -	\$ 710.00	\$ 852,000.00
69	4.4.5		2330.05	Slush Grout	m ²	3,400	0.20	\$ 22.73	\$ 8.44	\$ 0.83	\$ -	\$ 32.00	\$ 108,800.00
70	4.4.6		2330.06	Dry Pack	m ³	20	50.00	\$ 5,709.01	\$ 1,233.11	\$ 207.88	\$ -	\$ 7,150.00	\$ 143,000.00
71	4.4.7		2330.07	Drilling Holes for Grouting	m	1,200	0.70	\$ 100.00	\$ -	\$ 25.00	\$ -	\$ 125.00	\$ 150,000.00
72	4.4.8		2330.08	Dry cement incorporated in the grout	kg	42,000	0.04	\$ 3.90	\$ 1.63	\$ 0.98	\$ -	\$ 6.50	\$ 273,000.00
73	4.4.9		2330.09	Cored Drill Check Holes	m	30	1.79	\$ 495.48	\$ -	\$ 84.52	\$ -	\$ 580.00	\$ 17,400.00
74	4.4.10		2330.10	Percussion Drilling Check holes	m	60	0.80	\$ 96.80	\$ -	\$ 24.20	\$ -	\$ 121.00	\$ 7,260.00
75	4.4.11		2330.11	Grouting - Successful connections	unit	250	2.93	\$ 383.76	\$ -	\$ 31.24	\$ -	\$ 415.00	\$ 103,750.00
76	4.4.12		2330.12	Water pressure test (Lugeon - 5 Stages)	hour	8	3.00	\$ 425.70	\$ -	\$ 219.30	\$ -	\$ 645.00	\$ 5,160.00
77	4.4.13		2330.13	Water test - Successful connections	unit	18	1.33	\$ 191.40	\$ -	\$ 98.60	\$ -	\$ 290.00	\$ 5,220.00
78	4.4.14		2330.14	Uplift gauges	m	20	2.40	\$ 300.00	\$ 216.00	\$ 84.00	\$ -	\$ 600.00	\$ 12,000.00
79	4.4.15		2330.15	Thermistors (measure rock temperature in grout holes)	unit	1	48.00	\$ -	\$ 7,488.00	\$ 4,212.00	\$ -	\$ 11,700.00	\$ 11,700.00
				Embankment Materials									
80	4.4.16		2330.16	Compacted Till - Zones 1 and 1C	m ³	26,000	0.22	\$ 25.34	\$ -	\$ 30.66	\$ -	\$ 56.00	\$ 1,456,000.00
81	4.4.17		2330.17	Compacted Granular - Zone 2A	m ³	28,000	0.24	\$ 25.86	\$ -	\$ 31.14	\$ -	\$ 57.00	\$ 1,596,000.00
82	4.4.18		2330.18	Compacted Crushed Stone - Zone 3A	m ³	12,000	0.30	\$ 35.02	\$ 0.28	\$ 33.70	\$ -	\$ 69.00	\$ 828,000.00
83	4.4.19		2330.19	Compacted Crushed Stone - Zone 3B	m ³	16,000	0.30	\$ 34.51	\$ 0.28	\$ 32.70	\$ -	\$ 67.50	\$ 1,080,000.00
84	4.4.20		2330.20	Compacted Rockfill - Zone 3C	m ³	21,000	0.09	\$ 10.94	\$ -	\$ 12.06	\$ -	\$ 23.00	\$ 483,000.00
85	4.4.21		2330.21	Compacted Rockfill - Zone 3D	m ³	46,000	0.09	\$ 10.94	\$ -	\$ 12.06	\$ -	\$ 23.00	\$ 1,058,000.00

