APPENDIX

C CULVETS

	Project: Vault to Whale Tail haul road	Date: 2018-02-08	
	Client: Agnico Eagle Limited	**Prepared by:**	
	No. 171-17523-00	Youssef Hessani	
	Object: Culvert inventory-conception vs As built list	**Verified by:**	
		Stéphan Dupuis, ing	

Small culvert

Culvert canceled

	Conception							As-Built		
No	Chaining	Ab (ha)	Q25 (m^3/s)	Q_conception (m^3)	Diameter (mm)	Number of culverts	Recommended diameter	Real Chaining	Real Diameter	Installed length (m)
#1	0+450	4.67		0.44	450	1	600/700	0+450	450	15
#2	0+675	1.47	0.14	0.15	300	1	300	0+675	300	15
#3	1+140	29.42	1.28	1.41	900	2	900	1+128	900	18
#4	1+325	4.71	0.34	0.37	800	1	800	1+325	800	18
#5	1+525	2.18	0.16	0.18	600	1	600	1+531	600	24
#6	1+799	3.4	0.27	0.29	600	1	600	1+792	600	15
#7	2+015	25.47	1.21	1.33	900	2	900	2+024	900	18
#8	2+125	28.81	1.56	1.72	900	2	900	2+137	900	27
#9	2+660	4.72	0.31	0.35	600	1	600	2+670	600	24
#10	3+630	15.24	0.63	0.69	600	1	600	3+630	600	18
#11	3+850	2.45	0.21	0.23	300	1	300	3+855	300	18
#12	4+180	0.76	0.47	0.52	900	5	900	4+190	900	18
#13	4+615	1.68	0.12	0.14	300	1	300	4+621	300	15
#14	4+760	12.58	0.71	0.78	600	1	600	4+761	600	24
#15	4+850	1.82	0.15	0.16	900	1	900	4+853	900	18
#16	5+050	0.33	0.03	0.03	300	1	300	5+040	300	15
#17	5+160	12.9	0.79	0.87	800	1	800	5+166	800	22
#18	5+330	0.83	0.07	0.08	700	1	700	5+336	710	24
#19	5+575	16.42	0.93	1.03	900	1	900	5+558	900	15
#20	5+930	36.27	1.01	1.11	900	2	900	5+936	900	24
#21	6+310	33.4	1.51	1.66	300	1	300	6+314	300	18
#22	6+423				600	1	600	6+428	600	18
#23	6+442				600	1	600	6+446	600	18
#24	6+493				600	1	600	6+497	300	18
#25	6+530				600	1	600	6+524	600	24
#26	7+215	38.07	1.77	1.95	800	2	800	7+220	800	27
#27	7+275				600	3	600	7+280	710	18
#28	7+349				600	1	600	7+354	710	18
#28-2	7+375				600	1	600	7+381	710	18
#29	7+779	41.53	1.85	2.03	900	2	900	7+785	900	21
#30	7+970	17.63	0.87	0.96	900	2	900	7+972	900	21
#31	8+005				900	1	900	8+014	900	18
#32	8+380	29.53	1.28	1.41	900	1	900	8+387	900	18
#33	8+404				900	1	900	8+408	900	18
#34	8+426				900	2	900	8+434	900	18
#35	8+581	21.9	0.82	0.9	700	1	700	8+585	710	15
#36	9+000	40.4	1.53	1.68	700	1	700	9+004	710	15
#37	9+035				900	1	900	9+039	900	18
#38	9+049				900	1	900	9+054	900	18
#39	9+190	13.13	0.54	0.59	900	2	900	9+196	900	18
#40	9+290				900	1	900	9+292	900	18
#41	9+388	27.32	0.73	0.8	600	1	600	9+390	710	18
#42	9+416				600	1	600	9+413	600	18
#43	9+460				600	1	600	9+463	710	15
#44	9+490				300	1	300	9+487	300	15
#45	9+710	25.8	1.28	1.41	600	1	2 de 900	9+720	710	15
#46	11+020	82.95	2.62	2.88	600	1	600	11+026	600	15
#47	11+103				900	4	900	11+105	900	21
#48	11+203				900	1	900	11+206	900	18
#49	11+410	6.4	0.53	0.58	450	1	450	11+407	450	15
#50	11+748	14.22	0.69	0.76	600	1	600	11+756	710	15
#51	11+905	6.35	0.33	0.36	300	1	700	11+902	300	15
#52	12+195	9.18	0.52	0.57	700	1	700	12+197	710	15
#53	12+240				700	1	700	12+248	710	15
#54	12+390	6.46	0.36	0.39	600	1	600	12+384	600	15
#55	12+440				600	1	600	12+445	600	15
#56	12+485				600	1	600	12+482	600	15
#57	12+635	4.12	0.23	0.26	450	1	450	12+633	450	15
#58	12+740	53.48	1.26	1.38	900	1	900	12+763	900	18
#59	12+760				900	1	900	12+765	900	18
#60	12+775				900	1	900	12+783	900	18
#61	13+050	3.66	0.24	0.26	600	1	600	13+047	600	15

wsp	**Project:**	Vault to Whale Tail haul road	Date: 2018-02-08	AGNICO EAGLE
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	No.	171-17523-00	Youssef Hessani	
	Object:	Culvert inventory-conception vs As built list	**Verified by:**	
			Stéphan Dupuis, ing	

Small culvert

Culvert canceled

#62	13+265	2.09	0.2	0.22	600	1	600	13+269	600	21
#63	13+390	1.62	0.13	0.14	300	1	300	13+429	300	15
#64	13+920	4.98	0.33	0.36	600	1	600	13+927	600	18
#65	14+924	20.55	0.92	1.01	800	1	800	14+924	800	18
#66	16+324	8.4	0.43	0.48	600	1	600	16+322	600	15
#67	16+689	7.2	0.49	0.53	600	1	600	16+689	600	15
#68	16+750				600	1	600	16+739	600	15
#69	17+750	5.2	0.49	0.54	600	1	600	17+783	600	15
#70	17+842				600	1	600	17+836	600	15
#71	18+290	1.11	0.11	0.12	450	1	450	18+287	450	21
#72	18+352				450	1	450	18+350	450	30
#73	18+580	480.54	7.13	7.85	1200	1	1200	18+588	1200	21
#74	18+599				900	1	900	18+605	900	21
#74-2	18+601				900	1	900	18+606	900	21
#75	18+861	6.73	0.42	0.46	600	1	600	18+855	600	18
#76	18+916				450	1	450	18+919	450	18
#77	18+998				450	1	450	19+003	450	15
#78	19+092	6.3	0.36	0.4	300	1	300	19+094	300	15
#78-2	19+092				300	1	300	19+094	300	15
#79	19+495	10.2	0.57	0.62	700	1	700	19+491	700	18
#80	19+659	1.97	0.17	0.19	450	1	450	19+644	450	24
#81	19+841	1.51	0.12	0.13	600	1	600	19+848	600	18
#82	20+143	1.58	0.12	0.14	300	1	300	20+173	300	15
#83	20+300	13.1	0.69	0.75	600	1	600	20+288	600	21
#84	20+527	3.28	0.21	0.23	700	1	700	20+528	700	21
#85	20+671				600	1	600	20+667	600	15
#86	20+740	4.46	0.33	0.36	600	1	600	20+738	600	15
#87	20+810				600	1	600	28+810	600	15
#88	20+881				300	1	300	20+875	300	15
#89	21+180	7.63	0.37	0.4	450	1	450	21+176	450	21
#90	21+295	10.3	0.31	0.34	800	1	800	21+289	800	18
#90-2	21+297				800	1	800	21+291	800	18
#91	21+770	24.14	0.9	0.99	600	1	600	21+769	600	18
#92	22+040	112.33	3.59	3.94	600	1	600	22+039	600	15
#93	22+100				450	1	450	22+097	450	18
#94	22+147				900	1	900	22+151	900	18
#94-2	22+149				900	1	900	22+152	900	18
#94-3	22+150				900	1	900	22+153	900	18
#95	22+161				900	1	900	22+166	900	21
#95-2	22+162				900	1	900	22+167	900	21
#96	22+353	1.83	0.16	0.17	600	1	600	22+354	600	18
#97	22+436	8.1	0.47	0.51	600	1	600	22+441	600	21
#98	22+482				600	1	600	22+494	600	21
#99	22+830	2.27	0.17	0.18	600	1	600	22+829	600	18
#100	22+936	7.58	0.56	0.61	600	1	600	22+955	600	18
#101	23+025				600	1	600	23+023	600	18
#102	23+265	1.28	0.11	0.12	600	1	600	23+264	600	18
#103	23+562	4.62	0.36	0.39	600	1	600	23+559	600	27
#104	23+595				600	1	600	23+592	600	18
#105	24+555	216.57	2.77	3.04	600	1	600	24+564	600	18
#106	24+700				600	1	600	24+714	600	21
#107	24+960				900	1	900	24+960	900	30
#107-2	24+978				900	1	900	24+978	900	40
#107-3	24+980				900	1	900	24+980	900	40
#108	25+551	2.49	0.19	0.21	600	1	600	25+550	600	18
#109	25+905	1.1	0.07	0.07	800	1	800	25+796	800	15
#110	26+350	2.24	0.19	0.21	450	1	450	26+358	450	24
#111	26+461	1.73	0.11	0.12	300	1	300	26+464	300	21
#112	26+630	2.49	0.18	0.2	300	1	300	26+637	600	15
#113	26+736	7.12	0.44	0.49	450	1	450	26+750	450	15
#114	26+810				450	1	450	26+806	450	15
#115	26+865				300	1	300	26+858	300	15
#116	26+940	8.07	0.37	0.41	450	1	450	26+941	450	18
#117	27+173	9.08	0.5	0.55	700	1	700	27+176	700	27
#118	27+433	2.57	0.22	0.24	450	1	450	27+416	450	21

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	Object:	Culvert inventory-conception vs As built list	**Verified by:**	
			Stéphan Dupuis, ing	

Small culvert

Culvert canceled

#119	27+777	3.87	0.3	0.33	300	1	300	27+769	300	27
#120	28+125	0.46	0.04	0.04	300	1	300	28+145	300	18
#121	28+300	5.31	0.33	0.36	900	1	900	28+303	900	45
#121-2	28+302				900	1	900	28+305	900	45
#121-3	28+304				900	1	900	28+307	900	45
#122	28+414	9.75	0.6	0.65	900	1	900	28+413	900	42
#122-2	28+416				900	1	900	28+415	900	42
#122-3	28+418				900	1	900	28+417	900	42
#123	28+575	0.57	0.05	0.05	800	1	800	28+559	800	30
#124	28+710	0.5	0.04	0.04	300	1	300	28+706	300	18
#125	29+040	2.6	0.2	0.22	800	1	800	29+045	800	18
#126	29+240	1.74	0.15	0.17	800	1	800	29+240	800	60
#127	29+329	1.88	0.17	0.18	300	1	300	29+336	300	25
#128	29+515	0.94	0.08	0.08	300	1	300	29+522	300	14
#129	30+409	60.3	1.49	1.64	1200	1	1200	30409	1200	51
#130	30+812	8.81	0.51	0.56	600	1	600	30812	600	39
#131	31+041	7.38	0.41	0.45	600	1	600	31+031	600	48
#132	31+540	2.32	0.23	0.25	600	1	600	31545	600	18
#133	32+141	1	0.09	0.1	300	1	300	32+146	300	15
#134	32+389	8.89	0.69	0.76	300	1	300	32+401	300	36
#135	32+567	2.24	0.22	0.24	300	1	300	32+565	300	18
#136	32+905	4.37	0.31	0.34	300	1	300	32+908	300	15
#137	32+940	87.14	1.55	1.71	300	1	300	32+943	300	15
#138	33+000				300	1	300	32+978	300	15
#139	33+214				900	1	900	33+217	900	27
#139-2	33+216				900	1	900	33+218	900	27
#139-3	33+218				900	1	900	33+219	900	27
#140	33+256				900	1	900	33+259	900	27
#140-2	33+258				900	1	900	33+260	900	27
#140-3	33+260				900	1	900	33+261	900	27
#141	33+727	200.95	2.16	2.37	900	1	900	33+723	900	39
#141-2	33+728				900	1	900	33+724	900	39
#141-3	33+730				900	1	900	33+725	900	39
#141-4	33+732				900	1	900	33+726	900	39
#141-5	33+734				900	1	900	33+728	900	39
#142	34+160	1.8	0.13	0.15	450	1	450	34+168	450	15
#143	34+291	1.53	0.13	0.15	600	1	600	34+288	600	21
#144	34+319				1000	1	1000	34+310	1000	21
#145	34+395	2.14	0.17	0.19	300	1	300	34+401	300	18
#146	34+660	62.72	1.47	1.62	1200	1	1200	34+668	1200	33
#147	34+855	3.88	0.34	0.37	600	1	700	34+856	600	18
#148	35+173	3.44	0.3	0.33	600	1	600	35+149	600	18
#149	35+670	21.76	1.46	1.6	900	1	900	35+660	900	33
#150	36+171	296.11	7.97	8.77	900	1	900	36+170	900	18
#150-2	36+173				900	1	900	36+172	900	18
#150-3	36+175				900	1	900	36+174	900	18
#150-4	36+177				900	1	900	36+176	900	18
#150-5	36+179				900	1	900	36+178	900	18
#151	36+562	8.91	0.46	0.51	600	1	600	36+560	600	18
#152	36+933	55.9	1.41	1.55	900	1		36+929	900	21
#153	37+027				600	1		37+027	600	18
#153-2	37+028				600	1		37+028	600	18
#153-3	37+030				600	1		37+030	600	18
#153-4	37+032				600	1		37+031	600	18
#153-5	37+033				600	1		37+032	600	18
#154	37+261	3.22	0.17	0.19	450	1	450	37+255	450	18
#155	37+470	6.09	0.28	0.31	600	1	600	37+460	600	15
#156	37+506				450	1	450	37+481	450	15
#157	38+028	3.12	0.24	0.26	600	1	600	38+028	600	21
#158	38+490	81.72	2.4	2.64	900	1	900	38+490	900	18
#158-2	38+491				900	1	900	38+491	900	18
#158-3	38+493				900	1	900	38+493	900	18
#159	39+768	3.84	0.21	0.23	700	1	700	39+717	700	18
#160	39+966	3.77	0.31	0.34	600	1	600	39+958	600	21
#161	40+051				600	1	600	40+033	600	18

