SNC·LAVALIN

nalcor energy

Lower Churchill Project

RECOMMENDATION FOR AWARD

SUMMARY REPORT

CH0007: Construction of Intake and Powerhouse, Spillway and Transition Dams

	NAME	TITLE	SIGNATURE	DATE
PREPARED BY:	*Ron Adamcyk*	Contract Administrator		26 Sept 2013
REVIEWED BY:	*Laird Paton*	Package Leader		26 Sept 2013
REVIEWED BY:	*Ed Over*	Sr. Advisor –Commercial Strategies		02 Oct 2013
REVIEWED BY:	*Luc Turcotte*	Area Manager		26 SEPT 2013
REVIEWED BY:	*Ken McClintock*	Project Cost Controls Manager		26 Sept 2013.
REVIEWED BY:	*Scott O'Brien*	Project Manager – C1		26 Sep 2013
REVIEWED BY:	*Jason Kean*	Deputy Project General Manager		26-SEP-2013
APPROVED BY:	*Pat Hussey*	Supply Chain Manager		26 Sept 13
APPROVED BY:	*Ron Power*	General Project Manager		24-SEP-2013
APPROVED BY:	*Lance Clarke*	Business Services Manager		26-Sep-2013
APPROVED BY:	*Paul Harrington*	Project Director		26 Sept 2013

September 24, 2013

Table of Contents

1.0 Introduction

This report presents the recommendation for award of contract package CH0007 and includes a summary of the technical and commercial evaluation reports. The detailed evaluation reports for each area of evaluation are attached as appendices.

1.1 Package Number

CH0007

1.2 Package Title

Construction of Intake and Powerhouse, Spillway and Transition Dams

1.3 Package Scope of Work Brief Description

Contractor will be responsible for:

- Construction of the powerhouse and the intake;
- Construction of the gated spillway including permanent and temporary bridges;
- Construction of the centre, south and north transition dams;
- Construction of separation wall civil works related to permanent and temporary access roads
- Conventional vibrated concrete (CVC), inclusive of the batch plant(s), the fabrication of the aggregates for concrete, the supply and storage of Portland cement, the production of concrete at the batching plant and the quality control at the batch plant;
- Supply of concrete to Company's other Contractors;
- Exploitation of borrow areas and rockfill stockpile areas;
- Operation and maintenance of the existing dewatering systems and if required, design, supply, installation, operation and maintenance of additional necessary dewatering systems.
- Operation and maintenance of sedimentation ponds with associated ditches;
- Maintenance, dust control, snow removal and ice control, of all temporary and permanent roads including construction roads, access ramps, work and laydown areas; and
- Construction, maintenance and operation of all temporary environmental mitigation measures

1.4 Estimate

The current estimate for this package is $837 million; this includes DG3 and the estimated effect of the 14 Addenda issued during the bid period.

1.5 Contracting Parties

Nalcor Energy and the successful Bidder (Contractor).

1.6 Agreement Type

Construction

1.7 Approved Bidders List

The following approved bidders list is the culmination of a series of activities that started with the request for pre-qualification that was posted on the project web site in February 2012. Ten prequalification packages were received and following a thorough review of the prequalification documents, four bidders were invited to bid.

- Aecon-Flatiron-Barnard Construction – Joint Venture (Aecon JV)
- Astaldi S.p.A. (Astaldi)
- IKC-ONE Civil Constructors, a Partnership (IKC)
- Salini S.p.A./FCC Construccion S.A./Impregilo S.p.A. – Joint Venture (Salini JV)

Bidding documents were issued to these four bidders on 28 September 2012 and were followed by a total of 13 Addendums issued from 26 October 2012 to 27 March 2013. The four bids were received on April 16, 2013.

The prequalification evaluation report is attached as Appendix 11.

1.8 RFP Key Dates and Validity

- Issue RFP — 28 September 2012
- Bid Information Meeting — 18 October 2012
- Site Visits — 19 October 2012
- Proposal Closing Date — 16 April 2013
- Issue Addendum 14 to shortlisted bidders — 5 July 2013
- Receipt of Addendum 14 — 30 July 2013
- RFP validity — 180 Days

1.9 RFP Addendums and Bidder Clarifications

During the RFP period all bidders received a total of thirteen (13) separate RFP Addendums and three hundred and forty-six (346) SLI/Nalcor responses to bidder's technical and commercial clarifications.

The initial RFP documents requested bidders to provide a combination of fixed prices, unit prices and lump sums in their bid. During the bid period, several bidders expressed concern about the risk involved of these pricing strategies and were reluctant to bid under these conditions.

In light of these concerns, bidders were issued an update during the RFP process and were provided with two options for pricing the proposal: 1) fixed unit prices and lump sums and 2)

reimbursable labour with a target cost and a fixed maximum along with fixed unit prices and lump sums for the non-labour component. The latter option included cost-sharing mechanisms for sharing labour cost over-runs and under-runs and a maximum not-to-exceed price.

1.10 Proposals Received

All four of the prequalified Bidders, as listed under section 1.7 above, submitted Proposals. Three bidders submitted target cost bids while Salini JV submitted a fixed price bid.

2.0 Evaluation of Proposals

2.1 Evaluation Procedure

Following the receipt, opening and distribution of proposals, the Nalcor/SLI integrated evaluation team commenced a detailed analysis of the proposals in accordance with the package approved bid evaluation plan.

The bid evaluation was done with two separate teams working in isolation; one for the commercial components and the other team for the technical components. The technical team completed their analysis using unpriced proposals and were not aware of the bid prices or any other commercial aspect of the bids.

The technical evaluation was led by Luc Turcotte (Area Manager, Powerhouse and Spillway) and Laird Paton (Area Construction Manager), with support from project discipline representatives from both the local project office and Montreal, including:

- John Mulcahy — Construction Specialist
- Andre Mosser — Package Engineer CH0007
- Lee Stanton — Planner
- Mark Peddle — Quality Manager
- Paul Fraser — Quality Coordinator
- Sean Lee — Health & Safety
- David Haley — Environment
- Tony Scott — Lead Planner
- Roger Gravel — Civil-Concrete specialist
- Dave Brown — Civil-Concrete specialist
- Jim Daubersmith — Construction Specialist
- Victor Jaremko — Electrical engineer
- Regis Bouchard — Geotechnical Lead
- Marvin Zylber — Lead Planner MF Generation

The commercial evaluation was led by Ed Over (Senior Adviser Commercial Strategies) and Ron Adamcyk (Contract Administrator) with support from Aiden Meade (McInnes Cooper), Steve Goulding (Economic Analyst) and Paul Lemay (Senior Estimator).

A preliminary evaluation was completed by both the technical and commercial teams and presented to senior management on May 30. Following this meeting it was decided to invite

three bidders (Astaldi, Salini JV and Aecon JV) for clarification meetings. These clarification meetings were held from 6 June 2013 to 18 June 2013.

Following the clarification meetings, Addendum 14 was issued to Astaldi and Salini JV on 5 July 2013. This addendum contained some 670 construction drawings and a revised schedule with the addition of a Limited Notice to Proceed (LNTP) date of 15 September 2013 and some schedule relief on the spillway construction. The two bidders were asked to revise their bid and resubmit on 30 July 2013. A review of the technical and commercial evaluation based on the new information was done from 30 July to 28 August 2013 and the recommendation for award to Astaldi was presented to the management team on 30 August 2013.

2.2 Bidder Clarification Meetings

Off Site Technical and Commercial Clarification Meetings were arranged with three bidders. During these meetings Senior Representatives were invited to deliver Technical and Commercial Presentations to support their respective Proposals:

- Aecon-Flatiron-Barnard Construction – Joint Venture (June 6-7, 2013)
- Astaldi S.p.A. (June 17-18, 2013)
- Salini S.p.A./FCC Construccion S.A./Impregilo S.p.A. – Joint Venture (June 13-14, 2013)

2.3 Preferred Bidder Status

Following the bidder clarification meetings and the additional information provided, two of the bidders – Astaldi and Salini JV – were short-listed and requested to update their bids. They were each provided with Addendum 14 which included updated drawings, a revised Schedule of Price Breakdown and revised milestone and interface dates.

2.4 Evaluation Report Summaries

This section provides a summary of each area assessed in the evaluation process. A complete set of Evaluation Reports are attached in the appendices. Appendix 10 contains the overall evaluation matrix scoring summary.

2.4.1 Commercial Evaluation Summary

Commercial Evaluation

The commercial evaluation included an analysis of the schedules of price breakdown, a comparison against the estimate, the monthly cash flow forecasts, escalation, the payment terms and conditions, financial security provisions, the credit worthiness of the bidders, the articles of agreement and other salient factors.

After the preliminary commercial evaluation was completed (see Appendix 1, Table 1.1), two bidders were dropped from further consideration and Addendum 14, which included a revised schedule of price breakdown, was provided to the two shortlisted bidders (Astaldi and Salini JV).

Both bidders completed the revised Schedule of Price Breakdown. The comparison of the two bids is provided in Appendix 1, Table 1.2.

The review of the detailed cost estimates in the Schedule of Price Breakdown indicated that all bidders appeared to have adequate resources allocated to undertake the work according to their execution strategies. While some bidders had varying amounts of resources allocated to each line item than others, on the aggregate the price schedule reflected the execution strategies of the bidders. Table 1.7 in Appendix 1 provides a line by line comparison between the bidders for hours, labour costs and non-labour costs for each line item.

Table 1.8 provides a comparison of the final bid prices for the two short-listed bidders and the costs included in the estimate (DG3 and estimated effect of the 14 Addenda issued during the bid process period. The estimate direct costs were found to be almost identical to the direct costs estimated by Astaldi. The major difference in the estimate versus the Astaldi's bid price is in the indirects. Specifically, management staff requirements are estimated at 1.9 million hours versus the estimate which estimated that 930,000 hours for management staff would be required.

The results of the commercial evaluation indicated that Astaldi was the preferred bidder with a final maximum price of $1.104 billion compared to Salini JV which had a fixed price of $1.260 billion.

Articles of Agreement Evaluation

In addition to evaluating the bid prices, the commercial evaluation also included a review of the articles of agreement and any deviations proposed by each bidder to the wording suggested in the RFP. Each of the 40 articles was evaluated comparing the proposed wording of each article to the wording suggested by LCP in the RFP. This evaluation was conducted early after receipt of the bid documents from the bidders. In subsequent negotiations, the major areas of concern were addressed in revised wording so that in general all scores have improved since the original assessment. Scores for the Articles of Agreement evaluation ranged from 27.5 out of 40 (Aecon JV) to a high of 35 out of 40 (Astaldi) points in the original assessment. Negotiated revisions to the articles of agreement since that time will improve the score of the preferred bidder. The evaluation matrices for the Articles of Agreement evaluation are provided in Tables 1.4 and 1.5 in Appendix 1.

Creditworthiness Evaluation

The proponent is credit worthy based on our established criteria and has posted an acceptable performance security package, and we will be recommending acceptance from a creditworthiness perspective. However, in reaching this decision, decision makers should be "eyes open" to any of the risks noted below in the key findings.

Key Findings

1. Overall credit score is 63%, caused largely by higher levels of leverage, but is creditworthy within our approved framework. The proponent has diversified revenue streams outside of Italy and cash flow/earnings have been stable.
2. Performance security consists of a $100 million letter of credit with a Canadian Schedule 1 bank and a $150 million performance bond. There is also an up-front payment of 10% of contract value from Nalcor to the proponent, which is fully secured by a separate letter of credit from a Canadian Schedule 1 bank. Our exposure to default by the

(using certain data provided by LCP related to costs to complete and remobilization costs considered reasonable by LCP) and reflects exposure before other costs that may become apparent due to delay. As you can see, the exposure is highest at the beginning of the contract period, and is eliminated towards the end of the construction period. The spreadsheet has been reviewed with LCP and they are in agreement with the methodology used.

3. Additionally, LCP has arranged a 10% hold back bond, which minimizes risks of work stoppage due to subcontractor claims.
4. Liquidated damages are also provided on schedule and key personnel. This provides an adequate incentive to the proponent to complete the work in a timely manner. Additionally, liquidated damages of up to 7.5% are available against delay costs.
5. Liability is unlimited if the proposed proponent walks away. In the event of default, including insolvency, liability limited to 50% of the contract value. This appears reasonable as compared to the exposures noted in my table and provides a reserve for other costs of delay, including IDC. However, we would be chasing this in court as against an insolvent party. What we may recover is uncertain, but contractually we have sufficient coverage it appears.
6. The economic outlook for Italy (D&B report states sovereign risk for Italy is moderate, with outlook as deteriorating) is not favourable. The proponent has significant exposure to Italian banks. However, the proponent has mitigated exposure by employing a strategy of obtaining committed facilities to support project construction activities, and their debt maturity profile is medium to long-term, minimizing short-term maturity risk.

Other

In doing its due diligence, Treasury and Risk had asked for the following to be provided prior to final decision as part of our due diligence activities:

1. An explanation as to why we have not pursued obtaining security over the batch plant in the event of default. We understand that this is not practical as the proponent will subcontract out the batch plant, making a lien impractical.
2. An understanding of the financing strategy to be employed for Muskrat construction, and in particular whether the strategy is to obtain a committed facility as per their normal practice. We obtained a satisfactory answer in that regard.

Table 1.10 in Appendix 1 contains a detailed creditworthiness evaluation.

2.4.2 Technical Evaluation Summary

A preliminary technical recommendation was prepared on 17 May 2013, which concluded that all bidders had presented valid bids, all bidders respected scope, all bidders had demonstrated that they were capable to execute the works successfully and although some differences were noted in the quality of the bids these differences were minimal as illustrated by the final scoring which varied from 87% for the lowest score to 92% for the highest.

A summary of the relative strengths and weaknesses of the two short-listed bidders is provided in Figure 1 below.

Figure 1 – Technical Strengths and Weaknesses Summary for Shortlisted Bidders

Bidder 2 - Astaldi	Bidder 4 - Sallini-Impregilo-FCC
Strength	Strength
Quality and thoroughness of bid denotes good understanding of the work	C.V's submitted of high caliber
Full enclosure over the powerhouse, controlled climate 12 months of the year	Has not planned working over winters, this gives margin for schedule recovery
Very experienced P.M., C.M. and planner	Full Tower crane coverage
Dedicated Kick off team experienced in getting contracts off the ground	Canadian sub has cold weather and hydro experience
Astaldi is already establish in Canada having acquired a Canadian firm	Less affected by CH0006 delay than the other bidders
Good manpower levelling	Canadian sub well qualified to do Spillway
All activities in the schedule are logically tied. Thus no loose end or dangling activities.	
Weaknesses	Weaknesses
C.V.'s given for Superintendents weak on Hydro	~~Missing C.V.'s for superintendents and R.E.~~
Resident Engineer does not have any Hydro experience	Aggressive monthly concrete pours, slippage will push them into winter
Hasn't confirmed if self performing or subcontracting some works	Aggressive 2014 schedule
Canadian subsidiary has no major hydro-electric construction experience nor is affiliated with a sub-contractor who has this solid experience	Starts acces roads (borrow pit) 3 months later than originally
	Salini join venture does not seem to be registerd in Canada, establishing a join venture may take some time and effort
	Increased peak manpower summer 2014 from 700 to 1100
	Totally unrealistic ramp up and 3 months later drops by over 900
Concerns	Concerns
~~Man-hours per cu. meter of concrete seems low during peaks~~	~~Man-hours per cu. meter of concrete seems low during peaks~~
Proposed subcontractors for major works appear unqualified	Bid quality a little light considering the reputation and resources of the bidder
~~Ability to hit the ground running given limited local knowledge~~	~~Some personnel based in St John's better off in HV/GB~~
Overhead crane congestion and multiple handling	Man hours seem sufficient and could be understated
	Local knowledge of senior management

Appendix 2 contains the detailed technical evaluation reports prepared during the evaluation process.

2.4.3 Quality Evaluation Summary

Based on the review conducted, all 4 bidders scored reasonably well and appear to have a strong understanding of Quality Management processes and procedures for large construction projects.

All bidders appear to have valid ISO Quality Management System certification in good standing, with notable ISO Registrars. All bidders appear to have an implemented audit processes, including processes for control of documents, control of quality records, control of nonconformity, corrective action and preventive action, which are requirements of ISO Certification.

Based on the review conducted, it appears that all bidders have the capacity to meet the quality requirements for CH0007 – Spillway, Powerhouse & Transition Dams, as related to the "Scope of Work" technical specification. All bidders scored reasonably well in most areas of the quality questionnaire, with no significant noncompliance noted.

Appendix 3 contains the scoring matrix for the quality questionnaire evaluation.

2.4.4 Health and Safety Evaluation Summary

For this scope of work it was decided through the bid evaluation planning meeting the minimum passing score was an overall score of 70%.

All four bidders provided detailed documentation on Health and Safety Management. During the review the focus areas were:

- Risk / Hazard Management
- Incident Investigation
- Sub-Contractor Management
- Training and competency for all levels.
- Safety leadership
- Safe work processes
- Inspections
- Regulatory compliance
- H&S Performance

All bidders meet the criteria and scored above the 70% pass requirement. There were no significant gaps found in any of the bidders H&S documentation provided.

The scoring matrix for the H&S questionnaire is provided in Appendix 4.

2.4.5 Environmental Evaluation Summary

All four bidders have demonstrated the use and understanding of environmental management systems (EMS's). In two cases, EMS's have been adopted for use from bid partners (i.e. IKC-ONE (Kiewit) and AECON JV (Flatiron)). Scores for Salini JV would have been higher, however several key pieces of reference materials could not be located in the proposal documents. Notwithstanding this, the Salini JV environmental submission is solid and considered acceptable. All four bidders have highlighted environmental training, as well as incident response procedures, this is consistent with mature environmental management systems.

While all bidders exceed the minimum pass/fail threshold of 60%, the scores for Astaldi and Aecon JV were the highest and were driven by their demonstrated advanced risk management procedures.

Table 5.1 in Appendix 5 provides the detailed evaluation for environmental questionnaire.

2.4.6 Project Execution and Schedule Evaluation Summary

2.4.6.1 Schedule

For every step in this process, all of the bidders were compliant in meeting all the milestone and interface dates. At the initial bid stage, all bidders demonstrated that they were able to meet all milestone and interface dates. With the revised dates provided in Addendum 14, the two bidders who were invited to resubmit their bids both reconfirmed their ability to meet the dates.

Tables 6.1, 6.2 and 6.3 in Appendix 6 contain the scoring matrices for the schedule evaluation.

2.4.6.2 Execution Strategy

A summary of the execution strategies for each of the two short-listed bidders is provided below. Table 6.4 in Appendix 6 contains the execution strategy scoring matrix.

Astaldi

Astaldi's contract execution strategy distinguishes itself by the use of a heated shelter over the powerhouse to be erected in the winter of 2014 (Jan-April) to permit work over the following 12 months in climate controlled conditions (especially useful for the winter of 2015). Small overhead cranes within the shelter would handle material. The shelter would be removed as structural steel erection progresses in the late spring of 2015.

Mobilization would start immediately after LNTP with the intention of having a temporary crusher and batch plant operational by Christmas 2013 for temporary installation and foundation preparation use. Permanent crusher and concrete batching plant would be installed over the winter in view of starting industrial production in March 2014. Contractor installations would be constructed during the autumn of 2013 and winter of 2014.

Spillway, Separation wall and Central transition dam foundation preparation work would take place over the winter of 2014 using local shelters. Full scale production would then start in these areas in the spring as well as in the Powerhouse area. Overall manpower would peak at about 800 in 2014.

The Intake and the Powerhouse will be executed starting from unit 1 to unit 4, with about 40 days of delay between the different units. All the vertical sections of the Southern service bay between El. -31 to +15.5 would be executed during the summer and the fall 2014. The Separation Wall and the Transition Dams (north, center and south) would be poured during the summer period or during the first part of the autumn 2014. In case of winter pouring, temporary heated shelters will be installed. In 2015 work would continue as the shelter is removed and powerhouse work would take place within the permanent structure. The spillway would be substantially complete by early 2015 except for the Rollways, for which construction, done in

three phases, is staggered until 2018. Little winter work would take place over 2015/2016. Manpower would be at a minimum in 2016/2017/2018 when most work will be taking place on second stage concrete and rollways.

The quality and thoroughness of the Astaldi bid denotes a good understanding of the work. This is also reflected in the experience of the senior management proposed. There was some concern (lack of number, not of quality) at the Superintendent level but at the final bid review meeting held on 4 September 2013, this concern was alleviated with the presentation of additional CV's with pertinent (Canadian) experience.

The covered shelter permits Astaldi to better project production rates as well as allows them to perform extensive work over the 2014/2015 winter and thus helps flatten the manpower curve. A kick off team composed of members of the bid team would mobilize early to get the contract off the ground. This is considered to be a strong element of their execution strategy.

Astaldi is established in Canada which is a plus administratively however the Canadian entity does not have specific Hydro experience .This shortcoming is compensated by the experienced personnel proposed. An experienced local subcontractor might also strengthen the team but Astaldi has decided to self-perform with qualified personnel in order to better control the works. Specialized supply and erect work (e.g. rebar, structural steel etc.) would be subcontracted as is the norm in North America.

Overall, Astaldi has a strong proposal and is definitely qualified technically without any serious reservations. Astaldi's execution plan was confirmed on September 4, 2013 when Astaldi made a presentation to the Project senior management team. A copy of the relevant slides from this presentation regarding Astaldi's execution plan are presented in Appendix 2, pages 79-83.

Salini JV

Salini JV is averse to working over the winter and its execution strategy reflects this. Their execution starts with the installation of the site establishment during the autumn of 2013 and the winter of 2014. Also during his time some drilling and grouting will be done with foundation treatment starting in April 2014. Site manpower at this time would slowly increase from 100 to 200. From that point onward, site manpower increases dramatically, reaching close to 1,200 in August 2014, which represents a ramp up of 200 persons per month. The contractor simultaneously attacks the powerhouse, spillway and transition dams. Manpower remains constant until the end of October when layoffs start, dropping down to about 200 by Christmas 2014 and staying at that level until the end of March 2015. Manpower then increases to about 650 over the span of a month and stays at the 650-700 level until the end of the year (2015). The pattern repeats itself over the winter of 2016 - lay off 300 then hire them back in the spring. After this time manpower levels remain more constant as work fronts diminish and second stage powerhouse concrete is done inside the building.

The contractor indicates that they will use local shelters where required and that work would take place over the winter of 2014/2015 should objectives not be met in 2014. A trigger date would be established whereby winter protection measures would be put in place if a certain concrete volume is not achieved or if the production rate shows that some milestones might not be achieved. This would involve more robust winter shelters but not full enclosure temporary buildings.

Salini JV meets all milestones in their execution plan including the 2014 spillway dates and the idea of not working over winter has its merits. With its severe weather, winter production is low

in Labrador. This idle time over winter is also a float that could be used should the summer/autumn objectives not be met. Working in a completely unsheltered environment permits the use of tower cranes which are much more efficient than overhead cranes working under a shelter or temporary building. They are faster, have a long reach and can reduce multiple handling. Concrete pour volumes are aggressive but do-able and the contractor has demonstrated that they have achieved and even exceeded the required pour rates on other jobs. As well, the staff the contractor proposes is of high caliber and his Canadian sub-contractor has demonstrated cold weather experience.

Of concern with this proposal is the steep ramp up required to perform 2014 work. Not only will it be difficult to obtain the number of trades labour required in that period but the rapid integration required will quite possibly be problematic. It is this ramp up and layoff cycle which is the main concern in an otherwise generally sound proposal.

2.4.7 Newfoundland and Labrador Benefits Evaluation Summary

All bidders provided satisfactory responses to Appendix 11- Provincial Benefits Questionnaire, agreeing to adhere to the Lower Churchill Projects Construction Benefits Strategy and relevant conditions outlined in the Impact Benefits Agreement with Innu Nation.

Because Astaldi, Salini JV, and Aecon JV indicated in their bids that less than 50% of the projected workforce would be residents of the Province, LCP provided each of these bidders with information regarding provincial labour supply and ongoing training initiatives during the bidder clarification meetings. All bidders reviewed their initial submissions and subsequently agreed that their Newfoundland and Labrador labour estimates were likely low.

LCP's Benefits Team will work with the successful bidder to ensure that benefits for the people of Newfoundland and Labrador are optimized in the successful execution of this contract.

The Newfoundland and Labrador benefits questionnaire scoring is provided in Appendix 7.

2.4.8 Risk Management Evaluation Summary

Based solely on responses to the Risk Questionnaire provided by the four bidders of the CH0007, the respective scores are as follows:

- IKC-ONE 88.9%
- Astaldi 89.2%
- Aecon JV 96.6%
- Salini JV 91.6%

The scoring reflects the quality, relevancy and comprehensiveness of the responses to the questionnaire. All four bidders provided detailed and comprehensive responses and all exceed the pass/fail threshold of 80%.

The two Canadian bidders (IKC and Aecon JV) have provided relevant reference projects demonstrating good knowledge of the construction constraints inherent to performing parts of the Work in winter conditions, while the reference projects provided by the two European Bidders (Astaldi and Salini JV) did not include cold weather projects as relevant as IKC and Aecon JV. However, review of these two bidders' winter works execution plan indicates that Astaldi

plans on enclosing the work areas in winter shelters, which aligns with usual construction approaches in these climates and with IKC and Aecon JV, whereas Salini's winter approach is silent regarding shelters and revolves around avoiding winter work through scheduling adjustments.

Aecon JV and Salini JV have emphasized the value of proactive cooperation with the Owner as part of their Risk Management approach while IKC and Astaldi seem to have an approach more driven by mitigating their own enterprise Risks, which could support a Claims driven strategy.

The risk management questionnaire scoring is provided in Appendix 8.

3.0 Summary of Final Bidder Prices

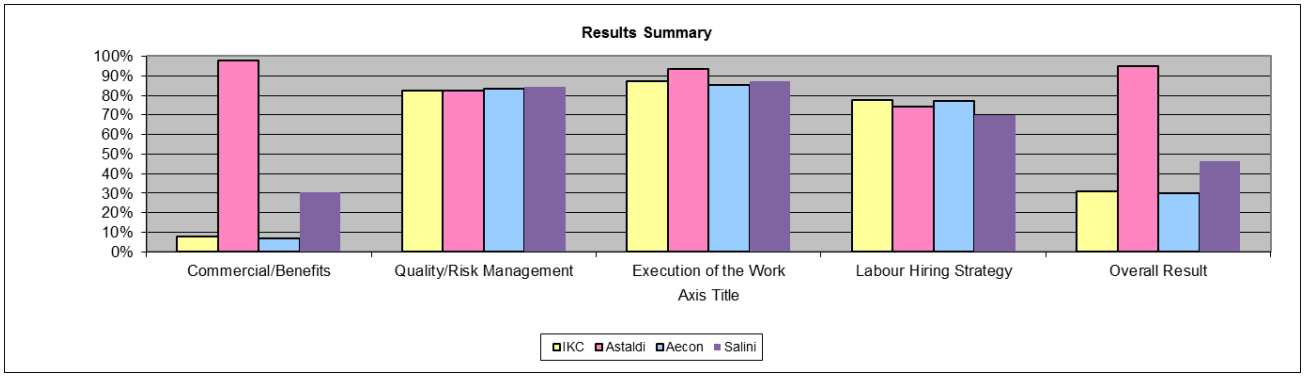
Table 1 below summarizes the proposal prices for all four bidders as well as the total evaluated costs. Rows 1 through 4 are prices from the original bids. Row 5 is the final evaluated costs for the two short listed bidders and includes adjustments for estimated escalation, adjustments to travel allowances, post-Addendum 14 price changes and other adjustments to the bid prices as per correspondence with both bidders. Appendix 1, Table 1.2 provides the detailed adjustments made and how the final evaluated prices were derived.

Table 1 – Summary of Bid Prices

	IKC	Astaldi	Aecon JV	Salini JV
Original Bid Prices				
1. Total Proposal Price	$1,760,838,042	$1,044,176,011	$1,521,857,700	$1,113,609,930
2. Cost Adders Submitted by Bidder to withdraw Technical Non Conformances	$	$	$	$
3. Estimate for Trades Labour Travel & Costs	$59,825,306	$23,104,157	$53,642,300	$30,238,320
4. Estimated Total Proposal Price (see Table 1.1 in Appendix 1)	**$1,820,663,348**	**$1,067,280,168**	**$1,575,500,000**	**$1,143,848,250**
Addendum 14 Bid Prices				
5. Estimated Total Evaluated Costs (see Table 1.2 in Appendix 1)		**$1,103,856,408**		**$1,259,787,389**

The results of the final evaluation, both commercial and technical as well as the overall weighted results are presented in Figure 2 below.

Figure 2 – Bid Evaluation Results Summary



4.0 Recommendation for Award

In consideration of the Evaluation Reports summarized in Section 2 and detailed in the appendices, including the summary of final proposal prices summarized in Section 3 above, the Evaluation Team recommends awarding a Contract for the Construction of the Intake and Powerhouse, Spillway and Transition Dams to:

Astaldi Canada Inc. for the following contract price:

- $1,117,752,550 CAD$

This price excludes HST and includes estimates for travel allowances, escalation and other allowances for specified and non-specified growth.

This contract price is summarized in the Request for Award attached as Table 1.9 in Appendix 1.

5.0 Appendices

1. Commercial Evaluation Reports
2. Technical Evaluation Reports
3. Quality Evaluation Report
4. Health and Safety Evaluation Report
5. Environmental Evaluation Report
6. Schedule and Execution Plan Evaluation Reports
7. Newfoundland and Labrador Benefits Evaluation Report
8. Risk Management Evaluation Report
9. Labour Hiring Strategy Evaluation Report
10. Overall Evaluation Scoring Matrix
11. Prequalification Evaluation Report

Appendix 1 – Commercial Evaluation Reports

The original bid prices for the four bidders are presented in Table 1.1 below.

Table 1.1 - Commercial Bid Price Tabulation

Description	IKC	Astaldi	Aecon JV	Salini JV
Option 1 – Fixed Price				
Contract price	**No fixed price bids submitted**			$1,113,609,930
Travel cost estimate				$30,238,320
Contract Price for Award				**$1,143,848,250**
Adjustments:				
Escalation				$11,302,501
Total Evaluated Price				**$1,155,150,751**
Total Person Hours				**5,847,268**
Option 2 – Fixed Price with Target Cost of Labour				
Target labour cost	$808,212,872	$543,672,580	$560,000,000	**No fixed price with target cost of labour bid submitted**
Labour profit	$80,821,287	$48,930,532	$44,800,000	
Non-labour component	$871,803,882	$451,572,899	$917,557,700	
Travel cost estimate	$59,825,306	$23,104,157	$53,642,300	
Contract Price for Award	**$1,820,663,348**	**$1,067,280,168**	**$1,575,500,000**	
Total Person Hours Included in Bid	**9,509,976**	**6,821,509**	**6,886,567**	
Adjustments:				
LMAX	$216,000,000	$64,300,000	$440,180,727	
Escalation	$8,975,561	$6,648,620	$8,975,561	
Total Evaluated Price for Preliminary Evaluation	**$2,045,638,908**	**$1,138,228,788**	**$2,024,656,288**	
Total Person Hours in Evaluated Cost (including LMAX)	**12,509,976**	**7,628,055**	**14,386,567**	

Based on the initial commercial evaluation, the bidder list was shortened to two bidders – Astaldi and Salini JV - and a further bid price analysis was conducted on the revised bids submitted by both short-listed bidders. The summary of this analysis is presented in Table 1.2 below.

Table 1.2 - Shortlisted Bidders Adjusted Bid Price Evaluation

	Astaldi	Salini JV
Option 1 Fixed Price		
Contract Price For Award ($CAD)	$-	$1,198,990,253
Estimate of Travel Costs for Trades Labour	$-	$44,539,376
Bid Price Including Estimated Travel Costs of Trades Labour ($CAD)	**$-**	**$1,243,529,629**
Total Manhours Included in Bid		**6,216,550**
Option 2 Fixed Price With Target Cost of Labour		
Labour Component: Target Cost of Labour ($CAD)	$547,598,341	$-
Labour Profit	$38,331,884	$-
Non Labour Component ($CAD)	$435,784,712	$-
Estimate of Travel Costs for Trades Labour	$29,057,891	$-
Contract Price before Adjustments Including Estimated Travel Costs of Trades Labour ($CAD)	**$1,050,772,828**	**$-**
Total Person Hours Included in Target Cost	**6,826,478**	
Adjustments		
Maximum increase in cost of labour up to LMAX	$64,300,000	$-
Escalation of Cement, Rebar and Structural Steel over the life of the Project	$3,821,749	$5,583,296
Escalation for all other materials		$11,693,645
Adjustment for LCP Estimate of Travel Costs of $40,500,000	$11,442,109	$(4,039,376)
Post-bid discount Offered (including labour profit for Astaldi)	$(42,800,000)	$(23,979,805)
Additional $50 M LC	$5,058,722	$-
Performance bond ($150 M for Astaldi; 50% of contract price for Salini JV)	$11,261,000	$27,000,000
Final Evaluated Bid Price	**$1,103,856,408**	**$1,259,787,389**
PV of total evaluated cost	$978,383,591	$1,110,926,844
Total Person Hours Included in Evaluated Cost	7,129,407	6,216,550

The adjusted bid price analysis was undertaken to normalize both bids. This normalization was necessary because one bid was for a fixed price sum and the other was a fixed price with a target cost of labour and a maximum labour cost. The target price bid was adjusted to reflect the maximum bid price represented by the LMAX formula. This formula is a cost overrun sharing formula whereby additional labour costs are capped at $75 million, with Nalcor's share of this additional labour being $64.3 million. Any labour overruns in excess of $75 million will be absorbed by the contractor. Other aspects of the normalization exercise involved using the same travel costs, adding escalation and discounting the monthly cash flows to Sept 2013 dollars. Additional adjustments were made to reflect post-Addendum 14 negotiations with each bidder which resulted in overall price adjustments as well as specific adjustments to financial security related cost items.

The result of this normalization exercise shows that Astaldi's price is $156 million lower with a maximum cost of $1.104 billion versus the $1.260 billion fixed price sum bid price from Salini JV. The present value of these bid prices also confirm Astaldi as the low bidder, with Astaldi $133 million lower in present value terms.

Table 1.3 below summarizes the commercial evaluation results from tables 1.1 and 1.2 above and tables 1.4 and 1.6.

Table 1.3 – Commercial Evaluation Report Summary

Commercial Part	Weighting Overall Matrix	Bidder #1	Bidder #2	Bidder #3	Bidder #4
1. Total Evaluated Cost (Refer to Tables 1.1 and 1.2)	90%	$2,045,638,908	$1,105,250,237	$2,031,708,287	$1,268,114,814
2. Provincial Benefits (Refer to Appendix 7)	5%	88%	71%	70.5%	58.3%
3. Articles of Agreement (Refer to Table 1.5)	5%	29/40	35/40	27½/40	29¼/40
4. RFP Appendix A2.6 & A14	Not Included in Scoring Matrix				
4.1 RFP Appendix A2.6 Declaration of Residency - Conform		Yes	Yes	Yes	Yes
4.2 RFP Appendix A14 Financial Data, Status, Reference and Board Resolution (Refer to Table 1.6)		23/23	23/23	23/23	23/23

Explanation:

- This page summarizes the scoring for all elements of the Commercial Evaluation. The Scores for items 1 to 3 are for input to the Overall Scoring Matrix, as provided in Appendix 10.
- Item 4 records the results of the responsiveness to Appendices A2.6 and A14 of the RFP. These scores are not integrated into the overall scoring Matrix. However the Bidder is still required to obtain a passing score of 9/10 for each of these.

Table 1.4 – Scoring for Major Issues – Articles of Agreement

Articles of Agreement	Bidder #1	Bidder #2	Bidder #3	Bidder #4
1. Limitation of Liability				
2. Liquidated Damages	¾ (5%) P	¾ (5%) P	½ (5%) P	¾ (5%) P
3. Warranty	0 F	√ P	0 F	¾ P
4. Title Transfer	¾	¾	¾	¾
5. Insurance	¾	√	√	√

Articles of Agreement	Bidder #1	Bidder #2	Bidder #3	Bidder #4
6. Performance Security	0 F	√ P	√ P	0 F
7. Default	½ P	¼ F	¼ F	½ P
8. Articles of Agreement (Refer to Table 1.5)				
Overall Score (see Table 1.5)	**29 4F**	**35 2F**	**27 ½ 6F**	**29 ¼ 3F**

Explanation:

1. This Table scores conformance to the Articles of Agreement. Major issues have been identified in the first 7 items and then the Articles are to be scored as a whole.
2. The scores are rated from 0 to 10, with 10 being best. Passing score for each item is 6. A substantial change to an Article is to be graded less than 6.
3. The Overall Score for the Articles is the average of the eight items. Overall Pass = 6.
4. Refer to Table 1.5 for the Detailed Report scoring the Articles of Agreement.

Table 1.5 – Detailed Scoring for the Articles of Agreement

		BIDDER 1	BIDDER 2	BIDDER 3	BIDDER 4
Article 1	Interpretation P/F	½ P	√ P	¾ P	½ P
Article 2	General Covenants	√	√	½	¾
Article 3	Contractor Work Obligations	√	√	¼	¾
Article 4	Reporting and Meetings	√	√	√	√
Article 5	Contractor's Personnel	√	√	√	√
Article 6	Subcontracts	¾	√	¾	¾
Article 7	Performance Security P/F	0 F	√ P	√ P	0 F
Article 8	Construction Schedule	√	√	√	√
Article 9	Construction Supervision	√	√	√	√
Article 10	Company's Obligations and Rights	¾	¾	½	½
Article 11	Role & Responsibilities of Engineer	¾	√	√	¾

		BIDDER 1	BIDDER 2	BIDDER 3	BIDDER 4
Article 12	Compensation & Terms of Payment **P/F**	½ P	√ P	¾ P	0 **F**
Article 13	Taxes	√	√	√	½
Article 14	Changes in the Work **P/F**	½	¾ P	½ P	¾ P
Article 15	Health, Safety & Environmental	¾	√	¾	√
Article 16	Access, Inspection, Testing	½	√	√	¾
Article 17	Warranty **P/F**	0 **F**	√ P	0 **F**	¾ P
Article 18	Contractor Insurance	¾	√	√	√
Article 19	Workers Compensation	√	√	√	√
Article 20	Project Insurance	¾	√	½	¾
Article 21	Indemnification **P/F**	½ P	½ P	¼ **F**	½ P
Article 22	Site & Transport Route Conditions	¾	√	½	½
Article 23	Subsurface Conditions	¾	√	¾	¾
Article 24	Default and Termination **P/F**	½ P	¼ **F**	¼ **F**	½ P
Article 25	Substantial & Final Completion **P/F**	¾ P	¾ P	¾ P	½ P
Article 26	Liquidated Damages **P/F**	¾ (5%) P	¾ (5%) P	½ (5%) P	¾ (5%) P
Article 27	Title and Risk	¾	¾	¾	¾
Article 28	Suspension	¾	¼	0	¾
Article 29	Force Majeure	¼	0	0	0
Article 30	Dispute Resolution	½	¾	√	¾
Article 31	Labour Relations **P/F**	√ P	√ P	0 **F**	¾ P
Article 32	Confidentiality	√	¾	√	√
Article 33	General	¾	√	¾	√
Article 34	Assignment **P/F**	0 **F**	√	¼ **F**	¾ P
Article35	Liens and Claims	√	√	¾	¾

		BIDDER 1	BIDDER 2	BIDDER 3	BIDDER 4
Article 36	Contractor's Documents & IP	√	√	√	√
Article 37	Shop Drawings	√	¾	√	¾
Article 38	Approval of Equipment	√	√	√	√
Article 39	Notices	√	√	¾	√
Article 40	Execution	√	√	√	√
	Liability Cap (added) **P/F**	Yes (26.2/5%) **F**	Yes (29.8/?%) **F**	Yes (21.14/?%) **F**	Yes (24.16/5%) **F**
	TOTAL MARK	**29** **4F**	**35** **2F**	**27 ½** **6F**	**29 ¼** **3F**

1. The marking is out of "1" for each article. ("√" means full mark.) The Mark is out of 40; the higher it is the more closely it reflects the original wording.
2. A ¼ mark has been deducted for each significant deviation from the wording proposed by the Company in the RFP form of Contract.
3. Some Articles have also been marked "Pass/Fail" (P/F). These Articles are the more significant.
4. For Article 1, the P/F assessment relates to the definition of change and acceptance of joint and several liability for joint ventures.
5. For Article 7, the P/F assessment is based on compliance with LC requested.
6. For Article 12, the P/F assessment is based on Mechanic's lien holdback, set off and deductions and general compliance with invoicing requirements.
7. For other Articles that are P/F, the assessment is based on general compliance.

Legal Counsel	Aidan Meade
Signed	_____
Date:	_____

Table 1.6 – Scoring for the Financial Data, Status, References and Resolution				
Section 1 Commercial	**Bidder #1**	**Bidder #2**	**Bidder #3**	**Bidder #4**
RFP Appendix A14 Financial Data, Status, Reference And Board Resolution				
1 ORGANIZATION				
a) Type of Business	1	1	1	1
b) JV?	1	1	1	1
c) Place of Registration, Registration No. And Certificate	1	1	1	1
d) Parent and % ownership	1	1	1	1
e) Existing Business Relationships	1	1	1	1
2. FINANCIAL DATA				
a) Financial Responsibility	1	1	1	1
b) Financial Statements last 3 years	1	1	1	1
c) Bonding Co., maximum and Origin	1	1	1	1
d) Willing to Provide Parent guarantee	1	1	1	1
e) Maximum Letter of Credit Can Provide	1	1	1	1
f) Credit References	1	1	1	1
g) Judgements of claims	1	1	1	1
h) Involved in Bankruptcy	1	1	1	1
i) Ever Cancelled a Contract	1	1	1	1
j) Litigation history	1	1	1	1
k) GST/HST Registration No.	1	1	1	1
3. LEGAL STATUS OF BIDDER				
a) Legal Details	1	1	1	1

Table 1.6 – Scoring for the Financial Data, Status, References and Resolution				
Section 1 Commercial	**Bidder #1**	**Bidder #2**	**Bidder #3**	**Bidder #4**
b) Partner Details	1	1	1	1
c) NL office address	1	1	1	1
4. BANK REFERENCES	1	1	1	1
5. EXPERIENCE AND PERFORMANCE WITH COMPARABLE WORK	1	1	1	1
6. BIDDERS Board resolution	1	1	1	1
7. BANK CLEARANCE LETTER	1	1	1	1
Overall Compliance Total Score/23	**23**	**23**	**23**	**23**

Comments:

1. Score 1 point for each item answered Total 23
2. Scoring Carried Forward to Commercial Evaluation Report – Summary, Table 1.3

Contract Administrator	Ron Adamcyk
Signed	_____
Date:	_____

Table 1.7 below compares the estimated hours, labour price and non-labour price for each price item in the Schedule of Price Breakdown as completed by each of the two shortlisted bidders in response to Addendum 14.

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders

				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
	INDIRECT COSTS								
1	Mobilization	LS	1	0	0	8,326,992	17,548	1,918,265	10,570,717
2	Site Installation	LS	1	71,519	5,668,063	20,028,886	12,769	1,020,204	11,634,774
3	Contractor Equipment for Indirects	LS	1	164,938	13,197,861	12,647,314	140,683	13,211,295	19,015,990
4	Temporary Works	LS	1	40,873	3,246,714	1,065,868	17,925	1,577,760	5,233,133
5	Winter Protection	LS	1	68,850	5,531,277	17,810,471	1,516	132,335	7,232,559
6	Management and Staff	LS	1	1,982,044	172,483,726	10,263,111	675,420	50,341,853	21,957,410
6A	Design and Technical Assistance	LS	1	131,000	10,508,344	1,334,825	116,445	6,505,903	2,153,375
7	Attendant labour	LS	1	736,610	58,375,032	240,750	478,835	41,089,207	3,247,888
8	Services	LS	1	50,821	3,960,856	15,363,286	13,084	1,178,640	11,222,987
9	Employee Training	LS	1	31,450	2,420,324	0	235,719	38,117,133	5,370,475
10	Health and Safety Requirements	LS	1	116,000	8,845,020	2,732,513	144,444	30,032,401	11,300,867
11	Environmental Requirements	LS	1	32,400	2,556,203	24,075	66,805	11,538,760	6,685,143
12	Quality Assurance / Quality Control	LS	1	175,800	13,799,281	0	109,043	17,218,124	4,304,554
13	Letters of Credit	LS	1	0	0	12,681,526	0	0	10,561,714
14	Parent Guarantee	LS	1	0	0	0	0	0	0
15	Contractor Insurance, per Article 18 of the Agreement	LS	1	0	0	5,576,498	0	0	3,176,906
16	Warranty, per Article 17 of the Agreement	LS	1	0	0	0	0	0	899,124
17	Site Maintenance	LS	1	86,693	6,970,927	5,502,365	46,679	4,064,242	2,152,667
17A	Maintenance Grade No. 3 Material	m^3	7,200	1,940	156,110	113,934	0	0	346,320
17B	Coarse Sand	m^3	2,900	817	65,734	47,972	0	0	143,579
17C	Calcium Chloride (20 kg bag)	each	12,500	0	0	200,625	0	0	242,500
18	Financing, Contingency, Head Office Overheads, & Consultant Fees	LS	1	0	0	60,316,058	0	0	77,373,623
19	Demobilization	LS	1	0	0	6,480,990	25,883	2,217,235	9,073,830
19A	Estimate of Travel Allowances - Trades Labour	NA	NA	0	0	0	0	0	0
	SUB-TOTAL INDIRECT COSTS								
	GENERAL								
	ACCESS ROADS TO SPILLWAY, ACCESS RAMPS AND PADS FOR COMPANY'S OTHER CONTRACTORS								
20	Overburden Excavation	m^3	6,400	684	54,266	24,564	1,280	116,544	50,176
21	Zone 3C Material	m^3	3,960	870	69,153	31,126	634	58,608	111,870
22	Zone 3D Material	m^3	8,360	1,836	145,991	65,711	1,254	111,773	42,469
23	Granular "B" Material	m^3	1,250	492	39,451	24,007	213	18,838	38,300
24	Granular "C" Material	m^3	1,250	492	39,451	24,007	213	19,600	35,638
25	Concrete Culvert 600 mm	m	45	8	606	467	283	26,051	15,081
	DEWATERING OF STRUCTURE AREAS								
26	Structure Areas	LS	1	10,863	866,271	829,609	16,551	1,573,936	3,466,385

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
	TEMPORARY BRIDGE								
27	Temporary Downstream Bridge over the Spillway	LS	1	7,953	598,480	831,039	13,231	1,207,263	532,321
	CONSTRUCTION CRANE								
28	Powerhouse – Construction Crane	LS	1	9,936	816,283	642,583	235	49,612	201,960
	Temporary Heating, Ventilating and Lighting of Powerhouse								
29	Temporary Heating, Ventilating and Lighting of Powerhouse	LS	1	1,801	141,041	4,774,603	18,000	1,876,248	7,139,526
	Chain Link Fences and Gates								
30	Chain Link Fences and Gates in the Powerhouse Parking and Contractor's Laydown Areas	m	50	65	5,049	8,485	635	55,006	10,700
	Temporary Lateral Support and Bracings								
31	Temporary Lateral Support and Bracings for Piers of the Spillway	LS	1	290	23,433	55,341	1,514	139,937	98,061
	Anchor Points								
32	Anchor Points at Powerhouse and Spillway	each	50	373	30,088	9,348	181	16,030	22,269
	SUB-TOTAL GENERAL								
	TRANSITION DAMS								
	NORTH TRANSITION DAM								
	CIVIL WORK								
	Excavation								
33	Fill Excavation (Sand Layer for Winter Protection)	m^3	650	221	17,679	10,568	111	9,997	4,050
	Foundation Preparation								
34	Dental Excavation	m^3	30	8	669	324	33	2,965	1,854
35	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	430	53	4,237	534	215	19,083	6,291
36	Dental Concrete	m^3	70	129	10,180	14,000	137	9,745	20,943
37	Dry Pack	m^3	3	6	461	907	8	694	1,846
	Drilling, Pressure Grouting and Drainage								
38	Grouting Holes	m	200	178	14,513	33,409	116	10,370	3,188
39	Grouting - Successful Connections	each	40	135	11,020	25,265	168	15,097	1,986
40	Dry Cement for Grouting	kg	7,000	315	25,711	19,407	70	4,830	42,140
41	Water Pressure Tests (Lugeon)	hour	4	40	3,285	2,544	18	1,659	383
42	Water Pressure Tests - Successful Connections	each	10	15	1,184	1,894	92	8,296	2,442
43	Uplift Gauges	m	25	27	2,163	5,618	176	15,693	9,776
44	Thermistors	each	1	23	1,873	4,869	6	543	433
45	Rotary/Percussion Drill Check Holes	m	25	17	1,408	3,651	113	9,973	1,524
46	Cored (Diamond drill) holes	m	25	67	5,469	11,302	109	9,578	1,643
47	Drainage Holes	m	65	48	3,926	8,137	79	7,173	1,975
48	PVC Caps for Drainage Holes	each	5	4	335	963	3	248	1,050
49	Survey Monuments	each	1	2	148	425	5	439	293
	CONCRETE WORK								
50	Concrete	m^3	9,130	35,590	2,707,565	2,068,197	39,350	3,165,919	3,637,118
50A	PVC Waterstop - TYPE A (150 mm width)	m	30	8	634	358	8	701	651

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
51	PVC Waterstop - TYPE B (225 mm width)	m	315	84	6,659	6,090	85	7,365	10,773
52	Hydrophilic Waterstop	m	22	6	465	509	5	429	691
53	Bituminous Coating at Contraction Joints	m^2	570	301	22,441	9,029	1,254	109,480	13,606
	REINFORCEMENT, ANCHORS AND DOWELS								
54	Reinforcement including Dowels	kg	55,000	1,164	85,855	85,333	1,650	169,950	146,850
	STRUCTURAL STEEL AND MISCELLANEOUS METAL								
	Supply and Installation of Non Embedded Miscellaneous Metal								
55	Galvanized Miscellaneous Steel	kg	10,600	425	34,312	101,590	636	59,678	26,606
56	Galvanized Grating	kg	5,100	150	12,123	57,495	306	28,713	12,801
	Embedded Miscellaneous Metals								
57	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	190	11	901	1,915	23	2,145	4,199
58	**Anchor Bolts Grade 55 ASTM F1554**	kg	535	31	2,537	1,772	43	3,836	5,329
	ELECTRICAL WORK								
59	Exothermic Connections.	each	30	72	7,027	4,702	67	6,934	10,347
59A	Mechanical Connections	each	4	9	898	906	6	748	646
60	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	200	83	8,083	12,900	104	10,818	10,864
61	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	30	7	656	890	8	794	773
61A	Embedded Copper Grounding Plates	each	1	4	390	486	2	247	437
61B	Rigid PVC Conduit, size 129mm	m	75	405	39,528	10,031	146	15,193	8,143
	SUB-TOTAL NORTH TRANSITION DAM								
	CENTRE TRANSITION DAM								
	CIVIL WORK								
	Excavation								
62	Fill Excavation (Sand Layer for Winter Protection)	m^3	2,100	713	57,116	34,143	357	32,298	13,083
	Foundation Preparation								
63	Dental Excavation	m^3	80	22	1,784	864	87	7,906	4,943
64	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	1,430	177	14,090	1,775	715	63,463	20,921
65	Dental Concrete	m^3	215	397	31,269	42,999	419	29,930	64,326
66	Dry Pack	m^3	10	19	1,506	2,964	26	2,315	6,153
	Drilling, Pressure Grouting and Drainage								
67	Grouting Holes	m	600	533	43,538	100,227	348	31,110	9,564
68	Grouting - Successful Connections	each	120	405	33,060	75,796	505	45,292	5,959
69	Dry Cement for Grouting	kg	20,000	900	73,460	55,447	200	13,800	120,400
70	Water Pressure Tests (Lugeon)	hour	4	40	3,285	2,544	18	1,659	383
71	Water Pressure Tests - Successful Connections	each	10	15	1,184	1,894	92	8,296	2,442
72	Uplift Gauges	m	30	32	2,596	6,741	211	18,831	11,731
73	Thermistors	each	1	23	1,873	4,869	6	543	433
74	Rotary/Percussion Drill Check Holes	m	25	17	1,408	3,651	113	9,973	1,524

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
75	Cored (Diamond drill) holes	m	25	67	5,469	11,302	109	9,578	1,643
76	Drainage Holes	m	200	148	12,081	25,038	244	22,070	6,078
77	PVC Caps for Drainage Holes	each	20	16	1,339	3,852	11	993	4,199
	Geotechnical Instrumentation								
78	Survey Monuments	each	5	9	739	2,124	24	2,193	1,464
79	Hydraulic piezometers	each	3	8	660	20,893	244	21,641	12,883
80	V-Notch Weirs	each	1	3	220	1,689	8	731	930
	CONCRETE WORK								
81	Concrete Below El. 42.00 m	m^3	**26,900**	112,268	8,525,283	6,035,248	143,108	11,648,507	10,116,552
82	Concrete Above El. 42.00 m	m^3	**2,550**	10,515	798,737	607,850	12,827	1,071,791	1,026,299
83	Concrete - Slab on Steel Deck	m^3	**150**	594	45,118	31,804	903	76,310	63,396
84	Grout	m^3	17	40	3,144	22,487	17	885	4,953
84A	PVC Waterstop - TYPE A (150 mm width)	m	**135**	36	2,854	1,610	36	3,156	2,930
85	PVC Waterstop - TYPE B (225 mm width)	m	**629**	168	13,296	12,160	138	12,259	17,927
86	Bituminous Coating at Contraction Joint	m^2	3,060	1,615	120,475	48,471	6,732	587,734	73,042
	REINFORCEMENT, ANCHORS AND DOWELS								
87	Reinforcement including Dowels	kg	**145,000**	3,069	226,345	224,968	4,350	448,050	387,150
	SUPPLY AND INSTALLATION OF STRUCTURAL STEEL								
88	Painted Structural Steel	kg	**79,400**	1,915	154,592	600,143	7,146	638,376	398,588
	STRUCTURAL STEEL AND MISCELLANEOUS METAL								
	Supply and Installation of Non Embedded Miscellaneous Metal								
89	Galvanized Miscellaneous Steel	kg	**37,000**	1,483	119,769	354,608	2,220	208,310	92,870
90	Galvanized Grating	kg	**1,745**	51	4,148	19,672	105	9,824	4,380
	Embedded Miscellaneous Metals								
91	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	**16,870**	991	79,998	170,003	1,350	129,730	129,562
	Metal Decking including Shear Studs (Galvanized)								
92	Steel deck type RD 306 (t=0.91 mm)	m^2	400	200	15,709	73,720	244	22,668	10,108
93	Shear Studs	kg	**375**	22	1,778	1,221	23	2,216	990
	Crane Rails including Fastening System and Accessories								
94	Rails for Trash Cleaning System	m	140	196	15,825	53,894	55	4,826	16,881
95	**Anchor Bolts Grade 55 ASTM F1554**	kg	**4,850**	285	22,999	16,062	388	34,775	48,306
96	**Elastomeric Bearing Pads**	each	21	7	558	1,889	938	83,423	127,015
	ELECTRICAL WORK								
97	Exothermic Connections.	each	**140**	336	32,794	21,943	314	32,655	43,665
97A	Mechanical Connections	each	**17**	39	3,816	3,850	38	3,965	6,037
98	Embedded Copper Grounding Plates	each	2	8	781	971	8	873	1,428
99	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	**500**	207	20,208	32,249	260	27,045	27,115
100	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	**225**	50	4,923	6,672	59	6,028	5,846
101	Rigid PVC Conduit, size 41mm	m	**0**	0	0	0	0	0	0

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
101A	Rigid PVC Conduit, size 53mm	m	3	6	586	347	3	258	405
102	Rigid PVC Conduit, size 78mm	m	0	0	0	0	0	0	0
103	Rigid PVC Conduit, size 129mm	m	110	594	57,974	14,713	213	22,283	11,932
104	Junction Box, size 200 x 200 x 150 mm Complete with Traffic Rated Cover	each	0	0	0	0	0	0	0
	SUB-TOTAL CENTRE TRANSITION DAM								
	SOUTH TRANSITION DAM								
	CIVIL WORK								
	Excavation								
105	Fill Excavation (Sand Layer for Winter Protection)	m^3	1,350	458	36,717	21,949	230	20,763	8,411
	Foundation Preparation								
106	Dental Excavation	m^3	45	12	1,004	486	50	4,469	2,790
107	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	900	112	8,868	1,117	450	39,942	13,167
108	Dental Concrete	m^3	135	249	19,634	26,999	263	18,764	39,663
109	Dry Pack	m^3	6	12	904	1,778	16	1,389	3,692
	Drilling, Pressure Grouting and Drainage								
110	Grouting Holes	m	500	444	36,282	83,523	290	25,925	7,970
111	Grouting - Successful Connections	each	100	337	27,550	63,163	421	37,743	4,966
112	Dry Cement for Grouting	kg	18,000	810	66,114	49,903	180	12,420	108,360
113	Water Pressure Tests (Lugeon)	hour	5	50	4,106	3,181	23	2,074	479
114	Water Pressure Tests - Successful Connections	each	12	17	1,420	2,273	110	9,955	2,930
115	Uplift Gauges	m	30	32	2,596	6,741	211	18,831	11,731
116	Thermistors	each	1	23	1,873	4,869	6	543	433
117	Rotary/Percussion Drill Check Holes	m	30	21	1,690	4,382	136	11,967	1,829
118	Cored (Diamond drill) holes	m	30	80	6,563	13,562	130	11,494	1,972
119	Drainage Holes	m	225	167	13,591	28,168	275	24,829	6,838
120	PVC Caps for Drainage Holes	each	15	12	1,004	2,889	8	745	3,150
	Geotechnical Instrumentation								
121	Survey Monuments	each	4	7	591	1,699	19	1,754	1,171
122	Hydraulic piezometers	each	2	6	440	13,929	170	15,068	9,089
123	V-Notch Weirs	each	1	3	220	1,689	8	731	930
	CONCRETE WORK								
124	Concrete	m^3	9,700	38,544	2,932,475	2,150,975	40,352	3,240,188	4,337,743
124A	PVC Waterstop - TYPE A (150 mm width)	m	130	35	2,748	1,551	35	3,039	2,821
125	PVC Waterstop - TYPE B (225 mm width)	m	170	45	3,594	3,287	37	3,313	4,845
126	Hydrophilic Waterstop	m	0	0	0	0	0	0	0
127	Bituminous Coating at Contraction Joints	m^2	380	201	14,961	6,019	836	72,987	9,071
	REINFORCEMENT, ANCHORS AND DOWELS								
128	Reinforcement including Dowels	kg	283,300	5,597	417,301	421,352	8,499	875,397	756,411
	STRUCTURAL STEEL AND MISCELLANEOUS METAL								

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
	Supply and Installation of Non Embedded Miscellaneous Metal								
129	Galvanized Miscellaneous Steel	kg	**14,850**	595	48,069	142,322	891	83,606	37,274
130	Galvanized Grating	kg	**230**	7	547	2,593	14	1,295	577
	Embedded Miscellaneous Metals								
131	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	**110**	4	356	1,054	9	846	845
132	**Anchor Bolts Grade 55 ASTM F1554**	kg	1,350	79	6,402	4,471	108	9,680	13,446
	ELECTRICAL WORK								
133	Exothermic Connections.	each	100	240	23,424	15,674	223	23,197	34,657
133A	Mechanical Connections	each	**12**	28	2,694	2,717	27	2,799	4,273
134	Embedded Copper Grounding Plates	each	**2**	8	781	971	8	842	1,278
135	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	**300**	124	12,125	19,350	156	16,227	16,269
136	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	**150**	34	3,282	4,448	39	4,020	3,899
137	Rigid PVC Conduit, size 53mm	m	**5**	10	976	579	3	330	138
	SUB-TOTAL SOUTH TRANSITION DAM								
	SEPARATION WALL								
	CIVIL WORK								
	Foundation Preparation								
138	Dental Excavation	m^3	50	14	1,115	540	55	4,942	3,090
139	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	900	112	8,868	1,117	450	39,942	13,167
140	Dental Concrete	m^3	130	240	18,907	25,999	254	18,097	38,895
141	Dry Pack	m^3	6	12	904	1,778	16	1,389	3,692
	CONCRETE WORK								
142	Concrete - Separation Wall	m^3	10,850	53,907	4,078,092	2,775,739	55,986	4,560,364	4,793,639
143	PVC Waterstop - TYPE B (225 mm width)	m	60	16	1,268	1,160	16	1,403	2,052
144	Hydrophilic Waterstop	m	15	4	317	347	3	292	471
145	Bituminous Coating at Contraction Joint	m^2	810	427	31,891	12,831	1,782	155,577	19,335
	SUB-TOTAL SEPARATION WALL								
	SPILLWAY								
	SPILLWAY STRUCTURE								
	CIVIL WORK								
	Excavation and Backfill								
146	Fill Excavation (Sand Layer for Winter Protection)	m^3	7,600	2,580	206,705	123,566	1,292	116,888	47,348
	Drilling, Pressure Grouting and Drainage								
147	Grouting Holes	m	650	578	47,166	108,579	377	33,703	10,361
148	Grouting - Successful Connections	each	130	439	35,815	82,112	547	49,066	6,456
149	Dry Cement for Grouting	kg	23,000	1,035	84,479	63,765	230	15,870	138,460
150	Water Pressure Tests (Lugeon)	hour	4	40	3,285	2,544	18	1,659	383

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
151	Water Pressure Tests - Successful Connections	each	10	15	1,184	1,894	92	8,296	2,442
152	Uplift Gauges	m	30	32	2,596	6,741	211	18,831	11,731
153	Thermistors	each	1	23	1,873	4,869	6	543	433
154	Rotary/Percussion Drill Check Holes	m	25	17	1,408	3,651	113	9,973	1,524
155	Cored (Diamond drill) holes	m	25	67	5,469	11,302	109	9,578	1,643
	Instrumentation								
156	Survey Monuments	each	6	11	887	2,549	29	2,631	1,757
	Foundation preparation								
157	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	5,100	632	50,250	6,330	2,550	226,338	74,613
	CONCRETE WORK								
	Spillway and Related Structures including Retaining Walls								
158	Concrete - Slabs	m^3	13,100	35,734	2,715,460	3,126,099	60,391	4,875,034	5,440,954
159	Concrete - Piers and Walls	m^3	32,900	245,733	18,356,029	11,544,155	208,257	17,229,401	14,802,697
160	Concrete - Rollways	m^3	19,500	52,439	3,986,424	4,843,851	84,630	6,780,150	7,990,320
161	Demolition of Slab for Rollway Key	m^3	200	95	7,499	2,296	220	19,864	12,402
162	Overbreak Concrete	m^3	3,000	6,235	479,040	713,885	5,850	417,630	1,125,540
163	Grout	m^3	20	47	3,699	26,455	52	4,598	12,200
164	PVC Waterstop - TYPE A (150 mm width)	m	**4,100**	1,093	86,670	48,906	902	79,909	74,169
164A	PVC Waterstop - TYPE B (225 mm width)	m	**1,000**	267	21,139	19,333	270	23,380	34,200
164B	PVC Waterstop - TYPE D	m	**550**	147	11,626	24,021	149	12,859	29,332
165	Hydrophilic Waterstop	m	**0**	0	0	0	0	0	0
166	Bituminous Coating at Contraction Joint	m^2	950	501	37,402	15,048	2,090	182,467	22,677
	REINFORCEMENT, ANCHORS AND DOWELS								
167	Reinforcement including Dowels	kg	**3,850,000**	76,058	5,671,050	5,726,105	115,500	11,896,500	10,279,500
168	Drill Holes and Grouting for Rock Dowels	m	**1,200**	2,692	204,864	35,631	1,692	152,016	29,028
169	Threaded Rebars with Couplers	kg	**117,000**	5,204	387,387	353,411	2,340	241,020	409,500
	STRUCTURAL STEEL AND MISCELLANEOUS METAL								
	Non Embedded Miscellaneous Metal								
170	Non Embedded Galvanized Miscellaneous Steel	kg	**10,900**	640	51,688	117,073	654	61,367	27,359
171	Non Embedded Galvanized Grating	kg	**0**	0	0	0	0	0	0
	Embedded Miscellaneous Metals								
172	Embedded Galvanized Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	**430**	17	1,392	4,121	34	3,307	3,302
173	Bulkhead Formwork - Rollway Joints	kg	**13,500**	613	49,505	137,040	1,080	103,815	103,680
	Crane Rails including Fastening System and Accessories								
174	Rails for Trash Cleaning System	m	150	210	16,955	57,944	59	5,171	18,087
175	**Anchor Bolts Grade 55 ASTM F1554**	kg	**2,520**	148	11,950	8,345	252	21,672	30,114
	ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS								
176	Anchors, Templates and Angles in Primary Concrete for Gates and Rollways (5 Sets)	kg	**91,135**	1,476	119,205	415,802	7,291	653,438	907,705

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
177	Anchors, Templates and Angles in Primary Concrete for Upstream Temporary Stoplogs (5 Sets)	kg	75,160	1,218	98,309	342,916	6,013	565,955	786,174
178	Anchors, Templates and Angles in Primary Concrete for Upstream Permanent Stoplogs (5 Sets)	kg	42,492	688	55,580	193,869	3,824	322,939	448,716
179	Anchors, Templates and Angles in Primary Concrete for Downstream Stoplogs (5 Sets)	kg	15,497	251	20,270	70,705	1,395	119,947	166,593
180	Anchors and Templates in Primary Concrete for Hoist Towers (5 Sets)	kg	430	7	562	1,962	39	3,388	4,709
181	Anchors and Templates in Primary Concrete for Walkways (5 Sets)	kg	200	3	262	912	20	1,720	2,390
182	Liner Plates in sides of Piers	each	10	15	1,189	4,146	74	6,810	3,037
	ELECTRICAL WORK								
183	Exothermic Connections.	each	290	696	67,930	45,454	644	67,231	167,527
183A	Mechanical Connections	each	45	104	10,102	10,191	101	10,496	26,408
184	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	2,200	911	88,915	141,897	1,144	118,998	119,262
185	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	550	123	12,034	16,309	143	14,735	29,018
186	Rigid Galvanized Steel Conduits, size 53mm	m	50	480	46,848	4,762	38	3,927	1,609
	SUB-TOTAL SPILLWAY STRUCTURE								
	SPILLWAY BRIDGES								
	CONCRETE WORK								
187	Concrete - Slab on Bridge Deck	m^3	460	1,654	126,052	106,287	2,903	240,897	206,968
	REINFORCEMENT, ANCHORS AND DOWELS								
188	Reinforcement including Dowels	kg	122,150	2,413	179,927	181,674	3,665	377,444	326,141
	STRUCTURAL STEEL AND MISCELLANEOUS METAL								
	Structural Steel								
189	Structural Steel - Painted/Galvanized Sections	kg	263,500	5,652	456,382	1,591,580	18,445	1,747,005	750,975
	Non Embedded Miscellaneous Metal								
190	Non Embedded Galvanized Miscellaneous Steel	kg	58,500	3,436	277,407	628,329	3,510	329,355	146,835
191	Non Embedded Galvanized Grating	kg	0	0	0	0	0	0	0
	Embedded Miscellaneous Metals								
192	Embedded Galvanized Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	12,850	515	41,595	123,154	1,028	98,817	98,688
192A	Shear Studs	kg	3,420	201	16,218	11,132	205	20,212	9,029
193	**Elastomeric Bearing Pads**	each	110	36	2,925	7,880	591	52,850	107,232
194	**Bridge Expansion Joints**	each	12	4	319	867	968	86,640	23,587
195	**Anchor Bolts Grade 55 ASTM F1554**	kg	13,000	763	61,646	43,051	1,040	93,210	129,480
	SUB-TOTAL SPILLWAY BRIDGES								
	SPILLWAY DISCHARGE CHANNEL - PHASE 1								
	CIVIL WORK								

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
	Foundation preparation								
196	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	2,880	357	28,377	3,575	1,440	127,814	42,134
	CONCRETE WORK								
197	Concrete - Slabs (CVC)	m^3	1,725	7,175	551,777	485,405	7,487	599,783	706,836
198	Concrete - Walls (CVC)	m^3	700	4,662	350,607	234,446	3,738	306,194	310,254
199	Overbreak Concrete	m^3	1,600	3,142	246,402	400,002	3,120	222,736	600,288
	REINFORCEMENT, ANCHORS AND DOWELS								
200	Reinforcement including Dowels	kg	145,000	2,865	213,585	215,659	4,350	448,050	387,150
201	Drill Holes and Grouting for Rock Dowels	m	3,650	8,189	623,128	108,378	5,147	462,382	88,294
	SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 1								
	SPILLWAY DISCHARGE CHANNEL - PHASE 2 - OPTIONAL								
	CIVIL WORK								
	Foundation preparation								
202	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	1,440	178	14,188	1,787	720	63,907	21,067
	CONCRETE WORK								
203	Concrete - Slabs (CVC)	m^3	750	2,046	155,465	178,975	3,353	260,775	307,320
204	Concrete - Walls (CVC)	m^3	300	2,906	208,660	135,543	1,899	157,107	134,979
205	Overbreak Concrete	m^3	700	1,455	111,776	166,573	1,365	97,447	262,626
	REINFORCEMENT, ANCHORS AND DOWELS								
206	Reinforcement including Dowels	kg	90,000	1,778	132,570	133,857	2,700	278,100	240,300
207	Drill Holes and Grouting for Rock Dowels	m	1,900	4,263	324,368	56,416	2,679	240,692	45,961
	SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 2								
	SPILLWAY DISCHARGE CHANNEL - PHASE 3 - OPTIONAL								
	CIVIL WORK								
	Foundation preparation								
208	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	3,400	421	33,500	4,220	1,700	150,892	49,742
	CONCRETE WORK								
209	Concrete - Slabs (CVC)	m^3	2,000	5,456	414,574	477,267	8,680	695,400	819,520
210	Concrete - Walls (CVC)	m^3	200	1,937	139,106	90,362	1,268	104,738	89,986
211	Overbreak Concrete	m^3	2,000	4,156	319,360	475,923	3,900	278,420	750,360
	REINFORCEMENT, ANCHORS AND DOWELS								
212	Reinforcement including Dowels	kg	160,000	3,161	235,680	237,968	4,800	494,400	427,200
213	Drill Holes and Grouting for Rock Dowels	m	4,600	10,320	785,312	136,586	6,486	582,728	111,274
	SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 3								
	INTAKE								
	INTAKE STRUCTURE								
	CIVIL WORK								
	Drilling, Pressure Grouting and Drainage								

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
214	Grouting Holes	m	2,000	1,778	145,126	334,090	1,160	103,700	31,880
215	Grouting - Successful Connections	each	400	1,350	110,199	252,654	1,684	150,972	19,864
216	Dry Cement for grouting	kg	70,000	3,150	257,110	194,066	700	48,300	421,400
217	Water Pressure Tests (Lugeon)	hour	8	80	6,570	5,089	37	3,318	767
218	Water Pressure Tests - Successful Connections	each	20	29	2,367	3,788	184	16,592	4,883
219	Uplift Gauges	m	30	32	2,596	6,741	211	18,831	11,731
220	Thermistors	each	1	23	1,873	4,869	6	543	433
221	Rotary/Percussion Drill Check Holes	m	50	35	2,816	7,303	227	19,946	3,048
222	Cored (Diamond drill) holes	m	50	134	10,938	22,604	217	19,156	3,286
223	Drainage Holes	m	800	592	48,325	100,152	976	88,280	24,312
224	PVC Caps for Drainage Holes	each	50	41	3,347	9,630	28	2,483	10,499
	Foundation preparation								
225	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	4,900	607	48,280	6,082	2,450	217,462	71,687
	Geotechnical Instrumentation								
226	Survey Monuments	each	4	7	591	1,699	19	1,754	1,171
227	V-Notch Weirs	each	2	6	440	3,379	16	1,463	1,860
	CONCRETE WORK								
	CONCRETE INTAKE & GATE HOIST BUILDING								
228	Concrete - Substructure below El. 45.5 m	m^3	**143,305**	661,323	50,204,614	37,670,754	930,049	76,990,611	75,076,056
229	Concrete - Gate Hoist Building and Elevator Room above El. 45.5 m	m^3	**1,646**	16,352	1,224,678	539,243	10,633	884,314	862,323
230	Overbreak Concrete	m^3	3,000	5,794	454,767	674,264	6,300	458,310	1,095,090
231	Grout	m^3	30	70	5,549	39,682	79	6,896	18,299
232	PVC Waterstop - TYPE A (150 mm width)	m	**8,611**	2,295	182,028	102,715	1,894	167,828	155,773
233	PVC Waterstop - TYPE B (225 mm width)	m	**876**	233	18,518	16,935	193	17,073	24,966
234	Sealing of Joints	m	100	27	2,114	794	41	3,547	465
235	Bituminous Coating at Construction Joints	m^2	6,020	3,176	237,013	95,358	13,244	1,156,261	143,697
235A	Elastomeric Polyurea Membrane	m^2	**5,803**	3,271	257,299	550,918	3,830	335,587	150,994
	REINFORCEMENT, ANCHORS AND DOWELS								
236	Reinforcement including Dowels	kg	**10,647,650**	271,175	20,400,897	19,801,009	319,430	32,901,239	28,429,226
	INSTALLATION OF ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS								
237	Anchors, Templates and Angles in Primary Concrete for Intake Gates (12 Sets)	kg	**173,672**	2,797	225,774	435,769	13,894	1,245,228	1,729,773
238	Anchors and Templates in Primary Concrete for Intake Trashracks (12 Sets)	kg	82,000	1,321	106,600	205,750	6,560	587,940	816,720
239	Anchors, Templates and Angles in Primary Concrete for Intake Stoplogs (12 Sets)	kg	**151,021**	2,432	196,327	378,934	12,082	1,082,821	1,504,169
	INTAKE - ELECTRICAL WORK								
240	Exothermic Connections.	each	**600**	1,440	140,544	94,042	1,326	138,450	205,428
240A	Mechanical Connections	each	**104**	239	23,346	23,551	233	24,258	36,720
241	Embedded Copper Grounding Plates	each	6	24	2,342	2,914	11	1,163	2,833

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders

				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
242	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	2,100	870	84,874	135,447	1,092	113,589	113,820
243	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	1,900	426	41,572	56,338	494	50,901	49,343
243A	Rigid PVC Conduit, size 35mm	m	9	14	1,318	639	6	587	241
243B	Rigid PVC Conduit, size 78mm	m	20	21	2,050	1,611	21	2,220	1,155
243C	Rigid PVC Conduit, size 129mm	m	300	1,620	158,112	40,125	582	60,771	32,505
	Heat Tracing of Drains								
243D	Heat Tracing Cable plus Accessories	m	224	403	31,560	43,654	125	6,673	10,125
243E	Heat Tracing Controllers	each	16	144	11,271	23,423	256	26,204	50,179
	SUB-TOTAL INTAKE STRUCTURE								
	POWERHOUSE								
	SUBSTRUCTURE								
	CIVIL WORK								
	Drilling, Pressure Grouting and Drainage								
244	Grouting Holes	m	800	711	58,050	133,636	464	41,480	12,752
245	Grouting - Successful Connections	each	160	540	44,080	101,061	674	60,389	7,946
246	Dry Cement for Grouting	kg	28,000	1,260	102,844	77,626	280	19,320	168,560
247	Water Pressure Tests (Lugeon)	hour	4	40	3,285	2,544	18	1,659	383
248	Water Pressure Tests - Successful Connections	each	10	15	1,184	1,894	92	8,296	2,442
249	Uplift Gauges	m	25	27	2,163	5,618	176	15,693	9,776
250	Thermistors	each	1	23	1,873	4,869	6	543	433
251	Rotary/Percussion Drill Check Holes	m	25	17	1,408	3,651	113	9,973	1,524
252	Cored (Diamond drill) holes	m	25	67	5,469	11,302	109	9,578	1,643
	Foundation preparation								
253	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	10,400	1,289	102,471	12,908	5,200	461,552	152,152
	Trench for Interconnection Cables and Pipes								
254	Excavation and Backfill	LS	1	4,633	369,237	126,875	8,967	816,473	1,140,240
255	Ductbank	LS	1	6,012	433,959	127,804	637	55,954	29,029
256	Manholes	each	3	7	525	1,473	36	3,159	25,278
	CONCRETE WORK								
257	Concrete - Powerhouse Substructure below El. 6.5 m	m^3	131,135	475,760	36,414,616	35,691,646	857,623	70,452,279	64,090,920
258	Concrete - Substructure between lines 6 and 7, including Sump Pit, Shafts for Stair & Elevator up to El. 45.5m	m^3	14,882	156,901	11,769,430	5,264,277	81,405	6,711,484	7,173,570
259	Concrete - Slabs and Walls between El. 6.5 and 15.5, including North and South Service Bays, Slab on grade, Basins and Bases for GSU transformer up to El. 16.8 m. Air vent enclosures on Powerhouse tailrace deck and North Service Bay, Access enclosure to stair no. 8 and Oil/Water separator enclosure.	m^3	6,692	66,723	5,008,052	2,308,497	44,033	3,595,277	3,270,648
260	Concrete - Slab on Steel Deck including Mezzanines	m^3	3,718	6,836	538,482	894,297	23,609	1,997,496	1,817,135

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
261	Secondary Concrete of Draft Tube Cone Steel liner	m^3	2,420	9,758	738,233	977,530	15,706	1,300,145	1,182,751
262	Overbreak Concrete	m^3	8,500	16,749	1,321,470	2,037,753	17,850	1,298,545	3,102,755
263	Grout	m^3	15	35	2,774	19,841	15	781	4,370
264	PVC Waterstop - TYPE A (150 mm width)	m	9,746	2,598	206,021	116,254	2,144	189,950	176,305
265	PVC Waterstop - TYPE B (225 mm width)	m	1,404	374	29,679	27,143	379	32,826	48,017
265A	PVC Waterstop - TYPE C (225 mm width)	m	25	7	528	483	7	585	855
266	Metallic Waterstop	m	27	7	571	974	6	501	394
267	Sealing of Joints	m	300	80	6,342	2,381	123	10,641	1,395
268	Polyethylene Foam Rod	m	140	37	2,959	1,096	46	4,003	1,424
269	Asphalt Impregnated Fibre Board	m^2	70	37	2,756	24,029	123	10,696	2,013
270	Bituminous Coating at Construction Joint	m^2	6,300	3,324	248,037	99,794	13,860	1,210,041	150,381
271	Soldrain 500 from Texel/Geosol	m^2	170	0	0	1,799	37	3,257	2,825
271A	Elastomeric Polyurea Membrane	m^2	678	382	30,062	64,367	447	39,209	19,540
271B	Polyflex 202 Membrane	m^2	2,400	1,713	134,592	283,291	1,896	166,560	106,536
	Fire Walls at Tailrace Deck (Transformer Deck)								
272	Prefabricated Concrete Longitudinal Sandwich Fire Walls (Refer to attached sketches)	m^2	2,520	1,338	108,065	3,218,108	1,184	108,662	587,185
273	Prefabricated Transversal Concrete Fire Walls	m^2	860	152	12,293	914,521	404	37,083	236,001
	REINFORCEMENT, ANCHORS AND DOWELS								
274	Reinforcement including Dowels	kg	10,918,631	278,076	20,920,097	20,304,941	327,559	33,738,570	29,152,745
275	Drill Holes and Grouting for Rock Dowels	m	700	1,571	119,504	20,785	987	88,676	16,933
276	Drill Holes for Anchors Diam. 25 mm with Epoxy Adhesive HIT-RE-500	m	100	224	17,072	2,969	183	16,468	3,145
277	Threaded Rebar (Dia. 35 mm) with Couplers	kg	800	19	1,400	1,183	16	1,648	2,800
	INSTALLATION OF ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS								
278	Anchors, Templates and Angles in Primary Concrete for Draft Tube Stoplogs (8 Sets)	kg	55,370	892	71,981	138,932	4,983	436,316	606,302
279	Anchors and Embedded Parts in Primary Concrete for T/G Units	kg	64,000	1,031	83,200	160,586	5,120	458,880	637,440
279A	Installation of the lower portion of the circular passage for all 4 T/G Units - Optional (Refer to attached sketches)	kg	59,200	3,599	291,678	99,133	6,512	607,392	762,496
	SUB-TOTAL POWERHOUSE - SUBSTRUCTURE								
	SUPERSTRUCTURE (Intake and Powerhouse)								
	STRUCTURAL STEEL								
	Beams - Rolled Sections, Painted								
280	Beams Under 60 kg/m (incl. S, C, L shapes detailed as bracing, facing and overhangs, girt channels, steel connections for prefab concrete panels and building attachment steel to upstream wall)	kg	618,443	14,823	1,196,687	3,832,102	6,184	927,665	5,442,298
281	Beams From 61 to 150 kg/m	kg	359,270	6,710	541,779	2,015,893	3,593	485,015	3,413,065
282	Beams Over 150 kg/m	kg	316,266	5,069	409,248	1,592,194	3,163	426,959	2,972,900
282A	W Beam Stiffener (For Generator Floor Beams)	kg	34,000	2,259	182,410	647,710	340	59,500	345,780

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
282B	W Beam Bearing Plate (For Generator Floor Beams)	kg	11,200	537	43,333	175,314	112	20,160	113,904
	W Shape Columns - Rolled Sections, Painted								
283	W Shape Columns Under 60 kg/m	kg	1,697	41	3,284	12,681	85	2,546	16,461
284	W Shape Columns from 61 to 150 kg/m	kg	89,054	1,663	134,293	551,526	891	142,486	848,685
285	W Shape Columns Over 150 kg/m	kg	216,296	3,656	297,840	1,261,330	2,163	281,185	2,005,064
	Grade WT Beams - Rolled Sections, Galvanized								
285A	Grade WT Beams Under 60 kg/m	kg	1,700	41	3,290	35,925	17	6,290	31,756
285B	Grade WT Beams From 61 to 150 kg/m	kg	34,000	635	51,272	429,502	340	122,400	621,520
285C	Grade WT Beams Over 150 kg/m	kg	267,300	5,758	468,042	2,273,787	2,673	908,820	4,953,069
285D	Grade WT Beams Bearing Plates	kg	15,800	757	61,130	247,318	158	58,460	294,354
285E	Grade WT Beams Stiffener	kg	11,200	744	60,088	213,363	112	40,880	207,312
	W Beams - Rolled Sections, Painted with Intumescent Paint								
286	W Beams Under 60 kg/m	kg	0	0	0	0	0	0	0
287	W Beams from 61 to 150 kg/m	kg	0	0	0	0	0	0	0
288	W Beams Over 150 kg/m	kg	0	0	0	0	0	0	0
289	W Beam Stiffners and Bent Plate at Openings	kg	0	0	0	0	0	0	0
290	W Beam Base Plate	kg	0	0	0	0	0	0	0
	WT Beams - Rolled Sections, Painted with Intumescent Paint								
291	WT Beams Under 60 kg/m	kg	0	0	0	0	0	0	0
292	WT Beams Over 150 kg/m	kg	0	0	0	0	0	0	0
293	WT Beam base plate	kg	0	0	0	0	0	0	0
	Columns - Rolled Sections, Painted with Intumescent Paint								
294	Columns from 61 to 150 kg/m	kg	0	0	0	0	0	0	0
295	Columns Over 150 kg/m	kg	0	0	0	0	0	0	0
	Columns, Built-up Sections, Painted with Intumescent Paint								
296	Main Building Columns, in Rolled Shapes & Plates, Welded Continuously.	kg	0	0	0	0	0	0	0
	Columns & Girders - Built up Sections, Painted								
297	Crane Girders in Welded Plates, 700-800 kg/m	kg	385,449	5,158	416,670	2,281,151	3,854	847,987	3,923,869
298	Main Building Columns, in Rolled Shapes & Plates, Welded Continuously.	kg	875,566	11,717	946,487	5,060,894	8,756	1,663,575	8,878,239
	Trusses, Painted								
299	Roof trusses and Wind Trusses	kg	275,598	6,606	533,282	1,758,722	2,756	399,617	2,811,098
	Bracings, Struts and HSS Columns Painted								
300	Horizontal Bracing (WT Shapes) for roof and mezzanines	kg	76,964	2,252	181,866	539,402	770	103,901	775,027
301	HSS Square Shapes for Vertical Bracing, Horizontal Bracing, Struts and HSS Columns (HSS Columns not covered in price item 304 (ref 7.2.25)	kg	189,724	5,552	448,318	1,318,921	1,897	607,116	2,238,742
	Nelson Studs, not painted								
302	Nelson Studs (Dia. 19 and 13 mm) Welded Mezzanine Beams	kg	3,305	193	15,576	54,997	1,124	94,523	109,759
303	Nelson Studs (Dia. 19 and 22 mm) Welded to Generator Floor Beams	kg	15,000	876	70,695	171,751	4,500	429,000	498,150
	Stairs, Hot dip Galvanized								

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
304	Stair Stringers in Channels (incl. Galvanized Beams and Columns for the stairs)	kg	62,410	5,825	472,069	758,873	5,617	504,897	335,766
305	Stair Treads in Grating (308 mm by 914 mm), hot dip galvanized, Bent Checkered Plate Nosing, type "FLOWFORGE" by FISHER & LUDLOW or equal	each	1,624	2,579	208,237	235,033	942	87,826	39,171
	Landings and Walkways, Hot dip Galvanized								
306	Gratings for Landings at Stairs, type 24-102, Bearing Bars (of approx. 32X4.8) by FISHER and LUDLOW or equal	kg	48,820	1,429	115,362	684,780	3,417	315,865	141,578
307	Bent Plate at Floor 15.5	kg	**53,000**	1,551	125,239	242,889	3,180	313,230	139,920
308	Steel Angle L102x102x7.9 at Floor 15.5	kg	2,400	70	5,671	13,723	168	14,592	6,480
	Steel Decking								
309	Roof Deck type RD 306 (t=0.91mm) by VICWEST, Galvanized Z 275 (Building roof and 10m door roof)	m²	**8,250**	2,983	234,333	1,108,955	908	80,025	598,538
310	Roof Deck type RD 938 (t=0.76mm) by VICWEST, Galvanized Z 275 (mezzanine roof)	m²	1,640	593	46,583	214,459	164	15,908	118,867
310A	Roof Deck type RD 306 (t=1.22mm) VICWEST, Galvanized Z 275 (Main entrance roof)	m²	**245**	190	14,888	48,593	29	2,377	17,775
311	Floor Deck type HB 306 (t=1.22 mm) by VICWEST, Galvanized Z 275 - Exterior (cover 3)	m²	1,550	1,199	94,187	307,425	155	15,035	112,344
311A	Floor Deck type HB 938 (t=0.91mm) by VICWEST, Galvanized Z 275 (Stair 10 roof)	m²	**55**	20	1,562	7,393	10	534	3,986
311B	Floor Deck type HB 306 (t=0.91mm) by VICWEST, Galvanized Z 275 (mezzanine floors)	m²	**3,550**	1,284	100,834	477,187	355	34,435	257,553
312	Floor Deck type RD 306 (t=1.22 mm) by VICWEST, Galvanized Z 275 (Generator Floor)	m²	**5,150**	3,984	312,945	1,116,830	567	49,955	373,272
312A	Cladding CL508 (t=0.76mm) by VICWEST, Galvanized Z 275 (Cover C8)	m²	**275**	99	7,811	51,694	30	2,668	19,932
	Crane Rails Accessories								
313	Tie-Back Linkage Assemblies by GANTREX, type TL123GP, includes Plates, Angles, Shims, "O" Rings, Bolts and Permanent Lubrication	each	96	18	1,427	155,780	101	9,293	18,268
	Anchor Bolts								
314	Anchor Bolts Steel Grade 55 ASTM F1554 (Dia. 19 and 25 mm), U-Bolt assembly and Nuts A563, hot dip galvanized, by PORTLAND or equal	kg	5,960	348	28,089	20,981	477	42,733	59,362
315	Anchor Bolts Steel Grade 55 ASTM F1554 (Dia. 28, 38 and 51 mm), Nuts A563, hot dip galvanized, by PORTLAND or equal	kg	22,800	1,331	107,456	93,217	1,824	163,476	227,088
	Guardrails in Pipes, Hot dip Galvanized								
316	Guardrails in Pipes for Mezzanine, Stairs and Covers, with Kick Plate, Posts in DN32-XS and Railings in DN32-Std (in miscellaneous and Structural Steel Drawings)	kg	47,250	3,008	242,912	689,301	3,308	292,478	130,883
317	Guardrails of Intake Deck (W and HSS shapes)	kg	17,750	1,412	114,008	299,436	1,243	109,873	49,168
	Hilti Bolts								
318	Hilti KWIK Bolts 3 (Dia. 25 mm) 304 SS	each	525	0	17	18,439	410	36,047	33,574
319	Hilti KWIK Bolts 3 (Dia. 10 mm and 19 mm) hot dip galvanized	each	630	0	13	4,473	491	43,256	33,062