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DATE: 6 - Jun - 2015

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No	REFERENCE Exhibit 2 - ATT 1	CODE	SUBCODE										
86	4.4.22		2330.22	Riprap - Zone 4	m ³	6,000	0.18	\$ 21.79	\$ -	\$ 29.21	\$ -	\$ 51.00	\$ 306,000.00
87	4.4.23		2330.23	Compacted Crushed Stone - Zone 5	m ³	310	0.32	\$ 38.67	\$ 0.28	\$ 39.05	\$ -	\$ 78.00	\$ 24,180.00
88	4.4.24		2330.24	Jersey Barrier	m	600	0.65	\$ 80.11	\$ 93.68	\$ 26.20	\$ -	\$ 200.00	\$ 120,000.00
				Geotechnical Instrumentation									
89	4.4.25		2330.25	V-Notch Weirs, excluding Shelters	unit	2	67.75	\$ 8,025.75	\$ 3,620.46	\$ 353.79	\$ -	\$ 12,000.00	\$ 24,000.00
90	4.4.26		2330.26	Shelters for V-Notch Weirs	unit	2	33.30	\$ 4,069.85	\$ 1,570.48	\$ 259.67	\$ -	\$ 5,900.00	\$ 11,800.00
91	4.4.27		2330.27	Survey Monuments at South Dam Crest	unit	3	5.33	\$ 624.25	\$ 349.63	\$ 26.12	\$ -	\$ 1,000.00	\$ 3,000.00
				SUB-TOTAL SOUTH DAM									\$ 10,981,270.00
				4.5	2320	NORTH DAM							
				CIVIL WORK									
				Clearing									
92	4.5.1		2320.01	Clearing of the North Abutment	Ha	3	74.67	\$ 20,808.36	\$ -	\$ 27,191.64	\$ -	\$ 48,000.00	\$ 144,000.00
				Excavation									
93	4.5.2		2320.02	Overburden Excavation	m ³	72,000	0.08	\$ 9.66	\$ -	\$ 11.34	\$ -	\$ 21.00	\$ 1,512,000.00
				Foundation Preparation									
94	4.5.3		2320.03	Foundation Cleaning (water/air jets and vacuum)	m ²	13,500	1.50	\$ 170.78	\$ -	\$ 29.22	\$ -	\$ 200.00	\$ 2,700,000.00
95	4.5.4		2320.04	Rock Excavation including Dental Excavation and Scaling	m ³	6,000	1.34	\$ 144.54	\$ 24.16	\$ 108.30	\$ -	\$ 277.00	\$ 1,662,000.00
96	4.5.5		2320.05	Dental Concrete	m ³	4,000	1.92	\$ 206.90	\$ 482.46	\$ 20.65	\$ -	\$ 710.00	\$ 2,840,000.00
97	4.5.6		2320.06	Slush Grout	m ²	13,500	0.20	\$ 22.39	\$ 8.64	\$ 0.97	\$ -	\$ 32.00	\$ 432,000.00
98	4.5.7		2320.07	Dry Pack	m ³	70	50.00	\$ 5,638.30	\$ 1,266.21	\$ 245.50	\$ -	\$ 7,150.00	\$ 500,500.00
99	4.5.8		2320.08	Drilling Holes in RCC and Bedrock for Grouting	m	4,200	1.39	\$ 228.00	\$ -	\$ 57.00	\$ -	\$ 285.00	\$ 1,197,000.00
100	4.5.9		2320.09	Grouting - Successful Connections	unit	720	2.43	\$ 346.35	\$ 31.17	\$ 37.48	\$ -	\$ 415.00	\$ 298,800.00
101	4.5.10		2320.10	Dry Cement incorporated in the grout	kg	126,000	0.01	\$ 4.25	\$ -	\$ 0.75	\$ -	\$ 5.00	\$ 630,000.00
102	4.5.11		2320.11	Cored Drill Check Holes	m	60	1.80	\$ 276.00	\$ -	\$ 69.00	\$ -	\$ 345.00	\$ 20,700.00
103	4.5.12		2320.12	Percussion Drilling Check Holes	m	120	1.40	\$ 225.00	\$ -	\$ 25.00	\$ -	\$ 250.00	\$ 30,000.00
104	4.5.13		2320.13	Water pressure test (lugeon - 5 Stages)	hour	15	3.20	\$ 396.00	\$ -	\$ 204.00	\$ -	\$ 600.00	\$ 9,000.00
105	4.5.14		2320.14	Water Pressure Test - Successful connections	unit	36	1.33	\$ 165.00	\$ -	\$ 85.00	\$ -	\$ 250.00	\$ 9,000.00
106	4.5.15		2320.15	Uplift gauges	m	60	1.80	\$ 300.00	\$ 216.00	\$ 84.00	\$ -	\$ 600.00	\$ 36,000.00
107	4.5.16		2320.16	Thermistor (measure temperature in grout holes)	unit	1	48.00	\$ -	\$ 7,488.00	\$ 4,212.00	\$ -	\$ 11,700.00	\$ 11,700.00
				Drainage Holes									
108	4.5.17		2320.17	Drilling Holes for Drainage in Foundation from Drainage Gallery, Ø76 mm	m	3,200	1.44	\$ 287.00	\$ -	\$ 63.00	\$ -	\$ 350.00	\$ 1,120,000.00
109	4.5.18		2320.18	PVC Caps for Drainage Holes	unit	125	0.00	\$ -	\$ 32.75	\$ -	\$ -	\$ 32.75	\$ 4,093.75
110	4.5.19		2320.19	Drilling Holes Upward for Drainage from Drainage Gallery into RCC, Ø76 mm	m	3,200	1.74	\$ 396.99	\$ 3.65	\$ 74.36	\$ -	\$ 475.00	\$ 1,520,000.00
				Instrumentation									
111	4.5.20		2320.20	Drilling Holes for piezometers	m	100	1.02	\$ 124.80	\$ 19.03	\$ 16.17	\$ -	\$ 160.00	\$ 16,000.00
112	4.5.21		2320.21	Vibrating Wire and Standpipe Piezometers TYPE - 1, excluding Cables	unit	8	34.00	\$ 3,600.00	\$ 2,400.00	\$ -	\$ -	\$ 6,000.00	\$ 48,000.00
113	4.5.22		2320.22	Vibrating Wire and Standpipe Piezometers TYPE - 2, excluding Cables	unit	2	34.00	\$ 3,600.00	\$ 2,400.00	\$ -	\$ -	\$ 6,000.00	\$ 12,000.00
114	4.5.23		2320.23	Instrument Cable including PVC Conduits and Pull Boxes	m	2,700	0.15	\$ 20.48	\$ -	\$ 38.03	\$ -	\$ 58.50	\$ 157,950.00
115	4.5.24		2320.24	Thermistors Cable in RCC	unit	8	25.00	\$ 2,350.00	\$ 2,350.00	\$ -	\$ -	\$ 4,700.00	\$ 37,600.00
116	4.5.25		2320.25	V-notch Weirs	unit	4	114.01	\$ 13,392.87	\$ 3,602.68	\$ 1,504.46	\$ -	\$ 18,500.00	\$ 74,000.00
117	4.5.26		2320.26	Vibrating Wire Weir Monitors.	unit	4	25.00	\$ 1,500.00	\$ -	\$ 4,500.00	\$ -	\$ 6,000.00	\$ 24,000.00
118	4.5.27		2320.27	Data logger, Terminal Box, Barometer Box including Grounding	LS	1	225.00	\$ 12,000.00	\$ 48,000.00	\$ -	\$ -	\$ 60,000.00	\$ 60,000.00

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

ISSUED FOR: BID

DATE: 6 - Jun - 2015

BIDDER'S NAME: H.J. O'Connell Construction Ltd - Dragados Canada Inc Joint Venture