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Small culvert
Culvert canceled

#162	40+238	5.86	0.43	0.47	600	1	600	40+202	600	15
#163	40+474	1.05	0.09	0.1	300	1	300	40+475	300	15
#164	40+790	5.62	0.39	0.43	300	1	300	40+805	300	18
#165	40+964	3.07	0.2	0.22	600	1	600	40+949	600	24
#166	41+610				900	1	900	41+617	900	21
#167	41+843	21.9	0.67	0.74	900	1	900	41+838	900	33
#168	42+342	6.21	0.34	0.38	600	1	600	42+348	600	18
#169	42+765	2.86	0.22	0.25	300	1	300	42+768	300	18
#170	43+340	9.3	0.48	0.53	800	1	800	43+334	600	24
#171	43+815	12.42	0.67	0.74	600	1	600	43+813	600	18
#172	44+410				600	1		44+436	600	18
#173	44+431				1000	1		44+437	1000	36
#173-2	44+433	40	1.07	1.18	1000	1		44+442	1000	36
#173-3	44+435				1000	1		44+470	1000	36
#174	44+470				600	1		44+469	600	21
#175	44+640	0.88	0.07	0.08	450	1	450	44+645	450	15
#176	45+055	1.9	0.15	0.16	600	1	600	45+040	600	21
#177	45+065				600	1	600	45+100	600	24
#178	45+170	0.55	0.05	0.05	600	1	600	45+167	600	18
#179	45+485	37.16	0.91	1	700	1	700	45+466	600	24
#180	45+803	3.14	0.2	0.22	600	1	600	45+785	600	21
#181	45+935	4.5	0.34	0.37	600	1	600	45+915	600	18
#182	46+126				800	1		46+125	800	18
#183	46+185	17.13	0.82	0.9	800	1		46+158	800	24
#183-2	46+187				800	1		46+167	800	21
#184	46+230				600	1		46+207	600	24
#185	46+404	1.8	0.14	0.15	300	1	300	46+399	300	18
#186	46+541				450	1	450	46+532	450	24
#187	46+570	3.33	0.26	0.29	600	1	600	46+553	600	27
#188	46+595				600	1	600	46+565	600	30
#189	46+870	3.39	0.18	0.2	700	1	700	46+850	700	18
#190	46+985	2.16	0.17	0.19	900	1	900	46+958	900	18
#191	47+046				300	1	300	#N/A	#N/A	#N/A
#192	47+190	4.82	0.37	0.41	600	1	700	47+166	600	18
#193	47+360	2.19	0.19	0.21	600	1	600	47+339	600	18
#194	47+660	2.88	0.21	0.24	600	1	600	47+649	600	18
#195	47+808	1.6	0.13	0.14	700	2		47+810	700	15
#196	47+961	0.49	0.04	0.04	300	1	300	47+948	300	15
#197	48+120	3.2	0.21	0.23	600	1	600	48+121	600	18
#198	48+242	3.77	0.23	0.25	600	1	600	48+222	450	15
#199	48+383				900	1	900	48+388	900	18
#199-2	48+385				900	1	900	48+389	900	18
#199-3	48+387	53.61	1.14	1.29	900	1	900	48+390	900	18
#199-4	48+389				900	1	900	48+391	900	18
#200	48+395				600	1	600	48+420	600	18
#201	48+490	3.02	0.22	0.24	900	1	900	48+458	900	18
#202	48+585	2.27	0.18	0.2	600	1	600	#N/A	#N/A	#N/A
#203	48+760	1.51	0.12	0.13	600	1	600	48+770	600	15
#204	48+840	5.2	0.37	0.4	600	1	600	48+828	600	18
#205	48+901	0.57	0.05	0.05	300	1	300	#N/A	#N/A	#N/A
#206	49+115	0.99	0.8	0.9	450	1	450	49+106	450	15
#207	49+310	6.44	0.36	0.39	600	1	600	49+315	600	18
#208	49+405				900	1	900	49+441	900	18
#209	49+410	279.61	3.75	4.12	900	1	900	49+442	900	18
#210	49+415				900	1	900	49+444	900	18
#211	49+568	2.61	0.19	0.21	450	1	450	49+547	450	18
#212	49+640	36.93	1.66	1.83	600	1	600	49+639	600	15
#213	49+795	0.85	0.08	0.09	300	1	300	49+797	300	15
#214	49+915	7.38	0.48	0.52	800	1	800	49+903	800	15
#215	50+135	0.27	0.01	0.02	300	1	300	50+130	300	15
#216	50+510	0.77	0.06	0.06	600	1	600	#N/A	#N/A	#N/A
#217	50+790	1.27	0.1	0.11	450	1	450	50+788	450	15
#218	51+233				900	1	900	51+228	900	18
#218-2	51+235	270.4	3.3	3.63	900	1	900	51+229	900	18
#218-3	51+237				900	1	900	51+230	900	18

wsp	**Project:**	Vault to Whale Tail haul road	Date: 2018-02-08	AGNICO EAGLE
	Client:	Agnico Eagle Limited	**Prepared by:**	
	No.	171-17523-00	Youssef Hessani	
	Object:	Culvert inventory-conception vs As built list	**Verified by:**	
			Stéphan Dupuis, ing	

Small culvert

Culvert canceled

#218-4	51+239				900	1	900	51+231	900	18
#219	51+460	1.29	0.09	0.1	300	1	300	51+459	300	18
#220	51+765	2.07	0.18	0.19	450	1	450	#N/A	#N/A	#N/A
#221	51+883	8.49	0.52	0.58	900	1	900	51+878	900	24
#221-2	51+885				900	1	900	51+880	900	24
#221-3	51+887				900	1	900	51+883	900	24
#222	52+315	1.37	0.1	0.11	600	1	600	52+316	600	15
#223	52+650	6.34	0.48	0.53	600	1	600	52+651	600	15
#224	52+705				600	1	600	52+702	600	18
#225	52+715				600	1	600	52+719	450	15
#226	52+935	3.6	0.22	0.25	450	1	450	52+936	700	15
#227	52+970				600	1	600	52+969	600	18
#228	52+995				700	1	700	53+020	710	17
#229	53+245	0.71	0.06	0.06	300	1	300	53+272	300	15
#230	53+363	4.6	0.3	0.33	700	1	800	53+360	700	15
#231	53+659	0.49	0.04	0.04	300	1	300	53+652	300	15
#232	53+928	1.79	0.15	0.17	300	1	300	53+892	300	15
#233	54+240	0.37	0.03	0.04	450	1	450	54+237	450	15
#234	54+385	1.94	0.15	0.17	450	1	450	54+392	450	18
#235	54+500	3.13	0.25	0.27	600	1	600	54+500	600	18
#236	54+625	1.59	0.12	0.14	450	1	450	54+625	450	15
#237	54+655				600	1	600	54+654	600	15
#238	54+850	2.92	0.19	0.21	600	1	600	54+848	600	18
#239	55+060	23.1	1.11	1.22	600	1	900	55+059	600	18
#240	55+164				600	1	900	55+160	600	15
#241	55+235				600	1	900	55+243	600	18
#242	55+329				600	1	900	55+328	600	15
#243	55+593	4.95	0.37	0.41	600	1	600	55+576	600	18
#244	55+625				450	1	450	55+643	450	15
#245	55+735	1.91	0.16	0.18	600	1	600	55+732	600	15
#246	56+005	2.62	0.15	0.17	600	1	600	55+998	600	21
#247	56+065				700	1	700	56+069	700	18
#248	56+220	7.5	0.45	0.5	700	1	800	56+248	700	18
#249	56+435	14.85	0.69	0.76	600	1	600	56+437	700	18
#250	56+510				800	1	800	56+505	800	21
#251	56+745	0.86	0.07	0.07	300	1	300	56+726	300	18
#252	56+900	673.12	3.93	4.31	900	1	900	56+903	1200	24
#253	56+965				900	1	900	56+959	900	18
#253-2	56+967				900	1	900	56+961	900	18
#253-3	56+969				900	1	900	56+962	900	18
#254	57+125	1.48	0.12	0.13	600	1	600	57+121	600	18
#255	57+195	3.7	0.24	0.26	600	1	600	57+196	600	18
#256	57+350	4.61	0.31	0.34	600	1	600	57+340	600	18
#257	57+525	1.73	0.12	0.13	600	1	600	57+550	600	16
#258	57+875	2.53	0.16	0.17	600	1	600	57+900	600	16
#259	57+985	41.15	0.74	0.81	900	1	900	58+015	900	18
#260	58+185	1.57	0.1	0.11	300	1	300	58+123	300	18
#261	58+350	0.7	0.06	0.06	450	1	450	58+371	450	15
#262	58+410	1.54	0.12	0.13	450	1	450	58+407	450	15
#263	58+885	2.4	0.17	0.19	450	1	450	58+888	450	15
#264	58+922	1.53	0.11	0.12	600	1	600	58+926	600	15
#265	58+967				450	1	450	58+964	450	15
#266	59+024	1.88	0.15	0.16	300	1	300	59+031	300	15
#267	59+720	5.57	0.28	0.31	900	1	900	59+720	900	18
#268	59+774				600	1	600	59+764	600	21
#269	59+860	1.78	0.13	0.14	600	1	600	59+860	600	18
#270	60+000	0.89	0.6	0.7	600	1	600	60+001	600	18
#271	60+050	1.11	0.07	0.08	600	1	600	60+048	600	18
#272	60+087	1.74	0.11	0.13	600	1	600	60+088	600	15
#273	60+649	0.62	0.05	0.05	300	1	300	60+648	300	15
#274	60+815	1.29	0.11	0.12	600	1	600	60+813	600	18
#275	61+022	1.67	0.16	0.17	600	1	600	61+021	600	21
#276	61+282	2.07	0.16	0.17	600	1	600	61+283	600	21
#277	61+622	1.96	0.17	0.18	450	1	600	61+622	450	18
#278	61+869	10.29	0.73	0.8	600	1	700	61+867	1200	18

wsp	**Project:** Vault to Whale Tail haul road **Client:** Agnico Eagle Limited **No.** 171-17523-00 **Object:** Culvert inventory-conception vs As built list	Date: 2018-02-08 **Prepared by:** Youssef Hessani **Verified by:** Stéphan Dupuis, ing	AGNICO EAGLE

