

Amendment 005

- 1) In order to get the cranes of the size we require in at the south tower we find it necessary to temporarily relocate the roadway to the parking lot. Is this acceptable?

Answer: To obtain approval, the Contractor should ensure that PWGSC normal operations are not hindered or obstructed in any way and ensure concurrence from adjacent property owners and should undertake to reinstate all disturbed facilities to its original condition and make good all disturbed.

- 2) In order to accommodate the cranes, staging area, trailer park areas, washroom and lunchroom trailers etc it will be necessary to prohibit use of the public parking lot for most of the construction schedule.

Answer: Yes, advanced notification would be required to inform the public.

- 3) We assume that access to the north tower for cranes and trailers would be under the Skyway bridge and thru the locked gates. Is this correct?

Answer: Yes, Hamilton Port Authority owns property in the area and may have to be consulted.

- 4) Please advise a contact for "Inland Waterways" as we will have to arrange for use of the boat launch facilities for our water rescue boats during the periods that the "Fisherman's Pier" is not open. ie October thru March.

Answer: The contact available is the Canadian Centre for Inland Waters (CCIW).

- 5) In order to get temporary power to the north tower area we need to know a contact for the property that the "Skyway bridge" is located on. The local utility needs to extend an existing temporary service for that property to the tower area.

Answer: Refer to the Topographic survey Drawings provided in Addendum 003. MTO has the right of way. Hamilton Port Authority owns a parcel of that land as well.

- 6) Burlington Hydro is requesting a soft copy Acad file of the site showing access roads and property lines for the north tower area.

Answer: Refer to the Topographic survey Drawings provided in Addendum 003.

- 7) Horizon Utilities is requesting a soft copy Acad file of the site showing access roads and property lines for the south tower area.

Answer: Refer to the Topographic survey Drawings provided in Addendum 003.

- 8) We will be required to barrier off a foot path for pedestrian and bicycle traffic for both the north and south areas. There may be some minor delays while hoisting operations are going on.

Answer: After contract award and to obtain approval, the Contractor shall submit shop drawings to barrier off a foot path. The Contractor shall ensure no delay in the work as a result.

- 9) In order to get cranes of a sufficient size located where we require them to be it will be necessary to either temporarily relocate both the existing overhead hydro service as well as the existing overhead Bell/Communication lines in the area of the south parking lot.

Answer: Yes.

- 10) The specifications indicate that the ATS is to be mounted in the north MCC. The drawings appear to indicate that the ATS is a standalone unit. Please clarify.

Answer: The ATS is a standalone unit.

- 11) The specifications indicate that transformers shall be K-rated or harmonic mitigating as indicated. We see no indication one way or the other. Please clarify.

Answer: Two new 15 kVA 600-120/208 volt transformers for LP-5 and LP-6 are to be furnished and installed. These transformers do not need to be harmonic mitigating, and do not require a K-factor rating.

- 12) Is the bidder to carry the cost for the isolation of the high voltage lines? If so, please provide an amount to carry in the tender.

Answer: The bidder should establish the cost of the work required for all the work required for the isolation of the high voltage lines and include that cost in his bid.

- 13) We need the names of the utilities involved in order to get pricing for temporary power set ups. Please advise.

Answer: The names of utilities are: Hamilton

Side: Horizon Utilities

Burlington Side: Burlington Hydro

- 14) Please provide all of the as built drawings showing underground utilities and services.

Answer: The underground services data is not presently available and it is up to the bidder to establish the locations, as required.

16) What is the budget for this project:

Answer: The project budget is over \$5,000,000.00.

17) There is a discrepancy between the specified insulation thicknesses in this table with the values specified on the "Aerial Cable Detail" drawing E-85 (revision 08, dated 2014-06-26) and latest version of ICEA Standard S-95-658. Because these wires are used in a jacketed cable the insulation thickness requirements are determined from Column B in table 3-4 of ICEA Standard S-95-658

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Table 3-4
Conductor Sizes, Insulation Thicknesses and Test Voltages
For Class T-4, T-5, T-6 and All Class X and E Insulations
(See Table 3-1 for Voltage Limitations of Various Grades of Insulation)

Rated Circuit Voltage, Phase to Phase Volts ⁽¹⁾	Conductor Size AWG or kcmil ⁽²⁾	Insulation Thickness ⁽³⁾								ac Test Voltage, kV	dc Test Voltage, kV	ac Spark Test Voltage, kV		dc Spark Test Voltage, kV	
		Nominal Columns				Minimum Point Columns						Column		Column	
		A		B		A		B				A	B	A	B
		mils	mm	mils	mm	mils	mm	mils	mm						
0 - 600	14 - 9 ⁽³⁾	45	1.016	30	0.762	40	1.016	28	0.635	3.5	10.5	10.0	7.5	16.0	10.5
	8 - 2	60	1.397	45	1.143	55	1.397	40	1.016	5.5	16.5	15.0	10.0	21.0	16.5
	1 - 4/0	80	2.032	55	1.397	75	1.778	50	1.270	7.0	21.0	17.5	12.5	28.0	21.0
	225 - 500	95	2.413	65	1.651	90	2.159	60	1.524	8.0	24.0	20.0	15.0	33.5	24.0
	525 - 1000	110	2.640	80	2.032	105	2.667	75	1.905	10.0	30.0	27.5	17.5	38.5	30.0
	1025 - 2000	125	3.175	100	2.540	120	3.048	95	2.413	11.5	34.0	31.0	20.0	44.0	34.0
601 - 2000	14 - 9 ⁽³⁾	60	1.397	45	1.016	55	1.397	40	1.016	5.5	16.5	15.0	10.0	21.0	16.5
	8 - 2	70	1.778	55	1.397	65	1.651	50	1.270	7.0	21.0	17.5	12.5	24.5	21.0
	1 - 4/0	90	2.159	65	1.651	85	2.159	60	1.524	8.0	24.0	20.0	15.0	31.5	24.0
	225 - 500	105	2.667	75	1.778	95	2.413	70	1.778	9.5	28.5	25.0	17.5	37.0	28.5
	525 - 1000	120	3.048	90	2.159	115	2.921	85	2.159	11.5	34.5	30.0	20.0	42.0	34.5
	1025 - 2000	140	3.556	115	2.921	130	3.302	110	2.640	13.5	40.0	35.0	24.0	49.0	40.0