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT (\$ CAN) B	MATERIALS COST/UNIT (\$ CAN) C	EQUIPMENT COST/UNIT (\$ CAN) D	PROFIT COST/UNIT (\$ CAN) E	UNIT PRICE (\$ CAN) F= (B+C+D+E)	TOTAL PRICE (\$ CAN) G= A x F
No	REFERENCE Exhibit 2 - ATT 1	CODE	SUBCODE										
119	4.5.28		2320.28	Crest Survey Monuments	unit	4	6.80	\$ 807.23	\$ 353.21	\$ 39.56	\$ -	\$ 1,200.00	\$ 4,800.00
Concrete and RCC operations													
120	4.5.29		2320.29	Roller Compacted Concrete (RCC)	m ³	210,000	1.59	\$ 195.25	\$ 118.48	\$ 76.27	\$ -	\$ 390.00	\$ 81,900,000.00
	4.5.29a			RCC Coarse Aggregates (Rate Only)	Tonne							\$ 15.50	
	4.5.29b			RCC Fine Aggregates (Rate Only)	Tonne							\$ 15.50	
121	4.5.30		2320.30	Conventional Vibrated Concrete (CVC) (Crest and Flip Bucket)	m ³	11,100	7.85	\$ 943.64	\$ 353.57	\$ 252.78	\$ -	\$ 1,550.00	\$ 17,205,000.00
122	4.5.31		2320.31	Facing Concrete	m ³	8,600	5.79	\$ 643.80	\$ 197.50	\$ 208.71	\$ -	\$ 1,050.00	\$ 9,030,000.00
123	4.5.32		2320.32	GERCC or GEVR - Formed Faces	m ³	4,650	4.36	\$ 502.93	\$ 128.15	\$ 218.92	\$ -	\$ 850.00	\$ 3,952,500.00
124	4.5.33		2320.33	Conventional Vibrated Concrete (North Abutment Crest Surface and Training Wall)	m ³	270	7.91	\$ 896.36	\$ 299.05	\$ 154.60	\$ -	\$ 1,350.00	\$ 364,500.00
125	4.5.34		2320.34	Increase or decrease in quantity of cement - Bid Mix (rate only)	Kg	N/A					\$ -	\$ 0.38	
126	4.5.35		2320.35	Increase or decrease in quantity of flyash - Bid Mix (rate only)	Kg	N/A					\$ -	\$ 0.38	
127	4.5.36		2320.36	Increase or decrease in quantity of cement - Source B (rate only)	Kg	N/A					\$ -	\$ -	
128	4.5.37		2320.37	Increase or decrease in quantity of flyash - Source B (rate only)	Kg	N/A					\$ -	\$ -	
129	4.5.38		2320.38	Air-entraining Admixture	litre	315,000	0.00	\$ -	\$ 1.30	\$ -	\$ -	\$ 1.30	\$ 409,500.00
130	4.5.39		2320.39	Retarder Admixture	litre	336,000	0.00	\$ -	\$ 1.75	\$ -	\$ -	\$ 1.75	\$ 588,000.00
131	4.5.40		2320.40	Precast Concrete	m ³	1,150	2.75	\$ 286.85	\$ 1,658.55	\$ 104.60	\$ -	\$ 2,050.00	\$ 2,357,500.00
132	4.5.41		2320.41	Gallery Floor CVC Concrete	m ³	275	15.30	\$ 1,771.71	\$ 353.57	\$ 274.73	\$ -	\$ 2,400.00	\$ 660,000.00
133	4.5.42		2320.42	Steel Reinforcement	kg	500,000	0.02	\$ 4.92	\$ 2.71	\$ 0.38	\$ -	\$ 8.00	\$ 4,000,000.00
134	4.5.43		2320.43	Steel Guardrails	kg	5,200	0.30	\$ 36.57	\$ 6.36	\$ 2.07	\$ -	\$ 45.00	\$ 234,000.00
135	4.5.44		2320.44	Waterstop	m	1,350	1.50	\$ 178.56	\$ 21.44	\$ -	\$ -	\$ 200.00	\$ 270,000.00
	4.6		2370	NORTH DAM - Auxiliary Services									
ELECTRICAL WORK													
136	4.6.1		2370.01	Exothermic Connections.	unit	20	8.00	\$ 881.25	\$ 293.75	\$ -	\$ -	\$ 1,175.00	\$ 23,500.00
137	4.6.2		2370.02	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	815	0.85	\$ 92.00	\$ 23.00	\$ -	\$ -	\$ 115.00	\$ 93,725.00
138	4.6.3		2370.03	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	16	0.80	\$ 92.00	\$ 23.00	\$ -	\$ -	\$ 115.00	\$ 1,840.00
139	4.6.4		2370.04	Embedded Copper Grounding Plates	unit	7	0.30	\$ 35.00	\$ 315.00	\$ -	\$ -	\$ 350.00	\$ 2,450.00
SUB-TOTAL NORTH DAM													\$ 136,203,658.75
	5	3100		Powerhouse Channels									
	5.1		3120.00	Tailrace									
CIVIL WORK													
Tailrace Rock Plug - Overburden Excavation													
140	5.1.1		3120.01	Overburden Excavation, excluding excavation of Cofferdam 3 - Dry Conditions	m ³	12,000	0.08	\$ 9.12	\$ -	\$ 10.38	\$ -	\$ 19.50	\$ 234,000.00
Tailrace Rock Plug - Rock Excavation													
141	5.1.2		3120.02	Tailrace Rock Plug Excavation including access ramp to powerhouse -Dry Conditions	m ³	170,000	0.11	\$ 16.77	\$ 3.70	\$ 17.03	\$ -	\$ 37.50	\$ 6,375,000.00
142	5.1.3		3120.03	Tailrace Rock Plug - Underwater Excavation	m ³	34,000	0.40	\$ 44.82	\$ 22.57	\$ 40.61	\$ -	\$ 108.00	\$ 3,672,000.00
Tailrace Rock Plug - Stabilization and Rock Surface Protection													
143	5.1.4		3120.04	Grouted Rock Bolts Type A	unit	70	19.20	\$ 2,237.95	\$ 1,050.08	\$ 461.98	\$ -	\$ 3,750.00	\$ 262,500.00
144	5.1.5		3120.05	Grouted Rock Bolts Type C	unit	20	35.20	\$ 4,105.31	\$ 1,949.39	\$ 845.30	\$ -	\$ 6,900.00	\$ 138,000.00
145	5.1.6		3120.06	Chain Link Wire Mesh - Installation	m ²	2,500	0.25	\$ 28.79	\$ 15.20	\$ 6.01	\$ -	\$ 50.00	\$ 125,000.00
146	5.1.7		3120.07	Chain Link Wire Mesh - Removal	m ²	20,300	0.05	\$ 5.82	\$ -	\$ 1.93	\$ -	\$ 7.75	\$ 157,325.00
147	5.1.8		3120.08	Existing Temporary Safety Fence - Removal	m	1,200	0.39	\$ 45.04	\$ -	\$ 14.96	\$ -	\$ 60.00	\$ 72,000.00