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
320	Hilti Adhesive Anchors, HAS rods (Dia. 19 mm) HIT RE-500 , hot dip galvanized	each	200	0	4	2,838	156	13,732	7,512
	Joists								
321	Steel Joists, by CANAM or equal	kg	2,100	123	9,897	16,776	21	2,730	97,524
	Elastomeric pad								
322	Elastomeric Pad at Attachment Axis E	each	40	13	1,058	3,669	4	324	215
	Intumescent Paint (for application on Steel Beams and Columns)								
322A	Intumescent Paint	m²	**3,550**	10,709	841,119	703,930	1,811	497,000	3,913,130
	MISCELLANEOUS STEEL								
	Miscellaneous Structural Steel, Hot dip Galvanized								
323	Miscellaneous Structural Steel - Embedded	kg	**104,968**	4,183	337,682	1,020,838	8,397	807,204	806,154
324	Miscellaneous Structural Steel, L Shapes, Plates, Eye bolts, Crosby Type Pieces, Bent Plates and W shapes in miscellaneous steel section drawings	kg	**189,908**	11,085	895,036	1,953,580	15,193	1,460,393	1,458,493
325	Checkered Plates	kg	**102,014**	1,635	132,006	701,648	8,161	746,742	332,566
326	Embedded angles related to typical detail for steel deck on dwg : MFA-SN-CD-3320-ST-DD-0005-01	kg	**832**	33	2,677	8,316	67	6,398	6,390
327	Contraction joint related to section E-E on the drawing : MFA-SN-CD-3300-CV-DD-0003-01	m	40	11	846	904	324	28,958	10,186
328	Contraction joint related to section F-F on the drawing: MFA-SN-CD-3300-CV-DD-0003-01	m	50	13	1,057	1,392	405	36,153	12,705
329	Contraction joint related to section K-K on the drawing: MFA-SN-CD-3300-CV-DD-0003-01	m	**122**	33	2,579	3,742	985	87,952	30,846
	Miscellaneous Stainless steel								
330	Miscellaneous Stainless Steel for MK1, MK2 and Covers C9, C10, C11 and C11A	kg	**4,721**	625	50,499	73,598	755	69,727	88,658
	Crane Rails, rust preventive coating								
331	Rail type BETH 175, includes Splices and Aluminothermic Welds, for Crane Girders and for Trash Cleaner	m	720	1,002	80,894	280,718	288	25,718	63,677
332	Rail type Beth 104 with Aluminothermic Welds	m	315	261	21,037	62,120	85	7,617	18,859
	Crane Rails Accessories								
333	GANTREX Rail Clip type WELDLOK 43 with Rubber Nosing for Crane Girders and Trash Cleaner	each	2,160	122	9,830	109,962	5,789	518,184	492,696
334	GANTREX rail clip type WELDLOK 24 with Rubber Nosing, hot dip galvanized	each	1,060	16	1,254	26,135	2,851	254,379	209,965
	Ladders, Hot dip Galvanized								
335	Ladders with or without Cage, and Self-Closing Gates (in miscellaneous and structural steel drawings)	kg	15,000	796	64,290	94,230	1,050	92,850	41,550
	Plates, Painted / Hot dip Galvanized								
336	Plates 350 x 20, Under Rails BETH 175, Painted with Primer Plates 300 x 20 Under Rails BETH 175, hot dip galvanized	kg	35,500	2,354	190,067	325,797	2,485	219,745	98,335
	Landings, Walkways and Covers, Hot dip Galvanized								

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
337	All types of grating not covered in price item 305 (ref 7.2.26) and price item 306 (ref 7.2.27) (in miscellaneous and structural steel drawings)	kg	81,748	5,421	437,679	624,014	5,722	506,020	226,442
338	Grating at EL 45.5 on Intake Deck, Special Order	kg	0	0	0	0	0	0	0
	ARCHITECTURE WORKS								
	METAL CLADDING & ROOFING								
339	Insulated Metal Wall Panels (Sandwiched Panels. VicWest & Kingspan; refer to them as Composite Metal Building Panels)	m²	7,323	21,374	1,707,467	2,179,028	7,030	1,265,048	2,502,196
340	Preformed Metal Siding (Vertical Metal Siding fastened to Steel Stud Wall)	m²	508	1,764	140,555	98,426	848	78,623	35,062
341	Preformed Metal Siding & Framing (for Snow Baffles over louvers)	m²	112	389	30,988	20,391	187	17,334	7,730
342	Metal Liner Panel, Insulation & Z-Bars ($Attached to interior of pre-cast concrete fire wall)	m²	460	1,343	107,256	155,746	12,609	2,256,038	1,205,784
343	Modified Bituminous Membrane Roofing System	m²	8,416	1,862	150,377	2,973,220	15,570	1,353,545	254,668
344	Sealants (including for roofing & wall systems and pre-cast concrete fire wall joints)	LS	1	640	51,666	22,541	431	38,381	14,589
345	Signage (Nalcor & Logo, Muskrat Falls Generating Station)	LS	1	195	15,760	7,349	29	2,578	3,591
346	Roof Curb for Exhaust Fans	each	9	119	9,649	13,303	0	1,881	8,255
347	Roof Curb for Exhaust Hood	each	1	13	1,072	2,150	0	157	688
348	Roof Curb for Chimney	each	1	13	1,072	1,422	0	412	1,808
349	Flashing for Roof Drains	each	25	40	3,216	7,262	0	2,060	9,041
350	Flashing for Plumbing Vents	each	6	10	772	1,179	0	433	1,899
	OPENINGS								
351	Exterior Metal Insulated Doors - Double	each	7	56	4,503	9,297	71	6,380	7,125
352	Exterior Metal Insulated Doors - Single	each	14	74	6,004	14,614	129	11,558	9,617
353	Aluminum Entrance Door (Insulated)	each	1	8	643	2,125	7	610	1,077
354	Sectional Metal Insulated Door	each	2	53	4,288	18,191	11	980	4,696
355	Aluminum Windows (32 Windows max)	m²	154	818	66,040	278,701	636	57,080	23,171
356	Concrete Unit Masonry (Exterior)	m²	21	112	9,005	10,907	50	4,485	1,933
	FIRE & SAFETY ITEMS								
357	Roof Anchors & Safety Restraints	each	45	299	24,122	26,306	243	21,704	14,508
	SPECIAL DOORS								
358	Multi-Leaf Vertical Lift Metal Insulated Door	each	1	5	429	3,204	15	1,341	1,554
	ELECTRICAL WORK								
	EXTERIOR BUILDING LIGHTING								
358A	Exterior lighting fixtures, HPS, 347 V AC, complete with conduit, junction box, wiring and JB mounting plates	each	23	1,173	114,485	113,059	460	59,110	93,207
	ROOF METAL SLEEVE								
358B	Metal sleeves for cable passage for roof exhaust fans	each	9	86	8,345	6,988	36	3,644	1,439
	SLEEVE IN METAL SIDING WALL OF THE POWERHOUSE								

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
358C	Sleeve in metal siding wall complete with conduit, junction box and JB mounting plates as per detail 1 on DWG MFA-SN-CD-3340-EL-EL-0001-02	each	13	130	12,688	13,010	65	6,450	10,696
358D	Sleeve in metal siding wall on the right jamb of the multi-leaf door complete with conduit, junction box and JB mounting plates as per detail 2 on DWG MFA-SN-CD-3340-EL-EL-0001-02	each	1	20	1,952	1,461	5	496	908
	SUB-TOTAL POWERHOUSE - SUPERSTRUCTURE								
	TURBINE GENERATOR AND ANCILLARIES								
	ELECTRICAL WORK								
359	Exothermic Connections	each	1225	2,940	286,944	192,003	2,756	286,785	427,133
359A	Mechanical Connections	each	40	92	8,979	9,058	90	9,330	14,148
360	Embedded Copper Grounding Plates	each	65	260	25,376	31,567	293	30,547	44,335
361	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	5200	2,153	210,163	335,392	2,704	281,268	281,892
362	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	1800	404	39,384	53,373	468	48,222	46,728
362A	Rigid PVC Conduit, size 53mm	m	15	30	2,928	1,737	13	1,290	696
363	Rigid PVC Conduit, size 78mm	m	50	53	5,124	4,028	50	5,138	2,659
364	Rigid PVC Conduit, size 129mm	m	325	715	69,784	62,904	631	65,835	35,211
365	Rigid Galvanized Steel Conduits, size 103 mm	m	100	540	52,704	13,375	1,868	112,400	39,470
366	High Bay Light Fixture, Metal Halide, 347 Vac, complete with 1000 W lamp	each	46	1,005	98,098	95,182	363	37,906	51,238
367	High Bay Light Fixture, Metal Halide, 347 Vac, complete with 1000 W lamp and Quartz auxiliary lamp	each	23	520	50,741	48,283	286	29,879	40,025
368	Panelboard, 600/347 Vac, 3 phase, 4 wire, 42 circuit, surface mounted sprinkler-proof enclosure, complete with breakers as indicated	each	3	105	10,248	19,381	89	9,307	9,528
369	Dry-Type Transformer, 75 kVA, 600-600/347 Vac	each	3	117	11,445	29,266	109	11,343	12,847
370	Disconnect Switch, 600 V, 3 phase, complete with fuses	each	3	37	3,608	5,075	31	3,275	7,083
371	Lighting Contactor Control Panel	each	2	32	3,135	5,216	15	1,551	2,007
372	ON-OFF Pushbutton Control Station	each	4	46	4,441	4,448	7	690	1,401
373	Teck Cables, 2C # 12 AWG	m	900	183	17,902	16,982	135	13,527	9,585
374	Teck Cables, 3C # 12 AWG	m	500	110	10,779	10,009	85	8,370	14,350
375	Teck Cables, 2C # 10 AWG	m	400	88	8,623	8,466	68	6,868	5,048
376	Teck Cables, 4C # 10 AWG	m	500	136	13,255	13,405	120	12,400	8,785
377	Temporary Feeder Cables to lighting transformers/panelboards, etc.	LS	1	62	6,031	4,732	2,673	279,207	150,609
	SUB-TOTAL POWERHOUSE - ELECTRICAL WORK								
	MECHANICAL WORK								
378	HVAC System	LS	1	2,164	187,556	940,231	1,273	120,229	745,455
378.01	Pipe and Fittings NPS 6, Piping Specification PA03	m	86						

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders										
				Astaldi			Salini JV			
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component	
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	
378.02	Pipe and Fittings NPS 21, Piping Specification PA03	m	**81**							
378.03	Pipe and Fittings NPS 24, Piping Specification PA03	m	**101**							
378.04	HVAC Louvers	LS	1							
379	**Domestic Wastewater System**	**LS**	**1**	9,218	798,933	1,785,738	4,702	450,322	147,502	
379.01	Pipe and Fittings NPS 3, Piping Specification PA04 (HDPE-DR11)	m	**900**							
379.02	Equipments and Other Components	LS	1							
379.03	Miscellaneous Work (Painting, Insulation etc.)	LS	1							
380	**Wastewater System**	**LS**	**1**	1,820	157,741	993,496	10,924	1,014,077	557,832	
380.01	Pipe and Fittings NPS 1 1/2, Piping Specification PA01	m	**2**							
380.02	Pipe and Fittings NPS 2, Piping Specification PA01	m	**2**							
380.03	Pipe and Fittings NPS 3, Piping Specification PA01	m	**10**							
380.04	Pipe and Fittings NPS 4, Piping Specification PA01	m	**29**							
380.05	Pipe and Fittings NPS 3, Piping Specification PA04 (HDPE-DR11)	m	**160**							
380.06	Flexible corrugated perforated HDPE Pipe NPS 4, covered With A Geotextile	m	**100**							
380.07	NPS 4, PERFORATED SOLVENT WELD SEWER PIPE CERTIFIED: CSA B182.1 AND BNQ NQ3624-050	m	**250**							
380.08	NPS 4, SOLVENT WELD SEWER PIPE CERTIFIED: CSA B182.1	m	**35**							
380.09	Septic Tile Field	LS	1							
380.1	Roof vent	each	2							
380.11	Equipments and Other Components	LS	1							
380.12	Miscellaneous Work (Painting, Insulation etc.)	LS	1							
381	**Low Pressure Compressed Air System**	**LS**	**1**	235	20,368	161,634	149	14,342	17,410	
381.01	Pipe and Fittings NPS 2, Piping Specification SB11	m	**49**							
381.02	Miscellaneous Work (Painting, Insulation etc.)	LS	1							
382	**Fire Protection System**	**LS**	**1**	917	79,477	203,140	1,518	146,370	93,307	
382.01	Pipe and Fittings NPS 8, Piping Specification CB12	m	**10**							
382.02	Pipe and Fittings NPS 10, Piping Specification CB12	m	**60**							
382.03	Pipe and Fittings NPS 2 1/2, Piping Specification SB12	m	**37**							
382.04	Pipe and Fittings NPS 4, Piping Specification SB12	m	**2**							
382.05	Miscellaneous Work (Painting, Insulation etc.)	LS	1							
383	**Clear Water Drainage System**	**LS**	**1**	18,499	1,603,344	2,558,362	31,485	3,033,402	2,302,683	
383.01	Pipe and Fittings NPS 3, Piping Specification PA01	m	**3**							
383.02	Pipe and Fittings NPS 4, Piping Specification PA01	m	**121**							
383.03	Pipe and Fittings NPS 6, Piping Specification PA01	m	**330**							
383.04	Pipe and Fittings NPS 8, Piping Specification PA02	m	**664**							
383.05	Pipe and Fittings NPS 2, Piping Specification CB11	m	**79**							
383.06	Pipe and Fittings NPS 3, Piping Specification CB11	m	**420**							
383.07	Pipe and Fittings NPS 4, Piping Specification CB11	m	**1,146**							
383.08	Pipe and Fittings NPS 6, Piping Specification CB11	m	**875**							
383.09	Pipe and Fittings NPS 8, Piping Specification CB11	m	**149**							

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders									
				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
383.1	Pipe and Fittings NPS 10, Piping Specification CB11	m	**139**						
383.11	Pipe and Fittings NPS 12, Piping Specification CB11	m	**130**						
383.12	Pipe and Fittings NPS 16, Piping Specification CB11	m	**19**						
383.13	Pipe and Fittings NPS 24, Piping Specification CB11	m	**20**						
383.14	Equipments and Other Components	LS	1						
383.15	Miscellaneous Work (Painting, Insulation etc.)	LS	1						
383.16	Roof drains and accessories	each	32						
384	**Dewatering System**	**LS**	**1**	9,009	780,819	1,702,251	24,138	2,322,510	1,324,977
384.01	Pipe and Fittings NPS 3/4, Piping Specification SB11	m	**1**						
384.02	Pipe and Fittings NPS 1, Piping Specification SB11	m	**3**						
384.03	Pipe and Fittings NPS 2, Piping Specification SB11	m	**12**						
384.04	Pipe and Fittings NPS 4, Piping Specification CB11	m	**32**						
384.05	Pipe and Fittings NPS 8, Piping Specification CB11	m	**33**						
384.06	Pipe and Fittings NPS 12, Piping Specification CB11	m	**242**						
384.07	Pipe and Fittings NPS 20, Piping Specification CB11	m	**235**						
384.08	Pipe and Fittings NPS 24, Piping Specification CB11	m	**110**						
384.09	Pipe and Fittings NPS 30, Piping Specification CB11	m	**39**						
384.1	Equipment and Other Components	LS	1						
384.11	Miscellaneous Work (Painting, Insulation etc.)	LS	1						
385	**Oily Water Drainage System**	**LS**	**1**	3,721	322,503	744,559	7,275	700,536	423,778
385.01	Pipe and Fittings NPS 3, Piping Specification CB11	m	**9**						
385.02	Pipe and Fittings NPS 4, Piping Specification CB11	m	**6**						
385.03	Pipe and Fittings NPS 6, Piping Specification CB11	m	**30**						
385.04	Pipe and Fittings NPS 8, Piping Specification CB11	m	**19**						
385.05	Pipe and Fittings NPS 14, Piping Specification CB11	m	**70**						
385.06	Pipe and Fittings NPS 16, Piping Specification CB11	m	**146**						
385.07	Equipments and Other Components	LS	1						
385.08	Miscellaneous Work (Painting, Insulation etc.)	LS	1						
386	**Raw and Cooling Water System**	**LS**	**1**	2,101	182,117	337,929	221	21,227	295,622
386.01	Pipe and Fittings NPS 14, Piping Specification CB11	m	**243**						
387	**Service Water System**	**LS**	**1**	1,642	142,314	624,222	7,020	675,975	279,137
387.01	Pipe and Fittings NPS 4, Piping Specification PA04 (HDPE-DR11)	m	**880**						
387.02	Pipe and Fittings NPS 6, Piping Specification CB11	m	**60**						
387.03	Pipe and Fittings NPS 8, Piping Specification CB11	m	**67**						
387.04	Pipe and Fittings NPS 3/4, Piping Specification SB11	m	**36**						
387.05	Pipe and Fittings NPS 2, Piping Specification SB11	m	**60**						
387.06	Pipe and Fittings NPS 4, Piping Specification SB11	m	**27**						
387.07	Equipments and Other Components	LS	1						
387.08	Miscellaneous Work (Painting, Insulation etc.)	LS	1						
388	**Piezometer and Water Level System**	**LS**	**1**	15,346	1,330,053	1,937,793	16,683	1,608,399	1,391,166
388.01	Pipe and Fittings NPS 6, Piping Specification SA11	m	**55**						

Table 1.7 – Hour and Pricing Comparison from Addendum 14 – Shortlisted Bidders

				Astaldi			Salini JV		
				Labour Component		Non-Labour Component	Labour Component		Non-Labour Component
PRICE ITEM No	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)	MAN HOURS	COST OF LABOUR ($CAD)	PRICE ($ CAD)
388.02	Pipe and Fittings NPS 3, Piping Specification SB11	m	1,924						
388.03	Pipe and Fittings NPS 1/2, Piping Specification JD01	m	1,924						
	SUB-TOTAL POWERHOUSE - MECHANICAL WORKS								
	WORK EXECUTED FOR COMPANY'S OTHER CONTRACTOR								
	Supply of Concrete to Company's Other Contractors at the Batch Plant (excluding delivery from the Batch Plant to the Pour Location)								
389	Supply of Secondary Concrete - Class A2	m^3	7,500	8,838	710,580	1,618,538	25,125	2,266,875	3,010,725
390	Supply of Concrete - Class A	m^3	1,000	1,178	94,744	215,805	3,350	302,250	401,430
391	Supply of Concrete - Class B	m^3	14,500	17,087	1,373,788	2,828,260	48,575	4,382,625	5,472,590
	SUB-TOTAL SUBCONTRACTING WORKS FOR OTHERS								
	CALCULATED TOTAL OF LUMP SUM AND UNIT PRICE ITEM (BASED ON APPROXIMATE QUANTITIES), AS DETAILED IN ITEMS 1 TO 391, BUT EXCLUDING ITEM 19A. (TAXES EXCLUDED)								
	ESTIMATE OF TRAVEL ALLOWANCES - TRADES LABOUR (PRICE ITEM 19A)								
	MISCELLANEOUS - RATE ONLY								
	Hilti Adhesive Anchors								
392	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 16 mm), hot dip galvanized	each	100	0	0	0	1,141	4,717	0
393	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 19 mm), hot dip galvanized	each	100	0	0	0	1,158	4,785	0
394	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 25 mm), hot dip galvanized	each	100	0	0	0	1,439	5,946	0

Economic Analyst	Steve Goulding
Signed	Steve Goulding
Date:	25-Sep-13

Table 1.8 – Short Listed Bidders' Prices Compared to Estimate

	MUSKRAT FALLS LCP: CH0007 Powerhouse & Spillway	ASTALDI				BUDGET ESTIMATE				DELTA		SALINI			
Exhibit #	DESCRIPTION	MAN-HRS	COST OF LABOUR	COST OF NON-LABOUR	TOTAL	MAN-HR	COST OF LABOUR	COST OF NON-LABOUR (including Labor)	TOTAL	$$ Budget less Astaldi	%	MAN-HRS	COST OF LABOUR	COST OF NON-LABOUR	TOTAL
2	INDIRECTS COSTS														
	SUB-TOTAL INDIRECT COSTS	3,691,084	307,785,474.52	180,758,059.98	$ 488,543,534.50	1,509,100		208,672,000.00	$ 208,672,000.00	-$ 279,871,535	-57.3%	2,102,798	220,164,361.75	223,899,131.18	$ 444,063,492.93
3	Access roads, ramps & pads														
	sub total	36,901	2,829,563.47	7,320,889.24	$ 10,150,452.71	43,217		10,804,172.00	$ 10,804,172.00	$ 653,719	6.4%	53,938	5,193,965.96	11,840,235.52	$ 17,034,201.48
4.1	North Transition Dam														
	sub total	39,638	$ 3,034,335.85	$ 2,506,016.20	$ 5,540,352.05	25,716	$ -	$ 6,480,777.00	$ 6,480,777.00	$ 940,425	17.0%	37,127	$ 3,005,255.95	$ 4,695,724.42	$ 7,700,980.37
4.2	Center Transition Dam														
	sub total	138,240	$ 10,558,384.63	$ 8,755,368.19	$ 19,313,752.82	76,478		$ 19,634,471.00	$ 19,634,471.00	$ 320,718	1.7%	185,212	$ 15,398,309.89	$ 12,906,431.77	$ 28,304,741.66
4.3	South Transition Dam														
	sub total	48,403	$ 3,700,899.38	$ 3,109,661.94	$ 6,810,561.32	27,845	$ -	$ 7,140,952.00	$ 7,140,952.00	$ 330,391	4.9%	54,233	$ 4,597,170.59	$ 5,453,115.42	$ 10,050,286.01
4.4	Separation Wall														
	sub total	54,731	$ 4,141,361.22	$ 2,819,510.42	$ 6,960,871.64	29,638	$ -	$ 7,391,690.00	$ 7,391,690.00	$ 430,818	6.2%	58,562	4,782,005	4,874,339	9,656,344.20
5.1	Spillway Structure														
	sub total	439,313	$ 33,062,099.12	$ 28,470,544.69	$ 61,532,643.81	271,812		63,253,238.00	63,253,238.00	$ 1,720,594	2.8%	510,720	$ 44,400,655.87	$ 43,405,356.29	87,806,012.16
5.2	Spillway Bridges														
	sub total	14,675	$ 1,162,470.40	$ 2,693,954.43	$ 3,856,424.83	14,501		4,992,966.00	4,992,966.00	$ 1,136,541	29.5%	32,354	$ 3,287,326.02	$ 1,558,037.42	4,845,363.44
5.3	Spillway Discharge Channel-Ph-1														
	sub total	26,390	$ 2,013,875.62	$ 1,447,463.29	$ 3,461,338.91	13,452	$ -	$ 3,019,400.00	$ 3,019,400.00	-$ 441,939	-12.8%	25,282	$ 2,166,958.90	$ 2,134,955.90	4,301,914.80
5.4	Spillway Discharge Channel-Ph-2			$ -	$ -										
	sub total	12,625	$ 947,027.17	$ 673,150.91	$ 1,620,178.08	6,304	$ -	$ 1,446,900.00	$ 1,446,900.00	-$ 173,278	-10.7%	12,716	$ 1,098,028.20	$ 1,012,253.20	2,110,281.40
5.5	Spillway Discharge Channel-Ph-3			$ -	$ -										
	sub total	25,811	$ 1,917,532.60	$ 1,422,325.53	$ 3,349,858.13	13,780	$ -	$ 3,136,200.00	$ 3,136,200.00	$ 213,658	-6.4%	26,834	$ 2,905,684.00	$ 1,648,976.00	4,554,660.00
6.1	Intake Structure														
	sub total	983,328	$ 74,653,744.41	$ 61,886,016.18	$ 136,539,760.59	584,279	$ -	$ 143,950,206.00	$ 143,950,206.00	$ 7,410,445	5.4%	1,330,289	$ 116,954,108.79	$ 111,116,720.56	$ 228,070,829.35
7.1	Powerhouse Structure														
	sub total	1,042,953	$ 79,206,442.23	$ 73,287,874.25	$ 152,494,316.48	838,994	$ -	$ 196,884,439.00	$ 196,884,439.00	$ 44,390,123	29.1%	1,423,030	$ 124,022,037.51	$ 114,709,038.17	$ 238,731,075.68
7.2	Superstructure & Architec.														
	sub total	171,999	$ 13,851,099.86	$ 43,018,035.50	$ 56,869,135.36	120,503	$ -	$ 57,401,164.00	$ 57,401,164.00	$ 532,029	0.9%	159,861	$ 20,334,738.68	$ 55,348,780.27	$ 75,683,518.95
8.1	Electrical Work (TURBINE GENERATOR	9,628	$ 939,692.50	$ 963,881.97	$ 1,903,574.47	4,671	$ -	$ 1,082,770	$ 1,082,770	-$ 810,804	-42.6%	12,852	$ 1,246,768	$ 1,204,776.61	$ 2,451,544.61
8.2	Mechanical Work	64,672	$ 5,605,225.91	$ 11,989,355.74	$ 17,594,581.65	78,575	$ -	$ 15,715,000	$ 15,715,000	-$ 1,879,582	-10.7%	105,388	$ 10,107,388.99	$ 7,578,868.97	$ 17,686,258
9.1	Concrete Supply for Others	27,104	$ 2,179,112.00	$ 4,662,603.65	$ 6,841,715.65		$ -	$ 10,092,500	$ 10,092,500	$ 3,250,784	47.5%	85,354	$ 6,951,750	$ 8,884,745.00	$ 15,836,495
	TOTAL INDIRECTS & DIRECTS	6,827,495	547,598,340.89	435,784,712.11	983,383,053.00	3,658,875			$ 761,108,845.00	-$ 222,274,208	-22.6%	6,216,550	$ 586,616,513.95	$ 612,271,486.05	$ 1,198,888,000.00
	Profit at 7 %		$ 38,331,883.86			3,658,875									
	Air Travel:			$ 29,057,891.00					$ 12,000,000.00					$ 44,539,376	
	GRAND TOTAL as deposited on July 29th 2013.		585,930,224.75	464,842,603.11	$ 1,050,772,827.86				$ 773,108,845	-$ 277,663,983	-26.4%				$ 1,243,427,376
	+ LMAX				$ 64,300,000.00		ESCALATION: (estimated by Jim Robertson)		$ 63,993,603.00						
	GRAND "New" TOTAL:				$ 1,115,072,827.86				$ 837,102,448	-$ 277,970,380	-24.9%				$ 1,243,427,376
	Less $ 25,000,000 TARGET		$ 25,000,000				Minimal Labor Contingency		$ 20,000,000.00						
	Plus $ 450,000 CREDIT		$ 450,000				10% of +/- $ 200 million								
	the least best		561,380,224.75		$ 1,026,222,828				$ 857,102,448.00	-$ 169,120,380	-16.5%				$ 1,243,427,376
	Less $ 150,000,000 TARGET		$ 150,000,000				Maximal Labor Contingency		$ 50,000,000.00						
	Plus $ 66,700,000 CREDIT		$ 66,700,000				25% of +/- $ 200 million								
	the greatest best		$ 502,630,224.75		$ 967,472,827.86				$ 887,102,448.00	-$ 80,370,380	-8.3%				$ 1,243,427,376

Lead Estimator Paul Lemay

Signed _____ Date 26 sept, 013

Table 1.9 – Request for Award

CH0007- Construction of Intake and PH, Spillway and Transition dams

Estimated Contract Value and Comparison to Budget

The Lump Sum final value for this award is indicated in Table 1-Contract Value and Comparison to Budget

Table 1-Contract Value and Comparison to Budget

Description (all amount in CAD)		Amount
Total Contract Value (includes Additional LC and Performance bond)	a	1,067,092,550
Escalation **(Note 1)**	b	3,800,000
Forecast Specific Growth Allowance **(Note 2)**	c	0
Forecast Non-specific Growth Allowance **(Note 3)**	d	46,860,000
Forecast Total Contract Cost	e=a+b+c+d	1,117,752,550
Estimate	f	$ 687,994,113
Budget transfers and scope changes **(Note 4)**	g	$ 23,330,520
Escalation allowance	h	$ 63,993,603
Revised Budget	i=f+g+h	$ 775,318,236
Budget Over-Run **(Note 5)**	j=i-e	-342,434,314

Note 1: Escalation Allowance

• Cement, rebars,structural steel, fuel Escalation based on a fixed price of 1.16 $/L for fuel	$	3,800,000
Sub Total Escalation	$	3,800,000

Note 2: Specific growth

		N/A
Sub Total Specific	$	-

Note 3 : Non-specific growth

• Garanteed maximum price on installation	$	64,300,000
• Negociated credit on the garanteed price upon successful award of the north spur and the North dam contracts (as per MOM dated 14 Sep 2013)	-$	42,800,000
• Site coordination and interface	$	5,860,000
• Site Conditions	$	4,650,000
• Engineering changes	$	4,950,000
• Quantity variation	$	9,900,000
Sub Total Non-Specific	$	46,860,000

Note 4 : Budget

• Discharge channel (PCN 58)	$	7,600,000
• Lower level gates (PCN 55)	$	1,900,000
• Change to Diversion timeline at MF (PCN 137)	$	20,800,000
• Several Budget transfers	-$	6,969,480
Sub Total Variance	$	23,330,520

Note 5 : Variance

• Variances as per list of trends attached	$	45,071,950
• Air travel (transferred to SM0709)	$	16,857,891
• Price Variance in the concrete works of the Intake and PH	-$	51,800,000
• Indirect Costs (Contrator has 3.7 M hours vs 1.5 M hrs in budget)	$	279,871,535
• Growth	$	46,860,000
• Additional bonds and LC	$	16,319,722
• Miscelleneous variance in price through the rest of the contract	$	10,746,784
Sub Total Variance	$	342,434,314

Conclusion:

The current forecast of $ 1,117,752,550 inclusive of escalation, specified and un-specified growth, represents an over-run of $ 342,434,314 compared to the revised budget and should be retained as Authorised Fund Amount.

Lead Cost Controller	George Chehab
Signed	
Date:	26 Sep 2013

Appendix 2 – Technical Evaluation Reports

The technical evaluation involve a review of the completed technical questionnaires, a review of the quantities and hours associated with each bid item and an analysis of the proposed manufacturers, sub-contractors and material suppliers by each bidder. The following tables are included in the Technical Evaluation Appendix:

Table 2.1 – Technical Questionnaire Evaluation
Table 2.2 – Confirmation of Quantities in the Original Bids
Table 2.3 – Evaluation of Hours in the Original Bids
Table 2.4 – Confirmation of Quantities in the Addendum 14 for Short-listed Bidders
Table 2.5 – Evaluation of Hours in the Addendum 14 for Short-listed Bidders
Table 2.6 – Proposed Manufacturers
Table 2.7 – Proposed Sub-contractors
Table 2.8 – Proposed Material Suppliers

Table 2.1 below provides the scoring for each bidder for the technical questionnaire.

Table 2.1 - Technical Questionnaire Evaluation

		IKC		Astaldi		Aecon JV		Salini JV	
	Weight for Element	Answer	Score (%)	Answer	Score (%)	Answer	Score (%)	Answer	Score (%)
2.1 Work History	**2**								
2.1 The Bidder shall identify the work description, location, approximate value, date of award, duration and name of the employer for work completed similar to that described in the Bid Package description.	2	100	2	85	1.7	80	1.6	100	2
2.2 Subcontracted Work	**4**								
2.2 The Bidder shall outline the sub-contract framework. List all components:	4	100	4	90	3.6	100	4	95	3.8
3.0 Policy and Procedures	**4**								
3.1 Does your company have policies, processes, and procedures to select and qualify its Suppliers and sub-Suppliers? Please provide List of how Suppliers and Sub-Suppliers are selected.	2	95	1.9	100	2	100	2	95	1.9
3.2 Does you company have policies, processes, and procedures to monitor its Suppliers and sub-Suppliers? Please provide List of how Suppliers and Sub-Suppliers are monitored and qualified	2	95	1.9	85	1.7	80	1.6	80	1.6
4.0 Resources, Equipment and Workload	**37**								
4.1 Please indicate the number of management, engineering, supervision, trades, employees and any other relevant categories the Bidder and each partner of Joint Venture Agreement (JVA) (if applicable) have committed to the Scope of Work (Use execution plan info to evaluate e.g.; org charts, CV'S)	20	95.3	19.1	97.4	19.5	79.6	15.9	100	20.0
4.2 Please describe the equipment that will be used to execute the Work and include pertinent details (such as model, capacity, rating, reach, speed, etc.)	3	100	3	100	3	100	3	100	3
4.3 Please describe if and how "State of the Art Technology" such as the use of portable electronic devices, software, electronic forms, real time field reporting, etc. will be used in the coordination, planning and management of the work.	5	100	5	100	5	100	5	80	4
4.4 Describe what computer systems and software applications will be used to support the work. In particular, provide information on how Engineering/Design/Survey data will be incorporated to maximize effective planning, execution and management of the work	3	100	3	100	3	100	3	80	2.4

Table 2.1 - Technical Questionnaire Evaluation

		IKC		Astaldi		Aecon JV		Salini JV	
	Weight for Element	Answer	Score (%)	Answer	Score (%)	Answer	Score (%)	Answer	Score (%)
4.5 Bidders and each partner of a JVA shall provide information on manpower loading during the timeframe in which the Work will be performed and shall comment on their capacity to execute the Work to the schedule provided.	5	100	5	100	5	80	4	60	3
4.6 Bidders and each partner to a JVA should provide information on their current commitments on all contracts that have been awarded or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.	1	100	1	100	1	100	1	100	1
5.0 SPECIFIC TECHNICAL QUESTIONNAIRE	**44**								
5.1 Concrete Works									
5.1.1 Give details on batch plant, size, make, year of manufacture and details. How many will be used?	2	90	1.8	90	1.8	100	2	100	2
5.1.2 What do you intend to keep for batch plant spares to ensure uninterrupted production?	1	80	0.8	100	1	95	0.95	90	0.9
5.1.3 How many cranes will you have? Provide type (tower, mobile, etc.), year of manufacture and details (reach, lifting capacities, etc.).	4	100	4	80	3.2	80	3.2	100	4
5.1.4 Give details on cold weather protection measures for: • aggregate/cement/water • batch plant • trucks/cranes • pumps and lines	4	70	2.8	100	4	100	4	80	3.2
5.1.5 Provide a weekly concrete placing curve	4	100	4	100	4	100	4	80	3.2
5.1.6 How many pumps will you have? Provide details, capacity, line diameter.	2	100	2	100	2	100	2	100	2
5.1.7 How many concrete delivery trucks will you have? Size? Year of manufacture?	1	100	1	100	1	100	1	100	1
5.1.8 Provide a layout indicating locations of concrete pumps, placing arms, etc.	4	100	4	100	4	100	4	100	4
5.1.9 Where do you plan to source cement? How will you transport it to site?	3	100	3	100	3	100	3	100	3
5.1.10 What cement storage capacity do you plan to have on site? Do you plan to have any off site/remote cement storage?	3	100	3	100	3	100	3	95	2.85
5.1.11 What measures will you take to ensure adequate cement supply?	2	100	2	100	2	100	2	100	2
5.1.12 Outline your concrete testing laboratory setup and testing program. Elaborate on how you will plan the initial concrete testing and certification required by the specifications such that the concrete works can begin as early as possible.	1	100	1	100	1	100	1	100	1
5.1.13 What would be your strategy for winter protection (temporary buildings and/or hoarding) during winter 2013/2014 and 2014/2015?	2	75	1.5	90	1.8	100	2	80	1.6
5.1.14 Your strategy and plan for the use of the permanent bridge crane and the temporary construction bridge crane	3	90	2.7	90	2.7	100	3	90	2.7
5.1.15 Provide information and details of your concrete screeding and finishing techniques in order to obtain the finish and quality of concrete surface required and tolerances specified in the Technical Specification.	1	100	1	100	1	75	0.75	75	0.75
5.2 Work Area Layout									
5.2.1 Prepare a plan showing work area layout with location of tower crane(s), mobile crane pads, etc.	4	90	3.6	100	4	100	4	90	3.6
5.2.2 Show sail area of cranes and load travel areas clearly indicating any building, shops, containers which may be under the sail travel area.	2	95	1.9	100	2	90	1.8	95	1.9
5.2.3 Indicate what is your typical lifting plan for a critical lift. Please provide a typical example.	1	100	1	0		100	1	0	
General	**9**								
5.3 Explain your dewatering strategy.	2	90	1.8	90	1.8	90	1.8	90	1.8
5.4 Do you plan to design your own shoring/falsework or use specialized falsework designers (e.g. PERI, ALUMA, EFCO).	2	90	1.8	90	1.8	100	2	90	1.8
5.5 Do you have in house surveying or use a subcontractor?	1	100	1	90	0.9	95	0.95	100	1

Table 2.1 - Technical Questionnaire Evaluation

		IKC		Astaldi		Aecon JV		Salini JV	
	Weight for Element	**Answer**	**Score (%)**	**Answer**	**Score (%)**	**Answer**	**Score (%)**	**Answer**	**Score (%)**
5.6 Give the details that your pour drawings will show (e.g. concrete mix, green cut, surface finish, water stops, etc.).	2	100	2	90	1.8	100	2	90	1.8
5.7 What is your aggregate production strategy?	2	80	1.6	90	1.8	85	1.7	75	1.5
Total	**100**		**95.2**		**95.1**		**92.3**		**90.3**

Area Construction Manager Laird Paton

Signed _____

Date: _____

Tables 2.2 to 2.5 on the following pages evaluate and compare the quantities and hours estimated by the bidders for each line item in RFP Appendix 2.1 – Schedule of Price Breakdown. Tables 2.2 and 2.3 compare all four bidders to the original bids provided in response to the RFP for quantities and hours respectively. Tables 2.4 and 2.5 compare the quantities and hours estimated by the two shortlisted bidders in response to Addendum 14.

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
	2	0000		**INDIRECT COSTS**						
1	2.1		0000.01	Mobilization	LS	1	1	1	1	1
2	2.2		0000.02	Site Installation	LS	1	1	1	1	1
3	2.3		0000.03	Contractor Equipment for Indirects	LS	1	1	1	1	1
4	2.4		0000.04	Temporary Works	LS	1	1	1	1	1
5	2.5		0000.05	Winter Protection	LS	1	1	1	1	1
6	2.6		0000.06	Management and Staff	LS	1	1	1	1	1
6A	2.6A		0000.06A	Design and Technical Assistance	LS	1	1	1	1	1
7	2.7		0000.07	Attendant labour	LS	1	1	1	1	1
8	2.8		0000.08	Services	LS	1	1	1	1	1
9	2.9		0000.09	Employee Training	LS	1	1	1	1	1
10	2.10		0000.10	Health and Safety Requirements	LS	1	1	1	1	1
11	2.11		0000.11	Environmental Requirements	LS	1	1	1	1	1
12	2.12		0000.12	Quality Assurance / Quality Control	LS	1	1	1	1	1
13	2.13		0000.13	Letters of Credit	LS	1	1	1	1	1
14	2.14		0000.14	Parent Guarantee	LS	1	1	1	1	1
15	2.15		0000.15	Contractor Insurance, per Article 18 of the Agreement	LS	1	1	1	1	1
16	2.16		0000.16	Warranty, per Article 17 of the Agreement	LS	1	1	1	1	1
17	2.17		0000.17	Site Maintenance	LS	1	1	1	1	1
17A	2.17A		0000.17A	Maintenance Grade No. 3 Material	m^3	7,200	7,200	7,200	7,200	7,200
17B	2.17B		0000.17B	Coarse Sand	m^3	2,900	2,900	2,900	2,900	2,900
17C	2.17C		0000.17C	Calcium Chloride (20 kg bag)	each	12,500	12,500	12,500	12,500	12,500
18	2.18		0000.18	Financing, Contingency, Head Office Overheads, & Consultant Fees	LS	1	1	1	1	1
19	2.19		0000.19	Demobilization	LS	1	1	1	1	1
19A	2.19A		0000.19A	Estimate of Travel Allowances - Trades Labour	NA	NA	NA	0	NA	0
				SUB-TOTAL INDIRECT COSTS						
	3	0000		**GENERAL**						
	3.1		1110	**ACCESS ROADS TO SPILLWAY, ACCESS RAMPS AND PADS FOR COMPANY'S OTHER CONTRACTORS**						
20	3.1.1		1110.01	Overburden Excavation	m^3	6,400	6,400	6,400	6,400	6,400
21	3.1.2		1110.02	Zone 3C Material	m^3	3,960	3,960	3,960	3,960	3,960
22	3.1.3		1110.03	Zone 3D Material	m^3	8,360	8,360	8,360	8,360	8,360
23	3.1.4		1110.04	Granular "B" Material	m^3	1,250	1,250	1,250	1,250	1,250
24	3.1.5		1110.05	Granular "C" Material	m^3	1,250	1,250	1,250	1,250	1,250
25	3.1.6		1110.06	Concrete Culvert 600 mm	m	45	45	45	45	45
	3.2		1120	**DEWATERING OF STRUCTURE AREAS**						
26	3.2.1		1120.01	Structure Areas	LS	1	1	1	1	1
	3.3		1150	**TEMPORARY BRIDGE**						
27	3.3.1		1150.01	Temporary Downstream Bridge over the Spillway	LS	1	1	1	1	1
	3.4		1170	**CONSTRUCTION CRANE**						
28	3.4.1		1170.01	Powerhouse – Construction Crane	LS	1	1	1	1	1
	3.5		1180	**Temporary Heating, Ventilating and Lighting of Powerhouse**						

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
29	3.5.1		1180.01	Temporary Heating, Ventilating and Lighting of Powerhouse	LS	1	1	1	1	1
	3.6		1190	**Chain Link Fences and Gates**						
30	3.6.1		1190.01	Chain Link Fences and Gates in the Powerhouse Parking and Contractor's Laydown Areas	m	50	50	50	50	50
	3.7		1200	**Temporary Lateral Support and Bracings**						
31	3.7.1		1200.01	Temporary Lateral Support and Bracings for Piers of the Spillway	LS	1	1	1	1	1
	3.8		1210	**Anchor Points**						
32	3.8.1		1210.01	Anchor Points at Powerhouse and Spillway	each	50	50	50	50	50
				SUB-TOTAL GENERAL						
	4	2360		**TRANSITION DAMS**						
	4.1		2361	**NORTH TRANSITION DAM**						
				CIVIL WORK						
				Excavation						
33	4.1.1		2361.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	650	650	650	650	650
				Foundation Preparation						
34	4.1.2		2361.02	Dental Excavation	m^3	30	30	30	30	30
35	4.1.3		2361.03	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	430	430	430	430	430
36	4.1.4		2361.04	Dental Concrete	m^3	70	70	70	70	70
37	4.1.5		2361.05	Dry Pack	m^3	3	3	3	3	3
				Drilling, Pressure Grouting and Drainage						
38	4.1.6		2361.06	Grouting Holes	m	200	200	200	200	200
39	4.1.7		2361.07	Grouting - Successful Connections	each	40	40	40	40	40
40	4.1.8		2361.08	Dry Cement for Grouting	kg	7,000	7,000	7,000	7,000	7,000
41	4.1.9		2361.09	Water Pressure Tests (Lugeon)	hour	4	4	4	4	4
42	4.1.10		2361.10	Water Pressure Tests - Successful Connections	each	10	10	10	10	10
43	4.1.11		2361.11	Uplift Gauges	m	25	25	25	25	25
44	4.1.12		2361.12	Thermistors	each	1	1	1	1	1
45	4.1.13		2361.13	Rotary/Percussion Drill Check Holes	m	25	25	25	25	25
46	4.1.14		2361.14	Cored (Diamond drill) holes	m	25	25	25	25	25
47	4.1.15		2361.15	Drainage Holes	m	65	65	65	65	65
48	4.1.16		2361.16	PVC Caps for Drainage Holes	each	5	5	5	5	5
49	4.1.17		2361.17	Survey Monuments	each	1	1	1	1	1
				CONCRETE WORK						
50	4.1.18		2361.18	Concrete	m^3	9,130	9,130	9,130	9,130	9,130
51	4.1.19		2361.19	PVC Waterstop - TYPE B (225 mm width)	m	330	330	330	330	330
52	4.1.20		2361.20	Hydrophilic Waterstop	m	90	90	90	90	90
53	4.1.21		2361.21	Bituminous Coating at Contraction Joints	m^2	570	570	570	570	570
				REINFORCEMENT, ANCHORS AND DOWELS						
54	4.1.22		2361.22	Reinforcement including Dowels	kg	44,100	44,100	44,100	44,100	44,100
				STRUCTURAL STEEL AND MISCELLANEOUS METAL						
				Supply and Installation of Non Embedded Miscellaneous Metal						
55	4.1.23		2361.23	Galvanized Miscellaneous Steel	kg	11,300	11,300	11,300	11,300	11,300
56	4.1.24		2361.24	Galvanized Grating	kg	1,860	1,860	1,860	1,860	1,860

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
				Embedded Miscellaneous Metals						
57	4.1.25		2361.25	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	90	90	90	90	90
58	4.1.26		2361.26	**Anchor Bolts Grade 55 ASTM F1554**	kg	535	535	535	535	535
				ELECTRICAL WORK						
59	4.1.27		2361.27	Exothermic Connections.	each	30	30	30	30	30
60	4.1.28		2361.28	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	200	200	200	200	200
61	4.1.29		2361.29	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	25	25	25	25	25
				SUB-TOTAL NORTH TRANSITION DAM						
	4.2		2362	**CENTRE TRANSITION DAM**						
				CIVIL WORK						
				Excavation						
62	4.2.1		2362.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	2,100	2,100	2,100	2,100	2,100
				Foundation Preparation						
63	4.2.2		2362.02	Dental Excavation	m^3	80	80	80	80	80
64	4.2.3		2362.03	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	1,430	1,430	1,430	1,430	1,430
65	4.2.4		2362.04	Dental Concrete	m^3	215	215	215	215	215
66	4.2.5		2362.05	Dry Pack	m^3	10	10	10	10	10
				Drilling, Pressure Grouting and Drainage						
67	4.2.6		2362.06	Grouting Holes	m	600	600	600	600	600
68	4.2.7		2362.07	Grouting - Successful Connections	each	120	120	120	120	120
69	4.2.8		2362.08	Dry Cement for Grouting	kg	20,000	20,000	20,000	20,000	20,000
70	4.2.9		2362.09	Water Pressure Tests (Lugeon)	hour	4	4	4	4	4
71	4.2.10		2362.10	Water Pressure Tests - Successful Connections	each	10	10	10	10	10
72	4.2.11		2362.11	Uplift Gauges	m	30	30	30	30	30
73	4.2.12		2362.12	Thermistors	each	1	1	1	1	1
74	4.2.13		2362.13	Rotary/Percussion Drill Check Holes	m	25	25	25	25	25
75	4.2.14		2362.14	Cored (Diamond drill) holes	m	25	25	25	25	25
76	4.2.15		2362.15	Drainage Holes	m	200	200	200	200	200
77	4.2.16		2362.16	PVC Caps for Drainage Holes	each	20	20	20	20	20
				Geotechnical Instrumentation						
78	4.2.17		2362.17	Survey Monuments	each	5	5	5	5	5
79	4.2.18		2362.18	Hydraulic piezometers	each	3	3	3	3	3
80	4.2.19		2362.19	V-Notch Weirs	each	1	1	1	1	1
				CONCRETE WORK						
81	4.2.20		2362.20	Concrete Below El. 42.30 m	m^3	27,200	27,200	27,200	27,200	27,200
82	4.2.21		2362.21	Concrete Above El. 42.30 m	m^3	2,230	2,230	2,230	2,230	2,230
83	4.2.22		2362.22	Concrete - Slab on Steel Deck	m^3	130	130	130	130	130
84	4.2.23		2362.23	Grout	m^3	17	17	17	17	17
85	4.2.24		2362.24	PVC Waterstop - TYPE B (225 mm width)	m	770	770	770	770	770
86	4.2.25		2362.25	Bituminous Coating at Contraction Joint	m^2	3,060	3,060	3,060	3,060	3,060
				REINFORCEMENT, ANCHORS AND DOWELS						
87	4.2.26		2362.26	Reinforcement including Dowels	kg	133,000	133,000	133,000	133,000	133,000

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
				SUPPLY AND INSTALLATION OF STRUCTURAL STEEL						
88	4.2.27		2362.27	Painted Structural Steel	kg	76,500	76,500	76,500	76,500	76,500
				STRUCTURAL STEEL AND MISCELLANEOUS METAL						
				Supply and Installation of Non Embedded Miscellaneous Metal						
89	4.2.28		2362.28	Galvanized Miscellaneous Steel	kg	32,500	32,500	32,500	32,500	32,500
90	4.2.29		2362.29	Galvanized Grating	kg	460	460	460	460	460
				Embedded Miscellaneous Metals						
91	4.2.30		2362.30	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	15,650	15,650	15,650	15,650	15,650
				Metal Decking including Shear Studs (Galvanized)						
92	4.2.31		2362.31	Steel deck type RD 306 (t=0.91 mm)	m^2	400	400	400	400	400
93	4.2.32		2362.32	Shear Studs	kg	4,200	4,200	4,200	4,200	4,200
				Crane Rails including Fastening System and Accessories						
94	4.2.33		2362.33	Rails for Trash Cleaning System	m	140	140	140	140	140
95	4.2.34		2362.34	**Anchor Bolts Grade 55 ASTM F1554**	kg	5,500	5,500	5,500	5,500	5,500
96	4.2.35		2362.35	**Elastomeric Bearing Pads**	each	21	21	21	21	21
				ELECTRICAL WORK						
97	4.2.36		2362.36	Exothermic Connections.	each	110	110	110	110	110
98	4.2.37		2362.37	Embedded Copper Grounding Plates	each	2	2	2	2	2
99	4.2.38		2362.38	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	450	450	450	450	450
100	4.2.39		2362.39	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	125	125	125	125	125
101	4.2.40		2362.40	Rigid PVC Conduit, size 41mm	m	**100**	100	100	100	100
102	4.2.41		2362.41	Rigid PVC Conduit, size 78mm	m	25	25	25	25	25
103	4.2.42		2362.42	Rigid PVC Conduit, size 129mm	m	40	40	40	40	40
104	4.2.43		2362.43	Junction Box, size 200 x 200 x 150 mm Complete with Traffic Rated Cover.	each	2	2	2	2	2
				SUB-TOTAL CENTRE TRANSITION DAM						
	4.3		2363.00	**SOUTH TRANSITION DAM**						
				CIVIL WORK						
				Excavation						
105	4.3.1		2363.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	1,350	1,350	1,350	1,350	1,350
				Foundation Preparation						
106	4.3.2		2363.02	Dental Excavation	m^3	45	45	45	45	45
107	4.3.3		2363.03	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	900	900	900	900	900
108	4.3.4		2363.04	Dental Concrete	m^3	135	135	135	135	135
109	4.3.5		2363.05	Dry Pack	m^3	6	6	6	6	6
				Drilling, Pressure Grouting and Drainage						
110	4.3.6		2363.06	Grouting Holes	m	500	500	500	500	500
111	4.3.7		2363.07	Grouting - Successful Connections	each	100	100	100	100	100
112	4.3.8		2363.08	Dry Cement for Grouting	kg	18,000	18,000	18,000	18,000	18,000
113	4.3.9		2363.09	Water Pressure Tests (Lugeon)	hour	5	5	5	5	5
114	4.3.10		2363.10	Water Pressure Tests - Successful Connections	each	12	12	12	12	12
115	4.3.11		2363.11	Uplift Gauges	m	30	30	30	30	30
116	4.3.12		2363.12	Thermistors	each	1	1	1	1	1

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
117	4.3.13		2363.13	Rotary/Percussion Drill Check Holes	m	30	30	30	30	30
118	4.3.14		2363.14	Cored (Diamond drill) holes	m	30	30	30	30	30
119	4.3.15		2363.15	Drainage Holes	m	225	225	225	225	225
120	4.3.16		2363.16	PVC Caps for Drainage Holes	each	15	15	15	15	15
				Geotechnical Instrumentation						
121	4.3.17		2363.17	Survey Monuments	each	4	4	4	4	4
122	4.3.18		2363.18	Hydraulic piezometers	each	2	2	2	2	2
123	4.3.19		2363.19	V-Notch Weirs	each	1	1	1	1	1
				CONCRETE WORK						
124	4.3.20		2363.20	Concrete	m^3	**9,700**	9,700	9,700	9,700	9,700
125	4.3.21		2363.21	PVC Waterstop - TYPE B (225 mm width)	m	**450**	450	450	450	450
126	4.3.22		2363.22	Hydrophilic Waterstop	m	100	100	100	100	100
127	4.3.23		2363.23	Bituminous Coating at Contraction Joints	m^2	**680**	680	680	680	680
				REINFORCEMENT, ANCHORS AND DOWELS						
128	4.3.24		2363.24	Reinforcement including Dowels	kg	**180,000**	180,000	180,000	180,000	180,000
				STRUCTURAL STEEL AND MISCELLANEOUS METAL						
				Supply and Installation of Non Embedded Miscellaneous Metal						
129	4.3.25		2363.25	Galvanized Miscellaneous Steel	kg	**14,500**	14,500	14,500	14,500	14,500
130	4.3.26		2363.26	Galvanized Grating	kg	**300**	300	300	300	300
				Embedded Miscellaneous Metals						
131	4.3.27		2363.27	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	**100**	100	100	100	100
132	4.3.28		2363.28	**Anchor Bolts Grade 55 ASTM F1554**	kg	**1,350**	1,350	1,350	1,350	1,350
				ELECTRICAL WORK						
133	4.3.29		2363.29	Exothermic Connections.	each	**100**	100	100	100	100
134	4.3.30		2363.30	Embedded Copper Grounding Plates	each	**1**	1	1	1	1
135	4.3.31		2363.31	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	**450**	450	450	450	450
136	4.3.32		2363.32	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	**100**	100	100	100	100
137	4.3.33		2363.33	Rigid PVC Conduit, size 41mm	m	**60**	60	60	60	60
				SUB-TOTAL SOUTH TRANSITION DAM						
	4.4		2364	**SEPARATION WALL**						
				CIVIL WORK						
				Foundation Preparation						
138	4.4.1		2364.01	Dental Excavation	m^3	50	50	50	50	50
139	4.4.2		2364.02	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	900	900	900	900	900
140	4.4.3		2364.03	Dental Concrete	m^3	130	130	130	130	130
141	4.4.4		2364.04	Dry Pack	m^3	6	6	6	6	6
				CONCRETE WORK						
142	4.4.5		2364.05	Concrete - Separation Wall	m^3	**10,850**	10,850	10,850	10,850	10,850
143	4.4.6		2364.06	PVC Waterstop - TYPE B (225 mm width)	m	60	60	60	60	60
144	4.4.7		2364.07	Hydrophilic Waterstop	m	15	15	15	15	15
145	4.4.8		2364.08	Bituminous Coating at Contraction Joint	m^2	810	810	810	810	810
				SUB-TOTAL SEPARATION WALL						

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
	5	2400		**SPILLWAY**						
	5.1		2410	**SPILLWAY STRUCTURE**						
				CIVIL WORK						
				Excavation and Backfill						
146	5.1.1		2410.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	7,600	7,600	7,600	7,600	7,600
				Drilling, Pressure Grouting and Drainage						
147	5.1.2		2410.02	Grouting Holes	m	650	650	650	650	650
148	5.1.3		2410.03	Grouting - Successful Connections	each	130	130	130	130	130
149	5.1.4		2410.04	Dry Cement for Grouting	kg	23,000	23,000	23,000	23,000	23,000
150	5.1.5		2410.05	Water Pressure Tests (Lugeon)	hour	4	4	4	4	4
151	5.1.6		2410.06	Water Pressure Tests - Successful Connections	each	10	10	10	10	10
152	5.1.7		2410.07	Uplift Gauges	m	30	30	30	30	30
153	5.1.8		2410.08	Thermistors	each	1	1	1	1	1
154	5.1.9		2410.09	Rotary/Percussion Drill Check Holes	m	25	25	25	25	25
155	5.1.10		2410.10	Cored (Diamond drill) holes	m	25	25	25	25	25
				Instrumentation						
156	5.1.11		2410.11	Survey Monuments	each	6	6	6	6	6
				Foundation preparation						
157	5.1.12		2410.12	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	5,100	5,100	5,100	5,100	5,100
				CONCRETE WORK						
				Spillway and Related Structures including Retaining Walls						
158	5.1.13		2410.13	Concrete - Slabs	m^3	13,100	13,100	13,100	13,100	13,100
159	5.1.14		2410.14	Concrete - Piers and Walls	m^3	32,900	32,900	32,900	32,900	32,900
160	5.1.15		2410.15	Concrete - Rollways	m^3	19,500	19,500	19,500	19,500	19,500
161	5.1.16		2410.16	Demolition of Slab for Rollway Key	m^3	200	200	200	200	200
162	5.1.17		2410.17	Overbreak Concrete	m^3	3,000	3,000	3,000	3,000	3,000
163	5.1.18		2410.18	Grout	m^3	20	20	20	20	20
164	5.1.19		2410.19	PVC Waterstop - TYPE A (150 mm width)	m	8,500	8,500	8,500	8,500	8,500
165	5.1.20		2410.20	Hydrophilic Waterstop	m	2,850	2,850	2,850	2,850	2,850
166	5.1.21		2410.21	Bituminous Coating at Contraction Joint	m^2	950	950	950	950	950
				REINFORCEMENT, ANCHORS AND DOWELS						
167	5.1.22		2410.22	Reinforcement including Dowels	kg	3,612,000	3,612,000	3,612,000	3,612,000	3,612,000
168	5.1.23		2410.23	Drill Holes and Grouting for Rock Dowels	m	8,000	8,000	8,000	8,000	8,000
169	5.1.24		2410.24	Threaded Rebars with Couplers	kg	192,000	192,000	192,000	192,000	192,000
				STRUCTURAL STEEL AND MISCELLANEOUS METAL						
				Non Embedded Miscellaneous Metal						
170	5.1.25		2410.25	Non Embedded Galvanized Miscellaneous Steel	kg	350	350	350	350	350
171	5.1.26		2410.26	Non Embedded Galvanized Grating	kg	250	250	250	250	250
				Embedded Miscellaneous Metals						
172	5.1.27		2410.27	Embedded Galvanized Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	100	100	100	100	100
173	5.1.28		2410.28	Expanded Sheet Metal - Rollway Joints	kg	4,000	4,000	4,000	4,000	4,000
				Crane Rails including Fastening System and Accessories						

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
174	5.1.29		2410.29	Rails for Trash Cleaning System	m	150	150	150	150	150
175	5.1.30		2410.30	**Anchor Bolts Grade 55 ASTM F1554**	kg	1,700	1,700	1,700	1,700	1,700
				ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS						
176	5.1.31		2410.31	Anchors and Templates in Primary Concrete for Gates (5 Sets)	kg	85,900	85,900	85,900	85,900	85,900
177	5.1.32		2410.32	Anchors and Templates in Primary Concrete for Upstream Stoplogs (5 Sets)	kg	70,700	70,700	70,700	70,700	70,700
178	5.1.33		2410.33	Anchors and Templates in Primary Concrete for Permanent Stoplogs (5 Sets)	kg	39,300	39,300	39,300	39,300	39,300
179	5.1.34		2410.34	Anchors and Templates in Primary Concrete for Downstream Stoplogs (5 Sets)	kg	14,200	14,200	14,200	14,200	14,200
180	5.1.35		2410.35	Anchors and Templates in Primary Concrete for Hoist Towers (5 Sets)	kg	430	430	430	430	430
181	5.1.36		2410.36	Anchors and Templates in Primary Concrete for Walkways (5 Sets)	kg	200	200	200	200	200
182	5.1.37		2410.37	Liner Plates in sides of Piers	each	10	10	10	10	10
				ELECTRICAL WORK						
183	5.1.38		2410.38	Exothermic Connections.	each	360	360	360	360	360
184	5.1.39		2410.39	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	1,600	1,600	1,600	1,600	1,600
185	5.1.40		2410.40	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	550	550	550	550	550
186	5.1.41		2410.41	Rigid PVC Conduit, size 53mm	m	120	120	120	120	120
				SUB-TOTAL SPILLWAY STRUCTURE						
	5.2		2411	**SPILLWAY BRIDGES**						
				CONCRETE WORK						
187	5.2.1		2411.01	Concrete - Slab on Bridge Deck	m^3	450	450	450	450	450
				REINFORCEMENT, ANCHORS AND DOWELS						
188	5.2.2		2411.02	Reinforcement including Dowels	kg	110,000	110,000	110,000	110,000	110,000
				STRUCTURAL STEEL AND MISCELLANEOUS METAL						
				Structural Steel						
189	5.2.3		2411.03	Structural Steel - Painted/Galvanized Sections	kg	**245,500**	245,500	245,500	245,500	245,500
				Non Embedded Miscellaneous Metal						
190	5.2.4		2411.04	Non Embedded Galvanized Miscellaneous Steel	kg	**40,650**	40,650	40,650	40,650	40,650
191	5.2.5		2411.05	Non Embedded Galvanized Grating	kg	**26,550**	26,550	26,550	26,550	26,550
				Embedded Miscellaneous Metals						
192	5.2.6		2411.06	Embedded Galvanized Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	**17,850**	17,850	17,850	17,850	17,850
193	5.2.7		2411.07	**Elastomeric Bearing Pads**	each	**110**	110	110	110	110
194	5.2.8		2411.08	**Bridge Expansion Joints**	each	16	16	16	16	16
195	5.2.9		2411.09	**Anchor Bolts Grade 55 ASTM F1554**	kg	**4,455**	4,455	4,455	4,455	4,455
				SUB-TOTAL SPILLWAY BRIDGES						
	5.3		2430	**SPILLWAY DISCHARGE CHANNEL - PHASE 1**						
				CIVIL WORK						
				Foundation preparation						
196	5.3.1		2430.01	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	2,880	2,880	2,880	2,880	2,880
				CONCRETE WORK						
197	5.3.2		2430.02	Concrete - Slabs (CVC)	m^3	1,725	1,725	1,725	1,725	1,725
198	5.3.3		2430.03	Concrete - Walls (CVC)	m^3	700	700	700	700	700
199	5.3.4		2430.04	Overbreak Concrete	m^3	1,600	1,600	1,600	1,600	1,600

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
				REINFORCEMENT, ANCHORS AND DOWELS						
200	5.3.5		2430.05	Reinforcement including Dowels	kg	145,000	145,000	145,000	145,000	145,000
201	5.3.6		2430.06	Drill Holes and Grouting for Rock Dowels	m	3,650	3,650	3,650	3,650	3,650
				SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 1						
	5.4		2431	**SPILLWAY DISCHARGE CHANNEL - PHASE 2 - OPTIONAL**						
				CIVIL WORK						
				Foundation preparation						
202	5.4.1		2431.01	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	1,440	1,440	1,440	1,440	1,440
				CONCRETE WORK						
203	5.4.2		2431.02	Concrete - Slabs (CVC)	m^3	850	850	850	850	850
204	5.4.3		2431.03	Concrete - Walls (CVC)	m^3	300	300	300	300	300
205	5.4.4		2431.04	Overbreak Concrete	m^3	700	700	700	700	700
				REINFORCEMENT, ANCHORS AND DOWELS						
206	5.4.5		2431.05	Reinforcement including Dowels	kg	90,000	90,000	90,000	90,000	90,000
207	5.4.6		2431.06	Drill Holes and Grouting for Rock Dowels	m	1,900	1,900	1,900	1,900	1,900
				SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 2						
	5.5		2432	**SPILLWAY DISCHARGE CHANNEL - PHASE 3 - OPTIONAL**						
				CIVIL WORK						
				Foundation preparation						
208	5.5.1		2432.01	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	3,400	3,400	3,400	3,400	3,400
				CONCRETE WORK						
209	5.5.2		2432.02	Concrete - Slabs (CVC)	m^3	2,000	2,000	2,000	2,000	2,000
210	5.5.3		2432.03	Concrete - Walls (CVC)	m^3	200	200	200	200	200
211	5.5.4		2432.04	Overbreak Concrete	m^3	2,000	2,000	2,000	2,000	2,000
				REINFORCEMENT, ANCHORS AND DOWELS						
212	5.5.5		2432.05	Reinforcement including Dowels	kg	160,000	160,000	160,000	160,000	160,000
213	5.5.6		2432.06	Drill Holes and Grouting for Rock Dowels	m	4,600	4,600	4,600	4,600	4,600
				SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 3						
	6	3200		**INTAKE**						
	6.1		3220	**INTAKE STRUCTURE**						
				CIVIL WORK						
				Drilling, Pressure Grouting and Drainage						
214	6.1.1		3220.01	Grouting Holes	m	2,000	2,000	2,000	2,000	2,000
215	6.1.2		3220.02	Grouting - Successful Connections	each	400	400	400	400	400
216	6.1.3		3220.03	Dry Cement for grouting	kg	70,000	70,000	70,000	70,000	70,000
217	6.1.4		3220.04	Water Pressure Tests (Lugeon)	hour	8	8	8	8	8
218	6.1.5		3220.05	Water Pressure Tests - Successful Connections	each	20	20	20	20	20
219	6.1.6		3220.06	Uplift Gauges	m	30	30	30	30	30
220	6.1.7		3220.07	Thermistors	each	1	1	1	1	1
221	6.1.8		3220.08	Rotary/Percussion Drill Check Holes	m	50	50	50	50	50

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
222	6.1.9		3220.09	Cored (Diamond drill) holes	m	50	50	50	50	50
223	6.1.10		3220.10	Drainage Holes	m	800	800	800	800	800
224	6.1.11		3220.11	PVC Caps for Drainage Holes	each	50	50	50	50	50
				Foundation preparation						
225	6.1.12		3220.12	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	4,900	4,900	4,900	4,900	4,900
				Geotechnical Instrumentation						
226	6.1.13		3220.13	Survey Monuments	each	4	4	4	4	4
227	6.1.14		3220.14	V-Notch Weirs	each	2	2	2	2	2
				CONCRETE WORK						
				CONCRETE INTAKE & GATE HOIST BUILDING						
228	6.1.15		3220.15	Concrete - Substructure below El. 45.5 m	m^3	143,850	143,850	143,850	143,850	143,850
229	6.1.16		3220.16	Concrete - Gate Hoist Building and Elevator Room above El. 45.5 m	m^3	1,600	1,600	1,600	1,600	1,600
230	6.1.17		3220.17	Overbreak Concrete	m^3	3,000	3,000	3,000	3,000	3,000
231	6.1.18		3220.18	Grout	m^3	30	30	30	30	30
232	6.1.19		3220.19	PVC Waterstop - TYPE A (150 mm width)	m	11,500	11,500	11,500	11,500	11,500
233	6.1.20		3220.20	PVC Waterstop - TYPE B (225 mm width)	m	650	650	650	650	650
234	6.1.21		3220.21	Sealing of Joints	m	100	100	100	100	100
235	6.1.22		3220.22	Bituminous Coating at Construction Joints	m^2	6,020	6,020	6,020	6,020	6,020
				REINFORCEMENT, ANCHORS AND DOWELS						
236	6.1.23		3220.23	Reinforcement including Dowels	kg	9,251,000	9,251,000	9,251,000	9,251,000	9,251,000
				INSTALLATION OF ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS						
237	6.1.24		3220.24	Anchors and Templates in Primary Concrete for Intake Gates (12 Sets)	kg	**165,500**	165,500	165,500	165,500	165,500
238	6.1.25		3220.25	Anchors and Templates in Primary Concrete for Intake Trashracks (12 Sets)	kg	82,000	82,000	82,000	82,000	82,000
239	6.1.26		3220.26	Anchors and Templates in Primary Concrete for Intake Stoplogs (12 Sets)	kg	144,800	144,800	144,800	144,800	144,800
	6.2		3290	**INTAKE - ELECTRICAL WORK**						
240	6.2.1		3290.01	Exothermic Connections.	each	575	575	575	575	575
241	6.2.2		3290.02	Embedded Copper Grounding Plates	each	6	6	6	6	6
242	6.2.3		3290.03	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	2,000	2,000	2,000	2,000	2,000
243	6.2.4		3290.04	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	1,300	1,300	1,300	1,300	1,300
				SUB-TOTAL INTAKE STRUCTURE						
	7	3300		**POWERHOUSE**						
	7.1		3310	**SUBSTRUCTURE**						
				CIVIL WORK						
				Drilling, Pressure Grouting and Drainage						
244	7.1.1		3310.01	Grouting Holes	m	800	800	800	800	800
245	7.1.2		3310.02	Grouting - Successful Connections	each	160	160	160	160	160
246	7.1.3		3310.03	Dry Cement for Grouting	kg	28,000	28,000	28,000	28,000	28,000
247	7.1.4		3310.04	Water Pressure Tests (Lugeon)	hour	4	4	4	4	4
248	7.1.5		3310.05	Water Pressure Tests - Successful Connections	each	10	10	10	10	10
249	7.1.6		3310.06	Uplift Gauges	m	25	25	25	25	25
250	7.1.7		3310.07	Thermistors	each	1	1	1	1	1
251	7.1.8		3310.08	Rotary/Percussion Drill Check Holes	m	25	25	25	25	25

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
252	7.1.9		3310.09	Cored (Diamond drill) holes	m	25	25	25	25	25
				Foundation preparation						
253	7.1.10		3310.10	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	10,400	10,400	10,400	10,400	10,400
				Trench for Interconnection Cables and Pipes						
254	7.1.11		3310.11	Fill Excavation and Backfill	LS	1	1	1	1	1
255	7.1.12		3310.12	Ductbank	LS	1	1	1	1	1
256	7.1.13		3310.13	Manholes	each	3	3	3	3	3
				CONCRETE WORK						
257	7.1.14		3310.14	Concrete - Powerhouse Substructure below El. 6.5 m	m^3	137,900	137,900	137,900	137,900	137,900
258	7.1.15		3310.15	Concrete - Substructure between lines 6 and 7, including Sump Pit, Shafts for Stair & Elevator up to El. 45.5m	m^3	14,600	14,600	14,600	14,600	14,600
259	7.1.16		3310.16	Concrete - Slabs and Walls between El. 6.5 and 15.5, including North and South Service Bays, Slab on grade, Basins and Bases for GSU transformer up to El. 16.8 m. Air vent enclosures on Powerhouse tailrace deck and North Service Bay, Access enclosure to stair no. 8 and Oil/Water separator enclosure.	m^3	7,300	7,300	7,300	7,300	7,300
260	7.1.17		3310.17	Concrete - Slab on Steel Deck including Mezzanines	m^3	3,200	3,200	3,200	3,200	3,200
261	7.1.18		3310.18	Secondary Concrete of Draft Tube Cone Steel liner	m^3	2,420	2,420	2,420	2,420	2,420
262	7.1.19		3310.19	Overbreak Concrete	m^3	8,500	8,500	8,500	8,500	8,500
263	7.1.20		3310.20	Grout	m^3	15	15	15	15	15
264	7.1.21		3310.21	PVC Waterstop - TYPE A (150 mm width)	m	12,600	12,600	12,600	12,600	12,600
265	7.1.22		3310.22	PVC Waterstop - TYPE B (225 mm width)	m	1,300	1,300	1,300	1,300	1,300
266	7.1.23		3310.23	Metallic Waterstop	m	370	370	370	370	370
267	7.1.24		3310.24	Sealing of Joints	m	300	300	300	300	300
268	7.1.25		3310.25	Polyethylene Foam Rod	m	140	140	140	140	140
269	7.1.26		3310.26	Asphalt Impregnated Fibre Board	m^2	70	70	70	70	70
270	7.1.27		3310.27	Bituminous Coating at Construction Joint	m^2	6,300	6,300	6,300	6,300	6,300
271	7.1.28		3310.28	Soldrain 500 from Texel/Geosol	m^2	170	170	170	170	170
				Fire Walls at Tailrace Deck (Transformer Deck)						0.00
272	7.1.29		3310.29	Prefabricated Longitudinal Concrete Fire Walls	m^2	2,520	2,520	2,520	2,520	2,520
273	7.1.30		3310.30	Prefabricated Transversal Concrete Fire Walls	m^2	860	860	860	860	860
				REINFORCEMENT, ANCHORS AND DOWELS						0.00
274	7.1.31		3310.31	Reinforcement including Dowels	kg	10,950,000	10,950,000	10,950,000	10,950,000	10,950,000
275	7.1.32		3310.32	Drill Holes and Grouting for Rock Dowels	m	700	700	700	700	700
276	7.1.33		3310.33	Drill Holes for Anchors Diam. 25 mm with Epoxy Adhesive HIT-RE-500	m	100	100	100	100	100
277	7.1.34		3310.34	Threaded Rebar (Dia. 35 mm) with Couplers	kg	800	800	800	800	800
				INSTALLATION OF ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS						0.00
278	7.1.35		3310.35	Anchors and Templates in Primary Concrete for Draft Tube Stoplogs (8 Sets)	kg	53,200	53,200	53,200	53,200	53,200
279	7.1.36		3310.36	Anchors and Embedded Parts in Primary Concrete for T/G Units	kg	**64,000**	64,000	64,000	64,000	64,000
				SUB-TOTAL POWERHOUSE - SUBSTRUCTURE						
	7.2		3320	**SUPERSTRUCTURE (Intake and Powerhouse)**						
				STRUCTURAL STEEL						
				Beams - Rolled Sections, Painted						

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
280	**7.2.1**		3320.01	**Beams Under 60 kg/m (incl. S, C, L shapes detailed as bracing, facing and overhangs, and girt channels)**	kg	612,400	612,400	612,400	612,400	612,400
281	**7.2.2**		3320.02	Beams From 61 to 150 kg/m	kg	**71,100**	71,100	71,100	71,100	71,100
282	**7.2.3**		3320.03	Beams Over 150 kg/m	kg	**15,280**	15,280	15,280	15,280	15,280
				Columns - Rolled Sections, Painted						
283	**7.2.4**		3320.04	Columns Under 60 kg/m	kg	16,020	16,020	16,020	16,020	16,020
284	**7.2.5**		3320.05	Columns from 61 to 150 kg/m	kg	**101,420**	101,420	101,420	101,420	101,420
285	**7.2.6**		3320.06	Columns Over 150 kg/m	kg	**174,860**	174,860	174,860	174,860	174,860
				W Beams - Rolled Sections, Painted with Intumescent Paint						
286	**7.2.7**		3320.07	W Beams Under 60 kg/m	kg	2,450	2,450	2,450	2,450	2,450
287	**7.2.8**		3320.08	W Beams from 61 to 150 kg/m	kg	251,000	251,000	251,000	251,000	251,000
288	**7.2.9**		3320.09	W Beams Over 150 kg/m	kg	358,000	358,000	358,000	358,000	358,000
289	**7.2.10**		3320.10	W Beam Stiffners and Bent Plate at Openings	kg	24,200	24,200	24,200	24,200	24,200
290	**7.2.11**		3320.11	W Beam Base Plate	kg	5,700	5,700	5,700	5,700	5,700
				WT Beams - Rolled Sections, Painted with Intumescent						
291	**7.2.12**		3320.12	WT Beams Under 60 kg/m	kg	1,550	1,550	1,550	1,550	1,550
292	**7.2.13**		3320.13	WT Beams Over 150 kg/m	kg	286,300	286,300	286,300	286,300	286,300
293	**7.2.14**		3320.14	WT Beam base plate	kg	10,550	10,550	10,550	10,550	10,550
				Columns - Rolled Sections, Painted with Intumescent Paint						
294	**7.2.15**		3320.15	Columns from 61 to 150 kg/m	kg	6,350	6,350	6,350	6,350	6,350
295	**7.2.16**		3320.16	Columns Over 150 kg/m	kg	62,700	62,700	62,700	62,700	62,700
				Columns, Built-up Sections, Painted with Intumescent Paint						
296	**7.2.17**		3320.17	Main Building Columns, in Rolled Shapes & Plates, Welded Continuously.	kg	166,500	166,500	166,500	166,500	166,500
				Columns & Girders - Built up Sections, Painted						
297	**7.2.18**		3320.18	Crane Girders in Welded Plates, 700-800 kg/m	kg	**392,100**	392,100	392,100	392,100	392,100
298	**7.2.19**		3320.19	Main Building Columns, in Rolled Shapes & Plates, Welded Continuously.	kg	674,300	674,300	674,300	674,300	674,300
				Trusses, Painted						
299	**7.2.20**		3320.20	Trusses and Wind Trusses	kg	**286,375**	286,375	286,375	286,375	286,375
				Bracings, Painted						
300	**7.2.21**		3320.21	Horizontal Bracing (WT Shapes), 31-60 kg/m	kg	76,970	76,970	76,970	76,970	76,970
301	**7.2.22**		3320.22	HSS Square Shapes for Vertical Bracing and Struts	kg	**193,900**	193,900	193,900	193,900	193,900
				Nelson Studs, not painted						
302	**7.2.23**		3320.23	Nelson Studs (Dia. 19 and 13 mm) Welded Mezzanine Beams	kg	3,305	3,305	3,305	3,305	3,305
303	**7.2.24**		3320.24	Nelson Studs (Dia. 19 and 22 mm) Welded to Generator Floor Beams	kg	15,000	15,000	15,000	15,000	15,000
				Stairs, Hot dip Galvanized						
304	**7.2.25**		3320.25	**Stair Stringers in Channels (incl. Galvanized Beams and Columns for the stairs)**	kg	62,410	62,410	62,410	62,410	62,410
305	**7.2.26**		3320.26	Stair Treads in Grating (308 mm by 914 mm), hot dip galvanized, Bent Checkered Plate Nosing, type "FLOWFORGE" by FISHER & LUDLOW or equal	each	1,624	1,624	1,624	1,624	1,624
				Landings and Walkways, Hot dip Galvanized						
306	**7.2.27**		3320.27	Gratings for Landings at Stairs, type 24-102, Bearing Bars (of approx. 32X4.8) by FISHER and LUDLOW or equal	kg	48,820	48,820	48,820	48,820	48,820
307	**7.2.28**		3320.28	Bent Plate at Floor 15.5	kg	45,000	45,000	45,000	45,000	45,000
308	**7.2.29**		3320.29	Steel Angle L102x102x7.9 at Floor 15.5	kg	2,400	2,400	2,400	2,400	2,400

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
				Steel Decking						
309	**7.2.30**		3320.30	Roof Deck type RD 306 (t=0.91mm) and type HB (t=0.91 mm) by VICWEST, Galvanized Z 275	m²	11,730	11,730	11,730	11,730	11,730
310	**7.2.31**		3320.31	Roof Deck type RD 938 (t=0.76mm) by VICWEST, Galvanized Z 275	m²	1,640	1,640	1,640	1,640	1,640
311	**7.2.32**		3320.32	Floor Deck type RD 306 (t=1.22 mm) by VICWEST - Exterior	m²	1,550	1,550	1,550	1,550	1,550
312	**7.2.33**		3320.33	Floor Deck type RD 306 (t=1.22 mm) by VICWEST - Interior	m²	3,600	3,600	3,600	3,600	3,600
				Crane Rails Accessories						
313	**7.2.34**		3320.34	Tie-Back Linkage Assemblies by GANTREX, type TL123GP, includes Plates, Angles, Shims, "O" Rings, Bolts and Permanent Lubrication	each	96	96	96	96	96
				Anchor Bolts						
314	**7.2.35**		3320.35	**Anchor Bolts Steel Grade 55 ASTM F1554 (Dia. 19 and 25 mm), U-Bolt assembly and Nuts A563, hot dip galvanized, by PORTLAND or equal**	kg	5,960	5,960	5,960	5,960	5,960
315	**7.2.36**		3320.36	Anchor Bolts Steel Grade 55 ASTM F1554 (Dia. 38 and 51 mm), Nuts A563, hot dip galvanized, by PORTLAND or equal	kg	22,800	22,800	22,800	22,800	22,800
				Guardrails in Pipes, Hot dip Galvanized						
316	**7.2.37**		3320.37	Guardrails in Pipes for Mezzanine, Stairs and Covers, with Kick Plate, Posts in DN32-XS and Railings in DN32-Std.	kg	**47,250**	47,250	47,250	47,250	47,250
317	**7.2.38**		3320.38	Guardrails of Intake Deck (W and HSS shapes)	kg	17,750	17,750	17,750	17,750	17,750
				Hilti Bolts						
318	**7.2.39**		3320.39	Hilti KWIK Bolts 3 (Dia. 25 mm) 304 SS	each	525	525	525	525	525
319	**7.2.40**		3320.40	**Hilti KWIK Bolts 3 (Dia. 10 mm and 19 mm) hot dip galvanized**	each	630	630	630	630	630
320	**7.2.41**		3320.41	Hilti Adhesive Anchors, HAS rods (Dia. 19 mm) HIT RE-500 , hot dip galvanized	each	200	200	200	200	200
				Joists						
321	**7.2.42**		3320.42	Steel Joists, by CANAM or equal	kg	2,100	2,100	2,100	2,100	2,100
				Elastomeric pad						
322	**7.2.43**		3320.43	Elastomeric Pad at Attachment Axis E	each	40	40	40	40	40
				MISCELLANEOUS STEEL						
				Miscellaneous Structural Steel, Hot dip Galvanized						
323	**7.2.44**		3320.44	Miscellaneous Structural Steel - Embedded	kg	**64,250**	64,250	64,250	64,250	64,250
324	**7.2.45**		3320.45	Miscellaneous Structural Steel, L Shapes, Plates etc.	kg	**151,330**	151,330	151,330	151,330	151,330
325	**7.2.46**		3320.46	Checkered Plates	kg	54,260	54,260	54,260	54,260	54,260
326	**7.2.47**		3320.47	Embedded angles related to typical detail for steel deck on dwg : MFA-SN-CD-3320-ST-DD-0005-01	kg	11,450	11,450	11,450	11,450	11,450
327	**7.2.48**		3320.48	Contraction joint related to section E-E on the drawing : MFA-SN-CD-3300-CV-DD-0003-01	m	40	40	40	40	40
328	**7.2.49**		3320.49	Contraction joint related to section F-F on the drawing: MFA-SN-CD-3300-CV-DD-0003-01	m	50	50	50	50	50
329	**7.2.50**		3320.50	Contraction joint related to section K-K on the drawing: MFA-SN-CD-3300-CV-DD-0003-01	m	115	115	115	115	115
				Miscellaneous Stainless steel						
330	**7.2.51**		3320.51	Miscellaneous Stainless Steel (drains in hydraulic passages and diamond expanded metal of MK1 and MK2)	kg	**6,650**	6,650	6,650	6,650	6,650
				Crane Rails, rust preventive coating						
331	**7.2.52**		3320.52	Rail type BETH 175, includes Splices and Aluminothermic Welds, for Crane Girders and for Trash Cleaner	m	720	720	720	720	720
332	**7.2.53**		3320.53	Rail type Beth 104 with Aluminothermic Welds	m	315	315	315	315	315

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
				Crane Rails Accessories						
333	**7.2.54**		3320.54	GANTREX Rail Clip type WELDLOK 43 with Rubber Nosing for Crane Girders and Trash Cleaner	each	2,160	2,160	2,160	2,160	2,160
334	**7.2.55**		3320.55	**GANTREX rail clip type WELDLOK 24 with Rubber Nosing, hot dip galvanized**	each	1,060	1,060	1,060	1,060	1,060
				Ladders, Hot dip Galvanized						
335	**7.2.56**		3320.56	Ladders with Cage including the Self-Closing Gates	kg	**15,000**	15,000	15,000	15,000	15,000
				Plates, Painted / Hot dip Galvanized						
336	**7.2.57**		3320.57	Plates 350 x 20, Under Rails BETH 175, Painted with Primer Plates 300 x 20 Under Rails BETH 175, hot dip galvanized	kg	35,500	35,500	35,500	35,500	35,500
				Landings and Walkways, Hot dip Galvanized						
337	**7.2.58**		3320.58	Grating Type HD-24-102 (bearing bars 64X4.8 or 51X4.8) and Grating Type 30-102 (bearing bars 38X4.8) by Fisher and Ludlow	kg	56,800	56,800	56,800	56,800	56,800
338	**7.2.59**		3320.59	Grating at EL 45.5 on Intake Deck, Special Order	kg	101,600	101,600	101,600	101,600	101,600
				ARCHITECTURE WORKS						
				METAL CLADDING & ROOFING						
339	**7.2.60**		3320.60	Insulated Metal Wall Panels (Sandwiched Panels. VicWest & Kingspan; refer to them as Composite Metal Building Panels)	m^2	**7,323**	7,323	7,323	7,323	7,323
340	**7.2.61**		3320.61	Preformed Metal Siding (Vertical Metal Siding fastened to Steel Stud Wall)	m^2	**508**	508	508	508	508
341	**7.2.62**		3320.62	Preformed Metal Siding & Framing (for Snow Baffles over louvers)	**m^2**	**112**	112	112	112	112
342	**7.2.63**		3320.63	Metal Liner Panel, Insulation & Z-Bars (attached to interior of pre-cast concrete fire wall)	**m^2**	**2,980**	2,980	2,980	2,980	2,980
343	**7.2.64**		3320.64	Modified Bituminous Membrane Roofing System	m^2	**8,416**	8,416	8,416	8,416	8,416
344	**7.2.65**		3320.65	Sealants (including for roofing & wall systems and pre-cast concrete fire wall joints)	**LS**	**1**	1	1	1	1
345	**7.2.66**		3320.66	Signage (Nalcor & Logo, Muskrat Falls Generating Station)	**LS**	**1**	1	1	1	1
346	**7.2.67**		3320.67	Roof Curb for Exhaust Fans	each	**9**	9	9	9	9
347	**7.2.68**		3320.68	Roof Curb for Exhaust Hood	each	**1**	1	1	1	1
348	**7.2.69**		3320.69	Roof Curb for Chimney	each	**1**	1	1	1	1
349	**7.2.70**		3320.70	Flashing for Roof Drains	each	**25**	25	25	25	25
350	**7.2.71**		3320.71	Flashing for Plumbing Vents	each	**6**	6	6	6	6
				OPENINGS						
351	**7.2.72**		3320.72	Exterior Metal Insulated Doors - Double	each	**7**	7	7	7	7
352	**7.2.73**		3320.73	Exterior Metal Insulated Doors - Single	each	**14**	14	14	14	14
353	**7.2.74**		3320.74	Aluminum Entrance Door (Insulated)	each	1	1	1	1	1
354	**7.2.75**		3320.75	Sectional Metal Insulated Door	each	2	2	2	2	2
355	**7.2.76**		3320.76	Aluminum Windows (32 Windows max)	m^2	**154**	154	154	154	154
356	**7.2.77**		3320.77	Concrete Unit Masonry (Exterior)	**m^2**	**21**	21	21	21	21
				FIRE & SAFETY ITEMS						
357	**7.2.78**		3320.78	Roof Anchors & Safety Restraints	each	**45**	45	45	45	45
				SPECIAL DOORS						
358	**7.2.79**		3320.79	Multi-Leaf Vertical Lift Metal Insulated Door	each	1	1	1	1	1
				SUB-TOTAL POWERHOUSE - SUPERSTRUCTURE						
	8	**3400**		**TURBINE GENERATOR AND ANCILLARIES**						
	8.1		**3430**	**ELECTRICAL WORK**						

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
359	8.1.1		3430.01	Exothermic Connections.	each	1,000	1,000	1,000	1,000	1,000
360	8.1.2		3430.02	Embedded Copper Grounding Plates	each	50	50	50	50	50
361	8.1.3		3430.03	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	4,700	4,700	4,700	4,700	4,700
362	8.1.4		3430.04	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	1,400	1,400	1,400	1,400	1,400
363	8.1.5		3430.05	Rigid PVC Conduit, size 78mm	m	150	150	150	150	150
364	8.1.6		3430.06	Rigid Galvanized Steel Conduits, size 152 mm	m	5	5	5	5	5
365	8.1.7		3430.07	Rigid PVC Conduit, size 129mm	m	1,000	1,000	1,000	1,000	1,000
366	8.1.8		3430.08	High Bay Light Fixture, Metal Halide, 347 Vac, complete with 1000 W lamp	each	46	46	46	46	46
367	8.1.9		3430.09	High Bay Light Fixture, Metal Halide, 347 Vac, complete with 1000 W lamp and Quartz auxiliary lamp	each	23	23	23	23	23
368	8.1.10		3430.10	Panelboard, 600/347 Vac, 3 phase, 4 wire, 42 circuit, surface mounted sprinkler-proof enclosure, complete with breakers as indicated	each	3	3	3	3	3
369	8.1.11		3430.11	Dry-Type Transformer, 75 kVA, 600-600/347 Vac	each	3	3	3	3	3
370	8.1.12		3430.12	Disconnect Switch, 600 V, 3 phase, complete with fuses	each	3	3	3	3	3
371	8.1.13		3430.13	Lighting Contactor Control Panel	each	2	2	2	2	2
372	8.1.14		3430.14	ON-OFF Pushbutton Control Station	each	4	4	4	4	4
373	8.1.15		3430.15	Teck Cables, 2C # 12 AWG	m	900	900	900	900	900
374	8.1.16		3430.16	Teck Cables, 3C # 12 AWG	m	500	500	500	500	500
375	8.1.17		3430.17	Teck Cables, 2C # 10 AWG	m	400	400	400	400	400
376	8.1.18		3430.18	Teck Cables, 4C # 10 AWG	m	500	500	500	500	500
377	8.1.19		3430.19	Temporary Feeder Cables to lighting transformers/panelboards, etc.	LS	1	1	1	1	1
				SUB-TOTAL POWERHOUSE - ELECTRICAL WORK						
	8.2		3440	**MECHANICAL WORK**						
378	8.2.1		3351	**HVAC System**	LS	**1**	1	1	1	1
			3351.01	Pipe and Fittings NPS 16, Piping Specification PA01	m	92	See Note 1			
			3351.02	Pipe and Fittings NPS 24, Piping Specification PA01	m	99				
			3351.03	HVAC Louvers	LS	1				
379	8.2.2		3352	**Domestic Wastewater System**	**LS**	**1**	1	1	1	1
			3352.01	Pipe and Fittings NPS 2, Piping Specification NB11	**m**	102	See Note 1			
			3352.02	Equipments and Other Components	LS	1				
			3352.03	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3352.04	Pipe and Fittings NPS 3, Piping Specification PA04 (HDPE-DR11)	m	0	none found			
380	8.2.3		3353	**Wastewater System**	**LS**	**1**	1	1	1	1
			3353.01	Pipe and Fittings NPS 1 1/2, Piping Specification PA01	m	4	See Note 1			
			3353.02	Pipe and Fittings NPS 3, Piping Specification PA01	m	13				
			3353.03	Pipe and Fittings NPS 4, Piping Specification PA01	m	59				
			3353.04	Flexible corrugated perforated HDPE Pipe NPS 4, covered With A Geotextile	m	82				
			3353.05	Septic Tile Field	LS	1				
			3353.06	Equipments and Other Components	LS	1				
			3353.07	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3353.08	Roof vent	each	2				
			3353.09	Pipe and Fittings NPS 3, Piping Specification PA04 (HDPE-DR11)	m	0				