* The actual operating voltage shall not exceed the rated circuit voltage by more than
(a) 5 percent during continuous operation or
(b) 10 percent during emergencies lasting not more than 15 minutes.
** For cables or conditions of service where mechanical stresses govern, such as in submarine cables or long vertical risers, these minimum conductor sizes may not be strong enough.
*** Single conductor cables in sizes 9 AWG and smaller shall not be used for direct burial.
† Insulation thicknesses are adequate for both 100 percent and 133 percent insulation levels.
Column A thicknesses shall apply to single-conductor power cables and multiple conductors without an overall jacket for general application which employ a sunlight-resistant, carbon-black pigmented insulation without further covering.
Column B thicknesses apply to multi-conductor cables with an outer covering and to single-conductor cables with an outer covering. The Column B thicknesses are considered adequate for electrical purposes and may be specified for single-conductor cables employing sunlight-resistant, carbon black pigmented insulation without further covering. These cables may be used in applications where installation and service conditions are such that the additional thickness for mechanical protection is not considered necessary for satisfactory operation.
†† ac voltages are rms values.

Answer: Discrepancies noted. Note that Section 3.3 of the ICEA Standard S-95-658 states this insulation is not to be less than the insulation thickness specified under Table 3.4.

18) The following nominal (minimum average) insulation thicknesses have been used in all 2000V rated aerial cable constructions in accordance with ICEA S-95-658, Table 3-4, Column B.

Answer: Please note revised insulation thickness below in red. Insulation thickness had been increased to suit the cable design.

Voltage Rating (volts)	Conductor Size (AWG)	Nominal (minimum average) Insulation Thickness (inches)
601 - 2000V	14AWG to 9AWG	0.045"

8AWG to 2AWG	0.055" 0.060"
1AWG to 4/0AWG	0.065" 0.080"

If necessary, the insulation thickness may have been increased to suit the cable design.

- 19) The maximum inside diameter of the flexible corrugated duct is specified to be 3/4 inches (21 mm). 21 mm converts to 0.827 inches which is more in line with the actual diameter of the flexible corrugated duct and is considered to be acceptable.

Answer: The equivalent trade size for a nominal 3/4 inch diameter conduit is 21 mm.

- 20) There is a discrepancy between this section asking for a pull rope and the drawing E-85 which says no pull rope. A pull rope has been included in the aerial cable design, as applicable.

Answer: Pull rope is to be provided by the Contractor. The aerial cable manufacturer is not necessarily the provider of the pull rope.

- 21) There is a discrepancy between the specified AC test voltages in this table with the values specified in latest version of ICEA Standard S-95-658, table 3-4 (see above). The following AC test voltage will be used on all 2000V rated aerial cable constructions in accordance with ICEA S-95-658, Table 3-4.

Voltage Rating (volts)	Conductor Size (AWG)	Nominal (minimum average) Insulation Thickness (inches)
601 – 2000V	14AWG to 9AWG	0.045"
	8AWG to 2AWG	0.055"
	1AWG to 4/0AWG	0.065"

If necessary, the insulation thickness may have been increased to suit the cable design.

Answer: Please see below the AC test voltages to be used on the aerial cables.

Conductor Size (AWG or kcmil)	600 Volt/2,000 Volt Cables AC Test Voltage – kV (Five minute duration)
18AWG to 16AWG	2.0 (600 Volt only)
14AWG to 9AWG	5.5
8AWG to 2AWG	7.0
1AWG to 4/0AWG	8.0

- 22) 3/8 inch wide stainless steel clamps are shown on both ends of the assembly drawing. Need confirmation of what these stainless steel clamps are and how they are to be connected.

Answer: The 3/8 inch wide stainless steel clamps shall be Type 304. These clamps are provided at both ends of the messenger in order to terminate and provide support to the messenger. The cable manufacturer shall provide these details in the shop drawing.

- 23) The 3C 4/0AWG cable with 1/0AWG insulated ground wire has a calculated maximum sag of 9.5 feet using 20% of the breaking strength of the 3/4 inch diameter stainless steel messenger cable which exceeds the maximum 9 foot requirement specified.

Answer: The specifications Section 26 05 19.23 2.6.1.1.1 will be revised to read "The messenger shall be stainless steel Type 304". As stated in the specifications, the calculated sag shall not exceed 20% of the ultimate breaking strength of the messenger. The sag shall not be more than 20 feet sag. The manufacturer shall provide sag calculations in the shop drawings.

Clarification from Amendment 003:

9) Please advise the local power utility for the north side of the bridge if different from the south side

Revised Response: Our service provider is Horizon Utilities. Fed from the south side.