Small culvert

Culvert canceled

#278-2	61+871	[illegible]	[illegible]	[illegible]	600	1	700	61+898	600	15
#279	62+307	0.35	0.03	0.03	300	1	300	62+304	300	18
#280	62+416	4.48	0.31	0.34	900	1	900	62+413	1200	18
#281	62+530	1.63	0.13	0.14	600	1	600	62+529	600	18
#282	62+870	0.34	0.03	0.03	450	1	450	62+898	450	16
#283	62+965	0.44	0.04	0.05	450	1	450	62+963	450	18
#284	63+070	90.12	2.6	2.47	900	1	900	63+069	900	24
#284-2	63+072				900	1	900	63+071	900	24
#284-3	63+074				900	1	900	63+073	900	24
#285	63+225	0.54	0.05	0.05	300	1	300	63+253	300	15
#286	63+380	0.61	0.05	0.06	300	1	300	63+408	200	22
#287	63+429	1.17	0.1	0.11	600	1	600	63+431	600	30
#288	63+530	0.8	0.06	0.07	600	1	600	63+533	600	18
#289	63+630	0.66	0.05	0.06	600	1	600	63+738	800	24
#290	63+975	0.49	0.04	0.04	600	1	600	64+005	600	15

KIVALLIQ CONTRACTORS GROUP LTD

					2016-2017	2018					Remains to do			
Number	Location	Diameter (mm)	Slope	Flow	Length installed (m)	Extension side completed	Surveyed	Left side extension lenght (m)	Right side extension lenght (m)	Lenght installed (m)	Extension side	Estimated missing length with surveys (m)	Final length (m)	Notes (Follow-up)
#3	1+128	900	2.13%	Right-to-Left	No survey	Right	X		6	6	Left	1.5	27	confimation at spring
#3-2	1+131	900	2.13%	Right-to-Left	No survey	Right	X		6	6	Left	1.5	27	confimation at spring
#5	1+531	600	4.67%	Right-to-Left	24	Right	X		6	6			30	
#7	2+024	900	5.54%	Right-to-Left	18	Right	X	6	6	12			30	confimation at spring
#7-2	2+027	900	5.45%	Right-to-Left	18	Right	X	6	6	12			30	confimation at spring
#8	2+137	900	4.13%	Right-to-Left	27	Right	X		12	12			39	
#8-2	2+140	900	4.27%	Right-to-Left	27	Right	X		12	12			39	
#9	2+670	600	4.46%	Right-to-Left	24	Right	X		6	6	Left	3.3	30	confimation at spring
#10	3+630	600	3.85%	Right-to-Left	18	Right	X		6	6			24	
#11	3+855	300	1.66%	Left-to-Right	18	Right	X		6	6			24	
#12-3	4+184	900	2.62%	Right-to-Left	18	Right	X		9	9			27	
#12-2	4+187	900	2.79%	Right-to-Left	18	Right	X		9	9			27	
#12	4+190	900	2.50%	Right-to-Left	18	Right	X		9	9			27	
#12-4	4+192	900	2.73%	Right-to-Left	18	Right	X		9	9			27	
#12-5	4+195	900	2.57%	Right-to-Left	18	Right	X		9	9			27	
#13	4+621	300	3.93%	Right-to-Left	15	Right	X		9	9	Left	7.8	24	Installed on the Right side/ Meeting point a tasser (left side) ou extention 9m
#14	4+761	600	4.15%	Right-to-Left	24	Right	X	6	6	12			36	confimation at spring
#15	4+853	900	4.29%	Left-to-Right	18	Right			6	6			24	confimation at spring
#17	5+166	800	1.18%	Right-to-Left	21	Right	X		21	21			42	
#18	5+336	700	5.53%	Right-to-Left	24	Right	X	9	9	18			42	confimation at spring
#19	5+558	900	6.08%	Right-to-Left	33	Right / Left	X	12	15	27			60	
#20	5+936	900	1.00%	Right-to-Left	24	Right / Left	X	6	9	15			39	
#20-2	5+934	900	1.13%	Right-to-Left	24	Right / Left	X	6	9	15			39	
#21	6+314	300	0.61%	Right-to-Left	18	Right				0			18	Drain Français Installé coté droit / Coté gauche enterré dans le meeting point
#22	6+428	600	2.75%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#23	6+446	600	2.12%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#24	6+497	600	0.95%	Right-to-Left	18	Right / Left	X	9	6	15			33	
#26	7+220	800	3.07%	Right-to-Left	27	Right / Left	X	15	6	21			48	confimation at spring
#26-2	7+223	800	3.04%	Right-to-Left	27	Right / Left	X	15	6	21			48	confimation at spring
#27	7+280	700	2.49%	Right-to-Left	18	Right / Left	X	9	6	15			33	
#27-2	7+303	700	2.50%	Right-to-Left	18	Right	X		6	6			24	
#27-3	7+329	700	1.98%	Right-to-Left	18	Right	X		6	6			24	
#28	7+354	700	2.55%	Right-to-Left	18	Right	X		6	6			24	
#28-2	7+381	700	3.40%	Right-to-Left	18	Right	X		6	6			24	
#30	7+972	900	7.93%	Right-to-Left	21	Right / Left	X	9	9	18			39	confimation at spring
#30-2	7+974	900	8.15%	Right-to-Left	21	Right / Left	X	9	9	18			39	confimation at spring
#31	8+014	900	5.71%	Right-to-Left	18	Right / Left	X	6	6	12			30	confimation at spring
#32	8+387	900	3.73%	Right-to-Left	18	Right	X		6	6			24	
#33	8+408	900	0.94%	Right-to-Left	18	Right	X		6	6			24	
#34	8+434	900	0.77%	Right-to-Left	18	Right	X		6	6			24	
#34-2	8+436	900	1.83%	Right-to-Left	18	Right	X		6	6			24	
#35	8+585	700	2.07%	Right-to-Left	15	Right	X		6	6			21	
#36	9+004	700	2.43%	Right-to-Left	15	Right	X		6	6			21	
#37	9+039	900	4.33%	Right-to-Left	18	Right	X		6	6			24	
#38	9+054	900	5.10%	Right-to-Left	18	Right	X		6	6	left	2	24	confimation at spring
#39	9+196	900	3.03%	Right-to-Left	18	Right	X		6	6			24	
#39-2	9+198	900	3.09%	Right-to-Left	18	Right	X		6	6			24	
#40	9+292	900	2.52%	Right-to-Left	18	Right	X		6	6			24	
#41	9+390	700	4.10%	Right-to-Left	18	Right	X		6	6			24	
#43	9+463	700	3.56%	Right-to-Left	15	Right	X		6	6			21	
#45	9+720	700	0.92%	Right-to-Left	15	Left	X	6		6			21	
#46	11+026	600	3.08%	Right-to-Left	15	Left	X	6		6	Right	2	21	confimation at spring

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					2016-2017	2018					Remains to do			
Number	Location	Diameter (mm)	Slope	Flow	Length installed (m)	Extension side completed	Surveyed	Left side extension lenght (m)	Right side extension lenght (m)	Lenght installed (m)	Extension side	Estimated missing length with surveys (m)	Final length (m)	Notes (Follow-up)
#47	11+105	900	1.23%	Right-to-Left	21	Left	X	6		6			27	
#47-2	11+107	900	1.24%	Right-to-Left	21	Left	X	6		6			27	
#47-3	11+109	1200	1.21%	Right-to-Left	24	Left	X	6		6			30	
#47-4	11+111	900	1.28%	Right-to-Left	21	Left	X	6		6			27	
#47-5	11+113	900	0.90%	Right-to-Left	21	Left	X	6		6			27	
#48	11+206	900	1.95%	Right-to-Left	18	Left	X	6		6			24	
#50	11+756	700	3.80%	Right-to-Left	15	Right	X		6	6			21	
#52	12+197	700	4.60%	Right-to-Left	15	Right	X		6	6			21	
#53	12+248	700	1.18%	Right-to-Left	15	Right	X		6	6			21	
#54	12+384	700	1.20%	Right-to-Left	15	Left	X	6	6	12			27	confimation at spring
#55	12+445	700	2.67%	Right-to-Left	15	Left	X	6	6	12			27	confimation at spring
#56	12+482	700	No survey	No survey	15	Left	X	6	6	12			27	confimation at spring
#57	12+633	450	2.00%	Right-to-Left	15	Right	X		6	6			21	
#58	12+763	900	1.44%	Right-to-Left	18	Right	X		9	9			27	
#59	12+765	900	0.68%	Right-to-Left	18	Right	X		9	9			27	
#60	12+783	900	1.60%	Right-to-Left	18	Right	X		6	6			24	
#61	13+047	600	2.05%	Right-to-Left	15	Right	X		6	6			21	
#62	13+269	600	1.70%	Right-to-Left	21	Right	X		6	6			27	
#63	13+429	300	0.01%	Right-to-Left	15	Right	X		6	6			21	
#64	13+927	600	1.22%	Right-to-Left	18	Left	X	6		6	Right	2.3	24	
#65	14+924	800	2.29%	Right-to-Left	18	Left	X	6		6	Right	2.7	24	
#66	16+322	600	6.27%	Left-to-Right	15	Right	X		6	6			21	
#67	16+689	600	4.53%	Left-to-Right	15	Right	X		6	6			21	
#68	16+739	600	2.73%	Left-to-Right	15	Right	X		6	6			21	
#68-A	17+289	600	0.05%	Left-to-Right	24	-	X			0			24	
#68-B	17+504	600	1.86%	Left-to-Right	24	-	X			0			24	
#69	17+783	600	7.53%	Left-to-Right	15	Left	X	6		6			21	
#70	17+836	600	8.93%	Left-to-Right	15	Left	X	6		6			21	
#73	18+588	1200	1.52%	Right-to-Left	21	Right	X		6	6			27	
#74	18+605	900	0.52%	Right-to-Left	21	Right	X		6	6			27	
#74-2	18+606	900	0.90%	Right-to-Left	21	Right	X		6	6			27	
#75	18+855	600	6.65%	Right-to-Left	18	Right	X		6	6			24	
#76	18+919	450	6.38%	Right-to-Left	18	Right	X		6	6			24	
#77	19+003	450	6.32%	Right-to-Left	15	Right			3	3			18	
#78	19+094	300	1.51%	Right-to-Left	15	Right	X		6	6			21	
#78-2	19+094	300	1.55%	Right-to-Left	15	Right	X		6	6			21	
#79	19+491	700	5.66%	Right-to-Left	18	-				0	right	1.9	18	confimation at spring
#80	19+644	450	7.00%	Right-to-Left	24	Right	X		6	6			30	
#81	19+848	600	1.46%	Left-to-Right	18	Right / Left	X	6	6	12			30	
#82	20+173	300	5.24%	Right-to-Left	15	Right	X		6	6	Left	3.4	21	confimation at spring
#83	20+288	600	2.48%	Right-to-Left	21	Right	X	9	12	21			42	
#84	20+528	700	0.60%	Left-to-Right	21	-				0	right	2.1	21	confimation at spring
#85	20+667	600	0.27%	Right-to-Left	15	Right	X		6	6			21	
#86	20+738	600	0.50%	Right-to-Left	15	Right	X		6	6			21	
#87	20+810	600	1.07%	Right-to-Left	15	Right	X		6	6			21	
#88	20+875	300	0.13%	Left-to-Right	15	Right	X		6	6			21	
#89	21+176	450	0.70%	Right-to-Left	21	Right	X		6	6			27	
#90	21+289	800	1.00%	Left-to-Right	18	Right	X		6	6			24	
#90-2	21+291	800	1.00%	Left-to-Right	18	Right	X		6	6			24	
#91	21+769	600	0.76%	Left-to-Right	18	Right	X		6	6			24	
#92	22+039	600	0.27%	Left-to-Right	15	Right	X		6	6			21	
#93	22+097	450	0.85%	Right-to-Left	18	Right	X		6	6			24	