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
381	**8.2.4**		**3441**	**Low Pressure Compressed Air System**	**LS**	**1**	1	1	1	1
			3441.01	Pipe and Fittings NPS 2, Piping Specification GB11	m	32	See Note 1			
			3441.02	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3441.03	Pipe and Fittings NPS 3/4, Piping Specification SB11	m	44				
			3441.04	Pipe and Fittings NPS 2, Piping Specification SB11	m	44				
382	**8.2.5**		**3443**	**Fire Protection System**	**LS**	**1**	1	1	1	1
			3443.01	Pipe and Fittings NPS 4, Piping Specification CB12	m	4	See Note 1			
			3443.02	Pipe and Fittings NPS 8, Piping Specification CB12	m	66				
			3443.03	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3443.04	Pipe and Fittings NPS 4, Piping Specification SB12	m	2				
383	**8.2.6**		**3444**	**Clear Water Drainage System**	**LS**	**1**	1	1	1	1
			3444.01	Pipe and Fittings NPS 3, Piping Specification PA01	m	5	See Note 1			
			3444.02	Pipe and Fittings NPS 4, Piping Specification PA01	m	105				
			3444.03	Pipe and Fittings NPS 6, Piping Specification PA01	m	262				
			3444.04	Pipe and Fittings NPS 8, Piping Specification PA01	m	1,045				
			3444.05	Pipe and Fittings NPS 3, Piping Specification CB11	m	463				
			3444.06	Pipe and Fittings NPS 4, Piping Specification CB11	m	951				
			3444.07	Pipe and Fittings NPS 6, Piping Specification CB11	m	858				
			3444.08	Pipe and Fittings NPS 8, Piping Specification CB11	m	214				
			3444.09	Equipments and Other Components	LS	1				
			3444.10	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3444.11	Roof drains and accessories	each	**32**				
			3444.12	Pipe and Fittings NPS 8, Piping Specification PA02	m	632				
			3444.13	Pipe and Fittings NPS 24, Piping Specification CB11	m	28				
			3444.14	Pipe and Fittings NPS 16, Piping Specification CB11	m	14				
384	**8.2.7**		**3445**	**Dewatering System**	**LS**	**1**	1	1	1	1
			3445.01	Pipe and Fittings NPS 3/4, Piping Specification SB11	m	0				
			3445.02	Pipe and Fittings NPS 2, Piping Specification SB11	m	11				
			3445.03	Pipe and Fittings NPS 8, Piping Specification CB11	m	34				
			3445.04	Pipe and Fittings NPS 12, Piping Specification CB11	m	208				
			3445.05	Pipe and Fittings NPS 20, Piping Specification CB11	m	69				
			3445.06	Pipe and Fittings NPS 24, Piping Specification CB11	m	64				
			3445.07	Pipe and Fittings NPS 30, Piping Specification CB11	m	44				
			3445.08	Equipment and Other Components	LS	1				
			3445.09	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
385	**8.2.8**		**3447**	**Oily Water Drainage System**	**LS**	**1**	1	1	1	1
			3447.01	Pipe and Fittings NPS 4, Piping Specification CB11	m	32	See Note 1			
			3447.02	Pipe and Fittings NPS 8, Piping Specification CB11	m	16				
			3447.03	Pipe and Fittings NPS 16, Piping Specification CB11	m	69				
			3447.04	Equipments and Other Components	LS	1				
			3447.05	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3447.06	**Pipe and Fittings NPS 14, Piping Specification CB11**	**m**	**100**				
386	**8.2.9**		**3448**	**Raw and Cooling Water System**	LS	1	1	1	1	1

Table 2.2 – Confirmation of Quantities by Bidder in Original Bids

PRICE ITEM No	PRICE ITEM REFERENCE EXH. 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
			3448.01	Pipe and Fittings NPS 14, Piping Specification CB11	m	258	See Note 1			
387	8.2.10		3449	**Service Water System**	LS	1	1	1	1	1
			3449.01	Pipe and Fittings NPS 3/4, Piping Specification SB11	m	44	See Note 1			
			3449.02	Pipe and Fittings NPS 2, Piping Specification SB11	m	58				
			3449.03	Pipe and Fittings NPS 3, Piping Specification SB11	m	125				
			3449.04	Pipe and Fittings NPS 6, Piping Specification CB11	m	8				
			3449.05	Pipe and Fittings NPS 8, Piping Specification CB11	m	59				
			3449.06	Equipments and Other Components	LS	1				
			3449.07	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3449.08	Pipe and Fittings NPS 4, Piping Specification PA04 (HDPE-DR11)	m	0	none found			
388	8.2.11		344C	**Piezometer and Water Level System**	LS	1	1	1	1	1
			344C.01	Pipe and Fittings NPS 6, Piping Specification SA11	m	83	See Note 1			
			344C.02	Pipe and Fittings NPS 3, Piping Specification SB11	m	2,064				
			344C.03	Pipe and Fittings NPS 1/2, Piping Specification JD01	m	2,037				
				SUB-TOTAL POWERHOUSE - MECHANICAL WORKS						
	9	3500		**WORK EXECUTED FOR COMPANY'S OTHER CONTRACTOR**						
	9.1		3510	**Supply of Concrete to Company's Other Contractors at the Batch Plant (excluding delivery from the Batch Plant to the Pour Location)**						
389	9.1.1		3510.01	Supply of Secondary Concrete - Class A2	m^3	7,500	7,500	7,500	7,500	7,500
390	9.1.2		3510.02	Supply of Concrete - Class A	m^3	1,000	1,000	1,000	1,000	1,000
391	9.1.3		3510.03	Supply of Concrete - Class B	m^3	14,500	14,500	14,500	14,500	14,500
				SUB-TOTAL SUBCONTRACTING WORKS FOR OTHERS						
	10	3600		**MISCELLANEOUS - RATE ONLY**						
	10.1		3610	**Hilti Adhesive Anchors**						
392	10.1.1		3610.01	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 16 mm), hot dip galvanized	each	100	100	100	100	100
393	10.1.2		3610.02	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 19 mm), hot dip galvanized	each	100	100	100	100	100
394	10.1.3		3610.03	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 25 mm), hot dip galvanized	each	100	100	100	100	100
	10.2		3620	**Precast Sandwich Insulated Panel**						
395	10.2.1		3620.01	Precast Sandwich Insulated Panel	m^2	2,520	2,520	2,520	2,520	2,520

Economic Analyst Steve Goulding

Signed

Date: 25-Sep-13

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
	2	0000		**INDIRECT COSTS**						
1	2.1		0000.01	Mobilization	LS	1	18,253	16,062	91,148	12,057
2	2.2		0000.02	Site Installation	LS	1	68,455	62,920	15,066	12,800
3	2.3		0000.03	Contractor Equipment for Indirects	LS	1	304,957	39,392	0	70,436
4	2.4		0000.04	Temporary Works	LS	1	186,063	41,672	18,200	17,925
5	2.5		0000.05	Winter Protection	LS	1	184,321	66,407	250,000	1,514
6	2.6		0000.06	Management and Staff	LS	1	2,239,780	2,377,882	1,090,000	622,178
6A	2.6A		0000.06A	Design and Technical Assistance	LS	1	177,360	150,200	7,598	116,445
7	2.7		0000.07	Attendant labour	LS	1	458,569	479,400	837,000	106,491
8	2.8		0000.08	Services	LS	1	203,550	68,385	336,000	13,122
9	2.9		0000.09	Employee Training	LS	1	126,000	31,450	10,000	2,171
10	2.10		0000.10	Health and Safety Requirements	LS	1	159,918	122,000	36,412	144,496
11	2.11		0000.11	Environmental Requirements	LS	1	22,007	32,800	18,000	59,482
12	2.12		0000.12	Quality Assurance / Quality Control	LS	1	226,312	202,000	81,860	109,477
13	2.13		0000.13	Letters of Credit	LS	1	0	0	0	0
14	2.14		0000.14	Parent Guarantee	LS	1	0	0	0	0
15	2.15		0000.15	Contractor Insurance, per Article 18 of the Agreement	LS	1	0	0	0	0
16	2.16		0000.16	Warranty, per Article 17 of the Agreement	LS	1	0	0	0	0
17	2.17		0000.17	Site Maintenance	LS	1	95,339	93,886	94,000	32,887
17A	2.17A		0000.17A	Maintenance Grade No. 3 Material	m^3	7,200	0	1,944	1,584	0
17B	2.17B		0000.17B	Coarse Sand	m^3	2,900	250	812	464	0
17C	2.17C		0000.17C	Calcium Chloride (20 kg bag)	each	12,500	200	0	750	0
18	2.18		0000.18	Financing, Contingency, Head Office Overheads, & Consultant Fees	LS	1	0	0	0	0
19	2.19		0000.19	Demobilization	LS	1	478	2,088	9,400	20,515
19A	2.19A		0000.19A	Estimate of Travel Allowances - Trades Labour	NA	NA	0	0	0	0
				SUB-TOTAL INDIRECT COSTS						
	3	0000		**GENERAL**						
	3.1		1110	**ACCESS ROADS TO SPILLWAY, ACCESS RAMPS AND PADS FOR COMPANY'S OTHER CONTRACTORS**						
20	3.1.1		1110.01	Overburden Excavation	m^3	6,400	354	704	320	1,292
21	3.1.2		1110.02	Zone 3C Material	m^3	3,960	433	871	331	645
22	3.1.3		1110.03	Zone 3D Material	m^3	8,360	914	1,839	660	1,242
23	3.1.4		1110.04	Granular "B" Material	m^3	1,250	177	488	126	208
24	3.1.5		1110.05	Granular "C" Material	m^3	1,250	102	488	126	216
25	3.1.6		1110.06	Concrete Culvert 600 mm	m	45	94	8	70	283
	3.2		1120	**DEWATERING OF STRUCTURE AREAS**						
26	3.2.1		1120.01	Structure Areas	LS	1	16,279	10,863	13,467	8,384
	3.3		1150	**TEMPORARY BRIDGE**						
27	3.3.1		1150.01	Temporary Downstream Bridge over the Spillway	LS	1	501	7,938	9,382	12,859
	3.4		1170	**CONSTRUCTION CRANE**						
28	3.4.1		1170.01	Powerhouse – Construction Crane	LS	1	0	16,698	1,050	235
	3.5		1180	**Temporary Heating, Ventilating and Lighting of Powerhouse**						
29	3.5.1		1180.01	Temporary Heating, Ventilating and Lighting of Powerhouse	LS	1	34,808	1,801	4,775	18,000

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
	3.6		**1190**	**Chain Link Fences and Gates**						
30	**3.6.1**		1190.01	Chain Link Fences and Gates in the Powerhouse Parking and Contractor's Laydown Areas	m	50	0	65	56	350
	3.7		**1200**	**Temporary Lateral Support and Bracings**						
31	**3.7.1**		1200.01	Temporary Lateral Support and Bracings for Piers of the Spillway	LS	1	2,566	290	565	1,514
	3.8		**1210**	**Anchor Points**						
32	**3.8.1**		1210.01	Anchor Points at Powerhouse and Spillway	each	50	520	373	100	181
				SUB-TOTAL GENERAL						
	4	**2360**		**TRANSITION DAMS**						
	4.1		**2361**	**NORTH TRANSITION DAM**						
				CIVIL WORK						
				Excavation						
33	**4.1.1**		2361.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	650	60	221	117	111
				Foundation Preparation						
34	**4.1.2**		2361.02	Dental Excavation	m^3	30	38	8	47	33
35	**4.1.3**		2361.03	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	430	430	52	598	214
36	**4.1.4**		2361.04	Dental Concrete	m^3	70	421	109	133	143
37	**4.1.5**		2361.05	Dry Pack	m^3	3	40	5	31	8
				Drilling, Pressure Grouting and Drainage						
38	**4.1.6**		2361.06	Grouting Holes	m	200	101	178	214	115
39	**4.1.7**		2361.07	Grouting - Successful Connections	each	40	195	135	80	168
40	**4.1.8**		2361.08	Dry Cement for Grouting	kg	7,000	56	350	140	56
41	**4.1.9**		2361.09	Water Pressure Tests (Lugeon)	hour	4	12	40	1	18
42	**4.1.10**		2361.10	Water Pressure Tests - Successful Connections	each	10	49	15	50	92
43	**4.1.11**		2361.11	Uplift Gauges	m	25	19	27	85	175
44	**4.1.12**		2361.12	Thermistors	each	1	13	23	53	6
45	**4.1.13**		2361.13	Rotary/Percussion Drill Check Holes	m	25	11	17	80	113
46	**4.1.14**		2361.14	Cored (Diamond drill) holes	m	25	0	67	80	109
47	**4.1.15**		2361.15	Drainage Holes	m	65	127	48	38	79
48	**4.1.16**		2361.16	PVC Caps for Drainage Holes	each	5	8	4	60	3
49	**4.1.17**		2361.17	Survey Monuments	each	1	17	2	6	5
				CONCRETE WORK						
50	**4.1.18**		2361.18	Concrete	m^3	9,130	54,763	33,142	42,455	29,928
51	**4.1.19**		2361.19	PVC Waterstop - TYPE B (225 mm width)	m	330	660	89	663	89
52	**4.1.20**		2361.20	Hydrophilic Waterstop	m	90	180	24	180	20
53	**4.1.21**		2361.21	Bituminous Coating at Contraction Joints	m^2	570	285	302	211	1,256
				REINFORCEMENT, ANCHORS AND DOWELS						
54	**4.1.22**		2361.22	Reinforcement including Dowels	kg	44,100	712	882	882	3,322
				STRUCTURAL STEEL AND MISCELLANEOUS METAL						
				Supply and Installation of Non Embedded Miscellaneous Metal						
55	**4.1.23**		2361.23	Galvanized Miscellaneous Steel	kg	11,300	0	565	899	687
56	**4.1.24**		2361.24	Galvanized Grating	kg	1,860	0	56	45	113
				Embedded Miscellaneous Metals						
57	**4.1.25**		2361.25	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	90	14	5	4	11

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
58	4.1.26		2361.26	**Anchor Bolts Grade 55 ASTM F1554**	kg	535	27	32	139	43
				ELECTRICAL WORK						
59	4.1.27		2361.27	Exothermic Connections.	each	30	24	80	0	75
60	4.1.28		2361.28	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	200	60	82	0	118
61	4.1.29		2361.29	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	25	4	6	0	7
				SUB-TOTAL NORTH TRANSITION DAM						
	4.2		2362	**CENTRE TRANSITION DAM**						
				CIVIL WORK						
				Excavation						
62	4.2.1		2362.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	2,100	193	714	378	358
				Foundation Preparation						
63	4.2.2		2362.02	Dental Excavation	m^3	80	1,157	22	123	87
64	4.2.3		2362.03	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	1,430	1,430	172	1,902	711
65	4.2.4		2362.04	Dental Concrete	m^3	215	100	333	357	439
66	4.2.5		2362.05	Dry Pack	m^3	10	134	17	76	26
				Drilling, Pressure Grouting and Drainage						
67	4.2.6		2362.06	Grouting Holes	m	600	304	534	636	345
68	4.2.7		2362.07	Grouting - Successful Connections	each	120	591	404	240	505
69	4.2.8		2362.08	Dry Cement for Grouting	kg	20,000	160	1,000	400	159
70	4.2.9		2362.09	Water Pressure Tests (Lugeon)	hour	4	12	40	25	18
71	4.2.10		2362.10	Water Pressure Tests - Successful Connections	each	10	49	15	50	92
72	4.2.11		2362.11	Uplift Gauges	m	30	23	32	90	211
73	4.2.12		2362.12	Thermistors	each	1	13	23	53	6
74	4.2.13		2362.13	Rotary/Percussion Drill Check Holes	m	25	11	17	80	113
75	4.2.14		2362.14	Cored (Diamond drill) holes	m	25	0	67	80	109
76	4.2.15		2362.15	Drainage Holes	m	200	390	148	120	244
77	4.2.16		2362.16	PVC Caps for Drainage Holes	each	20	30	16	240	11
				Geotechnical Instrumentation						
78	4.2.17		2362.17	Survey Monuments	each	5	84	9	26	24
79	4.2.18		2362.18	Hydraulic piezometers	each	3	22	8	41	244
80	4.2.19		2362.19	V-Notch Weirs	each	1	12	3	4	8
				CONCRETE WORK						
81	4.2.20		2362.20	Concrete Below El. 42.30 m	m^3	27,200	147,199	106,352	127,840	116,360
82	4.2.21		2362.21	Concrete Above El. 42.30 m	m^3	2,230	17,717	8,608	11,819	9,540
83	4.2.22		2362.22	Concrete - Slab on Steel Deck	m^3	130	2,439	480	2,340	594
84	4.2.23		2362.23	Grout	m^3	17	1,700	35	125	17
85	4.2.24		2362.24	PVC Waterstop - TYPE B (225 mm width)	m	770	1,540	208	1,548	173
86	4.2.25		2362.25	Bituminous Coating at Contraction Joint	m^2	3,060	1,530	1,622	1,132	6,741
				REINFORCEMENT, ANCHORS AND DOWELS						
87	4.2.26		2362.26	Reinforcement including Dowels	kg	133,000	2,145	2,660	2,527	10,020
				SUPPLY AND INSTALLATION OF STRUCTURAL STEEL						
88	4.2.27		2362.27	Painted Structural Steel	kg	76,500	0	2,295	2,295	6,692
				STRUCTURAL STEEL AND MISCELLANEOUS METAL						

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM No	PRICE ITEM REFERENCE EXH. 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
				Supply and Installation of Non Embedded Miscellaneous Metal						
89	**4.2.28**		2362.28	Galvanized Miscellaneous Steel	kg	32,500	0	1,625	2,200	1,975
90	**4.2.29**		2362.29	Galvanized Grating	kg	460	0	14	11	28
				Embedded Miscellaneous Metals						
91	**4.2.30**		2362.30	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	15,650	2,504	939	4,069	1,322
				Metal Decking including Shear Studs (Galvanized)						
92	**4.2.31**		2362.31	Steel deck type RD 306 (t=0.91 mm)	m^2	400	0	200	60	245
93	**4.2.32**		2362.32	Shear Studs	kg	4,200	0	252	450	268
				Crane Rails including Fastening System and Accessories						
94	**4.2.33**		2362.33	Rails for Trash Cleaning System	m	140	0	196	700	59
95	**4.2.34**		2362.34	**Anchor Bolts Grade 55 ASTM F1554**	kg	5,500	275	330	1,705	444
96	**4.2.35**		2362.35	**Elastomeric Bearing Pads**	each	21	147	7	82	900
				ELECTRICAL WORK						
97	**4.2.36**		2362.36	Exothermic Connections.	each	110	121	292	0	277
98	**4.2.37**		2362.37	Embedded Copper Grounding Plates	each	2	11	7	0	9
99	**4.2.38**		2362.38	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	450	135	185	0	266
100	**4.2.39**		2362.39	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	125	19	28	0	36
101	**4.2.40**		2362.40	Rigid PVC Conduit, size 41mm	m	**100**	43	63	0	71
102	**4.2.41**		2362.41	Rigid PVC Conduit, size 78mm	m	25	18	25	0	30
103	**4.2.42**		2362.42	Rigid PVC Conduit, size 129mm	m	40	64	84	0	88
104	**4.2.43**		2362.43	Junction Box, size 200 x 200 x 150 mm Complete with Traffic Rated Cover.	each	2	6	4	0	7
				SUB-TOTAL CENTRE TRANSITION DAM						
	4.3		**2363.00**	**SOUTH TRANSITION DAM**						
				CIVIL WORK						
				Excavation						
105	**4.3.1**		2363.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	1,350	124	459	243	230
				Foundation Preparation						
106	**4.3.2**		2363.02	Dental Excavation	m^3	45	56	13	76	49
107	**4.3.3**		2363.03	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	900	900	108	1,205	448
108	**4.3.4**		2363.04	Dental Concrete	m^3	135	814	209	221	276
109	**4.3.5**		2363.05	Dry Pack	m^3	6	80	10	62	16
				Drilling, Pressure Grouting and Drainage						
110	**4.3.6**		2363.06	Grouting Holes	m	500	254	445	531	288
111	**4.3.7**		2363.07	Grouting - Successful Connections	each	100	492	337	200	421
112	**4.3.8**		2363.08	Dry Cement for Grouting	kg	18,000	144	900	338	143
113	**4.3.9**		2363.09	Water Pressure Tests (Lugeon)	hour	5	16	50	31	23
114	**4.3.10**		2363.10	Water Pressure Tests - Successful Connections	each	12	59	17	60	110
115	**4.3.11**		2363.11	Uplift Gauges	m	30	23	32	90	211
116	**4.3.12**		2363.12	Thermistors	each	1	13	23	52	6
117	**4.3.13**		2363.13	Rotary/Percussion Drill Check Holes	m	30	13	21	96	136
118	**4.3.14**		2363.14	Cored (Diamond drill) holes	m	30	0	80	96	130
119	**4.3.15**		2363.15	Drainage Holes	m	225	439	167	131	275
120	**4.3.16**		2363.16	PVC Caps for Drainage Holes	each	15	23	12	180	8

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM No	PRICE ITEM REFERENCE EXH. 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
				Geotechnical Instrumentation						
121	**4.3.17**		2363.17	Survey Monuments	each	4	67	7	21	19
122	**4.3.18**		2363.18	Hydraulic piezometers	each	2	15	6	27	170
123	**4.3.19**		2363.19	V-Notch Weirs	each	1	12	3	4	8
				CONCRETE WORK						
124	**4.3.20**		2363.20	Concrete	m^3	**9,700**	66,761	35,987	51,410	31,796
125	**4.3.21**		2363.21	PVC Waterstop - TYPE B (225 mm width)	m	**450**	900	122	927	101
126	**4.3.22**		2363.22	Hydrophilic Waterstop	m	100	200	27	200	22
127	**4.3.23**		2363.23	Bituminous Coating at Contraction Joints	m^2	**680**	340	360	252	1,498
				REINFORCEMENT, ANCHORS AND DOWELS						
128	**4.3.24**		2363.24	Reinforcement including Dowels	kg	**180,000**	2,903	3,600	3,060	13,561
				STRUCTURAL STEEL AND MISCELLANEOUS METAL						
				Supply and Installation of Non Embedded Miscellaneous Metal						
129	**4.3.25**		2363.25	Galvanized Miscellaneous Steel	kg	**14,500**	0	725	1,001	881
130	**4.3.26**		2363.26	Galvanized Grating	kg	**300**	0	9	7	18
				Embedded Miscellaneous Metals						
131	**4.3.27**		2363.27	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	**100**	16	5	109	8
132	**4.3.28**		2363.28	**Anchor Bolts Grade 55 ASTM F1554**	kg	**1,350**	68	81	473	109
				ELECTRICAL WORK						
133	**4.3.29**		2363.29	Exothermic Connections.	each	**100**	390	265	0	251
134	**4.3.30**		2363.30	Embedded Copper Grounding Plates	each	**1**	2	4	0	5
135	**4.3.31**		2363.31	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	**450**	135	185	0	266
136	**4.3.32**		2363.32	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	**100**	150	22	0	29
137	**4.3.33**		2363.33	Rigid PVC Conduit, size 41mm	m	**60**	26	38	0	43
				SUB-TOTAL SOUTH TRANSITION DAM						
	4.4		**2364**	**SEPARATION WALL**						
				CIVIL WORK						
				Foundation Preparation						
138	**4.4.1**		2364.01	Dental Excavation	m^3	50	63	14	74	54
139	**4.4.2**		2364.02	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	900	900	108	1,205	448
140	**4.4.3**		2364.03	Dental Concrete	m^3	130	784	202	221	266
141	**4.4.4**		2364.04	Dry Pack	m^3	6	80	10	62	16
				CONCRETE WORK						
142	**4.4.5**		2364.05	Concrete - Separation Wall	m^3	**10,850**	73,397	50,995	59,675	46,416
143	**4.4.6**		2364.06	PVC Waterstop - TYPE B (225 mm width)	m	60	120	16	125	16
144	**4.4.7**		2364.07	Hydrophilic Waterstop	m	15	30	4	30	3
145	**4.4.8**		2364.08	Bituminous Coating at Contraction Joint	m^2	810	405	429	300	1,784
				SUB-TOTAL SEPARATION WALL						
	5	**2400**		**SPILLWAY**						
	5.1		**2410**	**SPILLWAY STRUCTURE**						
				CIVIL WORK						
				Excavation and Backfill						

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
146	**5.1.1**		2410.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	7,600	667	2,584	1,368	1,297
				Drilling, Pressure Grouting and Drainage						
147	**5.1.2**		2410.02	Grouting Holes	m	650	330	579	691	374
148	**5.1.3**		2410.03	Grouting - Successful Connections	each	130	640	438	260	547
149	**5.1.4**		2410.04	Dry Cement for Grouting	kg	23,000	184	1,150	445	183
150	**5.1.5**		2410.05	Water Pressure Tests (Lugeon)	hour	4	12	40	25	18
151	**5.1.6**		2410.06	Water Pressure Tests - Successful Connections	each	10	49	15	50	92
152	**5.1.7**		2410.07	Uplift Gauges	m	30	23	32	90	211
153	**5.1.8**		2410.08	Thermistors	each	1	13	23	53	6
154	**5.1.9**		2410.09	Rotary/Percussion Drill Check Holes	m	25	11	17	80	113
155	**5.1.10**		2410.10	Cored (Diamond drill) holes	m	25	0	67	80	109
				Instrumentation						
156	**5.1.11**		2410.11	Survey Monuments	each	6	101	11	32	29
				Foundation preparation						
157	**5.1.12**		2410.12	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	5,100	5,100	612	6,834	2,537
				CONCRETE WORK						
				Spillway and Related Structures including Retaining Walls						
158	**5.1.13**		2410.13	Concrete - Slabs	m^3	13,100	67,807	32,226	25,545	52,027
159	**5.1.14**		2410.14	Concrete - Piers and Walls	m^3	32,900	382,430	237,209	414,540	162,209
160	**5.1.15**		2410.15	Concrete - Rollways	m^3	19,500	117,185	47,385	62,595	74,429
161	**5.1.16**		2410.16	Demolition of Slab for Rollway Key	m^3	200	2,091	94	1,170	219
162	**5.1.17**		2410.17	Overbreak Concrete	m^3	3,000	14,720	5,400	7,560	6,131
163	**5.1.18**		2410.18	Grout	m^3	20	2,000	42	151	52
164	**5.1.19**		2410.19	PVC Waterstop - TYPE A (150 mm width)	m	8,500	17,000	2,295	17,075	1,908
165	**5.1.20**		2410.20	Hydrophilic Waterstop	m	2,850	5,700	770	5,700	640
166	**5.1.21**		2410.21	Bituminous Coating at Contraction Joint	m^2	950	475	504	352	2,093
				REINFORCEMENT, ANCHORS AND DOWELS						
167	**5.1.22**		2410.22	Reinforcement including Dowels	kg	3,612,000	56,453	72,240	68,628	272,115
168	**5.1.23**		2410.23	Drill Holes and Grouting for Rock Dowels	m	8,000	0	17,920	4,000	11,272
169	**5.1.24**		2410.24	Threaded Rebars with Couplers	kg	192,000	4,920	7,680	3,456	11,667
				STRUCTURAL STEEL AND MISCELLANEOUS METAL						
				Non Embedded Miscellaneous Metal						
170	**5.1.25**		2410.25	Non Embedded Galvanized Miscellaneous Steel	kg	350	0	21	28	21
171	**5.1.26**		2410.26	Non Embedded Galvanized Grating	kg	250	0	8	8	15
				Embedded Miscellaneous Metals						
172	**5.1.27**		2410.27	Embedded Galvanized Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	100	16	5	290	8
173	**5.1.28**		2410.28	Expanded Sheet Metal - Rollway Joints	kg	4,000	4,800	200	320	338
				Crane Rails including Fastening System and Accessories						
174	**5.1.29**		2410.29	Rails for Trash Cleaning System	m	150	0	210	1,200	63
175	**5.1.30**		2410.30	**Anchor Bolts Grade 55 ASTM F1554**	kg	1,700	85	102	136	165
				ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS						
176	**5.1.31**		2410.31	Anchors and Templates in Primary Concrete for Gates (5 Sets)	kg	85,900	11,167	1,718	3,866	6,940
177	**5.1.32**		2410.32	Anchors and Templates in Primary Concrete for Upstream Stoplogs (5 Sets)	kg	70,700	9,204	1,414	3,182	5,998
178	**5.1.33**		2410.33	Anchors and Templates in Primary Concrete for Permanent Stoplogs (5 Sets)	kg	39,300	5,109	786	1,769	3,366

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
179	5.1.34		2410.34	Anchors and Templates in Primary Concrete for Downstream Stoplogs (5 Sets)	kg	14,200	1,846	284	639	1,239
180	5.1.35		2410.35	Anchors and Templates in Primary Concrete for Hoist Towers (5 Sets)	kg	430	22	9	24	38
181	5.1.36		2410.36	Anchors and Templates in Primary Concrete for Walkways (5 Sets)	kg	200	10	4	11	19
182	5.1.37		2410.37	Liner Plates in sides of Piers	each	10	672	15	530	74
				ELECTRICAL WORK						
183	5.1.38		2410.38	Exothermic Connections.	each	360	169	954	0	904
184	5.1.39		2410.39	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	1,600	480	656	0	944
185	5.1.40		2410.40	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	550	83	121	0	160
186	5.1.41		2410.41	Rigid PVC Conduit, size 53mm	m	120	54	95	0	102
				SUB-TOTAL SPILLWAY STRUCTURE						
	5.2		2411	**SPILLWAY BRIDGES**						
				CONCRETE WORK						
187	5.2.1		2411.01	Concrete - Slab on Bridge Deck	m^3	450	9,741	1,499	12,600	2,218
				REINFORCEMENT, ANCHORS AND DOWELS						
188	5.2.2		2411.02	Reinforcement including Dowels	kg	110,000	1,719	2,200	2,090	8,287
				STRUCTURAL STEEL AND MISCELLANEOUS METAL						
				Structural Steel						
189	5.2.3		2411.03	Structural Steel - Painted/Galvanized Sections	kg	**245,500**	0	4,910	7,365	17,747
				Non Embedded Miscellaneous Metal						
190	5.2.4		2411.04	Non Embedded Galvanized Miscellaneous Steel	kg	**40,650**	0	2,439	3,252	2,470
191	5.2.5		2411.05	Non Embedded Galvanized Grating	kg	**26,550**	0	797	799	1,613
				Embedded Miscellaneous Metals						
192	5.2.6		2411.06	Embedded Galvanized Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	**17,850**	2,856	893	2,678	1,507
193	5.2.7		2411.07	**Elastomeric Bearing Pads**	each	**110**	770	36	450	591
194	5.2.8		2411.08	**Bridge Expansion Joints**	each	16	800	5	209	1,290
195	5.2.9		2411.09	**Anchor Bolts Grade 55 ASTM F1554**	kg	**4,455**	223	267	1,648	360
				SUB-TOTAL SPILLWAY BRIDGES						
	5.3		2430	**SPILLWAY DISCHARGE CHANNEL - PHASE 1**						
				CIVIL WORK						
				Foundation preparation						
196	5.3.1		2430.01	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	2,880	2,880	346	3,859	1,432
				CONCRETE WORK						
197	5.3.2		2430.02	Concrete - Slabs (CVC)	m^3	1,725	11,796	6,728	14,663	6,584
198	5.3.3		2430.03	Concrete - Walls (CVC)	m^3	700	13,143	4,480	12,495	2,752
199	5.3.4		2430.04	Overbreak Concrete	m^3	1,600	9,482	2,672	4,336	3,270
				REINFORCEMENT, ANCHORS AND DOWELS						
200	5.3.5		2430.05	Reinforcement including Dowels	kg	145,000	2,629	2,900	2,755	10,924
201	5.3.6		2430.06	Drill Holes and Grouting for Rock Dowels	m	3,650	0	8,176	183	5,143
				SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 1						
	5.4		2431	**SPILLWAY DISCHARGE CHANNEL - PHASE 2 - OPTIONAL**						
				CIVIL WORK						

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM No	PRICE ITEM REFERENCE EXH. 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
				Foundation preparation						
202	**5.4.1**		2431.01	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	1,440	1,440	0	1,930	716
				CONCRETE WORK						
203	**5.4.2**		2431.02	Concrete - Slabs (CVC)	m^3	850	4,914	0	5,228	3,245
204	**5.4.3**		2431.03	Concrete - Walls (CVC)	m^3	300	3,947	0	4,200	1,479
205	**5.4.4**		2431.04	Overbreak Concrete	m^3	700	3,560	0	1,904	1,431
				REINFORCEMENT, ANCHORS AND DOWELS						
206	**5.4.5**		2431.05	Reinforcement including Dowels	kg	90,000	1,630	0	1,485	6,780
207	**5.4.6**		2431.06	Drill Holes and Grouting for Rock Dowels	m	1,900	0	0	95	2,677
				SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 2						
	5.5		**2432**	**SPILLWAY DISCHARGE CHANNEL - PHASE 3 - OPTIONAL**						
				CIVIL WORK						
				Foundation preparation						
208	**5.5.1**		2432.01	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	3,400	3,400	0	4,556	1,691
				CONCRETE WORK						
209	**5.5.2**		2432.02	Concrete - Slabs (CVC)	m^3	2,000	12,696	0	12,400	7,634
210	**5.5.3**		2432.03	Concrete - Walls (CVC)	m^3	200	3,274	0	2,300	986
211	**5.5.4**		2432.04	Overbreak Concrete	m^3	2,000	11,323	0	5,580	4,088
				REINFORCEMENT, ANCHORS AND DOWELS						
212	**5.5.5**		2432.05	Reinforcement including Dowels	kg	160,000	2,899	0	2,640	12,054
213	**5.5.6**		2432.06	Drill Holes and Grouting for Rock Dowels	m	4,600	0	0	230	6,481
				SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 3						
	6	**3200**		**INTAKE**						
	6.1		**3220**	**INTAKE STRUCTURE**						
				CIVIL WORK						
				Drilling, Pressure Grouting and Drainage						
214	**6.1.1**		3220.01	Grouting Holes	m	2,000	1,015	1,780	2,125	1,150
215	**6.1.2**		3220.02	Grouting - Successful Connections	each	400	1,970	1,348	800	1,683
216	**6.1.3**		3220.03	Dry Cement for grouting	kg	70,000	560	3,500	1,350	556
217	**6.1.4**		3220.04	Water Pressure Tests (Lugeon)	hour	8	25	80	50	37
218	**6.1.5**		3220.05	Water Pressure Tests - Successful Connections	each	20	98	29	100	184
219	**6.1.6**		3220.06	Uplift Gauges	m	30	23	32	90	211
220	**6.1.7**		3220.07	Thermistors	each	1	13	23	53	6
221	**6.1.8**		3220.08	Rotary/Percussion Drill Check Holes	m	50	22	35	160	227
222	**6.1.9**		3220.09	Cored (Diamond drill) holes	m	50	0	134	160	217
223	**6.1.10**		3220.10	Drainage Holes	m	800	1,559	592	463	977
224	**6.1.11**		3220.11	PVC Caps for Drainage Holes	each	50	75	41	600	28
				Foundation preparation						
225	**6.1.12**		3220.12	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	4,900	4,900	588	6,566	2,437
				Geotechnical Instrumentation						
226	**6.1.13**		3220.13	Survey Monuments	each	4	67	7	21	19
227	**6.1.14**		3220.14	V-Notch Weirs	each	2	24	6	8	16

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM No	PRICE ITEM REFERENCE EXH. 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
				CONCRETE WORK						
				CONCRETE INTAKE & GATE HOIST BUILDING						
228	**6.1.15**		3220.15	Concrete - Substructure below El. 45.5 m	m^3	143,850	1,379,403	625,748	791,175	709,232
229	**6.1.16**		3220.16	Concrete - Gate Hoist Building and Elevator Room above El. 45.5 m	m^3	1,600	90,257	15,472	91,072	7,889
230	**6.1.17**		3220.17	Overbreak Concrete	m^3	3,000	31,608	4,920	7,560	6,131
231	**6.1.18**		3220.18	Grout	m^3	30	3,000	62	225	78
232	**6.1.19**		3220.19	PVC Waterstop - TYPE A (150 mm width)	m	11,500	23,000	3,105	23,100	2,582
233	**6.1.20**		3220.20	PVC Waterstop - TYPE B (225 mm width)	m	650	1,300	176	1,304	146
234	**6.1.21**		3220.21	Sealing of Joints	m	100	110	27	45	41
235	**6.1.22**		3220.22	Bituminous Coating at Construction Joints	m^2	6,020	3,010	3,191	2,227	13,262
				REINFORCEMENT, ANCHORS AND DOWELS						
236	**6.1.23**		3220.23	Reinforcement including Dowels	kg	9,251,000	200,091	277,530	231,275	696,938
				INSTALLATION OF ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS						
237	**6.1.24**		3220.24	Anchors and Templates in Primary Concrete for Intake Gates (12 Sets)	kg	**165,500**	21,515	3,310	7,448	13,371
238	**6.1.25**		3220.25	Anchors and Templates in Primary Concrete for Intake Trashracks (12 Sets)	kg	82,000	10,660	1,640	3,690	6,625
239	**6.1.26**		3220.26	Anchors and Templates in Primary Concrete for Intake Stoplogs (12 Sets)	kg	144,800	18,824	2,896	6,516	11,699
	6.2		**3290**	**INTAKE - ELECTRICAL WORK**						
240	**6.2.1**		3290.01	Exothermic Connections.	each	575	230	1,524	0	1,438
241	**6.2.2**		3290.02	Embedded Copper Grounding Plates	each	6	14	22	0	13
242	**6.2.3**		3290.03	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	2,000	600	820	0	1,180
243	**6.2.4**		3290.04	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	1,300	195	286	0	377
				SUB-TOTAL INTAKE STRUCTURE						
	7	**3300**		**POWERHOUSE**						
	7.1		**3310**	**SUBSTRUCTURE**						
				CIVIL WORK						
				Drilling, Pressure Grouting and Drainage						
244	**7.1.1**		3310.01	Grouting Holes	m	800	406	712	850	460
245	**7.1.2**		3310.02	Grouting - Successful Connections	each	160	788	539	320	673
246	**7.1.3**		3310.03	Dry Cement for Grouting	kg	28,000	224	1,400	540	223
247	**7.1.4**		3310.04	Water Pressure Tests (Lugeon)	hour	4	12	40	25	18
248	**7.1.5**		3310.05	Water Pressure Tests - Successful Connections	each	10	33	15	50	92
249	**7.1.6**		3310.06	Uplift Gauges	m	25	19	27	85	175
250	**7.1.7**		3310.07	Thermistors	each	1	13	23	53	6
251	**7.1.8**		3310.08	Rotary/Percussion Drill Check Holes	m	25	11	17	80	113
252	**7.1.9**		3310.09	Cored (Diamond drill) holes	m	25	0	67	80	109
				Foundation preparation						
253	**7.1.10**		3310.10	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	10,400	10,400	1,248	13,936	5,173
				Trench for Interconnection Cables and Pipes						
254	**7.1.11**		3310.11	Fill Excavation and Backfill	LS	1	1,305	4,632	150	15,593
255	**7.1.12**		3310.12	Ductbank	LS	1	28	6,012	4	556
256	**7.1.13**		3310.13	Manholes	each	3	0	7	21	36
				CONCRETE WORK						
257	**7.1.14**		3310.14	Concrete - Powerhouse Substructure below El. 6.5 m	m^3	137,900	1,066,064	463,344	841,190	679,896

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
258	7.1.15		3310.15	Concrete - Substructure between lines 6 and 7, including Sump Pit, Shafts for Stair & Elevator up to El. 45.5m	m^3	14,600	201,356	149,942	113,880	57,383
259	7.1.16		3310.16	**Concrete - Slabs and Walls between El. 6.5 and 15.5, including North and South Service Bays, Slab on grade, Basins and Bases for GSU transformer up to El. 16.8 m. Air vent enclosures on Powerhouse tailrace deck and North Service Bay, Access enclosure to stair no. 8 and Oil/Water separator enclosure.**	m^3	7,300	202,420	70,810	204,400	35,991
260	7.1.17		3310.17	Concrete - Slab on Steel Deck including Mezzanines	m^3	3,200	20,442	5,024	19,552	15,777
261	7.1.18		3310.18	Secondary Concrete of Draft Tube Cone Steel liner	m^3	2,420	15,545	9,123	7,623	11,931
262	7.1.19		3310.19	Overbreak Concrete	m^3	8,500	36,113	14,195	14,450	17,371
263	7.1.20		3310.20	Grout	m^3	15	1,500	31	113	15
264	7.1.21		3310.21	PVC Waterstop - TYPE A (150 mm width)	m	12,600	25,200	3,402	25,300	2,829
265	7.1.22		3310.22	PVC Waterstop - TYPE B (225 mm width)	m	1,300	2,600	351	2,608	350
266	7.1.23		3310.23	Metallic Waterstop	m	370	740	100	760	79
267	7.1.24		3310.24	Sealing of Joints	m	300	330	81	135	122
268	7.1.25		3310.25	Polyethylene Foam Rod	m	140	42	38	68	46
269	7.1.26		3310.26	Asphalt Impregnated Fibre Board	m^2	70	70	37	34	123
270	7.1.27		3310.27	Bituminous Coating at Construction Joint	m^2	6,300	3,150	3,339	2,331	13,879
271	7.1.28		3310.28	Soldrain 500 from Texel/Geosol	m^2	170	27	0	113	38
				Fire Walls at Tailrace Deck (Transformer Deck)						0.00
272	7.1.29		3310.29	Prefabricated Longitudinal Concrete Fire Walls	m^2	2,520	0	1,336	0	1,250
273	7.1.30		3310.30	Prefabricated Transversal Concrete Fire Walls	m^2	860	0	155	0	427
				REINFORCEMENT, ANCHORS AND DOWELS						0.00
274	7.1.31		3310.31	Reinforcement including Dowels	kg	10,950,000	292,143	328,500	339,450	824,935
275	7.1.32		3310.32	Drill Holes and Grouting for Rock Dowels	m	700	8,190	1,568	350	986
276	7.1.33		3310.33	Drill Holes for Anchors Diam. 25 mm with Epoxy Adhesive HIT-RE-500	m	100	69	224	65	183
277	7.1.34		3310.34	Threaded Rebar (Dia. 35 mm) with Couplers	kg	800	26	16	30	49
				INSTALLATION OF ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS						0.00
278	7.1.35		3310.35	Anchors and Templates in Primary Concrete for Draft Tube Stoplogs (8 Sets)	kg	53,200	6,916	1,064	2,394	4,728
279	7.1.36		3310.36	Anchors and Embedded Parts in Primary Concrete for T/G Units	kg	**64,000**	7,680	1,280	2,880	5,171
				SUB-TOTAL POWERHOUSE - SUBSTRUCTURE						
	7.2		3320	**SUPERSTRUCTURE (Intake and Powerhouse)**						
				STRUCTURAL STEEL						
				Beams - Rolled Sections, Painted						
280	7.2.1		3320.01	**Beams Under 60 kg/m (incl. S, C, L shapes detailed as bracing, facing and overhangs, and girt channels)**	kg	612,400	2,029	12,248	15,922	5,430
281	7.2.2		3320.02	Beams From 61 to 150 kg/m	kg	**71,100**	232	1,422	889	970
282	7.2.3		3320.03	Beams Over 150 kg/m	kg	**15,280**	49	306	78	155
				Columns - Rolled Sections, Painted						
283	7.2.4		3320.04	Columns Under 60 kg/m	kg	16,020	49	320	1,538	90
284	7.2.5		3320.05	Columns from 61 to 150 kg/m	kg	**101,420**	331	2,028	690	1,000
285	7.2.6		3320.06	Columns Over 150 kg/m	kg	**174,860**	571	3,497	525	710
				W Beams - Rolled Sections, Painted with Intumescent Paint						
286	7.2.7		3320.07	W Beams Under 60 kg/m	kg	2,450	0	49	416	50

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
287	**7.2.8**		3320.08	W Beams from 61 to 150 kg/m	kg	251,000	818	5,020	2,058	2,080
288	**7.2.9**		3320.09	W Beams Over 150 kg/m	kg	358,000	1,169	7,160	1,360	2,680
289	**7.2.10**		3320.10	W Beam Stiffners and Bent Plate at Openings	kg	24,200	76	484	3,630	65
290	**7.2.11**		3320.11	W Beam Base Plate	kg	5,700	19	114	301	55
				WT Beams - Rolled Sections, Painted with Intumescent						
291	**7.2.12**		3320.12	WT Beams Under 60 kg/m	kg	1,550	0	31	91	20
292	**7.2.13**		3320.13	WT Beams Over 150 kg/m	kg	286,300	936	5,726	1,288	2,310
293	**7.2.14**		3320.14	WT Beam base plate	kg	10,550	0	211	909	70
				Columns - Rolled Sections, Painted with Intumescent Paint						
294	**7.2.15**		3320.15	Columns from 61 to 150 kg/m	kg	6,350	0	127	51	50
295	**7.2.16**		3320.16	Columns Over 150 kg/m	kg	62,700	206	1,254	339	450
				Columns, Built-up Sections, Painted with Intumescent Paint						
296	**7.2.17**		3320.17	Main Building Columns, in Rolled Shapes & Plates, Welded Continuously.	kg	166,500	541	1,665	466	1,660
				Columns & Girders - Built up Sections, Painted						
297	**7.2.18**		3320.18	Crane Girders in Welded Plates, 700-800 kg/m	kg	**392,100**	1,279	3,921	863	3,490
298	**7.2.19**		3320.19	Main Building Columns, in Rolled Shapes & Plates, Welded Continuously.	kg	674,300	2,200	6,743	1,551	6,730
				Trusses, Painted						
299	**7.2.20**		3320.20	Trusses and Wind Trusses	kg	**286,375**	933	5,728	2,463	2,650
				Bracings, Painted						
300	**7.2.21**		3320.21	Horizontal Bracing (WT Shapes), 31-60 kg/m	kg	76,970	251	2,309	4,110	940
301	**7.2.22**		3320.22	HSS Square Shapes for Vertical Bracing and Struts	kg	**193,900**	632	5,817	4,848	1,845
				Nelson Studs, not painted						
302	**7.2.23**		3320.23	Nelson Studs (Dia. 19 and 13 mm) Welded Mezzanine Beams	kg	3,305	0	198	568	1,130
303	**7.2.24**		3320.24	Nelson Studs (Dia. 19 and 22 mm) Welded to Generator Floor Beams	kg	15,000	49	900	2,651	4,530
				Stairs, Hot dip Galvanized						
304	**7.2.25**		3320.25	**Stair Stringers in Channels (incl. Galvanized Beams and Columns for the stairs)**	kg	62,410	202	5,617	2,684	5,452
305	**7.2.26**		3320.26	Stair Treads in Grating (308 mm by 914 mm), hot dip galvanized, Bent Checkered Plate Nosing, type "FLOWFORGE" by FISHER & LUDLOW or equal	each	1,624	0	2,582	1,397	948
				Landings and Walkways, Hot dip Galvanized						
306	**7.2.27**		3320.27	Gratings for Landings at Stairs, type 24-102, Bearing Bars (of approx. 32X4.8) by FISHER and LUDLOW or equal	kg	48,820	160	1,465	1,386	3,412
307	**7.2.28**		3320.28	Bent Plate at Floor 15.5	kg	45,000	148	1,350	2,678	2,871
308	**7.2.29**		3320.29	Steel Angle L102x102x7.9 at Floor 15.5	kg	2,400	0	72	185	158
				Steel Decking						
309	**7.2.30**		3320.30	Roof Deck type RD 306 (t=0.91mm) and type HB (t=0.91 mm) by VICWEST, Galvanized Z 275	m^2	11,730	38	4,223	1,994	5,207
310	**7.2.31**		3320.31	Roof Deck type RD 938 (t=0.76mm) by VICWEST, Galvanized Z 275	m^2	1,640	0	590	246	170
311	**7.2.32**		3320.32	Floor Deck type RD 306 (t=1.22 mm) by VICWEST - Exterior	m^2	1,550	0	1,194	341	160
312	**7.2.33**		3320.33	Floor Deck type RD 306 (t=1.22 mm) by VICWEST - Interior	m^2	3,600	0	2,772	864	2,682
				Crane Rails Accessories						
313	**7.2.34**		3320.34	Tie-Back Linkage Assemblies by GANTREX, type TL123GP, includes Plates, Angles, Shims, "O" Rings, Bolts and Permanent Lubrication	each	96	0	17	504	100
				Anchor Bolts						
314	**7.2.35**		3320.35	**Anchor Bolts Steel Grade 55 ASTM F1554 (Dia. 19 and 25 mm), U-Bolt assembly and Nuts A563, hot dip galvanized, by PORTLAND or equal**	kg	5,960	298	358	954	482

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
315	7.2.36		3320.36	Anchor Bolts Steel Grade 55 ASTM F1554 (Dia. 38 and 51 mm), Nuts A563, hot dip galvanized, by PORTLAND or equal	kg	22,800	1,140	1,368	1,140	1,842
				Guardrails in Pipes, Hot dip Galvanized						
316	7.2.37		3320.37	Guardrails in Pipes for Mezzanine, Stairs and Covers, with Kick Plate, Posts in DN32-XS and Railings in DN32-Std.	kg	**47,250**	152	2,835	3,033	3,158
317	7.2.38		3320.38	Guardrails of Intake Deck (W and HSS shapes)	kg	17,750	0	1,420	1,156	1,187
				Hilti Bolts						
318	7.2.39		3320.39	Hilti KWIK Bolts 3 (Dia. 25 mm) 304 SS	each	525	0	113	525	410
319	7.2.40		3320.40	**Hilti KWIK Bolts 3 (Dia. 10 mm and 19 mm) hot dip galvanized**	each	630	0	98	200	492
320	7.2.41		3320.41	Hilti Adhesive Anchors, HAS rods (Dia. 19 mm) HIT RE-500 , hot dip galvanized	each	200	0	10	125	156
				Joists						
321	7.2.42		3320.42	Steel Joists, by CANAM or equal	kg	2,100	0	126	69	30
				Elastomeric pad						
322	7.2.43		3320.43	Elastomeric Pad at Attachment Axis E	each	40	0	13	21	3
				MISCELLANEOUS STEEL						
				Miscellaneous Structural Steel, Hot dip Galvanized						
323	7.2.44		3320.44	Miscellaneous Structural Steel - Embedded	kg	**64,250**	10,489	2,570	3,213	5,426
324	7.2.45		3320.45	Miscellaneous Structural Steel, L Shapes, Plates etc.	kg	**151,330**	24,704	9,080	10,593	12,780
325	7.2.46		3320.46	Checkered Plates	kg	54,260	3,435	1,085	1,628	4,286
326	7.2.47		3320.47	Embedded angles related to typical detail for steel deck on dwg : MFA-SN-CD-3320-ST-DD-0005-01	kg	11,450	1,832	458	573	967
327	7.2.48		3320.48	Contraction joint related to section E-E on the drawing : MFA-SN-CD-3300-CV-DD-0003-01	m	40	252	11	87	324
328	7.2.49		3320.49	Contraction joint related to section F-F on the drawing: MFA-SN-CD-3300-CV-DD-0003-01	m	50	315	14	87	405
329	7.2.50		3320.50	Contraction joint related to section K-K on the drawing: MFA-SN-CD-3300-CV-DD-0003-01	m	115	725	31	217	928
				Miscellaneous Stainless steel						
330	7.2.51		3320.51	Miscellaneous Stainless Steel (drains in hydraulic passages and diamond expanded metal of MK1 and MK2)	kg	**6,650**	1,064	865	1,463	1,061
				Crane Rails, rust preventive coating						
331	7.2.52		3320.52	Rail type BETH 175, includes Splices and Aluminothermic Welds, for Crane Girders and for Trash Cleaner	m	720	0	1,001	1,008	322
332	7.2.53		3320.53	Rail type Beth 104 with Aluminothermic Welds	m	315	0	261	410	95
				Crane Rails Accessories						
333	7.2.54		3320.54	GANTREX Rail Clip type WELDLOK 43 with Rubber Nosing for Crane Girders and Trash Cleaner	each	2,160	0	130	551	5,800
334	7.2.55		3320.55	**GANTREX rail clip type WELDLOK 24 with Rubber Nosing, hot dip galvanized**	each	1,060	0	11	250	2,847
				Ladders, Hot dip Galvanized						
335	7.2.56		3320.56	Ladders with Cage including the Self-Closing Gates	kg	**15,000**	0	750	800	1,003
				Plates, Painted / Hot dip Galvanized						
336	7.2.57		3320.57	Plates 350 x 20, Under Rails BETH 175, Painted with Primer Plates 300 x 20 Under Rails BETH 175, hot dip galvanized	kg	35,500	0	2,485	2,251	2,373
				Landings and Walkways, Hot dip Galvanized						
337	7.2.58		3320.58	Grating Type HD-24-102 (bearing bars 64X4.8 or 51X4.8) and Grating Type 30-102 (bearing bars 38X4.8) by Fisher and Ludlow	kg	56,800	0	3,976	2,749	3,797
338	7.2.59		3320.59	Grating at EL 45.5 on Intake Deck, Special Order	kg	101,600	0	6,096	5,253	6,791
				ARCHITECTURE WORKS						

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE							
				METAL CLADDING & ROOFING						
339	**7.2.60**		3320.60	Insulated Metal Wall Panels (Sandwiched Panels. VicWest & Kingspan; refer to them as Composite Metal Building Panels)	m^2	**7,323**	0	21,383	0	7,044
340	**7.2.61**		3320.61	Preformed Metal Siding (Vertical Metal Siding fastened to Steel Stud Wall)	m^2	**508**	0	1,763	0	849
341	**7.2.62**		3320.62	Preformed Metal Siding & Framing (for Snow Baffles over louvers)	**m^2**	**112**	0	389	0	187
342	**7.2.63**		3320.63	Metal Liner Panel, Insulation & Z-Bars (attached to interior of pre-cast concrete fire wall)	**m^2**	**2,980**	0	8,702	0	12,608
343	**7.2.64**		3320.64	Modified Bituminous Membrane Roofing System	m^2	**8,416**	0	1,852	0	15,563
344	**7.2.65**		3320.65	Sealants (including for roofing & wall systems and pre-cast concrete fire wall joints)	**LS**	**1**	0	640	650	431
345	**7.2.66**		3320.66	Signage (Nalcor & Logo, Muskrat Falls Generating Station)	**LS**	**1**	0	195	100	29
346	**7.2.67**		3320.67	Roof Curb for Exhaust Fans	each	**9**	0	120	36	15
347	**7.2.68**		3320.68	Roof Curb for Exhaust Hood	each	**1**	0	13	20	12
348	**7.2.69**		3320.69	Roof Curb for Chimney	each	**1**	0	13	20	20
349	**7.2.70**		3320.70	Flashing for Roof Drains	each	**25**	0	40	100	12
350	**7.2.71**		3320.71	Flashing for Plumbing Vents	each	**6**	0	10	24	10
				OPENINGS						
351	**7.2.72**		3320.72	Exterior Metal Insulated Doors - Double	each	**7**	0	56	61	71
352	**7.2.73**		3320.73	Exterior Metal Insulated Doors - Single	each	**14**	0	74	91	129
353	**7.2.74**		3320.74	Aluminum Entrance Door (Insulated)	each	1	0	8	0	7
354	**7.2.75**		3320.75	Sectional Metal Insulated Door	each	2	0	53	230	11
355	**7.2.76**		3320.76	Aluminum Windows (32 Windows max)	m^2	**154**	0	818	0	636
356	**7.2.77**		3320.77	Concrete Unit Masonry (Exterior)	**m^2**	**21**	0	112	15	50
				FIRE & SAFETY ITEMS						
357	**7.2.78**		3320.78	Roof Anchors & Safety Restraints	each	**45**	0	299	281	243
				SPECIAL DOORS						
358	**7.2.79**		3320.79	Multi-Leaf Vertical Lift Metal Insulated Door	each	1	0	5	575	15
				SUB-TOTAL POWERHOUSE - SUPERSTRUCTURE						
	8	**3400**		**TURBINE GENERATOR AND ANCILLARIES**						
	8.1		**3430**	**ELECTRICAL WORK**						
359	**8.1.1**		3430.01	Exothermic Connections.	each	1,000	420	2,650	0	2,530
360	**8.1.2**		3430.02	Embedded Copper Grounding Plates	each	50	136	181	0	254
361	**8.1.3**		3430.03	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	4,700	1,410	1,927	0	2,773
362	**8.1.4**		3430.04	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	1,400	210	308	0	406
363	**8.1.5**		3430.05	Rigid PVC Conduit, size 78mm	m	150	89	150	0	167
364	**8.1.6**		3430.06	Rigid Galvanized Steel Conduits, size 152 mm	m	5	10	36	0	41
365	**8.1.7**		3430.07	Rigid PVC Conduit, size 129mm	m	1,000	1,320	2,100	0	2,050
366	**8.1.8**		3430.08	High Bay Light Fixture, Metal Halide, 347 Vac, complete with 1000 W lamp	each	46	276	1,015	0	410
367	**8.1.9**		3430.09	High Bay Light Fixture, Metal Halide, 347 Vac, complete with 1000 W lamp and Quartz auxiliary lamp	each	23	138	520	0	323
368	**8.1.10**		3430.10	Panelboard, 600/347 Vac, 3 phase, 4 wire, 42 circuit, surface mounted sprinkler-proof enclosure, complete with breakers as indicated	each	3	32	111	0	101
369	**8.1.11**		3430.11	Dry-Type Transformer, 75 kVA, 600-600/347 Vac	each	3	54	117	0	123
370	**8.1.12**		3430.12	Disconnect Switch, 600 V, 3 phase, complete with fuses	each	3	16	37	0	35
371	**8.1.13**		3430.13	Lighting Contactor Control Panel	each	2	10	32	0	17

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM No	PRICE ITEM REFERENCE EXH. 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
372	**8.1.14**		3430.14	ON-OFF Pushbutton Control Station	each	4	13	46	0	7
373	**8.1.15**		3430.15	Teck Cables, 2C # 12 AWG	m	900	774	180	0	144
374	**8.1.16**		3430.16	Teck Cables, 3C # 12 AWG	m	500	370	110	0	90
375	**8.1.17**		3430.17	Teck Cables, 2C # 10 AWG	m	400	324	88	0	76
376	**8.1.18**		3430.18	Teck Cables, 4C # 10 AWG	m	500	415	135	0	135
377	**8.1.19**		3430.19	Temporary Feeder Cables to lighting transformers/panelboards, etc.	LS	1	174	62	0	3,020
				SUB-TOTAL POWERHOUSE - ELECTRICAL WORK						
	8.2		**3440**	**MECHANICAL WORK**						
378	**8.2.1**		**3351**	**HVAC System**	LS	**1**	0	1,063	0	557
			3351.01	Pipe and Fittings NPS 16, Piping Specification PA01	m	92	See Note 1			
			3351.02	Pipe and Fittings NPS 24, Piping Specification PA01	m	99				
			3351.03	HVAC Louvers	LS	1				
379	**8.2.2**		**3352**	**Domestic Wastewater System**	**LS**	**1**	0	9,057	0	924
			3352.01	Pipe and Fittings NPS 2, Piping Specification NB11	**m**	102	See Note 1			
			3352.02	Equipments and Other Components	LS	1				
			3352.03	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3352.04	Pipe and Fittings NPS 3, Piping Specification PA04 (HDPE-DR11)	m	0				
380	**8.2.3**		**3353**	**Wastewater System**	**LS**	**1**	1,058	1,820	0	714
			3353.01	Pipe and Fittings NPS 1 1/2, Piping Specification PA01	m	4	See Note 1			
			3353.02	Pipe and Fittings NPS 3, Piping Specification PA01	m	13				
			3353.03	Pipe and Fittings NPS 4, Piping Specification PA01	m	59				
			3353.04	Flexible corrugated perforated HDPE Pipe NPS 4, covered With A Geotextile	m	82				
			3353.05	Septic Tile Field	LS	1				
			3353.06	Equipments and Other Components	LS	1				
			3353.07	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3353.08	Roof vent	each	2				
			3353.09	Pipe and Fittings NPS 3, Piping Specification PA04 (HDPE-DR11)	m	0				
381	**8.2.4**		**3441**	**Low Pressure Compressed Air System**	**LS**	**1**	0	373	0	381
			3441.01	Pipe and Fittings NPS 2, Piping Specification GB11	m	32	See Note 1			
			3441.02	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3441.03	Pipe and Fittings NPS 3/4, Piping Specification SB11	m	44				
			3441.04	Pipe and Fittings NPS 2, Piping Specification SB11	m	44				
382	**8.2.5**		**3443**	**Fire Protection System**	**LS**	**1**	0	721	0	196
			3443.01	Pipe and Fittings NPS 4, Piping Specification CB12	m	4	See Note 1			
			3443.02	Pipe and Fittings NPS 8, Piping Specification CB12	m	66				
			3443.03	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3443.04	Pipe and Fittings NPS 4, Piping Specification SB12	m	2				
383	**8.2.6**		**3444**	**Clear Water Drainage System**	**LS**	**1**	0	14,779	0	1,579
			3444.01	Pipe and Fittings NPS 3, Piping Specification PA01	m	5	See Note 1			
			3444.02	Pipe and Fittings NPS 4, Piping Specification PA01	m	105				
			3444.03	Pipe and Fittings NPS 6, Piping Specification PA01	m	262				
			3444.04	Pipe and Fittings NPS 8, Piping Specification PA01	m	1,045				
			3444.05	Pipe and Fittings NPS 3, Piping Specification CB11	m	463				

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM No	PRICE ITEM REFERENCE EXH. 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
			3444.06	Pipe and Fittings NPS 4, Piping Specification CB11	m	951				
			3444.07	Pipe and Fittings NPS 6, Piping Specification CB11	m	858				
			3444.08	Pipe and Fittings NPS 8, Piping Specification CB11	m	214				
			3444.09	Equipments and Other Components	LS	1				
			3444.10	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3444.11	Roof drains and accessories	each	**32**				
			3444.12	Pipe and Fittings NPS 8, Piping Specification PA02	m	632				
			3444.13	Pipe and Fittings NPS 24, Piping Specification CB11	m	28				
			3444.14	Pipe and Fittings NPS 16, Piping Specification CB11	m	14				
384	**8.2.7**		**3445**	**Dewatering System**	**LS**	**1**	0	5,902	0	1,441
			3445.01	Pipe and Fittings NPS 3/4, Piping Specification SB11	m	0				
			3445.02	Pipe and Fittings NPS 2, Piping Specification SB11	m	11				
			3445.03	Pipe and Fittings NPS 8, Piping Specification CB11	m	34				
			3445.04	Pipe and Fittings NPS 12, Piping Specification CB11	m	208				
			3445.05	Pipe and Fittings NPS 20, Piping Specification CB11	m	69				
			3445.06	Pipe and Fittings NPS 24, Piping Specification CB11	m	64				
			3445.07	Pipe and Fittings NPS 30, Piping Specification CB11	m	44				
			3445.08	Equipment and Other Components	LS	1				
			3445.09	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
385	**8.2.8**		**3447**	**Oily Water Drainage System**	**LS**	**1**	0	2,531	0	711
			3447.01	Pipe and Fittings NPS 4, Piping Specification CB11	m	32	See Note 1			
			3447.02	Pipe and Fittings NPS 8, Piping Specification CB11	m	16				
			3447.03	Pipe and Fittings NPS 16, Piping Specification CB11	m	69				
			3447.04	Equipments and Other Components	LS	1				
			3447.05	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3447.06	**Pipe and Fittings NPS 14, Piping Specification CB11**	**m**	**100**				
386	**8.2.9**		**3448**	**Raw and Cooling Water System**	LS	1	0	1,652	0	182
			3448.01	Pipe and Fittings NPS 14, Piping Specification CB11	m	258	See Note 1			
387	**8.2.10**		**3449**	**Service Water System**	**LS**	**1**	0	709	0	649
			3449.01	Pipe and Fittings NPS 3/4, Piping Specification SB11	m	44	See Note 1			
			3449.02	Pipe and Fittings NPS 2, Piping Specification SB11	m	58				
			3449.03	Pipe and Fittings NPS 3, Piping Specification SB11	m	125				
			3449.04	Pipe and Fittings NPS 6, Piping Specification CB11	m	8				
			3449.05	Pipe and Fittings NPS 8, Piping Specification CB11	m	59				
			3449.06	Equipments and Other Components	LS	1				
			3449.07	Miscellaneous Work (Painting, Insulation etc.)	LS	1				
			3449.08	Pipe and Fittings NPS 4, Piping Specification PA04 (HDPE-DR11)	m	0				
388	**8.2.11**		**344C**	**Piezometer and Water Level System**	**LS**	**1**	0	6,924	0	542
			344C.01	Pipe and Fittings NPS 6, Piping Specification SA11	m	83	See Note 1			
			344C.02	Pipe and Fittings NPS 3, Piping Specification SB11	m	2,064				
			344C.03	Pipe and Fittings NPS 1/2, Piping Specification JD01	m	2,037				
				SUB-TOTAL POWERHOUSE - MECHANICAL WORKS						
	9	**3500**		**WORK EXECUTED FOR COMPANY'S OTHER CONTRACTOR**						

SNC·LAVALIN

nalcor energy

Table 2.3 – Evaluation of Hours by Bidder in Original Bid

PRICE ITEM No	PRICE ITEM REFERENCE EXH. 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY of UNITS	IKC	Astaldi	Aecon JV	Salini JV
	9.1		3510	Supply of Concrete to Company's Other Contractors at the Batch Plant (excluding delivery from the Batch Plant to the Pour Location)						
389	9.1.1		3510.01	Supply of Secondary Concrete - Class A2	m^3	7,500	3,324	6,825	2,250	24,045
390	9.1.2		3510.02	Supply of Concrete - Class A	m^3	1,000	443	910	300	3,278
391	9.1.3		3510.03	Supply of Concrete - Class B	m^3	14,500	6,427	13,195	4,350	47,531
				SUB-TOTAL SUBCONTRACTING WORKS FOR OTHERS						
	10	3600		MISCELLANEOUS - RATE ONLY						
	10.1		3610	Hilti Adhesive Anchors						
392	10.1.1		3610.01	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 16 mm), hot dip galvanized	each	100				
393	10.1.2		3610.02	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 19 mm), hot dip galvanized	each	100				
394	10.1.3		3610.03	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 25 mm), hot dip galvanized	each	100				
	10.2		3620	Precast Sandwich Insulated Panel						
395	10.2.1		3620.01	Precast Sandwich Insulated Panel	m^2	2,520				

Economic Analyst Steve Goulding

Signed

Date: 25-Sep-13

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
	2	0000		**INDIRECT COSTS**				
1	2.1		0000.01	Mobilization	LS	1	1	1
2	2.2		0000.02	Site Installation	LS	1	1	1
3	2.3		0000.03	Contractor Equipment for Indirects	LS	1	1	1
4	2.4		0000.04	Temporary Works	LS	1	1	1
5	2.5		0000.05	Winter Protection	LS	1	1	1
6	2.6		0000.06	Management and Staff	LS	1	1	1
6A	2.6A		0000.06A	Design and Technical Assistance	LS	1	1	1
7	2.7		0000.07	Attendant labour	LS	1	1	1
8	2.8		0000.08	Services	LS	1	1	1
9	2.9		0000.09	Employee Training	LS	1	1	1
10	2.10		0000.10	Health and Safety Requirements	LS	1	1	1
11	2.11		0000.11	Environmental Requirements	LS	1	1	1
12	2.12		0000.12	Quality Assurance / Quality Control	LS	1	1	1
13	2.13		0000.13	Letters of Credit	LS	1	1	1
14	2.14		0000.14	Parent Guarantee	LS	1	1	1
15	2.15		0000.15	Contractor Insurance, per Article 18 of the Agreement	LS	1	1	1
16	2.16		0000.16	Warranty, per Article 17 of the Agreement	LS	1	1	1
17	2.17		0000.17	Site Maintenance	LS	1	1	1
17A	2.17A		0000.17A	Maintenance Grade No. 3 Material	m^3	7,200	7,200	7,200
17B	2.17B		0000.17B	Coarse Sand	m^3	2,900	2,900	2,900
17C	2.17C		0000.17C	Calcium Chloride (20 kg bag)	each	12,500	12,500	12,500
18	2.18		0000.18	Financing, Contingency, Head Office Overheads, & Consultant Fees	LS	1	1	1
19	2.19		0000.19	Demobilization	LS	1	1	1
19A	2.19A		0000.19A	Estimate of Travel Allowances - Trades Labour	NA	NA	0	0
				SUB-TOTAL INDIRECT COSTS				
	3	0000		**GENERAL**				
	3.1		1110	**ACCESS ROADS TO SPILLWAY, ACCESS RAMPS AND PADS FOR COMPANY'S OTHER CONTRACTORS**				
20	3.1.1		1110.01	Overburden Excavation	m^3	6,400	6,400	6,400
21	3.1.2		1110.02	Zone 3C Material	m^3	3,960	3,960	3,960
22	3.1.3		1110.03	Zone 3D Material	m^3	8,360	8,360	8,360
23	3.1.4		1110.04	Granular "B" Material	m^3	1,250	1,250	1,250
24	3.1.5		1110.05	Granular "C" Material	m^3	1,250	1,250	1,250
25	3.1.6		1110.06	Concrete Culvert 600 mm	m	45	45	45
	3.2		1120	**DEWATERING OF STRUCTURE AREAS**				
26	3.2.1		1120.01	Structure Areas	LS	1	1	1
	3.3		1150	**TEMPORARY BRIDGE**				
27	3.3.1		1150.01	Temporary Downstream Bridge over the Spillway	LS	1	1	1
	3.4		1170	**CONSTRUCTION CRANE**				
28	3.4.1		1170.01	Powerhouse – Construction Crane	LS	1	1	1
	3.5		1180	**Temporary Heating, Ventilating and Lighting of Powerhouse**				
29	3.5.1		1180.01	Temporary Heating, Ventilating and Lighting of Powerhouse	LS	1	1	1
	3.6		1190	**Chain Link Fences and Gates**				

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
30	3.6.1		1190.01	Chain Link Fences and Gates in the Powerhouse Parking and Contractor's Laydown Areas	m	50	50	50
	3.7		1200	**Temporary Lateral Support and Bracings**				
31	3.7.1		1200.01	Temporary Lateral Support and Bracings for Piers of the Spillway	LS	1	1	1
	3.8		1210	**Anchor Points**				
32	3.8.1		1210.01	Anchor Points at Powerhouse and Spillway	each	50	50	50
				SUB-TOTAL GENERAL				
	4	2360		**TRANSITION DAMS**				
	4.1		2361	**NORTH TRANSITION DAM**				
				CIVIL WORK				
				Excavation				
33	4.1.1		2361.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	650	650	650
				Foundation Preparation				
34	4.1.2		2361.02	Dental Excavation	m^3	30	30	30
35	4.1.3		2361.03	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	430	430	430
36	4.1.4		2361.04	Dental Concrete	m^3	70	70	70
37	4.1.5		2361.05	Dry Pack	m^3	3	3	3
				Drilling, Pressure Grouting and Drainage				
38	4.1.6		2361.06	Grouting Holes	m	200	200	200
39	4.1.7		2361.07	Grouting - Successful Connections	each	40	40	40
40	4.1.8		2361.08	Dry Cement for Grouting	kg	7,000	7,000	7,000
41	4.1.9		2361.09	Water Pressure Tests (Lugeon)	hour	4	4	4
42	4.1.10		2361.10	Water Pressure Tests - Successful Connections	each	10	10	10
43	4.1.11		2361.11	Uplift Gauges	m	25	25	25
44	4.1.12		2361.12	Thermistors	each	1	1	1
45	4.1.13		2361.13	Rotary/Percussion Drill Check Holes	m	25	25	25
46	4.1.14		2361.14	Cored (Diamond drill) holes	m	25	25	25
47	4.1.15		2361.15	Drainage Holes	m	65	65	65
48	4.1.16		2361.16	PVC Caps for Drainage Holes	each	5	5	5
49	4.1.17		2361.17	Survey Monuments	each	1	1	1
				CONCRETE WORK				
50	4.1.18		2361.18	Concrete	m^3	9,130	9,130	9,130
50A	4.1.18A		2361.19	PVC Waterstop - TYPE A (150 mm width)	m	30	30	30
51	4.1.19		2361.20	PVC Waterstop - TYPE B (225 mm width)	m	315	315	315
52	4.1.20		2361.21	Hydrophilic Waterstop	m	22	22	22
53	4.1.21		2361.22	Bituminous Coating at Contraction Joints	m^2	570	570	570
				REINFORCEMENT, ANCHORS AND DOWELS				
54	4.1.22		2361.23	Reinforcement including Dowels	kg	55,000	55,000	55,000
				STRUCTURAL STEEL AND MISCELLANEOUS METAL				
				Supply and Installation of Non Embedded Miscellaneous Metal				
55	4.1.23		2361.24	Galvanized Miscellaneous Steel	kg	10,600	10,600	10,600
56	4.1.24		2361.25	Galvanized Grating	kg	5,100	5,100	5,100
				Embedded Miscellaneous Metals				
57	4.1.25		2361.26	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	190	190	190

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
58	4.1.26		2361.27	**Anchor Bolts Grade 55 ASTM F1554**	kg	535	535	535
				ELECTRICAL WORK				
59	4.1.27		2361.28	Exothermic Connections.	each	30	30	30
59A	4.1.27A		2361.29	Mechanical Connections	each	4	4	4
60	4.1.28		2361.30	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	200	200	200
61	4.1.29		2361.31	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	30	30	30
61A	4.1.30		2361.32	Embedded Copper Grounding Plates	each	1	1	1
61B	4.1.31		2361.33	Rigid PVC Conduit, size 129mm	m	75	75	75
				SUB-TOTAL NORTH TRANSITION DAM				
	4.2		2362	**CENTRE TRANSITION DAM**				
				CIVIL WORK				
				Excavation				
62	4.2.1		2362.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	2,100	2,100	2,100
				Foundation Preparation				
63	4.2.2		2362.02	Dental Excavation	m^3	80	80	80
64	4.2.3		2362.03	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	1,430	1,430	1,430
65	4.2.4		2362.04	Dental Concrete	m^3	215	215	215
66	4.2.5		2362.05	Dry Pack	m^3	10	10	10
				Drilling, Pressure Grouting and Drainage				
67	4.2.6		2362.06	Grouting Holes	m	600	600	600
68	4.2.7		2362.07	Grouting - Successful Connections	each	120	120	120
69	4.2.8		2362.08	Dry Cement for Grouting	kg	20,000	20,000	20,000
70	4.2.9		2362.09	Water Pressure Tests (Lugeon)	hour	4	4	4
71	4.2.10		2362.10	Water Pressure Tests - Successful Connections	each	10	10	10
72	4.2.11		2362.11	Uplift Gauges	m	30	30	30
73	4.2.12		2362.12	Thermistors	each	1	1	1
74	4.2.13		2362.13	Rotary/Percussion Drill Check Holes	m	25	25	25
75	4.2.14		2362.14	Cored (Diamond drill) holes	m	25	25	25
76	4.2.15		2362.15	Drainage Holes	m	200	200	200
77	4.2.16		2362.16	PVC Caps for Drainage Holes	each	20	20	20
				Geotechnical Instrumentation				
78	4.2.17		2362.17	Survey Monuments	each	5	5	5
79	4.2.18		2362.18	Hydraulic piezometers	each	3	3	3
80	4.2.19		2362.19	V-Notch Weirs	each	1	1	1
				CONCRETE WORK				
81	4.2.20		2362.20	Concrete Below El. 42.00 m	m^3	26,900	26,900	26,900
82	4.2.21		2362.21	Concrete Above El. 42.00 m	m^3	2,550	2,550	2,550
83	4.2.22		2362.22	Concrete - Slab on Steel Deck	m^3	150	150	150
84	4.2.23		2362.23	Grout	m^3	17	17	17
84A	4.2.23A		2362.24	PVC Waterstop - TYPE A (150 mm width)	m	135	135	135
85	4.2.24		2362.25	PVC Waterstop - TYPE B (225 mm width)	m	629	629	629
86	4.2.25		2362.26	Bituminous Coating at Contraction Joint	m^2	3,060	3,060	3,060
				REINFORCEMENT, ANCHORS AND DOWELS				

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
87	4.2.26		2362.27	Reinforcement including Dowels	kg	145,000	145,000	145,000
				SUPPLY AND INSTALLATION OF STRUCTURAL STEEL				
88	4.2.27		2362.28	Painted Structural Steel	kg	79,400	79,400	79,400
				STRUCTURAL STEEL AND MISCELLANEOUS METAL				
				Supply and Installation of Non Embedded Miscellaneous Metal				
89	4.2.28		2362.29	Galvanized Miscellaneous Steel	kg	37,000	37,000	37,000
90	4.2.29		2362.30	Galvanized Grating	kg	1,745	1,745	1,745
				Embedded Miscellaneous Metals				
91	4.2.30		2362.31	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	16,870	16,870	16,870
				Metal Decking including Shear Studs (Galvanized)				
92	4.2.31		2362.32	Steel deck type RD 306 (t=0.91 mm)	m^2	400	400	400
93	4.2.32		2362.33	Shear Studs	kg	375	375	375
				Crane Rails including Fastening System and Accessories				
94	4.2.33		2362.34	Rails for Trash Cleaning System	m	140	140	140
95	4.2.34		2362.35	**Anchor Bolts Grade 55 ASTM F1554**	kg	4,850	4,850	4,850
96	4.2.35		2362.36	**Elastomeric Bearing Pads**	each	21	21	21
				ELECTRICAL WORK				
97	4.2.36		2362.37	Exothermic Connections.	each	140	140	140
97A	4.2.36A		2362.38	Mechanical Connections	each	17	17	17
98	4.2.37		2362.39	Embedded Copper Grounding Plates	each	2	2	2
99	4.2.38		2362.40	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	500	500	500
100	4.2.39		2362.41	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	225	225	225
101	4.2.40		2362.42	Rigid PVC Conduit, size 41mm	m	0	0	0
101A	4.2.40A		2362.43	Rigid PVC Conduit, size 53mm	m	3	3	3
102	4.2.41		2362.44	Rigid PVC Conduit, size 78mm	m	0	0	0
103	4.2.42		2362.45	Rigid PVC Conduit, size 129mm	m	110	110	110
104	4.2.43		2362.46	Junction Box, size 200 x 200 x 150 mm Complete with Traffic Rated Cover	each	0	0	0
				SUB-TOTAL CENTRE TRANSITION DAM				
	4.3		2363.00	**SOUTH TRANSITION DAM**				
				CIVIL WORK				
				Excavation				
105	4.3.1		2363.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	1,350	1,350	1,350
				Foundation Preparation				
106	4.3.2		2363.02	Dental Excavation	m^3	45	45	45
107	4.3.3		2363.03	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	900	900	900
108	4.3.4		2363.04	Dental Concrete	m^3	135	135	135
109	4.3.5		2363.05	Dry Pack	m^3	6	6	6
				Drilling, Pressure Grouting and Drainage				
110	4.3.6		2363.06	Grouting Holes	m	500	500	500
111	4.3.7		2363.07	Grouting - Successful Connections	each	100	100	100
112	4.3.8		2363.08	Dry Cement for Grouting	kg	18,000	18,000	18,000
113	4.3.9		2363.09	Water Pressure Tests (Lugeon)	hour	5	5	5
114	4.3.10		2363.10	Water Pressure Tests - Successful Connections	each	12	12	12

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
115	4.3.11		2363.11	Uplift Gauges	m	30	30	30
116	4.3.12		2363.12	Thermistors	each	1	1	1
117	4.3.13		2363.13	Rotary/Percussion Drill Check Holes	m	30	30	30
118	4.3.14		2363.14	Cored (Diamond drill) holes	m	30	30	30
119	4.3.15		2363.15	Drainage Holes	m	225	225	225
120	4.3.16		2363.16	PVC Caps for Drainage Holes	each	15	15	15
				Geotechnical Instrumentation				
121	4.3.17		2363.17	Survey Monuments	each	4	4	4
122	4.3.18		2363.18	Hydraulic piezometers	each	2	2	2
123	4.3.19		2363.19	V-Notch Weirs	each	1	1	1
				CONCRETE WORK				
124	4.3.20		2363.20	Concrete	m^3	9,700	9,700	9,700
124A	4.3.20A		2363.21	PVC Waterstop - TYPE A (150 mm width)	m	130	130	130
125	4.3.21		2363.22	PVC Waterstop - TYPE B (225 mm width)	m	170	170	170
126	4.3.22		2363.23	Hydrophilic Waterstop	m	0	0	0
127	4.3.23		2363.24	Bituminous Coating at Contraction Joints	m^2	380	380	380
				REINFORCEMENT, ANCHORS AND DOWELS				
128	4.3.24		2363.25	Reinforcement including Dowels	kg	283,300	283,300	283,300
				STRUCTURAL STEEL AND MISCELLANEOUS METAL				
				Supply and Installation of Non Embedded Miscellaneous Metal				
129	4.3.25		2363.26	Galvanized Miscellaneous Steel	kg	14,850	14,850	14,850
130	4.3.26		2363.27	Galvanized Grating	kg	230	230	230
				Embedded Miscellaneous Metals				
131	4.3.27		2363.28	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	110	110	110
132	4.3.28		2363.29	**Anchor Bolts Grade 55 ASTM F1554**	kg	1,350	1,350	1,350
				ELECTRICAL WORK				
133	4.3.29		2363.30	Exothermic Connections.	each	100	100	100
133A	4.3.29A		2363.31	Mechanical Connections	each	12	12	12
134	4.3.30		2363.32	Embedded Copper Grounding Plates	each	2	2	2
135	4.3.31		2363.33	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	300	300	300
136	4.3.32		2363.34	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	150	150	150
137	4.3.33		2363.35	Rigid PVC Conduit, size 53mm	m	5	5	5
				SUB-TOTAL SOUTH TRANSITION DAM				
	4.4		2364	**SEPARATION WALL**				
				CIVIL WORK				
				Foundation Preparation				
138	4.4.1		2364.01	Dental Excavation	m^3	50	50	50
139	4.4.2		2364.02	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	900	900	900
140	4.4.3		2364.03	Dental Concrete	m^3	130	130	130
141	4.4.4		2364.04	Dry Pack	m^3	6	6	6
				CONCRETE WORK				
142	4.4.5		2364.05	Concrete - Separation Wall	m^3	10,850	10,850	10,850
143	4.4.6		2364.06	PVC Waterstop - TYPE B (225 mm width)	m	60	60	60

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
144	4.4.7		2364.07	Hydrophilic Waterstop	m	15	15	15
145	4.4.8		2364.08	Bituminous Coating at Contraction Joint	m²	810	810	810
				SUB-TOTAL SEPARATION WALL				
	5	2400		**SPILLWAY**				
	5.1		2410	**SPILLWAY STRUCTURE**				
				CIVIL WORK				
				Excavation and Backfill				
146	5.1.1		2410.01	Fill Excavation (Sand Layer for Winter Protection)	m³	7,600	7,600	7,600
				Drilling, Pressure Grouting and Drainage				
147	5.1.2		2410.02	Grouting Holes	m	650	650	650
148	5.1.3		2410.03	Grouting - Successful Connections	each	130	130	130
149	5.1.4		2410.04	Dry Cement for Grouting	kg	23,000	23,000	23,000
150	5.1.5		2410.05	Water Pressure Tests (Lugeon)	hour	4	4	4
151	5.1.6		2410.06	Water Pressure Tests - Successful Connections	each	10	10	10
152	5.1.7		2410.07	Uplift Gauges	m	30	30	30
153	5.1.8		2410.08	Thermistors	each	1	1	1
154	5.1.9		2410.09	Rotary/Percussion Drill Check Holes	m	25	25	25
155	5.1.10		2410.10	Cored (Diamond drill) holes	m	25	25	25
				Instrumentation				
156	5.1.11		2410.11	Survey Monuments	each	6	6	6
				Foundation preparation				
157	5.1.12		2410.12	Scaling and Water/Air Jet Cleaning of rock foundation	m²	5,100	5,100	5,100
				CONCRETE WORK				
				Spillway and Related Structures including Retaining Walls				
158	5.1.13		2410.13	Concrete - Slabs	m³	13,100	13,100	13,100
159	5.1.14		2410.14	Concrete - Piers and Walls	m³	32,900	32,900	32,900
160	5.1.15		2410.15	Concrete - Rollways	m³	19,500	19,500	19,500
161	5.1.16		2410.16	Demolition of Slab for Rollway Key	m³	200	200	200
162	5.1.17		2410.17	Overbreak Concrete	m³	3,000	3,000	3,000
163	5.1.18		2410.18	Grout	m³	20	20	20
164	5.1.19		2410.19	PVC Waterstop - TYPE A (150 mm width)	m	4,100	4,100	4,100
164A	5.1.19A		2410.20	PVC Waterstop - TYPE B (225 mm width)	m	1,000	1,000	1,000
164B	5.1.19B		2410.21	PVC Waterstop - TYPE D	m	550	550	550
165	5.1.20		2410.22	Hydrophilic Waterstop	m	0	0	0
166	5.1.21		2410.23	Bituminous Coating at Contraction Joint	m²	950	950	950
				REINFORCEMENT, ANCHORS AND DOWELS				
167	5.1.22		2410.24	Reinforcement including Dowels	kg	3,850,000	3,850,000	3,850,000
168	5.1.23		2410.25	Drill Holes and Grouting for Rock Dowels	m	1,200	1,200	1,200
169	5.1.24		2410.26	Threaded Rebars with Couplers	kg	117,000	117,000	117,000
				STRUCTURAL STEEL AND MISCELLANEOUS METAL				
				Non Embedded Miscellaneous Metal				
170	5.1.25		2410.27	Non Embedded Galvanized Miscellaneous Steel	kg	10,900	10,900	10,900
171	5.1.26		2410.28	Non Embedded Galvanized Grating	kg	0	0	0

