nalcor energy
LOWER CHURCHILL PROJECT

Minutes of Meeting

MOM-CH0007001-0004

Project:	Lower Churchill Project	**Package No.:**	CH0007
Purpose:	Review of LCP comments on the structural Steel Layout Drawings Submitted by Astaldi	**Package Title:**	ICS Temporary Structure
Location:	SNC – Montreal	**Date / Time:**	23-JAN-2014 9AM to 11:45 AM

Attendees:	Scott Batt - Astaldi Tim Brace - Astaldi Koushan Sadeghi - Astaldi	David Audy - PROCO Patrick Mignault - PROCO Jean-Denis Toupin - PROCO	David Hébert - DPHV Jonathan Rozon - DPHV François Couturier - LCP Nassima Hadj Messaoud - LCP Pierre M. Parent - LCP Stephen Chorny (phone in) - LCP
Distribution:	Attendees, M. Collins, A. Mosser, M. Melhem, D. Tranquilla, B. Knox, N. Ferguson, G. Snyder, P. Sasseville, P. Oblander		
Recorded by:	Pierre Parent	**Signature:**	

Item	Description	Action	Date
1.0	LCP's comments are presented to Astaldi by Pierre Parent. Discussion follows and explanations are provided. The following comes out of this discussion:		
1.1 1.2	• A load factor of 0.8 was applied to the snow load. It was clarified that this factor is not the "Is" factor for importance as provided by the CNBC, but it is a reduction factor for temporary structures provided by an ASCE standard. Copy of that standard is provided to LCP for review and comments. • Astaldi confirms that the steel material for the temporary building were already ordered. The joists and trusses are reported to be in fabrication already.	LCP	2014-01-29
1.3	• Astaldi is to confirm whether the ICS is required in the area of the South Transition Dam. The temporary structural arrangement in this area is not coordinated with the rock profile. Refer to 1.13".	ASTALDI	

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Item	Description	Action	Date
1.4 1.5 1.6 1.7	• Astaldi must confirm its strategy regarding the bracing members on the east-west column lines (e.g. column lines 0.1, 1, 6, 7, 12, 13, 18, 19, 24), as to the type of sections and whether they will stay or not embedded in the concrete. • LCP mentions that the building proposed by Astaldi has no expansion joints. Astaldi mentions that the thermal expansion is accommodated through elastic deformation of the structure. LCP mentions that the structural design and the foundation design must take into account the thermal case. • Based on this input and the as-built rock excavation in the south service bay area, Astaldi must study the bracing on line 0.1, an extension bracing bay in the South Service area along line B and C and a new location of bracing on line A, D and 24. • LCP requests Astaldi to provide the service loads under all steel columns, including columns with bracing, for verification of the rock foundation load capacity.	ASTALDI	2014-01-29
1.8	• LCP argues that when a steel member becomes embedded in concrete, there must not be air voids entrapped in concrete as a result of the presence of hollow structural sections or stiffeners or other components. This applies to any and all members: bracing, beams, columns, etc.	ASTALDI	2014-01-29
1.9	• Astaldi to detail the construction sequence in the South Service Bay area with regard to the foundation and structure of the ICS and its interference with the permanent concrete slab. Any need for block-outs and second phase concrete must be submitted for approval with the ICS submittals (?).	ASTALDI	2014-01-29

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Item	Description	Action	Date
1.10	• Astaldi must present, for review, their complete scenario on how they are going to deal with the bracing members. If they are to be removed, which is preferable from the powerhouse concrete structure standpoint, the sequence of removal, the anchor points with their embedment and the procedure for load transfer must all be detailed and presented for review and coordination with the permanent structure.	ASTALDI	
1.11	• On the topic of interferences, Astaldi is to provide a set of drawings identifying which steel members will stay embedded in the concrete for LCP to check for interferences (clashes). The resolution of the interference will be communicated by LCP to Astaldi.	ASTALDI	
1.12	• Astaldi to present its plan on resolving the interference between the water-stops and the ICS steel members.	ASTALDI	
1.13	• Astaldi to be provided with the 3D model of the excavated surface in order for them to adjust the position of the ICS foundation and the layout of the structure to the actual profile of the rock. Astaldi will also be provided with the 3D model of the outside surface of the concrete structure and the 3D model of the ICS structure prepared by LCP to study the interference.	LCP	See 1.16
1.14	**Post meeting note 1**: Astaldi should also provide LCP with a copy of their current 3D model of the structural steel in order for LCP to do an updated clash check of the structure with current embedment.	ASTALDI	2014-02
1.15	**Post meeting note 2:** There needs to be a second submittal of the updated structural layout drawings which have evolved significantly since the previous submittal of last November.	ASTALDI	2014-02

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Item	Description	Action	Date
1.16	**Post meeting note 3;** LCP will provide Astaldi with a 3D model with Temporary Structure, Rock line (as built rock line excavation produced at the end of December, 2013), with outside concrete face of powerhouse (in AUTOCAD DWG Files, STP Files). Also will be provided screen shots of the 3D model showing interferences with the building components. Those shots are based on a model of the rock surface dating 1st-Dec-2013, approximately. They are presented as general information indicating nature of interferences. The final clash check will be done with Astaldi final structure and the final rock surface.	LCP	2014-01-27

Contract/Supplier hereby agrees that Contract/Supplier has reviewed and agrees with the content and accuracy of these Minutes of Meeting.

Signature: Francois Couturier eng. / Pierre M. Parent eng.

Name (please print): Francois Couturier eng. / Pierre M. Parent eng.

Date: 2014-01-25