KIVALLIQ CONTRACTORS GROUP LTD

					2016-2017	2018					Remains to do			
Number	Location	Diameter (mm)	Slope	Flow	Length installed (m)	Extension side completed	Surveyed	Left side extension lenght (m)	Right side extension lenght (m)	Lenght installed (m)	Extension side	Estimated missing length with surveys (m)	Final length (m)	Notes (Follow-up)
#94	22+151	900	0.33%	Right-to-Left	18	Right	X		6	6			24	
#94-2	22+152	900	0.39%	Right-to-Left	18	Right	X		6	6			24	
#94-3	22+153	900	0.55%	Right-to-Left	18	Right	X		6	6			24	
#95	22+166	900	0.03%	Left-to-Right	21	Right	X		6	6			27	
#95-2	22+167	900	0.17%	Left-to-Right	21	Right	X		6	6			27	
#96	22+354	600	1.14%	Right-to-Left	18	Right	X		6	6			24	
#97	22+441	600	3.20%	Right-to-Left	21	-	X			0			21	
#98	22+494	600	0.88%	Right-to-Left	21	Right	X		9	9			30	
#99	22+829	600	2.83%	Right-to-Left	18	Right	X		6	6			24	
#100	22+955	600	1.20%	Right-to-Left	18	Right	X		6	6			24	
#101	23+023	600	5.60%	Right-to-Left	18	Right				0			18	French drain right side
#102	23+264	600	3.48%	Right-to-Left	18	Right	X		2	2			20	
#103	23+559	600	1.60%	Right-to-Left	27	Right / Left	X	6	6	12			39	
#104	23+592	600	3.53%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#105	24+564	600	0.87%	Left-to-Right	18	Right	X		6	6			24	
#106	24+714	600	2.22%	Right-to-Left	21	Right	X		6	6			27	
#107	24+960	900	4.33%	Right-to-Left	30	Right / Left	X	6	12	18			48	
#107-2	24+978	900	1.34%	Right-to-Left	39	Right / Left	X	9	12	21			60	
#107-3	24+980	900	1.35%	Right-to-Left	39	Right / Left	X	9	12	21			60	
#108	25+550	600	2.83%	Left-to-Right	18	Right / Left	X	6	6	12			30	
#109	25+796	800	3.90%	Left-to-Right	15	Right / Left	X	6	6	12			27	
#110	26+358	450	0.78%	Left-to-Right	24	-	X			0			24	
#111	26+464	300	2.66%	Left-to-Right	21	-	X			0			21	
#112	26+637	300	3.66%	Left-to-Right	15	Right	X		6	6	Left	2.2	21	confimation at spring
#113	26+750	450	0.02%	Right-to-Left	15	Right	X		6	6	Left	3.5	21	confimation at spring
#114	26+806	450	1.40%	Right-to-Left	15	Right / Left	X	6	6	12			27	
#115	26+858	300	0.30%	Right-to-Left	15	Right	X		6	6			21	
#116	26+941	450	2.78%	Right-to-Left	18	Right	X		6	6			24	
#117	27+176	700	2.94%	Right-to-Left	27	Right / Left	X	9	6	15			42	
#118	27+416	450	0.58%	Right-to-Left	21	Left	X	12		12			33	
#119	27+769	300	4.38%	Right-to-Left	27	Right / Left	X	12	6	18			45	
#120	28+145	300	1.15%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#121	28+303	900	3.64%	Left-to-Right	45	Right / Left	X	12	12	24			69	
#121-2	28+305	900	3.84%	Left-to-Right	45	Right / Left	X	12	12	24			69	
#121-3	28+307	900	3.95%	Left-to-Right	45	Right / Left	X	12	12	24			69	
#122	28+413	900	4.21%	Left-to-Right	42	Right / Left	X	12	12	24			66	
#122-2	28+415	900	4.40%	Left-to-Right	42	Right / Left	X	12	12	24			66	
#122-3	28+417	900	4.30%	Left-to-Right	42	Right / Left	X	12	12	24			66	
#123	28+559	800	0.72%	Left-to-Right	30	Right / Left	X	12	12	24			54	
#124	28+706	300	1.69%	Left-to-Right	18	Right / Left	X	6	9	15			33	
#125	29+045	800	1.49%	Left-to-Right	18	Right / Left	X	6	6	12			30	
#126	29+240	800	1.39%	Left-to-Right	60	Right / Left	X	18	24	42			102	
#129	30+409	1200	0.12%	Left-to-Right	51	Right / Left	X	18	18	36			87	
#130	30+812	600	5.79%	Right-to-Left	39	Right / Left	X	12	9	21			60	
#131	31+031	600	5.11%	Right-to-Left	48	Right / Left	X	15	9	24			72	
#132	31+545	600	1.26%	Right-to-Left	18	Right	X		6	6			24	
#133	32+146	300	3.51%	Left-to-Right	15	Right	X	12	6	18			33	confimation at spring
#134	32+401	300	2.50%	Left-to-Right	36	Right / Left	X		12	12			48	
#135	32+565	300	2.51%	Left-to-Right	18	-				0			18	
#136	32+908	300	4.38%	Left-to-Right	15	Right	X		6	6			21	
#137	32+943	300	4.00%	Left-to-Right	15	Right	X		6	6			21	
#138	32+978	300	3.62%	Left-to-Right	15	Right	X	6	6	12			27	confimation at spring

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					2016-2017	2018					Remains to do			
Number	Location	Diameter (mm)	Slope	Flow	Length installed (m)	Extension side completed	Surveyed	Left side extension lenght (m)	Right side extension lenght (m)	Lenght installed (m)	Extension side	Estimated missing length with surveys (m)	Final length (m)	Notes (Follow-up)
#139	33+217	900	1.98%	Left-to-Right	27	Left	X	6		6			33	
#139-2	33+218	900	1.74%	Left-to-Right	27	Left	X	6		6			33	
#139-3	33+219	900	1.65%	Left-to-Right	27	Left	X	6		6			33	
#140	33+259	900	3.71%	Left-to-Right	27	Right / Left	X	6	6	12			39	
#140-2	33+260	900	3.76%	Left-to-Right	27	Right / Left	X	6	6	12			39	
#140-3	33+261	900	3.85%	Left-to-Right	27	Right / Left	X	6	6	12			39	
#141	33+723	900	0.12%	Left-to-Right	39	Right / Left	X	9	6	15			54	
#141-2	33+724	900	0.01%	Left-to-Right	39	Right / Left	X	9	6	15			54	
#141-3	33+725	900	0.29%	Left-to-Right	39	Right / Left	X	9	6	15			54	
#141-4	33+726	900	0.20%	Left-to-Right	39	Right / Left	X	9	6	15			54	
#141-5	33+728	900	0.12%	Left-to-Right	39	Right / Left	X	9	6	15			54	
#142	34+168	450	6.60%	Left-to-Right	15	Right	X		6	6			21	
#143	34+288	600	1.33%	Left-to-Right	21	Right	X		6	6			27	
#144	34+310	1000	1.82%	Left-to-Right	21	Right	X		6	6			27	
#145	34+401	300	3.47%	Left-to-Right	18	Right	X		6	6			24	
#146	34+668	1200	2.00%	Left-to-Right	33	-	X			0	left	3.4	33	confimation at spring
#147	34+856	600	2.53%	Right-to-Left	18	Right	X		6	6			24	
#148	35+149	600	0.56%	Left-to-Right	18	Right	X		6	6			24	
#149	35+660	900	0.29%	Left-to-Right	33	Right / Left	X	12	12	24			57	
#150	36+170	900	2.17%	Left-to-Right	18	Left	X	6		6			24	
#150-2	36+172	900	1.95%	Left-to-Right	18	Left	X	6		6			24	
#150-3	36+174	900	1.88%	Left-to-Right	18	Left	X	6		6			24	
#150-4	36+176	900	1.90%	Left-to-Right	18	Left	X	6		6			24	
#150-5	36+178	900	1.93%	Left-to-Right	18	Left	X	6		6			24	
#151	36+560	600	2.70%	Left-to-Right	18	Left	X	6		6			24	
#152	36+929	900	2.54%	Left-to-Right	21	Left	X	6		6			27	
#153	37+027	600	1.33%	Left-to-Right	18	Left	X	6		6			24	
#153-2	37+028	600	1.13%	Left-to-Right	18	Left	X	6		6			24	
#153-3	37+030	600	0.90%	Left-to-Right	18	Left	X	6		6			24	
#153-4	37+031	600	0.83%	Left-to-Right	18	Left	X	6		6			24	
#153-5	37+032	600	1.10%	Left-to-Right	18	Left	X	6		6			24	
#154	37+255	450	0.27%	Right-to-Left	15	Right / Left	X	3	6	9			24	
#155	37+460	600	0.49%	Right-to-Left	15	Right	X		6	6			21	
#156	37+481	450	0.56%	Right-to-Left	15	Right	X		6	6			21	
#157	38+028	600	1.85%	Right-to-Left	21	Left	X	6		6			27	
#158	38+490	900	0.89%	Right-to-Left	18	Right	X		6	6			24	
#158-2	38+491	900	0.83%	Right-to-Left	18	Right	X		6	6			24	
#158-3	38+493	900	0.03%	Right-to-Left	18	Right	X		6	6			24	
#159	39+717	700	1.10%	Right-to-Left	18	Right	X		6	6			24	
#160	39+958	600	1.18%	Left-to-Right	21	-	X			0			21	
#161	40+033	600	0.39%	Right-to-Left	18	Right	X		6	6			24	
#162	40+202	600	0.17%	Right-to-Left	15	Right / Left	X	6	6	12			27	
#163	40+475	300	3.02%	Right-to-Left	15	Left	X	6		6			21	
#164	40+805	300	0.23%	Left-to-Right	18	Left	X	6		6			24	
#165	40+949	600	0.56%	Right-to-Left	24	Left	X	6		6			30	
#166	41+617	900	1.26%	Left-to-Right	21	Left	X	6		6			27	
#167	41+838	900	1.90%	Left-to-Right	33	Right / Left	X	9	9	18			51	
#168	42+348	600	0.03%	Left-to-Right	18	-	X	6	6	12			30	
#169	42+768	300	4.18%	Left-to-Right	18	Left	X	6	6	12			30	
#170	43+334	600	3.36%	Right-to-Left	24	Right / Left	X	6	6	12			36	
#170-a	43+595	900	1.95%	Left-to-Right	42	Right / Left	X	9	9	18			60	
#170-b	43+597	900	1.89%	Left-to-Right	42	Right / Left	X	9	9	18			60	

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					2016-2017	2018					Remains to do			
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#170-c	43+599	900	1.92%	Left-to-Right	42	Right / Left	X	9	12	21			63	
#171	43+813	600	2.10%	Left-to-Right	18	-	X	6	6	12			30	
#173	44+437	1000	0.01%	Left-to-Right	36	Right / Left	X	6	6	12			48	
#173-2	44+442	1000	0.08%	Left-to-Right	36	Right / Left	X	6	6	12			48	
#173-3	44+470	1000	0.04%	Left-to-Right	36	Left	X	6		6			42	
#174	44+469	600	1.57%	Left-to-Right	21	Left	X	6		6			27	
#175	44+645	450	4.24%	Left-to-Right	15	Right / Left	X	6	6	12			27	
#176	45+040	600	2.80%	Right-to-Left	21	Right	X		6	6			27	
#177	45+100	600	0.77%	Right-to-Left	24	Right	X		6	6			30	
#178	45+167	600	3.07%	Right-to-Left	18	-	X	6	6	12			30	
#179	45+466	600	1.94%	Left-to-Right	24	Right / Left	X	6	6	12			36	
#180	45+785	600	2.03%	Left-to-Right	21	-	X		6	6			27	
#181	45+915	600	0.22%	Right-to-Left	18	Right	X		6	6			24	
#182	46+125	800	0.56%	Left-to-Right	18	Right	X	6	6	12			30	
#183	46+158	800	0.15%	Left-to-Right	24	Right	X	6	6	12			36	
#183-2	46+167	800	0.50%	Left-to-Right	21	Right	X	6	6	12			33	
#184	46+207	600	0.50%	Left-to-Right	24	Right	X	6	6	12			36	
#185	46+399	300	1.52%	Right-to-Left	18	Right	X		6	6			24	
#186	46+532	450	0.77%	Right-to-Left	24	Right / Left	X	6	6	12			36	
#187	46+553	600	2.00%	Right-to-Left	27	Right / Left	X	9	6	15			42	
#188	46+565	600	2.14%	Right-to-Left	30	Right / Left	X	9	9	18			48	
#189	46+850	700	0.77%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#190	46+958	900	1.54%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#192	47+166	600	3.01%	Left-to-Right	18	Right	X		6	6			24	
#193	47+339	600	1.07%	Right-to-Left	18	Left	X	6		6			24	
#194	47+649	600	1.36%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#195	47+810	700	3.11%	Right-to-Left	15	Right / Left		6	6	12			27	
#196	47+948	300	3.00%	Right-to-Left	15	Right / Left	X	6	6	12			27	
#197	48+121	600	2.48%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#198	48+222	450	3.71%	Right-to-Left	15	Right / Left	X	6	6	12			27	
#199	48+388	900	2.67%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#199-2	48+389	900	2.72%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#199-3	48+390	900	2.31%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#199-4	48+391	900	3.10%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#201	48+458	900	1.39%	Left-to-Right	18	Left	X	6		6			24	
#203	48+770	600	2.52%	Right-to-Left	15	Right / Left	X	6	6	12			27	
#204	48+828	600	3.32%	Right-to-Left	18	Left	X	6		6			24	
#206	49+106	450	0.08%	Left-to-Right	15	Right / Left	X	6	6	12			27	
#207	49+315	600	1.91%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#208	49+441	900	1.18%	Left-to-Right	18	Left	X	6		6			24	
#209	49+442	900	1.64%	Left-to-Right	18	Left	X	6		6			24	
#210	49+444	900	1.82%	Left-to-Right	18	Left	X	6		6			24	
#211	49+547	450	2.39%	Left-to-Right	18	Right / Left	X	6		6			24	
#212	49+639	600	2.35%	Left-to-Right	15	Left	X	6		6			21	
#213	49+797	300	0.24%	Left-to-Right	15	Left	X	6		6			21	
#214	49+903	800	0.11%	Right-to-Left	15	Right / Left	X	6	6	12			27	
#215	50+130	300	2.85%	Right-to-Left	15	Left	X	6		6			21	
#217	50+788	450	2.74%	Left-to-Right	15	Left	X	6		6			21	
#218	51+228	900	0.19%	Right-to-Left	18	Left	X	6		6			24	
#218-2	51+229	900	0.08%	Right-to-Left	18	Left	X	6		6			24	
#218-3	51+230	900	0.10%	Right-to-Left	18	Left	X	6		6			24	
#218-4	51+231	900	0.19%	Right-to-Left	18	Left	X	6		6			24	