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
				Embedded Miscellaneous Metals				
172	5.1.27		2410.29	Embedded Galvanized Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	430	430	430
173	5.1.28		2410.30	Bulkhead Formwork - Rollway Joints	kg	13,500	13,500	13,500
				Crane Rails including Fastening System and Accessories				
174	5.1.29		2410.31	Rails for Trash Cleaning System	m	150	150	150
175	5.1.30		2410.32	**Anchor Bolts Grade 55 ASTM F1554**	kg	2,520	2,520	2,520
				ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS				
176	5.1.31		2410.33	Anchors, Templates and Angles in Primary Concrete for Gates and Rollways (5 Sets)	kg	91,135	91,135	91,135
177	5.1.32		2410.34	Anchors, Templates and Angles in Primary Concrete for Upstream Temporary Stoplogs (5 Sets)	kg	75,160	75,160	75,160
178	5.1.33		2410.35	Anchors, Templates and Angles in Primary Concrete for Upstream Permanent Stoplogs (5 Sets)	kg	42,492	42,492	42,492
179	5.1.34		2410.36	Anchors, Templates and Angles in Primary Concrete for Downstream Stoplogs (5 Sets)	kg	15,497	15,497	15,497
180	5.1.35		2410.37	Anchors and Templates in Primary Concrete for Hoist Towers (5 Sets)	kg	430	430	430
181	5.1.36		2410.38	Anchors and Templates in Primary Concrete for Walkways (5 Sets)	kg	200	200	200
182	5.1.37		2410.39	Liner Plates in sides of Piers	each	10	10	10
				ELECTRICAL WORK				
183	5.1.38		2410.40	Exothermic Connections.	each	290	290	290
183A	5.1.38A		2410.41	Mechanical Connections	each	45	45	45
184	5.1.39		2410.42	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	2,200	2,200	2,200
185	5.1.40		2410.43	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	550	550	550
186	5.1.41		2410.44	Rigid Galvanized Steel Conduits, size 53mm	m	50	50	50
				SUB-TOTAL SPILLWAY STRUCTURE				
	5.2		2411	**SPILLWAY BRIDGES**				
				CONCRETE WORK				
187	5.2.1		2411.01	Concrete - Slab on Bridge Deck	m^3	460	460	460
				REINFORCEMENT, ANCHORS AND DOWELS				
188	5.2.2		2411.02	Reinforcement including Dowels	kg	122,150	122,150	122,150
				STRUCTURAL STEEL AND MISCELLANEOUS METAL				
				Structural Steel				
189	5.2.3		2411.03	Structural Steel - Painted/Galvanized Sections	kg	263,500	263,500	263,500
				Non Embedded Miscellaneous Metal				
190	5.2.4		2411.04	Non Embedded Galvanized Miscellaneous Steel	kg	58,500	58,500	58,500
191	5.2.5		2411.05	Non Embedded Galvanized Grating	kg	0	0	0
				Embedded Miscellaneous Metals				
192	5.2.6		2411.06	Embedded Galvanized Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	12,850	12,850	12,850
192A	5.2.6A		2411.07	Shear Studs	kg	3,420	3,420	3,420
193	5.2.7		2411.08	**Elastomeric Bearing Pads**	each	110	110	110
194	5.2.8		2411.09	**Bridge Expansion Joints**	each	12	12	12
195	5.2.9		2411.10	**Anchor Bolts Grade 55 ASTM F1554**	kg	13,000	13,000	13,000
				SUB-TOTAL SPILLWAY BRIDGES				
	5.3		2430	**SPILLWAY DISCHARGE CHANNEL - PHASE 1**				
				CIVIL WORK				
				Foundation preparation				

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
196	5.3.1		2430.01	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	2,880	2,880	2,880
				CONCRETE WORK				
197	5.3.2		2430.02	Concrete - Slabs (CVC)	m^3	1,725	1,725	1,725
198	5.3.3		2430.03	Concrete - Walls (CVC)	m^3	700	700	700
199	5.3.4		2430.04	Overbreak Concrete	m^3	1,600	1,600	1,600
				REINFORCEMENT, ANCHORS AND DOWELS				
200	5.3.5		2430.05	Reinforcement including Dowels	kg	145,000	145,000	145,000
201	5.3.6		2430.06	Drill Holes and Grouting for Rock Dowels	m	3,650	3,650	3,650
				SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 1				
	5.4		2431	**SPILLWAY DISCHARGE CHANNEL - PHASE 2 - OPTIONAL**				
				CIVIL WORK				
				Foundation preparation				
202	5.4.1		2431.01	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	1,440	1,440	1,440
				CONCRETE WORK				
203	5.4.2		2431.02	Concrete - Slabs (CVC)	m^3	750	750	750
204	5.4.3		2431.03	Concrete - Walls (CVC)	m^3	300	300	300
205	5.4.4		2431.04	Overbreak Concrete	m^3	700	700	700
				REINFORCEMENT, ANCHORS AND DOWELS				
206	5.4.5		2431.05	Reinforcement including Dowels	kg	90,000	90,000	90,000
207	5.4.6		2431.06	Drill Holes and Grouting for Rock Dowels	m	1,900	1,900	1,900
				SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 2				
	5.5		2432	**SPILLWAY DISCHARGE CHANNEL - PHASE 3 - OPTIONAL**				
				CIVIL WORK				
				Foundation preparation				
208	5.5.1		2432.01	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	3,400	3,400	3,400
				CONCRETE WORK				
209	5.5.2		2432.02	Concrete - Slabs (CVC)	m^3	2,000	2,000	2,000
210	5.5.3		2432.03	Concrete - Walls (CVC)	m^3	200	200	200
211	5.5.4		2432.04	Overbreak Concrete	m^3	2,000	2,000	2,000
				REINFORCEMENT, ANCHORS AND DOWELS				
212	5.5.5		2432.05	Reinforcement including Dowels	kg	160,000	160,000	160,000
213	5.5.6		2432.06	Drill Holes and Grouting for Rock Dowels	m	4,600	4,600	4,600
				SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 3				
	6	3200		**INTAKE**				
	6.1		3220	**INTAKE STRUCTURE**				
				CIVIL WORK				
				Drilling, Pressure Grouting and Drainage				
214	6.1.1		3220.01	Grouting Holes	m	2,000	2,000	2,000
215	6.1.2		3220.02	Grouting - Successful Connections	each	400	400	400
216	6.1.3		3220.03	Dry Cement for grouting	kg	70,000	70,000	70,000
217	6.1.4		3220.04	Water Pressure Tests (Lugeon)	hour	8	8	8

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
218	6.1.5		3220.05	Water Pressure Tests - Successful Connections	each	20	20	20
219	6.1.6		3220.06	Uplift Gauges	m	30	30	30
220	6.1.7		3220.07	Thermistors	each	1	1	1
221	6.1.8		3220.08	Rotary/Percussion Drill Check Holes	m	50	50	50
222	6.1.9		3220.09	Cored (Diamond drill) holes	m	50	50	50
223	6.1.10		3220.10	Drainage Holes	m	800	800	800
224	6.1.11		3220.11	PVC Caps for Drainage Holes	each	50	50	50
				Foundation preparation				
225	6.1.12		3220.12	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	4,900	4,900	4,900
				Geotechnical Instrumentation				
226	6.1.13		3220.13	Survey Monuments	each	4	4	4
227	6.1.14		3220.14	V-Notch Weirs	each	2	2	2
				CONCRETE WORK				
				CONCRETE INTAKE & GATE HOIST BUILDING				
228	6.1.15		3220.15	Concrete - Substructure below El. 45.5 m	m^3	143,305	143,305	143,305
229	6.1.16		3220.16	Concrete - Gate Hoist Building and Elevator Room above El. 45.5 m	m^3	1,646	1,646	1,646
230	6.1.17		3220.17	Overbreak Concrete	m^3	3,000	3,000	3,000
231	6.1.18		3220.18	Grout	m^3	30	30	30
232	6.1.19		3220.19	PVC Waterstop - TYPE A (150 mm width)	m	8,611	8,611	8,611
233	6.1.20		3220.20	PVC Waterstop - TYPE B (225 mm width)	m	876	876	876
234	6.1.21		3220.21	Sealing of Joints	m	100	100	100
235	6.1.22		3220.22	Bituminous Coating at Construction Joints	m^2	6,020	6,020	6,020
235A	6.1.22A		3220.23	Elastomeric Polyurea Membrane	m^2	5,803	5,803	5,803
				REINFORCEMENT, ANCHORS AND DOWELS				
236	6.1.23		3220.24	Reinforcement including Dowels	kg	10,647,650	10,647,650	10,647,650
				INSTALLATION OF ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS				
237	6.1.24		3220.25	Anchors, Templates and Angles in Primary Concrete for Intake Gates (12 Sets)	kg	173,672	173,672	173,672
238	6.1.25		3220.26	Anchors and Templates in Primary Concrete for Intake Trashracks (12 Sets)	kg	82,000	82,000	82,000
239	6.1.26		3220.27	Anchors, Templates and Angles in Primary Concrete for Intake Stoplogs (12 Sets)	kg	151,021	151,021	151,021
	6.2		3290	**INTAKE - ELECTRICAL WORK**				
240	6.2.1		3290.01	Exothermic Connections.	each	600	600	600
240A	6.2.1A		3290.02	Mechanical Connections	each	104	104	104
241	6.2.2		3290.03	Embedded Copper Grounding Plates	each	6	6	6
242	6.2.3		3290.04	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	2,100	2,100	2,100
243	6.2.4		3290.05	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	1,900	1,900	1,900
243A	6.2.5		3290.06	Rigid PVC Conduit, size 35mm	m	9	9	9
243B	6.2.6		3290.07	Rigid PVC Conduit, size 78mm	m	20	20	20
243C	6.2.7		3290.06	Rigid PVC Conduit, size 129mm	m	300	300	300
				Heat Tracing of Drains				
243D	6.2.8		3290.07	Heat Tracing Cable plus Accessories	m	224	224	224
243E	6.2.9		3290.08	Heat Tracing Controllers	each	16	16	16
				SUB-TOTAL INTAKE STRUCTURE				
	7	3300		**POWERHOUSE**				

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
	7.1		3310	**SUBSTRUCTURE**				
				CIVIL WORK				
				Drilling, Pressure Grouting and Drainage				
244	7.1.1		3310.01	Grouting Holes	m	800	800	800
245	7.1.2		3310.02	Grouting - Successful Connections	each	160	160	160
246	7.1.3		3310.03	Dry Cement for Grouting	kg	28,000	28,000	28,000
247	7.1.4		3310.04	Water Pressure Tests (Lugeon)	hour	4	4	4
248	7.1.5		3310.05	Water Pressure Tests - Successful Connections	each	10	10	10
249	7.1.6		3310.06	Uplift Gauges	m	25	25	25
250	7.1.7		3310.07	Thermistors	each	1	1	1
251	7.1.8		3310.08	Rotary/Percussion Drill Check Holes	m	25	25	25
252	7.1.9		3310.09	Cored (Diamond drill) holes	m	25	25	25
				Foundation preparation				
253	7.1.10		3310.10	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	10,400	10,400	10,400
				Trench for Interconnection Cables and Pipes				
254	7.1.11		3310.11	Excavation and Backfill	LS	1	1	1
255	7.1.12		3310.12	Ductbank	LS	1	1	1
256	7.1.13		3310.13	Manholes	each	3	3	3
				CONCRETE WORK				
257	7.1.14		3310.14	Concrete - Powerhouse Substructure below El. 6.5 m	m^3	131,135	131,135	131,135
258	7.1.15		3310.15	Concrete - Substructure between lines 6 and 7, including Sump Pit, Shafts for Stair & Elevator up to El. 45.5m	m^3	14,882	14,882	14,882
259	7.1.16		3310.16	Concrete - Slabs and Walls between El. 6.5 and 15.5, including North and South Service Bays, Slab on grade, Basins and Bases for GSU transformer up to El. 16.8 m. Air vent enclosures on Powerhouse tailrace deck and North Service Bay, Access enclosure to stair no. 8 and Oil/Water separator enclosure.	m^3	6,692	6,692	6,692
260	7.1.17		3310.17	Concrete - Slab on Steel Deck including Mezzanines	m^3	3,718	3,718	3,718
261	7.1.18		3310.18	Secondary Concrete of Draft Tube Cone Steel liner	m^3	2,420	2,420	2,420
262	7.1.19		3310.19	Overbreak Concrete	m^3	8,500	8,500	8,500
263	7.1.20		3310.20	Grout	m^3	15	15	15
264	7.1.21		3310.21	PVC Waterstop - TYPE A (150 mm width)	m	9,746	9,746	9,746
265	7.1.22		3310.22	PVC Waterstop - TYPE B (225 mm width)	m	1,404	1,404	1,404
265A	7.1.22A		3310.23	PVC Waterstop - TYPE C (225 mm width)	m	25	25	25
266	7.1.23		3310.24	Metallic Waterstop	m	27	27	27
267	7.1.24		3310.25	Sealing of Joints	m	300	300	300
268	7.1.25		3310.26	Polyethylene Foam Rod	m	140	140	140
269	7.1.26		3310.27	Asphalt Impregnated Fibre Board	m^2	70	70	70
270	7.1.27		3310.28	Bituminous Coating at Construction Joint	m^2	6,300	6,300	6,300
271	7.1.28		3310.29	Soldrain 500 from Texel/Geosol	m^2	170	170	170
271A	7.1.28A		3310.30	Elastomeric Polyurea Membrane	m^2	678	678	678
271B	7.1.28B		3310.31	Polyflex 202 Membrane	m^2	2,400	2,400	2,400
				Fire Walls at Tailrace Deck (Transformer Deck)				
272	7.1.29		3310.32	Prefabricated Concrete Longitudinal Sandwich Fire Walls (Refer to attached sketches)	m^2	2,520	2,520	2,520
273	7.1.30		3310.33	Prefabricated Transversal Concrete Fire Walls	m^2	860	860	860

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
				REINFORCEMENT, ANCHORS AND DOWELS				
274	**7.1.31**		3310.34	Reinforcement including Dowels	kg	**10,918,631**	10,918,631	10,918,631
275	**7.1.32**		3310.35	Drill Holes and Grouting for Rock Dowels	m	700	700	700
276	**7.1.33**		3310.36	Drill Holes for Anchors Diam. 25 mm with Epoxy Adhesive HIT-RE-500	m	100	100	100
277	**7.1.34**		3310.37	Threaded Rebar (Dia. 35 mm) with Couplers	kg	800	800	800
				INSTALLATION OF ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS				
278	**7.1.35**		3310.38	Anchors, Templates and Angles in Primary Concrete for Draft Tube Stoplogs (8 Sets)	kg	**55,370**	55,370	55,370
279	**7.1.36**		3310.39	Anchors and Embedded Parts in Primary Concrete for T/G Units	kg	64,000	64,000	64,000
279A	**7.1.37**		3310.40	Installation of the lower portion of the circular passage for all 4 T/G Units - Optional (Refer to attached sketches)	kg	**59,200**	59,200	59,200
				SUB-TOTAL POWERHOUSE - SUBSTRUCTURE				
	7.2		**3320**	**SUPERSTRUCTURE (Intake and Powerhouse)**				
				STRUCTURAL STEEL				
				Beams - Rolled Sections, Painted				
280	**7.2.1**		3320.01	Beams Under 60 kg/m (incl. S, C, L shapes detailed as bracing, facing and overhangs, girt channels, steel connections for prefab concrete panels and building attachment steel to upstream wall)	kg	**618,443**	618,443	618,443
281	**7.2.2**		3320.02	Beams From 61 to 150 kg/m	kg	**359,270**	359,270	359,270
282	**7.2.3**		3320.03	Beams Over 150 kg/m	kg	**316,266**	316,266	316,266
282A	**7.2.3A**		3320.04	W Beam Stiffener (For Generator Floor Beams)	kg	**34,000**	34,000	34,000
282B	**7.2.3B**		3320.05	W Beam Bearing Plate (For Generator Floor Beams)	kg	**11,200**	11,200	11,200
				W Shape Columns - Rolled Sections, Painted				
283	**7.2.4**		3320.06	W Shape Columns Under 60 kg/m	kg	**1,697**	1,697	1,697
284	**7.2.5**		3320.07	W Shape Columns from 61 to 150 kg/m	kg	**89,054**	89,054	89,054
285	**7.2.6**		3320.08	W Shape Columns Over 150 kg/m	kg	**216,296**	216,296	216,296
				Grade WT Beams - Rolled Sections, Galvanized				
285A	**7.2.6A**		3320.09	Grade WT Beams Under 60 kg/m	kg	**1,700**	1,700	1,700
285B	**7.2.6B**		3320.10	Grade WT Beams From 61 to 150 kg/m	kg	**34,000**	34,000	34,000
285C	**7.2.6C**		3320.11	Grade WT Beams Over 150 kg/m	kg	**267,300**	267,300	267,300
285D	**7.2.6D**		3320.12	Grade WT Beams Bearing Plates	kg	**15,800**	15,800	15,800
285E	**7.2.6E**		3320.13	Grade WT Beams Stiffener	kg	**11,200**	11,200	11,200
				W Beams - Rolled Sections, Painted with Intumescent Paint				
286	**7.2.7**		3320.14	W Beams Under 60 kg/m	kg	**0**	0	0
287	**7.2.8**		3320.15	W Beams from 61 to 150 kg/m	kg	**0**	0	0
288	**7.2.9**		3320.16	W Beams Over 150 kg/m	kg	**0**	0	0
289	**7.2.10**		3320.17	W Beam Stiffners and Bent Plate at Openings	kg	**0**	0	0
290	**7.2.11**		3320.18	W Beam Base Plate	kg	**0**	0	0
				WT Beams - Rolled Sections, Painted with Intumescent Paint				
291	**7.2.12**		3320.19	WT Beams Under 60 kg/m	kg	**0**	0	0
292	**7.2.13**		3320.20	WT Beams Over 150 kg/m	kg	**0**	0	0
293	**7.2.14**		3320.21	WT Beam base plate	kg	**0**	0	0
				Columns - Rolled Sections, Painted with Intumescent Paint				
294	**7.2.15**		3320.22	Columns from 61 to 150 kg/m	kg	**0**	0	0
295	**7.2.16**		3320.23	Columns Over 150 kg/m	kg	**0**	0	0

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
				Columns, Built-up Sections, Painted with Intumescent Paint				
296	7.2.17		3320.24	Main Building Columns, in Rolled Shapes & Plates, Welded Continuously.	kg	0	0	0
				Columns & Girders - Built up Sections, Painted				
297	7.2.18		3320.25	Crane Girders in Welded Plates, 700-800 kg/m	kg	385,449	385,449	385,449
298	7.2.19		3320.26	Main Building Columns, in Rolled Shapes & Plates, Welded Continuously.	kg	875,566	875,566	875,566
				Trusses, Painted				
299	7.2.20		3320.27	Roof trusses and Wind Trusses	kg	275,598	275,598	275,598
				Bracings, Struts and HSS Columns Painted				
300	7.2.21		3320.28	Horizontal Bracing (WT Shapes) for roof and mezzanines	kg	76,964	76,964	76,964
301	7.2.22		3320.29	HSS Square Shapes for Vertical Bracing, Horizontal Bracing, Struts and HSS Columns (HSS Columns not covered in price item 304 (ref 7.2.25)	kg	189,724	189,724	189,724
				Nelson Studs, not painted				
302	7.2.23		3320.30	Nelson Studs (Dia. 19 and 13 mm) Welded Mezzanine Beams	kg	3,305	3,305	3,305
303	7.2.24		3320.31	Nelson Studs (Dia. 19 and 22 mm) Welded to Generator Floor Beams	kg	15,000	15,000	15,000
				Stairs, Hot dip Galvanized				
304	7.2.25		3320.32	Stair Stringers in Channels (incl. Galvanized Beams and Columns for the stairs)	kg	62,410	62,410	62,410
305	7.2.26		3320.33	Stair Treads in Grating (308 mm by 914 mm), hot dip galvanized, Bent Checkered Plate Nosing, type "FLOWFORGE" by FISHER & LUDLOW or equal	each	1,624	1,624	1,624
				Landings and Walkways, Hot dip Galvanized				
306	7.2.27		3320.34	Gratings for Landings at Stairs, type 24-102, Bearing Bars (of approx. 32X4.8) by FISHER and LUDLOW or equal	kg	48,820	48,820	48,820
307	7.2.28		3320.35	Bent Plate at Floor 15.5	kg	53,000	53,000	53,000
308	7.2.29		3320.36	Steel Angle L102x102x7.9 at Floor 15.5	kg	2,400	2,400	2,400
				Steel Decking				
309	7.2.30		3320.37	Roof Deck type RD 306 (t=0.91mm) by VICWEST, Galvanized Z 275 (Building roof and 10m door roof)	m²	8,250	8,250	8,250
310	7.2.31		3320.38	Roof Deck type RD 938 (t=0.76mm) by VICWEST, Galvanized Z 275 (mezzanine roof)	m²	1,640	1,640	1,640
310A	7.2.31A		3320.39	Roof Deck type RD 306 (t=1.22mm) VICWEST, Galvanized Z 275 (Main entrance roof)	m²	245	245	245
311	7.2.32		3320.40	Floor Deck type HB 306 (t=1.22 mm) by VICWEST, Galvanized Z 275 - Exterior (cover 3)	m²	1,550	1,550	1,550
311A	7.2.32A		3320.41	Floor Deck type HB 938 (t=0.91mm) by VICWEST, Galvanized Z 275 (Stair 10 roof)	m²	55	55	55
311B	7.2.32B		3320.42	Floor Deck type HB 306 (t=0.91mm) by VICWEST, Galvanized Z 275 (mezzanine floors)	m²	3,550	3,550	3,550
312	7.2.33		3320.43	Floor Deck type RD 306 (t=1.22 mm) by VICWEST, Galvanized Z 275 (Generator Floor)	m²	5,150	5,150	5,150
312A	7.2.33A		3320.44	Cladding CL508 (t=0.76mm) by VICWEST, Galvanized Z 275 (Cover C8)	m²	275	275	275
				Crane Rails Accessories				
313	7.2.34		3320.45	Tie-Back Linkage Assemblies by GANTREX, type TL123GP, includes Plates, Angles, Shims, "O" Rings, Bolts and Permanent Lubrication	each	96	96	96
				Anchor Bolts				
314	7.2.35		3320.46	Anchor Bolts Steel Grade 55 ASTM F1554 (Dia. 19 and 25 mm), U-Bolt assembly and Nuts A563, hot dip galvanized, by PORTLAND or equal	kg	5,960	5,960	5,960
315	7.2.36		3320.47	Anchor Bolts Steel Grade 55 ASTM F1554 (Dia. 28, 38 and 51 mm), Nuts A563, hot dip galvanized, by PORTLAND or equal	kg	22,800	22,800	22,800
				Guardrails in Pipes, Hot dip Galvanized				
316	7.2.37		3320.48	Guardrails in Pipes for Mezzanine, Stairs and Covers, with Kick Plate, Posts in DN32-XS and Railings in DN32-Std (in miscellaneous and Structural Steel Drawings)	kg	47,250	47,250	47,250
317	7.2.38		3320.49	Guardrails of Intake Deck (W and HSS shapes)	kg	17,750	17,750	17,750

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
				Hilti Bolts				
318	**7.2.39**		3320.50	Hilti KWIK Bolts 3 (Dia. 25 mm) 304 SS	each	525	525	525
319	**7.2.40**		3320.51	Hilti KWIK Bolts 3 (Dia. 10 mm and 19 mm) hot dip galvanized	each	630	630	630
320	**7.2.41**		3320.52	Hilti Adhesive Anchors, HAS rods (Dia. 19 mm) HIT RE-500 , hot dip galvanized	each	200	200	200
				Joists				
321	**7.2.42**		3320.53	Steel Joists, by CANAM or equal	kg	2,100	2,100	2,100
				Elastomeric pad				
322	**7.2.43**		3320.54	Elastomeric Pad at Attachment Axis E	each	40	40	40
				Intumescent Paint (for application on Steel Beams and Columns)				
322A	**7.2.43A**		3320.55	Intumescent Paint	m^2	**3,550**	3,550	3,550
				MISCELLANEOUS STEEL				
				Miscellaneous Structural Steel, Hot dip Galvanized				
323	**7.2.44**		3320.56	Miscellaneous Structural Steel - Embedded	kg	**104,968**	104,968	104,968
324	**7.2.45**		3320.57	Miscellaneous Structural Steel, L Shapes, Plates, Eye bolts, Crosby Type Pieces, Bent Plates and W shapes in miscellaneous steel section drawings	kg	**189,908**	189,908	189,908
325	**7.2.46**		3320.58	Checkered Plates	kg	**102,014**	102,014	102,014
326	**7.2.47**		3320.59	Embedded angles related to typical detail for steel deck on dwg : MFA-SN-CD-3320-ST-DD-0005-01	kg	**832**	832	832
327	**7.2.48**		3320.60	Contraction joint related to section E-E on the drawing : MFA-SN-CD-3300-CV-DD-0003-01	m	40	40	40
328	**7.2.49**		3320.61	Contraction joint related to section F-F on the drawing: MFA-SN-CD-3300-CV-DD-0003-01	m	50	50	50
329	**7.2.50**		3320.62	Contraction joint related to section K-K on the drawing: MFA-SN-CD-3300-CV-DD-0003-01	m	**122**	122	122
				Miscellaneous Stainless steel				
330	**7.2.51**		3320.63	Miscellaneous Stainless Steel for MK1, MK2 and Covers C9, C10, C11 and C11A	kg	**4,721**	4,721	4,721
				Crane Rails, rust preventive coating				
331	**7.2.52**		3320.64	Rail type BETH 175, includes Splices and Aluminothermic Welds, for Crane Girders and for Trash Cleaner	m	720	720	720
332	**7.2.53**		3320.65	Rail type Beth 104 with Aluminothermic Welds	m	315	315	315
				Crane Rails Accessories				
333	**7.2.54**		3320.66	GANTREX Rail Clip type WELDLOK 43 with Rubber Nosing for Crane Girders and Trash Cleaner	each	2,160	2,160	2,160
334	**7.2.55**		3320.67	GANTREX rail clip type WELDLOK 24 with Rubber Nosing, hot dip galvanized	each	1,060	1,060	1,060
				Ladders, Hot dip Galvanized				
335	**7.2.56**		3320.68	Ladders with or without Cage, and Self-Closing Gates (in miscellaneous and structural steel drawings)	kg	15,000	15,000	15,000
				Plates, Painted / Hot dip Galvanized				
336	**7.2.57**		3320.69	Plates 350 x 20, Under Rails BETH 175, Painted with Primer Plates 300 x 20 Under Rails BETH 175, hot dip galvanized	kg	35,500	35,500	35,500
				Landings, Walkways and Covers, Hot dip Galvanized				
337	**7.2.58**		3320.70	All types of grating not covered in price item 305 (ref 7.2.26) and price item 306 (ref 7.2.27) (in miscellaneous and structural steel drawings)	kg	**81,748**	81,748	81,748
338	**7.2.59**		3320.71	Grating at EL 45.5 on Intake Deck, Special Order	kg	**0**	0	0
				ARCHITECTURE WORKS				
				METAL CLADDING & ROOFING				
339	**7.2.60**		3320.72	Insulated Metal Wall Panels (Sandwiched Panels. VicWest & Kingspan; refer to them as Composite Metal Building Panels)	m^2	7,323	7,323	7,323
340	**7.2.61**		3320.73	Preformed Metal Siding (Vertical Metal Siding fastened to Steel Stud Wall)	m^2	508	508	508

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
341	7.2.62		3320.74	Preformed Metal Siding & Framing (for Snow Baffles over louvers)	m²	112	112	112
342	7.2.63		3320.75	Metal Liner Panel, Insulation & Z-Bars (attached to interior of pre-cast concrete fire wall)	m²	460	460	460
343	7.2.64		3320.76	Modified Bituminous Membrane Roofing System	m²	8,416	8,416	8,416
344	7.2.65		3320.77	Sealants (including for roofing & wall systems and pre-cast concrete fire wall joints)	LS	1	1	1
345	7.2.66		3320.78	Signage (Nalcor & Logo, Muskrat Falls Generating Station)	LS	1	1	1
346	7.2.67		3320.79	Roof Curb for Exhaust Fans	each	9	9	9
347	7.2.68		3320.80	Roof Curb for Exhaust Hood	each	1	1	1
348	7.2.69		3320.81	Roof Curb for Chimney	each	1	1	1
349	7.2.70		3320.82	Flashing for Roof Drains	each	25	25	25
350	7.2.71		3320.83	Flashing for Plumbing Vents	each	6	6	6
				OPENINGS				
351	7.2.72		3320.84	Exterior Metal Insulated Doors - Double	each	7	7	7
352	7.2.73		3320.85	Exterior Metal Insulated Doors - Single	each	14	14	14
353	7.2.74		3320.86	Aluminum Entrance Door (Insulated)	each	1	1	1
354	7.2.75		3320.87	Sectional Metal Insulated Door	each	2	2	2
355	7.2.76		3320.88	Aluminum Windows (32 Windows max)	m²	154	154	154
356	7.2.77		3320.89	Concrete Unit Masonry (Exterior)	m²	21	21	21
				FIRE & SAFETY ITEMS				
357	7.2.78		3320.90	Roof Anchors & Safety Restraints	each	45	45	45
				SPECIAL DOORS				
358	7.2.79		3320.91	Multi-Leaf Vertical Lift Metal Insulated Door	each	1	1	1
				ELECTRICAL WORK				
				EXTERIOR BUILDING LIGHTING				
358A	7.2.80		3320.92	Exterior lighting fixtures, HPS, 347 V AC, complete with conduit, junction box, wiring and JB mounting plates	each	23	23	23
				ROOF METAL SLEEVE				
358B	7.2.81		3320.93	Metal sleeves for cable passage for roof exhaust fans	each	9	9	9
				SLEEVE IN METAL SIDING WALL OF THE POWERHOUSE				
358C	7.2.82		3320.94	Sleeve in metal siding wall complete with conduit, junction box and JB mounting plates as per detail 1 on DWG MFA-SN-CD-3340-EL-EL-0001-02	each	13	13	13
358D	7.2.83		3320.95	Sleeve in metal siding wall on the right jamb of the multi-leaf door complete with conduit, junction box and JB mounting plates as per detail 2 on DWG MFA-SN-CD-3340-EL-EL-0001-02	each	1	1	1
				SUB-TOTAL POWERHOUSE - SUPERSTRUCTURE				
	8	3400		**TURBINE GENERATOR AND ANCILLARIES**				
	8.1		3430	**ELECTRICAL WORK**				
359	8.1.1		3430.01	Exothermic Connections	each	1225	1,225	1,225
359A	8.1.1A		3430.02	Mechanical Connections	each	40	40	40
360	8.1.2		3430.03	Embedded Copper Grounding Plates	each	65	65	65
361	8.1.3		3430.04	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	5200	5,200	5,200
362	8.1.4		3430.05	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	1800	1,800	1,800
362A	8.1.4A		3430.06	Rigid PVC Conduit, size 53mm	m	15	15	15
363	8.1.5		3430.07	Rigid PVC Conduit, size 78mm	m	50	50	50
364	8.1.6		3430.08	Rigid PVC Conduit, size 129mm	m	325	325	325

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
365	8.1.7		3430.09	Rigid Galvanized Steel Conduits, size 103 mm	m	100	100	100
366	8.1.8		3430.10	High Bay Light Fixture, Metal Halide, 347 Vac, complete with 1000 W lamp	each	46	46	46
367	8.1.9		3430.11	High Bay Light Fixture, Metal Halide, 347 Vac, complete with 1000 W lamp and Quartz auxiliary lamp	each	23	23	23
368	8.1.10		3430.12	Panelboard, 600/347 Vac, 3 phase, 4 wire, 42 circuit, surface mounted sprinkler-proof enclosure, complete with breakers as indicated	each	3	3	3
369	8.1.11		3430.13	Dry-Type Transformer, 75 kVA, 600-600/347 Vac	each	3	3	3
370	8.1.12		3430.14	Disconnect Switch, 600 V, 3 phase, complete with fuses	each	3	3	3
371	8.1.13		3430.15	Lighting Contactor Control Panel	each	2	2	2
372	8.1.14		3430.16	ON-OFF Pushbutton Control Station	each	4	4	4
373	8.1.15		3430.17	Teck Cables, 2C # 12 AWG	m	900	900	900
374	8.1.16		3430.18	Teck Cables, 3C # 12 AWG	m	500	500	500
375	8.1.17		3430.19	Teck Cables, 2C # 10 AWG	m	400	400	400
376	8.1.18		3430.20	Teck Cables, 4C # 10 AWG	m	500	500	500
377	8.1.19		3430.21	Temporary Feeder Cables to lighting transformers/panelboards, etc.	LS	1	1	1
				SUB-TOTAL POWERHOUSE - ELECTRICAL WORK				
	8.2		3440	**MECHANICAL WORK**				
378	8.2.1		3351	**HVAC System**	**LS**	**1**	1	1
378.01			3351.01	Pipe and Fittings NPS 6, Piping Specification PA03	m	86		
378.02			3351.02	Pipe and Fittings NPS 21, Piping Specification PA03	m	81		
378.03			3351.03	Pipe and Fittings NPS 24, Piping Specification PA03	m	101		
378.04			3351.04	HVAC Louvers	LS	1	See Note 1	
379	8.2.2		3352	**Domestic Wastewater System**	**LS**	**1**	1	1
379.01			3352.01	Pipe and Fittings NPS 3, Piping Specification PA04 (HDPE-DR11)	m	900		
379.02			3352.02	Equipments and Other Components	LS	1	See Note 1	
379.03			3352.03	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
380	8.2.3		3353	**Wastewater System**	**LS**	**1**	1	1
380.01			3353.01	Pipe and Fittings NPS 1 1/2, Piping Specification PA01	m	2		
380.02			3353.02	Pipe and Fittings NPS 2, Piping Specification PA01	m	2		
380.03			3353.03	Pipe and Fittings NPS 3, Piping Specification PA01	m	10		
380.04			3353.04	Pipe and Fittings NPS 4, Piping Specification PA01	m	29		
380.05			3353.05	Pipe and Fittings NPS 3, Piping Specification PA04 (HDPE-DR11)	m	160		
380.06			3353.06	Flexible corrugated perforated HDPE Pipe NPS 4, covered With A Geotextile	m	100	See Note 1	
380.07			3353.07	NPS 4, PERFORATED SOLVENT WELD SEWER PIPE CERTIFIED: CSA B182.1 AND BNQ NQ3624-050	m	250		
380.08			3353.08	NPS 4, SOLVENT WELD SEWER PIPE CERTIFIED: CSA B182.1	m	35		
380.09			3353.09	Septic Tile Field	LS	1		
380.1			3353.10	Roof vent	each	2		
380.11			3353.11	Equipments and Other Components	LS	1		
380.12			3353.12	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
381	8.2.4		3441	**Low Pressure Compressed Air System**	**LS**	**1**	1	1
381.01			3441.01	Pipe and Fittings NPS 2, Piping Specification SB11	m	49	See Note 1	
381.02			3441.02	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
382	8.2.5		3443	**Fire Protection System**	**LS**	**1**	1	1
382.01			3443.01	Pipe and Fittings NPS 8, Piping Specification CB12	m	10		

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
382.02			3443.02	Pipe and Fittings NPS 10, Piping Specification CB12	m	**60**		
382.03			3443.03	Pipe and Fittings NPS 2 1/2, Piping Specification SB12	m	**37**		
382.04			3443.04	Pipe and Fittings NPS 4, Piping Specification SB12	m	**2**		
382.05			3443.05	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
383	**8.2.6**		**3444**	**Clear Water Drainage System**	**LS**	**1**	1	1
383.01			3444.01	Pipe and Fittings NPS 3, Piping Specification PA01	m	**3**		
383.02			3444.02	Pipe and Fittings NPS 4, Piping Specification PA01	m	**121**		
383.03			3444.03	Pipe and Fittings NPS 6, Piping Specification PA01	m	**330**		
383.04			3444.04	Pipe and Fittings NPS 8, Piping Specification PA02	m	**664**		
383.05			3444.05	Pipe and Fittings NPS 2, Piping Specification CB11	m	**79**		
383.06			3444.06	Pipe and Fittings NPS 3, Piping Specification CB11	m	**420**		
383.07			3444.07	Pipe and Fittings NPS 4, Piping Specification CB11	m	**1,146**		
383.08			3444.08	Pipe and Fittings NPS 6, Piping Specification CB11	m	**875**	See Note 1	
383.09			3444.09	Pipe and Fittings NPS 8, Piping Specification CB11	m	**149**		
383.1			3444.10	Pipe and Fittings NPS 10, Piping Specification CB11	m	**139**		
383.11			3444.11	Pipe and Fittings NPS 12, Piping Specification CB11	m	**130**		
383.12			3444.12	Pipe and Fittings NPS 16, Piping Specification CB11	m	**19**		
383.13			3444.13	Pipe and Fittings NPS 24, Piping Specification CB11	m	**20**		
383.14			3444.14	Equipments and Other Components	LS	1		
383.15			3444.15	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
383.16			3444.16	Roof drains and accessories	each	32		
384	**8.2.7**		**3445**	**Dewatering System**	**LS**	**1**	1	1
384.01			3445.01	Pipe and Fittings NPS 3/4, Piping Specification SB11	m	**1**		
384.02			3445.02	Pipe and Fittings NPS 1, Piping Specification SB11	m	**3**		
384.03			3445.03	Pipe and Fittings NPS 2, Piping Specification SB11	m	**12**		
384.04			3445.04	Pipe and Fittings NPS 4, Piping Specification CB11	m	**32**		
384.05			3445.05	Pipe and Fittings NPS 8, Piping Specification CB11	m	**33**		
384.06			3445.06	Pipe and Fittings NPS 12, Piping Specification CB11	m	**242**	See Note 1	
384.07			3445.07	Pipe and Fittings NPS 20, Piping Specification CB11	m	**235**		
384.08			3445.08	Pipe and Fittings NPS 24, Piping Specification CB11	m	**110**		
384.09			3445.09	Pipe and Fittings NPS 30, Piping Specification CB11	m	**39**		
384.1			3445.10	Equipment and Other Components	LS	1		
384.11			3445.11	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
385	**8.2.8**		**3447**	**Oily Water Drainage System**	**LS**	**1**	1	1
385.01			3447.01	Pipe and Fittings NPS 3, Piping Specification CB11	m	**9**		
385.02			3447.02	Pipe and Fittings NPS 4, Piping Specification CB11	m	**6**		
385.03			3447.03	Pipe and Fittings NPS 6, Piping Specification CB11	m	**30**		
385.04			3447.04	Pipe and Fittings NPS 8, Piping Specification CB11	m	**19**		
385.05			3447.05	Pipe and Fittings NPS 14, Piping Specification CB11	m	**70**	See Note 1	
385.06			3447.06	Pipe and Fittings NPS 16, Piping Specification CB11	m	**146**		
385.07			3447.07	Equipments and Other Components	LS	1		
385.08			3447.08	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
386	**8.2.9**		**3448**	**Raw and Cooling Water System**	**LS**	**1**	1	1
386.01			3448.01	Pipe and Fittings NPS 14, Piping Specification CB11	m	**243**	See Note 1	

Table 2.4 – Confirmation of Quantities by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi	Salini JV
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
387	**8.2.10**		**3449**	**Service Water System**	**LS**	**1**	1	1
387.01			3449.01	Pipe and Fittings NPS 4, Piping Specification PA04 (HDPE-DR11)	m	**880**		
387.02			3449.02	Pipe and Fittings NPS 6, Piping Specification CB11	m	**60**		
387.03			3449.03	Pipe and Fittings NPS 8, Piping Specification CB11	m	**67**		
387.04			3449.04	Pipe and Fittings NPS 3/4, Piping Specification SB11	m	**36**		
387.05			3449.05	Pipe and Fittings NPS 2, Piping Specification SB11	m	**60**		
387.06			3449.06	Pipe and Fittings NPS 4, Piping Specification SB11	m	**27**	See Note 1	
387.07			3449.07	Equipments and Other Components	LS	1		
387.08			3449.08	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
388	**8.2.11**		**344C**	**Piezometer and Water Level System**	**LS**	**1**	1	1
388.01			344C.01	Pipe and Fittings NPS 6, Piping Specification SA11	m	**55**		
388.02			344C.02	Pipe and Fittings NPS 3, Piping Specification SB11	m	**1,924**	See Note 1	
388.03			344C.03	Pipe and Fittings NPS 1/2, Piping Specification JD01	m	**1,924**		
				SUB-TOTAL POWERHOUSE - MECHANICAL WORKS				
	9	**3500**		**WORK EXECUTED FOR COMPANY'S OTHER CONTRACTOR**				
	9.1		**3510**	**Supply of Concrete to Company's Other Contractors at the Batch Plant (excluding delivery from the Batch Plant to the Pour Location)**				
389	**9.1.1**		3510.01	Supply of Secondary Concrete - Class A2	m^3	7,500	7,500	7,500
390	**9.1.2**		3510.02	Supply of Concrete - Class A	m^3	1,000	1,000	1,000
391	**9.1.3**		3510.03	Supply of Concrete - Class B	m^3	14,500	14,500	14,500
				SUB-TOTAL SUBCONTRACTING WORKS FOR OTHERS				
	10	**3600**		**MISCELLANEOUS - RATE ONLY**				
	10.1		**3610**	**Hilti Adhesive Anchors**				
392	**10.1.1**		3610.01	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 16 mm), hot dip galvanized	each	100	100	100
393	**10.1.2**		3610.02	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 19 mm), hot dip galvanized	each	100	100	100
394	**10.1.3**		3610.03	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 25 mm), hot dip galvanized	each	100	100	100

Economic Analyst	Steve Goulding
Signed	_____
Date:	_____

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
	2	0000		**INDIRECT COSTS**				
1	2.1		0000.01	Mobilization	LS	1	0	17,548
2	2.2		0000.02	Site Installation	LS	1	71,519	12,769
3	2.3		0000.03	Contractor Equipment for Indirects	LS	1	164,938	140,683
4	2.4		0000.04	Temporary Works	LS	1	40,873	17,925
5	2.5		0000.05	Winter Protection	LS	1	68,850	1,516
6	2.6		0000.06	Management and Staff	LS	1	1,982,044	675,420
6A	2.6A		0000.06A	Design and Technical Assistance	LS	1	131,000	116,445
7	2.7		0000.07	Attendant labour	LS	1	736,610	478,835
8	2.8		0000.08	Services	LS	1	50,821	13,084
9	2.9		0000.09	Employee Training	LS	1	31,450	235,719
10	2.10		0000.10	Health and Safety Requirements	LS	1	116,000	144,444
11	2.11		0000.11	Environmental Requirements	LS	1	32,400	66,805
12	2.12		0000.12	Quality Assurance / Quality Control	LS	1	175,800	109,043
13	2.13		0000.13	Letters of Credit	LS	1	0	0
14	2.14		0000.14	Parent Guarantee	LS	1	0	0
15	2.15		0000.15	Contractor Insurance, per Article 18 of the Agreement	LS	1	0	0
16	2.16		0000.16	Warranty, per Article 17 of the Agreement	LS	1	0	0
17	2.17		0000.17	Site Maintenance	LS	1	86,693	46,679
17A	2.17A		0000.17A	Maintenance Grade No. 3 Material	m^3	7,200	1,940	0
17B	2.17B		0000.17B	Coarse Sand	m^3	2,900	817	0
17C	2.17C		0000.17C	Calcium Chloride (20 kg bag)	each	12,500	0	0
18	2.18		0000.18	Financing, Contingency, Head Office Overheads, & Consultant Fees	LS	1	0	0
19	2.19		0000.19	Demobilization	LS	1	0	25,883
19A	2.19A		0000.19A	Estimate of Travel Allowances - Trades Labour	NA	NA	0	0
				SUB-TOTAL INDIRECT COSTS				
	3	0000		**GENERAL**				
	3.1		1110	**ACCESS ROADS TO SPILLWAY, ACCESS RAMPS AND PADS FOR COMPANY'S OTHER CONTRACTORS**				
20	3.1.1		1110.01	Overburden Excavation	m^3	6,400	684	1,280
21	3.1.2		1110.02	Zone 3C Material	m^3	3,960	870	634
22	3.1.3		1110.03	Zone 3D Material	m^3	8,360	1,836	1,254
23	3.1.4		1110.04	Granular "B" Material	m^3	1,250	492	213
24	3.1.5		1110.05	Granular "C" Material	m^3	1,250	492	213
25	3.1.6		1110.06	Concrete Culvert 600 mm	m	45	8	283
	3.2		1120	**DEWATERING OF STRUCTURE AREAS**				
26	3.2.1		1120.01	Structure Areas	LS	1	10,863	16,551
	3.3		1150	**TEMPORARY BRIDGE**				
27	3.3.1		1150.01	Temporary Downstream Bridge over the Spillway	LS	1	7,953	13,231
	3.4		1170	**CONSTRUCTION CRANE**				
28	3.4.1		1170.01	Powerhouse – Construction Crane	LS	1	9,936	235
	3.5		1180	**Temporary Heating, Ventilating and Lighting of Powerhouse**				
29	3.5.1		1180.01	Temporary Heating, Ventilating and Lighting of Powerhouse	LS	1	1,801	18,000
	3.6		1190	**Chain Link Fences and Gates**				

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
30	3.6.1		1190.01	Chain Link Fences and Gates in the Powerhouse Parking and Contractor's Laydown Areas	m	50	65	635
	3.7		1200	**Temporary Lateral Support and Bracings**				
31	3.7.1		1200.01	Temporary Lateral Support and Bracings for Piers of the Spillway	LS	1	290	1,514
	3.8		1210	**Anchor Points**				
32	3.8.1		1210.01	Anchor Points at Powerhouse and Spillway	each	50	373	181
				SUB-TOTAL GENERAL				
	4	2360		**TRANSITION DAMS**				
	4.1		2361	**NORTH TRANSITION DAM**				
				CIVIL WORK				
				Excavation				
33	4.1.1		2361.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	650	221	111
				Foundation Preparation				
34	4.1.2		2361.02	Dental Excavation	m^3	30	8	33
35	4.1.3		2361.03	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	430	53	215
36	4.1.4		2361.04	Dental Concrete	m^3	70	129	137
37	4.1.5		2361.05	Dry Pack	m^3	3	6	8
				Drilling, Pressure Grouting and Drainage				
38	4.1.6		2361.06	Grouting Holes	m	200	178	116
39	4.1.7		2361.07	Grouting - Successful Connections	each	40	135	168
40	4.1.8		2361.08	Dry Cement for Grouting	kg	7,000	315	70
41	4.1.9		2361.09	Water Pressure Tests (Lugeon)	hour	4	40	18
42	4.1.10		2361.10	Water Pressure Tests - Successful Connections	each	10	15	92
43	4.1.11		2361.11	Uplift Gauges	m	25	27	176
44	4.1.12		2361.12	Thermistors	each	1	23	6
45	4.1.13		2361.13	Rotary/Percussion Drill Check Holes	m	25	17	113
46	4.1.14		2361.14	Cored (Diamond drill) holes	m	25	67	109
47	4.1.15		2361.15	Drainage Holes	m	65	48	79
48	4.1.16		2361.16	PVC Caps for Drainage Holes	each	5	4	3
49	4.1.17		2361.17	Survey Monuments	each	1	2	5
				CONCRETE WORK				
50	4.1.18		2361.18	Concrete	m^3	9,130	35,590	39,350
50A	4.1.18A		2361.19	PVC Waterstop - TYPE A (150 mm width)	m	**30**	8	8
51	4.1.19		2361.20	PVC Waterstop - TYPE B (225 mm width)	m	**315**	84	85
52	4.1.20		2361.21	Hydrophilic Waterstop	m	**22**	6	5
53	4.1.21		2361.22	Bituminous Coating at Contraction Joints	m^2	570	301	1,254
				REINFORCEMENT, ANCHORS AND DOWELS				
54	4.1.22		2361.23	Reinforcement including Dowels	kg	**55,000**	1,164	1,650
				STRUCTURAL STEEL AND MISCELLANEOUS METAL				
				Supply and Installation of Non Embedded Miscellaneous Metal				
55	4.1.23		2361.24	Galvanized Miscellaneous Steel	kg	**10,600**	425	636
56	4.1.24		2361.25	Galvanized Grating	kg	**5,100**	150	306
				Embedded Miscellaneous Metals				
57	4.1.25		2361.26	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	**190**	11	23

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
58	4.1.26		2361.27	**Anchor Bolts Grade 55 ASTM F1554**	kg	535	31	43
				ELECTRICAL WORK				
59	4.1.27		2361.28	Exothermic Connections.	each	30	72	67
59A	4.1.27A		2361.29	Mechanical Connections	each	4	9	6
60	4.1.28		2361.30	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	200	83	104
61	4.1.29		2361.31	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	30	7	8
61A	4.1.30		2361.32	Embedded Copper Grounding Plates	each	1	4	2
61B	4.1.31		2361.33	Rigid PVC Conduit, size 129mm	m	75	405	146
				SUB-TOTAL NORTH TRANSITION DAM				
	4.2		2362	**CENTRE TRANSITION DAM**				
				CIVIL WORK				
				Excavation				
62	4.2.1		2362.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	2,100	713	357
				Foundation Preparation				
63	4.2.2		2362.02	Dental Excavation	m^3	80	22	87
64	4.2.3		2362.03	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	1,430	177	715
65	4.2.4		2362.04	Dental Concrete	m^3	215	397	419
66	4.2.5		2362.05	Dry Pack	m^3	10	19	26
				Drilling, Pressure Grouting and Drainage				
67	4.2.6		2362.06	Grouting Holes	m	600	533	348
68	4.2.7		2362.07	Grouting - Successful Connections	each	120	405	505
69	4.2.8		2362.08	Dry Cement for Grouting	kg	20,000	900	200
70	4.2.9		2362.09	Water Pressure Tests (Lugeon)	hour	4	40	18
71	4.2.10		2362.10	Water Pressure Tests - Successful Connections	each	10	15	92
72	4.2.11		2362.11	Uplift Gauges	m	30	32	211
73	4.2.12		2362.12	Thermistors	each	1	23	6
74	4.2.13		2362.13	Rotary/Percussion Drill Check Holes	m	25	17	113
75	4.2.14		2362.14	Cored (Diamond drill) holes	m	25	67	109
76	4.2.15		2362.15	Drainage Holes	m	200	148	244
77	4.2.16		2362.16	PVC Caps for Drainage Holes	each	20	16	11
				Geotechnical Instrumentation				
78	4.2.17		2362.17	Survey Monuments	each	5	9	24
79	4.2.18		2362.18	Hydraulic piezometers	each	3	8	244
80	4.2.19		2362.19	V-Notch Weirs	each	1	3	8
				CONCRETE WORK				
81	4.2.20		2362.20	Concrete Below El. 42.00 m	m^3	26,900	112,268	143,108
82	4.2.21		2362.21	Concrete Above El. 42.00 m	m^3	2,550	10,515	12,827
83	4.2.22		2362.22	Concrete - Slab on Steel Deck	m^3	150	594	903
84	4.2.23		2362.23	Grout	m^3	17	40	17
84A	4.2.23A		2362.24	PVC Waterstop - TYPE A (150 mm width)	m	135	36	36
85	4.2.24		2362.25	PVC Waterstop - TYPE B (225 mm width)	m	629	168	138
86	4.2.25		2362.26	Bituminous Coating at Contraction Joint	m^2	3,060	1,615	6,732
				REINFORCEMENT, ANCHORS AND DOWELS				

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
87	4.2.26		2362.27	Reinforcement including Dowels	kg	145,000	3,069	4,350
				SUPPLY AND INSTALLATION OF STRUCTURAL STEEL				
88	4.2.27		2362.28	Painted Structural Steel	kg	79,400	1,915	7,146
				STRUCTURAL STEEL AND MISCELLANEOUS METAL				
				Supply and Installation of Non Embedded Miscellaneous Metal				
89	4.2.28		2362.29	Galvanized Miscellaneous Steel	kg	37,000	1,483	2,220
90	4.2.29		2362.30	Galvanized Grating	kg	1,745	51	105
				Embedded Miscellaneous Metals				
91	4.2.30		2362.31	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	16,870	991	1,350
				Metal Decking including Shear Studs (Galvanized)				
92	4.2.31		2362.32	Steel deck type RD 306 (t=0.91 mm)	m^2	400	200	244
93	4.2.32		2362.33	Shear Studs	kg	375	22	23
				Crane Rails including Fastening System and Accessories				
94	4.2.33		2362.34	Rails for Trash Cleaning System	m	140	196	55
95	4.2.34		2362.35	**Anchor Bolts Grade 55 ASTM F1554**	kg	4,850	285	388
96	4.2.35		2362.36	**Elastomeric Bearing Pads**	each	21	7	938
				ELECTRICAL WORK				
97	4.2.36		2362.37	Exothermic Connections.	each	140	336	314
97A	4.2.36A		2362.38	Mechanical Connections	each	17	39	38
98	4.2.37		2362.39	Embedded Copper Grounding Plates	each	2	8	8
99	4.2.38		2362.40	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	500	207	260
100	4.2.39		2362.41	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	225	50	59
101	4.2.40		2362.42	Rigid PVC Conduit, size 41mm	m	0	0	0
101A	4.2.40A		2362.43	Rigid PVC Conduit, size 53mm	m	3	6	3
102	4.2.41		2362.44	Rigid PVC Conduit, size 78mm	m	0	0	0
103	4.2.42		2362.45	Rigid PVC Conduit, size 129mm	m	110	594	213
104	4.2.43		2362.46	Junction Box, size 200 x 200 x 150 mm Complete with Traffic Rated Cover	each	0	0	0
				SUB-TOTAL CENTRE TRANSITION DAM				
	4.3		2363.00	**SOUTH TRANSITION DAM**				
				CIVIL WORK				
				Excavation				
105	4.3.1		2363.01	Fill Excavation (Sand Layer for Winter Protection)	m^3	1,350	458	230
				Foundation Preparation				
106	4.3.2		2363.02	Dental Excavation	m^3	45	12	50
107	4.3.3		2363.03	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	900	112	450
108	4.3.4		2363.04	Dental Concrete	m^3	135	249	263
109	4.3.5		2363.05	Dry Pack	m^3	6	12	16
				Drilling, Pressure Grouting and Drainage				
110	4.3.6		2363.06	Grouting Holes	m	500	444	290
111	4.3.7		2363.07	Grouting - Successful Connections	each	100	337	421
112	4.3.8		2363.08	Dry Cement for Grouting	kg	18,000	810	180
113	4.3.9		2363.09	Water Pressure Tests (Lugeon)	hour	5	50	23
114	4.3.10		2363.10	Water Pressure Tests - Successful Connections	each	12	17	110

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
115	4.3.11		2363.11	Uplift Gauges	m	30	32	211
116	4.3.12		2363.12	Thermistors	each	1	23	6
117	4.3.13		2363.13	Rotary/Percussion Drill Check Holes	m	30	21	136
118	4.3.14		2363.14	Cored (Diamond drill) holes	m	30	80	130
119	4.3.15		2363.15	Drainage Holes	m	225	167	275
120	4.3.16		2363.16	PVC Caps for Drainage Holes	each	15	12	8
				Geotechnical Instrumentation				
121	4.3.17		2363.17	Survey Monuments	each	4	7	19
122	4.3.18		2363.18	Hydraulic piezometers	each	2	6	170
123	4.3.19		2363.19	V-Notch Weirs	each	1	3	8
				CONCRETE WORK				
124	4.3.20		2363.20	Concrete	m^3	9,700	38,544	40,352
124A	4.3.20A		2363.21	PVC Waterstop - TYPE A (150 mm width)	m	130	35	35
125	4.3.21		2363.22	PVC Waterstop - TYPE B (225 mm width)	m	170	45	37
126	4.3.22		2363.23	Hydrophilic Waterstop	m	0	0	0
127	4.3.23		2363.24	Bituminous Coating at Contraction Joints	m^2	380	201	836
				REINFORCEMENT, ANCHORS AND DOWELS				
128	4.3.24		2363.25	Reinforcement including Dowels	kg	283,300	5,597	8,499
				STRUCTURAL STEEL AND MISCELLANEOUS METAL				
				Supply and Installation of Non Embedded Miscellaneous Metal				
129	4.3.25		2363.26	Galvanized Miscellaneous Steel	kg	14,850	595	891
130	4.3.26		2363.27	Galvanized Grating	kg	230	7	14
				Embedded Miscellaneous Metals				
131	4.3.27		2363.28	Embedded Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	110	4	9
132	4.3.28		2363.29	**Anchor Bolts Grade 55 ASTM F1554**	kg	1,350	79	108
				ELECTRICAL WORK				
133	4.3.29		2363.30	Exothermic Connections.	each	100	240	223
133A	4.3.29A		2363.31	Mechanical Connections	each	12	28	27
134	4.3.30		2363.32	Embedded Copper Grounding Plates	each	2	8	8
135	4.3.31		2363.33	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	300	124	156
136	4.3.32		2363.34	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	150	34	39
137	4.3.33		2363.35	Rigid PVC Conduit, size 53mm	m	5	10	3
				SUB-TOTAL SOUTH TRANSITION DAM				
	4.4		2364	**SEPARATION WALL**				
				CIVIL WORK				
				Foundation Preparation				
138	4.4.1		2364.01	Dental Excavation	m^3	50	14	55
139	4.4.2		2364.02	Scaling and Water/Air Jet Cleaning of Bedrock	m^2	900	112	450
140	4.4.3		2364.03	Dental Concrete	m^3	130	240	254
141	4.4.4		2364.04	Dry Pack	m^3	6	12	16
				CONCRETE WORK				
142	4.4.5		2364.05	Concrete - Separation Wall	m^3	10,850	53,907	55,986
143	4.4.6		2364.06	PVC Waterstop - TYPE B (225 mm width)	m	60	16	16

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
144	4.4.7		2364.07	Hydrophilic Waterstop	m	15	4	3
145	4.4.8		2364.08	Bituminous Coating at Contraction Joint	m²	810	427	1,782
				SUB-TOTAL SEPARATION WALL				
	5	2400		**SPILLWAY**				
	5.1		2410	**SPILLWAY STRUCTURE**				
				CIVIL WORK				
				Excavation and Backfill				
146	5.1.1		2410.01	Fill Excavation (Sand Layer for Winter Protection)	m³	7,600	2,580	1,292
				Drilling, Pressure Grouting and Drainage				
147	5.1.2		2410.02	Grouting Holes	m	650	578	377
148	5.1.3		2410.03	Grouting - Successful Connections	each	130	439	547
149	5.1.4		2410.04	Dry Cement for Grouting	kg	23,000	1,035	230
150	5.1.5		2410.05	Water Pressure Tests (Lugeon)	hour	4	40	18
151	5.1.6		2410.06	Water Pressure Tests - Successful Connections	each	10	15	92
152	5.1.7		2410.07	Uplift Gauges	m	30	32	211
153	5.1.8		2410.08	Thermistors	each	1	23	6
154	5.1.9		2410.09	Rotary/Percussion Drill Check Holes	m	25	17	113
155	5.1.10		2410.10	Cored (Diamond drill) holes	m	25	67	109
				Instrumentation				
156	5.1.11		2410.11	Survey Monuments	each	6	11	29
				Foundation preparation				
157	5.1.12		2410.12	Scaling and Water/Air Jet Cleaning of rock foundation	m²	5,100	632	2,550
				CONCRETE WORK				
				Spillway and Related Structures including Retaining Walls				
158	5.1.13		2410.13	Concrete - Slabs	m³	13,100	35,734	60,391
159	5.1.14		2410.14	Concrete - Piers and Walls	m³	32,900	245,733	208,257
160	5.1.15		2410.15	Concrete - Rollways	m³	19,500	52,439	84,630
161	5.1.16		2410.16	Demolition of Slab for Rollway Key	m³	200	95	220
162	5.1.17		2410.17	Overbreak Concrete	m³	3,000	6,235	5,850
163	5.1.18		2410.18	Grout	m³	20	47	52
164	5.1.19		2410.19	PVC Waterstop - TYPE A (150 mm width)	m	4,100	1,093	902
164A	5.1.19A		2410.20	PVC Waterstop - TYPE B (225 mm width)	m	1,000	267	270
164B	5.1.19B		2410.21	PVC Waterstop - TYPE D	m	550	147	149
165	5.1.20		2410.22	Hydrophilic Waterstop	m	0	0	0
166	5.1.21		2410.23	Bituminous Coating at Contraction Joint	m²	950	501	2,090
				REINFORCEMENT, ANCHORS AND DOWELS				
167	5.1.22		2410.24	Reinforcement including Dowels	kg	3,850,000	76,058	115,500
168	5.1.23		2410.25	Drill Holes and Grouting for Rock Dowels	m	1,200	2,692	1,692
169	5.1.24		2410.26	Threaded Rebars with Couplers	kg	117,000	5,204	2,340
				STRUCTURAL STEEL AND MISCELLANEOUS METAL				
				Non Embedded Miscellaneous Metal				
170	5.1.25		2410.27	Non Embedded Galvanized Miscellaneous Steel	kg	10,900	640	654
171	5.1.26		2410.28	Non Embedded Galvanized Grating	kg	0	0	0

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM No	PRICE ITEM REFERENCE EXH. 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
				Embedded Miscellaneous Metals				
172	**5.1.27**		2410.29	Embedded Galvanized Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	**430**	17	34
173	**5.1.28**		2410.30	Bulkhead Formwork - Rollway Joints	kg	**13,500**	613	1,080
				Crane Rails including Fastening System and Accessories				
174	**5.1.29**		2410.31	Rails for Trash Cleaning System	m	150	210	59
175	**5.1.30**		2410.32	**Anchor Bolts Grade 55 ASTM F1554**	kg	**2,520**	148	252
				ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS				
176	**5.1.31**		2410.33	Anchors, Templates and Angles in Primary Concrete for Gates and Rollways (5 Sets)	kg	**91,135**	1,476	7,291
177	**5.1.32**		2410.34	Anchors, Templates and Angles in Primary Concrete for Upstream Temporary Stoplogs (5 Sets)	kg	**75,160**	1,218	6,013
178	**5.1.33**		2410.35	Anchors, Templates and Angles in Primary Concrete for Upstream Permanent Stoplogs (5 Sets)	kg	**42,492**	688	3,824
179	**5.1.34**		2410.36	Anchors, Templates and Angles in Primary Concrete for Downstream Stoplogs (5 Sets)	kg	**15,497**	251	1,395
180	**5.1.35**		2410.37	Anchors and Templates in Primary Concrete for Hoist Towers (5 Sets)	kg	430	7	39
181	**5.1.36**		2410.38	Anchors and Templates in Primary Concrete for Walkways (5 Sets)	kg	200	3	20
182	**5.1.37**		2410.39	Liner Plates in sides of Piers	each	10	15	74
				ELECTRICAL WORK				
183	**5.1.38**		2410.40	Exothermic Connections.	each	**290**	696	644
183A	**5.1.38A**		2410.41	Mechanical Connections	each	**45**	104	101
184	**5.1.39**		2410.42	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	**2,200**	911	1,144
185	**5.1.40**		2410.43	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	550	123	143
186	**5.1.41**		2410.44	Rigid Galvanized Steel Conduits, size 53mm	m	**50**	480	38
				SUB-TOTAL SPILLWAY STRUCTURE				
	5.2		**2411**	**SPILLWAY BRIDGES**				
				CONCRETE WORK				
187	**5.2.1**		2411.01	Concrete - Slab on Bridge Deck	m^3	**460**	1,654	2,903
				REINFORCEMENT, ANCHORS AND DOWELS				
188	**5.2.2**		2411.02	Reinforcement including Dowels	kg	**122,150**	2,413	3,665
				STRUCTURAL STEEL AND MISCELLANEOUS METAL				
				Structural Steel				
189	**5.2.3**		2411.03	Structural Steel - Painted/Galvanized Sections	kg	**263,500**	5,652	18,445
				Non Embedded Miscellaneous Metal				
190	**5.2.4**		2411.04	Non Embedded Galvanized Miscellaneous Steel	kg	**58,500**	3,436	3,510
191	**5.2.5**		2411.05	Non Embedded Galvanized Grating	kg	**0**	0	0
				Embedded Miscellaneous Metals				
192	**5.2.6**		2411.06	Embedded Galvanized Miscellaneous Steel (Frames, L Shapes, Sleeves, etc..)	kg	**12,850**	515	1,028
192A	**5.2.6A**		2411.07	Shear Studs	kg	**3,420**	201	205
193	**5.2.7**		2411.08	**Elastomeric Bearing Pads**	each	110	36	591
194	**5.2.8**		2411.09	**Bridge Expansion Joints**	each	**12**	4	968
195	**5.2.9**		2411.10	**Anchor Bolts Grade 55 ASTM F1554**	kg	**13,000**	763	1,040
				SUB-TOTAL SPILLWAY BRIDGES				
	5.3		**2430**	**SPILLWAY DISCHARGE CHANNEL - PHASE 1**				
				CIVIL WORK				
				Foundation preparation				

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
196	5.3.1		2430.01	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	2,880	357	1,440
				CONCRETE WORK				
197	5.3.2		2430.02	Concrete - Slabs (CVC)	m^3	1,725	7,175	7,487
198	5.3.3		2430.03	Concrete - Walls (CVC)	m^3	700	4,662	3,738
199	5.3.4		2430.04	Overbreak Concrete	m^3	1,600	3,142	3,120
				REINFORCEMENT, ANCHORS AND DOWELS				
200	5.3.5		2430.05	Reinforcement including Dowels	kg	145,000	2,865	4,350
201	5.3.6		2430.06	Drill Holes and Grouting for Rock Dowels	m	3,650	8,189	5,147
				SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 1				
	5.4		2431	**SPILLWAY DISCHARGE CHANNEL - PHASE 2 - OPTIONAL**				
				CIVIL WORK				
				Foundation preparation				
202	5.4.1		2431.01	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	1,440	178	720
				CONCRETE WORK				
203	5.4.2		2431.02	Concrete - Slabs (CVC)	m^3	750	2,046	3,353
204	5.4.3		2431.03	Concrete - Walls (CVC)	m^3	300	2,906	1,899
205	5.4.4		2431.04	Overbreak Concrete	m^3	700	1,455	1,365
				REINFORCEMENT, ANCHORS AND DOWELS				
206	5.4.5		2431.05	Reinforcement including Dowels	kg	90,000	1,778	2,700
207	5.4.6		2431.06	Drill Holes and Grouting for Rock Dowels	m	1,900	4,263	2,679
				SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 2				
	5.5		2432	**SPILLWAY DISCHARGE CHANNEL - PHASE 3 - OPTIONAL**				
				CIVIL WORK				
				Foundation preparation				
208	5.5.1		2432.01	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	3,400	421	1,700
				CONCRETE WORK				
209	5.5.2		2432.02	Concrete - Slabs (CVC)	m^3	2,000	5,456	8,680
210	5.5.3		2432.03	Concrete - Walls (CVC)	m^3	200	1,937	1,268
211	5.5.4		2432.04	Overbreak Concrete	m^3	2,000	4,156	3,900
				REINFORCEMENT, ANCHORS AND DOWELS				
212	5.5.5		2432.05	Reinforcement including Dowels	kg	160,000	3,161	4,800
213	5.5.6		2432.06	Drill Holes and Grouting for Rock Dowels	m	4,600	10,320	6,486
				SUB-TOTAL SPILLWAY DISCHARGE CHANNEL - PHASE 3				
	6	3200		**INTAKE**				
	6.1		3220	**INTAKE STRUCTURE**				
				CIVIL WORK				
				Drilling, Pressure Grouting and Drainage				
214	6.1.1		3220.01	Grouting Holes	m	2,000	1,778	1,160
215	6.1.2		3220.02	Grouting - Successful Connections	each	400	1,350	1,684
216	6.1.3		3220.03	Dry Cement for grouting	kg	70,000	3,150	700
217	6.1.4		3220.04	Water Pressure Tests (Lugeon)	hour	8	80	37

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
218	6.1.5		3220.05	Water Pressure Tests - Successful Connections	each	20	29	184
219	6.1.6		3220.06	Uplift Gauges	m	30	32	211
220	6.1.7		3220.07	Thermistors	each	1	23	6
221	6.1.8		3220.08	Rotary/Percussion Drill Check Holes	m	50	35	227
222	6.1.9		3220.09	Cored (Diamond drill) holes	m	50	134	217
223	6.1.10		3220.10	Drainage Holes	m	800	592	976
224	6.1.11		3220.11	PVC Caps for Drainage Holes	each	50	41	28
				Foundation preparation				
225	6.1.12		3220.12	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	4,900	607	2,450
				Geotechnical Instrumentation				
226	6.1.13		3220.13	Survey Monuments	each	4	7	19
227	6.1.14		3220.14	V-Notch Weirs	each	2	6	16
				CONCRETE WORK				
				CONCRETE INTAKE & GATE HOIST BUILDING				
228	6.1.15		3220.15	Concrete - Substructure below El. 45.5 m	m^3	143,305	661,323	930,049
229	6.1.16		3220.16	Concrete - Gate Hoist Building and Elevator Room above El. 45.5 m	m^3	1,646	16,352	10,633
230	6.1.17		3220.17	Overbreak Concrete	m^3	3,000	5,794	6,300
231	6.1.18		3220.18	Grout	m^3	30	70	79
232	6.1.19		3220.19	PVC Waterstop - TYPE A (150 mm width)	m	8,611	2,295	1,894
233	6.1.20		3220.20	PVC Waterstop - TYPE B (225 mm width)	m	876	233	193
234	6.1.21		3220.21	Sealing of Joints	m	100	27	41
235	6.1.22		3220.22	Bituminous Coating at Construction Joints	m^2	6,020	3,176	13,244
235A	6.1.22A		3220.23	Elastomeric Polyurea Membrane	m^2	5,803	3,271	3,830
				REINFORCEMENT, ANCHORS AND DOWELS				
236	6.1.23		3220.24	Reinforcement including Dowels	kg	10,647,650	271,175	319,430
				INSTALLATION OF ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS				
237	6.1.24		3220.25	Anchors, Templates and Angles in Primary Concrete for Intake Gates (12 Sets)	kg	173,672	2,797	13,894
238	6.1.25		3220.26	Anchors and Templates in Primary Concrete for Intake Trashracks (12 Sets)	kg	82,000	1,321	6,560
239	6.1.26		3220.27	Anchors, Templates and Angles in Primary Concrete for Intake Stoplogs (12 Sets)	kg	151,021	2,432	12,082
	6.2		3290	**INTAKE - ELECTRICAL WORK**				
240	6.2.1		3290.01	Exothermic Connections.	each	600	1,440	1,326
240A	6.2.1A		3290.02	Mechanical Connections	each	104	239	233
241	6.2.2		3290.03	Embedded Copper Grounding Plates	each	6	24	11
242	6.2.3		3290.04	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	2,100	870	1,092
243	6.2.4		3290.05	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	1,900	426	494
243A	6.2.5		3290.06	Rigid PVC Conduit, size 35mm	m	9	14	6
243B	6.2.6		3290.07	Rigid PVC Conduit, size 78mm	m	20	21	21
243C	6.2.7		3290.06	Rigid PVC Conduit, size 129mm	m	300	1,620	582
				Heat Tracing of Drains				
243D	6.2.8		3290.07	Heat Tracing Cable plus Accessories	m	224	403	125
243E	6.2.9		3290.08	Heat Tracing Controllers	each	16	144	256
				SUB-TOTAL INTAKE STRUCTURE				
	7	3300		**POWERHOUSE**				

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
	7.1		3310	**SUBSTRUCTURE**				
				CIVIL WORK				
				Drilling, Pressure Grouting and Drainage				
244	7.1.1		3310.01	Grouting Holes	m	800	711	464
245	7.1.2		3310.02	Grouting - Successful Connections	each	160	540	674
246	7.1.3		3310.03	Dry Cement for Grouting	kg	28,000	1,260	280
247	7.1.4		3310.04	Water Pressure Tests (Lugeon)	hour	4	40	18
248	7.1.5		3310.05	Water Pressure Tests - Successful Connections	each	10	15	92
249	7.1.6		3310.06	Uplift Gauges	m	25	27	176
250	7.1.7		3310.07	Thermistors	each	1	23	6
251	7.1.8		3310.08	Rotary/Percussion Drill Check Holes	m	25	17	113
252	7.1.9		3310.09	Cored (Diamond drill) holes	m	25	67	109
				Foundation preparation				
253	7.1.10		3310.10	Scaling and Water/Air Jet Cleaning of rock foundation	m^2	10,400	1,289	5,200
				Trench for Interconnection Cables and Pipes				
254	7.1.11		3310.11	Excavation and Backfill	LS	1	4,633	8,967
255	7.1.12		3310.12	Ductbank	LS	1	6,012	637
256	7.1.13		3310.13	Manholes	each	3	7	36
				CONCRETE WORK				
257	7.1.14		3310.14	Concrete - Powerhouse Substructure below El. 6.5 m	m^3	**131,135**	475,760	857,623
258	7.1.15		3310.15	Concrete - Substructure between lines 6 and 7, including Sump Pit, Shafts for Stair & Elevator up to El. 45.5m	m^3	**14,882**	156,901	81,405
259	7.1.16		3310.16	Concrete - Slabs and Walls between El. 6.5 and 15.5, including North and South Service Bays, Slab on grade, Basins and Bases for GSU transformer up to El. 16.8 m. Air vent enclosures on Powerhouse tailrace deck and North Service Bay, Access enclosure to stair no. 8 and Oil/Water separator enclosure.	m^3	**6,692**	66,723	44,033
260	7.1.17		3310.17	Concrete - Slab on Steel Deck including Mezzanines	m^3	**3,718**	6,836	23,609
261	7.1.18		3310.18	Secondary Concrete of Draft Tube Cone Steel liner	m^3	2,420	9,758	15,706
262	7.1.19		3310.19	Overbreak Concrete	m^3	8,500	16,749	17,850
263	7.1.20		3310.20	Grout	m^3	15	35	15
264	7.1.21		3310.21	PVC Waterstop - TYPE A (150 mm width)	m	**9,746**	2,598	2,144
265	7.1.22		3310.22	PVC Waterstop - TYPE B (225 mm width)	m	**1,404**	374	379
265A	7.1.22A		3310.23	PVC Waterstop - TYPE C (225 mm width)	m	**25**	7	7
266	7.1.23		3310.24	Metallic Waterstop	m	**27**	7	6
267	7.1.24		3310.25	Sealing of Joints	m	300	80	123
268	7.1.25		3310.26	Polyethylene Foam Rod	m	140	37	46
269	7.1.26		3310.27	Asphalt Impregnated Fibre Board	m^2	70	37	123
270	7.1.27		3310.28	Bituminous Coating at Construction Joint	m^2	6,300	3,324	13,860
271	7.1.28		3310.29	Soldrain 500 from Texel/Geosol	m^2	170	0	37
271A	7.1.28A		3310.30	Elastomeric Polyurea Membrane	m^2	**678**	382	447
271B	7.1.28B		3310.31	Polyflex 202 Membrane	m^2	**2,400**	1,713	1,896
				Fire Walls at Tailrace Deck (Transformer Deck)				
272	7.1.29		3310.32	Prefabricated Concrete Longitudinal Sandwich Fire Walls (Refer to attached sketches)	m^2	2,520	1,338	1,184
273	7.1.30		3310.33	Prefabricated Transversal Concrete Fire Walls	m^2	860	152	404

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
				REINFORCEMENT, ANCHORS AND DOWELS				
274	7.1.31		3310.34	Reinforcement including Dowels	kg	10,918,631	278,076	327,559
275	7.1.32		3310.35	Drill Holes and Grouting for Rock Dowels	m	700	1,571	987
276	7.1.33		3310.36	Drill Holes for Anchors Diam. 25 mm with Epoxy Adhesive HIT-RE-500	m	100	224	183
277	7.1.34		3310.37	Threaded Rebar (Dia. 35 mm) with Couplers	kg	800	19	16
				INSTALLATION OF ANCHORS AND EMBEDDED PARTS PROVIDED BY OTHERS				
278	7.1.35		3310.38	Anchors, Templates and Angles in Primary Concrete for Draft Tube Stoplogs (8 Sets)	kg	55,370	892	4,983
279	7.1.36		3310.39	Anchors and Embedded Parts in Primary Concrete for T/G Units	kg	64,000	1,031	5,120
279A	7.1.37		3310.40	Installation of the lower portion of the circular passage for all 4 T/G Units - Optional (Refer to attached sketches)	kg	59,200	3,599	6,512
				SUB-TOTAL POWERHOUSE - SUBSTRUCTURE				
	7.2		3320	**SUPERSTRUCTURE (Intake and Powerhouse)**				
				STRUCTURAL STEEL				
				Beams - Rolled Sections, Painted				
280	7.2.1		3320.01	Beams Under 60 kg/m (incl. S, C, L shapes detailed as bracing, facing and overhangs, girt channels, steel connections for prefab concrete panels and building attachment steel to upstream wall)	kg	618,443	14,823	6,184
281	7.2.2		3320.02	Beams From 61 to 150 kg/m	kg	359,270	6,710	3,593
282	7.2.3		3320.03	Beams Over 150 kg/m	kg	316,266	5,069	3,163
282A	7.2.3A		3320.04	W Beam Stiffener (For Generator Floor Beams)	kg	34,000	2,259	340
282B	7.2.3B		3320.05	W Beam Bearing Plate (For Generator Floor Beams)	kg	11,200	537	112
				W Shape Columns - Rolled Sections, Painted				
283	7.2.4		3320.06	W Shape Columns Under 60 kg/m	kg	1,697	41	85
284	7.2.5		3320.07	W Shape Columns from 61 to 150 kg/m	kg	89,054	1,663	891
285	7.2.6		3320.08	W Shape Columns Over 150 kg/m	kg	216,296	3,656	2,163
				Grade WT Beams - Rolled Sections, Galvanized				
285A	7.2.6A		3320.09	Grade WT Beams Under 60 kg/m	kg	1,700	41	17
285B	7.2.6B		3320.10	Grade WT Beams From 61 to 150 kg/m	kg	34,000	635	340
285C	7.2.6C		3320.11	Grade WT Beams Over 150 kg/m	kg	267,300	5,758	2,673
285D	7.2.6D		3320.12	Grade WT Beams Bearing Plates	kg	15,800	757	158
285E	7.2.6E		3320.13	Grade WT Beams Stiffener	kg	11,200	744	112
				W Beams - Rolled Sections, Painted with Intumescent Paint				
286	7.2.7		3320.14	W Beams Under 60 kg/m	kg	0	0	0
287	7.2.8		3320.15	W Beams from 61 to 150 kg/m	kg	0	0	0
288	7.2.9		3320.16	W Beams Over 150 kg/m	kg	0	0	0
289	7.2.10		3320.17	W Beam Stiffners and Bent Plate at Openings	kg	0	0	0
290	7.2.11		3320.18	W Beam Base Plate	kg	0	0	0
				WT Beams - Rolled Sections, Painted with Intumescent Paint				
291	7.2.12		3320.19	WT Beams Under 60 kg/m	kg	0	0	0
292	7.2.13		3320.20	WT Beams Over 150 kg/m	kg	0	0	0
293	7.2.14		3320.21	WT Beam base plate	kg	0	0	0
				Columns - Rolled Sections, Painted with Intumescent Paint				
294	7.2.15		3320.22	Columns from 61 to 150 kg/m	kg	0	0	0
295	7.2.16		3320.23	Columns Over 150 kg/m	kg	0	0	0

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
				Columns, Built-up Sections, Painted with Intumescent Paint				
296	**7.2.17**		3320.24	Main Building Columns, in Rolled Shapes & Plates, Welded Continuously.	kg	**0**	0	0
				Columns & Girders - Built up Sections, Painted				
297	**7.2.18**		3320.25	Crane Girders in Welded Plates, 700-800 kg/m	kg	**385,449**	5,158	3,854
298	**7.2.19**		3320.26	Main Building Columns, in Rolled Shapes & Plates, Welded Continuously.	kg	**875,566**	11,717	8,756
				Trusses, Painted				
299	**7.2.20**		3320.27	Roof trusses and Wind Trusses	kg	**275,598**	6,606	2,756
				Bracings, Struts and HSS Columns Painted				
300	**7.2.21**		3320.28	Horizontal Bracing (WT Shapes) for roof and mezzanines	kg	**76,964**	2,252	770
301	**7.2.22**		3320.29	HSS Square Shapes for Vertical Bracing, Horizontal Bracing, Struts and HSS Columns (HSS Columns not covered in price item 304 (ref 7.2.25)	kg	**189,724**	5,552	1,897
				Nelson Studs, not painted				
302	**7.2.23**		3320.30	Nelson Studs (Dia. 19 and 13 mm) Welded Mezzanine Beams	kg	3,305	193	1,124
303	**7.2.24**		3320.31	Nelson Studs (Dia. 19 and 22 mm) Welded to Generator Floor Beams	kg	15,000	876	4,500
				Stairs, Hot dip Galvanized				
304	**7.2.25**		3320.32	Stair Stringers in Channels (incl. Galvanized Beams and Columns for the stairs)	kg	62,410	5,825	5,617
305	**7.2.26**		3320.33	Stair Treads in Grating (308 mm by 914 mm), hot dip galvanized, Bent Checkered Plate Nosing, type "FLOWFORGE" by FISHER & LUDLOW or equal	each	1,624	2,579	942
				Landings and Walkways, Hot dip Galvanized				
306	**7.2.27**		3320.34	Gratings for Landings at Stairs, type 24-102, Bearing Bars (of approx. 32X4.8) by FISHER and LUDLOW or equal	kg	48,820	1,429	3,417
307	**7.2.28**		3320.35	Bent Plate at Floor 15.5	kg	**53,000**	1,551	3,180
308	**7.2.29**		3320.36	Steel Angle L102x102x7.9 at Floor 15.5	kg	2,400	70	168
				Steel Decking				
309	**7.2.30**		3320.37	Roof Deck type RD 306 (t=0.91mm) by VICWEST, Galvanized Z 275 (Building roof and 10m door roof)	m²	**8,250**	2,983	908
310	**7.2.31**		3320.38	Roof Deck type RD 938 (t=0.76mm) by VICWEST, Galvanized Z 275 (mezzanine roof)	m²	1,640	593	164
310A	**7.2.31A**		3320.39	Roof Deck type RD 306 (t=1.22mm) VICWEST, Galvanized Z 275 (Main entrance roof)	m²	**245**	190	29
311	**7.2.32**		3320.40	Floor Deck type HB 306 (t=1.22 mm) by VICWEST, Galvanized Z 275 - Exterior (cover 3)	m²	1,550	1,199	155
311A	**7.2.32A**		3320.41	Floor Deck type HB 938 (t=0.91mm) by VICWEST, Galvanized Z 275 (Stair 10 roof)	m²	**55**	20	10
311B	**7.2.32B**		3320.42	Floor Deck type HB 306 (t=0.91mm) by VICWEST, Galvanized Z 275 (mezzanine floors)	m²	**3,550**	1,284	355
312	**7.2.33**		3320.43	Floor Deck type RD 306 (t=1.22 mm) by VICWEST, Galvanized Z 275 (Generator Floor)	m²	**5,150**	3,984	567
312A	**7.2.33A**		3320.44	Cladding CL508 (t=0.76mm) by VICWEST, Galvanized Z 275 (Cover C8)	m²	**275**	99	30
				Crane Rails Accessories				
313	**7.2.34**		3320.45	Tie-Back Linkage Assemblies by GANTREX, type TL123GP, includes Plates, Angles, Shims, "O" Rings, Bolts and Permanent Lubrication	each	96	18	101
				Anchor Bolts				
314	**7.2.35**		3320.46	Anchor Bolts Steel Grade 55 ASTM F1554 (Dia. 19 and 25 mm), U-Bolt assembly and Nuts A563, hot dip galvanized, by PORTLAND or equal	kg	5,960	348	477
315	**7.2.36**		3320.47	Anchor Bolts Steel Grade 55 ASTM F1554 (Dia. 28, 38 and 51 mm), Nuts A563, hot dip galvanized, by PORTLAND or equal	kg	22,800	1,331	1,824
				Guardrails in Pipes, Hot dip Galvanized				
316	**7.2.37**		3320.48	Guardrails in Pipes for Mezzanine, Stairs and Covers, with Kick Plate, Posts in DN32-XS and Railings in DN32-Std (in miscellaneous and Structural Steel Drawings)	kg	47,250	3,008	3,308
317	**7.2.38**		3320.49	Guardrails of Intake Deck (W and HSS shapes)	kg	17,750	1,412	1,243

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
				Hilti Bolts				
318	**7.2.39**		3320.50	Hilti KWIK Bolts 3 (Dia. 25 mm) 304 SS	each	525	0	410
319	**7.2.40**		3320.51	Hilti KWIK Bolts 3 (Dia. 10 mm and 19 mm) hot dip galvanized	each	630	0	491
320	**7.2.41**		3320.52	Hilti Adhesive Anchors, HAS rods (Dia. 19 mm) HIT RE-500 , hot dip galvanized	each	200	0	156
				Joists				
321	**7.2.42**		3320.53	Steel Joists, by CANAM or equal	kg	2,100	123	21
				Elastomeric pad				
322	**7.2.43**		3320.54	Elastomeric Pad at Attachment Axis E	each	40	13	4
				Intumescent Paint (for application on Steel Beams and Columns)				
322A	**7.2.43A**		3320.55	Intumescent Paint	m^2	**3,550**	10,709	1,811
				MISCELLANEOUS STEEL				
				Miscellaneous Structural Steel, Hot dip Galvanized				
323	**7.2.44**		3320.56	Miscellaneous Structural Steel - Embedded	kg	**104,968**	4,183	8,397
324	**7.2.45**		3320.57	Miscellaneous Structural Steel, L Shapes, Plates, Eye bolts, Crosby Type Pieces, Bent Plates and W shapes in miscellaneous steel section drawings	kg	**189,908**	11,085	15,193
325	**7.2.46**		3320.58	Checkered Plates	kg	**102,014**	1,635	8,161
326	**7.2.47**		3320.59	Embedded angles related to typical detail for steel deck on dwg : MFA-SN-CD-3320-ST-DD-0005-01	kg	**832**	33	67
327	**7.2.48**		3320.60	Contraction joint related to section E-E on the drawing : MFA-SN-CD-3300-CV-DD-0003-01	m	40	11	324
328	**7.2.49**		3320.61	Contraction joint related to section F-F on the drawing: MFA-SN-CD-3300-CV-DD-0003-01	m	50	13	405
329	**7.2.50**		3320.62	Contraction joint related to section K-K on the drawing: MFA-SN-CD-3300-CV-DD-0003-01	m	**122**	33	985
				Miscellaneous Stainless steel				
330	**7.2.51**		3320.63	Miscellaneous Stainless Steel for MK1, MK2 and Covers C9, C10, C11 and C11A	kg	**4,721**	625	755
				Crane Rails, rust preventive coating				
331	**7.2.52**		3320.64	Rail type BETH 175, includes Splices and Aluminothermic Welds, for Crane Girders and for Trash Cleaner	m	720	1,002	288
332	**7.2.53**		3320.65	Rail type Beth 104 with Aluminothermic Welds	m	315	261	85
				Crane Rails Accessories				
333	**7.2.54**		3320.66	GANTREX Rail Clip type WELDLOK 43 with Rubber Nosing for Crane Girders and Trash Cleaner	each	2,160	122	5,789
334	**7.2.55**		3320.67	GANTREX rail clip type WELDLOK 24 with Rubber Nosing, hot dip galvanized	each	1,060	16	2,851
				Ladders, Hot dip Galvanized				
335	**7.2.56**		3320.68	Ladders with or without Cage, and Self-Closing Gates (in miscellaneous and structural steel drawings)	kg	15,000	796	1,050
				Plates, Painted / Hot dip Galvanized				
336	**7.2.57**		3320.69	Plates 350 x 20, Under Rails BETH 175, Painted with Primer Plates 300 x 20 Under Rails BETH 175, hot dip galvanized	kg	35,500	2,354	2,485
				Landings, Walkways and Covers, Hot dip Galvanized				
337	**7.2.58**		3320.70	All types of grating not covered in price item 305 (ref 7.2.26) and price item 306 (ref 7.2.27) (in miscellaneous and structural steel drawings)	kg	**81,748**	5,421	5,722
338	**7.2.59**		3320.71	Grating at EL 45.5 on Intake Deck, Special Order	kg	**0**	0	0
				ARCHITECTURE WORKS				
				METAL CLADDING & ROOFING				
339	**7.2.60**		3320.72	Insulated Metal Wall Panels (Sandwiched Panels. VicWest & Kingspan; refer to them as Composite Metal Building Panels)	m^2	7,323	21,374	7,030
340	**7.2.61**		3320.73	Preformed Metal Siding (Vertical Metal Siding fastened to Steel Stud Wall)	m^2	508	1,764	848
341	**7.2.62**		3320.74	Preformed Metal Siding & Framing (for Snow Baffles over louvers)	m^2	112	389	187