PRICE ITEM	WBS CODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY A	MAN HOURS (AT SITE) PER UNIT	MANPOWER COST/UNIT (\$ CAN) B	MATERIALS COST/UNIT (\$ CAN) C	EQUIPMENT COST/UNIT (\$ CAN) D	PROFIT COST/UNIT (\$ CAN) E	UNIT PRICE (\$ CAN) F= (B+C+D+E)	TOTAL PRICE (\$ CAN) G= A x F
SUB-TOTAL TAILRACE											\$ 11,035,825.00

	6	1100		Borrow Areas							
	6.1		1117.00	Borrowed Construction Material							
148	6.1.1		1117.01	Overhaul of Borrowed Construction Material (rate only)	m3/km	N/A				\$ 1.50	

ROW A	CALCULATED TOTAL OF LUMP SUM AND UNIT PRICE ITEMS (BASED ON APPROXIMATE QUANTITIES)									\$ 298,721,908.76
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	7	1100		Optional Pricing for Temporary Access Road and Quarry									
	7.1		1113	ACCESS ROAD TO LAYDOWN AREA C1, If required									
149	7.1.1		1113.01	Other Material or Rockfill	m ³	28,000	0.05	\$ 4.75	\$ -	\$ 6.50	\$ -	\$ 11.25	\$ 315,000.00
150	7.1.2		1113.02	Maintenance Grade No 3	m ³	4,000	0.19	\$ 17.52	\$ 0.27	\$ 18.21	\$ -	\$ 36.00	\$ 144,000.00
	7.2		1118	Quarry Q5									
151	7.2.1		1118.01	Production of blasted rockfill from the quarry Q5	m ³	50,000	0.05	\$ 3.00	\$ 1.40	\$ 2.10	\$ -	\$ 6.50	\$ 325,000.00
	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									
152	8.1.1		2341.01	Mobilization and demobilization	LS	1	2,342	\$ 412,000.00	\$ 46,500.00	\$ 765,500.00	\$ -	\$ 1,224,000.00	\$ 1,224,000.00
153	8.1.2		2341.02	Drilling Holes for Jet Grouting in embankment, river sediments and bedrock	m	9,600	0.56	\$ 83.50	\$ 5.35	\$ 64.90	\$ -	\$ 153.75	\$ 1,476,000.00
154	8.1.3		2341.03	Jet Grouted Cut-off wall	m ²	2,800	1.55	\$ 207.00	\$ 610.00	\$ 363.00	\$ -	\$ 1,180.00	\$ 3,304,000.00
				Bedrock Grouting beneath the Jet Grouted Cut-off Wall, if required									
155	8.1.4		2341.04	Drilling Holes for Grouting in embankment , jet grouting cut-off wall and bedrock, if required	m	1,300	0.05	\$ 5.90	\$ -	\$ 17.60	\$ -	\$ 23.50	\$ 30,550.00
156	8.1.5		2341.05	Dry cement incorporated in the grout, if required	kg	11,000	0.03	\$ 3.30	\$ 1.25	\$ 0.70	\$ -	\$ 5.25	\$ 57,750.00
157	8.1.6		2341.06	Grouting - Successful connections, if required	unit	60	2.50	\$ 315.00	\$ -	\$ 475.00	\$ -	\$ 790.00	\$ 47,400.00
				Investigation for Jet Grouted Cut-off Wall and Bedrock Grouting									
158	4.1.20		2341.07	Percussion Drill Holes in embankments, river sediments and bedrock	m	1,000	0.25	\$ 33.60	\$ -	\$ 86.40	\$ -	\$ 120.00	\$ 120,000.00
159	4.1.21		2341.08	Verification Core Drilling in jet grouting cut-off wall and bedrock	m	200	0.72	\$ 95.00	\$ 14.25	\$ 365.75	\$ -	\$ 475.00	\$ 95,000.00
160	4.1.22		2341.09	Core Diamond Drill Rig in Standby	hour	140	0.00	\$ -	\$ -	\$ 155.00	\$ -	\$ 155.00	\$ 21,700.00
				Additional Items Inserted by HJOC-Dragados as Requested by Nalcor									
161	9.1.1		2341.10	Levelling Concrete for RCC Including Formwork	m ³	1	1.87	\$ 199.00	\$ 504.00	\$ 22.00	\$ -	\$ 725.00	\$ 725.00
162	9.1.2		2341.11	RCC Trial Sections	m ³	2,500	3.42	\$ 399.50	\$ 144.50	\$ 106.00	\$ -	\$ 650.00	\$ 1,625,000.00
SUB-TOTAL OPTIONAL PRICING											\$ 8,786,125.00		

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.