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#219	51+459	300	4.13%	Right-to-Left	18	Right / Left	X	6	6	12			30	
#221	51+878	900	0.09%	Left-to-Right	24	Right	X		6	6			30	
#221-2	51+880	900	0.25%	Left-to-Right	24	Right	X		6	6			30	
#221-3	51+883	900	0.43%	Left-to-Right		Right	X		6	6			6	
#222	52+316	600	0.31%	Right-to-Left	15	Right / Left	X	6	6	12			27	
#223	52+651	600	0.97%	Left-to-Right	15	Left	X	6		6			21	
#224	52+702	600	2.21%	Left-to-Right	18	Left	X	6		6			24	
#225	52+719	450	0.93%	Left-to-Right	15	Right / Left	X	6	6	12			27	
#226	52+936	700	1.34%	Left-to-Right	15	Left	X	6		6			21	
226-2	52+937	450	1.13%	Left-to-Right	15	Left	X	6		6			21	
#227	52+969	600	0.63%	Left-to-Right	18	Left	X	6		6			24	
#230	53+360	700	5.75%	Left-to-Right	15	Right / Left	X	6	6	12			27	
#231	53+652	300	1.93%	Right-to-Left	15	Left	X	6		6			21	
#232	53+892	300	0.10%	Left-to-Right	15	Left	X	6		6			21	
#233	54+237	450	1.84%	Left-to-Right	15	Right / Left	X	6	6	12			27	
#234	54+392	450	3.98%	Left-to-Right	18	Left	X	6		6			24	
#235	54+500	600	2.57%	Left-to-Right	18	Left	X	6		6			24	
#236	54+625	450	2.19%	Left-to-Right	15	Rigth/Left	X	6	6	12			27	
#237	54+654	600	2.26%	Left-to-Right	15	Rigth/Left	X	6	6	12			27	
#238	54+848	600	1.91%	Left-to-Right	18	Rigth/Left	X	6	6	12			30	
#239	55+059	600	2.30%	Left-to-Right	18	Rigth/Left	X	6	6	12			30	
#240	55+160	600	3.21%	Left-to-Right	15	Rigth/Left	X	6	6	12			27	
#241	55+243	600	2.81%	Left-to-Right	18	Right	X		6	6			24	
#242	55+328	600	1.18%	Left-to-Right	15	Rigth/Left	X	6	6	12			27	
#243	55+576	600	3.18%	Left-to-Right	18	Right	X		6	6			24	
#244	55+643	450	3.13%	Left-to-Right	15	Right	X		6	6			21	
#245	55+732	600	6.80%	Left-to-Right	15	Right	X		6	6			21	
#246	55+998	600	3.82%	Left-to-Right	21	Right	X		6	6			27	
#247	56+069	700	3.19%	Left-to-Right	18	Rigth/Left	X	6	6	12			30	
#248	56+248	700	3.44%	Left-to-Right	18	Rigth/Left	X	6	6	12			30	
#249	56+437	700	1.91%	Left-to-Right	18	Rigth/Left	X	6	6	12			30	
#250	56+505	800	0.73%	Left-to-Right	21	Rigth/Left	X	6	6	12			33	
#251	56+726	300	1.76%	Right-to-Left	18	Rigth/Left	X	6	6	12			30	
#252	56+903	1200	1.42%	Right-to-Left	24	Rigth/Left	X	6	6	12			36	
#253	56+959	900	0.37%	Right-to-Left	18	Right	X	6	6	12			30	
#253-2	56+961	900	0.32%	Right-to-Left	18	Right	X	6	6	12			30	
#253-3	56+962	900	0.63%	Right-to-Left	18	Right	X	6	6	12			30	
#254	57+121	600	2.07%	Right-to-Left	18	Left/Right	X	6	6	12			30	
#255	57+196	600	1.43%	Right-to-Left	18	Left	X	6		6			24	
#256	57+340	600	3.47%	Right-to-Left	18	Right	X		6	6			24	
#259	58+015	900	0.12%	Left-to-Right	18	Right/Left	X	6	6	12			30	
#260	58+123	300	1.37%	Right-to-Left	18	-				0			18	Don't need extention//validation with surveyor
#261	58+371	450	0.04%	Left-to-Right	15	Right	X		6	6			21	
#262	58+407	450	0.05%	Right-to-Left	15	Rigth/Left	X	6	6	12			27	
#263	58+888	450	0.84%	Right-to-Left	15	Right	X		6	6			21	
#264	58+926	600	1.72%	Right-to-Left	15	Right	X		6	6			21	
#265	58+964	450	0.98%	Right-to-Left	15	Right	X	6	6	12			27	
#266	59+031	300	3.25%	Right-to-Left	15	Right	X		6	6			21	
#267	59+720	900	0.29%	Right-to-Left	18	Right	X		6	6			24	
#268	59+764	600	1.77%	Right-to-Left	21	Left	X	6		6			27	
#269	59+860	600	2.73%	Right-to-Left	18	-				0			18	
#270	60+001	600	1.48%	Right-to-Left	18	Right	X		6	6			24	

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#271	60+048	600	2.19%	Right-to-Left	18	Right	X		6	6			24	
#272	60+088	600	0.37%	Right-to-Left	15	Rigth/Left	X	6	6	12			27	
#273	60+648	300	1.65%	Right-to-Left	15	Rigth/Left	X	6	6	12			27	
#274	60+813	600	0.02%	Right-to-Left	18	Right	X		6	6			24	
#275	61+021	600	7.83%	Right-to-Left	21	Right	X		6	6			27	
#276	61+283	600	0.69%	Right-to-Left	21	Right	X		6	6			27	
#277	61+622	450	2.02%	Right-to-Left	18	Rigth/Left	X	6	6	12			30	
#278	61+867	1200	1.08%	Right-to-Left	18	Rigth/Left	X	6	6	12			30	
#279	62+304	300	4.67%	Right-to-Left	18	Rigth/Left	X	6	6	12			30	
#280	62+413	900	0.67%	Right-to-Left	18	Left	X			0	Right	3.7	18	confimation at spring
#281	62+529	600	0.85%	Right-to-Left	18	Right	X		6	6			24	
#283	62+963	450	0.94%	Right-to-Left	18					0	Right	3.8	18	confimation at spring
#284	63+069	900	0.14%	Right-to-Left	24					0	Both	7.2 - 9.6	24	confimation at spring
#284-2	63+071	900	0.05%	Right-to-Left	24					0	Both	7.2 - 9.6	24	confimation at spring
#284-3	63+073	900	0.26%	Right-to-Left	24					0	Both	7.2 - 9.6	24	confimation at spring
#287	63+431	600	3.10%	Right-to-Left	30	Right	X		12	12	Left	10.2	42	
#288	63+533	600	1.81%	Right-to-Left	18	Rigth/Left		12	6	18			36	
#289	63+738	800	0.60%	Right-to-Left	24	Right			9	9			33	
#290	64+005	600	2.12%	Right-to-Left	15	Rigth/Left		6	6	12	Right	3.7	27	confimation at spring

APPENDIX

D OTHER CHANGES

wsp	**Project:** Vault to Whale Tail haul road **Client:** Agnico Eagle Limited **No.** 171-17523-00 **Object:** Notice of change: Profile	Date: 2018-02-08 **Prepared by:** Youssef Hessani **Verified by:** Stéphan Dupuis, ing	AGNICO EAGLE

Notice of change: Profile adjustment

Source: Client

Chaining		Type of modification
25+071		(vertical intersection point) Asjustment of 1,5 m at the élévation 133.130m
25+177 PIV		Adjustment of 1 m at elevation 131.1m
31+090	31+120	Profile raising 300 mm
31+400	31+430	Profile raising 300 mm
31+650	31+775	Profile raising 300 mm
49+000	49+075	Profile raising 600 mm
49+175	???	Profile raising 600 mm
49+700	49+775	Profile raising 600 mm
49+850	49+900	Profile raising 500 mm
49+930	50+040	Profile raising 500 mm
50+075	50+225	Profile raising 400 mm
50+275	50+450	Profile raising 600 mm
50+520	50+575	Profile raising 500 mm
50+630	50+675	Profile raising 400 mm
50+675	50+700	Transition
50+930	51+050	Profile raising 400 to 600 mm
51+990	52+110	Profile raising 400 mm
54+900	54+980	Profile raising 400 mm

Title: Fish habitat (Bridges)
Source: Client

No.	Location (KM)	Crossing Structure	Culvert/Bridge Length (m)	Flow Characteristics	Channel Configuration	Dominant Habitat	Fish Habitat Assessment
2	3.4	Bridge	13.9	Mainly surface flow, but short sections of interstitial flow near proposed crossing in both 2014 and 2015	Single	Boulder	Provides seasonal small-bodied fish habitat and a potential migration route for fish, but upstream lakes not extensive or deep and so may have limited fish habitat. No Arctic Grayling were observed.
5	10.7	Bridge	13.88	Interstitial flow at crossing and surface flow in upstream bedrock sections during fall of 2014. Surface flow more widespread during spring 2015 but still sections with only interstitial flow	Single	Boulder	May provide seasonal small fish habitat. Possible upstream migration route for fish during spring freshet or during other periods of high flow. No Arctic Grayling were observed.
8	16	Bridge	44.87	Surface flow	Single	River	Watercourse provides seasonal small fish habitat and contains gravel substrate that may be suitable for Arctic Grayling spawning. Potential migration route between lakes. No Arctic Grayling were observed.
10	20	Bridge	13.88	Substantial flow, but still only interstitial in places in the spring of 2015	Multiple	Graminoid	Provides seasonal small fish habitat, as well as potential spawning habitat with cobble/gravel substrate in places for Arctic Grayling. Migration between lakes by large-bodied fishes unlikely due to sections with only interstitial flow, but could occur during high flows. Joins two relatively large lakes. No Arctic Grayling were observed.
12	23.9	Bridge	66	Surface flow, but diffuse in some locations in 2014 and 2015	Single	River	Fish habitat. Broad, short section of river between two large lake systems. Therefore fish passage may be an important function. No Arctic Grayling were observed.
13	26.1	Bridge	13.88	Surface flow	Single	Boulder	May not provide fish habitat most of the time, however, it appears as if flows may occasionally be substantial and fish passage may occur at that time, as this is a connection between two potentially fish-bearing lakes. No Arctic Grayling were observed.
16	32.3	Bridge	45	No surface connection in 2014. Surface connection in 2015	Single	River	Large flowing river, with large lakes upstream and downstream. Important fish habitat. May provide spawning habitat for large-bodied fishes and likely is an important migration route for fishes. No Arctic Grayling were observed.
19	43.5	Bridge	13.88	Likely seasonal interstitial flow	Single	Boulder	May provide seasonal fish habitat. Fish passage may be possible during the spring freshet during some years, and may be important for the chain of upstream lakes. No Arctic Grayling were observed.
21	44.8	Bridge	45	Surface flow at crossing in 2014 and 2015, but diffuse at some downstream locations	Multiple/ Diffus	Graminoid	Seasonal small-bodied fish habitat and potential spawning habitat for Arctic Grayling. Likely provides fish passage upstream to a number of small lakes. No spawning Arctic Grayling were observed, but one juvenile was captured in 2014 and in 2015.