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
342	7.2.63		3320.75	Metal Liner Panel, Insulation & Z-Bars (attached to interior of pre-cast concrete fire wall)	m²	460	1,343	12,609
343	7.2.64		3320.76	Modified Bituminous Membrane Roofing System	m²	8,416	1,862	15,570
344	7.2.65		3320.77	Sealants (including for roofing & wall systems and pre-cast concrete fire wall joints)	LS	1	640	431
345	7.2.66		3320.78	Signage (Nalcor & Logo, Muskrat Falls Generating Station)	LS	1	195	29
346	7.2.67		3320.79	Roof Curb for Exhaust Fans	each	9	119	0
347	7.2.68		3320.80	Roof Curb for Exhaust Hood	each	1	13	0
348	7.2.69		3320.81	Roof Curb for Chimney	each	1	13	0
349	7.2.70		3320.82	Flashing for Roof Drains	each	25	40	0
350	7.2.71		3320.83	Flashing for Plumbing Vents	each	6	10	0
				OPENINGS				
351	7.2.72		3320.84	Exterior Metal Insulated Doors - Double	each	7	56	71
352	7.2.73		3320.85	Exterior Metal Insulated Doors - Single	each	14	74	129
353	7.2.74		3320.86	Aluminum Entrance Door (Insulated)	each	1	8	7
354	7.2.75		3320.87	Sectional Metal Insulated Door	each	2	53	11
355	7.2.76		3320.88	Aluminum Windows (32 Windows max)	m²	154	818	636
356	7.2.77		3320.89	Concrete Unit Masonry (Exterior)	m²	21	112	50
				FIRE & SAFETY ITEMS				
357	7.2.78		3320.90	Roof Anchors & Safety Restraints	each	45	299	243
				SPECIAL DOORS				
358	7.2.79		3320.91	Multi-Leaf Vertical Lift Metal Insulated Door	each	1	5	15
				ELECTRICAL WORK				
				EXTERIOR BUILDING LIGHTING				
358A	7.2.80		3320.92	Exterior lighting fixtures, HPS, 347 V AC, complete with conduit, junction box, wiring and JB mounting plates	each	23	1,173	460
				ROOF METAL SLEEVE				
358B	7.2.81		3320.93	Metal sleeves for cable passage for roof exhaust fans	each	9	86	36
				SLEEVE IN METAL SIDING WALL OF THE POWERHOUSE				
358C	7.2.82		3320.94	Sleeve in metal siding wall complete with conduit, junction box and JB mounting plates as per detail 1 on DWG MFA-SN-CD-3340-EL-EL-0001-02	each	13	130	65
358D	7.2.83		3320.95	Sleeve in metal siding wall on the right jamb of the multi-leaf door complete with conduit, junction box and JB mounting plates as per detail 2 on DWG MFA-SN-CD-3340-EL-EL-0001-02	each	1	20	5
				SUB-TOTAL POWERHOUSE - SUPERSTRUCTURE				
	8	3400		**TURBINE GENERATOR AND ANCILLARIES**				
	8.1		3430	**ELECTRICAL WORK**				
359	8.1.1		3430.01	Exothermic Connections	each	1225	2,940	2,756
359A	8.1.1A		3430.02	Mechanical Connections	each	40	92	90
360	8.1.2		3430.03	Embedded Copper Grounding Plates	each	65	260	293
361	8.1.3		3430.04	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 500 kcmil	m	5200	2,153	2,704
362	8.1.4		3430.05	Bare, Stranded, Medium Hard-Drawn Copper Conductor, size 4/0 AWG	m	1800	404	468
362A	8.1.4A		3430.06	Rigid PVC Conduit, size 53mm	m	15	30	13
363	8.1.5		3430.07	Rigid PVC Conduit, size 78mm	m	50	53	50
364	8.1.6		3430.08	Rigid PVC Conduit, size 129mm	m	325	715	631
365	8.1.7		3430.09	Rigid Galvanized Steel Conduits, size 103 mm	m	100	540	1,868

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
366	8.1.8		3430.10	High Bay Light Fixture, Metal Halide, 347 Vac, complete with 1000 W lamp	each	46	1,005	363
367	8.1.9		3430.11	High Bay Light Fixture, Metal Halide, 347 Vac, complete with 1000 W lamp and Quartz auxiliary lamp	each	23	520	286
368	8.1.10		3430.12	Panelboard, 600/347 Vac, 3 phase, 4 wire, 42 circuit, surface mounted sprinkler-proof enclosure, complete with breakers as indicated	each	3	105	89
369	8.1.11		3430.13	Dry-Type Transformer, 75 kVA, 600-600/347 Vac	each	3	117	109
370	8.1.12		3430.14	Disconnect Switch, 600 V, 3 phase, complete with fuses	each	3	37	31
371	8.1.13		3430.15	Lighting Contactor Control Panel	each	2	32	15
372	8.1.14		3430.16	ON-OFF Pushbutton Control Station	each	4	46	7
373	8.1.15		3430.17	Teck Cables, 2C # 12 AWG	m	900	183	135
374	8.1.16		3430.18	Teck Cables, 3C # 12 AWG	m	500	110	85
375	8.1.17		3430.19	Teck Cables, 2C # 10 AWG	m	400	88	68
376	8.1.18		3430.20	Teck Cables, 4C # 10 AWG	m	500	136	120
377	8.1.19		3430.21	Temporary Feeder Cables to lighting transformers/panelboards, etc.	LS	1	62	2,673
				SUB-TOTAL POWERHOUSE - ELECTRICAL WORK				
	8.2		3440	**MECHANICAL WORK**				
378	8.2.1		3351	**HVAC System**	**LS**	**1**	2,164	1,273
378.01			3351.01	Pipe and Fittings NPS 6, Piping Specification PA03	m	86		
378.02			3351.02	Pipe and Fittings NPS 21, Piping Specification PA03	m	81		
378.03			3351.03	Pipe and Fittings NPS 24, Piping Specification PA03	m	101		
378.04			3351.04	HVAC Louvers	LS	1	See Note 1	
379	8.2.2		3352	**Domestic Wastewater System**	**LS**	**1**	9,218	4,702
379.01			3352.01	Pipe and Fittings NPS 3, Piping Specification PA04 (HDPE-DR11)	m	900		
379.02			3352.02	Equipments and Other Components	LS	1	See Note 1	
379.03			3352.03	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
380	8.2.3		3353	**Wastewater System**	**LS**	**1**	1,820	10,924
380.01			3353.01	Pipe and Fittings NPS 1 1/2, Piping Specification PA01	m	2		
380.02			3353.02	Pipe and Fittings NPS 2, Piping Specification PA01	m	2		
380.03			3353.03	Pipe and Fittings NPS 3, Piping Specification PA01	m	10		
380.04			3353.04	Pipe and Fittings NPS 4, Piping Specification PA01	m	29		
380.05			3353.05	Pipe and Fittings NPS 3, Piping Specification PA04 (HDPE-DR11)	m	160		
380.06			3353.06	Flexible corrugated perforated HDPE Pipe NPS 4, covered With A Geotextile	m	100		
380.07			3353.07	NPS 4, PERFORATED SOLVENT WELD SEWER PIPE CERTIFIED: CSA B182.1 AND BNQ NQ3624-050	m	250	See Note 1	
380.08			3353.08	NPS 4, SOLVENT WELD SEWER PIPE CERTIFIED: CSA B182.1	m	35		
380.09			3353.09	Septic Tile Field	LS	1		
380.1			3353.10	Roof vent	each	2		
380.11			3353.11	Equipments and Other Components	LS	1		
380.12			3353.12	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
381	8.2.4		3441	**Low Pressure Compressed Air System**	**LS**	**1**	235	149
381.01			3441.01	Pipe and Fittings NPS 2, Piping Specification SB11	m	49	See Note 1	
381.02			3441.02	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
382	8.2.5		3443	**Fire Protection System**	**LS**	**1**	917	1,518
382.01			3443.01	Pipe and Fittings NPS 8, Piping Specification CB12	m	10		
382.02			3443.02	Pipe and Fittings NPS 10, Piping Specification CB12	m	60		

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM		WBS CODE		PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
No	REFERENCE EXH. 2 - ATT 1	CODE	SUBCODE					
382.03			3443.03	Pipe and Fittings NPS 2 1/2, Piping Specification SB12	m	**37**		
382.04			3443.04	Pipe and Fittings NPS 4, Piping Specification SB12	m	**2**		
382.05			3443.05	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
383	**8.2.6**		**3444**	**Clear Water Drainage System**	**LS**	**1**	18,499	31,485
383.01			3444.01	Pipe and Fittings NPS 3, Piping Specification PA01	m	**3**		
383.02			3444.02	Pipe and Fittings NPS 4, Piping Specification PA01	m	**121**		
383.03			3444.03	Pipe and Fittings NPS 6, Piping Specification PA01	m	**330**		
383.04			3444.04	Pipe and Fittings NPS 8, Piping Specification PA02	m	**664**		
383.05			3444.05	Pipe and Fittings NPS 2, Piping Specification CB11	m	**79**		
383.06			3444.06	Pipe and Fittings NPS 3, Piping Specification CB11	m	**420**		
383.07			3444.07	Pipe and Fittings NPS 4, Piping Specification CB11	m	**1,146**		
383.08			3444.08	Pipe and Fittings NPS 6, Piping Specification CB11	m	**875**	See Note 1	
383.09			3444.09	Pipe and Fittings NPS 8, Piping Specification CB11	m	**149**		
383.1			3444.10	Pipe and Fittings NPS 10, Piping Specification CB11	m	**139**		
383.11			3444.11	Pipe and Fittings NPS 12, Piping Specification CB11	m	**130**		
383.12			3444.12	Pipe and Fittings NPS 16, Piping Specification CB11	m	**19**		
383.13			3444.13	Pipe and Fittings NPS 24, Piping Specification CB11	m	**20**		
383.14			3444.14	Equipments and Other Components	LS	1		
383.15			3444.15	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
383.16			3444.16	Roof drains and accessories	each	32		
384	**8.2.7**		**3445**	**Dewatering System**	**LS**	**1**	9,009	24,138
384.01			3445.01	Pipe and Fittings NPS 3/4, Piping Specification SB11	m	**1**		
384.02			3445.02	Pipe and Fittings NPS 1, Piping Specification SB11	m	**3**		
384.03			3445.03	Pipe and Fittings NPS 2, Piping Specification SB11	m	**12**		
384.04			3445.04	Pipe and Fittings NPS 4, Piping Specification CB11	m	**32**		
384.05			3445.05	Pipe and Fittings NPS 8, Piping Specification CB11	m	**33**		
384.06			3445.06	Pipe and Fittings NPS 12, Piping Specification CB11	m	**242**	See Note 1	
384.07			3445.07	Pipe and Fittings NPS 20, Piping Specification CB11	m	**235**		
384.08			3445.08	Pipe and Fittings NPS 24, Piping Specification CB11	m	**110**		
384.09			3445.09	Pipe and Fittings NPS 30, Piping Specification CB11	m	**39**		
384.1			3445.10	Equipment and Other Components	LS	1		
384.11			3445.11	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
385	**8.2.8**		**3447**	**Oily Water Drainage System**	**LS**	**1**	3,721	7,275
385.01			3447.01	Pipe and Fittings NPS 3, Piping Specification CB11	m	**9**		
385.02			3447.02	Pipe and Fittings NPS 4, Piping Specification CB11	m	**6**		
385.03			3447.03	Pipe and Fittings NPS 6, Piping Specification CB11	m	**30**		
385.04			3447.04	Pipe and Fittings NPS 8, Piping Specification CB11	m	**19**		
385.05			3447.05	Pipe and Fittings NPS 14, Piping Specification CB11	m	**70**	See Note 1	
385.06			3447.06	Pipe and Fittings NPS 16, Piping Specification CB11	m	**146**		
385.07			3447.07	Equipments and Other Components	LS	1		
385.08			3447.08	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
386	**8.2.9**		**3448**	**Raw and Cooling Water System**	**LS**	**1**	2,101	221
386.01			3448.01	Pipe and Fittings NPS 14, Piping Specification CB11	m	**243**	See Note 1	
387	**8.2.10**		**3449**	**Service Water System**	**LS**	**1**	1,642	7,020

Table 2.5 – Evaluation of Hours by Shortlisted Bidder in Addendum 14

PRICE ITEM No	PRICE ITEM REFERENCE EXH. 2 - ATT 1	WBS CODE CODE	WBS CODE SUBCODE	PRICE ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	Astaldi (Hours)	Salini JV (Hours)
387.01			3449.01	Pipe and Fittings NPS 4, Piping Specification PA04 (HDPE-DR11)	m	880		
387.02			3449.02	Pipe and Fittings NPS 6, Piping Specification CB11	m	60		
387.03			3449.03	Pipe and Fittings NPS 8, Piping Specification CB11	m	67		
387.04			3449.04	Pipe and Fittings NPS 3/4, Piping Specification SB11	m	36		
387.05			3449.05	Pipe and Fittings NPS 2, Piping Specification SB11	m	60		
387.06			3449.06	Pipe and Fittings NPS 4, Piping Specification SB11	m	27	See Note 1	
387.07			3449.07	Equipments and Other Components	LS	1		
387.08			3449.08	Miscellaneous Work (Painting, Insulation etc.)	LS	1		
388	8.2.11		344C	**Piezometer and Water Level System**	LS	1	15,346	16,683
388.01			344C.01	Pipe and Fittings NPS 6, Piping Specification SA11	m	55		
388.02			344C.02	Pipe and Fittings NPS 3, Piping Specification SB11	m	1,924	See Note 1	
388.03			344C.03	Pipe and Fittings NPS 1/2, Piping Specification JD01	m	1,924		
				SUB-TOTAL POWERHOUSE - MECHANICAL WORKS				
	9	3500		**WORK EXECUTED FOR COMPANY'S OTHER CONTRACTOR**				
	9.1		3510	**Supply of Concrete to Company's Other Contractors at the Batch Plant (excluding delivery from the Batch Plant to the Pour Location)**				
389	9.1.1		3510.01	Supply of Secondary Concrete - Class A2	m^3	7,500	8,838	25,125
390	9.1.2		3510.02	Supply of Concrete - Class A	m^3	1,000	1,178	3,350
391	9.1.3		3510.03	Supply of Concrete - Class B	m^3	14,500	17,087	48,575
				SUB-TOTAL SUBCONTRACTING WORKS FOR OTHERS				
	10	3600		**MISCELLANEOUS - RATE ONLY**				
	10.1		3610	**Hilti Adhesive Anchors**				
392	10.1.1		3610.01	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 16 mm), hot dip galvanized	each	100	0	0
393	10.1.2		3610.02	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 19 mm), hot dip galvanized	each	100	0	0
394	10.1.3		3610.03	Hilti adhesive anchors, HIT RE-500; HAS rods (Dia. 25 mm), hot dip galvanized	each	100	0	0

Economic Analyst Steve Goulding

Signed

Date: 25-Sep-13

Table 2.6 – Evaluation of Proposed Manufacturers

		Name of Manufacturer		Location of Manufacture (Country of origin) 20		Location of Testing and Inspection		Item(s) to Manufacture (Criticality) 5*		ISO registered (Yes or No) 10		Relative Value of the Work (M$)		Other Pertinent Information		(Optional) Quality of Testing and Inspection		(Optional) Experience of Manufacturer 14*	
Bidder	**Weight for Element**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**
IKC		Atlantic Industries limited	N/A	Canada (NL)	20	TBC	100	Modular Bridge	4	TBC	10	0.6	100					14	56
		Bétons Prefabriqués du Lac Inc.	N/A	Canada (QC)	20	TBC	100	Prefab Fire-Walls	3	Yes	10	1.6	100					14	42
		Asselin Industriel	N/A	Canada (QC)	20	TBC	100	Powerhouse Overhead Door	3	TBC	10	0.3	100					14	42
		LCL Bridge Products	N/A	Canada (QC)	20	TBC	100	Contraction Joint & Bearing pads	4	TBC	10	0.3	100					14	56
		Supermetal	N/A	Canada (QC)	20	TBC	100	Misc. steel	3	Yes	10	10.7	100					14	42
TOTAL	**78**				**20**						**10**								**48**
ASTALDI (Solution 1: Concrete Production, Forming and Concreting Self-Performed)		ESSROC Italcementi Group	N/A	ON	20	1370 Hwy 49 Picton, Ontario K0K 2T0	100	Bulk Cement	5	Yes	10	70	100	Supplied to Astaldi (value includes transportation)				14	70
		JV CEMENT MUSKRAT FALLS (HOLCIM - LAFARGE)	N/A	QC	20	435, Jean-Neveu, Longueuil (Québec) J4G 2P9	100	Bulk Cement	5	Yes	10	70	100	Supplied to Astaldi (value includes transportation)				14	70
		SUPERMETAL STRUCURES Inc.	N/A	QC	20	Factory/Site	100	Structural Steel	5	Yes	10	30	100					14	70
		Arcelor Mittal	N/A	Canada	20	Factory/Site	100	Reinforcing Steel	5	Yes	10	17	100	Supplied and bent by AGF STEEL Inc.				14	70
		Arcelor Mittal	N/A	Canada	20	Factory/Site	100	Reinforcing Steel	5	Yes	10	17	100	Supplied and bent by OLYMPIC METALS Ltd. + PISHUMUSS WELDING & FABRICATORS Ltd.				14	70
		VicWest	N/A	Canada	20	Factory/Site	100	Insulated Metal Wall Panels	4	Yes	10	1.2	100	Supplied by Enterprise de Construction TEQ Inc.				14	56
		VicWest	N/A	Canada	20	Factory/Site	100	Siding	4	Yes	10	0.6	100	Supplied by Enterprise de Construction TEQ Inc.				14	56
TOTAL	**96**				**20**						**10**								**66**

		Name of Manufacturer		Location of Manufacture (Country of origin) 20		Location of Testing and Inspection		Item(s) to Manufacture (Criticality) 5*		ISO registered (Yes or No) 10		Relative Value of the Work (M$)		Other Pertinent Information		(Optional) Quality of Testing and Inspection		(Optional) Experience of Manufacturer 14*	
Bidder	**Weight for Element**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**	**Answer**	**Score**
1.2.2 Astaldi (Solution 2: Concrete Production Subcontracted)		Holcim/Lafarge	N/A	Canada	20	Montreal Quebec	100	Bulk Cement	5	Yes	10	70	100	Supplied through Lafarge-Capital Ready Mix (Value Includes transportation)				14	70
		SUPERMETAL STRUCURES Inc.	N/A	QC	20	Factory/Site	100	Structural Steel	5	Yes	10	30	100					14	70
		Arcelor Mittal	N/A	Canada	20	Factory/Site	100	Reinforcing Steel	5	Yes	10	17	100	Supplied and bent by AGF STEEL Inc.				14	70
		Arcelor Mittal	N/A	Canada	20	Factory/Site	100	Reinforcing Steel	5	Yes	10	17	100	Supplied and bent by OLYMPIC METALS Ltd. + PISHUMUSS WELDING & FABRICATORS Ltd.				14	70
		VicWest	N/A	Canada	20	Factory/Site	100	Insulated Metal Wall Panels	4	Yes	10	1.2	100	Supplied by Enterprise de Construction TEQ Inc.				14	56
		VicWest	N/A	Canada	20	Factory/Site	100	Siding	4	Yes	10	0.6	100	Supplied by Enterprise de Construction TEQ Inc.				14	56
					20						**10**								**70**
Total	**95.3**	Structural Steel	N/A	Canada/USA	20	Canada/USA	100	Steel Structure	5	Yes	10	35	100	Steel source TBD				0	0
Aecon JV		Lafarge	N/A	Canada	20	Canada	100	Cement	5	Yes	10	45	100	GU & LHM				14	70
		Essroc	N/A	Canada	20	Canada	100	Cement	5	Yes	10	45	100	LHM only				14	70
		Ciment Quebec	N/A	Canada	20	Canada	100	Cement	5	Yes	10	45	100	GU only				14	70
		Canam-Murox	N/A	Canada/USA	20	Canada/USA	100	Steel Shelters	4	Yes	10	35	100	Steel source TBD				14	56
		Arcelor Mittal	N/A	Canada	20	Canada	100	Rebar	5	Yes	10	45	100					14	70
TOTAL	**86**				**20**						**10**								**56**
Salini JV		Cherubini	N/A	Canada	20	Canada, NS	100	Structural Steel	5	Yes	10	62	100					14	70
Total	100				**20**						10								**70**

Area Construction Manager Laird Paton

Signed

Date: 26 Sept 2013

Table 2.7 - Evaluation of Proposed Sub-contractors

	Weight for Element	Name of Subcontractor		Location of Subcontractor (Country of origin) 20		Services provided 5*		ISO registered (Yes or No) 10		Relative Value of the Work (M$) (Deduct 10 points for each 5% of total Bid)		Other Pertinent Information		(Optional) Experience of Subcontractor 14	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
IKC		AGF	N/A	Canada (QC)	20	Reinforcing steel	5	Yes	10	94		Target Price Contract		14	70
		Supermetal	N/A	Canada (QC)	20	Superstructure	5	Yes	10	30		Fixed Price Contract		14	70
		Vicwest	N/A	Canada (QC)	20	Cladding	4	TBC	10	3.4		Fixed Price Contract		14	56
		Flynn Canada	N/A	Canada (QC)	20	Roofing	4	TBC	10	4.4		Fixed Price Contract		14	56
		GJ Cahill	N/A	Canada (NL)	20	Permanent Electrical	4	TBC	10	3.5		Fixed Price Contract		14	56
		Black & MacDonald	N/A	Canada (NL)	20	Mechanical	4	TBC	10	19		Fixed Price Contract		14	56
TOTAL	**91**				**20**				**10**						**61**
Astaldi (Solution 1: Concrete Production, Forming and Concreting Self-Performed)		ATLANTIC UNDERGROUND SERVICE Ltd	N/A	425, Pine Glen road, Riverview, NB E1B 4J8	20	CIVIL WORKS - DRILLING PRESSURE GROUTING AND DRAINAGE AND GEOTECHNICAL INSTRUMENTATION	5	No	10	3.3				14	70
		GEO - FONDATION Contractors Inc. (subsidiary of Hayward Baker Canada Ltd)	N/A	302 Main Street North Acton, ON L7J 1W9	20	CIVIL WORKS - DRILLING PRESSURE GROUTING AND DRAINAGE AND GEOTECHNICAL INSTRUMENTATION	5	Yes	10	5.5		Alternative solution		14	70
		BIG LAND CONSTRUCTION Ltd	N/A	43, Cleary Drive, Goulds, NL A15 1C3	20	CIVIL WORKS - EARTH WORKS	4	No	10	1.7				12	48
		ENTERPRISE DE CONSTRUCTION TEQ Inc	N/A	4001, Rue St. Antoine Ouest, Montreal	20	CONCRETE WORK - PRECAST	3	Yes	10	3.2				12	36
		SUPERMETAL STRUCURES Inc	N/A	1955, 5e Rue, St-Romuald, Québec G6W 5M6	20	STRUCTURAL STEEL	5	Yes	10	39.4				14	70

	Weight for Element	Name of Subcontractor		Location of Subcontractor (Country of origin) 20		Services provided 5*		ISO registered (Yes or No) 10		Relative Value of the Work (M$) (Deduct 10 points for each 5% of total Bid)		Other Pertinent Information		(Optional) Experience of Subcontractor 14	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
		ALMA SOUDURE Inc.	N/A	600, Des Pins Ouest - Alma Quebec G8B 6T3	20	STRUCTURAL STEEL	5	Yes	10	44		Alternative solution		12	60
		PENNECON ENERGY Ltd.	N/A	650 Water Street St. John's, NL	20	ELECTRICAL WORKS	4	Yes	10	3.1				14	56
		GJ CAHILL & COMPANY Ltd.	N/A	PO Box 1674, 240 Waterford Bridge Rd. St. John's NL A1C 5P5	20	ELECTRICAL WORKS	4	No	10	3.4		Alternative solution		14	56
		BLACK & McDONALD Ltd	N/A	10, Payzant Ave, Darmouth, NS B3B 1Z6	20	MECHANICAL WORKS	4	No	10	19				14	56
		GROUPE PLOMBACTION Inc	N/A	575 Boul. Pierre-Roux Est. Victoriaville QC, G6T 1S7	20	MECHANICAL WORKS	4	Yes	10	16.2				14	56
		ENTERPRISE DE CONSTRUCTION TEQ Inc	N/A	4001, Rue St. Antoine Ouest, Montreal	20	ARCHITECTURAL WORKS	3	Yes	10	10.7				10	30
		BIG LAND CONSTRUCTION Ltd	N/A	43, Cleary Drive, Goulds, NL A15 1C3	20	CIVIL WORKS - ACCESS ROAD, ACCESS RAMP AND PADS	4	No	10	0.4				12	48
		ADF GROUP Inc.	N/A	300, Henry-Bessemer,Terrebone, Québec J6Y 1T3	20	TEMPORARY BRIDGE OVER THE SPILLWAY	4	Yes	10	1				14	56

	Weight for Element	Name of Subcontractor		Location of Subcontractor (Country of origin) 20		Services provided 5*		ISO registered (Yes or No) 10		Relative Value of the Work (M$) (Deduct 10 points for each 5% of total Bid)		Other Pertinent Information		(Optional) Experience of Subcontractor 14	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
		GREENFIELD CONSTRUCTION Ltd.	N/A	20 General Manson Way, Miramichi NB E1N 6K7	20	TEMPORARY BRIDGE OVER THE SPILLWAY	4	No	10	1.4		Alternative solution		11	44
		SUPERMETAL STRUCURES Inc	N/A	1955, 5e Rue, St-Romuald, Québec G6W 5M6	20	TEMPORARY LATERAL SUPPORT AND BRACINGS FOR PIERS OF THE SPILLWAY	4	Yes	10	0.2				14	56
		ALMA SOUDURE Inc.	N/A	600, Des Pins Ouest - Alma Quebec G8B 6T3	20	TEMPORARY LATERAL SUPPORT AND BRACINGS FOR PIERS OF THE SPILLWAY	4	Yes	10	0.1				12	48
		BIG LAND CONSTRUCTION Ltd	N/A	43, Cleary Drive, Goulds, NL A15 1C3	20	CIVIL WORKS - ROAD MAINTENANCE AND SNOW REMOVAL	4	No	10	2.7				12	48
		ADF GROUP Inc.	N/A	300, Henry-Bessemer,Terrebone, Québec J6Y 1T3	20	WINTER COVER SYSTEM for POWERHOUSE and INTAKE	5	Yes	10	16.5				14	70
		ALMA SOUDURE Inc.	N/A	600, Des Pins Ouest - Alma Quebec G8B 6T3	20	WINTER COVER SYSTEM for POWERHOUSE and INTAKE	5	Yes	10	17.1		Alternative solution		11	55
TOTAL	**84**				**20**				**10**						**54.4**
Astaldi (Solution 2: Concrete Production Subcontracted)		ATLANTIC UNDERGROUND SERVICE Ltd	N/A	425, Pine Glen road, Riverview, NB E1B 4J8	20	CIVIL WORKS - DRILLING PRESSURE GROUTING AND DRAINAGE AND GEOTECHNICAL INSTRUMENTATION	5	NO	10	3.3				14	70

	Weight for Element	Name of Subcontractor		Location of Subcontractor (Country of origin) 20		Services provided 5*		ISO registered (Yes or No) 10		Relative Value of the Work (M$) (Deduct 10 points for each 5% of total Bid)		Other Pertinent Information		(Optional) Experience of Subcontractor 14	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
		GEO - FONDATION Contractors Inc. (subsidiary of Hayward Baker Canada Ltd)	N/A	302 Main Street North Acton, ON L7J 1W9	20	CIVIL WORKS - DRILLING PRESSURE GROUTING AND DRAINAGE AND GEOTECHNICAL INSTRUMENTATION	5	YES	10	5.5		Alternative solution		14	70
		BIG LAND CONSTRUCTION Ltd	N/A	43, Cleary Drive, Goulds, NL A15 1C3	20	CIVIL WORKS - EARTH WORKS	4	NO	10	3.4				12	48
		BIG LAND CONSTRUCTION Ltd	N/A	43, Cleary Drive, Goulds, NL A15 1C3	20	CIVIL WORKS - CAST IN PLACE CONCRETING AND FORMING - SPILLWAY	5	NO	10	159.4				3	15
		LANCOR CONCRETE CONTRACTORS Ltd + ARTHUR SIVRET ET FILS	N/A	55 Industrial Street Dieppe NB E1A 2B9	20	CIVIL WORKS - CASTE IN PLACE CONCRETING AND FORMING - DAM & SEPARATION WALL	5	NO	10	52.1				3	15
		ENTERPRISE DE CONSTRUCTION TEQ Inc	N/A	4001, Rue St. Antoine Ouest, Montreal	20	CONCRETE WORK - PRECAST	3	YES	10	3.2				12	36
		AGF STEEL Inc.	N/A	113 GLENCOE DRIVE DONOVANS INDUSTRIAL PARK MOUNT PEARL, NL A1N4S7	20	REINFORCEMENT STEEL	5	YES	10	92.7				14	70
		SUPERMETAL STRUCURES Inc	N/A	1955, 5e Rue, St-Romuald, Québec G6W 5M6	20	STRUCTURAL STEEL	5	YES	10	39.4				14	70

	Weight for Element	Name of Subcontractor		Location of Subcontractor (Country of origin) 20		Services provided 5*		ISO registered (Yes or No) 10		Relative Value of the Work (M$) (Deduct 10 points for each 5% of total Bid)		Other Pertinent Information		(Optional) Experience of Subcontractor 14	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
		ALMA SOUDURE Inc.	N/A	600, Des Pins Ouest - Alma Quebec G8B 6T3	20	STRUCTURAL STEEL	5	YES	10	44		Alternative solution		10	50
		PENNECON ENERGY Ltd.	N/A	650 Water Street St. John's, NL	20	ELECTRICAL WORKS	4	YES	10	3.1				14	56
		GJ CAHILL & COMPANY Ltd.	N/A	PO Box 1674, 240 Waterford Bridge Rd. St. John's NL A1C 5P5	20	ELECTRICAL WORKS	4	YES	10	3.4		Alternative solution		14	56
		BLACK & McDONALD Ltd	N/A	10, Payzant Ave, Darmouth, NS B3B 1Z6	20	MECHANICAL WORKS	4	YES	10	19				14	56
		GROUPE PLOMBACTION Inc	N/A	575 Boul. Pierre-Roux Est. Victoriaville QC, G6T 1S7	20	MECHANICAL WORKS	4	YES	10	16.2				14	56
		ENTERPRISE DE CONSTRUCTION TEQ Inc	N/A	4001, Rue St. Antoine Ouest, Montreal	20	ARCHITECTURAL WORKS	3	YES	10	10.7				10	30
		BIG LAND CONSTRUCTION Ltd	N/A	43, Cleary Drive, Goulds, NL A15 1C3	20	CIVIL WORKS - ACCESS ROAD, ACCESS RAMP AND PADS	4	NO	10	0.8				12	48
		ADF GROUP Inc.	N/A	300, Henry-Bessemer,Terrebone, Québec J6Y 1T3	20	TEMPORARY BRIDGE OVER THE SPILLWAY	4	YES	10	1				14	56

	Weight for Element	Name of Subcontractor		Location of Subcontractor (Country of origin) 20		Services provided 5*		ISO registered (Yes or No) 10		Relative Value of the Work (M$) (Deduct 10 points for each 5% of total Bid)		Other Pertinent Information		(Optional) Experience of Subcontractor 14	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
		GREENFIELD CONSTRUCTION Ltd.	N/A	20 General Manson Way, Miramichi NB E1N 6K7	20	TEMPORARY BRIDGE OVER THE SPILLWAY	4	NO	10	1.4		Alternative solution		11	44
		SUPERMETAL STRUCURES Inc	N/A	1955, 5e Rue, St-Romuald, Québec G6W 5M6	20	TEMPORARY LATERAL SUPPORT AND BRACINGS FOR PIERS OF THE SPILLWAY	4	YES	10	0.2				14	56
		ALMA SOUDURE Inc.	N/A	600, Des Pins Ouest - Alma Quebec G8B 6T3	20	TEMPORARY LATERAL SUPPORT AND BRACINGS FOR PIERS OF THE SPILLWAY	4	YES	10	0.1				12	48
		BIG LAND CONSTRUCTION Ltd	N/A	43, Cleary Drive, Goulds, NL A15 1C3	20	CIVIL WORKS - ROAD MAINTENANCE AND SNOW REMOVAL	4	NO	10	5.3				11	44
		ADF GROUP Inc.	N/A	300, Henry-Bessemer,Terrebone, Québec J6Y 1T3	20	WINTER COVER SYSTEM for POWERHOUSE and INTAKE	5	YES	10	16.5				14	70
		ALMA SOUDURE Inc.	N/A	600, Des Pins Ouest - Alma Quebec G8B 6T3	20	WINTER COVER SYSTEM for POWERHOUSE and INTAKE	5	YES	10	17.1		Alternative solution		11	55
TOTAL	**81**				**20**				**10**						**51**
Aecon JV (Note two suppliers for similar scope. Actual supplier to be determined)**		Supermetal	N/A	Canada	20	Steel supply/erection	5	Yes	10	45				14	70
		Acier AGF	N/A	Canada	20	Rebar supply/installation	5	Yes	10	100				14	70
		Labrador Readymix	N/A	Canada	20	Concrete Supply**	5	Yes	10	150				14	70
		Capital Ready Mix	N/A	Canada	20	Concrete Supply**	5	Yes	10	150				14	70
		Murox-Canam	N/A	Canada	20	Shelter supply/erection	5	Yes	10	60				14	70
		Cahill Electric	N/A	Canada	20	Electrical	4	Yes	10	5				14	56
TOTAL	**98**				**20**				**10**						**68**
Salini JV		Cherubini	N/A	Canada	20	Structural Steel	5	Yes	10	62				14	70
		JSM	N/A	Canada	20	Electrical Works	4	No	10	5				14	56

	Weight for Element	Name of Subcontractor		Location of Subcontractor (Country of origin) 20		Services provided 5*		ISO registered (Yes or No) 10		Relative Value of the Work (M$) (Deduct 10 points for each 5% of total Bid)		Other Pertinent Information		(Optional) Experience of Subcontractor 14	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
		Deer-Lake	N/A	Canada	20	Steel Reinforcement Fixing	5	No	10	120		As an alternative to Harris-Rebar		5	25
		Harris-Rebar	N/A	Canada	20	Steel Reinforcement Fixing	5	No	10	120		As an alternative to Deer-Lake		14	70
		MSM	N/A	Canada	20	Metal Panels	3	No	10	10				5	15
TOTAL	77				20				10						47

Area Construction Manager Laird Paton

Signed

Date: Sept 24, 2013

Table 2.8 - Evaluation of Proposed Material Suppliers

	Weight for Element	Material supplied (Criticality) 5*		Name of Supplier		Location of Supplier (Country of Origin) 20		ISO registered (Yes or No) 10		Relative Value of the Work (M$)		Other Pertinent Information		(OPTIONAL) Experience of Material Supplier 14*	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
IKC		Waterstop (hydro)	4	PSC	N/A	Canada (QC)	20	TBC	10	0.5				14	56
		Waterstop (pvc)	4	Sika	N/A	Canada (ON)	20	Yes	10	0.5				14	56
		Concrete admixture	5	Sika	N/A	Canada (ON)	20	Yes	10	2.3				14	70
		Cement-Fly-Ash	5	Holcim-Lafarge	N/A	Canada (QC)	20	Yes	10	62				14	70
TOTAL	**93**						**20**		**10**						**63**
Astaldi (Solution 1: Concrete Production, Forming and Concreting Self-Performed)		REINFORCEMENT STEEL	5	AGF STEEL Inc.	N/A	113 GLENCOE DRIVE DONOVANS INDUSTRIAL PARK MOUNT PEARL, NL A1N 4S7 If-performed by Astaldi	20	Yes	10	40				14	70
		REINFORCEMENT STEEL	5	OLYMPIC METALS Ltd. + PISHUMUSS WELDING & FABRICATORS Ltd.	N/A	100 Chemin St.-Simon, Caraquet, NB, Canada, E1W 1B3	20	No	10	40.1		Alternative Solution		14	70
		PRECAST - Prefabricated Longitudinal Concrete Fire Walls	3	PENNECON CONCRETE Ltd.	N/A	PO Box 8274 Stn. A St. John`s NF A1B 3N4	20	Yes	10	3.2				12	36
TOTAL	**89**						**20**		**10**						**59**
Astaldi (Solution 2: Concrete Production Subcontracted)		REINFORCEMENT STEEL	5	AGF STEEL Inc.	N/A	113 GLENCOE DRIVE DONOVANS INDUSTRIAL PARK MOUNT PEARL, NL A1N 4S7	20	Yes	10	40				14	70
		CONCRETE	5	LABRADOR READY- MIX Ltd	N/A	8090, Boyer, C.P. 87041, Succ. Charlesbourg,Québec, (Québec) G2L 1S9	20	No	10	130				14	70
		CONCRETE	5	LAFARGE - CAPITAL READY MIX PARTNERSHIP	N/A	Québec, (Québec) G2L 1S9	20	Yes	10	140				14	70

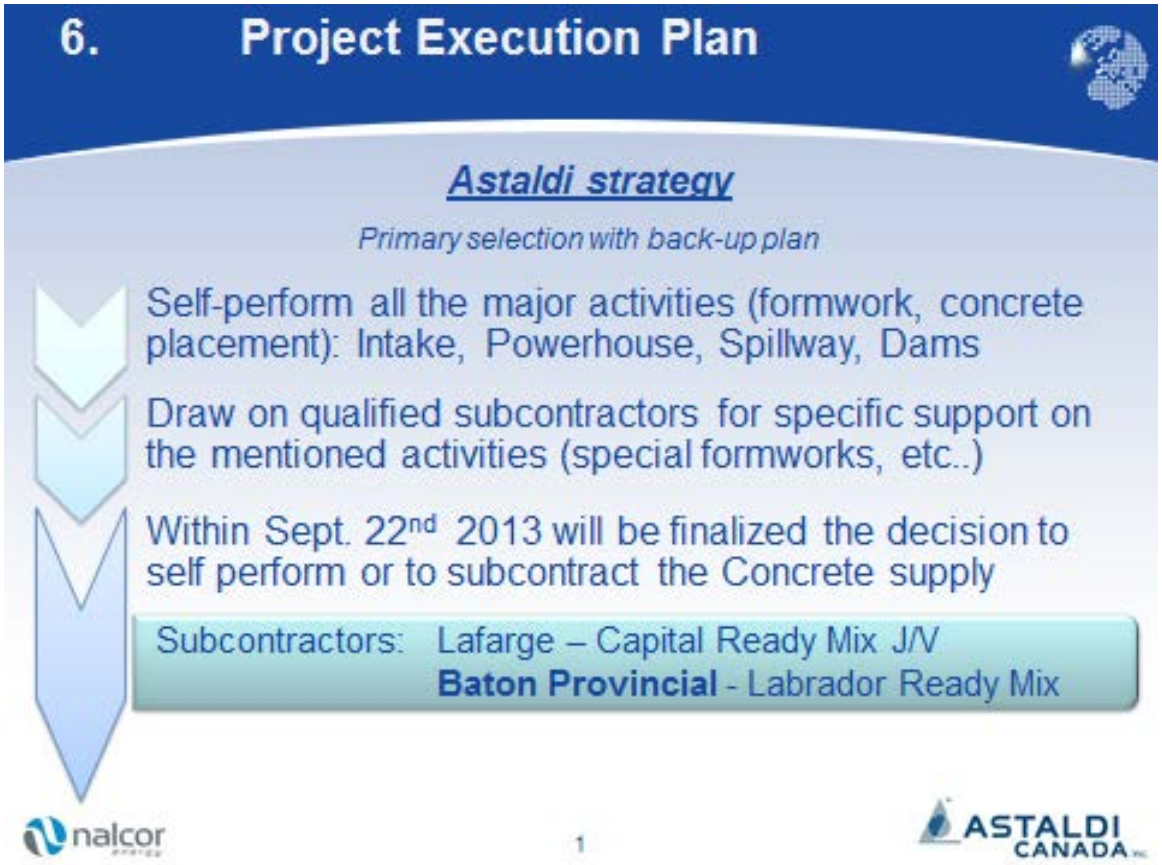
	Weight for Element	Material supplied (Criticality) 5*		Name of Supplier		Location of Supplier (Country of Origin) 20		ISO registered (Yes or No) 10		Relative Value of the Work (M$)		Other Pertinent Information		(OPTIONAL) Experience of Material Supplier 14*	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
		REINFORCEMENT STEEL	5	OLYMPIC METALS Ltd. + PISHUMUSS WELDING & FABRICATORS Ltd.	N/A	100 Chemin St.-Simon, Caraquet, NB Canada E1W 1B3	20	No	10	40.1		Alternative solution		14	70
		PRECAST - Prefabricated Longitudinal Concrete Fire Walls	3	PENNECON CONCRETE Ltd.	N/A	PO Box 8274 Stn. A St. John's NF A1B 3N4	20	Yes	10	3.2				12	36
TOTAL	**93**						**20**		**10**						**63**
Aecon JV		Cement	5	Lafarge	N/A	Canada	20	Yes	10	45		GU & LHM		14	70
		Cement	5	Essroc	N/A	Canada	20	Yes	10	45		LHM only		14	70
		Cement	5	Ciment Quebec	N/A	Canada	20	Yes	10	45		GU only		14	70
TOTAL	**100**						**20**		**10**						**70**
Salini JV		Concrete	5	LAFARGE	N/A	Canada	20	Yes	10	120				14	70
		Concrete	5	Beton-Provincial	N/A	Canada	20	No	10	120				14	70
		Steel Reinforcement	5	ALL-STAR	N/A	Canada	20	No	10	55				14	70
TOTAL	**100**						**20**		**10**						**70**

Area Construction Manager Laird Paton

Signed

Date: 24 Jan 2013

Astaldi Presentation to LCP September 4, 2013




6. Project Execution Plan
Astaldi strategy
Subcontract the reinforcement steel
Subcontractors: AGF
Harris rebar
Salit Steel
Subcontract the structural steel
Subcontractors: ADF
Supermetal Structures
Salit Steel
nalcor
2
ASTALDI CANADA


6. Project Execution Plan
Astaldi strategy
Subcontract the electrical and mechanical works
Subcontractors: Black and McDonald
Plombaction
Pennacon
JSM Electrical
Cahill &Company
Subcontract the drilling and ground treatment works
Subcontractors: Advanced Construction Tech
Atlantic Underground Services
Geo Foundation
nalcor
3
ASTALDI CANADA

6. Project Execution Plan

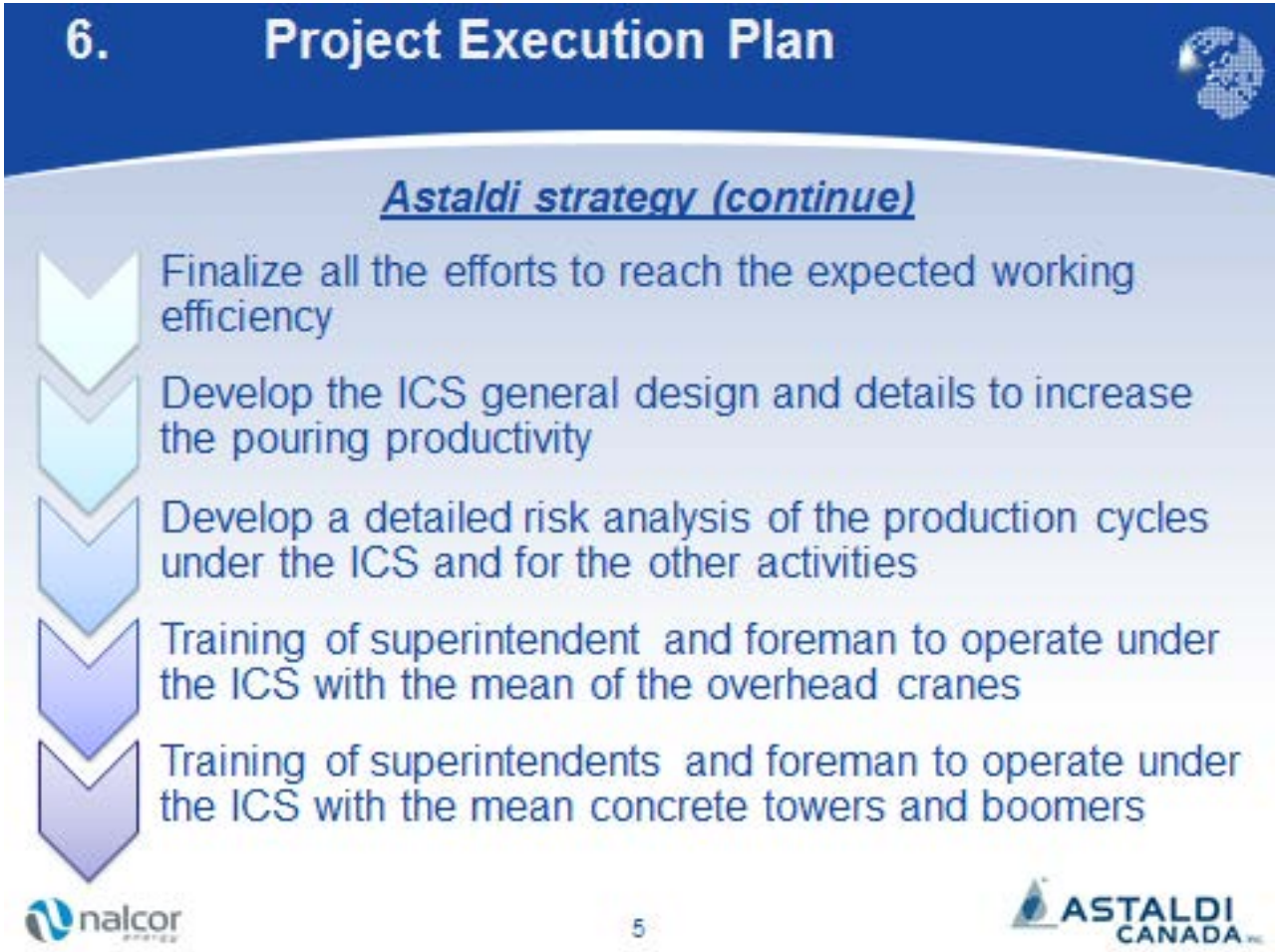
Astaldi strategy (continue)

- Strategy of transport material based on at least to different methodologies (by land and by sea)
- Detailed and careful revision of all pouring sequences, in order to guarantee the foreseen performances
- Detailed revision of the formwork methodologies, materials, sequences, requested form sets, etc..
- Engagement of Superintendents in the detailed definition of Work procedures
- Advanced training of Superintendents and Foreman prior to the start-up of the industrial production

nalcor

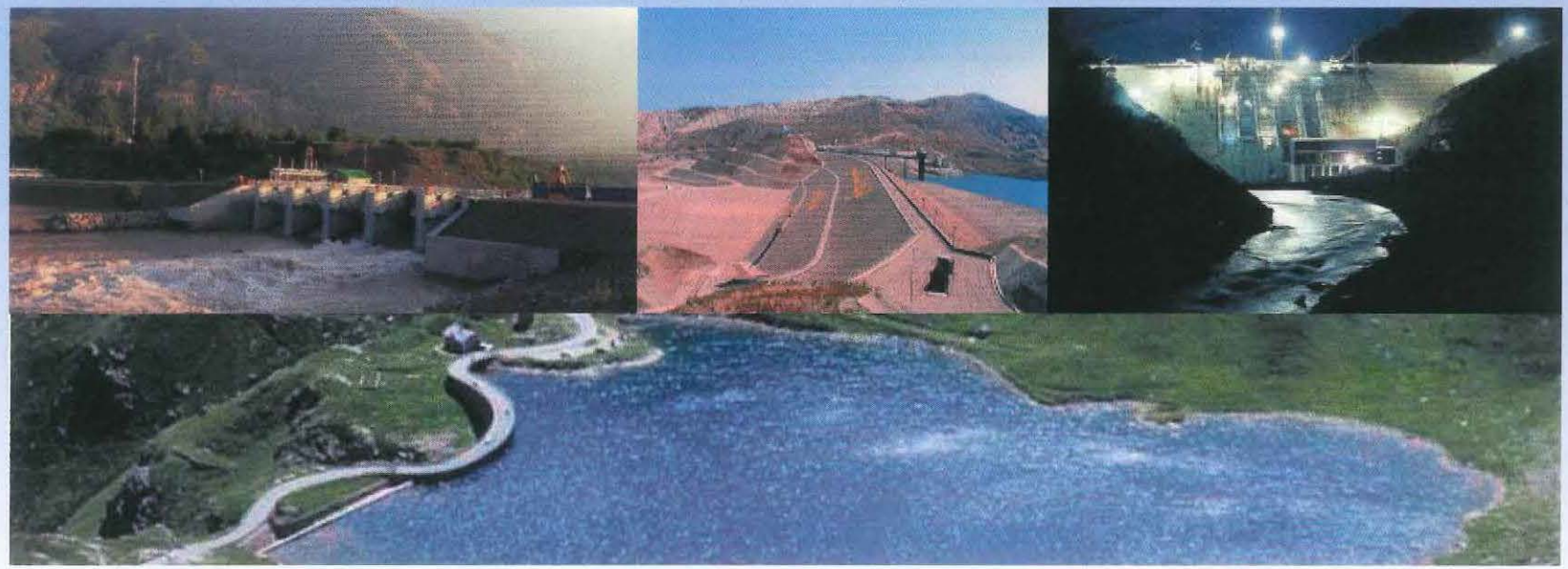
4

ASTALDI CANADA


6. Project Execution Plan
Astaldi strategy (continue)
Finalize all the efforts to reach the expected working efficiency
Develop the ICS general design and details to increase the pouring productivity
Develop a detailed risk analysis of the production cycles under the ICS and for the other activities
Training of superintendent and foreman to operate under the ICS with the mean of the overhead cranes
Training of superintendents and foreman to operate under the ICS with the mean concrete towers and boomers
nalcor
5
ASTALDI CANADA

Muskrat Falls Generation

(Lower Churchill Project, Labrador, Canada)



Final Presentation

Sept. 4th, 2013

nalcor energy

ASTALDI CANADA Inc.

2. Project Execution Key Personnel

The start-up team

Guido Venturini — *Italian*

Project Director

Experience: 21 years

4 HPP projects in Italy, Cile, and Peru

Ken Chryssolor — *Canadian*

Project Manager

Experience: 45 years

10 HPP projects in Canada in very similar climatic condition

Jack Shangmin Zhou — *Canadian*

Deputy Project Manager

Experience: 25 years

3 HPP projects in Africa and South America as DPM and PM

2. Project Execution Key Personnel

The start-up team

Vittorio Robiati — *Italian*

Construction Manager

Experience: 45 years

12 HPP projects in Nepal, China, Turkey, South and Central America

Marco Brollo — *Italian*

Deputy Construction Manager

Experience: 27years

4 Hydro projects in Italy, Mozambique, Panama and Peru

Nicola D'Emilio — *Italian*

Assistant Construction Manager

Experience : 40 years

3 HPP projects in Iraq, Cina and Italy

2. Project Execution Key Personnel

The start-up team

Pierre Cianni — *Canadian*

Planner

Experience: 42 years

4 HPP projects in Canada, Nigeria and Indonesia

Federico Accorsi — *Italian*

Procurement Manager

Experience : 25 years

Procurement Manager for the Pacific Side of the Canale de Panama

Sante Bonanni — *Italian*

Hydraulic Engineer

Experience: 29 years

6 HPP projects in Honduras, Salvador, Italy, Peru

2. Project Execution Key Personnel

The start-up team

Marvin Bennet* — *Canadian*

General Superintendent

Experience : 27 years

6 HPP projects in Canada (Lower Mattagami HP and others)

Yves Gagnon* — *Canadian*

General Superintendent

Experience: 35 years

7 HPP projects in Canada (Eastmain, Long Lake, Wuskwatim, etc)

Yves Gauthier* — *Canadian*

Formworks Superintendent

Experience: 34 years

3 HPP projects in Canada (Lower Mattagami , Long Lake, Wuskwatim)

* *Final agreement still pending*

2. Project Execution Key Personnel

The start-up team

Yves Gauthier* — *Canadian*

Formworks Superintendent

Experience: 34 years

3 HPP projects in Canada (Lower Mattagami , Long Lake, Wuskwatim)

Craig McKinnon* — *Canadian*

Foreman

Experience : 19 years

1 HPP project in Canada (Lower Mattagami HP and others)

Yves Girard* — *Canadian*

Foreman

Experience: 14 years

2 HPP projects in Canada (Lower Mattagami and Wuskwatim)

** Final agreement still pending*

2. Project Execution Key Personnel

The start-up team

Marco Marchetti — *Italian*

Structural Engineer

Experience: 9 years

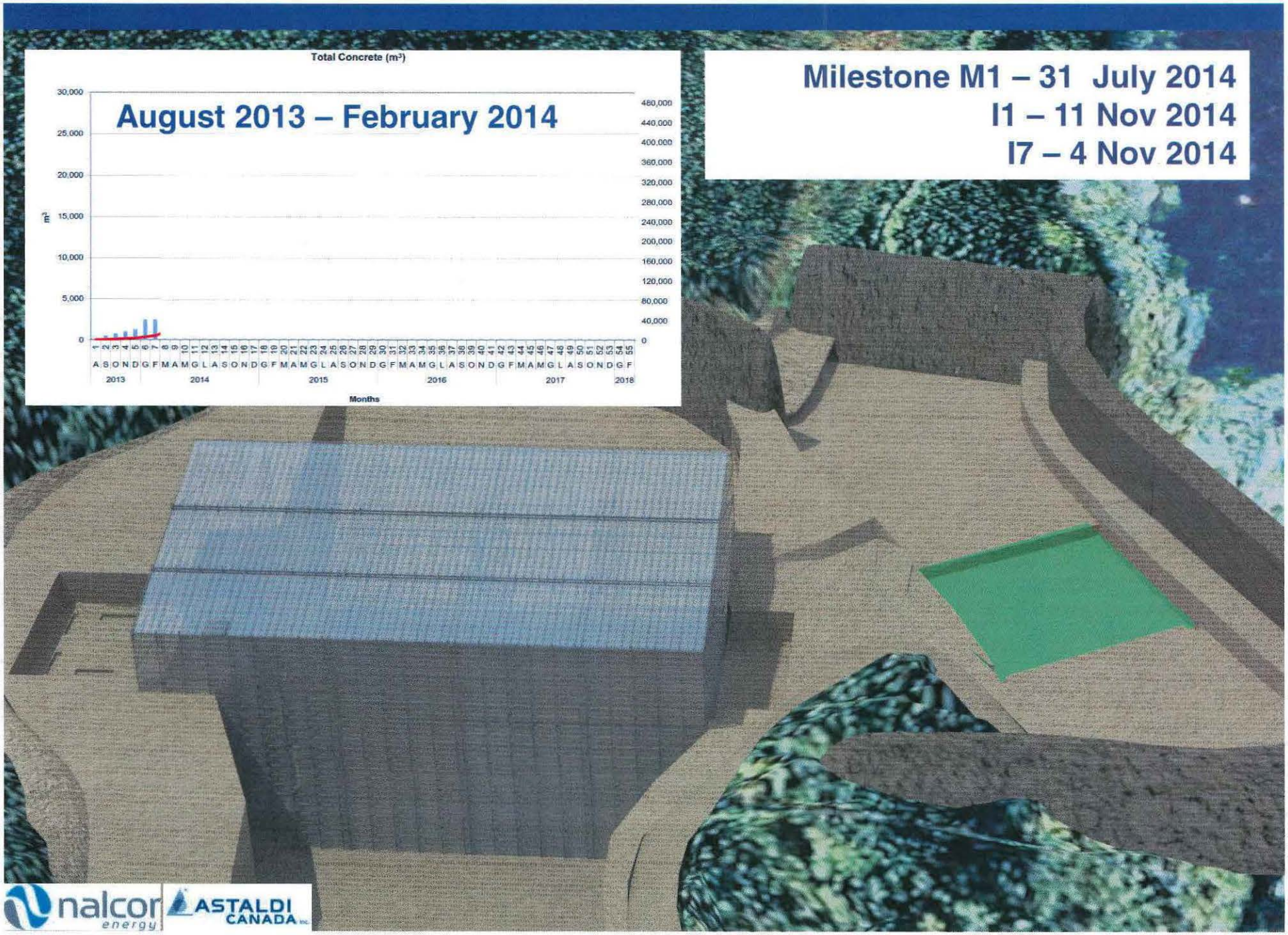
3 HPP projects in Costa Rica and Peru

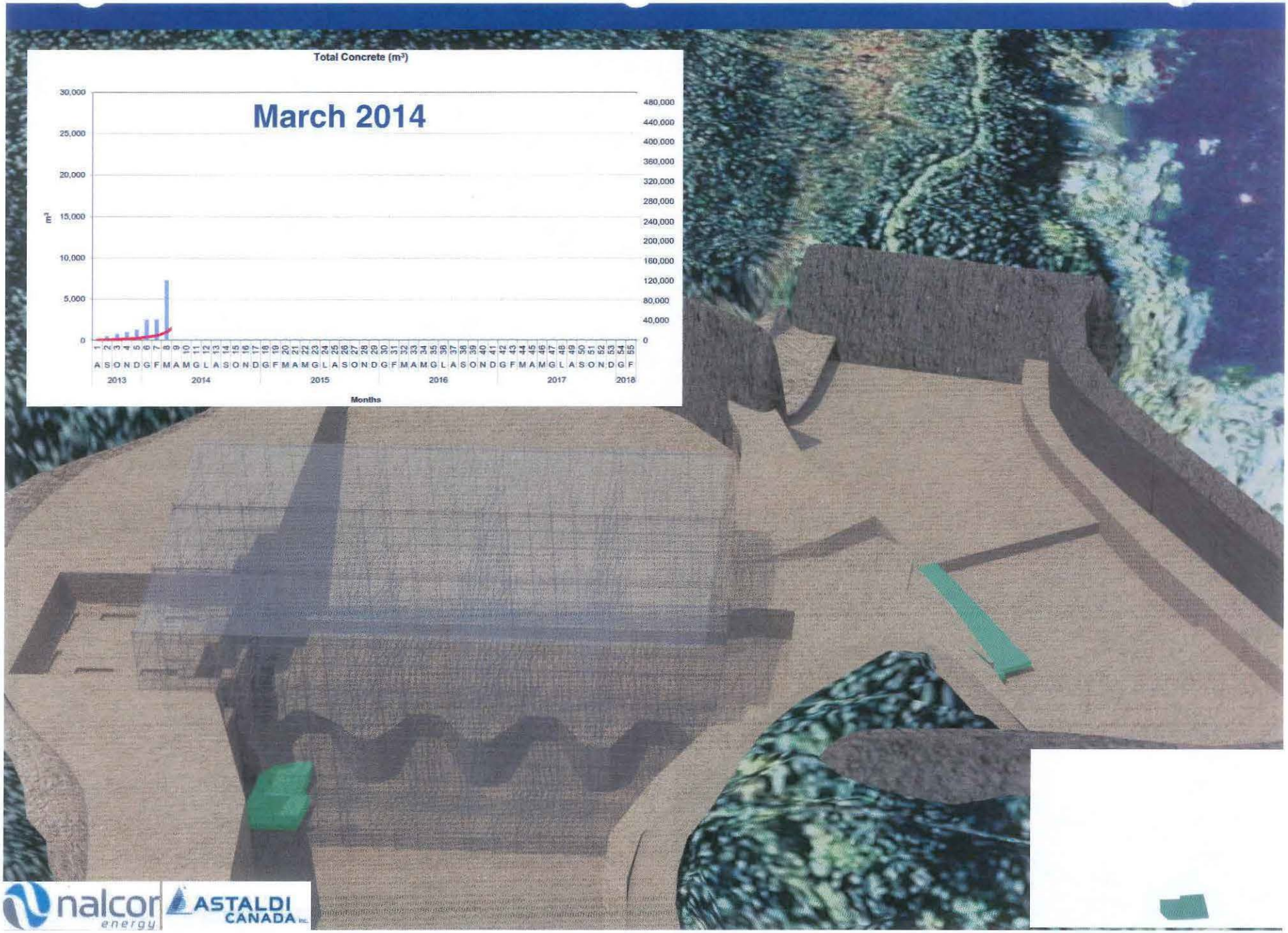
Enzo Raho — *Italian*

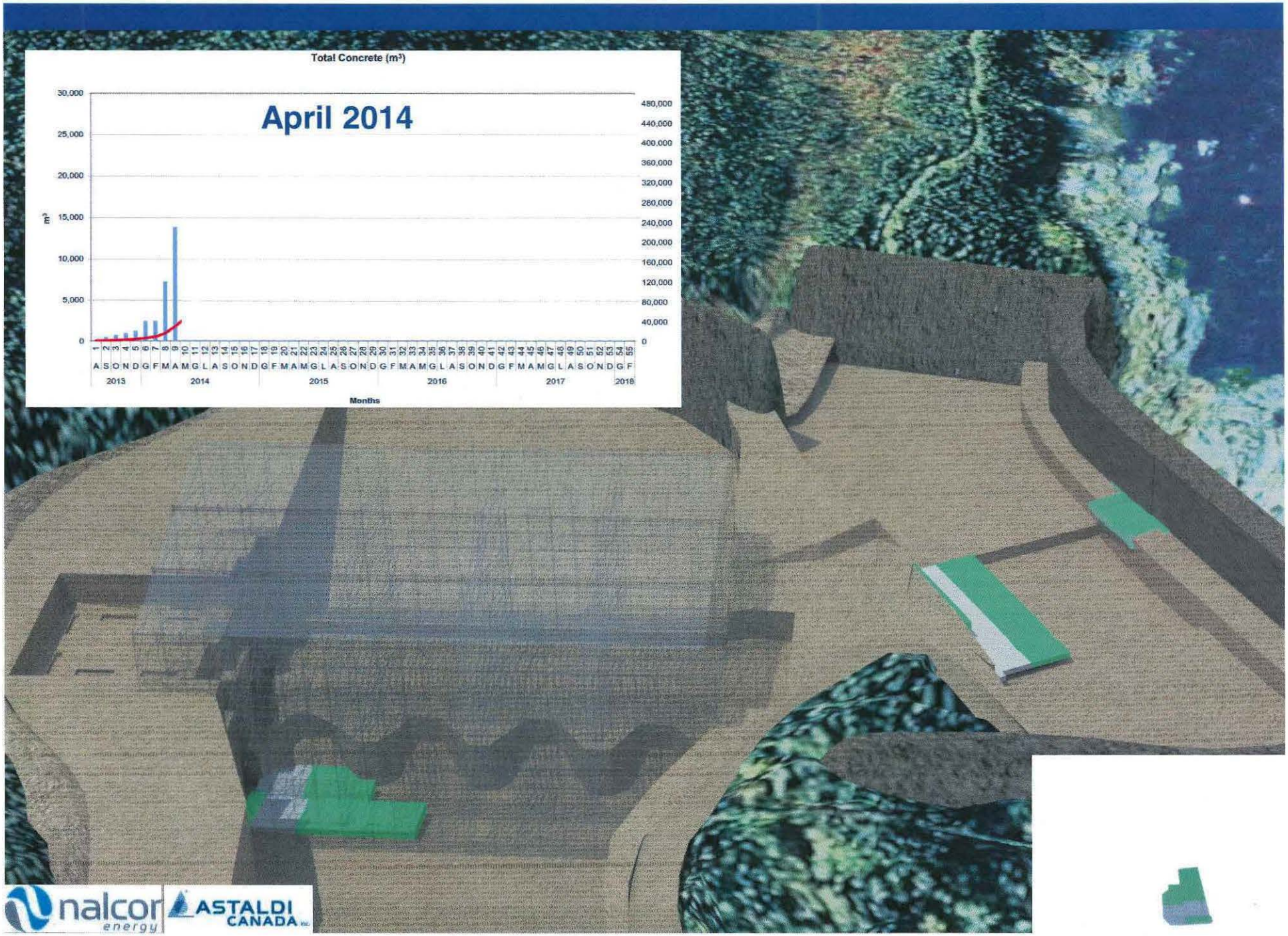
Safety Manager

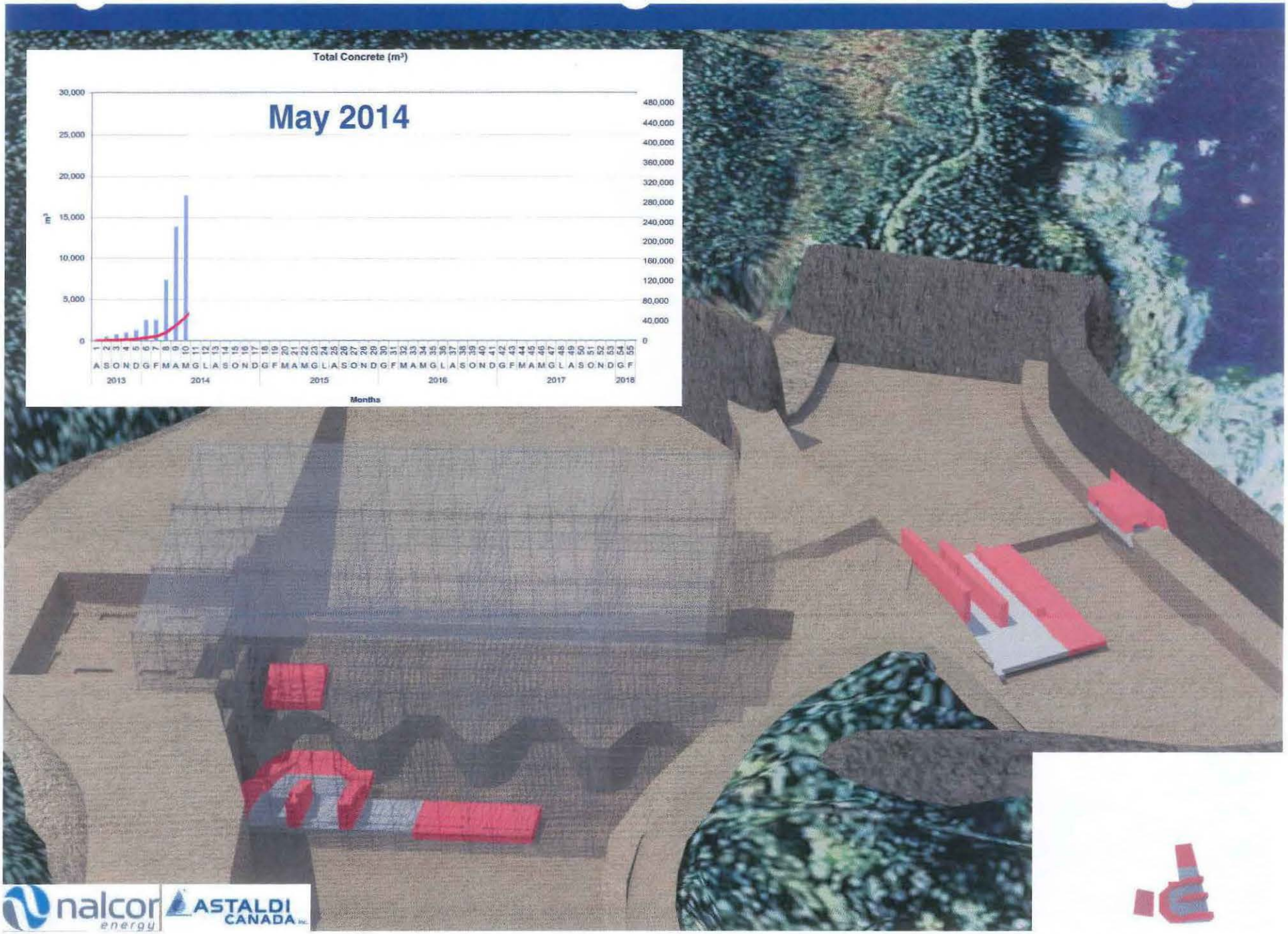
Experience: 10 years

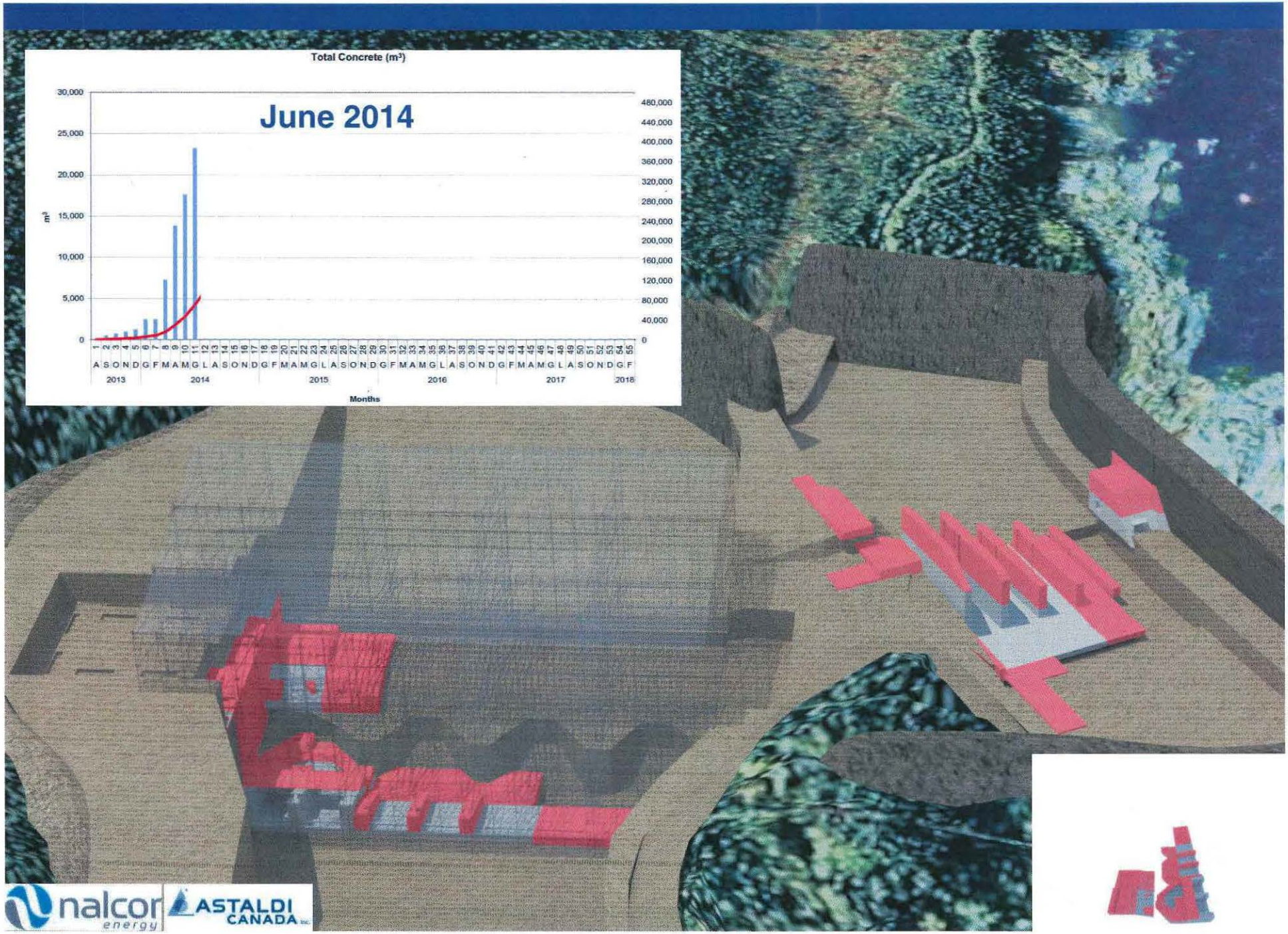
3 major projects in Italy (more than 1000 workers each)

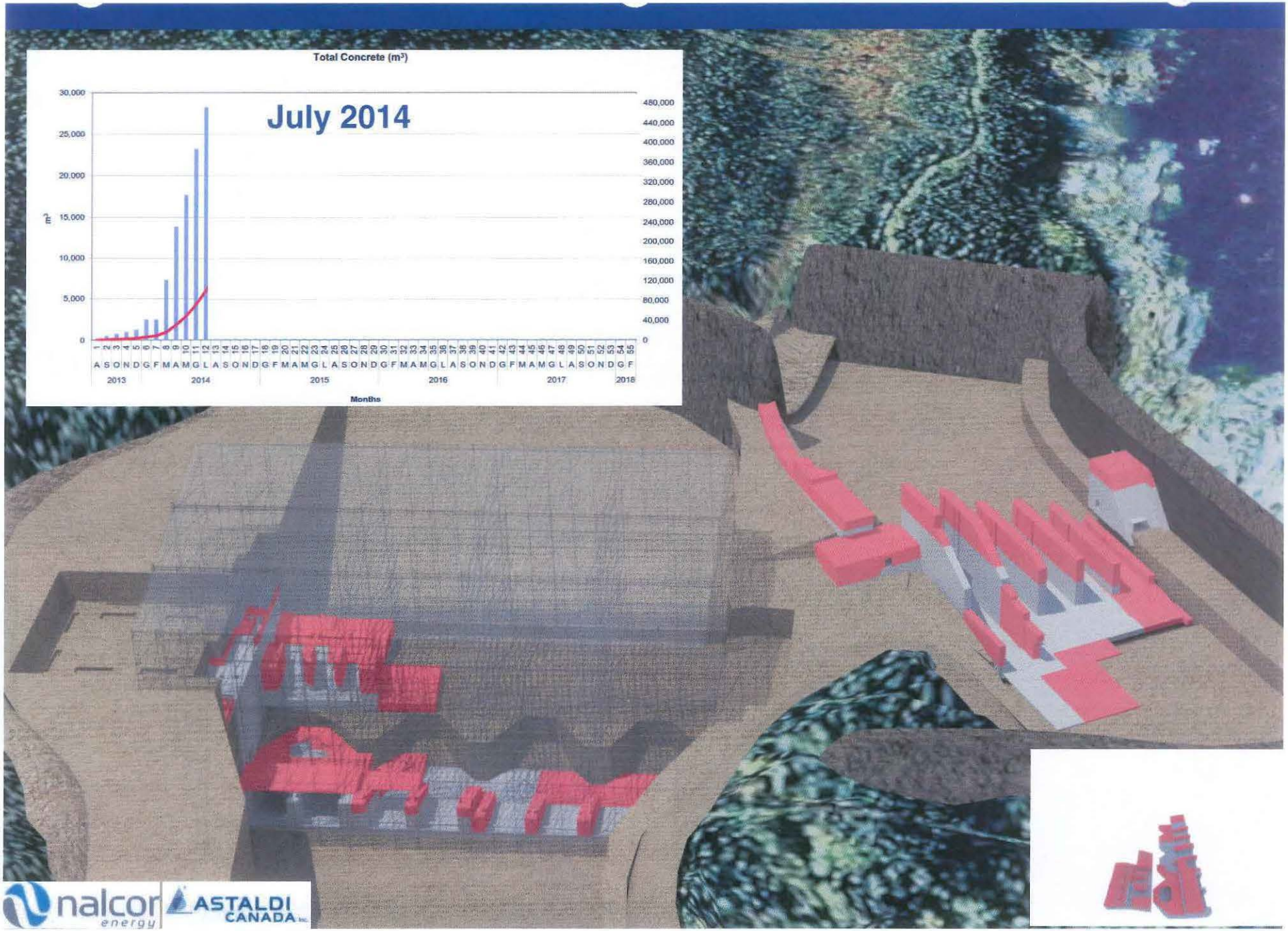

Total Concrete (m³)
August 2013 – February 2014
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
460,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
Milestone M1 – 31 July 2014
I1 – 11 Nov 2014
I7 – 4 Nov 2014

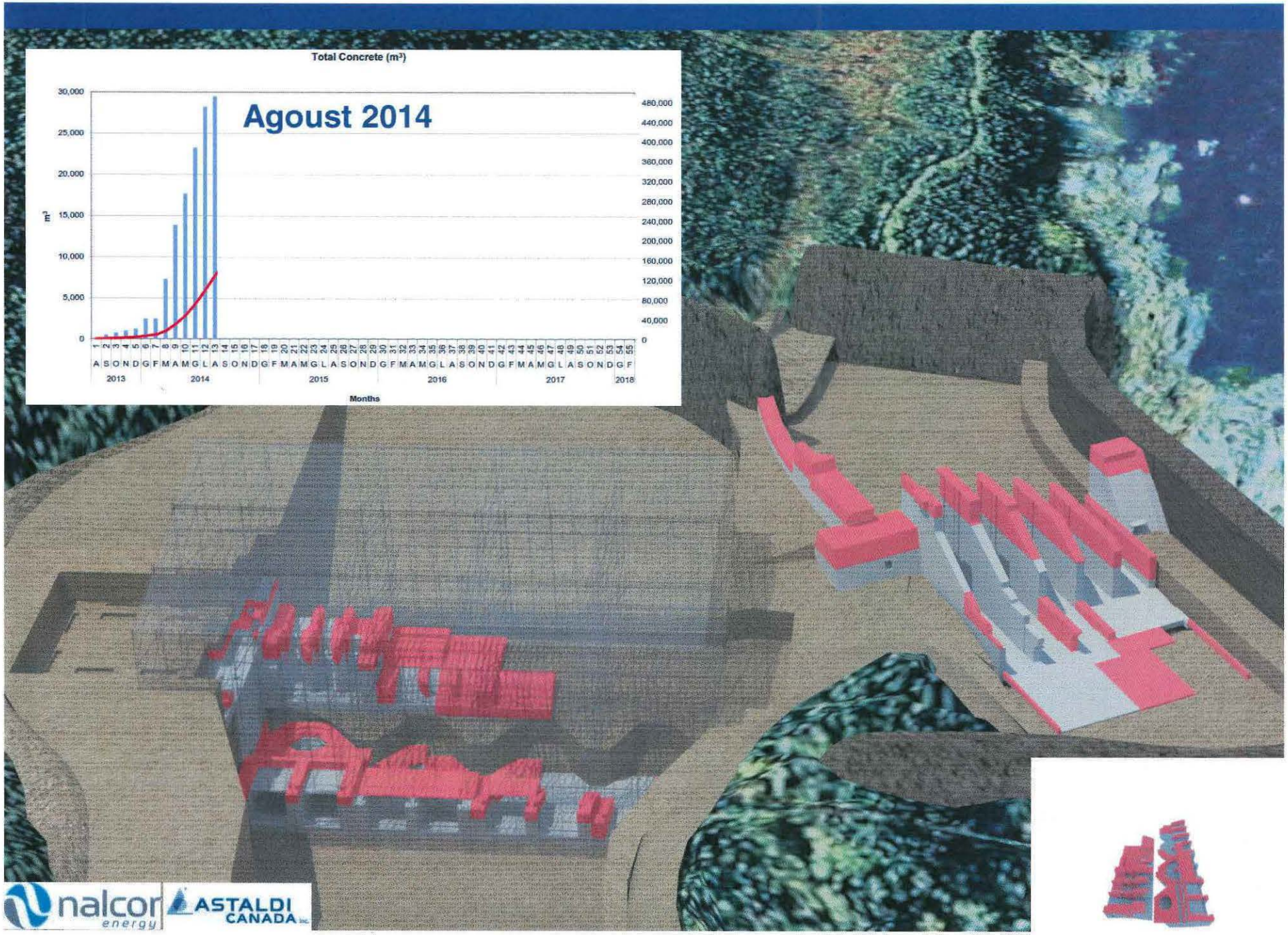

Total Concrete (m³)
March 2014
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA INC.

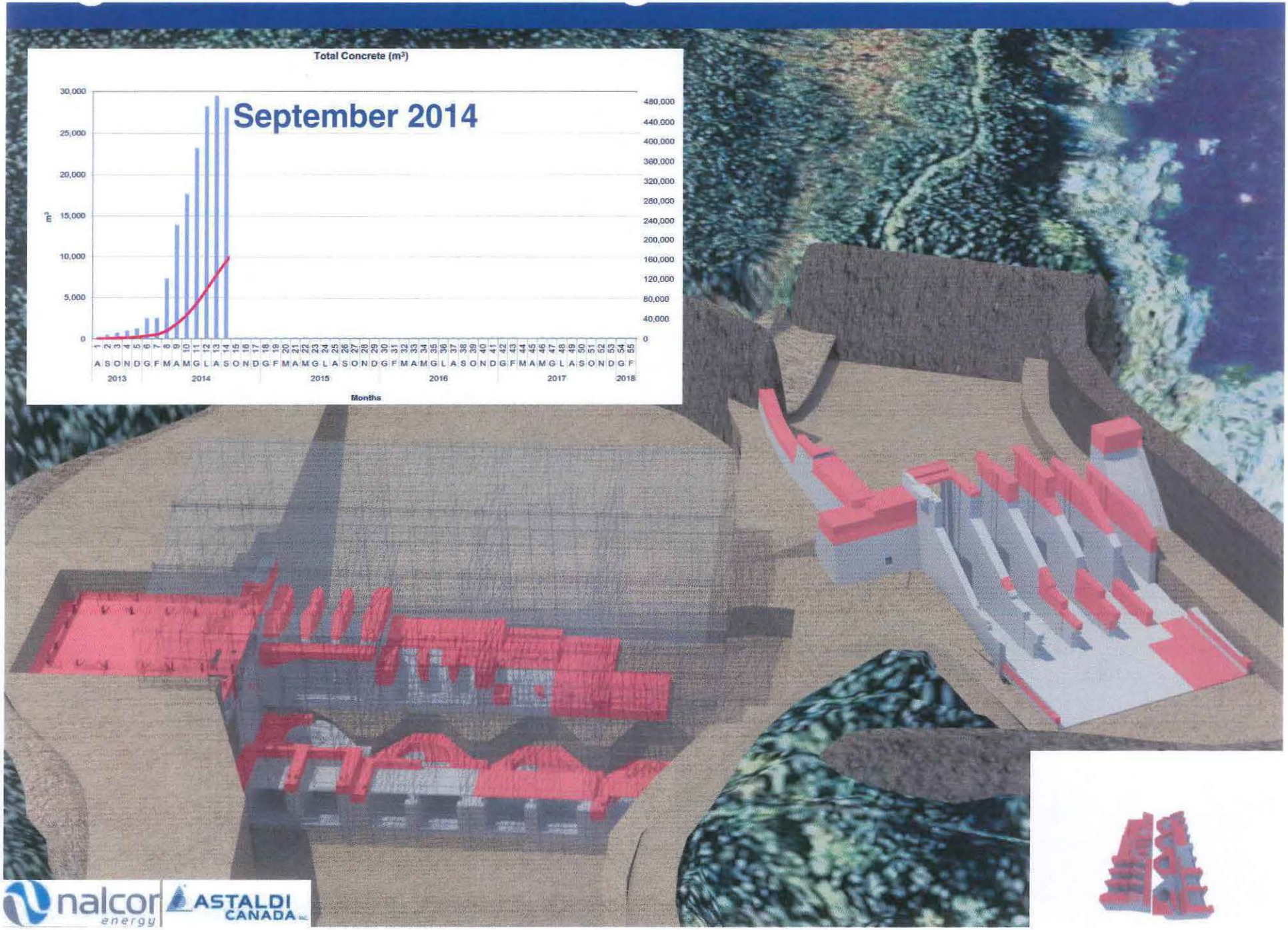

Total Concrete (m³)
April 2014
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA

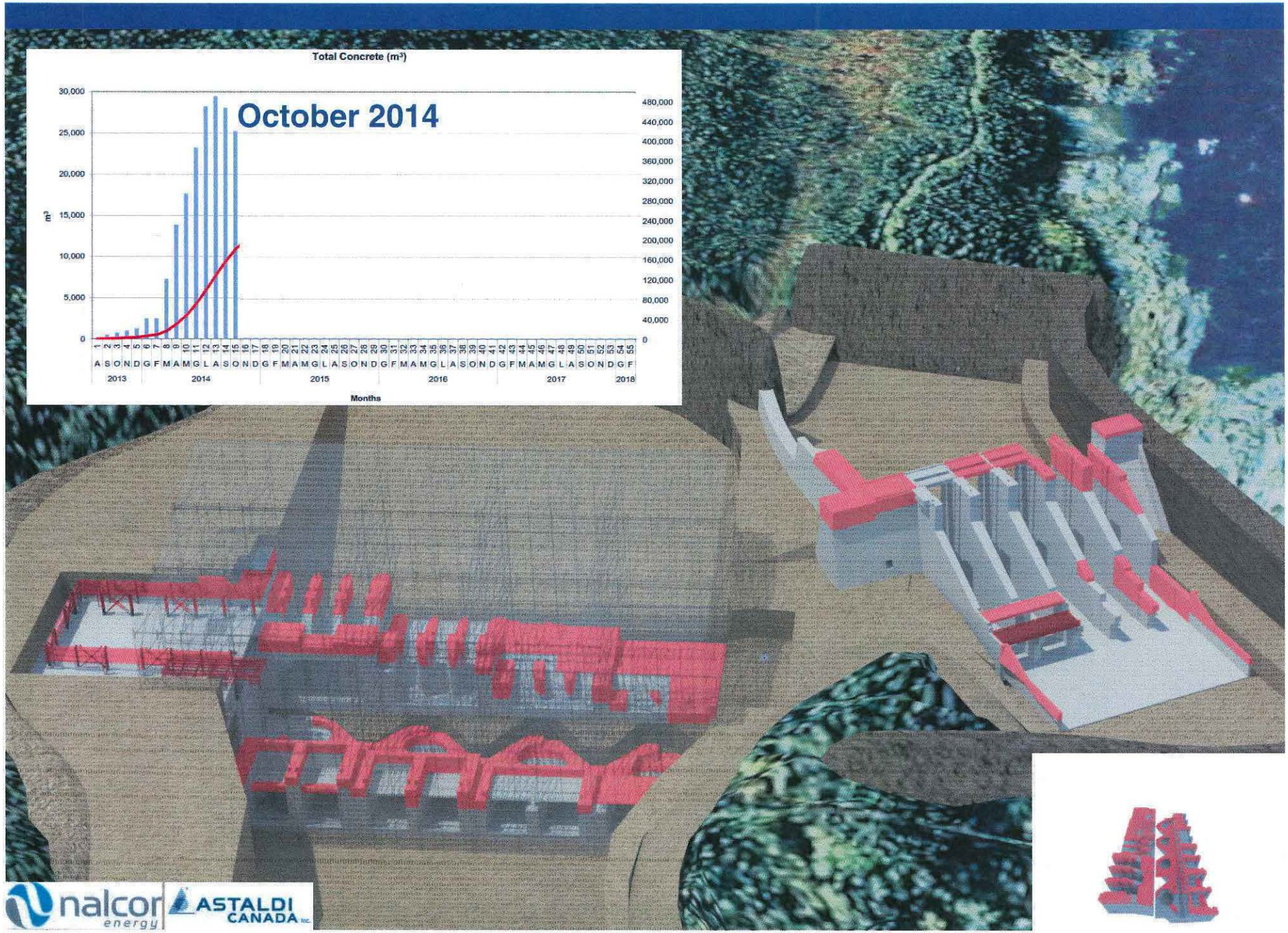

Total Concrete (m³)
May 2014
30,000
25,000
20,000
15,000
10,000
5,000
0
m³
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA INC.