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

CIMFP Exhibit P-02853
SCHEDULE OF PRICE BREAKDOWN - For River Diversion in 2017

Rev. B3

ISSUED FOR: BID

DATE: 6 - Jun - 2015

BIDDER'S NAME: H.J. O'Connell Construction Ltd - Dragados Canada Inc Joint Venture

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

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: H.J. O'Connell Construction Ltd - Dragados Canada Inc Joint Venture
Name of Bidder: H.J. O'Connell Construction Ltd - Dragados Canada Inc Joint Venture
Request For Proposal, Package No: CH0009
Signature:
Date of Proposal: 8-JUL-2015

LCP CH0009 Construction of North and South Dams
Responses to Questions Raised During July 7, 2015 Conference Call

1. Commercial Item #41 – Cement & Flyash

Bidder confirms that we are responsible for purchasing and delivery of cement and flyash. Company is responsible for price and availability of cement and flyash.

2. Schedule A2.1 – Item 4.5.29 Roller Compacted Concrete (RCC)

Bidder confirms that the RCC Trial Sections costs are no longer included in Item 4.5.29 but is now included in the Optional Price Item 9.1.2. Adjustments to the price in Item 4.5.29 from our October 22, 2014 proposal include the following:

- Decrease in costs by relocation of the RCC Trial Sections to the Optional Price items
- Decrease due to reduced fuel rate
- Increase due to addition of ammonia disposal risk (i.e. Technical Exception #27) previously excluded from our proposal
- Increase due to lower exchange rate for the Canadian Dollar in relation to the US Dollar (i.e. impacts purchase of formwork, etc.)
- Increase due to additional labour requirements for the RCC placement activities due to the compressed schedule (i.e. approximately 50% of the RCC placement activities now require 2-12 hour shifts per day as opposed to the 2-10 hour shifts per day in our October 22, 2014 proposal)
- Additional cost to supply heated conveyors due to the compressed schedule requirements

3. Schedule A2.1 – Items 45, 46 & 47 Re. Jet Grouting

Bidder confirms these three (3) items related to the Jet Grouting activities have been relocated to the Optional Price Items. See attached updated Schedule A2.1 for both the 2016 and 2017 River Diversion options.

4. Technical Item #19 – Aggregate Production

Bidder confirms that we assume the responsibility related to aggregate production quantities. This exception is withdrawn.

5. Technical Item #23 - Dental Excavation

Bidder confirms acceptance of this risk and the exception is withdrawn. Prices for Items 4.1.3, 4.2.3, 4.3.3, 4.4.3 and 4.5.4 of Schedule A2.1 have been increased accordingly to account for assumption of this risk. See attached updated Schedule A2.1 for both the 2016 and 2017 River Diversion options.

6. Temporary Bridge Sketch

Please see attached updated sketch showing more detail of structures to remain as well as details of the proposed concrete footing located on the North Abutment.

7. Jet Grouting Mobilization

Bidder confirms that four (4) months minimum is required to mobilize the Jet Grouting subcontractor.

8. Risks associated with 2016 work program which extends to Dec 18

The foundation preparation and concrete leveling activities for the North Dam are scheduled to stop on October 30, 2016 as per the excerpt (shown below) from the schedule.

North Dam		58.14w	12-Sep-16	12-Nov-17
Temporary Access		58.14w	12-Sep-16	12-Nov-17
220	Upstream Access	1.00w	19-Sep-16*	25-Sep-16
221	Downstream Access	1.00w	12-Sep-16	18-Sep-16
222	Temporary Access Removal	2.00w	30-Oct-17	12-Nov-17
Clearing		4.00w	31-Oct-16	27-Nov-16
224	Clearing of North Abutement	4.00w	31-Oct-16*	27-Nov-16
Excavation		4.00w	21-Nov-16	18-Dec-16
226	Overburden Excavation	4.00w	21-Nov-16	18-Dec-16
Foundation Preparation & levelling RCC/Concrete		29.14w	19-Sep-16	30-Apr-17
Foundation Preparation		27.14w	19-Sep-16	16-Apr-17
229	South Abutement and Main Channel Area	6.00w	19-Sep-16	30-Oct-16
230	North Abutement Area	2.00w	03-Apr-17*	16-Apr-17
Levelling Concrete, etc.		27.14w	03-Oct-16	30-Apr-17
232	South Abutement and Main Channel Area	4.00w	03-Oct-16	30-Oct-16*
233	North Abutement Area	2.00w	17-Apr-17	30-Apr-17
Rock Grouting		20.29w	12-Jun-17	31-Oct-17
235	Main Channel and Abutements Area	10.00w	12-Jun-17	20-Aug-17
236	North Abutement Area (Part B/Last 50m)	2.29w	16-Oct-17	31-Oct-17
Drainage Holes		8.00w	21-Aug-17	15-Oct-17
238	Drill Foundation Holes	8.00w	21-Aug-17	15-Oct-17
239	Drill Holes for RCC Drainage to Gallery	8.00w	21-Aug-17	15-Oct-17
Concrete and RCC Operations		53.14w	19-Sep-16	15-Oct-17
RCC Trial Section		6.14w	19-Sep-16	31-Oct-16
242	Prepare Pad and Infrastructure	1.00w	19-Sep-16*	25-Sep-16
243	Complete Trial Section	2.00w	18-Oct-16	31-Oct-16*
Main RCC and GEVR Placement		47.14w	31-Oct-16	15-Oct-17
2017 Training Program		1.00w	24-Apr-17	30-Apr-17
245	2017 Training Program	1.00w	24-Apr-17*	30-Apr-17
RCC and GEVR Section 1		22.00w	01-May-17	01-Oct-17
247	Elevation 4.89 to 8.49	2.00w	01-May-17	14-May-17
248	Elevation 8.49 to 10.89	2.00w	29-May-17	11-Jun-17
249	Elevation 10.89 to 13.29	2.00w	17-Jul-17	30-Jul-17
250	Elevation 13.29 to 22.89	3.00w	21-Aug-17	10-Sep-17
251	Elevation 22.89 to 39.39	3.00w	11-Sep-17	01-Oct-17

█ Remaining Level of Effort █ Critical Remaining Work
█ Actual Level of Effort ◆ Milestone
 Remaining Work Summary

LOWER CHURCHIL
Dragados Canac

The only activities that extend beyond October 30, 2016 are:

- Clearing of the North Abutment
- Overburden Excavation for the North Abutment

This was scheduled this way in order to ensure that the excavation was completed in the fall of 2016 so that it would not interfere with the 2017 work program.