APPENDIX

E BRIDGE INSPECTION REPORTS

APPENDIX

E-1 TECHNICAL MEMORANDUM - CAT 77G AND 785D

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

Issue Date:	January 5, 2018	**File:**	2017-2318.02.E.12.00
Previous Issue Date	November 23, 2017		
To:	Julie Belanger, P.Eng., M.Sc.A., Project Superintendent, Araruq		
From:	Raya Smertina		
Client:	Agnico Eagle Mines Ltd. (via Surespan Structures Ltd.)		
Project Name	Meadowbank to Amaruq Bridges		
Project No.	2017-2318		
Subject:	Loaded CAT 77G and 785D Load Rating		

TECHNICAL MEMORANDUM

1 BACKGROUND INFORMATION

Associated Engineering (B.C.) Ltd. (AE) was retained on December 19, 2017 by Surespan Construction Ltd. to conduct a load evaluation of bridges owned by **Agnico Eagle Mines Ltd.** on the road from Meadowbank to Amaruq. AE previously designed the bridges in question and performed site inspections of the structures in July 2017. The nine bridges in total involve three distinct structures with spans of 13.88 m, 44.88 m and 66.0 m.

The loaded machines evaluated and compared to the original design are as follows:

- Caterpillar 777G (182,420 kg GMW)
- Caterpillar 785D (249,480 kg GMW)

Axle spacing and loading is in accordance with data published (2013) by Caterpillar Inc.

2 CONCLUSIONS

Following structural analysis and evaluation, the evaluation machines as provided are within the original design capacity. Analysis was conducted to the requirements of CAN/CSA S6-14, with live load factors to Section 3 (as opposed to Section 14) including dynamic impact loads.

The following tables summarize the factored demands versus capacities.

Girder Flexural Demand/Capacity			
Bridge Span:	**13.88 m**	**44.88 m**	**66.0 m**
Caterpillar 777G - Loaded	66%	78%	71%
Caterpillar 785D - Loaded	84%	95%	83%

Girder Shear Demand/Capacity			
Bridge Span:	**13.88 m**	**44.88 m**	**66.0 m**
Caterpillar 777G - Loaded	48%	44%	33%
Caterpillar 785D - Loaded	61%	53%	38%

Bridge Deck Demand/Capacity			
Bridge Span:	**13.88 m**	**44.88 m**	**66.0 m**
Caterpillar 777G - Loaded	75%	75%	75%
Caterpillar 785D - Loaded	99%	99%	99%

In accordance with the original design, trucks/machines should operate within permitted speeds, and approaches should be adequately maintained to prevent additional dynamic loads on the structures that may compromise their structural integrity. A maximum of one truck/machine should cross each bridge at any given time. No additional operational restrictions are required for the evaluated trucks/machines to cross the bridges.

This report was prepared for **Agnico Eagle Mines Ltd.** to assist in evaluation of the bridges on the Meadowbank to Amaruq Road and is not a certification of the finished structures. The services provided by Associated Engineering (B.C.) Ltd. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Respectfully submitted,
Associated Engineering (B.C.) Ltd.

Prepared by:

Raya Smertina
Bridge Engineer

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER
D.J. HARVEY
LICENSEE
2018/01/05
NWT/NU

David Harvey, M.Sc., P.Eng., Struct.Eng.
Senior Bridge Engineer

RS/JH/DH/mc

PERMIT TO PRACTICE
ASSOCIATED ENGINEERING (B.C.) LTD.
Signature
Date 2018 January 05
PERMIT NUMBER: P 554
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

APPENDIX

E-2 TECHNICAL MEMORANDUM – CAT 6020B AND 6030

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

Issue Date:	April 13, 2018	**File:**	2017-2318.02.E.12.00
To:	Julie Belanger, P.Eng., M.Sc.A., Project Superintendent, Amaruq		
From:	Matteo Agnoloni		
Client:	Agnico Eagle Mines Ltd. (via Surespan Structures Ltd.)		
Project Name	Meadowbank to Amaruq Bridges		
Project No.	2017-2318		
Subject:	Cat 6020B and 6030 Excavator Load Evaluation		

TECHNICAL MEMORANDUM

1 BACKGROUND INFORMATION

Associated Engineering (B.C.) Ltd. (AE) was retained on April 9, 2018 by Surespan Construction Ltd. to conduct a load evaluation of bridges owned by **Agnico Eagle Mines Ltd.** on the road from Meadowbank to Amaruq. AE previously designed the bridges in question and performed site inspections of the structures in July 2017. The nine bridges in total involve three distinct structures with spans of 13.88 m, 44.88 m and 66.0 m.

On April 5, 2018, Julie Belanger, P.Eng., of Agnico Eagle requested that the bridge designs be evaluated for the following load cases – the excavators may be considered with or without buckets:

- Caterpillar 6020B (224,000 kg GMW)
- Caterpillar 6030 (294,000 kg GMW)
- Caterpillar 785D / Caterpillar 6020B on Sleipner E250 tow-haul (378,000 kg GVW).

Axle/track spacing and loading used in the evaluation is in accordance with data available on the manufacturers' websites.

2 CONCLUSIONS

Following structural analysis and evaluation, we conclude that the requested load configurations are generally within the original design capacity. Analysis was conducted to the requirements of CAN/CSA S6-14, with live load factors to Section 3 (as opposed to Section 14) including dynamic impact loads.

The following tables summarize the factored girder demands versus capacities.

Girder Flexural Demand/Capacity			
Bridge Span:	**13.88 m**	**44.88 m**	**66.0 m**
Caterpillar 6020B (224,000 kg GMW)	76%	89%	78%
Caterpillar 6030 (294,000 kg GMW)	94%	102%	90%
Caterpillar 785D / 6020B Tow-haul	86%	100%	94%

Girder Shear Demand/Capacity			
Bridge Span:	**13.88 m**	**44.88 m**	**66.0 m**
Caterpillar 6020B (224,000 kg GMW)	53%	49%	36%
Caterpillar 6030 (294,000 kg GMW)	65%	57%	40%
Caterpillar 785D / 6020B Tow-haul	56%	63%	44%

Bridge Deck Demand/Capacity			
Bridge Span:	**13.88 m**	**44.88 m**	**66.0 m**
Caterpillar 6020B (224,000 kg GMW)	85%	85%	85%
Caterpillar 6030 (294,000 kg GMW)	100%	100%	100%
Caterpillar 785D / 6020B Tow-haul	N/A	N/A	N/A

Excavators tracking across the bridges should operate at a very low speed along the centreline of each bridge, and a maximum of one machine should cross each bridge at any given time without other live loading on the bridge. The Caterpillar 6020B and 6030 excavators can cross the bridges with or without the bucket being attached. Excavators tracking across bridges will induce vibrations into the supporting structure. We recommend restricting tracked machine crossings to the minimum to prevent unintentional loosening of components. It is important to be aware that operating tracked machines on unprotected concrete decks can result in significant damage to the concrete surface. We strongly recommend that a protective or sacrificial surface (such as timber heavy-equipment mats) be placed along the track paths to provide the necessary deck protection. Note that flexural demand from the Caterpillar 6030 is marginally above the capacity of the 44.88 m span. This situation is acceptable because we expect this will be an unusual load case for which slightly reduced load factors are appropriate.

We were unable to evaluate the deck capacity for the loading from the Sleipner E250 because the out-to-out with of the wheel footprint exceeds to deck width. As a result, the Sleipner tow-haul will not be able to cross the bridge decks.

This report was prepared for **Agnico Eagle Mines Ltd.** to assist in evaluation of the bridges on the Meadowbank to Amaruq Road and is not a certification of the finished structures. The services provided by Associated Engineering (B.C.) Ltd. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Respectfully submitted,
Associated Engineering (B.C.) Ltd.

Prepared by:

Matteo Agnoloni
Bridge Engineer

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER
D.I. HARVEY
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2018-04-13

David Harvey, M.Sc., P.Eng., Struct.Eng.
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Signature
Date APR 13 2018
PERMIT NUMBER: P 554
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

APPENDIX

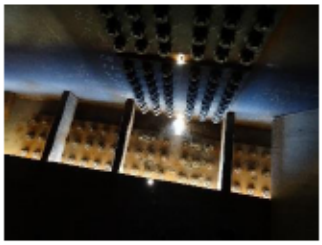
E-3 TECHNICAL MEMORANDUM – BRIDGE INSPECTIONS

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

TECHNICAL MEMORANDUM

Agnico Eagle Mines Ltd.

Meadowbank to Amaruq Road
Bridge Inspections



August 2017

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Table of Contents

TECHNICAL MEMORANDUM

Agnico Eagle

Meadowbank to Amaruq Road Bridge Inspections

Issued: August 2, 2017
Previous Issue: None

1 Introduction

Surespan Construction Ltd., (Surespan) and **Associated Engineering Ltd. (AE)** were retained to conduct a site visit to the Meadowbank to Amaruq road bridges by Agnico Eagle Mines Ltd. The intent was to address specific concerns raised for the nine heavy-haul bridges which were designed by AE and supplied by Surespan. Construction supervision for the bridge structures has been conducted by Qamanittuaq SANA (a division of Groupe Gilbert), WSP and Agnico Eagle since Fall 2016 and is nearing completion. The reasons for the requested site visit were:

- Observed deformations (out-of-straightness) in the steel girder webs, particularly at girder splice locations
- Local spalling of precast concrete components, particularly at locations of field-welded embedded steel plates
- Bearing misalignment

This report outlines observed conditions of the as-built and in-construction bridges, with a focus on discussing these concerns. As AE staff were not present during construction, we can only postulate as to the causes of the observed defects. The visual inspection reports included in Appendix A provide a brief overview of the condition for each structure but are not intended to be detailed inspections.

Site visits were conducted between July 13th to 17th by Raya Smertina, EIT, of Associated Engineering. She was accompanied by Youssef Hessani of WSP, Serge Tremblay of Agnico Eagle as well as Olivier Jacques of Groupe Gilbert at various times during inspections. Preliminary observations were presented on July 16th to Agnico Eagle representatives to facilitate staff scheduling and maintenance considerations decisions.

2 Summary of Structures

The Meadowbank to Amaruq Road is currently under construction, with nine bridges comprising three different spans, as summarized in Table 2-1. Reference drawings listed are for the Issued-for-Construction packages, not including fabrication and civil works drawings. Bridge superstructure and precast ballast wall and footing component designs were completed by AE. Foundations, binwall abutments and civil design was completed by WSP (the listed WSP drawings were provided to AE for reference only during the detailed design completed in 2016).

Table 2-1
Summary of Meadowbank to Amaruq Road Bridges

Bridge Station No.	Span Length (m)	Reference Drawings	Bridge Construction Stage During Inspections
km 3.6	13.88 m	20132318-09-S-101 to -109 (AE) 6103-117-230-276, -277 (WSP)	Complete
km 10.7	13.88 m	20132318-09-S-101 to -109 (AE) 6103-117-230-278, -279 (WSP)	Complete
km 16.0	44.88 m	20132318-09-S-201 to -212 (AE, Option 1) 6103-117-230-280, -281 (WSP)	Complete
km 20.0	13.88 m	20132318-09-S-101 to -109 (AE) 6103-117-230-282, -283 (WSP)	Complete
km 23.9	66.0 m	20132318-09-S-301 to -315 (AE) 6103-117-230-284, -285 (WSP)	Complete
km 26.1	13.88 m	20132318-09-S-101 to -109 (AE) 6103-117-230-286, -287 (WSP)	Complete
km 32.3	44.88 m	20132318-09-S-201 to -212 (AE, Option 1) 6103-117-230-288, -289 (WSP)	Complete
km 43.5	13.88 m	20132318-09-S-101 to -109 (AE) 6103-117-230-290, -291 (WSP)	Incomplete approach fills and cast-in-place deck joints/pockets
km 44.8	44.88 m	20132318-09-S-401 to -412 (AE, Option 2) 6103-117-230-292, -293 (WSP)	Cast-in-place deck joints/pockets under construction

The three bridge designs provided by AE consist of the following components:

- Three spans consisting of 13.88 m, 44.88 m and 66.0 m
- 7.9 m wide precast deck panels with railing (deck edge for delineation only), to be completed with cast-in-place reinforced concrete deck joints and girder shear stud pockets
- Steel plate girders
- Semi-integral abutments using precast ballast walls (two components at each end)
- Laminated elastomeric bearings, complete with guide plates in slotted holes and keeper bars
- Precast concrete footings - one beneath each bearing and girder end (bin wall and foundation design by WSP).