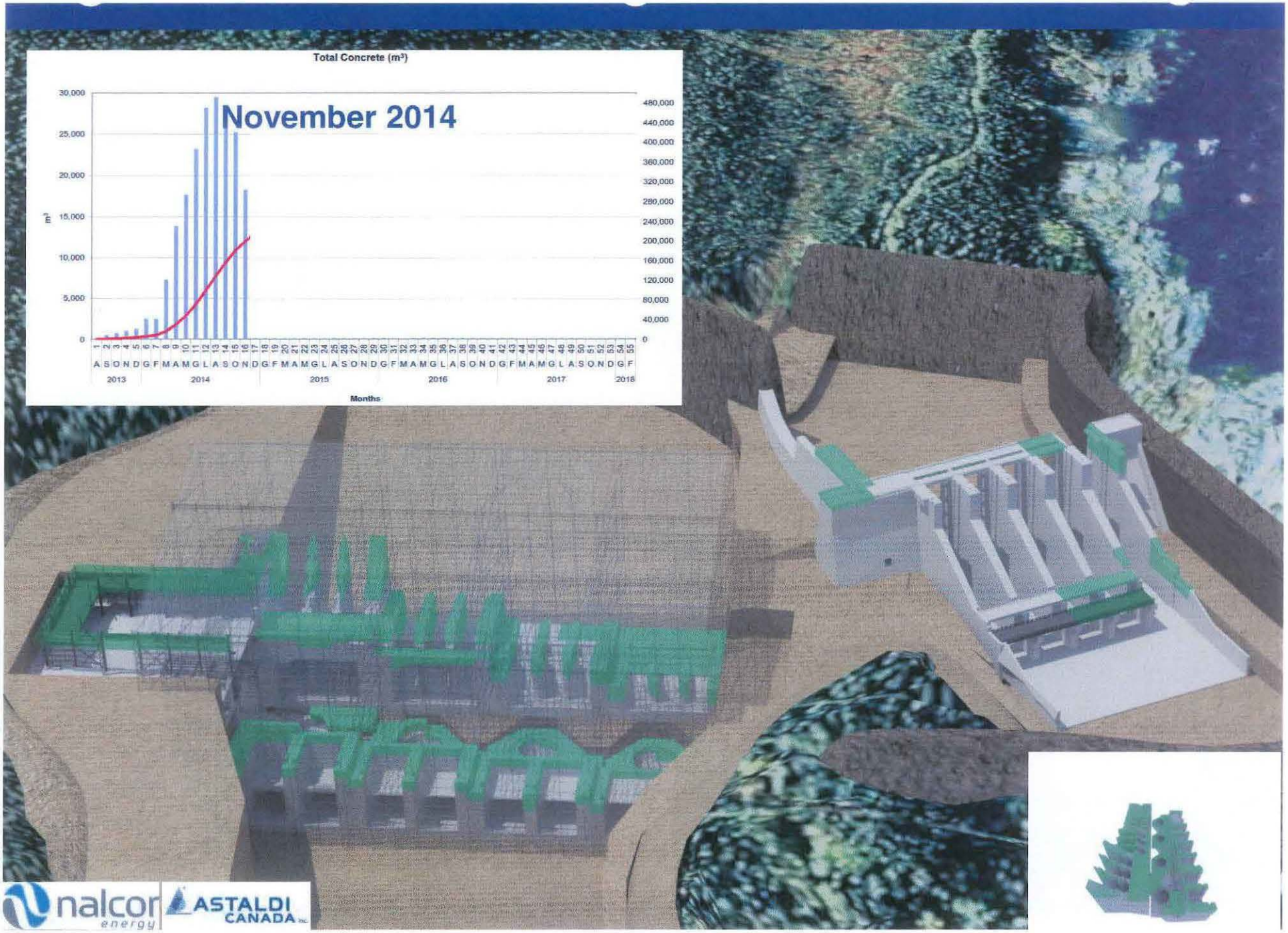

Total Concrete (m³)
June 2014
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA

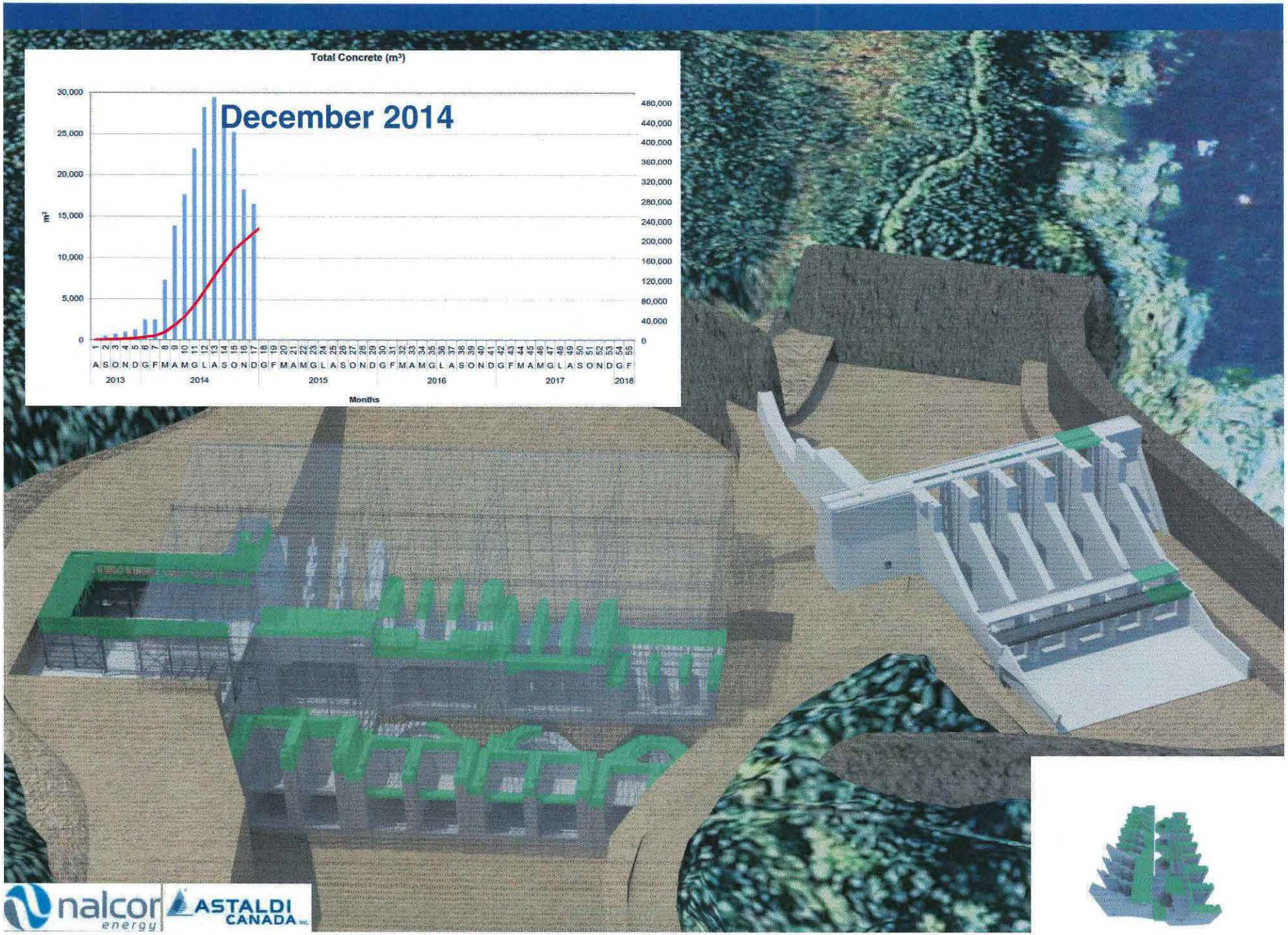

Total Concrete (m³)
July 2014
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA Inc.

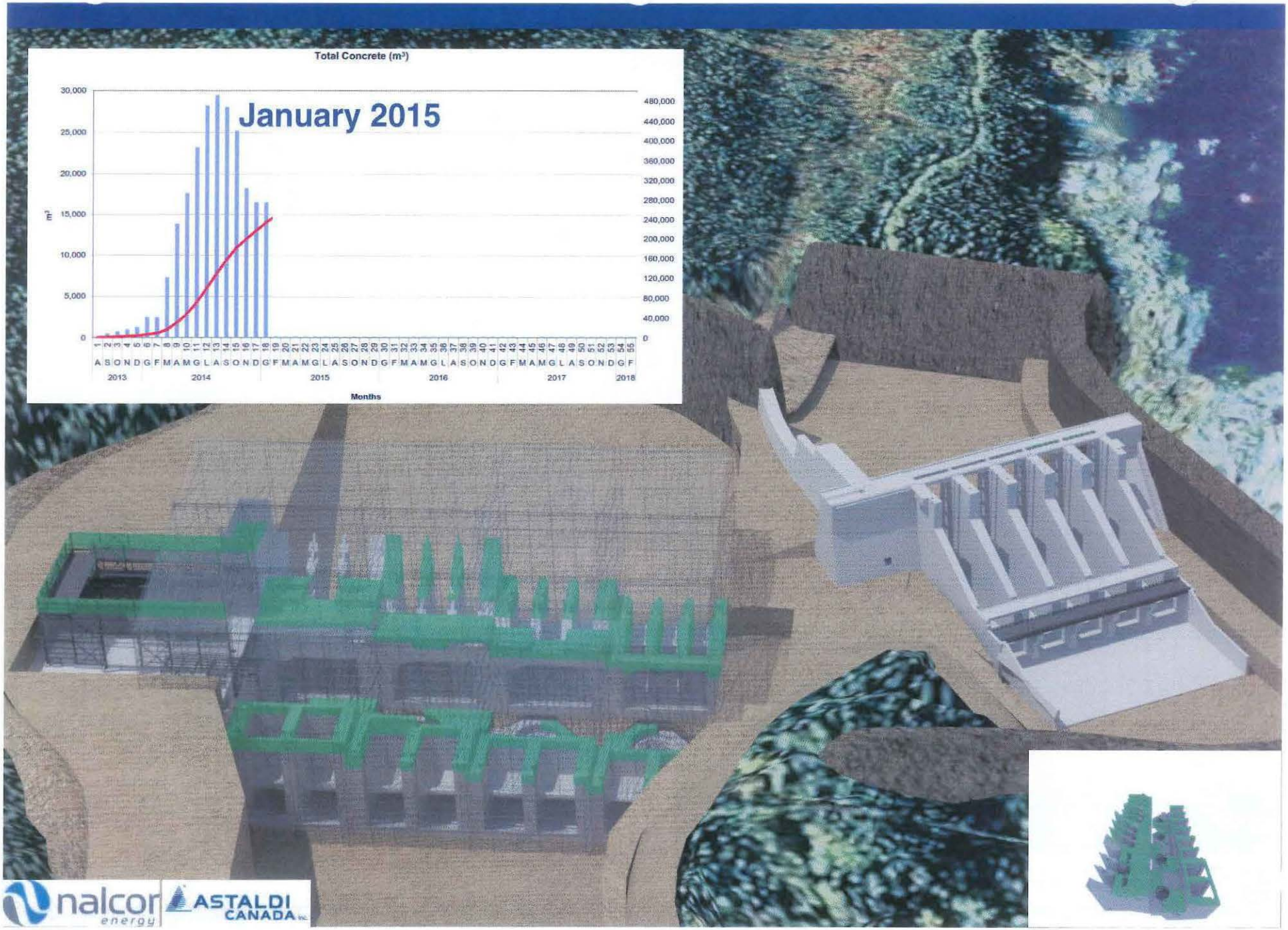

Total Concrete (m³)
Agoust 2014
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA inc.


Total Concrete (m³)
September 2014
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA

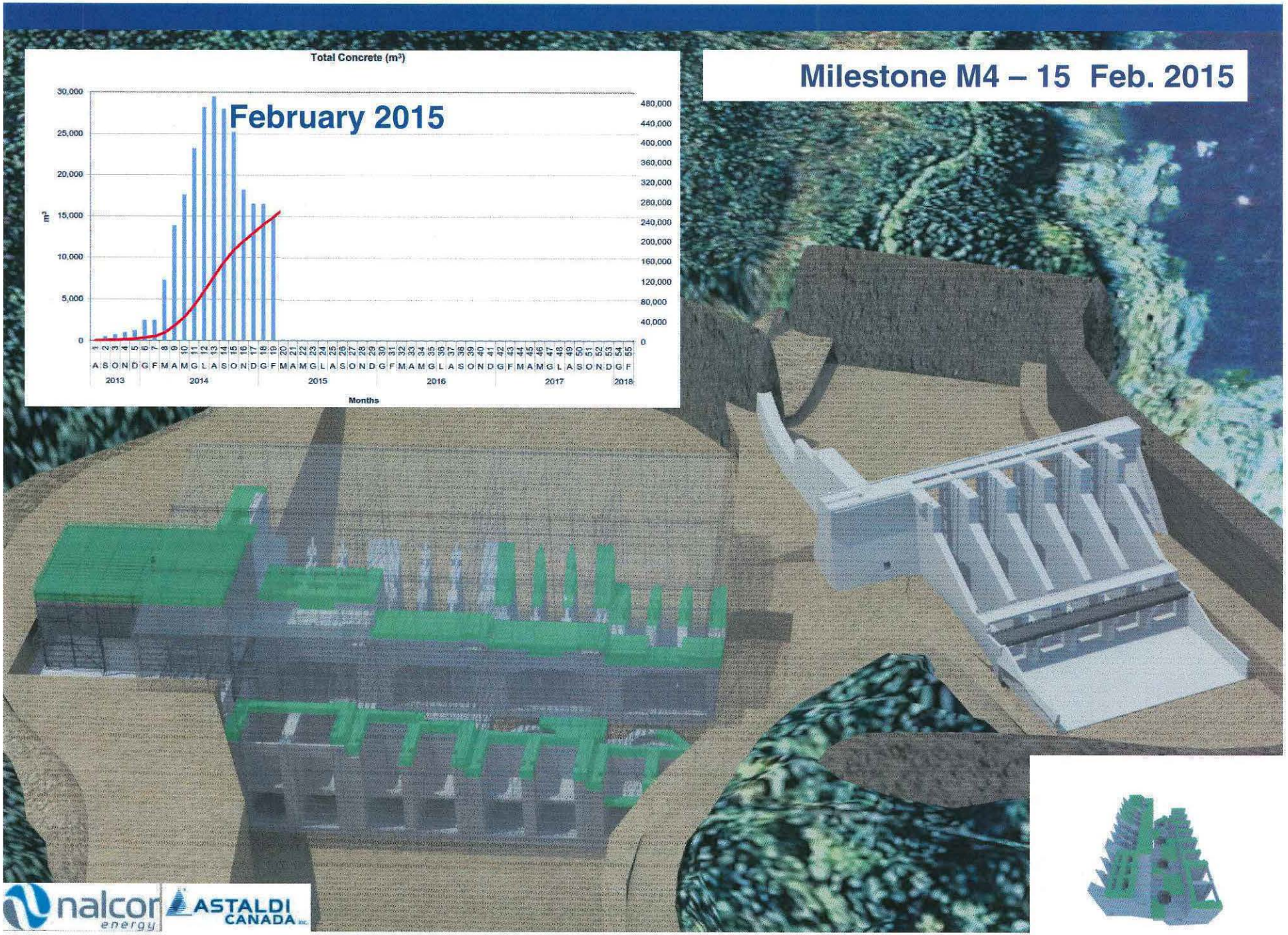

Total Concrete (m³)
October 2014
m³
Months
2013
2014
2015
2016
2017
2018
nalcor energy
ASTALDI CANADA Inc.

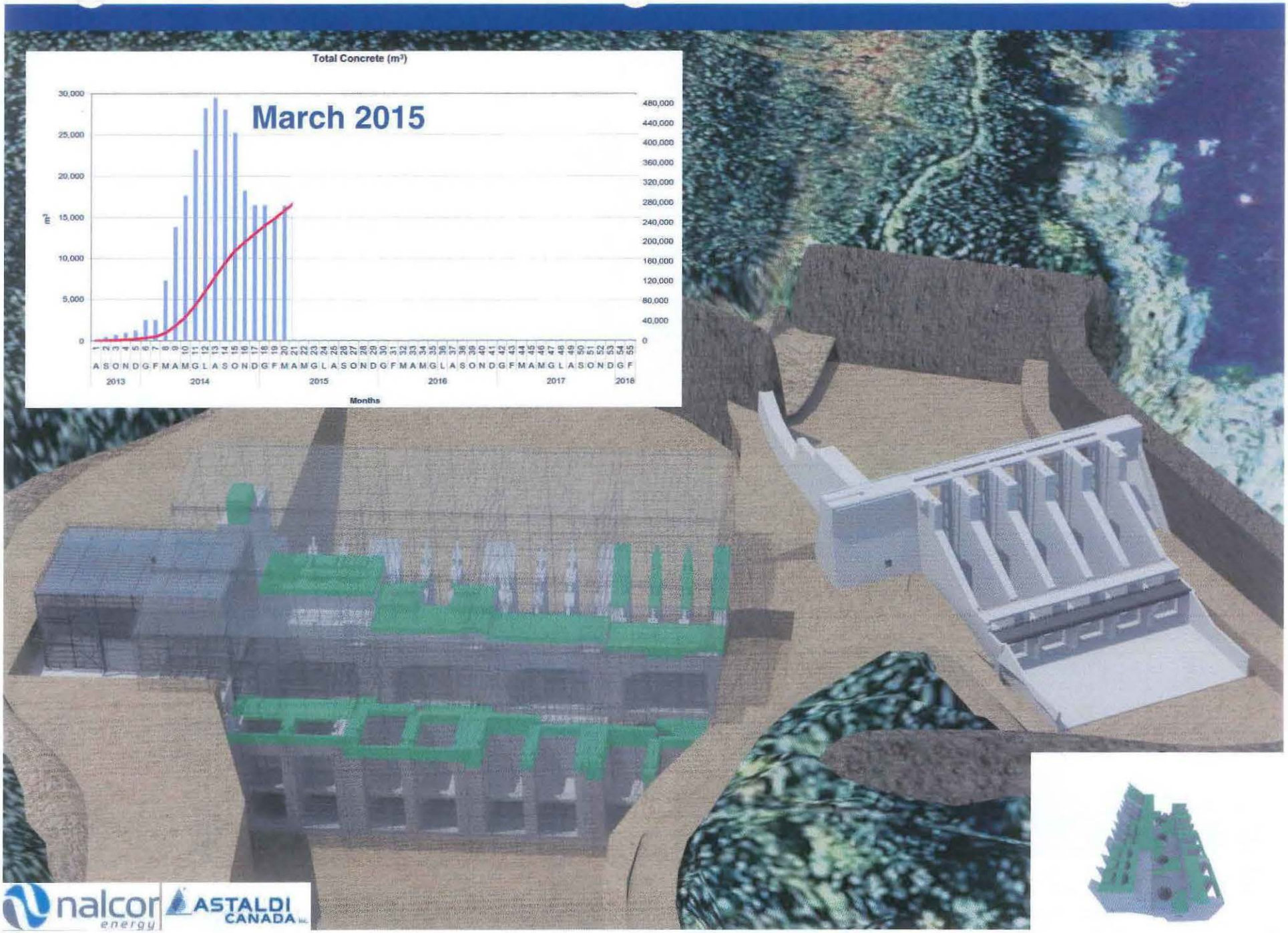

Total Concrete (m³)
November 2014
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA


Total Concrete (m³)
December 2014
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA

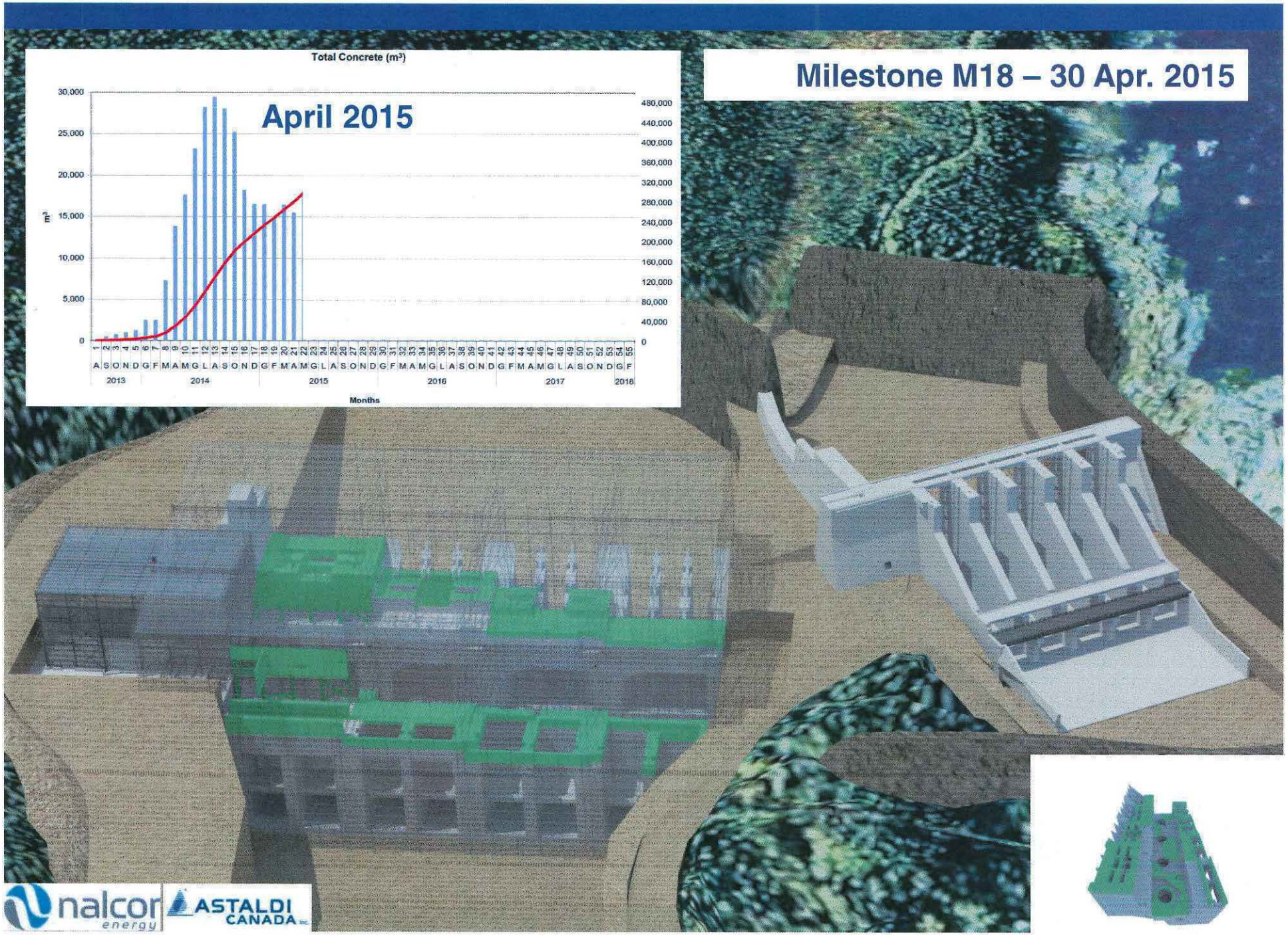

Total Concrete (m³)
January 2015
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA INC.

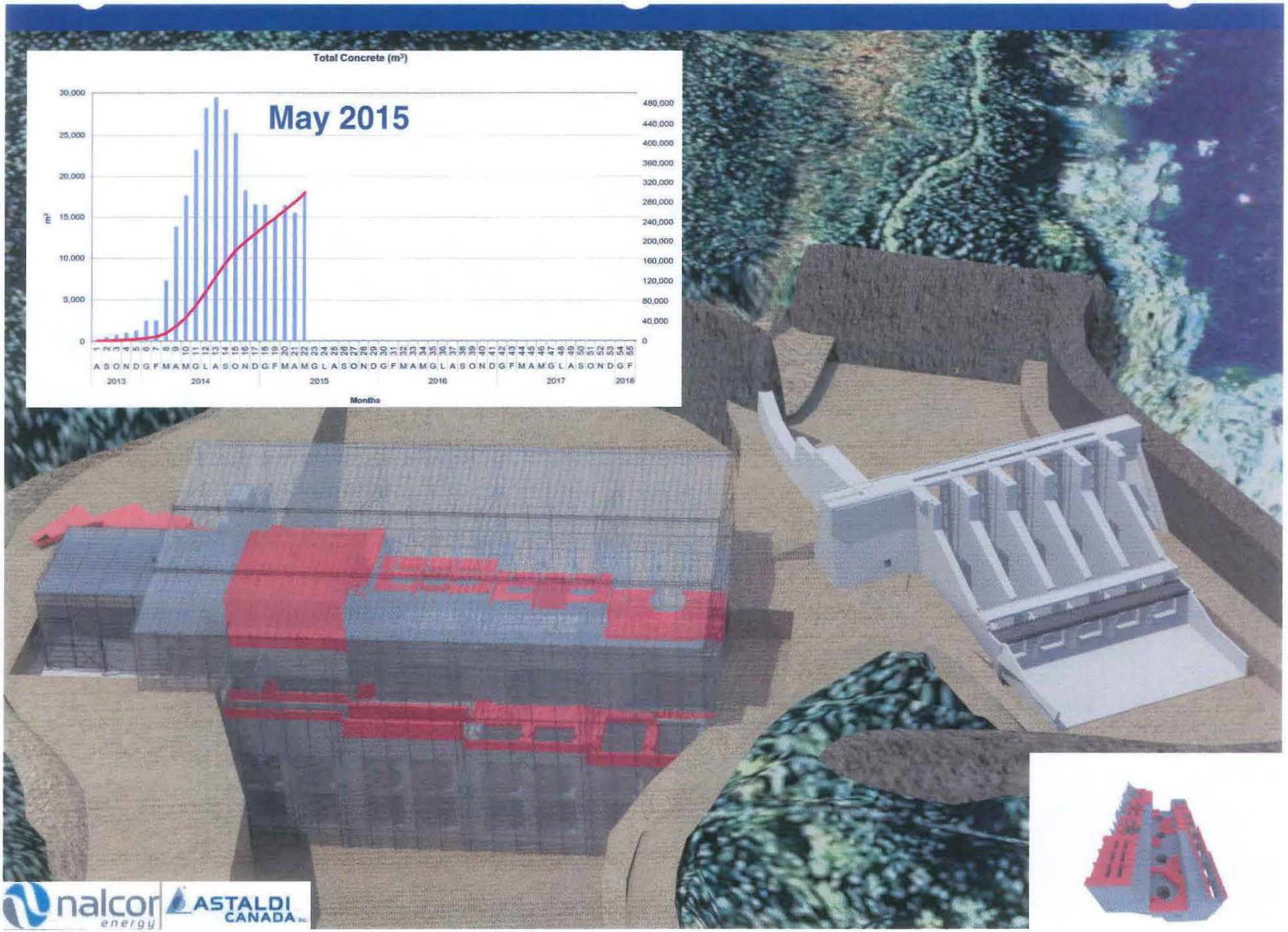
Milestone M4 – 15 Feb. 2015

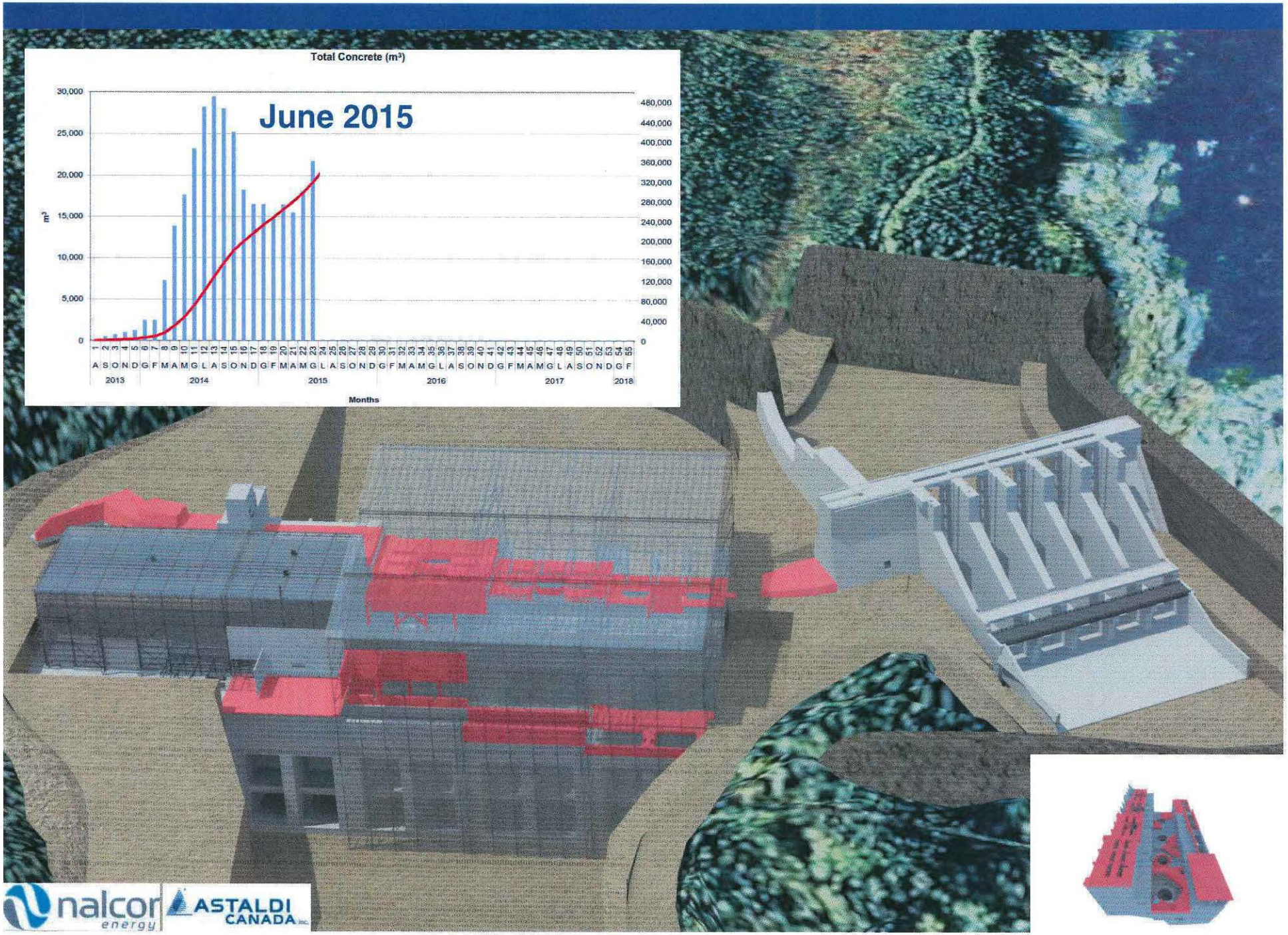


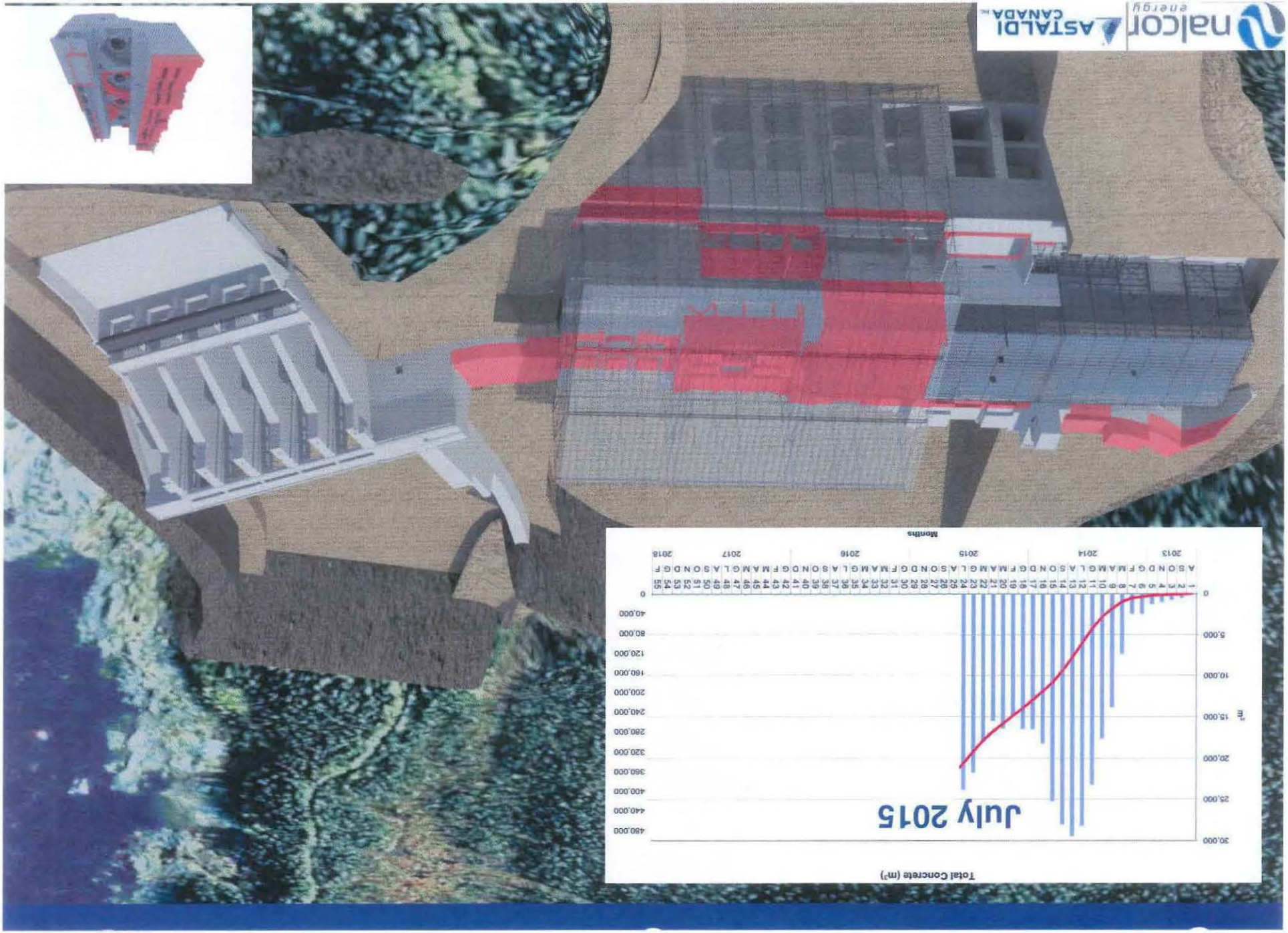

Total Concrete (m³)
March 2015
30,000
25,000
20,000
15,000
10,000
5,000
0
m³
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA

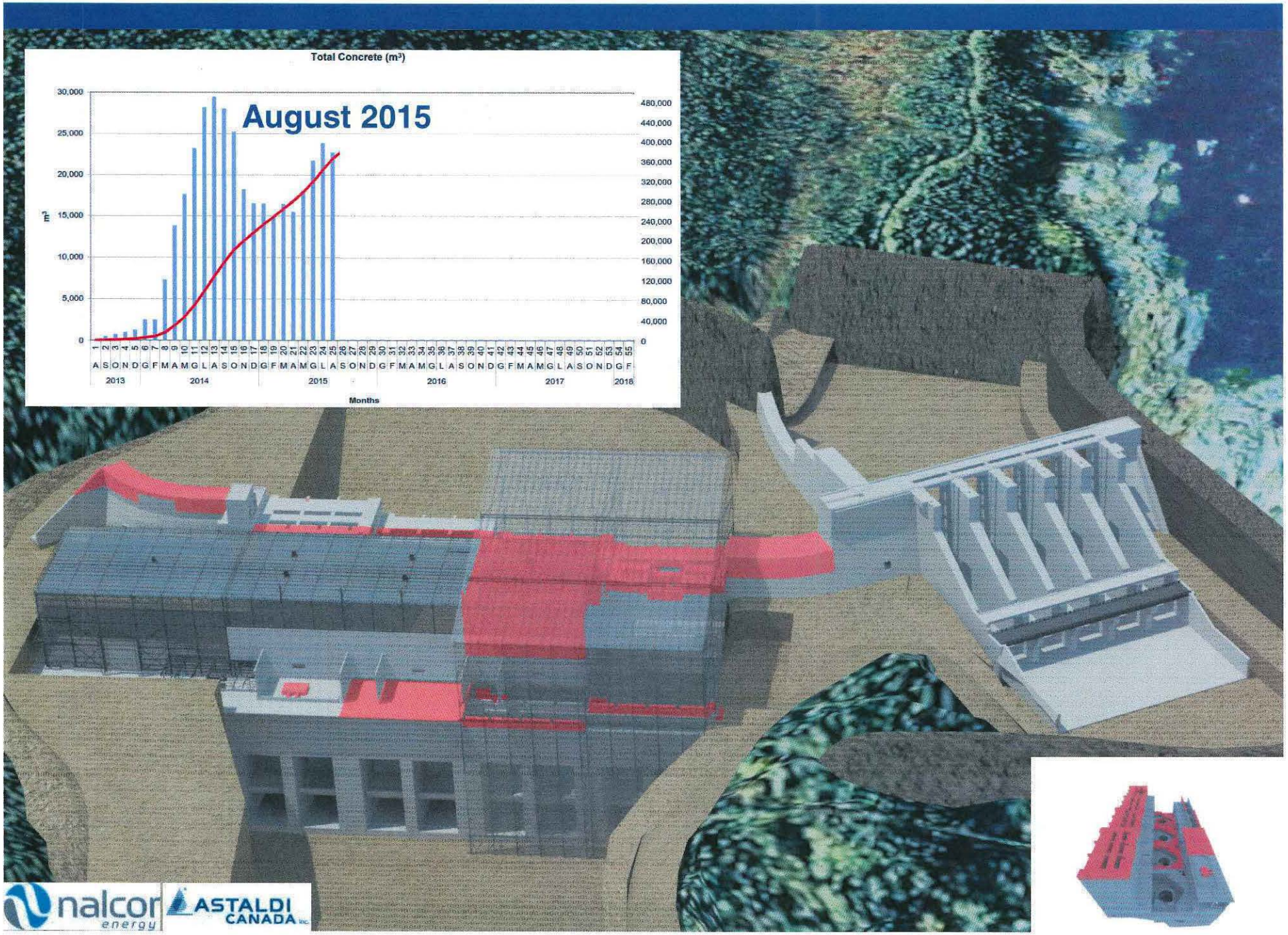
Milestone M18 – 30 Apr. 2015

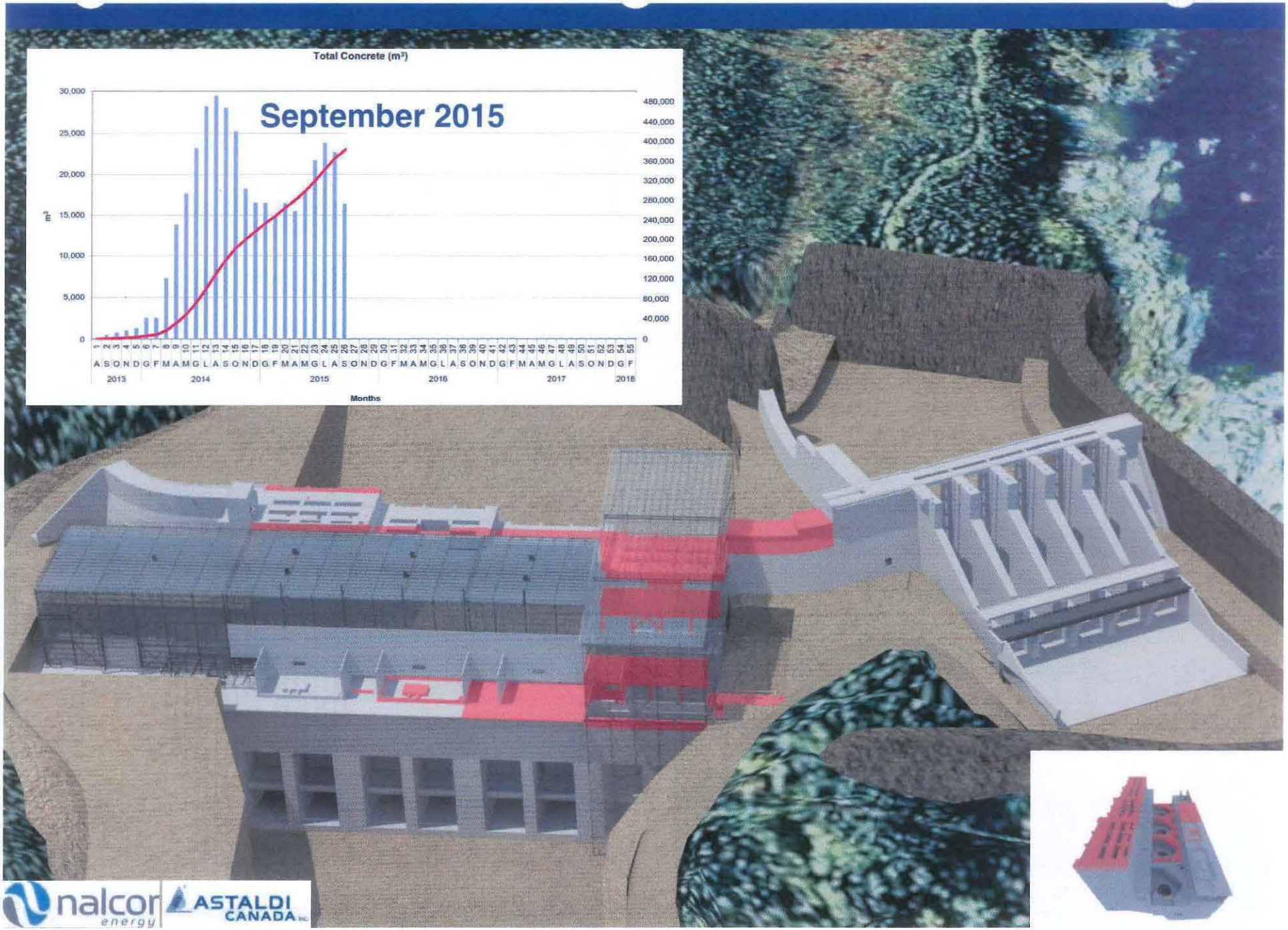


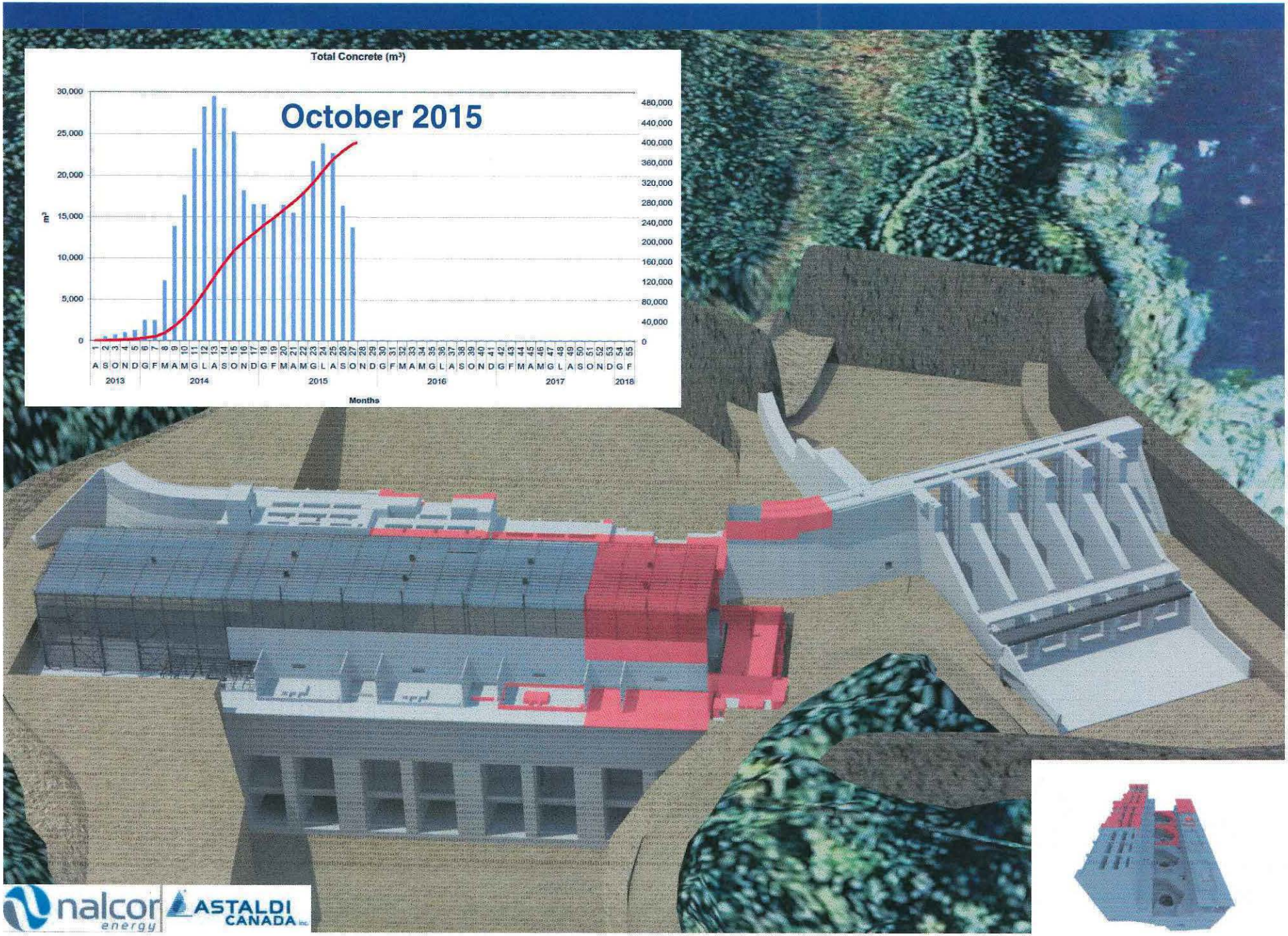

Total Concrete (m³)
May 2015
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA

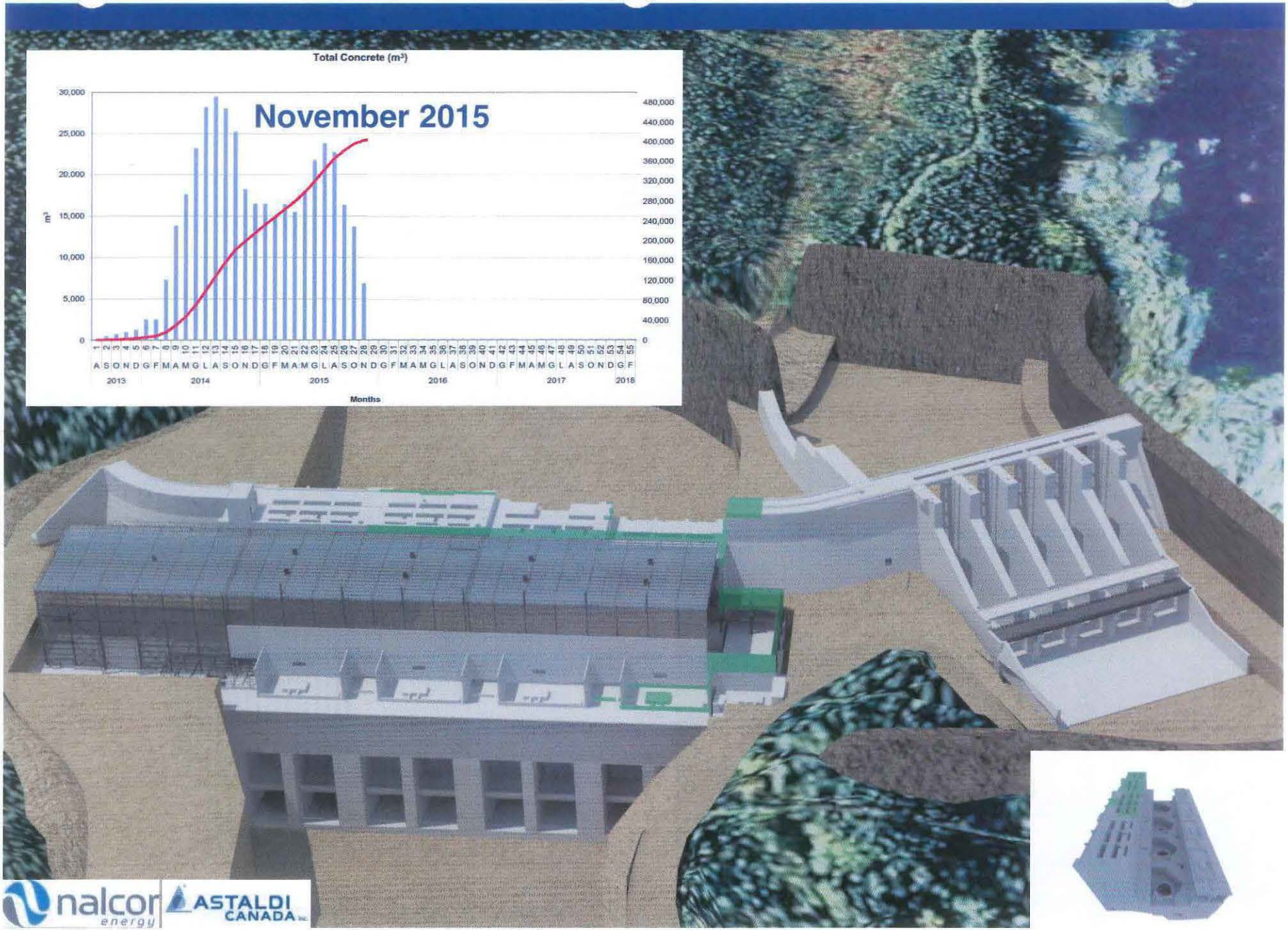

Total Concrete (m³)
June 2015
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA

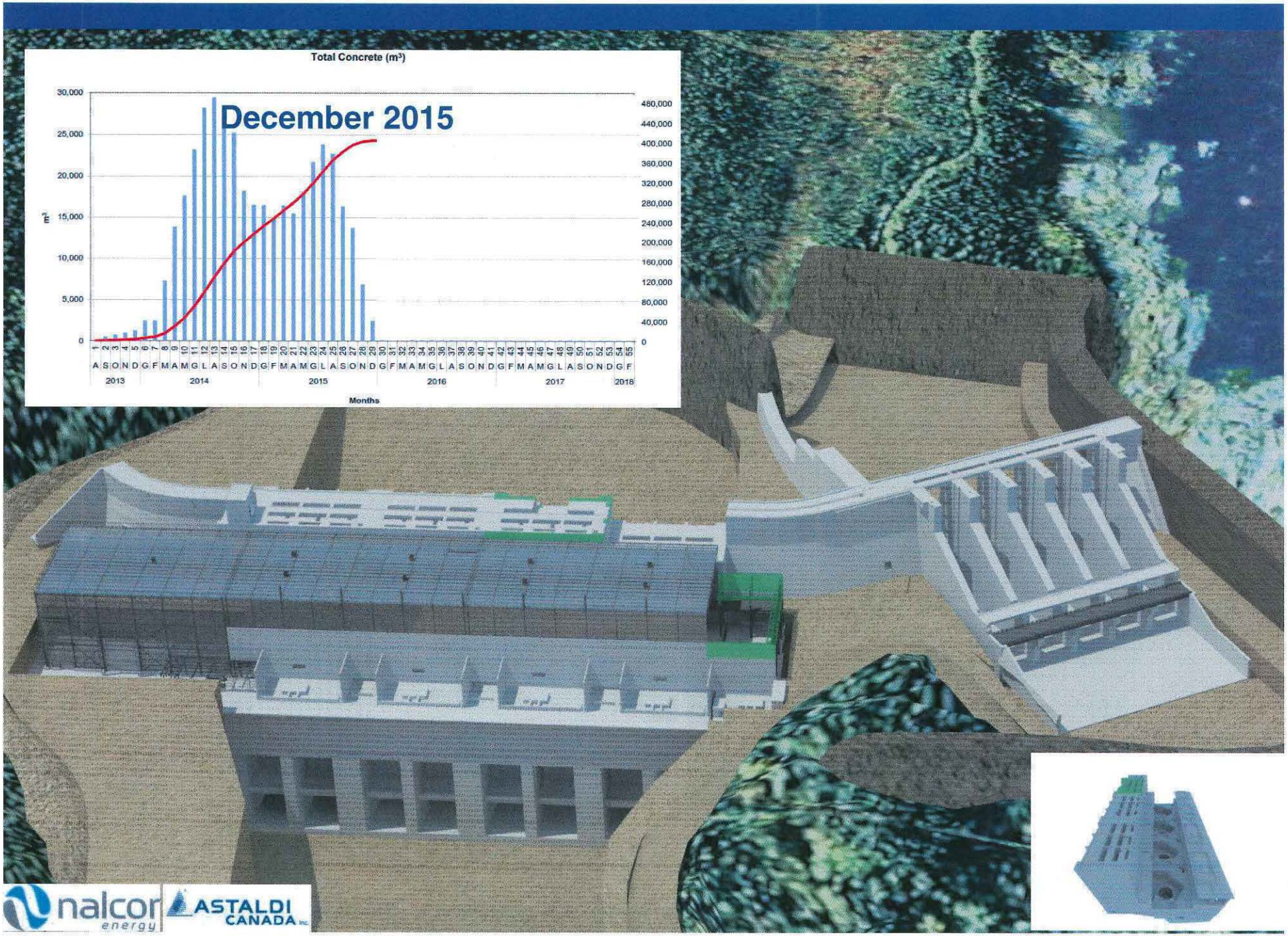

July 2015
Total Concrete (m³)
Months

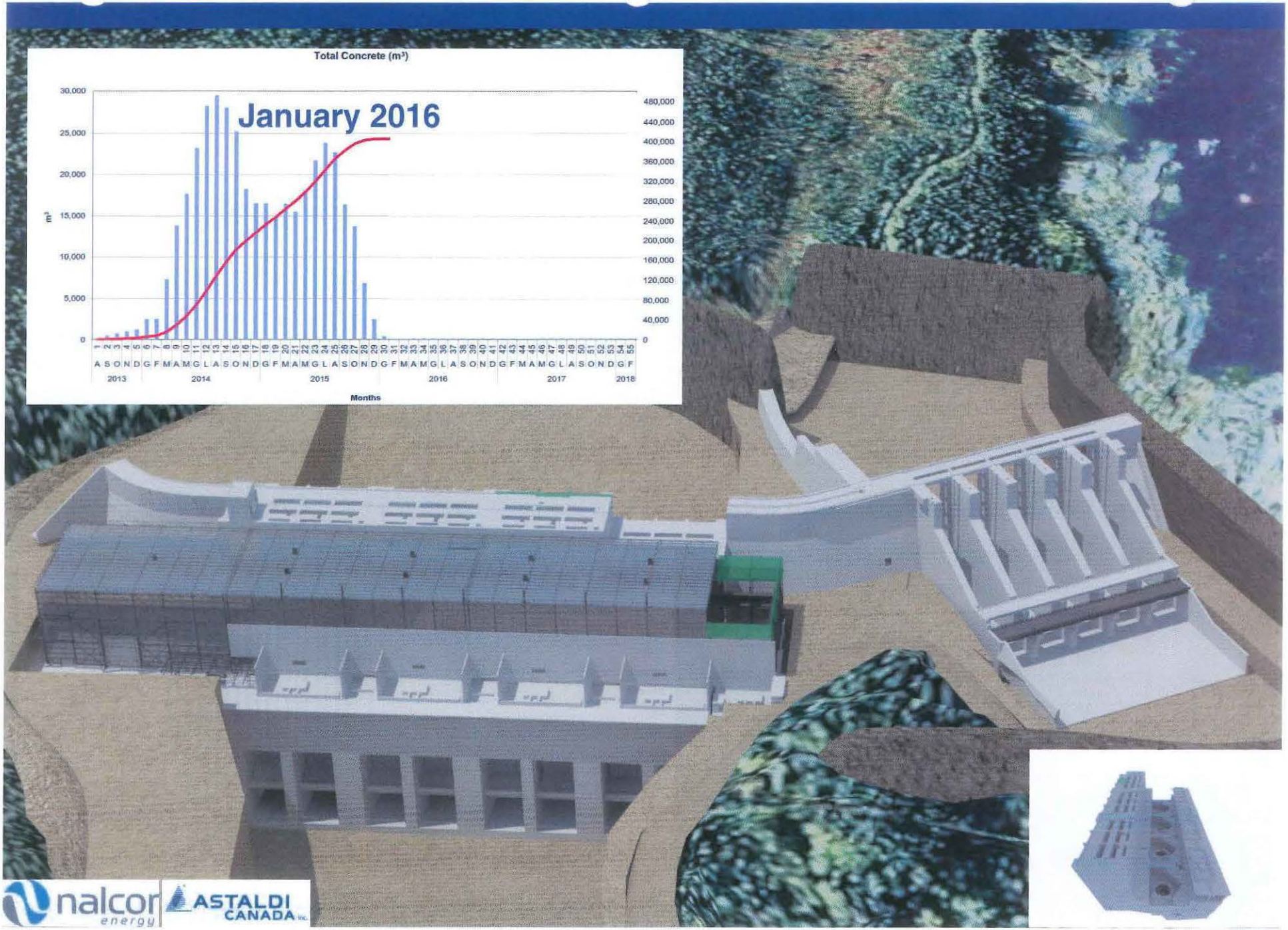

Total Concrete (m³)
August 2015
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA

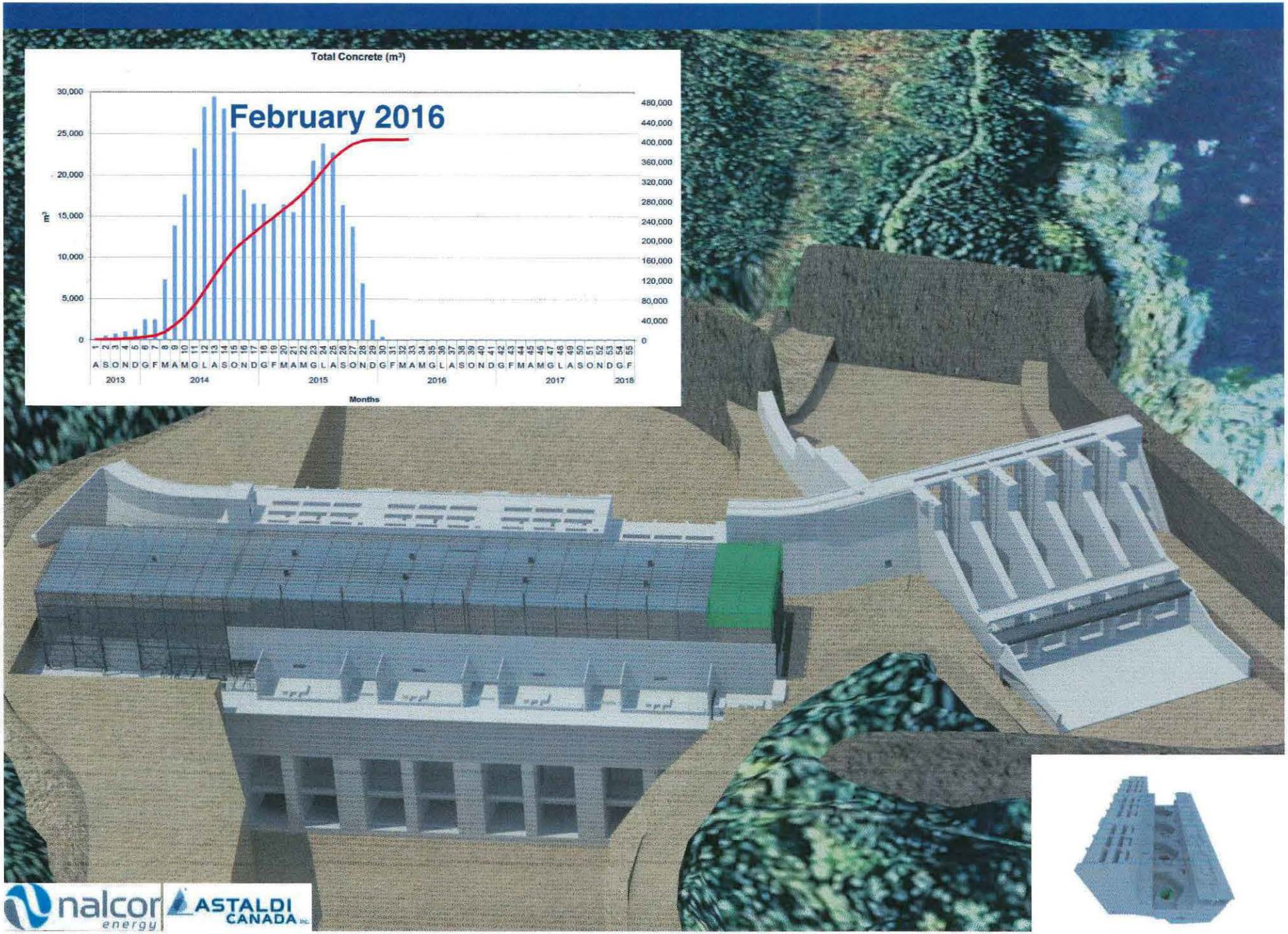

Total Concrete (m³)
September 2015
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA INC.

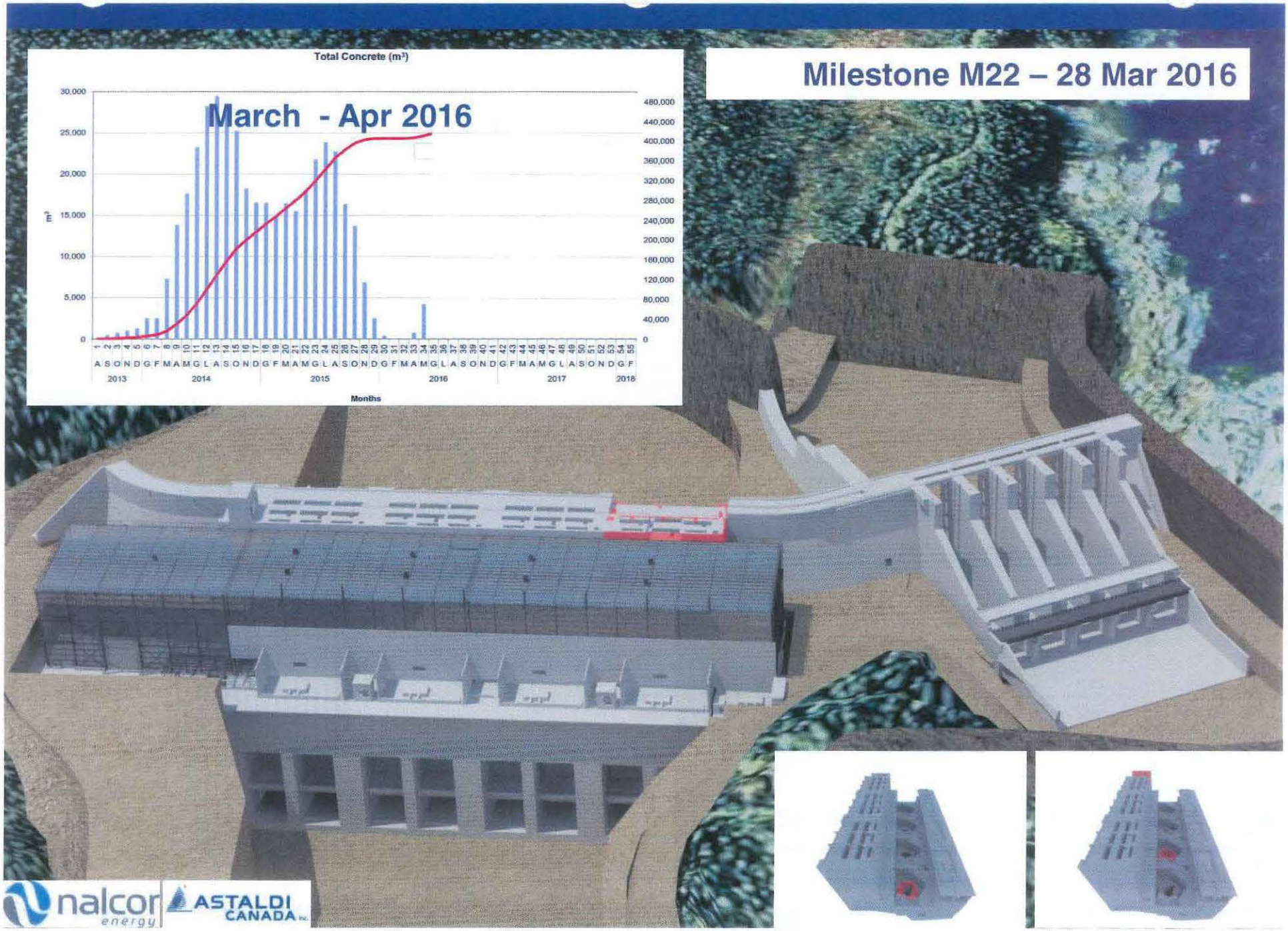

Total Concrete (m³)
October 2015
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA

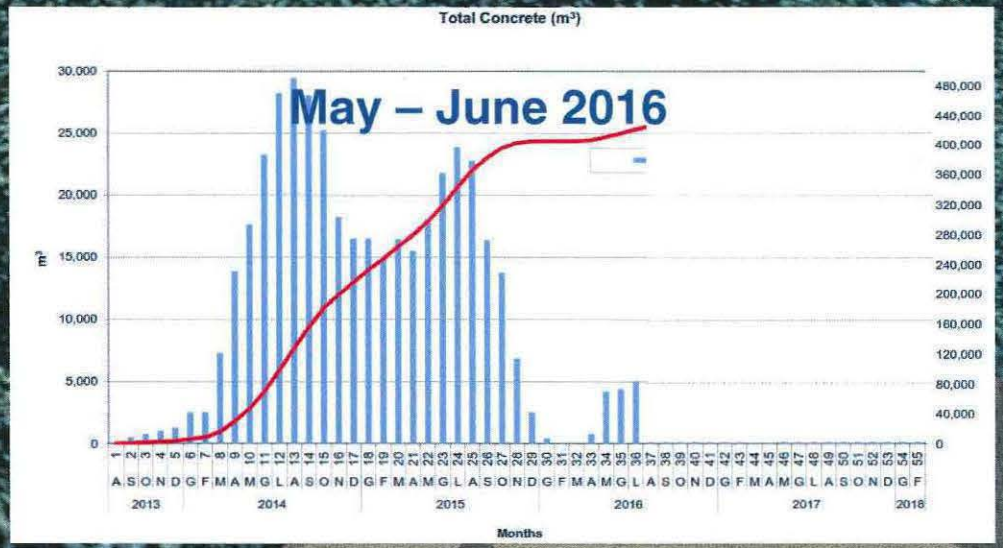

Total Concrete (m³)
November 2015
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA INC.


Total Concrete (m³)
December 2015
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA


Total Concrete (m³)
January 2016
m³
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA


Total Concrete (m³)
February 2016
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
m³
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA


Total Concrete (m³)
March - Apr 2016
Milestone M22 – 28 Mar 2016
30,000
25,000
20,000
15,000
10,000
5,000
0
m³
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F M A M G L A S O N D G F
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA INC.



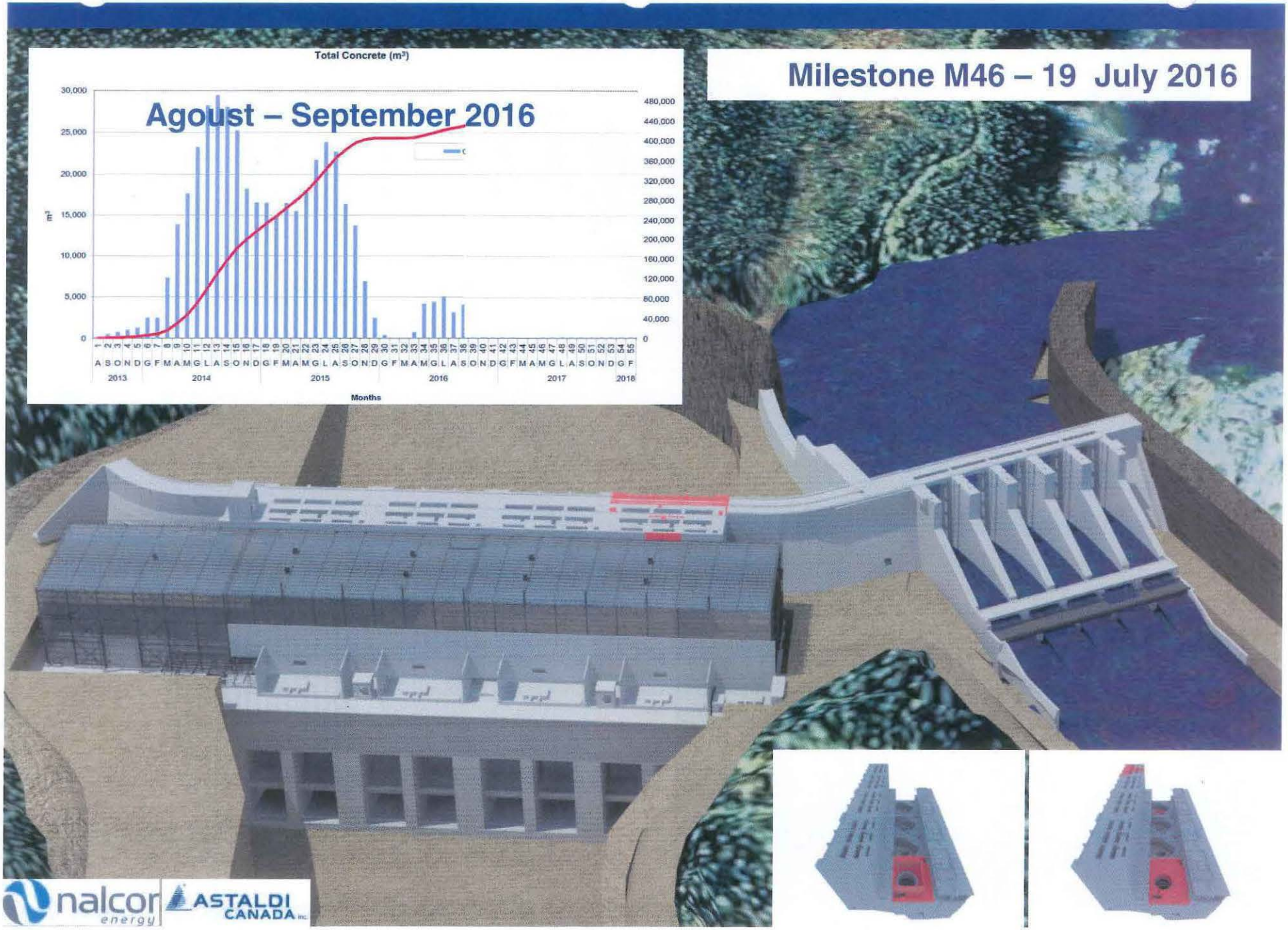
Milestone M30 – 4 May 2016

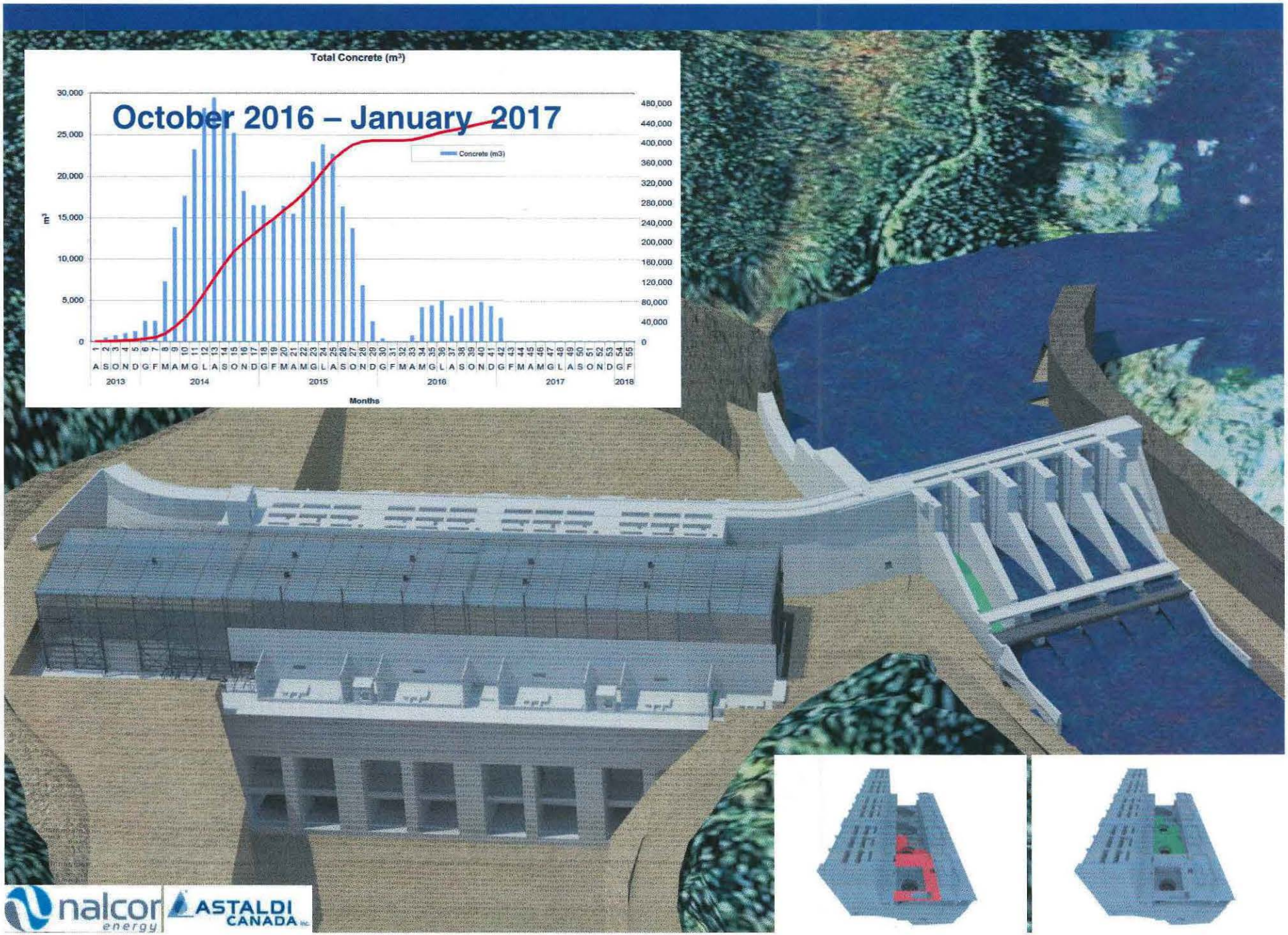
Milestone M38 – 10 June 2016

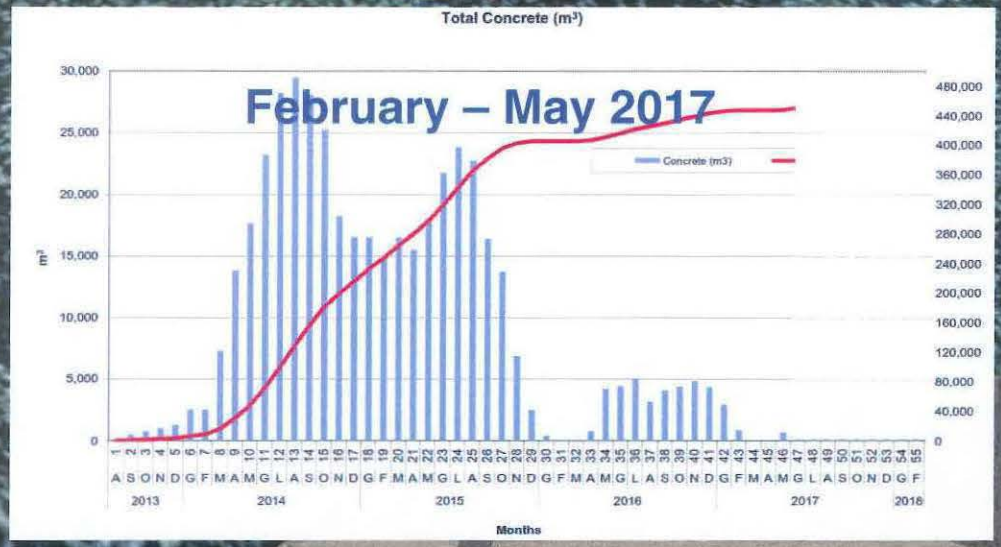
Note

The River Diversion through the spillway is only assumed

nalcor energy | ASTALDI CANADA inc

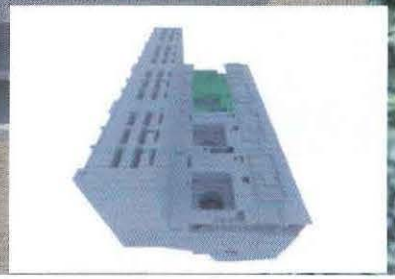

Total Concrete (m³)
Agoust – September 2016
Milestone M46 – 19 July 2016
30,000
25,000
20,000
15,000
10,000
5,000
0
480,000
440,000
400,000
360,000
320,000
280,000
240,000
200,000
160,000
120,000
80,000
40,000
0
m³
2013
2014
2015
2016
2017
2018
Months
nalcor energy
ASTALDI CANADA INC.

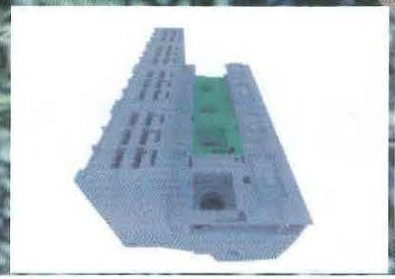

Total Concrete (m³)
October 2016 – January 2017
Concrete (m3)
m³
Months
2013
2014
2015
2016
2017
2018
nalcor energy
ASTALDI CANADA



Milestone M12 – 13 Mar. 2017

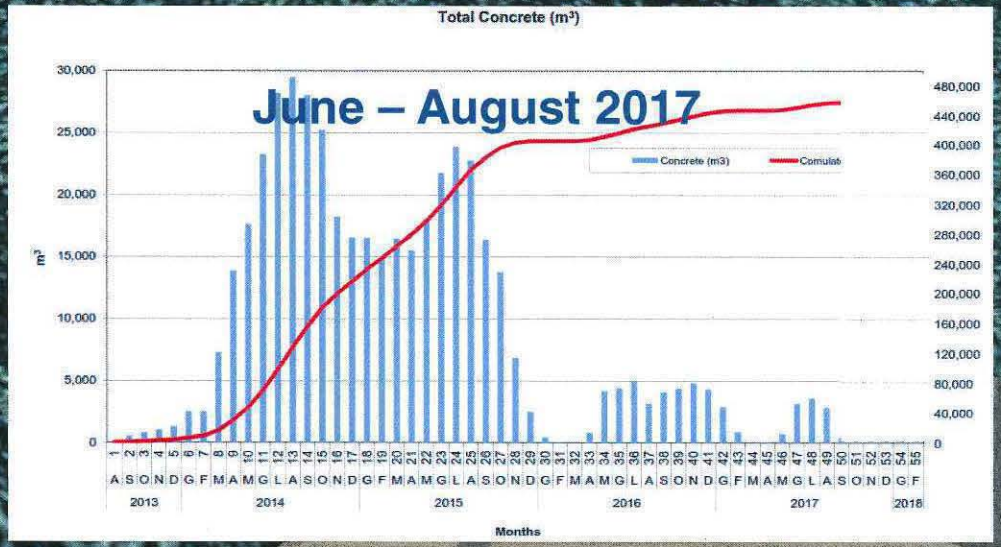
Rollway No. 1



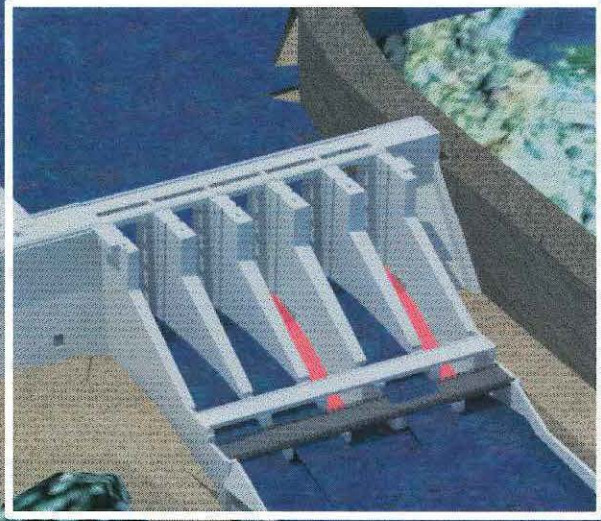


nalcor energy | ASTALDI CANADA INC.

Milestone M14 – 19 Sept. 2017



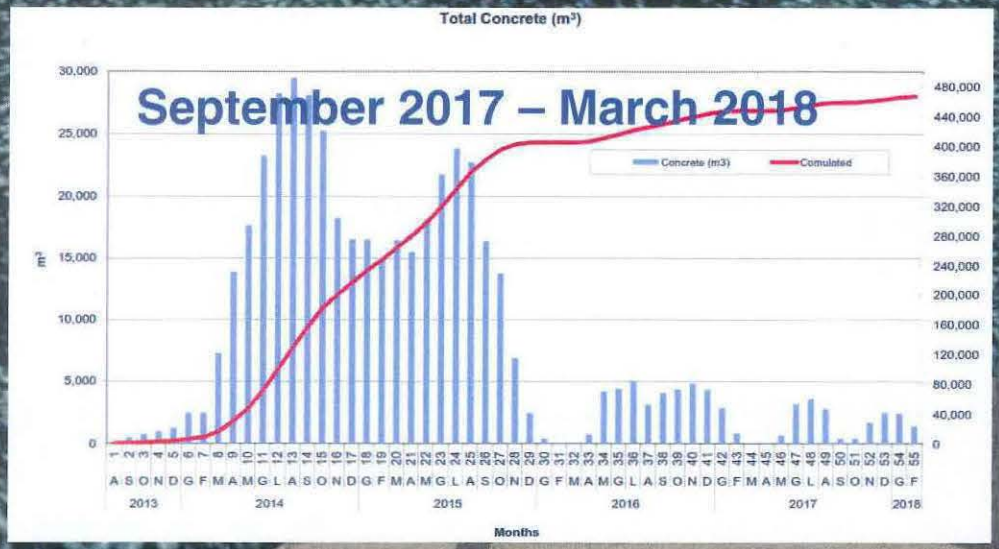
Rollways No. 3 and 5



nalcor energy

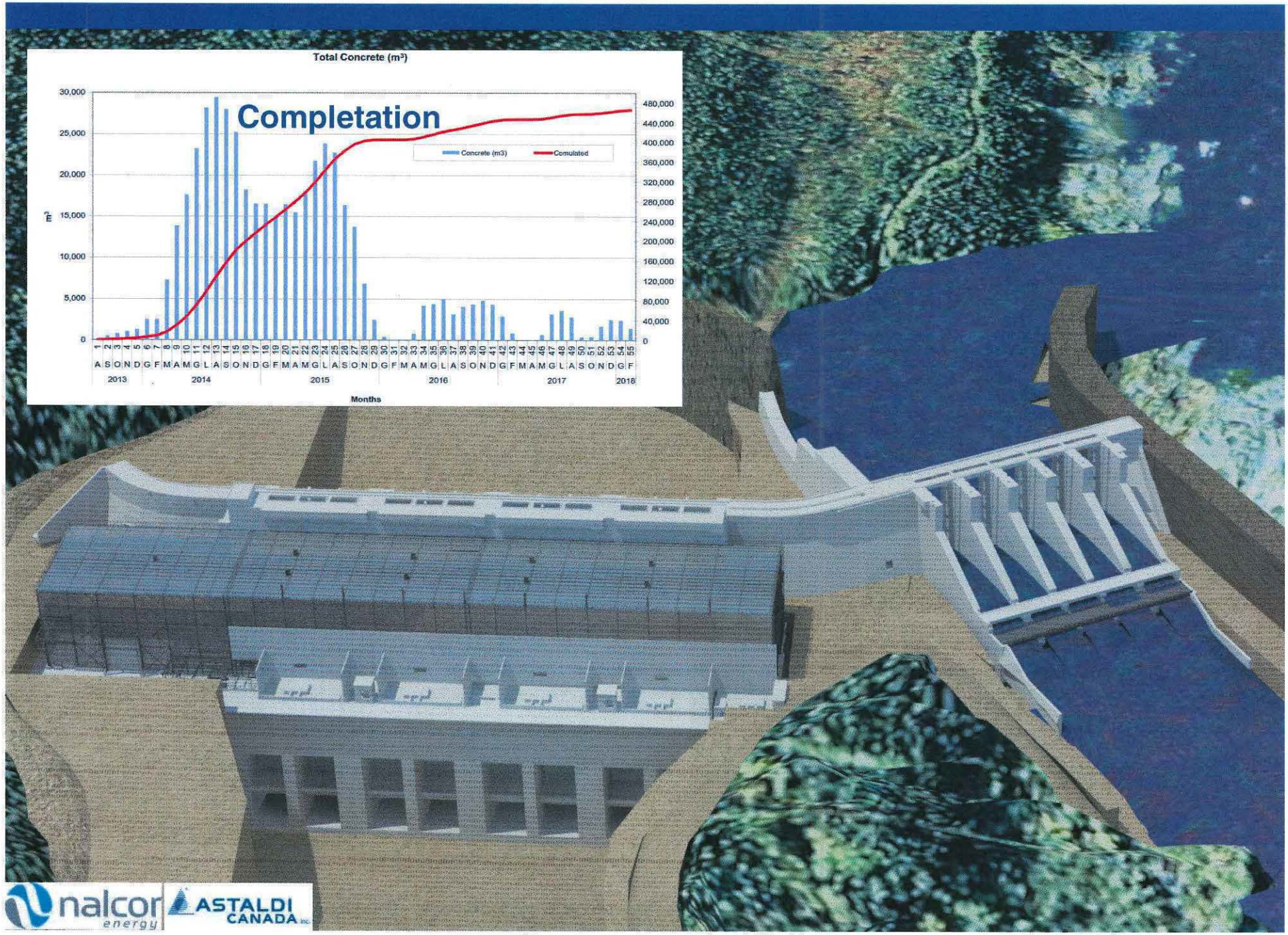
ASTALDI CANADA

Milestone M13 – 17 March 2018



Rollways No. 2 and 4

nalcor energy ASTALDI CANADA INC.


Total Concrete (m³)
Completation
Concrete (m3)
Comulated
Months
2013
2014
2015
2016
2017
2018
nalcor energy
ASTALDI CANADA inc.

6. Project Execution Plan

Astaldi strategy

Primary selection with back-up plan

Self-perform all the major activities (formwork, concrete placement): Intake, Powerhouse, Spillway, Dams

Draw on qualified subcontractors for specific support on the mentioned activities (special formworks, etc..)