There is the possibility of snow and cold weather that would impede progress. However, as the work does not have to be completed until mid 2017, there are no risks to the schedule with doing this work as scheduled. In fact, doing it as scheduled is positive as it will prevent any impacts on the 2017 program.

9. Explain plan to stockpile 45,000m³ on riverside area of the RCC cofferdam; an area of 3,500m²

Bidder's intent is to stockpile as many rock blocks as possible on the riverside area of the RCC cofferdam. The type of rock blocks should be class 1 and possibly class 2 as this is what will be used first instead of classes 2 & 3.

The schedule was based on using two access roads as per the attached sketch. This will reduce any bottlenecks on the bridge.

The first 15,000m³ will come from stockpile and will be hauled across the bridges. We do not want to stockpile this on the riverside as it is the smallest material and would be more susceptible to being washed away in the spring.

We have allowed a week in the schedule for this work. This gives an average production of 15,000m³/7 days/ 8.5 hours per shift/2 shifts = 126 m³/productive hour. This is achievable with one hauling fleet and we plan to have two (one upstream and one downstream). Assuming a conservative load of 15m³/truck, this equates to 126m³/hr/15m³ = 8.4 loads per productive hour or 1 load every 7 minutes crossing the bridge. This is very reasonable.

The class 1 rocks have an estimated quantity of 37,000m³. We plan to utilize two hauling fronts, one on the upstream bridge and one on the lower spillway bridge.

We have allowed a week in the schedule for this work. This gives an average production of 37,000m³/7 days/ 8.5 hours per shift/2 shifts/2 units = 155 m³/productive hour. Assuming a conservative load of 12m³/truck, this equates to 155m³/hr/12m³ = 13 loads per productive hour or 1 load every 4.6 minutes crossing the bridge. This is very reasonable.

The bottleneck will not be the bridge but should be on the placing. Utilizing a 90t excavator we need a placing production of 12m³ every 4.6 minutes, which is achievable.

The class 2 rocks have an estimated quantity of 65,000m³ at the time of the original tender. However, we understand that this quantity has been significantly reduced. Therefore we have allowed for 1 week on the schedule as we anticipate one half of the quantity. The same logic for the class 1 rocks has been utilized. If the quantity reduction is incorrect, then we would need another week on the schedule. This can be achieved by starting a week earlier or working into the first week of November.

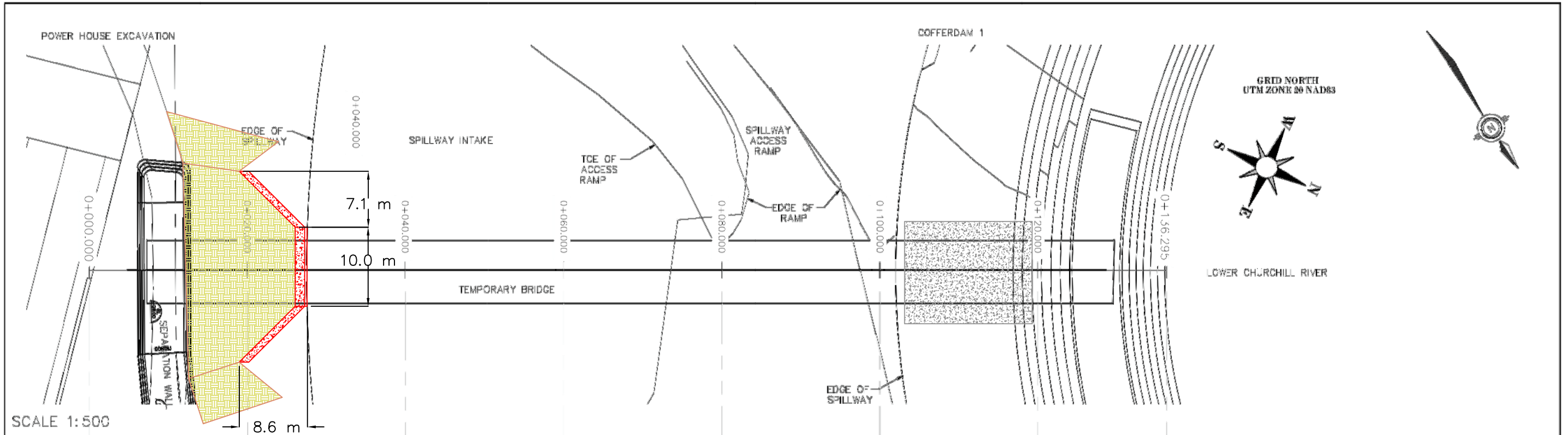
The class 3 rocks have an estimated quantity of 15,000m³. Our plan is to utilize two hauling fronts, one on the upstream bridge and one on the lower spillway bridge.

We have allowed a week for this work. This gives an average production of 15,000m³/7 days/ 8.5hours per shift/2 shifts/2 units = 63 m³/productive hour. Assuming a conservative load of 8m³/truck, this equates to 63m³/hr/8m³ = 8 loads per productive hour or 1 load every 7.5 minutes crossing the bridge. This is very reasonable.