3 Primary Observations

The following provides a summary and discussion of our observations. For the purposes of these inspections, all bridges were assumed nominally aligned from north to south (with east and west girders and sides). The actual orientation of the bridges varies based on the road geometry.

3.1 GIRDER WEB OUT-OF-STRAIGHTNESS

Following launching and installation of the 44.88 m and 66 m span bridges, web-panel out-of-straightness was noticed by on-site crews at some girder splice locations (see Figure 3-1). As these were documented following completion of the bridges, it is not possible to confirm whether they occurred during fabrication, transportation, erection, or traffic loading.

Figure 3-1
Web Panel Out-of-Straightness at Splice Locations (Bridge at km 23.9)

Measurements were taken by Groupe Gilbert construction staff, varying from zero up to 25 mm and were monitored a few weeks in a row in June and July 2017. Some variation was observed within these values, although these variations could be within the tolerance of the measurement tools. During AE's visual inspections, web out-of-straightness was observed to be in the range of zero to 18 mm. Some web out-of-straightness was also observed between vertical stiffeners (not at splice locations) on the km 23.9 bridge.

We believe that the web-panel out-of-straightness is the result of unbalanced welding shrinkage that occurred during girder fabrication. The girder design includes two longitudinal stiffeners installed on one side of the girder. The heat applied to one side of the web plate by the longitudinal-stiffener welds likely caused asymmetrical shrinkage in the web plate during cooling. Heating and cooling effects during the fabrication process can be mitigated by careful welding practices, but cannot be avoided completely with this type of web design. It is also possible that the out-of-straightness measurement will vary after installation due to asymmetric heating which can occur under solar radiation.

According to our measurements, the web-panel out-of-straightness is within prescribed fabrication tolerances. This degree of web-panel curvature has no effect on the structural integrity or service life of the bridge. Monitoring of the web-panel out-of-straightness can take place during regular bridge inspections, but should not require additional effort unless future observations detect any significant changes.

3.2 PRECAST CONCRETE SPALLING

Precast components for the bridges include deck panels (with cast-in-place concrete joints and pockets), ballast walls (two pieces per abutment) and footings (one supporting each girder end and bearing). Various degrees of concrete cover spalling and cracking was observed (See Figure 3-2) at corners and particularly near embedded plates that required welding during installation. Corner areas and edges of precast concrete components were likely chipped and damaged during transportation, installation by heavy equipment or rough handling. A small number of locations were observed with reinforcing bars visible at damaged corners. Most spalls were less than 25 mm deep with no exposed reinforcing steel.

Scorching of the concrete was evident at welding locations, showing that a significant degree of heat was applied to the areas. We observed that some of the welds were significantly larger than the size specified on the drawings. This would have increased the amount of heat applied to the area which would have caused the embedded plate to expand. Some of the bridges were installed in winter conditions, where the precast concrete mass would have been particularly cold. If the heat was not carefully controlled, welding would have caused the observed scorching, cracking and subsequent spalling around the embedded plates (See Figure 3-3).

The observed spalled concrete is mostly cosmetic, however, in areas where reinforcing steel is visible (see Figure 3-4), repairs are recommended to prevent corrosion. Agnico Eagle may decide whether repair is required for the smaller spalls and cracks that do not affect the durability of the structure.

Figure 3-2
Spall in Deck Soffit at km 44.8 Bridge, Southeast Corner

Figure 3-3
Minor Spalling in Ballast Wall Next to Embedded Plate (km 32.3 Bridge, Southeast Corner)

Figure 3-4
Bridge at km 23.9 – Northwest ballast wall bottom corner – exposed rebar in spall

3.3 LAMINATED ELASTOMERIC BRIDGE BEARINGS AND ASSEMBLIES

The bridge accommodates longitudinal thermal movements caused by changes in ambient temperature through deformation of the laminated elastomeric bearings. A vertical guide plate located within a top bearing plate that incorporates a slotted hole restrains travel to the longitudinal direction and maintains bearing stability. Assuming the contractor installed the bearings as described on the design drawings, i.e. located the top bearing plate such that the slot was centred over the guide plate, the bearings can accommodate an ambient bridge installation temperature ranging from -35ºC to 15ºC before the guide plate exceeds the limit of travel and engages the top bearing plate.

We inspected all the accessible bearings and observed the following:

- On some of the bridges the vertical guide plate had engaged the top bearing plate having exceeded the provided longitudinal travel allowance within the slot (see Figure 3-5).
- There is a general lack of symmetry in the location of the guide plates within the slot which cannot be attributed to thermal movements.

As a result, it is likely that the bridges are restrained against further thermal movement and restraint induced forces will be transferred directly to the footings and foundations. This load path is not advisable as the induced forces are indeterminate and may apply undue stress on the structural system.

Potential causes of the bearing misalignment include:

- **Abutment settlement / movement** - It is possible that the abutments have settled and shifted forward slightly. This movement would shift the lower bearing plate and guide plate forward resulting in the guide plates reaching the limit of travel and engaging the top bearing plate.
- **Construction / Installation** – Due to construction access limitations, the contractor placed the road embankment from one side resulting in the bridge being "pushed" over. This is illustrated on the bridge at km 32.3 where the bearing assembly required modification (removing keeper bars and enlarging the slots) to allow installation (see Figure 3-6 and 3-7). Similarly, the placement of the road embankment on one end resulted in the bearing misalignment on the bridge at km 43.5 (see Figure 3-8).
- **Asymmetrical installation of guide plates in slots** – The Contractor did not align the bearings at each abutment resulting in the amount of travel not being equal between bearings and being less than that required to accommodate thermal movements.
- **Temperature variation across bridge width** – Due to the northern location of the site, there is the potential for a temperature differential between the east west sides of the bridge (at the km 23.9 bridge, we observed a 25°C temperature differential between opposite exterior girder faces). This type of temperature variation is unusual and not a design condition under the Canadian Bridge Code (CSA S6-14). This temperature differential may increase the thermal strains on one side of the bridge, and make the alignment of bearings during installation challenging.

Appendix C includes a summary of the measured bearing alignments and highlights the variability in guide plate location within each bridge and between bridges.

Figure 3-5
Bearing guide plate engaging shear key – bridge at km 3.5, northeast bearing

Figure 3-6
Bridge at km 32.3 Southwest bearing – front top keepers have been removed

Figure 3-7
Bridge at km 32.3 Southwest bearing – Enlarged bearing guide plate slot by the Contractor during installation

In addition, on the bridge at km 23.9, the top bearing plates were supplied without keepers.

To limit the possibility of thermal restraint forces being applied to the abutments we recommend Agnico Eagle lengthen the slots in the top bearing plates. Further, we recommend resetting of the bearings on the bridge at km 43.5 and 32.3 km.

Figure 3-8
Bridge at km 43.5 – Approach Fills Complete Only on South End

3.4 LOAD TEST

On July 14th, a CAT 773F truck, estimated between 80 and 90 tonnes in weight (loaded to approximately 70% with road grade fill) traversed the first seven bridges (km 3.5 through to km 32.3) under observation.

No adverse bearing behaviour was observed during the load test; however, we observed the following locations:

- Bridge at km 3.6: Northeast corner – no snapping sounds
- Bridge at km 10.7: Northeast corner – no snapping sounds
- Bridge at km 16.0: Northeast corner – significant and multiple snapping sounds as the bridge was loaded from the south, at the centre point, ¾ point and right after unloading.
- Bridge at km 20.0: Southwest corner – minor snapping sounds south end when truck at centre-span
- Bridge at km 23.9: Northwest and Southeast corners – minor snapping sounds at the south end throughout loading and at unloading
- Bridge at km 26.1: Northeast and Southeast corners – minor snapping sounds at the south end
- Bridge at km 32.3: Southwest and Northwest observed – minor snapping sounds at the south end on second truck pass (three passes were conducted).

The bridge at km 16.0 was observed to make snapping sounds during inspection later in the afternoon on July 14th even when unloaded.

No load test was conducted at the bridges at km 43.5 and 44.8 as construction was not complete.

Upon further investigation, we observed loose bolts in plan bracing, diaphragm bracing and ballast wall connections. These loose connections are likely the cause of the snapping sounds. We recommend that Agnico Eagle inspect all connections to ensure that the bolts have been tightened in accordance with the project specifications.

4 Other Considerations

4.1 SPLICE CONNECTIONS

We noted that shims were installed in the top-flange compression splice at girder splice locations on the 44.88 m and 66 m span bridges (see Figure 4-1). These shims vary in thickness from 6 to 10 mm and were not detailed in the shop drawings reviewed by AE. We believe that the splices were not fabricated correctly and the shims were added as an attempt to address the "fit to bear" design requirement. This requirement ensures that the steel girders are able to transfer compression loads across the bolted splice.

Figure 4-1
Bridge at km 32.3 – compression splice with shim

4.2 APPROACHES AND MAINTENANCE

It was observed during our site visit that the roadway embankments at the bridge interfaces do not extend for the full width of the bridge deck at some locations (See Figure 4-2). This poses a safety concern to traversing traffic that crosses near the bridge railings and may result in premature deterioration of the deck panels at these locations. In addition, road maintenance crews should grade the roadway to ensure a smooth transition onto the bridge deck to minimise impact damage from heavy vehicular traffic.

Figure 4-2
Bridge at km 3.6 approach from north

4.3 PRECAST CONCRETE DECK PANEL STUD POCKETS

We observed square rather than oval stud pockets on the km 44.8 bridge. The pockets were detailed as oval to minimize corner cracking due to stress concentrations. Excessive gravel and grouting prevented confirming the shape of the stud pockets on the remaining bridges, however at this stage, nothing can be done to address this change other than inspecting the pockets for corner cracking and making appropriate concrete repairs if required.

4.4 DELINEATION AND SIGNAGE

Currently there are temporary hazard signs and delineating flags installed on most of the bridges. We anticipate that permanent signage, including kilometre markers will be installed prior to completion of the road project.

4.5 EVAZOTE JOINTS

We observed loose or displaced Evazote joint filler at numerous locations. We understand that the contractor had difficulty installing the Evazote due to misaligned precast concrete components (see Figure 4-3). This can result in debris accumulating around bearings and other components (see Figure 4-4).

Figure 4-3
Bridge at km 43.5 Evazote loose in front of ballast wall

Figure 4-4
Bridge at km 44.5 – north centre bearing – debris spill through ballast wall Evazote joint

4.6 BRIDGE RAILINGS

We noted that the bridge railing brackets at a number of locations on the exterior of the precast deck panels had only two of the intended three connecting bolts installed (see Figure 4-5) due to fit-up. This results in the anchorage capacity of the railing system being reduced.

Figure 4-5
Bridge at km 10.5 railing bracket (Note: This bracket could be shifted to capture the centre bolt)

4.7 DECK DRIP GROOVES

Bridges installed earlier in the construction period have rough cast-in-place deck joints and are missing drip grooves comparable to the adjacent precast panels (see Figure 4-6). The drip groove prevents water migrating along the underside of the deck panel to the girder where it could promote premature deterioration.

Figure 4-6
Bridge at km 3.6 – Underside of deck joint (southeast)

5 Immediate Construction and Repair Recommendations

5.1 CONCRETE REPAIRS

We recommend repairing all concrete spalls where reinforcing is exposed. Other areas of minor spalling may be repaired as determined by Agnico Eagle. We suggest the following general repair procedure for these concrete repairs:

- Saw cut perimeter of repair area minimum 15 mm where directed by Engineer, taking care to avoid damage to existing reinforcing steel.
- Remove unsound concrete within patch area using a maximum 7 kg chipping hammer.
- Where reinforcing bars are exposed, ensure a minimum 20 mm clear cover around reinforcing bars is provided. Clean reinforcing steel of all traces of rust and concrete prior to concrete patch repair. The steel and concrete should be high-pressure washed with clean water after mechanical cleaning (minimum 5000 psi).
- Concrete repair surface shall be cleaned of all foreign material and continuously roughened by sandblasting or other method in accordance with CAN/CSA A23.1.
- Saturate concrete repair surface with clean water. Substrate should be saturated, surface dry (SSD) with no standing water during application.
- Concrete repair to be cast with SikaRepair 223 or approved equivalent and Sikadur 32 Hi Mod bonding agent.
- Cure to CAN/CSA A23.1.

It is acknowledged that the Contractor has Target Traffic Patch easily available on site. This product may alternatively be used for horizontal repairs as per manufacturer's instructions. SikaTop 123 should be used for overhead and vertical repairs.