Within Sept. 22nd 2013 will be finalized the decision to self perform or to subcontract the Concrete supply

Subcontractors: Lafarge – Capital Ready Mix J/V
Baton Provincial - Labrador Ready Mix

6. Project Execution Plan

Astaldi strategy

Subcontract the reinforcement steel

Subcontractors: **AGF**
Harris rebar
Salit Steel

Subcontract the structural steel

Subcontractors: ADF
Supermetal Structures
Salit Steel

6. Project Execution Plan

Astaldi strategy

Subcontract the electrical and mechanical works

Subcontractors:	Black and McDonald	Plombaction
	Pennacon	JSM Electrical
	Cahill &Company	

Subcontract the drilling and ground treatment works

Subcontractors:	Advanced Construction Tech
	Atlantic Underground Services
	Geo Foundation

6. Project Execution Plan

Astaldi strategy (continue)

- Strategy of transport material based on at least to different methodologies (by land and by sea)
- Detailed and careful revision of all pouring sequences, in order to guarantee the foreseen performances
- Detailed revision of the formwork methodologies, materials, sequences, requested form sets, etc..
- Engagement of Superintendents in the detailed definition of Work procedures
- Advanced training of Superintendents and Foreman prior to the start-up of the industrial production

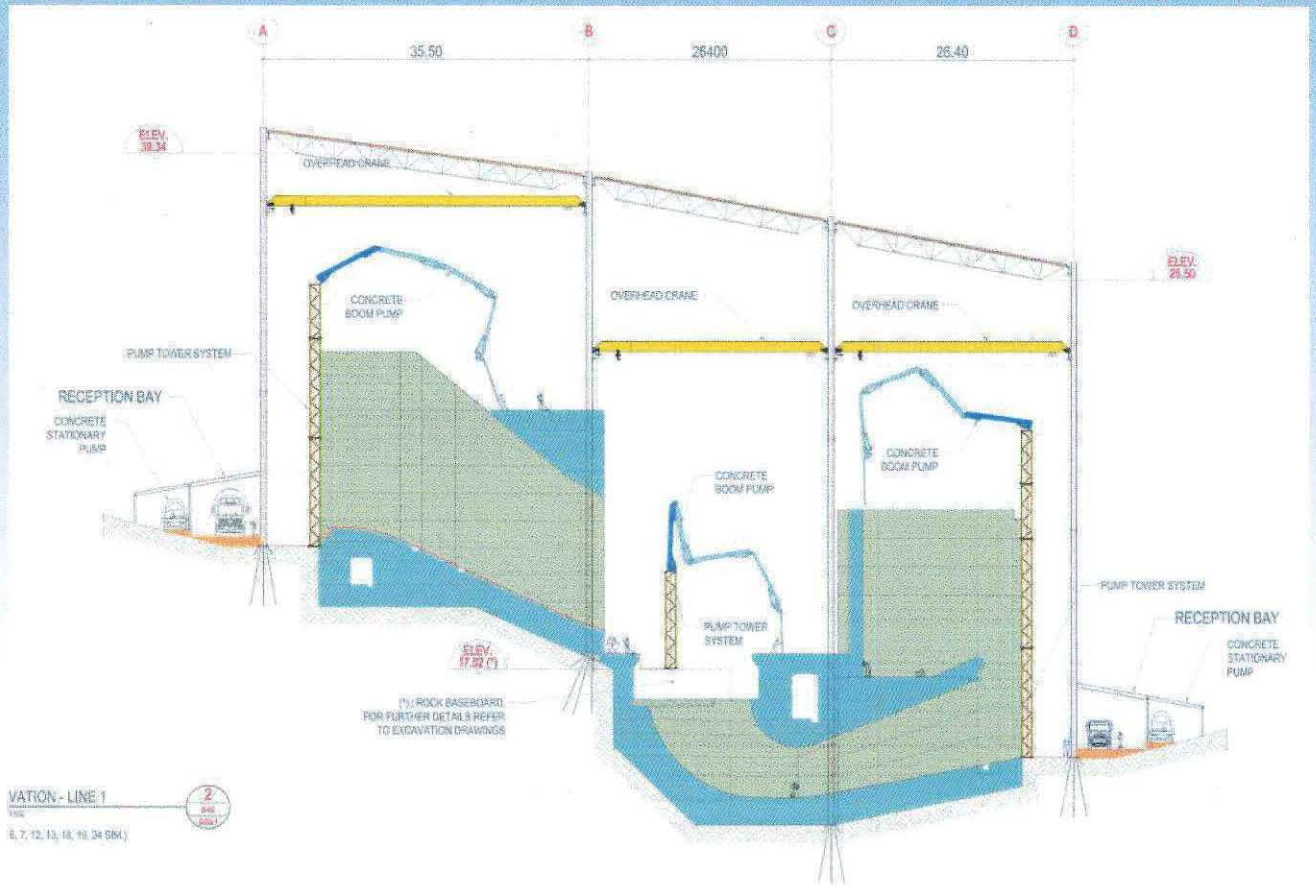
6. Project Execution Plan

Astaldi strategy (continue)

- Finalize all the efforts to reach the expected working efficiency
- Develop the ICS general design and details to increase the pouring productivity
- Develop a detailed risk analysis of the production cycles under the ICS and for the other activities
- Training of superintendent and foreman to operate under the ICS with the mean of the overhead cranes
- Training of superintendents and foreman to operate under the ICS with the mean concrete towers and boomers

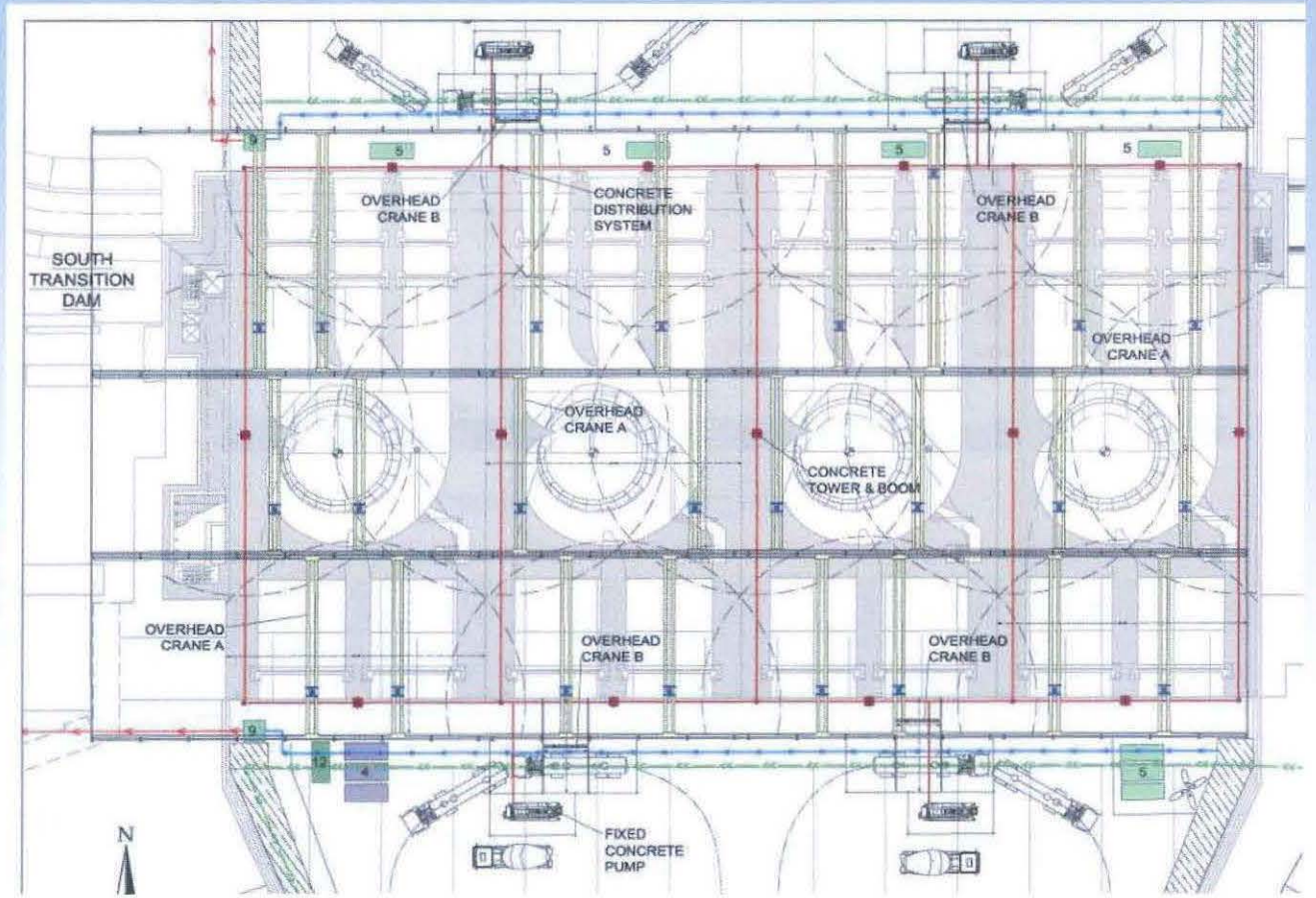
6. Project Execution Plan

Integrated Cover System



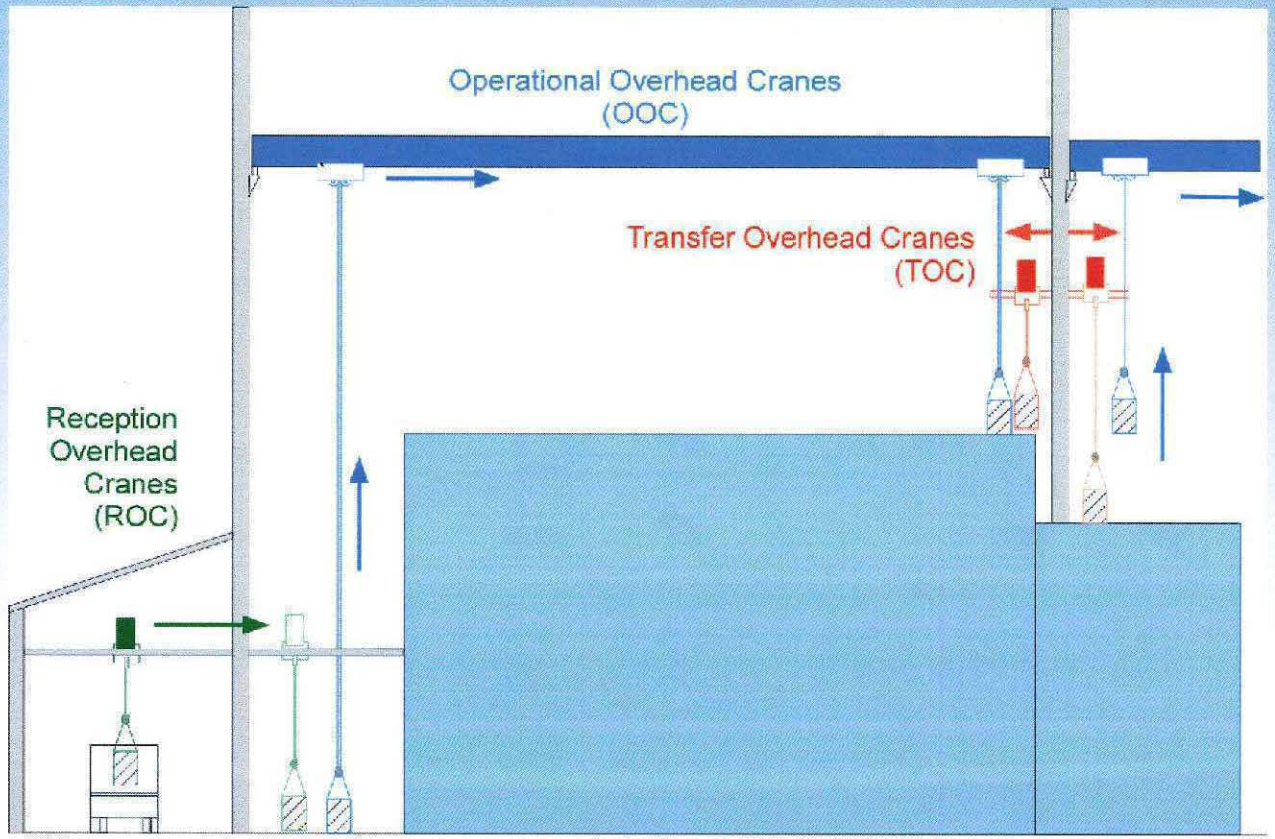
6. Project Execution Plan

Integrated Cover System



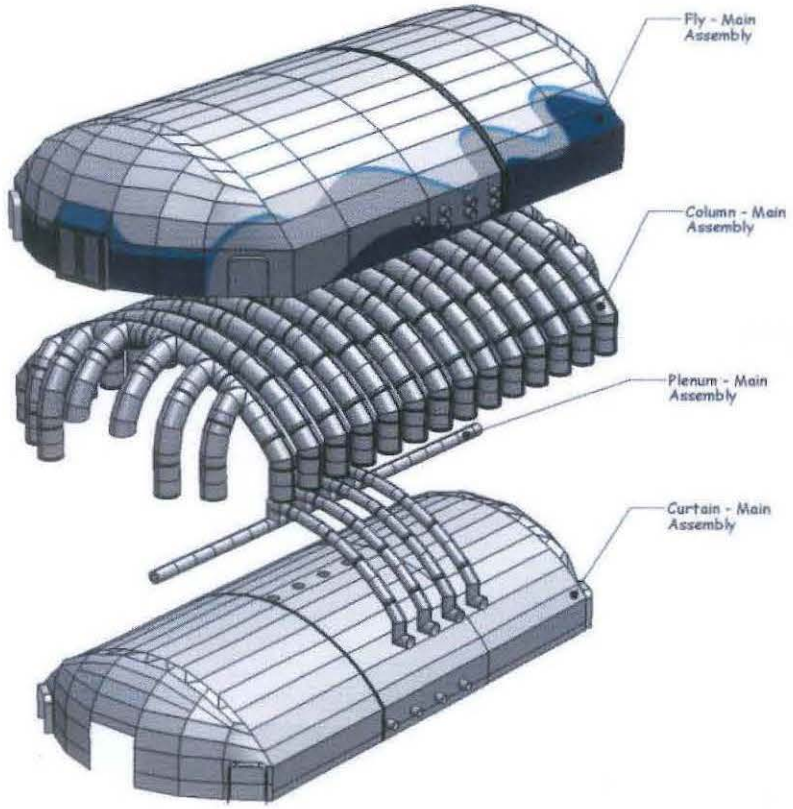
6. Project Execution Plan

Integrated Cover System



6. Project Execution Plan

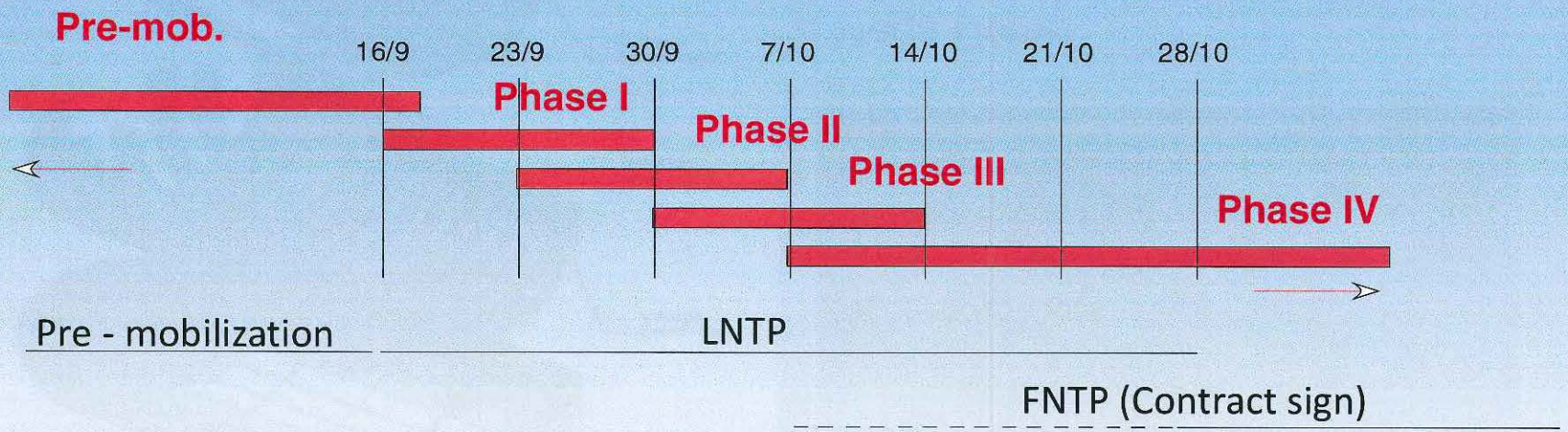
Temporary shelters



2 Mega Dome
(45m L x 90m L x 18m H)

4. LNTP – Mobilization Phase

LNTP sequence



4. LNTP – Mobilization Phase

Pre-mob: Actions in progress

- Material and equipment procurement
- Concrete suppliers negotiation
- Integrated Cover System (ICS) Detail Design
- ICS Supplier pre-selection
- Temporary winter shelters

4. LNTP – Mobilization Phase

Pre-mob: Actions in progress (continue)

- Engineering consultant selection
- Surveying, test and monitoring services selection
- Information technology and communication systems
- St. John's offices and guesthouses (pre-contracts)
- Goose Bay offices and guesthouses (pre-contracts)

4. LNTP – Mobilization Phase

Pre-mob: Actions in progress (continue)

- Working visa procedures for Astaldi personnel
- Surety and Bank final negotiations
- LC for the LNTP advanced payment
- Software and tools for contract communication (Aconex)
- Logistics and transportation for peoples and goods

4. LNTP – Mobilization Phase

Phase I - Actions from 16/9 to 29/09

- Kickoff meeting with the Company
- Detailed visit to Job Site
- Permits and rules of access to the working areas
- Meeting finalized to the working schedule analysis
- Meeting finalized to the ICS analysis

7. LNTP – Mobilization Phase

Phase I - Actions from 16/9 to 29/09 (continue)

- Office in Goose Bay for Innu relations and labour hiring
- Meeting with LCP for design/construction coordination
- Meeting with LCP for discussion of the LNTP procedures
- Access Road Maintenance
- Storages, training facilities &and accommodations in Goose Bay

7. LNTP – Mobilization Phase

Phase I - Actions from 16/9 to 29/09 (continue)

- Document transfer and communication procedures
- LNTP Working Permits
- Introduction meeting with the Unions
- Introduction meeting with the Innu and other communities
- LNTP QHSE procedures

7. LNTP – Mobilization Phase

Phase II - Actions from 22/9 to 06/10

- Procurement and delivery of the equipment for the site mobilization
- Procurement and delivery of the material for the site mobilization
- Labour recruitment for the LNTP
- Installation in the existing site facilities (camp, etc..)
- Detailed survey for site installation and mobilization

7. LNTP – Mobilization Phase

Phase III - Actions from 30/9 to 13/10

- Procurement and delivery of the equipment for the site mobilization *(continue)*
- Procurement and delivery of the material for the site mobilization *(continue)*
- Access Sand borrow pit and contractor laydown area installation
- Temporary shelter installation in the industrial area and in the laydown area
- Industrial water supply detailed design and procurement

7. LNTP – Mobilization Phase

Phase IV - Actions from 7/10 to 31/10

- Procurement Plan for the prosecution of the work
- Concrete platforms for site installations (containers, etc.)
- Electric power supply network construction (start-up)
- Water supply and drainage network contraction (start-up)
- Aggregate production testing and start-up

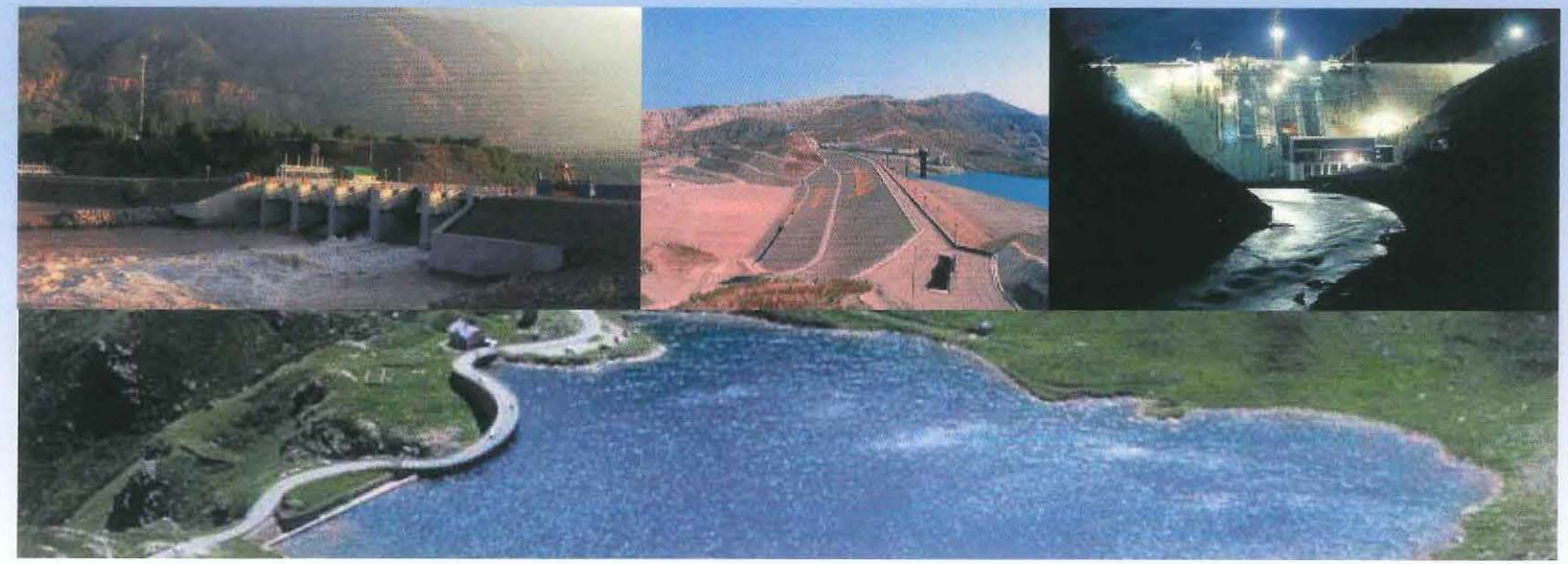
7. LNTP – Mobilization Phase

Other Actions of LNTP

- Project Presentation to communities
- Website and Social Media sites to increase hiring possibilities
- Presentation of the Project at the University and other technical institution
- Preliminary setup of the training facilities for formworks
- Submission of the detailed working schedule of the whole project with resources, equipment and materials

Muskrat Falls Generation

(Lower Churchill Project, Labrador, Canada)



Thanks for your attention

nalcor energy

ASTALDI CANADA Inc.

Appendix 3 - Quality Evaluation Report

Table 3.1 summarizes the responses to the quality questionnaire. The scoring guide for this questionnaire is provided at the end of the table.

Table 3.1 - Quality Questionnaire Evaluation

		Astaldi		IKC		Aecon JV		Salini JV	
Question	**Weight**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**
1i) Bidder's quality policy statement and list of current quality objectives.	0.2	4.0/ 0.16	Integrated Management System Policy provided but it is more centered around safety and environmental, quality objectives listed meet ISO requirements.	4.00/ 0.16	Integrated Management System Policy provided, quality objectives listed are very well defined and under control of the quality management team and meet ISO requirements.	4.50/ 0.18	Integrated Management System Policy provided along with sample of Quality Plan which included its own Quality Policy and a detailed list of quality objectives that cover all aspects of their quality system, well organize and cover ISO requirements.	4.00/ 0.16	Quality Policy provided is well defined and deals directly with Quality processes and objectives.
1ii) Bidder's Master Documents List or the Table of Contents of your policy and procedures manual.	0.5	4.5/ 0.45	Bidder provided a copy of their procedures manual and samples of applicable procedures related to quality, very good information provided.	4.00/ 0.40	Bidder provided the TOC of their quality manual and a list of quality procedure.	3.50/ 0.35	Bidder provided copy of their Master Documents List (matrix) but no TOC from procedures manual and no examples of procedures or mention of them.	3.50/ 0.35	Bidder provided copy of their Master Documents List which listed their quality procedures and some examples.
1iii) Bidder's current Internal / External Audit Schedules.	1.0	4.0/ 0.80	Bidder provided a detailed audit schedule including home office, project sites world wide and external audits.	3.5/ 0.70	Bidder provided an audit schedule but the information was high level, no mention of internal home offices.	0.0/ 0.00	Bidder didn't provide internal/external audit schedule as requested. **(Clarification Required) clarification received but bidder still didn't provide audit schedule, they just indicated that they would perform audits 15-MAY-2013**	3.5/ 0.70	Bidder provided audit schedule for 2012 only and it is not in English. **(Clarification Required) audit schedule provided 21-MAY-2013.**
1iv) Bidder's third party ISO 9001:2008 registration, if available.	0.5	4.5/ 0.45	ISO Certification provided, expires June 2015	4.5/ 0.45	ISO Certification provided, expires Jan 2016	4.5/ 0.45	ISO Certification provided, expires July 2015 (ISO certificate is in Leo Alarie & Sons Construction which is owned by Aecon JV)	4.5/ 0.45	ISO Certification provided, expires Aug 2015

Table 3.1 - Quality Questionnaire Evaluation

		Astaldi		IKC		Aecon JV		Salini JV	
Question	**Weight**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**
1v) Most Recent Management Review Minutes of Meeting.	1.0	3.0/ 0.60	Bidder didn't provide most recent management Review Meeting minutes, they only provided 2011 TOC, nothing else. **(Clarification Required) Management review meeting minutes TOC provided 15-MAY-2013 with clarification but are not in English.**	3.5/ 0.70	Bidder didn't provide Management Review Meeting minutes as requested. **(Clarification required) management review meeting minutes provided with clarification 15-MAY-2013**	4.0/ 0.80	Bidder provide Management Review procedure and meeting minutes as requested.	4.0/ 0.80	Bidder didn't provide the most recent Management Review meeting minutes, they provided 2011 only. **(Clarification required) management review meeting minutes provided on 21-MAY-2103.**
1vi) If ISO 9001:2008 registration is held, a copy of last third party surveillance report.	0.3	4.0/ 0.24	Bidder provided Third Party Audit report as requested.	4.0/ 0.24	Bidder didn't provide ISO Third Party Audit report as requested. **(Clarification required) third party audit report provided with clarification 15-MAY-2013**	4.0/ 0.24	Bidder provided Third Party audit report as requested.	4.0/ 0.24	Bidder provided Third Party audit report as requested.
2) Briefly describe any processes employed to plan the activities related to the requested products / services. If available, provide typical examples of Quality Plans and / or Inspection and Test Plans.	0.4	4.0/ 0.32	ITP procedure provided an example of detailed quality plan for two large projects but no example of ITP.	4.0/ 0.32	Detailed response provided but no examples of Quality Plan or ITP.**(Clarification required) ITP and quality plan provided with clarification 15-MAY-2013**	4.0/ 0.32	Bidder provided detailed response and a sample of their Quality Plan and ITP.	4.5/ 0.36	Excellent information provided which included a Quality Plan from another hydroelectric project they worked on and examples of their ITP's with concrete placement checklist and an ITP for underground excavation.
3) Describe how this work relates to the total annual productive capacity of Bidder's company and that of Bidder's main suppliers.	0.5	4.0/ 0.40	Bidder indicated that this project would be about 10% of the company capacity, they also indicate that they followed up with suppliers/subs to ensure there are no financing or technical issues.	2.5/ 0.25	Bidder did not answer the question regarding annual capacity for their company related to this project, they only indicated that they are working on several projects over 1 billion. **(Clarification required) clarification received but still didn't provide answer on annual capacity 15-MAY2013**	4.0/ 0.40	Bidder provided detailed answer which indicated that this project would be about 12.5 % revenue and about 10.5% capacity of their resources and they follow up with key suppliers/subs.	4.0/ 0.40	Bidder did not answer the question as related to this project per their annual capacity and no mention of suppliers or subs. **(Clarification required) clarification answer received back on 21-MAY-2013 details on annual capacity received.**

Table 3.1 - Quality Questionnaire Evaluation

		Astaldi		IKC		Aecon JV		Salini JV	
Question	**Weight**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**
4) Briefly describe the processes used to control the design of the products / services to be supplied. Include references to the following processes: • Design Planning • Design Review • Design Verification • Design Validation • Design Changes	1.0	4.0/ 0.80	The bidder performs Design Engineering, provided detailed answer to all areas of design and provided the TOC for their Design Management Procedure.	3.5/ 0.70	Provided detailed answer to all areas of design but indicated design to temp work and non permanent installations per scope requirements.	3.5/ 0.70	Bidder indicated that they would perform design on temp works and will develop Design Management Plan for this works.	4.0/ 0.80	Bidder provided detailed Design Procedure which included flow charts and design check sheets.
5) Briefly describe the Bidder's Supplier / Sub-contractor selection process and any processes employed to monitor continued performance against contract requirements. In Bidder's response include a list of any services associated with the scope of work that would be sub-contracted out and where appropriate, the contract details for that Sub-Contractor.	1.0	3.5/ 0.70/	Bidder did not provide enough detail on the supplier/sub contractor selection process and how they are monitored. **(Clarification Required) More information provided with clarification on 15-MAY-2013 which covered the selection/monitoring but didn't identify if sub contractors are audited.**	4.0/ 0.80	Bidder clearly identified their supplier/sub contractor process which includes a risk assessment, documented pre-award meetings, make subs develop quality plans/ITP's, conducts audits, designate qualified person for quality issues, hold/witness points and ensure they have most recent drawing/spec's.	4.5/ 0.90	Bidder provided very detailed response, has established processes for qualifying/evaluating/selecting and monitoring suppliers/subs, ensures Quality Plans/ITP are developed, verifies previous performance, performs audits/checks, regular meetings, verifies all records etc.. and identified sub contracted work.	4.0/ 0.80	Bidder provided detailed procedure for qualifying suppliers/sub contractors and listed sub contracted work, processes seem to be in place.
6) What techniques does the Bidder employ to verify that the product / service have been delivered appropriately and in accordance with the contract requirements? What verification records are generated?	0.4	3.5/ 0.28	Limited information provided, bidder indicated Management Procedures have been developed but haven't provided sample and no mention of verification records as requested. **(Clarification requested) More information provided with clarification 15-MAY-2013 which included verification of product, verification of service and acceptance of deliverables.**	4.0/ 0.32	Bidder provided detailed response on the control of deliverables and listed the verification documents used for this process.	4.0/ 0.32	Bidder indicates that they will implement their Quality Control program for products and services on this project, establish inspection points, product inspected once they arrive at site, identified audits and listed the verification documents including ITP's.	3.5/ 0.28	Bidder provided limited detail on the techniques employed to verify product or services, they provided operative procedure # 12 which listed Quality Plan development but not much else, they also didn't provide any information on verification documents. **(Clarification requested) bidder provided more information on 21-MAY-2013 along with a copy of a detailed quality plan.**

Table 3.1 - Quality Questionnaire Evaluation

		Astaldi		IKC		Aecon JV		Salini JV	
Question	**Weight**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**
7) Briefly describe the Bidder's records retention system and the normal records retained (or supplied to the client) as part of this **product / service** delivery. Bidder's response should make reference to records such as Material Test Reports, Non-destructive examination records, in process inspections and Factory Acceptance tests.	0.2	3.5/ 0.14	Bidder provided TOC only for the Management of Documents Procedure and didn't list any of the records that would be developed or retention times.	4.0/ 0.16	Bidder provided detailed response and covered all areas, they use sharepoint for filing, record are kept for 15 years ITP list documentation, they list documents ITP's/checklist/NCR/MTR/ red lined drawings etc..	3.5/ 0.14	Records are identified in Quality Plan, maintain document logs, document are stored in hard copy and back up electronically, they listed reference documentation as requested.	3.5/ 0.14	Bidder indicated that a record management and retention system will be issued but no examples, they did list sample documents as requested.
8) What processes does the Bidder employ to ensure that Inspection is performed and Measuring and Test Equipment is fully calibrated and functioning appropriately?	0.5	3.5/ 0.35	Bidder provided little detail but did provided the TOC for the three measuring and test equipment procedure, the management of measuring/testing is cover in their Integrated quality manual.	4.0/ 0.40	Bidder indicated that equipment is calibrated to manufactures specs, cal and verification documents are centrally filed, they are calibration binder, ensures all equipment is calibrated and includes sub contractors certification as well, QC is response for verification and documenting results, they have a calibration procedure, incoming inspections, in-process inspections and final inspections are performed on equipment.	3.5/ 0.35	Bidder calibrates equipment per manufactures specs, cal records are kept with quality, defective equipment is reported to quality manager, new equipment is calibrated prior to use, calibrated at specified intervals, adjusted as required, identified in order to validate cal, stored to prevent damage, records are filed, cal may be subcontracted to certified firm.	3.5/ 0.35	Bidder monitors records, trains personnel, entrusted labs use for cal, verify certification prior to use, preservation of devices/equipment.
9) When products / services do not meet requirements, what processes are employed to ensure timely resolution of the problem? If so, what records of the problem and solution are generated?	0.2	3.0/ 0.12	Bidder provided TOC for NCR procedure but limited information in response, their integrated quality manual covers the control of nonconforming product.	3.5/ 0.14	Bidder has QC process in place, NCR managed thru SharedPoint system, owner has full access, flow charts provided, monitoring to ensure no re-occurrence, audit process and continuous improvement.	4.0/ 0.16	Bidder provided very detailed information including flow chart, NCR form, CAR form, identified minor/major NCR, records are maintained.	4.0/ 0.16	Bidder provided copy of NCR procedure and applicable NCR forms, filing system in place etc...

Table 3.1 - Quality Questionnaire Evaluation

		Astaldi		IKC		Aecon JV		Salini JV	
Question	**Weight**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**
10) Does the Bidder employ any continuous improvement processes or other methods to monitor evaluate and improve the quality of products / services provided? If so, briefly describe them. Include in your response details on the following: • Processes to monitor and measure effects of continuous improvement changes. • Processes for the evaluation and implementation of innovative and cost reduction ideas.	0.5	3.0/ 0.30	Bidder performs audits, has provided TOC of their Management of Corrective and Preventive Action procedure, also covered in their execution plans and performs constructability workshops.	3.0/ 0.30	Bidder uses the following tools to monitor continuous improvement review of quality objectives, training, audits, analysis of NCR's, data/statistics, correct/preventive actions, management review, meetings with employees, 4 square matrix meeting, QMP meeting, pre-activity meeting.	3.5/ 0.35	Bidder indicates that continuous improvement is outline in their Quality Plan, objectives, customer review meeting, audits corrective/preventive actions, empowering employees to seek opportunities for improvement, quality plan updated to capture improvement, value engineering to reduce cost, operating procedures have guidelines for improvement process, well explained.	3.0/ 0.30	Bidder provides continuous improvement thru company policies, quality objectives, audits, management review, quality quarterly reporting to management, customer satisfaction, supplier/sub review, trends of processes.
11) Does the Bidder employ any processes to monitor internal / external activities to ensure conformance to procedures? If so, briefly describe them.	0.5	4.0/ 0.40	Bidder provided TOC for internal/external procedures which covers all areas per ISO requirements but limited information provided in response.	4.5/ 0.45	Bidder provided flow chart for audit process, use three level audit system, written procedures, competent auditors, quality management responsibility, items are closed, audits subs, owner issues audit reports, detail response provided.	4.0/ 0.40	Bidder provided detailed responses which cover ISO requirements and included a copy of their audit procedure, internal audit report/checklist and a copy of external audit report.	4.0/ 0.40	Bidder provided detailed audit procedure and 2012 audit plan but limited information in response.

Table 3.1 - Quality Questionnaire Evaluation

		Astaldi		IKC		Aecon JV		Salini JV	
Question	**Weight**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**
12) Briefly describe the Bidder's Training Policy and any controls used to ensure personnel are competent to perform their defined functions and responsibilities.	0.5	4.0/ 0.40	Bidder provided TOC for their training procedure and they indicate the process involved for motivating personnel to ensure they are provided necessary skills to carry out their duties.	4.5/ 0.45	Bidders Management is trained per competency needs, each department evaluates employees, if needs identified additional training provided, internal/external training, quality training, records of education/qualification and training assessments are retained, project orientation, quality plan training, toolbox/daily meeting with production, lessons learned, quality tours with supervision, testing/inspection personnel require certification training, quality manager maintains records.	4.0/ 0.40	Bidder indicates that competence judged on education/training/experience, training requirement identified, training/certification records maintained, effectiveness of training assessed, if competency of personnel is in question training is provided, training policy includes competency of personnel/training or action to satisfy needs/evaluate/ ensure personnel are aware of their activities and train as required.	4.0/ 0.40	Bidder provided detailed copy of their Training Procedure but no information in the response just referenced the procedure.
13) Briefly describe any servicing and / or product support required / recommended as part of the delivery of this equipment / service.	0.5	4.0/ 0.40	Bidder indicated all trades and services will be subcontracted based on prime agreement, applicable for commercial/safety/quality and any other contract requirement as applicable.	3.5/ 0.35	Bidder indicated that no support is required regarding services or product support.	3.5/ 0.35	Bidder indicated that no support is required regarding services or product support.	3.5/ 0.35	Bidder listed that lab instruments will be clean after use, granulometric sieves to be washed out, agitating motor is oiled and checked, oven cleaned regularly, monthly checks on electrical connections.
14) Briefly describe any processes employed to monitor Customer Satisfaction and how these processes will be applied to the proposed scope of work.	0.2	4.0/ 0.16	Bidder monitors customer satisfaction through Astaldi management procedures, clear and objective communication with customer at all levels, strong off site presence in Goose Bay/St John's to ensure client needs, no mention of client surveys.	4.5/ 0.18	Bidder uses third party independent company (Gallup) to perform customer satisfaction surveys.	4.0/ 0.16	Bidder uses Customer satisfaction surveys, customer satisfaction is a continuous process monitored throughout the project, formal audit process and performance evaluation program.	4.0/ 0.16	Bidder provided customer satisfaction procedure, process to monitor and evaluation customer feedback.

SNC·LAVALIN

nalcor energy

Table 3.1 - Quality Questionnaire Evaluation

		Astaldi		IKC		Aecon JV		Salini JV	
Question	**Weight**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**	**Score/ Weighted Score**	**Comments**
15) The Bidder shall confirm that it has reviewed and can comply with any Quality Assurance requirements outlined in the contract agreement and that the responses to this questionnaire are true and accurate.	0.1	4.0/ 0.08	Quality questionnaire signed and dated by company rep.	4.0/ 0.08	Quality questionnaire signed and dated by company rep.	4.0/ 0.08	Quality questionnaire signed and dated by company rep.	4.0/ 0.08	Quality questionnaire signed and dated by company rep.
Total Weighed Score With Design	**10.0**	**7.55**		**7.55**		**7.05**		**7.68**	

Scoring Guide:
0 - Question not answered or no relevant information provided in response
1 - Response does not meet key criteria
2 - Response only meets a few of the key criteria
3 - Response meets a majority of the key criteria
4 - Response meets all key criteria
5 - Response meets and exceeds key criteria

Quality Manager Mark Peddle

Signed

Date: Sept 24/2013

****Proponent must achieve a minimum Total Weighted Score of 60 percent to be considered acceptable.**

Appendix 4 – Health and Safety Evaluation Report

Table 4.1 below provides the scoring for each bidder for the health and safety questionnaire as provided in the RFP documents and completed by each bidder. A 70% score is the minimum score for achieving a pass. A scoring guide is provided at the end of the table.

Table 4.1 - Health and Safety Questionnaire Evaluation Report

	Question Weight (%)	Aecon JV		Astaldi		IKC-ONE		Salini JV	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score
Health and Safety									
1.0 HEALTH AND SAFETY MANAGEMENT PERFORMANCE - Please provide the following safety statistics, referencing the attached incident definitions and frequency calculation.	10	3	6	3	6	4	8	3	6
2.0 WORKER'S COMPENSATION RATES - Indicate the jurisdiction where you are registered. List your overall Worker's Compensation industry rating for the current year and past three (3) years. Attach a WCB clearance letter and experience rating statements for the past three years.	3	3	1.8	4	2.4	4	2.4	4	2.4
3. H&S MANAGEMENT SYSTEM CERTIFICATION - Do you have a certificate of recognition or is your health and safety management system certified by an outside agency? (OHSAS 18001, CSA Z-1000 etc.) If yes, provide a copy of the certificate.	2	4	1.6	3	1.2	4	1.6	3	1.2
4. H&S POLICY STATEMENT - Does your health and safety program have a policy statement that clearly outlines the Company's commitment to health and safety?	3	4	2.4	4	2.4	4	2.4	4	2.4
5. REGULATORY COMPLIANCE PERFORMANCE - Has your company received an occupational health and safety stop work order, charges or equivalent from any regulator in the last three (3) years? If yes, provide details.	3	4	2.4	4	2.4	4	2.4	4	2.4
6. SAFETY PROFESSIONALS - Please list the highest ranking safety professional in your organization: (attach résumé). Do you plan to have a safety representative(s) for this Work full time or part time (Y or N)? If "Yes", provide a résumé(s).	3	4	2.4	4	2.4	4	2.4	4	2.4
7. KEY PROGRAM ELEMENTS - Does your health and safety management system address the following key elements? Management leadership and commitment; hazard/risk identification, evaluation and control; risk assessments on all critical and non-routine jobs/job functions; a permit to work system; ongoing inspection. If yes to any of these, reference appropriate Health and Safety manual section(s).	8	4	6.4	4	6.4	4	6.4	4	6.4
8. KEY PROGRAM ELEMENTS - Does your health and safety management system include work practices and procedures, such as: Lockout and tagout; traffic control; excavation and trenching; confined space entry; hoisting and rigging; working near power lines; handling and transporting hazardous substances; unloading large/long materials (such as piles); vehicle recovery. If yes to any of these, reference appropriate Health and Safety manual section(s).	8	4	6.4	4	6.4	4	6.4	4	6.4
9. WRITTEN PROGRAM ELEMENTS - Do you have written programs for the following? Duty to refuse work; fall protection; noise management; workplace violence; working alone; personal protective equipment (PPE); WHMIS (Workplace Hazardous Materials Information System); respiratory protection. If yes to any of these, reference appropriate Health and Safety manual section(s). In regards to respiratory protection, have your employees been: trained? fit tested? medically approved?.	8	4	6.4	4	6.4	4	6.4	4	6.4
10. MEDICAL EXAMINATIONS - Do you conduct medical exams for the following? Pre-employment; replacement job capacity; pulmonary; respiratory. If yes to any of these, reference appropriate Health and Safety manual section(s).	2	4	1.6	4	1.6	4	1.6	3	1.2

Table 4.1 - Health and Safety Questionnaire Evaluation Report

	Question Weight (%)	Aecon JV		Astaldi		IKC-ONE		Salini JV	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score
Health and Safety									
11. DRUG AND ALCOHOL PROGRAM - Do you have a drug and alcohol program? If "Yes", does it include the following? Pre-employment testing; testing for cause; post incident testing; formalized arrangements with a collection and testing agency (if "Yes", provide testing agency information); does your drug and alcohol policy follow the guidelines as laid out in The Canadian Model for Providing A Safe Workplace – Alcohol and Drug Guidelines and Work Rule Version 2 – Effective October 1, 2010? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	4	2.4	0	0	3	1.8	0	0
12. TOOL AND EQUIPMENT PREVENTATIVE MAINTENANCE, USAGE AND INSPECTIONS : Do you have a written list of equipment requiring pre-use inspections? Do you have a documented list of equipment requiring scheduled servicing in accordance with manufacturer's recommendations, legislated requirements, and industry standards? Is frequency of equipment inspections and maintenance identified? Are corrections of deficiencies documented? Do you have follow-up mechanism for corrective actions? If yes to any of these, reference appropriate Health and Safety manual section(s).	4	3	2.4	4	3.2	4	3.2	3	2.4
13. ORIENTATION PROGRAM - Do you have a health and safety orientation program? Does the program include new, transferred and temporary workers? Does the program provide instruction on the following: employer health and safety responsibilities; employee health and safety responsibilities; obligation to refuse imminent danger work; progressive discipline policies and procedures; safe work practices and/or procedures; emergency response procedures; first-aid procedures; incident/near miss reporting; does you orientation program include a quiz? If yes to any of these, reference appropriate Health and Safety manual section(s).	5	3	3	4	4	4	4	3	3
14. INCIDENT REPORTING AND INVESTIGATION - Do you have a written procedure for incident reporting and investigation?; Do you utilize a root cause determination process such as "Tap-Root"? If yes to any of these, reference appropriate Health and Safety manual section(s).	5	4	4	4	4	4	4	4	4
15. EMERGENCY RESPONSE PROGRAM - Do you have an emergency response plan related to activities and specific locations? If yes reference appropriate Health and Safety manual section(s).	4	3	2.4	3	2.4	3	2.4	4	3.2
16. FIREARM AND WEAPON POLICY - Do you have a policy pertaining to prohibited items on (e.g. knives, firearms)? Are all employees made aware of the prohibited items policy and is it enforced? If yes to any of these, reference appropriate Health and Safety manual section(s).	1	4	0.8	0	0	3	0.6	0	0
17. LEGISLATIVE AND REGULATORY COMPLIANCE PROGRAM - Do you make reference to following legislative requirements where work is being performed?; violence policies and procedures; harassment policies and procedures. If yes to any of these, reference appropriate Health and Safety manual section(s).	1	4	0.8	4	0.8	4	0.8	3	0.6
18. PERSONAL PROTECTIVE EQUIPMENT PROGRAM - Do you have a policy or specific rules with respect to the use of personnel protective equipment (PPE)? Do you have a formal process in place for determining PPE requirements? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	4	2.4	4	2.4	3	1.8	4	2.4
19. CONTRACTOR MANAGEMENT - Do you pre-qualify subcontractors?; Do you include subcontractors in: orientations, health and safety meetings, inspections, audits. If yes to any of these, reference appropriate Health and Safety manual section(s).	5	3	3	3	3	4	4	4	4
20. COMMUNICATIONS - Do you inform employees and subcontractors on Health and Safety alerts, programs, practices, procedures, rules, revisions and related information ? Do you have a joint Health and Safety committee? Do you hold scheduled safety meetings, such as weekly general safety meetings for all crew and weekly departmental meetings for each department at all worksites? Are Health and Safety meeting minutes and attendance recorded? If yes to any of these, reference appropriate Health and Safety manual section(s).	5	4	4	4	4	4	4	4	4
21. SUPERVISOR SAFETY INSPECTIONS - Does your Health and Safety program outline the requirements for supervisors and employees to conduct regular Health and Safety inspections of equipment and work conditions at all worksite(s)? If yes reference appropriate Health and Safety manual section(s).	3	4	2.4	3	1.8	4	2.4	4	2.4

SNC·LAVALIN

nalcor energy

Table 4.1 - Health and Safety Questionnaire Evaluation Report

	Question Weight (%)	Aecon JV		Astaldi		IKC-ONE		Salini JV	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score
Health and Safety									
22. HAZARD REPORTING - Does your Health and Safety program require the prompt reporting of hazardous conditions at all worksite(s)? If yes reference appropriate Health and Safety manual section(s).	5	4	4	4	4	4	4	4	4
23.HEALTH AND SAFETY TRAINING Have your employees received the required Health and Safety training and retraining? Do you have a specific Health and Safety training program for supervisors? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	4	2.4	3	1.8	4	2.4	3	1.8
24. TRAINING RECORDS - Do you have Health and Safety training records for your employees? How do you verify competency of the training (job monitoring? written test? competency check? oral test? other?). Are all training records available upon request? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	3	1.8	3	1.8	4	2.4	3	1.8
Score	100	73.20		70.80		77.80		70.80	
Percentage		**73.20%**		**70.80%**		**77.80%**		**70.80%**	
Pass/Fail		**Pass**		**Pass**		**Pass**		**Pass**	

Scoring Guide

0 - Question not answered or no relevant information provided in response
1 - Response does not meet key Criteria
2 - Response only meets a few of the key criteria
3 - Response meets a majority of the key criteria
4 - Response meets all key criteria
5 - Response meets and exceeds key criteria

Sr. Health and Safety Advisor Sean Lee

Signed

Date: 24. Sept. 2013

Appendix 5 - Environmental Evaluation Report

Table 5.1 below summarizes the scoring for each bidder for the environmental questionnaire. Bidders must reach a minimum score of 70% to pass the environmental evaluation. The scoring guide is provided below the table along with reviewer comments.

Table 5.1 - Environmental Questionnaire Evaluation

	Weight	IKC		Astaldi		Aecon JV		Salini JV	
		Score	Weighted Score (%)	Score	Weighted Score (%)	Score	Weighted Score (%)	Score	Weighted Score (%)
1. Management Involvement, Leadership and Administration									
1.1 Environmental Management System (ISO or Not)?	4.0	5.0	4.0	5.0	4.0	5.0	4.00	5.0	4.00
1.2 Adequacy of TOC (if provided)	3.0	4.0	2.40	5.0	3.0	5.0	3.00	0.0	0.00
1.3 Adequacy of Environmental Policy (if provided)	3.0	5.0	3.0	5.0	3.0	5.0	3.00	0.0	0.00
1.4 Are Environmental Performance Targets developed and reviewed on a regular basis?	3.0	5.0	3.0	5.0	3.0	5.0	3.00	5.0	3.00
1.5 Adequacy of Environmental Performance Target development and review process	3.0	4.0	2.40	4.0	2.40	3.0	1.80	2.0	1.20
1.6 Has a formal system, including the use of audits and inspections, been developed to define responsibilities for verifying that environmental performance objectives are met?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
1.7 Adequacy of audit and inspection information	2.0	3.0	1.20	4.0	1.60	4.0	1.60	3.0	1.20
1. Environmental Hazard Identification and Risk Management									
2.1 Does the Bidder conduct formal Risk Assessments when planning and implementing operations and activities?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
2.2 If "Yes", does that risk assessment include environmental risks?	1.5	3.0	0.90	5.0	1.50	5.0	1.50	5.0	1.50
2.3 Adequacy of Risk Management System in assessing probabilities and consequences associated with environmental risks	1.5	3.0	0.90	5.0	1.50	4.0	1.20	3.0	0.90
2.4 Has a formal Hazard Observation Program been implemented at the Bidder's worksites?	1.0	5.0	1.0	5.0	1.0	5.0	1.00	5.0	1.00
2.5 Adequacy of Hazard Observation Program in identifying environmental hazards and environmental non-compliances.	1.0	4.0	0.80	4.0	0.80	5.0	1.00	4.0	0.80
2. Organizational Rules and Work Procedures									
3.1 Does the Bidder have documented environmental protection plans for all jobs/work activities?	1.5	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50
3.2 Does the Bidder have environmental contingency plans (i.e. spill response plans)?	1.5	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50
3.3 Adequacy of contingency plans and organizational chart for relevant plans.	2.5	0.0	0.0	4.0	2.0	3.0	1.50	3.0	1.50
3.4 Does the plan outline responsibilities, available resources and actions to be taken in the event of an environmental incident?	2.5	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50
3. Employee Knowledge, Training and Awareness									
4.1 Does the Bidder have an environmental awareness program?	1.5	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50
4.2 Does the Bidder provide environmental awareness training to supervisory staff?	3.0	5.0	3.0	5.0	3.0	5.0	3.00	5.0	3.00
4.3 What is frequency of environmental awareness training?	3.0	5.0	3.0	4.0	2.40	1.0	0.60	2.0	1.20
4. Personal Communications/Environment Meetings									
5.1 Are personal communications conducted to impart environmental awareness with other workers and thereby reducing the likelihood of non-compliances or environmental incidents?	2.5	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50

Table 5.1 - Environmental Questionnaire Evaluation

	Weight	IKC		Astaldi		Aecon JV		Salini JV	
		Score	Weighted Score (%)	Score	Weighted Score (%)	Score	Weighted Score (%)	Score	Weighted Score (%)
5.2 Is there a system for sharing best practices and procedures, incidents and other information across the Bidder's organization?	2.5	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50
5. Environmental Monitoring and Reporting									
6.1 Has the Bidder developed specific procedures for environmental monitoring and reporting on incidents that occur at its worksites?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
6.2 Adequacy of monitoring and incident procedure	1.5	4.0	1.20	4.0	1.20	5.0	1.50	2.0	0.60
6.3 Does the Bidder use an EMS system to establish standards, reporting and follow up and corrective action?	1.5	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50
6.4 Adequacy of this process	1.0	4.0	0.80	3.0	0.60	4.0	0.80	2.0	0.40
6.5 Are supervisors formally trained in accident/investigations?	1.0	5.0	1.0	5.0	1.0	5.0	1.00	0.0	0.00
6.6 Adequacy of training program and frequency	1.5	5.0	1.50	4.0	1.20	5.0	1.50	0.0	0.00
6.7 Does the Bidder have dedicated environmental personnel?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
6.8 Adequacy of organization and roles	1.5	4.0	1.20	5.0	1.50	5.0	1.50	5.0	1.50
6. Environmental Incident Analysis									
7.1 Does the Bidder have in place a formal system for the collection, analysis, trending and evaluation of environmental incident data and statistical analysis?	1.5	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50
7.2 Does the Bidder develop monthly environmental incident analysis reports, which are reviewed during management review meetings?	1.5	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50
7.3 Does senior management review and comment on serious and significant environmental incidents?	1.5	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00
7.4 Are all incident reports followed through from recommendations to completion and closure?	1.5	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50
7. Leadership Training									
8.1 Does Bidder's management receive formal environmental management training which provides a thorough understanding of the philosophies and principles behind environmental management?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
8.2 Adequacy of environmental management training	2.0	2.0	0.80	4.0	1.60	5.0	2.00	5.0	2.00
8.3 Does the Bidder's management receive an orientation to the Bidder's Environmental Management System that includes an introduction to individual accountabilities and responsibilities?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
8.4 Adequacy of EMS orientation in communicating accountability and responsibility to management personnel.	2.0	3.0	1.20	4.0	1.60	4.0	1.60	5.0	2.00
8. Environmental Audits, Inspections and Preventative Maintenance									
9.1 there a documented process for performing environmental audits?	2.5	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50
9.2 Has a formal process been developed to ensure routine environmental monitoring?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
9.3 Does the Bidder have planned preventative measures in place to prevent environmental incidents?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
9. Environmental Compliance									
10.1 Has a systematic approach been developed to identify and inventory all tasks based on mandatory rules, regulations and applicable codes, guidelines and standards?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
10.2 Is there a formal process to assess the environmental requirements associated with the tasks to ensure compliance with the requirements?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
10. Systems Review and Evaluation									

Table 5.1 - Environmental Questionnaire Evaluation

	Weight	IKC		Astaldi		Aecon JV		Salini JV	
		Score	Weighted Score (%)	Score	Weighted Score (%)	Score	Weighted Score (%)	Score	Weighted Score (%)
11.1 Does the Bidder's senior management conduct regular reviews of the Environmental Management System, at least annually or at more frequent intervals, as the organization may deem necessary?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
11.2 Do these reviews include environmental management policies and procedures and other inputs such as the results and recommendations from environmental audits, monitoring and surveys and analysis of incident investigations?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
11. Statistics									
12.1 Number and type of directives from clients or regulators	1.0	5.0	1.0	5.0	1.0	5.0	1.00	0.0	0.00
12.2 Oil spill incidents;	1.5	0.0	0.0	5.0	1.50	2.0	0.60	0.0	0.00
12.3 Waste management incidents;	1.5	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00
12.4 Hazardous materials incidents;	1.5	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00
12.5 Water degradation incidents;	1.5	0.0	0.0	5.0	1.50	5.0	1.50	0.0	0.00
12.6 Air degradation incidents; and	1.5	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00
12.7 Soil degradation incidents.	1.5	0.0	0.0	5.0	1.50	5.0	1.50	0.0	0.00
12.8 Total Environmental Incidents	2.0	0.0	0.0	5.0	2.0	5.0	2.00	0.0	0.00
Total Weighted Scores	**100%**		**84.8%**		**95.9%**		**93.2%**		**70.3%**

Scoring Guide:

0 - Question not answered or no relevant information provided in response
1 - Response does not meet key Criteria
2 - Response only meets a few of the key criteria
3 - Response meets a majority of the key criteria
4 - Response meets all key criteria
5 - Response meets and exceeds key criteria

Environmental Manager	David Haley
Signed	_____
Date:	_____

Bidder must achieve a minimum of 60% to be acceptable.

Reviewer Comments:

IKC-ONE

- Following Kiewit's EMS; not clear if this will be integrated into the broader project team.
- Level 1 and Level 2 audit protocol provided, includes corrective action, very good. Additional information on frequency and management involvement would be desirable.
- Hazard Identification and Risk Management supporting information was limited, especially on Risk Management. Management commitment to corrective actions would improve score
- Contingency Plan organizational chart not provided.
- Well organized incident response procedure.
- Training programs include incident simulations, very good.
- Leadership training refers to Kiewit only.

SNC·LAVALIN

nalcor energy

Table 5.1 - Environmental Questionnaire Evaluation

	Weight	IKC		Astaldi		Aecon JV		Salini JV	
		Score	Weighted Score (%)	Score	Weighted Score (%)	Score	Weighted Score (%)	Score	Weighted Score (%)
11.1 Does the Bidder's senior management conduct regular reviews of the Environmental Management System, at least annually or at more frequent intervals, as the organization may deem necessary?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
11.2 Do these reviews include environmental management policies and procedures and other inputs such as the results and recommendations from environmental audits, monitoring and surveys and analysis of incident investigations?	2.0	5.0	2.0	5.0	2.0	5.0	2.00	5.0	2.00
11. Statistics									
12.1 Number and type of directives from clients or regulators	1.0	5.0	1.0	5.0	1.0	5.0	1.00	0.0	0.00
12.2 Oil spill incidents;	1.5	0.0	0.0	5.0	1.50	2.0	0.60	0.0	0.00
12.3 Waste management incidents;	1.5	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00
12.4 Hazardous materials incidents;	1.5	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00
12.5 Water degradation incidents;	1.5	0.0	0.0	5.0	1.50	5.0	1.50	0.0	0.00
12.6 Air degradation incidents; and	1.5	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00
12.7 Soil degradation incidents.	1.5	0.0	0.0	5.0	1.50	5.0	1.50	0.0	0.00
12.8 Total Environmental Incidents	2.0	0.0	0.0	5.0	2.0	5.0	2.00	0.0	0.00
Total Weighted Scores	**100%**		**84.8%**		**95.9%**		**93.2%**		**70.3%**

Scoring Guide:

0 - Question not answered or no relevant information provided in response
1 - Response does not meet key Criteria
2 - Response only meets a few of the key criteria
3 - Response meets a majority of the key criteria
4 - Response meets all key criteria
5 - Response meets and exceeds key criteria

Environmental Manager	David Haley
Signed	Main Orgn
Date:	24-Sept-2013

Bidder must achieve a minimum of 60% to be acceptable.

Reviewer Comments:

IKC-ONE

- Following Kiewit's EMS; not clear if this will be integrated into the broader project team.
- Level 1 and Level 2 audit protocol provided, includes corrective action, very good. Additional information on frequency and management involvement would be desirable.
- Hazard Identification and Risk Management supporting information was limited, especially on Risk Management. Management commitment to corrective actions would improve score
- Contingency Plan organizational chart not provided.
- Well organized incident response procedure.
- Training programs include incident simulations, very good.
- Leadership training refers to Kiewit only.

- EMS referenced to Kiewit only.

Astaldi

- Environmental performance targets well defined and described.
- Risk management system described in detail, very good.
- Staff training matrix provided, annual training noted, perhaps a project specific training regime would be more appropriate
- Question 6.4, EMS system missing reference to audits.
- No spills or incidents reported for this large company, strange?

Aecon JV

- Using JV partners (Flaitron) ISO certification for evaluation.
- Review of environmental performance targets is unclear
- Good checklist based risk management system
- Daily site inspection includes environmental checklists, very good.
- Env. Contingency Plan, various plans listed as well as reference to corporate "Redbook", a few details of each plan would be helpful.
- Examples of environmental field reports provided, very good.
- EMS system uses root cause analysis in addition to corrective actions
- Supervisory training, 12 HSE modules are comprehensive.
- 150 environmental advisors noted.

Salini JV

- TOC of EMS not located where indicated, search for it was unsuccessful.
- Env. Policy not located where indicated, search unsuccessful.
- Environmental performance targets referenced but not provided, partial score.
- Question 1.7, audit information relates to Health and Safety and not directly applicable.
- Question 2.5, reporting referenced to policy PA 22 procedures, good
- Spill response plans are project specific, not supported by a corporate EMS?
- Good discussion on dedicated and trained environmental staff.
- Training based on ISO 140001 standards, very good.
- Statistics on historic spills/ incidents not provided, no score provided.

Appendix 6 - Schedule and Execution Plan Evaluation Reports

This appendix contains the results of the Interface and Milestone Schedule analysis as well as the evaluation of the Execution Plan. The results are presented in tables 6.1 and 6.2 respectively.

Table 6.1 - Evaluation of Bidder Compliance to the Interface and Milestone Schedule

Milestone No.	Interface No.	Description	Date	IKC-One Bidder No.1	Astaldi Bidder No.2	Aecon JV Bidder No.3	Salini JV Bidder No.4
		General					
M1		Contract Award.	31-July 2013	Yes	Yes	Yes	Yes
M2		Substantial Completion of the Work.	30 June 2018	Yes	Yes	Yes	Yes
		Spillway, North Transition Dam, Separation Wall & Center Transition Dam					
	I1	Spillway Site Ready for Start of Works	11 Nov 2013	Yes	Yes	Yes	Yes
M4		Spillway and Related Works required for Diversion, including: - Northern Two Monoliths of Centre Transition Dam including the Platform for Spillway Electrical Building Complete; - Completion of Separation Wall; - Completion of North Transition Dam, Spillway Discharge Channel Phase 1; - Downstream Temporary and Permanent Spillway Bridges Installed. Ready for start of hydro-mechanical works by Company Other Contractor (CH0032).	15 Feb 2015	Yes	Yes	Yes	Yes
	I2	Bay No. 1 Available for Start of Rollway Construction.	4 Oct 2016	Yes	Yes	Yes	Yes
M12		Bay No. 1 Rollway Construction Complete and Ready for start of hydro-mechanical works by Company Other Contractor (CH0032).	13 March 2017	Yes	Yes	Yes	Yes
	I3	Bay No. 2 & 4 Available for Start of Rollway Construction.	6 Nov 2017	Yes	Yes	Yes	Yes
M13		Bay No. 2 & 4 Rollway Construction Complete and Ready for start of hydro-mechanical works by Company Other Contractor (CH0032).	17 March 2018	Yes	Yes	Yes	Yes
	I4	Bay No. 3 & 5 Available for Start of Rollway Construction.	31 May 2017	Yes	Yes	Yes	Yes
M14		Bay No.3 & 5 Rollway Construction Complete and Ready for start of hydro-mechanical works by Company Other Contractor (CH0032).	19 Sept 2017	Yes	Yes	Yes	Yes
M16A		Completion of Phase 2 of Spillway Discharge Channel Lining.	29 Sept 2018	Yes	Yes	Yes	Yes
		Powerhouse					
	I7	Powerhouse Site Ready for Start of Works.	4 Nov 2013	Yes	Yes	Yes	Yes
M18		South Service Bay Enclosed and High Bay Lighting Installed and Ready for Start of Work by Company Other Contractors. This includes: - South Service Bay Mezzanines, Ready for Start of Work by Company other Contractors. - South Service Bay Structural Steel Ready for Setting Powerhouse Crane on Rails. - Service Bay Draft Tube Gallery, Ready for Installation of Gantry Crane by Company Other Contractor (CH0032).	30 April 2015	Yes	Yes	Yes	Yes
M22		Unit 1 – Ready for Installation of Draft Tube Cone by Company Other Contractor (CH0030).	28 Mar 2016	Yes	Yes	Yes	Yes

Table 6.1 - Evaluation of Bidder Compliance to the Interface and Milestone Schedule

Milestone No.	Interface No.	Description	Date	IKC-One Bidder No.1	Astaldi Bidder No.2	Aecon JV Bidder No.3	Salini JV Bidder No.4
	I8	Unit 1 - Installation of Draft Tube Cone, Completed by Company Other Contractor (CH0030).	23 April 2016	Yes	Yes	Yes	Yes
M23		Unit 1 - Ready for Installation of Stay Ring & Upper Pit Liner by Company Other Contractor (CH0030).	22 May 2016	Yes	Yes	Yes	Yes
	I9	Unit 1 – Installation of Stay Ring & Upper Pit Liner, Completed by Company Other Contractor (CH0030).	22 July 2016	Yes	Yes	Yes	Yes
M24		Unit 1 – Generator Floor Completed, including Pit Free for Unit 1.	30 Nov 2016	Yes	Yes	Yes	Yes
M26		Unit 1 – Building Enclosed and High Bay Lighting Installed and Ready for Start of Work by Company Other Contractors, including: - Unit 1 – Draft Tube, Structure Complete for start of hydro-mechanical works by Company Other Contractor (CH0032). - Unit 1 – Mezzanines, Ready for start of Work by Company Other Contractor (CH0031).	30 Sept 2015	Yes	Yes	Yes	Yes
M28		Unit 1 – Intake Structure Complete and Ready for start of hydro-mechanical works by Company Other Contractor (CH0032).	31 March 2016	Yes	Yes	Yes	Yes
M30		Unit 2 – Ready for Installation of Draft Tube Cone by Company Other Contractor (CH0030).	4 May 2016	Yes	Yes	Yes	Yes
	I10	Unit 2 – Installation of Draft Tube Cone, Completed by Company Other Contractor (CH0030).	30 May 2016	Yes	Yes	Yes	Yes
M31		Unit 2 - Ready for Installation of Stay Ring & Upper Pit Liner by Company Other Contractor (CH0030).	27 June 2016	Yes	Yes	Yes	Yes
	I11	Unit 2 – Installation of Stay Ring & Upper Pit Liner, Completed by Company Other Contractor (CH0030).	31 Aug 2016	Yes	Yes	Yes	Yes
M32		Unit 2 – Generator Floor Completed, including Pit Free for unit 2	11 Jan 2017	Yes	Yes	Yes	Yes
M34		Unit 2 - Building Enclosed and High Bay Lighting Installed and Ready for Start of Work by Company Other Contractors, including: - Unit 2 – Draft Tube, Structure Complete for start of hydro-mechanical works by Company Other Contractor (CH0032). - Unit 2 – Mezzanines, Ready for start of Work by Company Other Contractor (CH0031).	11 Nov 2015	Yes	Yes	Yes	Yes
M36		Unit 2 – Intake Structure Complete and Ready for start of hydro-mechanical works by Company Other Contractor (CH0032).	29 Jun 2016	Yes	Yes	Yes	Yes
M38		Unit 3 – Ready for Installation of Draft Tube Cone by Company Other Contractor (CH0030).	10 June 2016	Yes	Yes	Yes	Yes
	I12	Unit 3 – Installation of Draft Tube Cone, Completed by Company Other Contractor (CH0030).	6 July 2016	Yes	Yes	Yes	Yes
M39		Unit 3 - Ready for Installation of Stay Ring & Upper Pit Liner by Company Other Contractor (CH0030).	3 Aug 2016	Yes	Yes	Yes	Yes

Table 6.1 - Evaluation of Bidder Compliance to the Interface and Milestone Schedule

Milestone No.	Interface No.	Description	Date	IKC-One Bidder No.1	Astaldi Bidder No.2	Aecon JV Bidder No.3	Salini JV Bidder No.4
	I13	Unit 3 – Installation of Stay Ring & Upper Pit Liner, Completed by Company Other Contractor (CH0030).	9 Oct 2016	Yes	Yes	Yes	Yes
M40		Unit 3 – Generator Floor Completed, including Pit Free for Unit 3	5 Mar 2017	Yes	Yes	Yes	Yes
M42		Unit 3 - Building Enclosed and High Bay Lighting Installed and Ready for Start of Work by Company Other Contractors, including: - Unit 3 - Draft Tube, Structure Complete for start of hydro-mechanical works by Company Other Contractor (CH0032). - Unit 3 – Mezzanines, Ready for start of Work by Company Other Contractor (CH0031).	20 Jan 2016	Yes	Yes	Yes	Yes
M44		Unit 3 – Intake Structure Complete and Ready for start of hydro-mechanical works by Company Other Contractor (CH0032).	27 Sep 2016	Yes	Yes	Yes	Yes
M46		Unit 4 – Ready for Installation of Draft Tube Cone by Company Other Contractor (CH0030).	19 July 2016	Yes	Yes	Yes	Yes
	I14	Unit 4 – Installation of Draft Tube Cone, Completed by Company Other Contractor (CH0030).	14 Aug 2016	Yes	Yes	Yes	Yes
M47		Unit 4 - Ready for Installation of Stay Ring & Upper Pit Liner by Company Other Contractor (CH0030).	10 Sept 2016	Yes	Yes	Yes	Yes
	I15	Unit 4 – Installation of Stay Ring & Upper Pit Liner, Completed by Company Other Contractor (CH0030).	8 Nov 2016	Yes	Yes	Yes	Yes
M48		Unit 4 – Generator Floor Completed, including Pit Free for Unit 4.	27 Apr 2017	Yes	Yes	Yes	Yes
M50		Unit 4 - Building Enclosed and High Bay Lighting Installed and Ready for Start of Work by Company Other Contractors, including: - Unit 4 – Draft Tube, Structure Complete for start of hydro-mechanical works by Company Other Contractor (CH0032). - Unit 4 – Mezzanines, Ready for start of Work by Company Other Contractor (CH0031).	2 March 2016	Yes	Yes	Yes	Yes
M52		Unit 4 – Intake Structure Complete and Ready for start of hydro-mechanical works by Company Other Contractor (CH0032).	23 Dec 2016	Yes	Yes	Yes	Yes
M53		North Service Bay Building Enclosed and High Bay Lighting Installed and Ready for Start of Work by Company Other Contractors.	9 Apr 2016	Yes	Yes	Yes	Yes
M54		Center Transition Dam complete including Trashrack cleaner rails installed.	13 Aug 2016	Yes	Yes	Yes	Yes
		South Transition Dam					
M55		South Transition Dam Complete.	12 Dec 2015	Yes	Yes	Yes	Yes
		Interface Dates for Supply of 3rd Party Material					
	I16	Draft Tube Hydro-Mechanical, Primary Anchors, Delivered to Site by Company Other Contractor (CH0032).	29 March 2014	Yes	Yes	Yes	Yes

SNC·LAVALIN

nalcor energy

Table 6.1 - Evaluation of Bidder Compliance to the Interface and Milestone Schedule

Milestone No.	Interface No.	Description	Date	IKC-One Bidder No.1	Astaldi Bidder No.2	Aecon JV Bidder No.3	Salini JV Bidder No.4
	I17	Turbine & Generator (All 4 Units), Primary Anchors, Delivered to Site by Company Other Contractor (CH0030).	29 March 2014	Yes	Yes	Yes	Yes
	I21	Intake – Hydro-Mechanical Primary Anchors, Delivered to Site by Company Other Contractor (CH0032) and Available.	15 March 2014	Yes	Yes	Yes	Yes
	I22	All Spillway Hydro-Mechanical Primary Anchors, Delivered to Site by Company Other Contractor (CH0032).	4 Dec 2013	Yes	Yes	Yes	Yes
	Total Number of Interface and Milestone Dates		48	48	48	48	48
	Bidder Complies With No.		48	48	48	48	48
	Pass/Fail Result (Pass = 48/48)		48 / 48	Pass: 48 / 48	Pass: 48 / 48	Pass: 48 / 48	Pass: 48 / 48

Lead Planner MF Generation	Marvin Zylber
Signed	Marvin Zylber
Date:	Sept-24-2013

Table 6.2 – Schedule Evaluation from Addendum 14

		Astaldi		Salini JV	
	Weighted Value	Rating (0-10)	Item Value	Rating (0-10)	Item Value
Work Schedule Milestones (Exhibit 9, Revision 6)	30%	10	3.0	10	3.00
Site Staff Schedule	10%	8	0.8	6	0.60
Payment Schedule (against deliverables)	10%	10	1.0	10	1.00
SDRL Compliant with Schedule	10%	10	1.0	10	1.00
Schedule Quality	20%	9	1.8	7	1.40
Execution Plan / Strategy	20%	9	1.8	6	1.20
Totals	**100%**		**9.4**		**8.2**

Table 6.3 – Schedule Evaluation from Original Bids

		IKC		Astaldi		Aecon JV		Salini JV	
	Weighted Value	Rating (0-10)	Item Value	Rating (0-10)	Item Value	Rating (0-10)	Item Value	Rating (0-10)	Item Value
Work Schedule Milestones (Exhibit 9, Revision 6)	30%	10	3.00	10	3.00	10	3.00		3.00
Site Staff Schedule	10%	6	0.60	7	0.70	6	0.60	10	0.70
Payment Schedule (against deliverables)	10%	7	0.70	8	0.80	6	0.60	7	0.70
SDRL Compliant with Schedule	10%	6	0.60	9	0.90	6	0.60	7	0.70
Schedule Quality	20%	5	1.00	8	1.60	7	1.40	7	1.60
Execution Plan / Strategy	20%	5	1.00	10	2.00	5	1.00	8	1.60
Totals		**100%**		**6.9**	**9.0**	**7.2**		**8.3**	

Lead Planner MF Generation	Marvin Zylber
Signed	Marvin Zylber
Date:	Sept. 24-2013

Table 6.4 below summarizes the results of the evaluation of the bidders' response to the execution plan questionnaire as provided in the RFP documents.

Table 6.4 - Execution Plan Questionnaire Evaluation

			IKC		Astaldi		Aecon JV		Salini JV	
		Weight for Element	Answer	Score	Answer	Score	Answer	Score	Answer	Score
1.0	**EXECUTION PLAN**	**63**								
1.1	Mobilization / Demobilization Plan	2	100	2	100	2	100	2	100	2
1.2	List of Subcontractors and their scope of work	5	100	5	90	4.5	100	5	100	5
1.3	List and details of all equipment required and list of proposed stand-by equipment	3	90	2.7	90	2.7	100	3	100	3
1.4	Construction Execution Philosophy									
1.4.1	Construction schedule with overview of powerhouse, spillway and transition dams including as a as a minimum the weekly concreting progress by structure with reference and alignment to Milestones and Interfaces	10	90	9	100	10	90	9	80	8
1.4.2	Concrete batch plant and concrete product details including supply of materials (i.e. water, aggregates, cement) and details of testing program	3	90	2.7	90	2.7	80	2.4	70	2.1
1.4.3	Concrete placement methodology including placing, consolidating, finishing (screeding system), curing and cold and hot weather protection measures	4	80	3.2	90	3.6	100	4	70	2.8
1.4.4	Survey control methodology	2	100	2	90	1.8	90	1.8	100	2
1.4.5	Structural steel and rebar pre-fabrication details	3	100	3	90	2.7	95	2.85	90	2.7
1.4.6	Construction power monthly load requirements	1	100	1	100	1	100	1	95	0.95
1.4.7	Engineering and shop drawing production	2	100	2	90	1.8	100	2	85	1.7
1.4.8	Environmental and dewatering strategy	2	90	1.8	90	1.8	90	1.8	90	1.8
1.4.9	General cold weather (hoarding) protection strategy	7	70	4.9	95	6.65	100	7	70	4.9
1.4.10	Crane strategy including site lay-out drawings	3	100	3	75	2.25	85	2.55	95	2.85
1.4.11	Plan for road inspections and ongoing maintenance, by season, including the equipment spreads to be used for snow clearing/removal and for road maintenance, as well as the plan for the supply of sand, maintenance grade No. 3 material and calcium chloride	4	100	4	100	4	95	3.8	100	4
1.5	Resources, including the manpower forecast per trade for the duration of the works as well as the monthly accommodation requirement at the camp	8	100	8	100	8	85	6.8	60	4.8
1.6	Details of labour attraction and retention strategy		100		100		100		80	
1.7	Identification of required site layout of temporary facilities (include plan view) for proposed offices, warehouses, garages/workshops, storage yard needs, special equipment, lunch room	2	75	1.5	95	1.9	75	1.5	75	1.5
1.8	Detail how use of latest electronic technology will be used in engineering/design/survey data and the coordination, planning and management of the work	2	100	2	100	2	100	2	80	1.6
2.0	**Organization Charts**	**35**								
2.1	Organization Chart		0.5	67	0.335	65	0.325	84	0.4	95
2.1.1	Contractor's Representative	0.5	5	82	4.1	87	4.35	57	2.9	98
2.1.2	Project Manager	5	3	75	2.25	88	2.64	72	2.2	64
2.1.3	Engineering Manager	3	2.5	66	1.65	51	1.275	47	1.2	42
2.1.4	Resident Engineer	2.5	4	63	2.52	95	3.8	49	2.0	92
2.1.5	Construction Manager	4	9	78	7.02	63	5.67	67	6.0	69
2.1.6	Construction Superintendents	9	1.5	56	0.84	63	0.945	49	0.7	60
2.1.7	Equipment Manager	1.5	0.5	90	0.45	100	0.5	80	0.4	86
2.1.8	Quality Manager	0.5	3	61	1.83	69	2.07	96	2.9	95
2.1.9	Health and Safety Manager	3	0.5	73	0.365	68	0.34	89	0.4	79
2.1.10	Environmental Manager	0.5	4.5	91	4.095	92	4.14	50	2.3	90
2.1.11	Planning and Schedule Manager	4.5	0.5	88	0.44	73	0.365	79	0.4	98

SNC·LAVALIN

nalcor energy

Table 6.4 - Execution Plan Questionnaire Evaluation

		Weight for Element	IKC		Astaldi		Aecon JV		Salini JV	
			Answer	Score	Answer	Score	Answer	Score	Answer	Score
2.1.12	Risk Manager/ Coordinator	0.5	0.5	96	0.48	90	0.45	96	0.5	94
2.1.13	Financial and Accounting Manager	0.5	0.5	67	0.335	65	0.325	84	0.4	95
4.0	**List of Hydro Projects With Powerhouse and Spillway Structures of Similar Complexity Presently Under Construction by Contractor for Future Visit by Company's Representatives During the Evaluation Process**	2								
4.1	Projects listed by Bidder	2	100	2	100	2	100	2	100	2
Total		**100**		**86.2**		**88.3**		**82.7**		**81.5**

Area Construction Manager Laird Paton

Signed

Date: 24 Sept 2013

Appendix 7 - Newfoundland and Labrador Benefits Evaluation Report

Table 7.1 below summarizes the results of the evaluation of the bidders' response to the Newfoundland and Labrador Benefits questionnaire as provided in the RFP documents.

Table 7.1- Newfoundland and Labrador Benefits Questionnaire Evaluation

					Astaldi		IKC		Salini JV		Aecon JV	
Section	Description / Expectation			Weighting Assigned	Score Given	Weighted Score	Score Given	Weighted Score	Score Given	Weighted Score	Score Given	Weighted Score
2.1	**Contracting and Procurement (7.5%)**											
2.1 a)	Describe Bidder's experience with implementing local benefits strategies and agreements, including Aboriginal agreements			**2.5**	4	2	5	2.5	4	2	5	2.5
2.1 b)	Describe Bidder's procurement policies and procedures that will ensure reasonable advance notice to NL supply community of all procurement opportunities			**2.5**	5	2.5	5	2.5	5	2.5	5	2.5
2.1 c)	Describe Bidder's familiarity with NL contractor/supply capabilities. If Bidder is not currently familiar with these capabilities, describe proposed steps to ensure familiarity			**2.5**	4	2	5	2.5	4	2	5	2.5
2.2	**Employment (5%)**											
2.2 a)	Describe Bidder's familiarity with Newfoundland & Labrador workforce			**2.5**	3	1.5	5	2.5	4	2	5	2.5
2.2 b)	Describe Bidder's human resource policies that will optimize Newfoundland and Labrador employment benefits			**1.5**	5	1.5	5	1.5	5	1.5	5	1.5
2.2 c)	Describe Bidder's human resource policies that will optimize Innu employment benefits for work in Labrador			**1.0**	5	1	5	1	4	0.8	5	1
2.3	**Gender Equity and Diversity (5%)**											
2.3 a)	Does Bidder have gender equity and diversity plans? If so, describe Bidder's policies, including harassment and discrimination policies that support gender equity and diversity			**1.5**	5	1.5	5	1.5	0	0	5	1.5
2.3 b)	Does Bidder's human resource policies enable the voluntary identification of members of under represented groups? If so, describe these policies			**1.5**	5	1.5	5	1.5	0	0	5	1.5
2.3 c)	Is the Bidder a woman-owned business?			**1.0**			0	0				
2.3 d)	List any intended subcontractors / suppliers that are woman-owned business			**1.0**			0	0				
2.4	**NL Benefits Reporting (5%)**											
2.4 a)	Indicate Bidder's previous experience at capturing employment and expenditure data as they relate to local benefits monitoring			**2.5**	5	2.5	5	2.5	5	2.5	5	2.5
2.4 b)	Indicate who, within Bidders organization, will be responsible for benefits monitoring and reporting			**2.5**	5	2.5	5	2.5	5	2.5	5	2.5
	Scoring Grid	**Scoring Guidance for Section 2 (above)**										
	5	Response meets and exceeds all key criteria										
	4	Response meets all key criteria										
	3	Response meets a majority of all key criteria										
	2	Response meets only a few of the key criteria										
	1	Response meets none of the key criteria										
3.0	**Innu Content (17.5%)**											
3.0 a)	Is Bidder a registered Innu Company with IBDC?	Yes = 5	No = 0	**5.0**		0	5	5	0	0	0	0
3.0 b)	Use of registered Innu subcontractors?	Yes = 5	No = 0	**5.0**	5	5	5	5	5	5	0	0
3.0 c)	A named person for Innu /IBA monitoring is provided.	Yes = 5	No = 0	**2.5**	5	2.5	5	2.5	5	2.5	5	2.5
3.0 d)	Bidder has members of Innu Nation as part of Bid.	Yes = 5	No = 0	**2.5**		0	5	2.5	0	0	0	0
3.0 e)	Bidder has experience working with aboriginal IBAs	Yes = 5	No = 0	**2.5**	0	0	5	2.5	0	0	5	2.5
4.0 a)	**NL BENEFITS CONTENT - PERSON HOUR ESTIMATE by Residency (22.5%)**			**25**	3	15	4	20	3	15	3	15

SNC·LAVALIN

nalcor energy

Table 7.1- Newfoundland and Labrador Benefits Questionnaire Evaluation

Section	Description / Expectation		Weighting Assigned	Astaldi		IKC		Salini JV		Aecon JV	
				Score Given	Weighted Score	Score Given	Weighted Score	Score Given	Weighted Score	Score Given	Weighted Score
	Score = 5	If NL percentage of total hours is > 80%									
	Score = 4	If NL percentage of total hours is 60 to 80 %									
	Score = 3	If NL percentage of total hours is 40 to 60 %		60%		73%		42%		49%	
	Score = 2	If NL percentage of total hours is 20 to 40 %									
	Score = 1	If NL percentage of total hours is < 20%									
4.0 b)	**NL BENEFITS CONTENT - PERSON HOUR ESTIMATE by Location of Work (12.5%)**		**10**	5	10	5	10	5	10	5	10
	Score = 5	If NL percentage of total hours is > 80%									
	Score = 4	If NL percentage of total hours is 60 to 80 %									
	Score = 3	If NL percentage of total hours is 40 to 60 %		99%		90%		100%		100%	
	Score = 2	If NL percentage of total hours is 20 to 40 %									
	Score = 1	If NL percentage of total hours is < 20%									
5.0	**NL BENEFITS CONTENT - EXPENDITURE ESTIMATE (25%)**		**25**	4	20	4	20	2	10	4	20
	Score = 5	If NL percentage of total expenditures is > 80%									
	Score = 4	If NL percentage of total expenditures is 60 to 80 %									
	Score = 3	If NL percentage of total expenditures is 40 to 60 %		64%		62%		34%		69%	
	Score = 2	If NL percentage of total expenditures is 20 to 40 %									
	Score = 1	**If NL percentage of total expenditures is < 20%**									
		Total	**100**	**71**		**88**		**58.3**		**70.5**	
		Sectional Weighting	5%	**3.55**		**4.40**		**2.92**		**3.53**	

Industrial Benefits Lead	Maria Moran
Signed	Maria Moran
Date:	Sept. 24, 2013

Appendix 8 - Risk Management Evaluation Report

Table 8.1 below presents the summary results of the risk management questionnaire evaluation. The scoring guide is presented below the table and comments are provided in Table 8.2.

Table 8.1 - Risk Management Questionnaire Evaluation

		Question Weight (%)	IKC		Astaldi		Aecon JV		Salini JV	
Item #	Item Description		Answer	Score	Answer	Score	Answer	Score	Answer	Score
1	Risk Management system in place	5	60	3	90	4.5	100	5	100	5
2	Risk Management Plan sample	5	60	3	100	5	100	5	100	5
3	Top 5 Risks - Identification	5	90	4.5	100	5	100	5	100	5
4	Loss Control Plan	3	90	2.7	100	3	100	3	80	2.4
5	Historical Records-Successful delivery	2	100	2	80	1.6	100	2	90	1.8
6	Report and root cause of unsuccessful deliveries	2	80	1.6	100	2	100	2	80	1.6
7	Measure to improve performance in last 3 yrs	2	100	2	90	1.8	90	1.8	90	1.8
8	Discussion on Schedule Critical Path	10	90	9	90	9	100	10	90	9
9	Mobilization Strategy	5	80	4	90	4.5	90	4.5	90	4.5
10	Cementitious material (cement and fly ash) sourcing strategy	10	90	9	90	9	90	9	90	9
11	Structural steel sourcing strategy	10	90	9	80	8	90	9	80	8
12	Mitigation of contaminated water runoff	3	80	2.4	90	2.7	100	3	80	2.4
13	Mitigation of increased seepage and inflow	3	80	2.4	80	2.4	80	2.4	90	2.7
14	Mitigation of lower productivity due to adverse weather	5	90	4.5	100	5	100	5	90	4.5
15	Batch Plant, Crusher and major equipment continuity plan	10	100	10	90	9	100	10	100	10
16	Summary of Health & Safety	3	100	3	100	3	100	3	100	3
17	Operation of Tower cranes outside manufacturer's operating limitations	2	100	2	80	1.6	80	1.6	80	1.6
18	Change management process and procedure	2	100	2	90	1.8	90	1.8	90	1.8
19	Familiarity with Canadian Standards	2	100	2	90	1.8	100	2	80	1.6
20	English primary language	1	100	1	90	0.9	100	1	90	0.9
21	Critical Skills, number of people and turn-over	2	100	2	80	1.6	100	2	100	2
22	Attraction and retention of skilled labour	5	100	5	60	3	100	5	100	5
23	Strike or lock-out history	2	90	1.8	100	2	100	2	100	2
24	Responsibility statement	1	100	1	100	1	100	1	100	1
	Total Percentage		**88.9%**		**89.2%**		**96.1%**		**91.6%**	

Scoring Guide:

0 - Question not answered or no relevant information provided in response
60 - Response does not meet key Criteria
80- Response meets some of the key criteria
90- Response meets most key criteria
100 - Response meets or exceeds key criteria

Interface Manager and Risk Coordinator Jean-Daniel Tremblay

Signed

Date: 24-SEP-2013

Table 8.2 – Risk Management Questionnaire Evaluation and Comments

RFP - Risk Management Questionnaire Evaluation

Package Number:	Package Name:
CH0007	Construction of Intake and Powerhouse, Spillway and Transition Dams

Scoring Guide:
0 - Question not answered or no relevant information provided in response
60 - Response does not meet key Criteria
80- Response meets some of the key criteria
90- Response meets most key criteria
100 - Response meets or exceeds key criteria

		Question Weight (%)	Bidder 1 - IKC-ONE			Bidder 2 - Astaldi			Bidder 3 - AFB JV			Bidder 4 - Salini		
			Answer	Score	Comments	Answer	Score	Comments	Answer	Score	Comments	Answer	Score	Comments
Item	Risk Management													
1	Risk Management system in place.	5	60	3.0	For Substantiating Claims	90	4.5	Enterprise risks	100	5.0	Aligned with LCP RM	100	5.0	Aligned with LCP RM
2	Risk Management Plan sample	5	60	3.0	For Substantiating Claims	100	5.0	Detailed references provided	100	5.0	Aligned with LCP RM	100	5.0	Aligned with LCP RM
3	Top 5 Risks - Identification	5	90	4.5	IKC-ONE Risks	100	5.0	Valid risks and measures	100	5.0	Valid risks and measures	100	5.0	Valid risks and measures
4	Loss Control Plan	3	90	2.7	Program in place	100	3.0	Program in place	100	3.0	Program in place	80	2.4	Program in place
5	Historical Records-Successful delivery	2	100	2.0	Relevant references provided	80	1.6	Mostly Civil. One only Hydro Reference in Chile	100	2.0	Multiple Hydro references in cold climate conditions	90	1.8	No powerhouse construction references in cold weather climate
6	Report and root cause of unsuccessful deliveries	2	80	1.6	No late project to report. Lessons learned not provided	100	2.0	No late project to report. Lessons learned process included in place	100	2.0	Lessons learned emphasizes on working closely with Client	80	1.6	No late project to report. Lessons learned not provided
7	Measure to improve performance in last 3 yrs	2	100	2.0	Valid and relevant improvement measures implemented	90	1.8	Generic description. Policies stated not specific actions	90	1.8	Generic description. Specific actions related to Risk Management	90	1.8	Generic description. Specific actions related to deploying Project Task Force at Mobilization
8	Discussion on Schedule Critical Path	10	90	9.0	Controls defined. Only critical path emphasis in on Spillway base slab to be poured Fall 2013.	90	9.0	Two critical paths stated, Peak labour demand from June to Nov 2014. Labour availability and productivity critical risk to schedule	100	10.0	Limited notice to proceed ASAP for design of Spillway winter protection structure. Intake work completed prior to superstructure	90	9.0	Spillway and powerhouse critical path discussed, silent on intended controls to be implemented
9	Mobilization Strategy	5	80	4.0	Limited details provide. Reference to past experience for demonstrating capacity	90	4.5	Project start-up task force. Immediate mob of temporary crusher and batch plant for site installations	90	4.5	Limited notice to proceed asp for design of Spillway winter protection structure. Barging of bulks through HVGB port. Camp capacity critical	90	4.5	Example of Mobilization in remote Iceland provided. Initial mob to focus on environmental measures and crusher and batch plant, tower cranes. JV suggests performing injection under Spillway using sub prior to winter
10	Cementitious material (cement and fly ash) sourcing strategy	10	90	9.0	Two sourcing plants in QC for cement. Two sources for Fly ash in Ohio. All materials trucked to site	90	9.0	Two sourcing plants in QC for cement. Silent on Fly ash. All material trucked to site.	90	9.0	Two sourcing plants in QC for cement. Alternates plant in Quebec and Ontario. Unclear on Fly ash sourcing	90	9.0	Two sourcing plants in QC for cement. Silent on Fly ash. All material trucked to site.
11	Structural steel sourcing strategy	10	90	9.0	Generic and limited discussion but potential subs identified in Appendix 16	80	8.0	Limited discussion. Firm prices from 3 suppliers and expression of interest from 5 others	90	9.0	Multiple plants contemplated having Hydro experience. All material trucked to site. Storage capacity available at manufacturing plants	80	8.0	Generic discussion. Reliance on excess of supply capacity due to economic downturn. No problem anticipated
12	Mitigation of contaminated water runoff	3	80	2.4	Generic and limited discussion. Responsibility limited to take over and maintenance of CH0006 pumping system, measurement of runoff contaminants	90	2.7	Specific plan to be developed and all required measures to be implemented	100	3.0	Detailed presentation of contemplated measures.	80	2.4	Generic and limited discussion. Responsibility limited to take over and maintenance of CH0006 pumping system, and improvement if required
13	Mitigation of increased seepage and inflow	3	80	2.4	Generic and limited discussion.	80	2.4	Design of system as per Bid docs requirements	80	2.4	Pumping system contingent of system in place by CH0006. No provision for any additional work on the existing system	90	2.7	Full assessment of exiting systems upon mobilization and upgrade if required. Maintenance throughout project duration
14	Mitigation of lower productivity due to adverse weather	5	90	4.5	Heated facilities. Lower productivity built-in schedule. Non-work days included	100	5.0	Heated facilities. Lower productivity built-in schedule. Non-work days included	100	5.0	Detailed discussion of contemplated measures. Success largely dependent on excellent cooperation between workers, Contractor and Owner	90	4.5	Limited discussion. Reduction of winter work where possible, float included winter schedule. Silent on winterization.
15	Batch Plant, Crusher and major equipment continuity plan	10	100	10.0	Increased batching plant capacity (2 X 115m3/h in Appendix A13) good measure to ensure concrete production continuity.	90	9.0	Main plant provided capacity of 100m3. Initial mobilization of temporary batch plant. Lower redundancy rate than other bidders.	100	10.0	Concrete production may be subcontracted locally. Proposed installed nominal production capacity of 220m2/hr.	100	10.0	Increased Batching plant capacity (1 X 150m3/h + 1 X 100m3/h) good measure to ensure concrete production continuity.
16	Summary of Health & Safety	3	100	3.0	Provided	100	3.0	Provided	100	3.0	Provided	100	3.0	Provided
17	Operation of Tower cranes outside manufacturer's operating limitations	2	100	2.0	Understanding of critical lifts and engineered lift plans	80	1.6	Silent on critical lifts and engineered lift plans	80	1.6	Silent on critical lifts and engineered lift plans	80	1.6	Silent on critical lifts and engineered lift plans
18	Change management process and procedure	2	100	2.0	Management of change is IKC-ONE main strategy for addressing their Risks. Refer to response to Q1.	90	1.8	Limited discussion. Tools seem aligned with LCP systems	90	1.8	System defined and in place	90	1.8	System defined and in place
19	Familiarity with Canadian Standards	2	100	2.0	Canadian company, multiple Projects performed in Canada	90	1.8	Not Canadian company, few Projects performed in Canada if any	100	2.0	Canadian company, multiple Projects performed in Canada	80	1.6	Not Canadian company, but active in Canadian market for years
20	English primary language	1	100	1.0	English is first language	90	0.9	Professional expatriate assigned to Project have several years experience in English speaking environment. Could be translation requirements for certain documents	100	1.0	English is first language	90	0.9	Some reference documents provided in language other than English. Could be translation requirements for certain documents
21	Critical Skills, number of people and turn-over	2	100	2.0	Multiple Projects performed in Canada under similar conditions	80	1.6	Limited generic discussion	100	2.0	Canadian company, multiple Projects performed in Canada under similar conditions	100	2.0	Skills and turnover provided.
22	Attraction and retention of skilled labour	5	100	5.0	Multiple Projects performed in Canada under similar conditions	60	3.0	Limited generic discussion	100	5.0	Multiple Projects performed in Canada under similar conditions	100	5.0	Multiple measures provided
23	Strike or lock-out history	2	90	1.8	Lockout history provided	100	2.0	No strikes to report	100	2.0	No strikes to report	100	2.0	No strikes to report
24	Responsibility statement	1	100	1.0	Provided	100	1.0	Provided	100	1.0	Provided	100	1.0	Provided
				0.0			0.0			0.0			0.0	
	Score - transfer to Technical Summary	100	88.90			89.20			96.10			91.60		
		Total Percentage	**88.90%**			**89.20%**			**96.10%**			**91.60%**		

Appendix 9 – Labour Hiring Strategy

Table 9.1 presents the results of the labour hiring evaluation for each bidder.