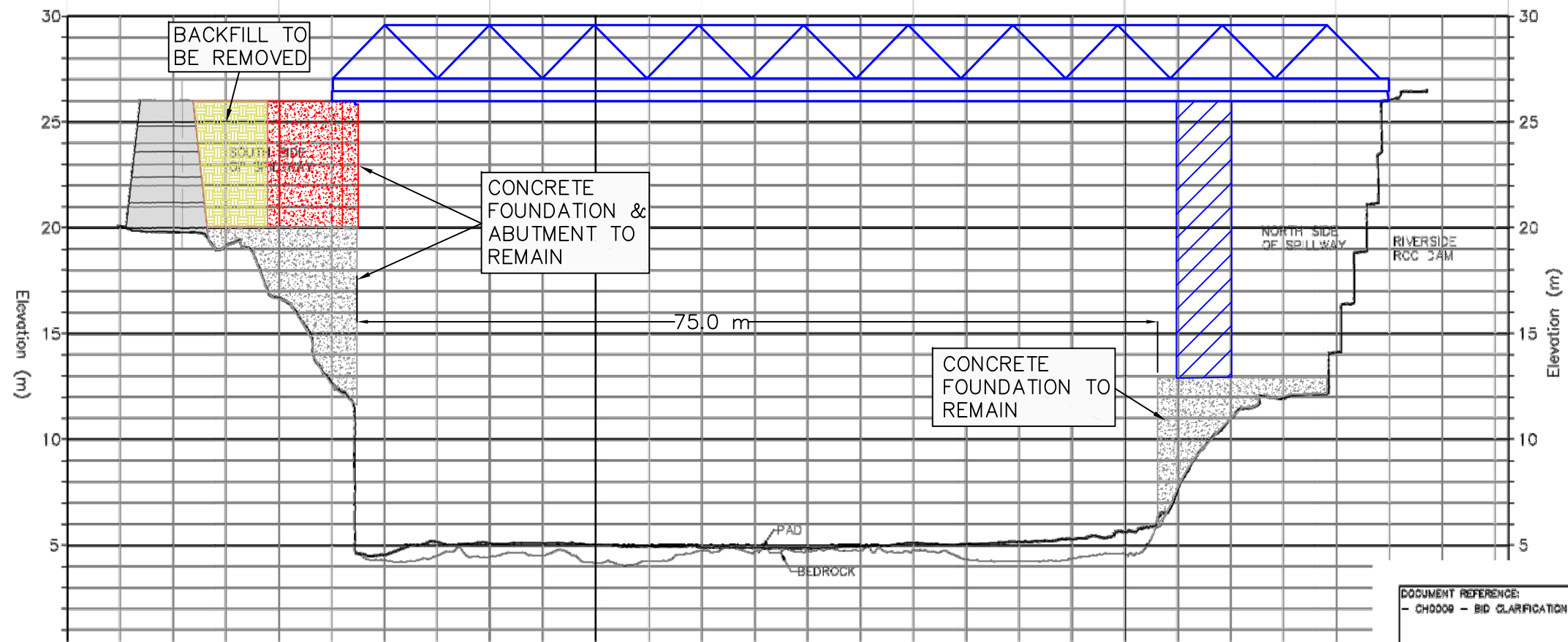
The bottleneck will not be the bridge but should be on the placing. Utilizing a 90t excavator we need a placing production of 8m³ every 7.5 minutes which is achievable.

The purpose of the above analysis is to show that the schedule is achievable by hauling all the material across the bridges in either 40t articulated trucks or 35T rigid frame trucks. Our plan of hauling and stockpiling rocks on the riverside of the RCC cofferdam was an added measure to ensure that the schedule is achieved. In addition to this we plan to utilize the material from the RCC cofferdam demolition into the cofferdams and we have the option to increase the shifts from 10 hours to 11 or 12 hours as required.

To conclude, we will haul and temporarily stockpile as many rock blocks as possible as this will help the schedule. However, the schedule is achievable, even if none were stockpiled.