When completing concrete repairs, consideration can be given "grinding: drip grooves in the cast-in-place concrete joints to minimize the possibility of deck runoff draining onto the outside face of the exterior girders.

5.2 BOLTED CONNECTION CHECKS

We recommended that all bolted connections be checked to ensure bolts have been installed correctly. Girder splices must meet the turn-of-the-nut installation requirements and other connections should be installed to snug tight. Snug tight is defined as the tightness that is attained with a few impacts of an impact wrench.

5.3 BALLAST WALL LOADING BY APPROACH FILLS

For all bridges that have not been backfilled, we recommend placing the backfill in equal lifts at each end to maintain a balanced loading condition. If this is not possible, the bearings can be "locked" by installing temporary shims between the vertical guide plate and the ends of the slot. Once backfilling is complete the shims can be removed.

5.4 BEARING RESETTING

We recommend that the bearings be reset on the bridges at km 43.5 and 32.3. A detailed procedure and loads can be provided by AE for this work. In general, this will involve the following:

- Gouge the top bearing plate weld connection to the bottom flange of the girders.
- Jack the superstructure (may be done one abutment at a time) by the minimum amount (approximately 5 mm) to facilitate bearing resetting.
- If using 100T jacks, 300 mm x 25 mm x 300 mm spreader plates, are recommended to be used on the footings beneath and above the 150 mm diameter jacks.
- Foundation capacity of the bin walls and fill below the precast footings should also be assessed for the eccentric loading.
- Reset the bearings as vertical and with guide plates adequately placed within the slots. Shift the top bearing plate as required to ensure the bearing is within the keepers, and lengthen the slots if required to meet the minimum expansion and contraction requirements (see Table 5-1).

5.5 EXTENSION OF BEARING GUIDE PLATE SLOTS TO ALLOW FURTHER MOVEMENT

To provide additional travel in the bearings, we recommend increasing the slot lengths in the top bearing plates as detailed in Table 5-1.

Table 5-1
Recommended Bearing Slot Lengths

Bridge Span	Minimum Recommended Slot Length[1,2]	
	River Side	Ballast Wall Side
14.88 m	25 mm	40 mm
44.88 m	30 mm	45 mm
66.00 m	40 mm	55 mm

[1]Recommended slot size assumes the bridges are fully constructed and backwalls have been backfilled and that the laminated elastomeric bearing pads have minimum locked-up deformation.
[2]Slot Lengths based on ambient temperatures during retrofit between 10 and 25 °C.

The bearings on the bridges at km 32.3 and km 43.5 must be reset before the slot lengths are adjusted.

5.6 RAILINGS

We recommend slotting the centre hole on the railing brackets to allow all three anchor bolts to be installed.

We understand that the railing height is expected to be increased to meet Agnico Eagle safety requirements. We recommend that instead of raising the existing HSS railing, Agnico Eagle install a pipe handrail (see Figure 5-1). AE is able to provide design for this rail if required.

Figure 5-1
Example railing extension from another project

5.7 APPROACH FILLS

Prior to completion of the road structure, the contractor should ensure that the embankments at the bridge approaches be extended to the full width of the bridge deck structure and the approaches are well graded to ensure a smooth transition onto the bridge deck.

5.8 TOP COMPRESSION SPLICE SHIMS

We recommend that while access to the splice locations is available, the top-flange compression splices be checked for gaps using a feeler gauge. Where the feeler gauge can be inserted more than 10 mm the bolts should be re-tightened and any remaining gaps sealed using a suitable pressure injected epoxy.

6 Future Maintenance and Inspection Considerations

6.1 EVAZOTE

We recommend that Evazote joints at the ballast walls be monitored during maintenance inspections for missing portions or fill spilling through joint gaps. A UV-resistant and weather-appropriate polyethylene foam approved by the Engineer may be used to replace Evazote where required to minimize soil and rock spill through the joints and permit joint displacement.

The bridge at km 44.8 shows fill spilling through the centre gap between precast ballast walls, indicating that the Evazote has not been installed or has been breached at that joint. As part of regular maintenance, fill and debris should be cleared of the area around bearings to prevent premature deterioration of the bearings.

6.2 APPROACH FILLS

To minimize impact damage to the bridge deck we recommend Agnico Eagle maintain smooth approach transitions on the bridge through regular road maintenance.

6.3 BASELINE INSPECTION REPORT

For future bridge maintenance and inspection, it is advisable to produce a detailed inspection report (cataloguing photos and applicable measurements of all bridge components) to facilitate inspections and identify changes in the condition of structural components. AE's scope was to undertake visual inspections and provide recommendations for the three concerns as outlined in Section 3. Based on the extent of photos and notes that were taken during the site visit, if requested we can provide a more detailed baseline inspection report.

6.4 FUTURE MAINTENANCE AND INSPECTIONS

Minor routine maintenance as required to include:

- Remove debris around bearings and abutment areas
- Clean the deck to limit gravel accumulation
- Grade the road embankments and approaches to ensure a smooth transition
- Fill Evazote joints where debris spill-through is observed.

Visual inspections conducted annually by an Agnico Eagle staff member, with a focus on general items as follows:

- Smooth approach transition grading
- Deck surface free of debris
- Railing repairs or painting required if impacted
- Evazote joint gaps and/or debris spill-through.

It is advisable that Agnico Eagle stock some spare HSS components on site in case of minor railing impacts, to facilitate quick repairs as needed.

Detailed inspections conducted every 3 to 5 years by a Professional Engineer. Inspections should include but are not limited to visual inspection of the following components:

- Approach signage
- Signs of scour or erosion at the creek embankments and riprap
- Road embankment and approach grading up to the bridge
- Edge of precast deck panels at approaches
- Bridge running surface and pockets
- Railings and connecting brackets
- Hand rails (if any are installed)
- Wingwalls and ballast walls
- Evazote joints
- Bridge bearings (including neoprene pads, top and bottom bearing plates and keepers, and guide plates and slots)
- Ballast wall and deck welds and connections
- Underside of deck
- Diaphragm and plan bracing connections
- Girder faces (visual as accessible)
- Bridge girder splices (visual from shore or creek during winter).

If any concerns are identified during detailed inspection, access to the centre of the bridge span may be required. Rather than installing permanent access walkways which may be costly to install and maintain, and will rarely be required, it is advised that temporary access be provided on an as-needed basis. Inspection of the centre span may be easily conducted from the ground during winter when ice bridges may be established. Also, AE has frequently installed a cable system (highline) attached between stiffeners for tie-off during specific inspections on the bridges. We can provide some simple detailed design of the anchors for this cable system. The cable system would allow an inspector to walk the girder flanges of the 44.88 and 66.0 m span bridges easily and safely if access is required for a specific area of concern.

We are pleased to provide these inspection notes and recommendations for Agnico Eagle and associated parties to understand the design considerations for the Meadowbank to Amaruq bridges. Please advise if further clarification is required during bridge completion, subsequent inspections and retrofits. We can also provide recommendations for higher railing retrofit design or recommendations for improved rail anchorage.

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Closure

This report was prepared for the **Agnico Eagle Mines Ltd. Mines Ltd.** to assist in completion of the bridges on the Meadowbank to Amaruq Road and is not a certification of the finished structures. The services provided by Associated Engineering (B.C.) Ltd. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Respectfully submitted,
Associated Engineering (B.C.) Ltd.

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PERMIT TO PRACTICE
ASSOCIATED ENGINEERING (B.C.) LTD.
Signature
Date AUG 0 3 2017
PERMIT NUMBER: P 554
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

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Appendix A – Inspection Summaries

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Bridge Inspection Report
Agnico Eagle

Bridge No.	2017-2318-3.6	Road Name	Meadowbank to Amaruq	Inspection Date	2017-07-15

STA.	Forest District	Access Notes
3.6 km		
Bridge Length	**Stream Crossing**	**Inspected By**
14.7 o/o m		R. Smertina
UTM Zone	**Easting**	**Northing**

No. Spans	Installation Date	Current Load Rating	Deck Width	Project No.	Anticipated Replacement
1	2016		7900 mm		

Span / Length (m)	1	13.88	2		3		4		5		6		7	
Comments	single span, steel girders, precast concrete deck, integral abutments													

Excellent: New or almost new condition and properly installed
Good: Structurally sound, in good repair and have minimal wear
Fair: Structurally sound, but show moderate wear or preliminary indications of rot or corrosion
Poor: Structurally unsound, major items in need of repair or replacement, or bridge load rating should be reduced

Abutment, spans, piers numbered from left bank, facing downstream / girders numbered from upstream to downstream.

Approaches		
Approach Road	Good	Some gaps in road embankment approaching deck edge
Alignment	Good	Straight
Visibility	Good	Weather dependent
Signage	N/A	Temporary signage installed currently
Delineators	N/A	None
Overall	Good	
Deck - Span 1		
Running Surface	Good	Lifting lug pockets exposed to gravel and traffic impact
Grout Pockets	Good	Drip grooves at CIP deck joints not installed (maintenance consideration)
Curb Rails and Risers	Fair	Only 2 of 3 anchor bolts currently installed at each connection - fit-up problems during construction at some locations
Hardware	Good	
Overall	Good	
Superstructure - Span 1		
Girders	Excellent	
Bracing	Good	
Diaphragms	Good	
Hardware	Excellent	
Overall	Good	

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Bridge Inspection Report
Agnico Eagle

Bridge No.	2017-2318-3.6	Road Name	Meadowbank to Amaruq	Inspection Date	2017-07-15
Abutment - North					
Bearings		Poor	Guide plates are at or near the limit of allowed movement		
Bracing		Good			
Ballast Wall		Good	Some loose evazote under ballast wall and at joint with deck. Some minor spalling evident at welded embedded plate locations.		
Corrosion Protection		N/A	weathering steel		
Caps or Sills		Good	Footings appear level. minimal settlement.		
Fill		Poor	Approach grading has some gaps near the ends of the deck.		
Hardware		Excellent	weathering steel		
Riprap		Excellent			
Wingwall		Good			
Overall		Good			
Abutment - South					
Bearings		Poor	Guide plates are at or near the limit of allowed movement		
Bracing		Good			
Ballast Wall		Good	Some loose evazote under ballast wall and at joint with deck. Some minor spalling evident at welded embedded plate locations.		
Corrosion Protection		Excellent	weathering steel		
Caps or Sills		Good	Footings appear level. minimal settlement.		
Fill		Good	Approach grading has some gaps near the ends of the deck.		
Hardware		Excellent	weathering steel		
Riprap		Excellent			
Wingwall		Good			
Overall		Good			
Hazards					
High Water					
Scour					
Ice					
Debris					
Aggradation					
Channel					
Estimated Present Water Level Depth					
Estimated Present Water Level Width					
Estimated High Water Level Clearance					

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Bridge Inspection Report
Agnico Eagle

Bridge No.	2017-2318-3.6	Road Name	Meadowbank to Amaruq	Inspection Date	2017-07-15

Repair Description and Cost Estimate

No.	Description	Priority	Cost Estimate
1	Cut bearing slots for guide plates to allow further movement - see report for recommended amount	Medium	$0.00
2	Confirm that all bracing and bolted connections are tightened according to project specifications	Low	$0.00
3	Install permanent signage at bridge approaches	Low	$0.00
4	Grout lifting lug pockets in deck to prevent damage from gravel and traffic	Low	$0.00
5	Install railings meeting facility requirements - ensure all anchor bolts are installed	Low	$0.00
6	Widen road embankments to match bridge deck width or provide delineation at gap locations	Low	$0.00
7	Leftover geotextile at the south abutment should be disposed of (clean-up item)	Low	$0.00
8	Recommend to check torque on bolted connections due to concerns on other bridges	Low	$0.00

High: Immediate, non-recurring repair to assure public safety
Medium: Ongoing, regular maintenance items to protect capital investment
Low: Minor maintenance items or improvements to extend service life

The cost estimate for individual maintenance items reflects the cost of materials and labour for completing a task; it does not include any costs associated with mobilization, demobilization, delivery of materials, engineering or contract administration.

Monitoring Items

No.	Description
1	Monitor approach grading regularly to avoid traffic damaging the precast deck panel edges
2	Monitor for loose or missing evazote at underside of ballast wall or joints and replace/repair as required
3	Monitor leakage due to lack of drip grooves at cast-in-place concrete deck soffit

Comments	Seal
Partial Inspection 2:30 pm Overcast/partly cloudy 17 degrees Celcius ambient Load test conducted earlier on July 15th	