Centreline Profile View of Existing Features at Future Temporary Bridge Location



SCALE 1:500
VERTICAL EXAGGERATION 2:1

DOCUMENT REFERENCE:
- CH0000 - BID CLARIFICATION

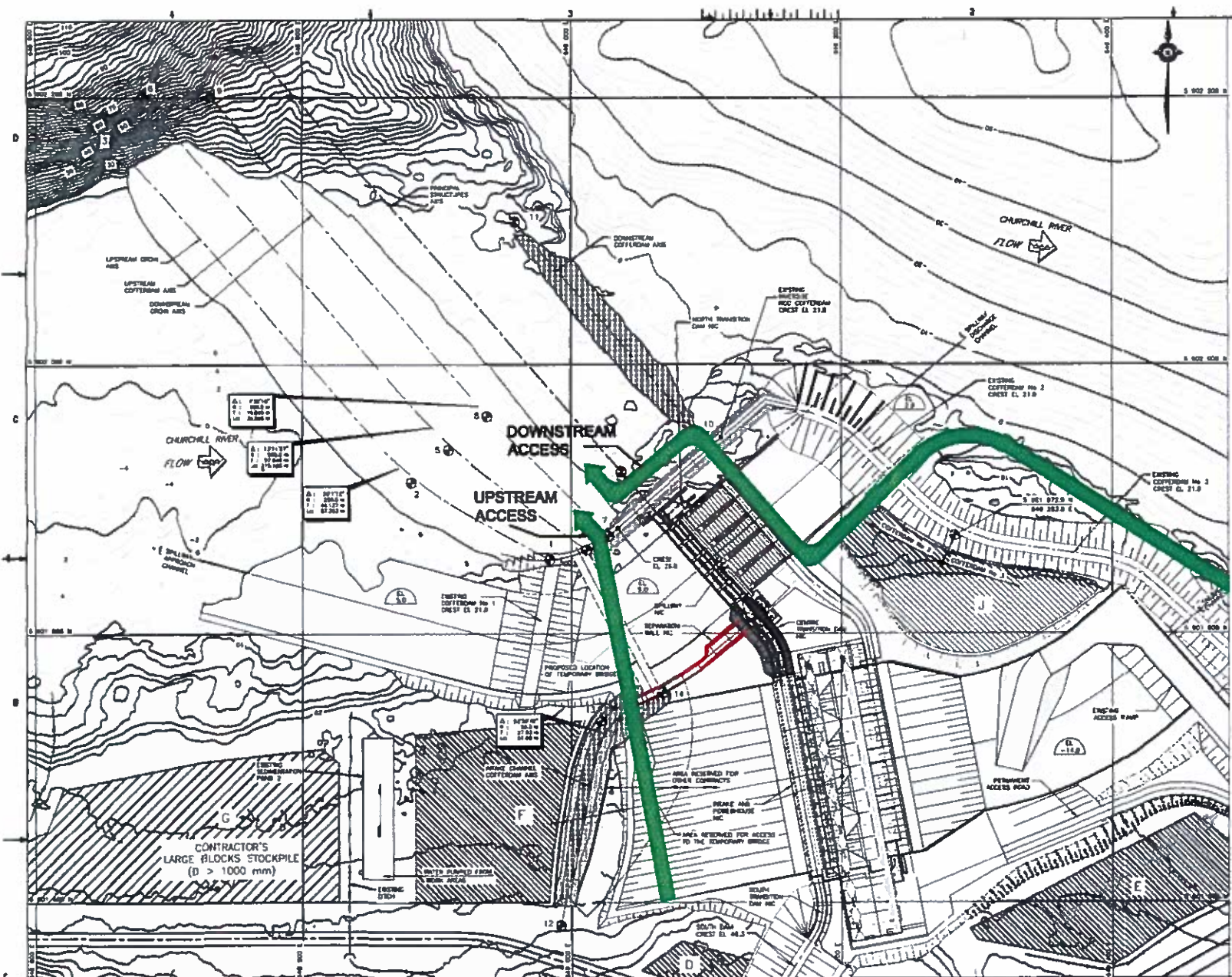
DATE:
15-SEP-2014

PROJECT	LOWER CHURCHILL PROJECT
TITLE	MUSKRAT FALLS TEMPORARY BRIDGE PLAN AND PROFILE
File No.	505573-3231-4.JDK-0003

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- NOTES:**
- ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.
 - TOPOGRAPHY AND GRID BASED ON UTM 48Q UTM 63, UTM 48 Q 500 000.
 - THE EXISTING TEMPORARY COFFERDAMS ARE LOCATED IN A 10% FLOOD RISK ZONE AS DETERMINED IN 2005.
 - THE AREA BETWEEN COFFERDAMS ARE TO BE FILLED WITH GRAVEL TO BE COMPLETED IN 2006.
 - THE EXISTING STRUCTURE OF THE BRIDGE, TOWER AND THE MAIN BRIDGEPIERS IS TO BE DEMOLISHED.
 - FOR FURTHER INFORMATION, SEE DRAWING 2100-01-01-000-01.

- LEGEND:**
- DOTTED LINE: IMPROVED CONTOUR
 - SOLID LINE: TOPOGRAPHIC CONTOUR
 - DASHED LINE: PROPOSED LIMIT-DESIGNED FOR CHANNEL FLOW OF 1000 m³/S
 - TRIANGLE: BENCH MARK
 - CIRCLE WITH CENTER: LOCATION POINT
 - ARROW: FLOW
 - SOLID LINE WITH CENTER: BRIDGE
 - SOLID LINE WITH CENTER: DAM
 - RECTANGLE WITH CENTER: TEMPERATURE LOG TOWER
 - HATCHED PATTERN: ROAD WIDENING AREA
 - HATCHED PATTERN: LAYERS AREA
 - SOLID LINE WITH CENTER: STAIRCASE AND LAYERS STAIRCASE
 - HATCHED PATTERN: EXCHANGE TO BRIDGE
 - HATCHED PATTERN: EXTENSION OF EXISTING ACCEPTABLE PAVEMENT
 - SOLID LINE WITH CENTER: EXISTING ROAD
 - DASHED LINE: NOT IN EXISTENCE

COFFERDAMS		
LOCATION POINTS		
POINT NO.	COORDINATES	
	EASTING	NORTHING
1	648 763,282	6 091 051,153
2	648 763,218	6 091 051,255
3	648 763,236	6 091 051,273
4	648 763,267	6 091 051,271
5	648 763,253	6 091 051,253
6	648 763,244	6 091 051,250
7	648 763,250	6 091 051,257
8	648 763,258	6 091 051,218
9	648 763,291	6 091 051,250
10	648 763,271	6 091 051,257
11	648 763,255	6 091 051,250
12	648 763,244	6 091 051,257
13	648 763,279	6 091 051,255
14	648 763,286	6 091 051,253

NOT FOR CONSTRUCTION

Scale: 0 10 20 30 40 50 m

<p>PROJECT: Lower Churchill Project</p> <p>CLIENT: Hydro-Québec</p> <p>DATE: 2004-08-02</p> <p>SCALE: 1:1000</p> <p>PROJECT NO.: 2100-01-01-000-01</p> <p>REV.: 01</p>				<p>DESIGNER: SNC-Lavalin</p> <p>PROJECT MANAGER: [Name]</p> <p>DATE: 2004-08-02</p>				<p>CLIENT: Hydro-Québec</p> <p>PROJECT MANAGER: [Name]</p> <p>DATE: 2004-08-02</p>			
<p>DESCRIPTION: [Detailed description of the project and drawing content]</p>				<p>APPROVED: [Signature]</p> <p>DATE: 2004-08-02</p>				<p>APPROVED: [Signature]</p> <p>DATE: 2004-08-02</p>			