Table9.1 - Labour Hiring Strategy Questionnaire Evaluation

			IKC		Astaldi		Aecon JV		Salini JV	
	Weight	**Max Score**	**Answer/ Score**	**Comment**	**Answer/ Score**	**Comment**	**Answer/ Score**	**Comment**	**Answer/ Score**	**Comment**
1. Has the Bidder conducted a Labour Availability Study with respect to the critical trades: carpenters, concrete workers, reinforcing steel workers equipment operators and labourers?	7.273%	5.0	3.0/ 4.36%	no labour availability study completed, relying on experience from other projects in NL	3.5/ 5.09%	No written labour availability study was completed although it does appear that this Contractor did reach out to consultants and sub-contractors with experience who prepared an estimate of the percentages of workers available in NL and other parts of Canada	3.0/ 4.37%	did not conduct a labour availability study with critical trades	3.0/ 4.36%	Did not conduct a labour availability study with critical trades given that circumstances in labour market are constantly changing
2.0 For each of these critical trades or occupations:										
2.1 What percentage of your requirements do you foresee drawing from Newfoundland and Labrador (NL)?	7.273%	5.0	4.0/ 5.82%	good analysis of key trades by a range of percentages	4.0/ 5.82%		3.5/ 5.09%	The Contractor indicates the availability in NL would be in the range of 50% but does not specify availability by trade	3.0/ 4.36%	The Contractor indicates would only draw 15 - 20% of critical trades from NL, which appear inordinately low
2.2 What is the risk level of not filling your requirements in NL (High, medium, low or some other measure)?	7.273%	5.0	4.0/ 5.82%	specific trades identified at high risk: carpenters, concrete workers, rebar, surveyors, and crane operators	3.5/ 5.09%	Bidder describes probability as low but believes there may be a higher risk during peak period however does not identify specific trades	3.5/ 5.09%	The Contractor indicates the risk is high for not fulfilling labour demand from within NL but does not describe specific trades	3.5/ 5.09%	Contractor identifies the risk as high but provides no rationale or identification of trades

Table9.1 - Labour Hiring Strategy Questionnaire Evaluation

			IKC		Astaldi		Aecon JV		Salini JV	
	Weight	**Max Score**	**Answer/ Score**	**Comment**	**Answer/ Score**	**Comment**	**Answer/ Score**	**Comment**	**Answer/ Score**	**Comment**
2.3 What is the risk level of not filling your requirements from the rest of Canada?	6.364%	5.0	4.0/ 5.09%	crane operators and surveyors identified as a high risk	3.5/ 4.46%	Contractor describes the risk as low but indicates there may be issues during peak periods but does not describe any trades that may be at issue	3.5/ 4.46%	The Contractor assesses the risk as low for not being able to provide requirements from the rest of Canada, however, the Contractor does not address specific trades such as crane operators or surveyors where there have been historical shortages	3.5/ 4.46%	The Bidder assesses the risk as medium but provides no assessment
3. If you have not conducted a Labour Availability Study, what process was followed and / or what information was relied upon when formulating the assessment of risk under point 2?	7.273%	5.0	4.0/ 5.82%	relying on high level of local knowledge	3.5/ 5.09%	Contractor relied upon consultants and sub-contractors in formulating its view, however does not appear to have reached out to the specific trades	4.0/ 5.82%		3.5/ 5.09%	Contractor is relying upon consultants and suppliers
4. Prior to the start of construction and during construction, what steps will be taken or processes put in place to monitor availability of the trades or classifications, both in NL and Canada?	7.273%	5.0	4.0/ 5.82%		4.0/ 5.82%		4.0/ 5.82%	While the specific initiates described are good, there is no surveillance plan of labour availability by trade in the province or in adjacent markets, which you would expect to see	4.0/ 5.82%	
5. Describe your hiring plan to obtain workers in Canada, if the required numbers of a trade exceed the availability in NL.	7.273%	5.0	4.0/ 5.82%		4.0/ 5.82%		4.0/ 5.82%		3.5/ 5.09%	
6. In the event of a labour shortage of critical trades occupations across Canada, what specific areas of the U.S. would workers be accessed from or if not in the U.S. what countries?	7.273%	5.0	4.0/ 5.82%	specific areas in the US identified where Contractor has accessed TFWs for other projects	3.0/ 4.36%	Contractor does not specify it would go to the US first, nor does it specify specific areas on the US	4.0/ 5.82%	Specific areas in the US are identified	3.5/ 5.09%	The Contractor has identified Maine and Michigan in the US and China outside the US. The trades to be accessed are not identified.

Table9.1 - Labour Hiring Strategy Questionnaire Evaluation

			IKC		Astaldi		Aecon JV		Salini JV	
	Weight	**Max Score**	**Answer/ Score**	**Comment**	**Answer/ Score**	**Comment**	**Answer/ Score**	**Comment**	**Answer/ Score**	**Comment**
7. What experience do you have in utilizing temporary foreign workers and what timeframe would it take to process an application and access temporary foreign workers?	7.273%	5.0	4.0/ 5.82%	experience with TFW in Long Harbour and Hebron	4.0/ 5.82%	Contractor appears to have assembled a reasonable team to deal with the TFW applications	4.0/ 5.82%	Contractor appears to have significant experience in TFW program	3.5/ 5.09%	Contractor assumed 6 - 8 months from their experience in Iceland, which appears inordinately high
A13(1). Details of Labour Attraction & Retention Strategy										
Details of labour attraction and retention strategy	7.273%	5.0	4.0		3.5/ 5.09%		3.5/ 5.09%		3.5/ 5.09%	The Contractor has a reasonable understanding of the conditions and challenges of attracting persons, however the attraction and retention plan lacks sufficient detail
A8. Risk Management										
3. Provide a list of top 5 risks, which, in your view, could impact the timely delivery of the scope of work as specified in the proposed agreement.	7.273%	5.0	4.0	Labour availability 3rd item listed	4.0/ 5.82%	risk of a labour shortage is #1 risk	4.0/ 5.82%	difficulty in attracting and maintaining skilled trades is #1 risk	4.0/ 5.82%	difficulty in attracting and maintaining skilled trades is #1 risk
3.a What risk addressing plans does your company intend to put in place to either reduce the probability that these risks could occur or to minimize the consequences, should they happen?	7.273%	5.0	3.5	Generic answer provided referring to NL first and then Atlantic Canada	4.0/ 5.82%	well thought out plan with multiple components	4.0/ 5.82%	Contractor identifies a significant number of initiatives to mitigate risk and provides examples of where these measures have been used	3.5/ 5.09%	Contractor relying on experience, skilled personnel and international consultants, however little detail provided
21. Put forward a listing of skills which are critical to the success of the project as well as the available number of people employed in these skills at the business unit which will perform the work as well as the average turn-over of those skills.	7.273%	5.0	4.0	Well thought out and itemized plan	3.5/ 5.09%	Contractor described critical trades as carpenters, concrete workers reinforcing steel, equipment operators and labourers, but did not address turnover	5.0/ 7.27%	Contractor created a well thought out table by skill, jurisdiction, number of employees and average turnover	3.5/ 5.09%	the only trade specified is tower crane operators with expected turnover of 50% or 12 of 24

Table9.1 - Labour Hiring Strategy Questionnaire Evaluation

			IKC		Astaldi		Aecon JV		Salini JV	
	Weight	**Max Score**	**Answer/ Score**	**Comment**	**Answer/ Score**	**Comment**	**Answer/ Score**	**Comment**	**Answer/ Score**	**Comment**
22. Share previous experience (positive and negative) to attract and retain skilled labour to comply with contract's costs & schedules.	6.364%	5.0	4.0	Relies upon item 7 in Appendix 13, which was rated at 4	4.0/ 5.09%	The components Astaldi described a number of items to make the workplace attractive, however, one described being increased wages and benefits leads to performance is not possible to provide under PLA	4.0/ 5.09%	detailed plan with examples of implementation provided	3.5/ 4.46%	focus is on generic plans and general company policy. There is reference to their performance management system, which cannot be implemented under the PLA
Total Weighed Scores	100.0%			77.82%		74.27%		77.18%		70.00%

Labour Relations Advisor David Clarke

Signed _____

Date: _____

Appendix 10 - Overall Evaluation Scoring Matrix

Table 10.1 below summarizes the overall scoring for each bidder for both the technical and commercial components of the evaluation.

Table 10.1 – Overall Evaluation Scoring Matrix

Table 10.1 — **Overall Evaluation Scoring Matrix**

Package # 505573-CH0007 Construction of Intake & Powerhouse, Spillway & Transition Dams

Contract Administrator: Ron Adamcyk
Lead Technical: Luc Turcotte
Lead Commercial: Ed Over

NOTE: Each subsection is rated on a scale 1 - 10 (rating) then multiplied by the weighted value (weighting) for the item (within the evaluation subsection) to get the item value.

Section 1 Commercial and Provincial Benefits

Lead : Ed Over
Weighted value: 70.0%

	Criteria:	item w gtg		Bidder 1 Rating 0-10	Bidder 1 item value	Bidder 2 Rating 0-10	Bidder 2 item value	Bidder 3 Rating 0-10	Bidder 3 item value	Bidder 4 Rating 0-10	Bidder 4 item value	Comments:
1	**Total Evaluated Cost :**	90%	x	0	= 0.00	10	= 9.00	0	= 0.00	2.6	= 2.37	
	Score 10 for lowest bid.		x		= 0.00		= 0.00		= 0.00		= 0.00	
	Score -1 for each 2% higher than lowest bid.		x		= 0.00		= 0.00		= 0.00		= 0.00	
			x		= 0.00		= 0.00		= 0.00		= 0.00	
2	Provincial Benefits:	5.00%	x	8.8	= 0.44	7.1	= 0.36	7.05	= 0.35	5.83	= 0.29	
			x		= 0.00		= 0.00		= 0.00		= 0.00	
3	**Terms & Conditions comprising:**	5.00%	x	7.25	= 0.36	8.75	= 0.44	6.875	= 0.34	7.3125	= 0.37	
	Limitation of Liability				0.00							
	Liquidated Damages		x		= 0.00		= 0.00		= 0.00		= 0.00	
	Warranty		x		= 0.00		= 0.00		= 0.00		= 0.00	
	Title Transfer		x		= 0.00		= 0.00		= 0.00		= 0.00	
	Insurance		x		= 0.00		= 0.00		= 0.00		= 0.00	
	Performance Security		x		= 0.00		= 0.00		= 0.00		= 0.00	
	Default		x		= 0.00		= 0.00		= 0.00		= 0.00	
	Articles of Agreement		x		= 0.00		= 0.00		= 0.00		= 0.00	
		100%		16.05	0.80	25.85	9.79	13.93	0.70	15.77	3.03	
					X		X		X		X	
	Weighted value				70%		70%		70%		70%	
	Points value				**0.56**		**6.85**		**0.49**		**2.12**	

Section 2 Quality Program and Risk Management

Lead: Laird Paton
Weighted value: 5.0%

	Criteria:	item w gtg		Bidder 1 Rating 0-10	Bidder 1 item value	Bidder 2 Rating 0-10	Bidder 2 item value	Bidder 3 Rating 0-10	Bidder 3 item value	Bidder 4 Rating 0-10	Bidder 4 item value	Comments:
1	Quality Program	50%	x	7.55	= 3.78	7.55	= 3.78	7.05	= 3.53	7.68	= 3.84	
2	Risk Management:	50%	x	8.89	= 4.45	8.92	= 4.46	9.61	= 4.81	9.16	= 4.58	
		100%		16.44	8.22	16.47	8.24	16.66	8.33	16.84	8.42	
					X		X		X		X	
	Weighted value				5%		5%		5%		5%	
	Points value				**0.41**		**0.41**		**0.42**		**0.42**	

Section 3 Execution of the Work

Lead: Laird Paton
Weighted value: 20.0%

	Criteria:	item w gtg		Bidder 1 Rating 0-10	Bidder 1 item value	Bidder 2 Rating 0-10	Bidder 2 item value	Bidder 3 Rating 0-10	Bidder 3 item value	Bidder 4 Rating 0-10	Bidder 4 item value	Comments:
1	Responses to A1 Technical Questionnaire	30%	x	9.52	= 2.86	9.51	= 2.85	9.23	= 2.77	9.03	= 2.71	
2	Responses to A9 Construction Schedule	25%	x	6.9	= 1.73	9.4	= 2.35	7.2	= 1.80	8.2	= 2.05	
3	Responses to A13 Execution Plan	25%	x	8.62	= 2.16	8.83	= 2.21	8.27	= 2.07	8.15	= 2.04	
4	Responses to A15 Logistics and Transportation Strategy	10%	x	10	= 1.00	10	= 1.00	10	= 1.00	10	= 1.00	
5	Responses to A16 Proposed Subcontractors	10%	x	10	= 1.00	9.3	= 0.93	8.8	= 0.88	9.2	= 0.92	
		100%		45.04	8.74	47.04	9.34	43.50	8.52	44.58	8.72	
					X		X		X		X	
	Weighted value				20%		20%		20%		20%	
	Points value				**1.75**		**1.87**		**1.70**		**1.74**	

Section 4 Labour Hiring Strategy

Lead : John Mulcahy
Weighted value: 5.0%

	Criteria:	item w gtg		Bidder 1 Rating 0-10	Bidder 1 item value	Bidder 2 Rating 0-10	Bidder 2 item value	Bidder 3 Rating 0-10	Bidder 3 item value	Bidder 4 Rating 0-10	Bidder 4 item value	Comments:
1	Labour Hiring Strategy	100%	x	7.782	= 7.78	7.427	= 7.43	7.718	= 7.72	7	= 7.00	
		100%		7.78	7.78	7.43	7.43	7.72	7.72	7.00	7.00	
					X		X		X		X	
	Weighted value				5.0%		5.0%		5.0%		5.0%	
	Points value				**0.39**		**0.37**		**0.39**		**0.35**	

SUMMARY OF PROPOSAL RESULTS

Overall Comments:

	Bidder 1		Bidder 2		Bidder 3		Bidder 4	
Points value of Section 1 Commercial and Provincial Benefits	8%	**0.56**	98%	**6.85**	7%	**0.49**	30%	**2.12**
Points value of Section 2 Quality Program and Risk Management	82%	**0.41**	82%	**0.41**	83%	**0.42**	84%	**0.42**
Points value of Section 3 Execution of the Work	87%	**1.75**	93%	**1.87**	85%	**1.70**	87%	**1.74**
Points value of Section 4 Labour Hiring Strategy	78%	**0.39**	74%	**0.37**	77%	**0.39**	70%	**0.35**
OVERALL RATING OF PROPOSALS	31%	**3.11**	95%	**9.51**	30%	**2.99**	46%	**4.63**

		IKC	Astaldi	Aecon	Salini
1	Commercial/Benefits	8%	98%	7%	30%
2	Quality/Risk Management	82%	82%	83%	84%
3	Execution of the Work	87%	93%	85%	87%
4	Labour Hring Strategy	78%	74%	77%	70%
	Overall Result	**31%**	**95%**	**30%**	**46%**
6	Technical Evaluation	P	P	P	P
6	Interf. and Milestone Sched.	P	P	P	P
7	Health and Safety	P	P	P	P
8	Environmental	P	P	P	P

Appendix 11 – Prequalification Evaluation Report

BIDDERS LIST REVIEW / APPROVAL
Lower Churchill Project

Date Received from SLI: **27-Aug-12**
Approval Required Date from NE: **4-Sep-12**

CONTRACT #: **CH0007**
CONTRACT NAME: **Construction of Intake and Powerhouse, Spillway and Transition Dams**

The following have reviewed the attached recommended Bidders List for CH0007 titled Construction of Intake and Powerhouse, Spillway and Transition Dams

Prepared By:	**Name:**	**Signature:**	**Date:**
SLI - Package CA or Buyer	R. Adamcyk	See attached Package Bidders List Recommendation and EOI/Prequal Results	27-Aug-12
Reviewed By:			
QA Manager	D. Green		29 AUG 2012
Health & Safety Manger	D. Riffe		31 Aug 2012
Environmental Engineering Lead	M. Organ		31-Aug-2012
Approved By:			
Project Manager - MF Facilities & Infrastructure	S. O'Brien		31 Aug 2012
Deputy Project Manager	J. Kean		31-AUG-2012
General Project Manager	R. Power		31-Aug-2012
Supply Chain Manager	P. Hussey		31 Aug 2012

Comments:

Date: 27 August-2012

Lower Churchill Project

Prequalification Evaluation Report- Package CH0007

Prepared by: SNC	**Name**	**Signature**
Contract Administrator	R. Adamcyk	
Lead Technical Evaluator	L. Paton	
Health and Safety Coordinator		
Environmental Coordinator		
Quality Coordinator	K. Morrison	
Checked by SNC:		
Area Manager		
Approved by SNC:		
Procurement Manager		
Engineering Manager	Greg Snyder	
Health and Safety Manager		
Environmental Manager		
Quality Manager	K. Morrison	
Component 1 Manager	A. Hanna	For A. Hanna
Approved by Nalcor;		
Supply Chain Manager		
Nalcor Project Manager		

REVISION LIST

Revision						Remarks
N°	By	Check	Apr.	Apr.	Date	

TABLE OF CONTENTS

PAGE

1. EXECUTIVE SUMMARY

This report presents the results of the prequalification evaluation that has been carried out for package CH0007 – Intake and Powerhouse, Spillway and Transition Dams.

The evaluation team has assessed and ranked the technical, commercial, health and safety, environmental, and quality capabilities of the nine Applicants for prequalification. The Overall Score for each Applicant is listed below.

The team recommends that the five companies/JointVentures that received the highest overall ranking be put on the Bidders List for Package CH0007. These companies met all of the pass/fail criteria. However,this recommendation has been affected by information received on 26 July 2012 with respect to two of the five recommended Applicants: Salini S.p.A has taken control of Impregilo S.p.A.

After further discussions with these two companies, they have confirmed that if both are prequalified, and to prevent a conflict of interest, they will bid as one Joint Venture: Salini/Impregilo/FCC, led by Salini. The team believe that this is an effective solution to the conflict. The Team therefore recommend a Bidders List made up of the four (4) Applicants with the highest Overall Scores: Astaldi S.P.A.; the two Joint Ventures: IKC-ONE, and Aecon/Flatiron/Demathieu & Bard; and the reconstituted Joint Venture of Salini/FCC/Impregilo.

The financial statements of the recommended Applicants have been reviewed by the Treasury and Risk Management Group of Nalcor Energy. The Group has concluded that "from a financial perspective" all recommended companies are "qualified".

	Name	Origin	PC	JV	Overall Score	R
1	IKC-ONE Civil Constructors, a Partnership			X	**87.13**	**R**
	• Sponsor: Innu-Kiewit Constructors; a partnership (IKC)	USA		40%		
	• H.J. O'Connell Construction Ltd.	Canada		20%		
	• Neilson Inc.	Canada		20%		
	• EBC Inc.	Canada		20%		
2	Impregilo S.p.A.	Italy	X		**85.60**	**R**
3	Astaldi S.P.A.	Italy	X		**83.20**	**R**
4	Salini S.p.A.			X	**82.46**	**R**
	• Lead: Salini S.p.A	Italy		50%		
	• FCC Construccion, S.A.	Spain		50%		
5	Aecon-Flatiron-Construction Demathieu & Bard – Joint Venture			X	**81.29**	**R**
	• Lead: Aecon Constructors,	Canada		40%		
	• Flatiron Constructors Canada Limited	USA		40%		
	• Construction Demathieu & Bard (CDB) Inc.	France		20%		
6	Barnard-Dragados J.V.			X	**76.86**	
	• Managing Partner: Barnard of Canada, Inc.	USA		50%		
	• Dragados Canada, Inc.	Spain		50%		
	• Pennecon as exclusive subcontractor					
7	Strabag Inc.	Austria	X		**76.52**	
8	OHL Construction Canada Inc.	Spain	X		**72.99**	
9	Acciona Infrastructure Canada Inc.	Spain	X		**72.54 (F)**	

Note: PC means as a Prime Contractor; JV means in Joint Venture; F means failed a criterion; and R means recommended for the Bidders List.

Sections 2 and 3 of this report present background information: respectively the Scope of Work for Package CH0007 and the History of the Invitation to Prequalify. This is followed, in Section 4, by a description of the Evaluation Plan that was the basis of the Evaluation. Section 5 presents the Evaluation Findings and Section 6 the Recommended Bidders List. The report is completed by Section 7, which references the Creditworthiness check that has been made by the Nalcor Treasury and Risk Management Group.

2. SCOPE OF WORK FOR PACKAGE CH0007

Package CH0007 includes:

- Construction of the powerhouse and the intake which includes concreting, steel structure, embedment parts and miscellaneous metals as well as the architectural works related to the envelop of the powerhouse building.
- Construction of the gated spillway including the upstream and downstream permanent bridges and downstream temporary bridge over the gated spillway.
- Construction of the centre and north transition dams.
- Construction of the Powerhouse/Intake separation wall.
- Civil works related to permanent access roads to the powerhouse and to the spillway.
- The fabrication of the conventional vibrated concrete (CVC) (inclusive of the mobilization, installation, operation and dismantlement of the batch plant(s), the fabrication of the aggregates for concrete from blasted rock stockpile and from sand gravel borrows areas, the supply and storage of Portland cement for the fabrication of concrete including Fly Ash and additives, the production of concrete at the batching plant and the quality control at the batch plant and at the pour location.)
- Supply and installation of the spillway electrical building (structure only)

3. INVITATION TO PREQUALIFY AND APPLICATIONS SUBMITTED

The Prequalification Document for Package CH0007 was issued on April 30th 2012

The call for Applications was carried out on two fronts:

- In the first instance, an announcement was inserted in the Journal '*International Water Power and Dam Construction* on April 1 2012. Refer to Appendix A.1;
- In the second instance, companies that were known to have a competency in the area of Package CH0007 were invited to prequalify. Companies were identified based on in-house knowledge and by actively reviewing the pubic data as recorded in the Top Lists of the journal *Engineering News-Record*. A total of 36 companies were contacted. The complete list of companies contacted is as listed in Appendix A.2. In the case of companies that declined to apply but who were particularly attractive – i.e. Bouygues,

Skanska, and Vinci - follow up contacts were made to encourage the company to reconsider. Despite this additional effort, none of these companies accepted to apply.

Six Clarifications were issued during the prequalification period. One of these clarifications extended the prequalification period.

The period for receipt of Applications was closed on the 29th June 2012.

Nine Applications were received. The Companies submitting are as listed in Appendix A.3.

4. EVALUATION PLAN

4.1 The Plan

The approved Evaluation Plan, as attached in Appendix B, was followed in the evaluation of the Applications.

The objective of the evaluation was to identify the five most qualified Applicants, who meet the standards set for prequalification.

In the first stage of the evaluation, the experience, capacity, organization, resources, systems, and record of performance were to be evaluated in each of the following Categories: technical capability; commercial fitness; health and safety record and systems; environmental record and systems and quality systems. Each of these Categories were to be evaluated under the detailed set of elements (or factors) which are identified in Tables 1 to 5 of Appendix B. The weightings to be allocated to each Element were also defined. Maximum score for each Category is 100. After evaluation of the scores for each of five Categories, an Overall Score was to be calculated based on the following weightings:

Technical (T)	Commercial (C)	Health and Safety (H)	Environmental (E)	Quality (Q)
.45	.20	.10	.10	.15

Overall Score = .45 X T Score + .20 X C Score + .10 X H Score + .10 X E Score + .15 X Q Score

Following the calculation of the Overall Scores, each Applicant was to be reviewed for compliance with the pass/fail criteria, which define the minimum standards needed to be

considered for inclusion on the Bidders List. The five Applicants with the highest Overall Scores, who meet all of the pass/fail criteria, defined immediately below, were to be selected for the Bidders List.

Category	Minimum Category Score	Minimum Score for Elements within the Category		Ref. Table (Appendix B)
		Element	Minimum Score	
1.Technical Capability	60	N/A		1
2. Commercial	60			2
		Applicant not involved in Bankruptcy	5	2
		Financial Instruments to Perform	20/20	2
		Lower Churchill Construction Project Benefits	13/25	2
3. Health and Safety	70	N/A		3
4. Environmental	60	N/A		4
5. Quality	60	N/A		5

4.2 Departures From the Plan

During the evaluation, minor adjustments were made in the procedure followed. For example, the technical evaluation used a rating of 95 % when the Applicant's response for an item met all criteria and 100% when it exceeded the requirements, rather than 80% and 100% as mentioned in the Evaluation Plan. Once made, these adjustments were consistently applied.

A more fundamental change was made with respect to a criterion for Joint Ventures. Each partner in a Joint Venture was required to meet the minimum Category score for environment. In one case a partner – Neilson – was not able to meet the requirements. However, given that the managing partner of the Joint Venture (IKC) has a well developed environmental system, and this system is to be used for the entire Joint Venture, the deficiency of Nielson was not treated as a pass/fail impediment.

5. FINDINGS

5.1 Preliminary Comments

The Applicants who are applying (whether as a prime contractor or as the lead contractor in a Joint Venture) are large companies themselves, or have parents that are large groups. Table C.1 gives the rankings of these companies as published in the *Engineering News-Record Top 225 Global Contractors* (by Revenue).

All of the Applicants have been profitable in the last 3 years.

5.2 Summary of the prequalification Evaluation

Table C.2 summarizes the evaluation results. It presents, for each of the nine Applicants, the scores for each Category and the Overall Scores. This Table should be read in conjunction with the commentary in the following Sections 5.3 and 5.4, the detailed scoring Tables in Appendix C.3, and the comments with respect to Individual Applicants under Appendix C.4.

5.3 Pass/Fail Results

With two exceptions, all of the Applicants met all of the pass/fail criteria. The exceptions are:

- The environmental systems of Neilson, a partner in the IKC-ONE Joint Venture, did not meet the pass requirement. However, given that the system of IKC, the lead partner, did pass the requirements and that the system of IKC is to be used by the entire Joint Venture, this should not prevent the Joint Venture from passing.
- Acciona refused to submit information detailing how they would meet the cash flow requirements of the Work, including letters of reference from their bank and surety. Consequently, they have been excluded from the list of possible Applicants for recommendation.

5.4 Summary of the findings :

5.4.1 Joint Venture, IKC-ONE:

Technical: well qualified. Pertinent recent experience, strong team, excellent subcontractors. Excellent depth. Sterling reputation.

Commercial: The weighted Financial Score of this group of 13.7/16 is the highest of the Applicants (Financial Score based on 2 points for each year of profit in 2009 to 2011; 4 points for Debt to Asset Ratio – 4 points for 60%, to 0 for 100% - ; and 6 points for Current Assets to Current Liabilities Ratio – 2 Points for 1 increasing to 6 points for 2.5) .They also have the most experience with respect to working with Inuit populations.

5.4.2 Impregilo:

Technical: (Very) large international contractor with pertinent recent experience. Has done Hydro work under similar conditions to LCP. Excellent depth.

Commercial: The Financial Score of 11.0/16 is in the median range.

5.4.3 Astaldi:

Technical: Large international contractor with pertinent experience on similar projects. Good site organization. Clear on portions he would sub-contract.

Commercial: Financial Score of 10.3/16 is just above the lowest quartile (Q1) for the Applicants. A credit worthiness check would be in order prior to addition to the Bidders List.

5.4.4 Joint Venture, Aecon:

Technical: Big Canadian firm tied in with experienced subcontractors. Experience with similar work under northern conditions. Not as big as the previous but technically capable.

Commercial: Financial Score for this JV is 11.65/16.

5.4.5 Joint Venture, Salini:

Technical: Large international firm with mega project experience. Pertinent powerhouse and gated spillway experience. Has identified some local subcontractors and has cold weather experience in Russia albeit not Hydro.

Commercial: The financial Score of 9.98/16 has been lowered by the score of partner FCC (9.27). Additional credit worthiness checking should be performed.

5.4.6 Strabag:

Technical: Although a large international contractor with powerhouse experience several shortcomings in the documentation presented lowered their score. The team presented had little or no powerhouse experience. They did not have any experience

in cold weather concreting, at least not anywhere near the climatic extremes we are talking about. Identification of work to be subcontracted was skimpy although not a main contributing factor to a lower score.
Commercial: Financial Score of 11.60.

5.4.7 Joint Venture, Barnard:
Technical: Barnard has little or no powerhouse experience although their subcontractor (Pennecon) does. The team presented is very weak in this matter. Experience in large batch plant operations is weaker than the leaders as is that in extreme cold weather concreting. Also scored low on clarity of subcontracting strategy. Given that Barnard are bidding on excavation contract CH0006, and that there was thus the possibility of having one contractor for both CH0006 and CH0007 (eliminating an interface), the Barnard team was invited to submit any additional information that would strengthen their Application. The additional information provided however, did not result in a change in the evaluation.
Commercial: Financial Score of 11.65. ; weighting of Barnard (16) and Dragados (7.3). Additional credit worthiness checking would be indicated for Dragados.

5.4.8 OHL:
Technical: OHL scores relatively low on contracts of a similar nature and complexity. They are at the low end on the depth and experience of site organization. They do not really have cold weather concreting experience and have not demonstrated understanding of the subject.
Commercial: Financial Score of 7.4. Additional credit worthiness checking would be indicated.

5.4.9 Acciona:
Technical: Very low on projects of similar nature and complexity. Little powerhouse experience and a team with little or no experience in that field. Low scores in some other areas but not with significant weighting.
Commercial: Financial Score of 10.91. Acciona refused to provide Letters of reference from their bank and their surety.They have thus failed to meet the minimum criterion as listed in Secton 4.1.

6. RECOMMENDATION

6.1 In accordance with the Evaluation Plan, the evaluation team recommend the Applicants with the five highest Overall Scores, who have met the pass/fail criteria. These are listed in Appendix D.

6.2 On 26 July 2012, the team were informed that Salini S.p.A. had taken control of Impregilo S.p.A; thus presenting a conflict of interest if both companies are added to the Bidders List. Salini and Impregilo have confirmed that if they are both on the Bidders List, they will form a Joint Venture – Salini/FCC/Impregilo, led by Salini. The team believe that this respresents an effective solution to the conflict; the team therefore recommend that the Bidders List be made up of four Bidders: Astaldi acting as a prime contractor, and the three Joint Ventures: IKC-ONE, Aecon/Flatiron/Demathieu & Bard, and Salini/FCC/Impregilo.

6.3 To further ensure that none of the four recommended Bidders change their minds after being included in the Bidders List, we recommend that Nalcor should visit each of these companies during the initial phase of the bidding period. The objective of the visits should be to make a final confirmation the companies will submit proposals if selected.

7. NALCOR CREDITWORTHINESS REVIEW OF RECOMMENDED COMPANIES

Copies of the Applications for prequalification and the accompanying financial statments of each of the recommended companies, were supplied to the Nalcor Treasury and Risk Managment Group.

The Group reviewed the ability of each individual entity to absorb the impacit of potential adverse financial events as documented in LCP-PT-MD-0000-FI-PR-0003-01 – *Guidelines for Creditworthiness.* They also considered the size of the contract relative to each entity's annual sales and whether the entities in question experienced adverse events in the past as well as willingness to providce performance security.

As of to-day, The Treasury and Risk Management Group consider that all of the companies meet Nalcor creditworthiness criteria. Appendix E presents the details of this confirmation.

APPENDICES

A Call for Applications

A.1 Announcement:

A.2 List of Companies Invited to Apply

A.3 Companies submitting Applications for Prequalification

B Approved Prequalification Evaluation Plan

C Findings

Table C.1 Engineering News Record Rankings of Applicants

Table C.2 Summary of the Prequalification Evaluation

C.3 Scoring Tables

Table C.3.1 Scoring for the Technical Capability, Evaluation

Table C.3.2 Scoring for the Commercial Evaluation

Table C.3.3 Scoring for the Health and Safety Evaluation

Table C.3.4 Scoring for the Environmental Evaluation

Table C.3.5 Scoring for the Quality Evaluation

C.4 Findings with Respect to the Individual Applications

Table C.4.1 IKC-ONE

Table C.4.2 – Impregilo S.p.A

Table C.4.3 – Astaldi S.p.A

Table C.4.4 – Salini S.p.A

Table c.4.5 – Aecon – Flatiron Construction Demathieu & Bard Joint Venture

Table C.4.6 – Barnard – Dragados Joint Venture

Table C.4.7 – Strabag Inc.

Table C.4.8 – OHL Construction Canada Inc.

Table C.4.9 – Acciona Infrastructure Canada Inc.

D. Recommended Bidders List

E. Nalcor Creditworthiness Review of Recommended Companies

APPENDIX A – CALL FOR APPLICATIONS

News

Invitation to prequalify for Muskrat Falls construction works package

30 April 2012

SNC-Lavalin Inc, as the engineering, procurement and construction management contractor for Nalcor Energy, invites interested companies to submit applications for prequalification with respect to Package CH0007: construction of intake, powerhouse, spillway and transition dams for the 824MW Muskrat Falls hydroelectric facility. The development of Muskrat Falls is phase one of the Lower Churchill Project, located in Newfoundland and Labrador, Canada.

The prequalification document will be available for downloading from SNC Lavalin's project website, starting 30 April 2012:

https://gps.snclavalin.com/content/LowerChurchill/projects/project.html

Completed applications for prequalification must be submitted no later than 30 May 2012.

The scope of work includes:

- Construction of the powerhouse and the intake which includes concreting, steel structure, embedment parts and miscellaneous metals as well as the architectural works related to the envelope of the powerhouse building.

- Construction of the gated spillway including the upstream and downstream permanent bridges and downstream temporary bridge over the gated spillway.

- Construction of the centre and north transition dams.

- Construction of the Powerhouse/Intake cofferdam (separation wall), inclusive of temporary road and temporary upstream bridge.

- Civil works related to permanent access roads to the powerhouse and to the spillway.

- The fabrication of the conventional vibrated concrete (CVC) This includes the mobilization, installation, operation and dismantlement of the batch plant(s), the fabrication of the aggregates for concrete from blasted rock stockpile and from sand gravel borrows areas, the supply and storage of Portland cement for the fabrication of concrete including Fly Ash and additives, the production of concrete at the batching plant and the quality control at the batch plant and at the pour location.

- Supply and installation of the spillway electrical building (structure only).

- Estimated major quantities: 450,000m3 CVC; 3,700 Tons structural steel.

All questions with respect to this invitation to prequalify should be forwarded to :

Ron Adamcyk
Senior Contract Administrator
SNC-Lavalin Inc.

Email: Ronald.Adamcyk@snclavalin.com

With a copy to:

Ed Over
Procurement Manager
SNC-Lavalin Inc.
Email: Ed.Over@snclavalin.com

Appendix A.2 Companies Invited to Prequalify for Bidding on Package CH0007

Company
Acciona S.A.
Advanced Flexible Systems, Inc.
Aecon Group Inc.
Alberici Constructors
Astaldi SpA
Balfour Beatty plc (UK)
Barnard Construction Company, Inc. in Joint Venture with Pennecon
Bechtel
Big Land Construction Ltd.
Bilfinger Berger (Canada), Inc.
Bouygues Batiment International
Construtora Andrade Gutierrez S.A
Construtora Norberto Odebrecht S.A.
Demathieu & Bard (CDB) inc.
Dragados S.A
Ed. Zublin AG
EllisDon Corporation
Ferrovial-Agroman S.A.
Fluor Constructors Canada Ltd.
Hochtief A.G. (Flatiron Canada/USA):JV with Aecon
Iberdrola Ingenieria y Construccion
Impregilo Group
Impresa Pizzarotti SpA
Kumagai Gumi Co., Ltd.
OHL Spain
PCL Construction Enterprises
Peter Kiewit (Joint Venture led by Kiewit, with O'Connell ,EBC and Nielsen)
Pomerleau Inc.
Salini SPA in JV with Strabag
Schiavone Construction Co. LLC
Skanska Construction
Strabag S.E.in JV with Salini
Taisei Construction Corporation (TCC)
TutorPerini
URS Corporation
VINCI Group

APPENDIX A.3 PREQUALIFICATION APPLICATIONS RECEIVED

PACKAGE CH0007 INTAKE, POWERHOUSE, SPILLWAY AND TRANSITION DAMS

	Name	PC	JV	Address	Authorized Signing Officer
1	Acciona Infrastructure Canada Inc.	X		Three Bentall Centre, 595 Burrard Street Suite 2000, PO Box 49125 Vancouver, BC, V7XJ1	Vincent Blesa, 1 (604) 622-6550 vblesa@acciona.ca
2	Aecon-Flatiron-Construction Demathieu & Bard – Joint Venture		X	20 Carlson Court, Suite 800, Toronto, Ontario Canada, M9W 7K6	Don Brophy, Senior Vice President, Aecon 1 (416) 293-7004 DBrophy@aecon.com
	• Lead: Aecon Constructors,		40%		
	• Flatiron Constructors Canada Limited		40%		
	• Construction Demathieu & Bard (CDB) Inc.		20%		
3	Astaldi S.P.A.	X		Via Giulio Vincenzo Bona N.65 Rome/Italy - 00144	Mario Lanciani, +39 6 417661 mlanciani@astaldi.com
4	Barnard-Dragados J.V.		X	701 Gold Avenue Bozeman, MT, US,59715	Kevin Ellerton, 1 (406) 586-1995 Kevin Ellerton@barnard-inc.com
	• Managing Partner: Barnard of Canada, Inc.		50%		
	• Dragados Canada, Inc.		50%		
	• Pennecon as exclusive subcontractor				

Notes: PC = as Prime Contractor; JV = as Joint Venture

5 July 2012

APPENDIX A.3 PREQUALIFICATION APPLICATIONS RECEIVED

PACKAGE CH0007 INTAKE, POWERHOUSE, SPILLWAY AND TRANSITION DAMS

	Name	PC	JV	Address	Authorized Signing Officer
5	Impregilo S.p.A.	X		Via dei Missaglia, 97 Milan/Italy - 20142	Ing. Mario Lampiano, +39 02 44422111 impregilo@impregilo.it
6	IKC-ONE Civil Constructors, a Partnership		X	215 Water Street Atlantic Place, Suite 505 St. John's, NL, Canada, A1C 6C9	Stephen Paul Carter Jr. 1 (709) 738-6160
	• Sponsor: Innu-Kiewit Constructors; a partnership (IKC)		40%		
	• H.J. O'Connell Construction Ltd.		20%		
	• Neilson Inc.		20%		
	• EBC Inc.		20%		
7	Salini S.p.A.		X	Via della Dataria, 22 Rome/Italy - 00187	Claudio Lautizi, +39 06 6776903 d.onori@salini.it
	• Lead: Salini S.p.A		50%		
	• FCC Construccion, S.A.		50%		
8	OHL Construction Canada Inc.	X		1440 Ste. Catherine Street West, suite 410 Montreal, Quebec, Canada, H3G 1R8	Miguel Fraile 1 (514) 394-0865 mfraile@ohlcanada.com
9	Strabag Inc.	X		2520 Stanley Avenue Niagra Falls, Ontario, Canada, L2E 6S4	Ernst Gschnitzer 1 (905) 650-7906 Ernst.Gschnitzer@strabag.ca

Notes: PC = as Prime Contractor; JV = as Joint Venture

APPENDIX B – APPROVED PREQUALIFICATION EVALUATION PLAN

SNC·LAVALIN		Revision 00	
	PREQUALIFICATION EVALUATION PLAN	Date	Page
	SLI Doc. No. 505573-CH0007-51BQ-0008	29-June-2012	1

Lower Churchill Project

Prequalification Evaluation Plan - Package CH0007

Date: 29-June-2012

Prepared by: SNC	Name	Signature
Contract Administrator		
Lead Technical Evaluator	LAIRD PATON	
Health and Safety Coordinator	RANDY WALKER	
Environmental Coordinator	Michel Wawrzkow	
Quality Coordinator	W.K. MORRISON	
Checked by SNC:		
Area Manager	LUC TURCOTTE	
Approved by SNC:		
Procurement Manager		
Engineering Manager		
Health and Safety Manager	Sean Lee	
Environmental Manager	Michel Wawrzkow	
Quality Manager	W.K. MORRISON	
Component 1 Manager		
Approved by Nalcor;		
Supply Chain Manager		
Nalcor Project Manager	Scott O'Brien	

REVISION LIST

Revision						Remarks
N°	By	Check	Apr.	Apr.	Date	

TABLE OF CONTENTS

PAGE

1. PURPOSE AND BACKGROUND

This report presents the method and criteria to be used in the evaluation of Applicants for Prequalification to bid on Package No. CH0007 – Construction of Intake, Powerhouse, Spillway and Transition Dams.

The Prequalification Document for Package CH0007 was issued on April 30th 2012. Six clarifications were also issued during the preparation period.

Applications were received on 29th June 2012. The evaluation to be executed in accordance with this report is structured around the questionnaires, and clarifications, that were part of the Prequalification Document.

2. OVERVIEW

The objective of the evaluation is to identify the five most qualified Applicants, who meet the standards set for prequalification.

In the first instance, the qualifications of each Applicant will be evaluated under five Categories: Technical Capability, Commercial Fitness, Health and Safety Record and Systems, Environmental Record and Systems and Quality Systems. The evaluation will be on a numerical basis; each Applicant will receive a score for each Category and the five Categories will be combined into one Overall Score by adding the weighted Category scores.

After the Overall Scores have been established, each Applicant will then be reviewed for compliance with the pass/fail criteria, which define the minimum standards needed to be considered for inclusion on the Bidder List. The five Applicants with the highest Overall Score, who meet all of the pass/fail criteria will be selected for the Bidders List.

Sections 5 and 6 of this report address the evaluation of Categories and Overall Score.

Sections 7 and 8 of this report address the pass/fail criteria.

3. PREQUALIFICATION EVALUATION TEAM

The members of the Prequalification Evaluation Team, including area of focus and role, will be as follows:

Name	Area of Focus and Role
L. Paton	Technical Capability, Lead
G. Savard	Technical Capability, support, as required.
H. Bouzaiene	Technical Capability, support, as required.
Francois Raut	Technical Capability, support, as required.
T. Smith	Technical Capability, support, as required.
Randy Walker	Health and Safety
M. Wawrzkow	Environmental
Ken Morrison	Quality
J.D. Tremblay	Risk, included in Commercial
Ron Adamcyk	Commercial and Coordination of the Evaluation Report

4. COMMUNICATION WITH THE APPLICANTS

In performing the evaluations, the team may contact the Applicants to request additional information, as required. This will occur if Applicants have omitted to submit essential information; it is most likely to occur in situations where the Applicant has failed a criterion by a small margin; and consequently a prudent re-verification would be in order. All communication with the Applicants will be through the Contract Administrator.

5. EVALUATION OF CATEGORIES – ELEMENTS TO BE CONSIDERED AND WEIGHTING

In the first stage of the evaluation, the experience, capacity, organization, resources, systems, and record of performance will be evaluated in each of the following Categories: technical capability; commercial fitness; health and safety record and systems; environmental record and

systems and quality systems. Each of these Categories will be evaluated under the detailed set of elements which are identified in the Tables 1 to 5 (attached).The weightings to be allocated to each Element are also shown. Maximum score for each Category will be 100.

6. WEIGHTINGS FOR THE OVERALL SCORE

After evaluation of the scores for each of five Categories, an Overall Score will be calculated based on the following weightings:

Technical (T)	Commercial (C)	Health and Safety (H)	Environmental (E)	Quality (Q)
.45	.20	.10	.10	.15

Overall Score = .45 X T Score + .20 X C Score + .10 X H Score + .10 X E Score + .15 X Q Score

7. MINIMUM CRITERIA FOR ACCEPTANCE - PASS/FAIL SCORES

To be considered as a Bidder for Package CH0007, minimum pass/fail scores have been established for each Category of evaluation. Applicants must achieve the minimum score for each Category of evaluation as listed below. In addition, minimum scores have been established within the Commercial Category. This is necessary since certain commercial elements – such as the ability to provide bonding and financial viability - are absolutely essential if bids are to be received from healthy, robust companies. Applicants must meet all of the pass/fail criteria to be considered for inclusion on the Bidder list.

Category	Minimum Category Score	Minimum Score for Elements within the Category		Ref. Table
		Element	Minimum Score	
1.Technical Capability	60	N/A		1
2. Commercial	60			2
		Applicant not involved in Bankruptcy	5	2
		Financial Instruments to Perform	20/20	2
		Lower Churchill Construction Project Benefits	13/25	2
3. Health and Safety	70	N/A		3
4. Environmental	60	N/A		4
5. Quality	60	N/A		5

8. JOINT VENTURES

In the case of Applications from Joint Ventures or Partnerships, the following pass/fail criteria will also apply:

a. Joint Venture shall collectively meet all of the listed criteria above.

b. The Lead Partner shall be responsible for at least 30 to 40 percent of the work, including project management.

c. Each partner shall meet the minimum category score for each of Health and Safety, Environment, Quality and Commercial

d. Each partner shall meet the elements of the Technical Capability Category, for the work under its responsibility;

e. The partners agree to be jointly and severally responsible for the execution of the work.

TABLES

END

Table 1 - Technical Capability, Elements for Evaluation and Weighting for Each Element

Element	Weight for Element	Minimum Score
1.0 EXPERIENCE		
1.2 Number of contracts undertaken in the last 10 years which are of a similar nature and complexity as Package CH0007 for Prequalification. Requirement for minimum score of 10, = at least one contract executed of similar nature and complexity and with at least 150,000 m3 of concrete placed	20	
2.0 TECHNICAL SPECIFIC		
2.1 Experience in production of concrete and/or operation of concrete batching plants. Projects were the Applicant was responsible for concrete production including the aggregate fabrication, mix design and quality control.	3	
2.2 Experience in placing concrete in an environment with climatic conditions similar to Labrador? Applicant to describe the protection measures taken for concreting during the cold months and indicate the average and peak concreting production achieved during the cold period and summer period?	10	
2.3 Experience in fabricating and installing steel superstructure.	3	
2.4 Applicant has a satisfactory organization with respect to Design work.	3	
2.5 Applicant would be able to mobilize its equipment and team in a timely manner.	3	
2.6 Experience in construction of large Hydro Electric Powerhouses.	10	
2.7 Experience in construction of large Gated Spillways.	6	
2.8 Experience in construction of concrete gravity dams.	2	
2.9 Applicant has satisfactory organization/arrangements in place for the execution of specialized formwork, such as the formwork for draft tube and spiral case.	2	
2.10 Experience in rock plug excavation (submerged rock).	2	
2.11 Experience in bridge construction	2	
2.12 Applicant appears to have proper organization for planning concrete pours.	2	
3.0 ORGANIZATION AND RESOURCES		
3.1 Project and Site Organization		
3.1.1 Project and Site Organization that would execute the scope of work of package CH0007. As a minimum the chart should show the positions for Project Manager, Quality Assurance Manager, Chief Design Engineer, Planning and Scheduling Manager, Material Manager (Including procurement, inspection, expediting and logistics), Site Manager, and the key area superintendents. Include CVs for the key roles including the number of years of experience that the individual has in the position to be filled, and in hydro power work. Requirement for minimum score of 5, for item 3.1.1 = Applicant shall have proposed qualified personnel to fill the positions defined in the organization chart. In general, Managers shall have a minimum of 15 years experience overall, with minimum of 5 years experience in the position identified on the organization chart. In addition, the Project Manager, the Construction Manager and a significant number of the key area superintendants shall have previous hydro experience.	15	

Table 1 - Technical Capability, Elements for Evaluation and Weighting for Each Element

Element	Weight for Element	Minimum Score
1.0 EXPERIENCE		
3.2 Subcontracting		
3.2.1 Applicant has policies, processes and procedures to select and qualify its subcontractors, suppliers and sub-suppliers.	1	
3.2.2 Applicant has policies, processes and procedures to monitor its subcontractors, suppliers and sub-suppliers.	1	
3.2.3 Applicant has free access to its suppliers, sub-suppliers and subcontractors plants, productions, manufacturing, service or other facilities for quality auditing, monitoring, inspecting or surveillance.	1	
3.3 Off Site Resources		
3.3.1 Applicant has described types of work that it would typically sub-contract.	1	
3.3.2 Applicant appears to have satisfactory facilities that would be used for the Package for Contract CH0007, including the square measure of fabrication facilities, offices, repair facilities, lay-down area, warehouse space, wharfage or other facilities relevant to the Scope of Work.	1	
3.3.3 Applicant appears to have satisfactory number of management, engineering, supervision, trades, employees and any other relevant categories for the personnel working at the locations covered in this Section 3.3.2.	1	
3.3.4 Applicant appears to have satisfactory equipment relevant to the execution of the Package for Prequalification.	2	
3.3.5 Given the Work loading, for the facilities and equipment covered in this Section 3.3, during the timeframe in which the work described for the Package for Prequalification it appears that the Applicant would be able to perform in the time frame indicated.	1	
3.4 Site Resources		
3.4.1 The portions of the Work that the Applicant would subcontract are identified and appear appropriate and effective.	4	
3.4.2 Applicant's list of equipment to perform the Work (construction plant) appears reasonable. In addition, Applicant has an appropriate and effective plan for mobilizing the construction plant to Site.	2	
3.4.4 Applicant appears to have the necessary internal administrative systems and software for the Work. In the case of a Joint Venture, Applicant has an appropriate plan to achieve integration of operations with respect to internal systems and software to be used.	2	
	100	60

Score Evaluation Guide (As a % of the Weight)
0% - Question not answered or no relevant information provided in response.
20% - Response does not meet key criteria.
40% - Response only meets a few of the key criteria.
60% - Response meets a majority of the key criteria.
80% - Response meets all of key criteria.
100%- Response meets and exceeds key criteria.

Table 2 - Commercial Fitness, Elements for Evaluation and Weighting for Each Element

Element	Weight for Element	Minimum Score
Supplier / Commercial Information		
1.0 Details of Applicant Complete	2	
2.0 Details of Organization Complete	2	
3.0 Current Contract Commitments Plus contract for prequalification, compared to the Annual revenue last 3 years, indicate Applicant not overextended.	5	
4.2 Annual revenue over the last 3 years, is at least twice the annual cash flow of the Package for Prequalification.	5	
4.4 Upper limit of Applicant's confirmed bidding range is consistent with the budget for Package CH0007.	5	
Financial Health of the Applicant		
4.2 Annual Revenue, Profit and Debt/Asset Ratio, last 3 years, indicate healthy company; and confirmed by submitted financial statements.	16	
4.10 Applicant not presently involved in any bankruptcy or reorganization proceedings.	5	5
Financial instruments to Perform		20
4.5 Lines of Credit sufficient for Peak Monthly Cash Flow	10	
4.6 Can you supply Performance/Payment bonds? Or 4.7 Letter of Credit?	10	
Contract Administration Performance		
4.9 No Arbitration or Litigation, against Applicant in Last 5 years	2	
4.10 No judgements, claims or suits pending or outstanding against Applicant Business	2	
4.10 Applicant has never cancelled a contract before completion of the work.	2	
4.10 Applicant has never had a draw down on a letter of credit issued for a contract.	2	
There are no issues identified under the headings above that would indicate a trend to negative contract administration.	2	
Lower Churchill Construction Project Benefits Strategy		13
5.1 Read Benefits Strategy & will Comply	10	
5.2 Previous relevant Experience working on projects with a local benefits strategy similar to Lower Churchill.	6	
5.3 Applicant has a named Individual responsible for Newfoundland and Labrador Benefits	3	
5.5 Previous relevant Experience Working with Aboriginal Groups?	2	
5.7 Has Applicant registered with any of the listed aboriginal groups?	2	
5.8 Applicant has Applicant/Aboriginal JVs	2	
Risk Management		
Applicant appears to have a culture supporting proactive risk identification, consistent with Lower Churchill Project.	5	
Score	100	60

Score Evaluation Guide (As a % of the Weight)
0% - Question not answered or no relevant information provided in response.
20% - Response does not meet key criteria.
40% - Response only meets a few of the key criteria.
60% - Response meets a majority of the key criteria.
80% - Response meets all of key criteria.
100%- Response meets and exceeds key criteria.

Table 3 Health and Safety - Elements for Evaluation and Weighting for Each Element

Scoring Guide:
0 - Question not answered or no relevant information provided in response
1 - Response does not meet key Criteria
2 - Response only meets a few of the key criteria
3 - Response meets a majority of the key criteria
4 - Response meets all key criteria
5 - Response meets and exceeds key criteria

Element	Element Weight	Minimum Score
Health and Safety		
2.0 HEALTH AND SAFETY MANAGEMENT PERFORMANCE - Please provide the following safety statistics, referencing the attached incident definitions and frequency calculation.	10	
3.0 WORKER'S COMPENSATION - Indicate the jurisdiction where you are registered. List your overall Worker's Compensation industry rating for the current year and past three (3) years. Attach a WCB clearance letter and experience rating statements for the past three years.	3	
4.1 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you have a certificate of recognition or is your health and safety management system certified by an outside agency? (OHSAS 18001, CSA Z-1000 etc.) If yes, provide a copy of the certificate.	2	
4.2 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Does your health and safety program have a policy statement that clearly outlines the Company's commitment to health and safety?	3	
4.3 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Has your company received an occupational health and safety stop work order, charges or equivalent from any regulator in the last three (3) years? If yes, provide details.	3	
4.4 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Please list the highest ranking safety professional in your organization: (attach résumé). Do you plan to have a safety representative(s) for this Work full time or part time (Y or N)? If "Yes", provide a résumé(s).	3	
4.5 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Does your health and safety management system address the following key elements? Management leadership and commitment; hazard/risk identification, evaluation and control; risk assessments on all critical and non-routine jobs/job functions; a permit to work system; ongoing inspection. If yes to any of these, reference appropriate Health and Safety manual section(s).	8	
4.6 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Does your health and safety management system include work practices and procedures, such as: Lockout and tagout; traffic control; excavation and trenching; confined space entry; hoisting and rigging; working near power lines; handling and transporting hazardous substances; unloading large/long materials (such as piles); vehicle recovery. If yes to any of these, reference appropriate Health and Safety manual section(s).	8	
4.7 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you have written programs for the following? Duty to refuse work; fall protection; noise management; workplace violence; working alone; personal protective equipment (PPE); WHMIS (Workplace Hazardous Materials Information System); respiratory protection. If yes to any of these, reference appropriate Health and Safety manual section(s). In regards to respiratory protection, have your employees been: trained? fit tested? medically approved?	8	
4.8 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you conduct medical exams for the following? Pre-employment; replacement job capacity; pulmonary; respiratory. If yes to any of these, reference appropriate Health and Safety manual section(s).	2	
4.9 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you have a drug and alcohol program? If "Yes", does it include the following? Pre-employment testing; testing for cause; post incident testing; formalized arrangements with a collection and testing agency (if "Yes", provide testing agency information); does your drug and alcohol policy follow the guidelines as laid out in The Canadian Model for Providing A Safe Workplace – Alcohol and Drug Guidelines and Work Rule Version 2 – Effective October 1, 2010? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	
4.10 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Equipment (Tools, Supplies, Machinery and Sanitary Facilities): Do you have a written list of equipment requiring pre-use inspections? Do you have a documented list of equipment requiring scheduled servicing in accordance with manufacturer's recommendations, legislated requirements, and industry standards? Is frequency of equipment inspections and maintenance identified? Are corrections of deficiencies documented? Do you have follow-up mechanism for corrective actions? If yes to any of these, reference appropriate Health and Safety manual section(s).	4	

Table 3 Health and Safety - Elements for Evaluation and Weighting for Each Element

Element	Element Weight	Minimum Score
4.11 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Orientation Program: Do you have a health and safety orientation program? Does the program include new, transferred and temporary workers? Does the program provide instruction on the following: employer health and safety responsibilities; employee health and safety responsibilities; obligation to refuse imminent danger work; progressive discipline policies and procedures; safe work practices and/or procedures; emergency response procedures; first-aid procedures; incident/near miss reporting; does you orientation program include a quiz? If yes to any of these, reference appropriate Health and Safety manual section(s).	5	
4.12 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Incident Investigation: Do you have a written procedure for incident reporting and investigation?; Do you utilize a root cause determination process such as "Tap-Root"? If yes to any of these, reference appropriate Health and Safety manual section(s).	5	
4.13 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you have an emergency response plan related to activities and specific locations? If yes reference appropriate Health and Safety manual section(s).	4	
4.14 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you have a policy pertaining to prohibited items on (e.g. knives, firearms)? Are all employees made aware of the prohibited items policy and is it enforced? If yes to any of these, reference appropriate Health and Safety manual section(s).	1	
4.15 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you make reference to following legislative requirements where work is being performed?; violence policies and procedures; harassment policies and procedures. If yes to any of these, reference appropriate Health and Safety manual section(s).	1	
4.16 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you have a policy or specific rules with respect to the use of personnel protective equipment (PPE)? Do you have a formal process in place for determining PPE requirements? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	
4.17 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Contractor Management: Do you pre-qualify subcontractors?; Do you include subcontractors in: orientations, health and safety meetings, inspections, audits. If yes to any of these, reference appropriate Health and Safety manual section(s).	5	
4.18 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Communications: Do you inform employees and subcontractors on Health and Safety alerts, programs, practices, procedures, rules, revisions and related information ? Do you have a joint Health and Safety committee? Do you hold scheduled safety meetings, such as weekly general safety meetings for all crew and weekly departmental meetings for each department at all worksites? Are Health and Safety meeting minutes and attendance recorded? If yes to any of these, reference appropriate Health and Safety manual section(s).	5	
4.19 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Does your Health and Safety program outline the requirements for supervisors and employees to conduct regular Health and Safety inspections of equipment and work conditions at all worksite(s)? If yes reference appropriate Health and Safety manual section(s).	3	
4.20 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Does your Health and Safety program require the prompt reporting of hazardous conditions at all worksite(s)? If yes reference appropriate Health and Safety manual section(s).	5	
4.21 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Health and Safety Training: Have your employees received the required Health and Safety training and retraining? Do you have a specific Health and Safety training program for supervisors? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	
4.22 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Training Records: Do you have Health and Safety training records for your employees? How do you verify competency of the training (job monitoring? written test? competency check? oral test? other?). Are all training records available upon request? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	
Score	100	70
	Percentag	

Table 4 Environmental - Elements for Evaluation and Weighting for Each Element

Scoring Guide
0 - Question not answered or no relevant information provided in response
1 - Response does not meet key Criteria
2 - Response only meets a few of the key criteria
3 - Response meets a majority of the key criteria
4 - Response meets all key criteria
5 - Response meets and exceeds key criteria

Element	Element Weight	Minimum Score
1. MANAGEMENT INVOLEMENT, LEADERSHIP AND ADMINISTRATION		
1.1 Environmental Management System (ISO or Not)?	4.0	
1.2 Adequacy of TOC (if provided)	3.0	
1.3 Adequacy of Environmental Policy (if provided)	3.0	
1.4 Are Environmental Performance Targets developed and reviewed on a regular basis?	3.0	
1.5 Adequacy of Environmental Performance Target development and review process	3.0	
1.6 Has a formal system, including the use of audits and inspections, been developed to define responsibilities for verifying that environmental performance objectives are met?	2.0	
1.7 Adequacy of audit and inspection information	2.0	
2. ENVIRONMENTAL HAZARD IDENTIFICATION AND RISK MANAGEMENT		
2.1 Does the Bidder conduct formal Risk Assessments when planning and implementing operations and activities?	2.0	
2.2 If "Yes", does that risk assessment include environmental risks?	1.5	
2.3 adequacy of Risk Management System in assessing probabilities and consequences associated with environmental risks	1.5	
2.4 Has a formal Hazard Observation Program been implemented at the Bidder's worksites?	1.0	
2.5 Adequacy of Hazard Observation Program in identifying environmental hazards and environmental non-compliances.	1.0	
3. ORGANIZATIONAL RULES AND WORK PROCEDURES		
3.1 Does the Bidder have documented environmental protection plans for all jobs/work activities?	1.5	
3.2 Does the Bidder have environmental contingency plans (i.e. spill response plans)?	1.5	
3.3 adequacy of contingency plans and organizational chart for relevant plans.	2.5	
3.4 Does the plan outline responsibilities, available resources and actions to be taken in the event of an environmental incident?	2.5	
4. EMPLOYEE KNOWLEDGE, TRAINING AND AWARENESS		
4.1 Does the Bidder have an environmental awareness program?	1.5	
4.2 Does the Bidder provide environmental awareness training to supervisory staff?	3.0	
4.3 What is frequency of environmental awareness training?	3.0	
5. PERSONAL COMMUNICATIONS/ENVIRONMENT MEETINGS		
5.1 Are personal communications conducted to impart environmental awareness with other workers and thereby reducing the likelihood of non compliances or environmental incidents?	2.5	
5.2 Is there a system for sharing best practices and procedures, incidents and other information across the Bidder's organization?	2.5	
6. ENVIRONMENTAL MONITORING AND REPORTING		
6.1 Has the Bidder developed specific procedures for environmental monitoring and reporting on incidents that occur at its worksites?	2.0	
6.2 Adequacy of monitoring and incident procedure	1.5	
6.3 Does the Bidder use an EMS system to establish standards, reporting and follow up and corrective action?	1.5	
6.4 Adequacy of this process	1.0	
6.5 Are supervisors formally trained in accident/investigations?	1.0	

Table 4 Environmental - Elements for Evaluation and Weighting for Each Element

Element	Element Weight	Minimum Score
6.6 Adequacy of training program and frequency	1.5	
6.7 Does the Bidder have dedicated environmental personnel?	2.0	
6.8 Adequacy of organization and roles	1.5	
7. ENVIRONMENTAL INCIDENT ANALYSIS		
7.1 Does the Bidder have in place a formal system for the collection, analysis, trending and evaluation of environmental incident data and statistical analysis?	1.5	
7.2 Does the Bidder develop monthly environmental incident analysis reports, which are reviewed during management review meetings?	1.5	
7.3 Does senior management review and comment on serious and significant environmental incidents?	1.5	
7.4 Are all incident reports followed through from recommendations to completion and closure?	1.5	
8. LEADERSHIP TRAINING		
8.1 Does Bidder's management receive formal environmental management training which provides a thorough understanding of the philosophies and principles behind environmental management?	2.0	
8.2 Adequacy of environmental management training	2.0	
8.3 Does the Bidder's management receive an orientation to the Bidder's Environmental Management System that includes an introduction to individual accountabilities and responsibilities?	2.0	
8.4 Adequacy of EMS orientation in communicating accountability and responsibility to management personnel.	2.0	
9. ENVIRONMENTAL AUDITS, INSPECTIONS AND PREVENTATIVE MAINTENANCE		
9.1 Is there a documented process for performing environmental audits?	2.5	
9.2 Has a formal process been developed to ensure routine environmental monitoring?	2.0	
9.3 Does the Bidder have planned preventative measures in place to prevent environmental incidents?	2.0	
10. ENVIRONMENTAL COMPLIANCE		
10.1 Has a systematic approach been developed to identify and inventory all tasks based on mandatory rules, regulations and applicable codes, guidelines and standards?	2.0	
10.2 Is there a formal process to assess the environmental requirements associated with the tasks to ensure compliance with the requirements?	2.0	
11. SYSTEMS REVIEW AND EVALUATION		
11.1 Does the Bidder's senior management conduct regular reviews of the Environmental Management System, at least annually or at more frequent intervals, as the organization may deem necessary?	2.0	
11.2 Do these reviews include environmental management policies and procedures and other inputs such as the results and recommendations from environmental audits, monitoring and surveys and analysis of incident investigations?	2.0	
12. STATISTICS		
12.1 Number and type of directives from clients or regulators	1.0	
12.2 Oil spill incidents;	1.5	
12.3 Waste management incidents;	1.5	
12.4 Hazardous materials incidents;	1.5	
12.5 Water degradation incidents;	1.5	
12.6 Air degradation incidents; and	1.5	
12.7 Soil degradation incidents.	1.5	
12.8 Total Environmental Incidents	2.0	
Score	100	60

Table 5 - Quality Systems - Elements for Evaluation and Maximum Score for Each Element

Scoring Guide:
0 - Question not answered or no relevant information provided in response 1 - Response does not meet key Criteria 2 - Response only meets a few of the key criteria 3 - Response meets a majority of the key criteria 4 - Response meets all key criteria 5 - Response meets and exceeds key criteria

	Element Weight	Minimum Score
Quality Part A - To be Completed by all Proponents		
Q1. Does your company have a registered Quality Management System? If "yes" please provide a copy of the registration certificate. If "No" proceed to part B of the Questionnaire.	50	
Q2. If company has a registered Quality management system, please provide the Table of Contents of your Quality Manual.	50	
Score Part A	100	60.00
Quality Part B - To be completed by proponents that "does not" have a registered ISO 9001:2008 QMS		
Q3. If you do not have a registered Quality Management System, please explain how your organization controls its processes to ensure that you meet the customer's requirements.	15	
Q4. Are there written procedures for your core processes? Please list.	15	
Q5. How do you ensure that your main subcontractors meet specified requirements (including requirements for Quality)?	15	
Q6. What are your processes for addressing problems and opportunities for improvement? Provide details.	10	
Q7. Do you have a documented audit schedule for both internal and external audits?	10	
Q8. What is your process for responding to customer complaints or corrective action requests?	10	
Q9. Describe your process for investigating the root cause of problems and implementing effective corrective action.	10	
Q10. Is there a procedure for management of hard copy and electronic records?	10	
Q11. Please provide contact information for two client references and details of products or services provided.	5	
Score Part B	100	60.00

APPENDIX C FINDINGS

Table C.1 Ranking of Applicants in *Engineering News-Record Top 225 Global Contractors*

Applicant	Company or Ultimate Parent	ENR Top 225 Global Ranking (2011)	Revenue 2010 $Million
Acciona Infrastructure Canada Inc	**ACCIONA INFRAESTRUCTURAS,** Madrid, Spain†	61	4,034
Aecon-Flatiron-Construction Demathieu & Bard – Joint Venture	**AECON GROUP INC.,** Toronto, Ontario, Canada	91	2,667
Astaldi S.P.A.	**ASTALDI SPA,** Rome, Italy	93	2,564
Barnard-Dragados J.V.	**GRUPO ACS,** Madrid, Spain†	9	20,631
Impregilo S.p.A.	**IMPREGILO SPA,** Milan, Italy†	96	2,472
IKC-ONE Civil Constructors, a Partnership	**KIEWIT CORP.,** Omaha, Neb., U.S.A.†	32	8,206
Salini S.p.A. /FCC Construccion, S.A JV	**SALINI COSTRUTTORI SPA,** Rome, Italy†	141	1,500
OHL Construction Canada Inc.	**OHL,** Madrid, Spain†	38	6,480
Strabag Inc.	**STRABAG SE,** Vienna, Austria†	22	12,777

Note: Top 225 Global means: The Top 225 Global Contractors list, published annually in August, ranks the 225 largest world construction contractors, both publicly and privately held, based on total construction contracting revenue regardless of where the projects were located

TABLE C.2 - SUMMARY OF THE PREQUALIFICATION EVALUATION - PACKAGE CH0007

Category	Weight for Category	Minimum Score	Acciona	Aecon - Flatiron - Demathieu&B	Astaldi	Barnard	Impregilo	IKC-ONE	Salini	OHL	Strabag
			Score	Score	Score	Score	Score	Score	Score	Score	Score
Technical											
Technical	0.45	60	67.7	86	86.9	71.9	90.6	95.7	84.9	68.1	72.8
Commercial											
Commercial	0.20	60	65.12	82.42	79.9	83.35	82	87.12	81.08	76.5	85.7
Health and Safety											
Health and Safety	0.10	70	72.2	73.2	71.2	72.6	70.6	77.8	70.4	70.2	70.2
Environmental											
Environmental	0.10	60	98.3	88.82	89.9	85.78	93.7	68.58	89.95	80.2	75.95
Quality											
Quality	0.15	60	80	66	80	80	80	80	80	80	80
Overall Score			72.54	81.29	83.20	76.86	85.60	87.13	82.46	72.99	76.52
RANK			9	5	3	6	2	1	4	8	7

Table C.3.1 - Scoring for Technical Capability Evaluation

Element	Weight for Element	Minimum Score	Acciona		Aecon		Astaldi		Barnard		Impregilo		IKC-ONE		Salini		Ohl		Strabag	
			Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
1.0 EXPERIENCE																				
1.2 Number of contracts undertaken in the last 10 years which are of a similar nature and complexity as Package CH0007 for Prequalification.	20		50	10	65	13	85	17	75	15	100	20	100	20	100	20	75	15	90	18
Requirement for minimum score of 10, = at least one contract executed of similar nature and complexity and with at least 150,000 m3 of concrete placed																				
2.0 TECHNICAL SPECIFIC																				
2.1 Experience in production of concrete and/or operation of concrete batching plants. Projects were the Applicant was responsible for concrete production including the aggregate fabrication, mix design and quality control.	3		95	2.85	95	2.85	100	3	50	1.5	100	3	95	2.85	100	3	90	2.7	100	3
2.2 Experience in placing concrete in an environment with climatic conditions similar to Labrador? Applicant to describe the protection measures taken for concreting during the cold months and indicate the average and peak concreting production achieved during the cold period and summer period?	10		80	8	95	9.5	80	8	40	4	95	9.5	100	10	75	7.5	25	2.5	25	2.5
2.3 Experience in fabricating and installing steel superstructure.	3		95	2.85	95	2.85	95	2.85	95	2.85	95	2.85	95	2.85	95	2.85	95	2.85	95	2.85
2.4 Applicant has a satisfactory organization with respect to Design work.	3		95	2.85	95	2.85	95	2.85	40	1.2	95	2.85	95	2.85	75	2.25	100	3	100	3
2.5 Applicant would be able to mobilize its equipment and team in a timely manner.	3		80	2.4	80	2.4	90	2.7	100	3	100	3	80	2.4	90	2.7	80	2.4	80	2.4
2.6 Experience in construction of large Hydro Electric Powerhouses.	10		50	5	85	8.5	80	8	85	8.5	100	10	95	9.5	100	10	85	8.5	95	9.5
2.7 Experience in construction of large Gated Spillways.	6		80	4.8	80	4.8	90	5.4	95	5.7	100	6	95	5.7	100	6	80	4.8	95	5.7
2.8 Experience in construction of concrete gravity dams.	2		95	1.9	95	1.9	95	1.9	95	1.9	100	2	75	1.5	80	1.6	85	1.7	75	1.5
2.9 Applicant has satisfactory organization/arrangements in place for the execution of specialized formwork, such as the formwork for draft tube and spiral case.	2		95	1.9	95	1.9	95	1.9	95	1.9	100	2	100	2	95	1.9	95	1.9	90	1.8
2.10 Experience in rock plug excavation (submerged rock).	2		95	1.9	95	1.9	95	1.9	95	1.9	95	1.9	100	2	95	1.9	75	1.5	75	1.5
2.11 Experience in bridge construction	2		100	2	100	2	100	2	100	2	100	2	95	1.9	100	2	100	2	100	2
2.12 Applicant appears to have proper organization for planning concrete pours.	2		85	1.7	90	1.8	80	1.6	100	2	95	1.9	77	1.54	90	1.8	95	1.9	85	1.7
3.0 ORGANIZATION AND RESOURCES																				
3.1 Project and Site Organization																				
3.1.1 Project and Site Organization that would execute the scope of work of package CH0007. As a minimum the chart should show the positions for Project Manager, Quality Assurance Manager, Chief Design Engineer, Planning and Scheduling Manager, Material Manager (including procurement, inspection, expediting and logistics), Site Manager, and the key area superintendents. Include CVs for the key roles including the number of years of experience that the individual has in the position to be filled, and in hydro power work.	15		29	4.35	100	15	83	12.45	47	7.05	74	11.1	95	14.25	61	9.15	39	5.85	45	6.75
Requirement for minimum score of 5, for item 3.1.1 = Applicant shall have proposed qualified personnel to fill the positions defined in the organization chart. In general, Managers shall have a minimum of 15 years experience overall, with minimum of 5 years experience in the position identified on the organization chart. In addition, the Project Manager, the Construction Manager and a significant number of the key area superintendants shall have previous hydro experience.																				

Table C.3.1 - Scoring for Technical Capability Evaluation

			Acciona		Aecon		Astaldi		Barnard		Impregilo		IKC-ONE		Salini		Ohl		Strabag	
Element	Weight for Element	Minimum Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
3.2 Subcontracting																				
3.2.1 Applicant has policies, processes and procedures to select and qualify its subcontractors, suppliers and sub-suppliers.	1		95	0.95	100	1	95	0.95	60	0.6	60	0.6	95	0.95	30	0.3	95	0.95	20	0.2
3.2.2 Applicant has policies, processes and procedures to monitor its subcontractors, suppliers and sub-suppliers.	1		95	0.95	60	0.6	60	0.6	95	0.95	95	0.95	95	0.95	30	0.3	100	1	60	0.6
3.2.3 Applicant has free access to its suppliers, sub-suppliers and subcontractors plants, productions, manufacturing, service or other facilities for quality auditing, monitoring, inspecting or surveillance.	1		95	0.95	95	0.95	95	0.95	95	0.95	95	0.95	95	0.95	95	0.95	95	0.95	95	0.95
3.3 Off Site Resources																				
3.3.1 Applicant has described types of work that it would typically sub-contract.	1		95	0.95	100	1	40	0.4	40	0.4	70	0.7	100	1	50	0.5	35	0.35	20	0.2
3.3.2 Applicant appears to have satisfactory facilities that would be used for the Package for Contract CH0007, including the square measure of fabrication facilities, offices, repair facilities, lay-down area, warehouse space, wharfage or other facilities relevant to the Scope of Work.	1		60	0.6	95	0.95	95	0.95	95	0.95	50	0.5	95	0.95	100	1	60	0.6	95	0.95
3.3.3 Applicant appears to have satisfactory number of management, engineering, supervision, trades, employees and any other relevant categories for the personnel working at the locations covered in this Section 3.3.2.	1		95	0.95	40	0.4	95	0.95	100	1	60	0.6	95	0.95	20	0.2	80	0.8	20	0.2
3.3.4 Applicant appears to have satisfactory equipment relevant to the execution of the Package for Prequalification.	2		100	2	95	1.9	95	1.9	100	2	95	1.9	95	1.9	95	1.9	95	1.9	95	1.9
3.3.5 Given the Work loading, for the facilities and equipment covered in this Section 3.3, during the timeframe in which the work described for the Package for Prequalification it appears that the Applicant would be able to perform in the time frame indicated.	1		100	1	100	1	100	1	100	1	100	1	100	1	100	1	100	1	100	1
3.4 Site Resources																				
3.4.1 The portions of the Work that the Applicant would subcontract are identified and appear appropriate and effective.	4		95	3.8	100	4	95	3.8	50	2	40	1.6	100	4	80	3.2	20	0.8	20	0.8
3.4.2 Applicant's list of equipment to perform the Work (construction plant) appears reasonable. In addition, Applicant has an appropriate and effective plan for mobilizing the construction plant to Site.	2		100	2	95	1.9	95	1.9	100	2	95	1.9	95	1.9	95	1.9	95	1.9	95	1.9
3.4.4 Applicant appears to have the necessary internal administrative systems and software for the Work. In the case of a Joint Venture, Applicant has an appropriate plan to achieve integration of operations with respect to internal systems and software to be used.	2		50	1	50	1	95	1.9	75	1.5	90	1.8	90	1.8	50	1	60	1.2	95	1.9
	100	60		67.7		86.0		86.9		71.9		90.6		95.7		84.8		68.1		72.6

Score Evaluation Guide (As a % of the Weight)
0% - Question not answered or no relevant information provided in response.
20% - Response does not meet key criteria.
40% - Response only meets a few of the key criteria.
60% - Response meets a majority of the key criteria.
95% - Response meets all of key criteria.
100%- Response meets and exceeds key criteria.

Table C.3.2 - SCORING FOR THE COMMERCIAL EVALUATION

Element	Weight for Element	Minimum Score	Acciona		Aecon - Flatiron - Dematthieu&Bard JV		Astaldi		Barnard		Impregilo		IKC-ONE		Salini		OHL		Strabag	
			Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
Supplier / Commercial Information																				
1.0 Details of Applicant Complete	2			2		2		2		2		2		2		1.4		2		2
2.0 Details of Organization Complete	2			2		2		2		2		1.2		2		1.2		2		2
3.0 Current Contract Commitments Plus contract for prequalification, compared to the Annual revenue last 3 years, indicate Applicant not overextended.	5			5		4.4		3		5		3		5		4.5		5		5
4.2 Applicant Annual revenue over the last 3 years, is at least twice the annual cash flow of the Package for Prequalification (240 Million) for 60% of points, three times for 80%.	5			5		5		5		4		5		4.6		5		5		5
4.4 Upper limit of Applicant's confirmed bidding range is consistent with the budget for Package CH0007.	5			5		5		5		4		5		3.65		5		5		5
Financial Health of the Applicant								0				0						0		0
Financial Health of the Applicant: Financial Score based on 2 points for each year of profit in 2009 to 2011; 4 points for Debt to Asset Ratio – 4 points for 60%,to 0 for 100% - ; and 6 points for Current Assets to Current Liabilities Ratio – 2 Points for 1 Increasing to 6 points for 2.5	16			10.92		11.66		10.30		11.65		11.00		13.71		9.98		7.40		11.60
4.10 Applicant not presently involved in any bankruptcy or reorganization proceedings.	5	5		5		5		5		5		5		5		5		5		5
Financial Instruments to Perform		20						0										0		
4.5 Lines of Credit sufficient for Peak Monthly Cash Flow	10		Fail	2		10		10		10		10		10		10		10		10
4.6 Applicant able to supply Performance and Payment bonds based on Letter from Surety	10		Fail	2		10		10		10		10		10		10		10		10
Contract Administration Performance								0										0		
4.9 No Arbitration or Litigation, against Applicant in Last 5 years	2			2		0.72		1		1.1		1.6		0.56		1.4		1.2		2
4.10 No judgements, claims or suits pending or outstanding against Applicant Business	2			2		2		2		1.6		2		1.12		2		0.8		2
4.10 Applicant has never cancelled a contract before completion of the work.	2			2		2		2		2		2		2		2		2		2
4.10 Applicant has never had a draw down on a letter of credit issued for a contract.	2			2		2		2		2		2		2		2		0.8		2
There are no issues identified under the headings above that would indicate a trend to negative contract administration.	2			1.6		1.52		1		1.2		1.6		1.2		1.4		1.2		2
Lower Churchill Construction Project Benefits Strategy		13						0										0		
5.1 Read Benefits Strategy & will Comply	10			10		10		10		10		10		10		10		10		10
5.2 Previous relevant Experience working on projects with a local benefits strategy similar to Lower Churchill.	6			0		2.16		3.6		4.2		3.6		4.2		4.2		3.6		3.6
5.3 Applicant has a named individual responsible for Newfoundland and Labrador Benefits	3			3		3		3		3		3		3		3		3		3
5.5 Previous relevant Experience Working with Aboriginal Groups?	2			1.6		0.96		0		1.6		0		1.64		0		0		0
5.7 Has Applicant registered with any of the listed aboriginal groups?	2			0		0		0		0		0		0.72		0		0		0
5.8 Applicant has Applicant/Aboriginal JVs	2			0		0		0		0		0		0.72		0		0		0
Risk Management								0				0						0		
				2		3		3		3		4	80	4		3		2.5		3.5
				65.12		82.42		79.9		83.35		82		87.12		81.08		76.5		85.7

Score Evaluation Guide (As a % of the Weight)
0% - Question not answered or no relevant information provided in response.
20% - Response does not meet key criteria.
40% - Response only meets a few of the key criteria.
60% - Response meets a majority of the key criteria.
80% - Response meets all of key criteria.
100%- Response meets and exceeds key criteria.

Table C.3.3 Scoring for Health and Safety Evaluation

RFP Health and Safety Evaluation

RFP #:	RFP Name:

Scoring Guide:

0 - Question not answered or no relevant information provided in response
1 - Response does not meet key Criteria
2 - Response only meets a few of the key criteria
3 - Response meets a majority of the key criteria
4 - Response meets all key criteria
5 - Response meets and exceeds key criteria

	Question	Acciona		Aecon		Astaldi		Barnard		Impregilo		IKC-ONE		Salini		OHL		Strabag	
	Weight (%)	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
Health and Safety																			
1.0 HEALTH AND SAFETY MANAGEMENT PERFORMANCE - Please provide the following safety statistics, referencing the attached incident definitions and frequency calculation.	10	4	8	3	6	4	8	4	8	2	4	4	8	4	8	4	8	2	4
2.0 WORKER'S COMPENSATION RATES - Indicate the jurisdiction where you are registered. List your overall Worker's Compensation Industry rating for the current year and past three (3) years. Attach a WCB clearance letter and experience rating statements for the past three years.	3	3	1.8	3	1.8	3	1.8	3	1.8	0	0	4	2.4	3	1.8	3	1.8	2	1.2
3. H&S MANAGEMENT SYSTEM CERTIFICATION - Do you have a certificate of recognition or is your health and safety management system certified by an outside agency? (OHSAS 18001, CSA Z-1000 etc.) If yes, provide a copy of the certificate.	2	3	1.2	4	1.6	3	1.2	4	1.6	4	1.6	4	1.6	3	1.2	4	1.6	3	1.2
4. H&S POLICY STATEMENT - Does your health and safety program have a policy statement that clearly outlines the Company's commitment to health and safety?	3	4	2.4	4	2.4	4	2.4	4	2.4	4	2.4	4	2.4	4	2.4	4	2.4	4	2.4
5. REGULATORY COMPLIANCE PERFORMANCE - Has your company received an occupational health and safety stop work order, charges or equivalent from any regulator in the last three (3) years? If yes, provide details.	3	4	2.4	4	2.4	4	2.4	4	2.4	4	2.4	4	2.4	4	2.4	4	2.4	4	2.4
6. SAFETY PROFESSIONALS - Please list the highest ranking safety professional in your organization: (attach résumé). Do you plan to have a safety representative(s) for this Work full time or part time (Y or N)? If "Yes", provide a résumé(s).	3	4	2.4	4	2.4	4	2.4	3	1.8	4	2.4	4	2.4	4	2.4	3	1.8	4	2.4

Table C.3.3 Scoring for Health and Safety Evaluation

7. KEY PROGRAM ELEMENTS - Does your health and safety management system address the following key elements? Management leadership and commitment; hazard/risk identification, evaluation and control; risk assessments on all critical and non-routine jobs/job functions; a permit to work system; ongoing inspection. If yes to any of these, reference appropriate Health and Safety manual section(s).	8	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4
8. KEY PROGRAM ELEMENTS - Does your health and safety management system include work practices and procedures, such as: Lockout and tagout; traffic control; excavation and trenching; confined space entry; hoisting and rigging; working near power lines; handling and transporting hazardous substances; unloading large/long materials (such as piles); vehicle recovery. If yes to any of these, reference appropriate Health and Safety manual section(s).	8	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4
9. WRITTEN PROGRAM ELEMENTS - Do you have written programs for the following? Duty to refuse work; fall protection; noise management; workplace violence; working alone; personal protective equipment (PPE); WHMIS (Workplace Hazardous Materials Information System); respiratory protection. If yes to any of these, reference appropriate Health and Safety manual section(s). In regards to respiratory protection, have your employees been: trained? fit tested? medically approved?.	8	3	4.8	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4	4	6.4
10. MEDICAL EXAMINATIONS - Do you conduct medical exams for the following? Pre-employment; replacement job capacity; pulmonary; respiratory. If yes to any of these, reference appropriate Health and Safety manual section(s).	2	0	0	4	1.6	4	1.6	3	1.2	4	1.6	4	1.6	3	1.2	3	1.2	4	1.6
11. DRUG AND ALCOHOL PROGRAM - Do you have a drug and alcohol program? If "Yes", does it include the following? Pre-employment testing; testing for cause; post incident testing; formalized arrangements with a collection and testing agency (if "Yes", provide testing agency information); does your drug and alcohol policy follow the guidelines as laid out in The Canadian Model for Providing A Safe Workplace -- Alcohol and Drug Guidelines and Work Rule Version 2 -- Effective October 1, 2010? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	2	1.2	4	2.4	0	0	4	2.4	2	1.2	3	1.8	0	0	0	0	0	0

Table C.3.3 Scoring for Health and Safety Evaluation

12. TOOL AND EQUIPMENT PREVENTATIVE MAINTENANCE, USAGE AND INSPECTIONS : Do you have a written list of equipment requiring pre-use inspections? Do you have a documented list of equipment requiring scheduled servicing in accordance with manufacturer's recommendations, legislated requirements, and industry standards? Is frequency of equipment inspections and maintenance identified? Are corrections of deficiencies documented? Do you have follow-up mechanism for corrective actions? If yes to any of these, reference appropriate Health and Safety manual section(s).	4	4	3.2	3	2.4	4	3.2	3	2.4	4	3.2	4	3.2	3	2.4	4	3.2	3	2.4
13. ORIENTATION PROGRAM - Do you have a health and safety orientation program? Does the program include new, transferred and temporary workers? Does the program provide instruction on the following: employer health and safety responsibilities; employee health and safety responsibilities; obligation to refuse imminent danger work; progressive discipline policies and procedures; safe work practices and/or procedures; emergency response procedures; first-aid procedures; incident/near miss reporting; does you orientation program include a quiz? If yes to any of these, reference appropriate Health and Safety manual section(s).	5	4	4	3	3	4	4	3	3	4	4	4	4	3	3	3	3	3	3
14. INCIDENT REPORTING AND INVESTIGATION - Do you have a written procedure for incident reporting and investigation?; Do you utilize a root cause determination process such as "Tap-Root"? If yes to any of these, reference appropriate Health and Safety manual section(s).	5	4	4	4	4	4	4	3	3	4	4	4	4	4	4	4	4	4	4
15. EMERGENCY RESPONSE PROGRAM - Do you have an emergency response plan related to activities and specific locations? If yes reference appropriate Health and Safety manual section(s).	4	3	2.4	3	2.4	3	2.4	3	2.4	3	2.4	3	2.4	4	3.2	3	2.4	4	3.2
16. FIREARM AND WEAPON POLICY - Do you have a policy pertaining to prohibited items on (e.g. knives, firearms)? Are all employees made aware of the prohibited items policy and is it enforced? If yes to any of these, reference appropriate Health and Safety manual section(s).	1	4	0.8	4	0.8	0	0	4	0.8	4	0.8	3	0.6	0	0	4	0.8	4	0.8
17. LEGISLATIVE AND REGULATORY COMPLIANCE PROGRAM - Do you make reference to following legislative requirements where work is being performed?; violence policies and procedures; harassment policies and procedures. If yes to any of these, reference appropriate Health and Safety manual section(s).	1	4	0.8	4	0.8	4	0.8	4	0.8	4	0.8	4	0.8	3	0.6	4	0.8	4	0.8

Table C.3.3 Scoring for Health and Safety Evaluation

18. PERSONAL PROTECTIVE EQUIPMENT PROGRAM - Do you have a policy or specific rules with respect to the use of personnel protective equipment (PPE)? Do you have a formal process in place for determining PPE requirements? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	4	2.4	4	2.4	4	2.4	4	2.4	4	2.4	3	1.8	4	2.4	4	2.4	4	2.4
19. CONTRACTOR MANAGEMENT - Do you pre-qualify subcontractors?; Do you include subcontractors in: orientations, health and safety meetings, inspections, audits. If yes to any of these, reference appropriate Health and Safety manual section(s).	5	3	3	3	3	3	3	3	3	3	3	4	4	4	4	3	3	4	4
20. COMMUNICATIONS - Do you inform employees and subcontractors on Health and Safety alerts, programs, practices, procedures, rules, revisions and related information ? Do you have a joint Health and Safety committee? Do you hold scheduled safety meetings, such as weekly general safety meetings for all crew and weekly departmental meetings for each department at all worksites? Are Health and Safety meeting minutes and attendance recorded? If yes to any of these, reference appropriate Health and Safety manual section(s).	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
21. SUPERVISOR SAFETY INSPECTIONS - Does your Health and Safety program outline the requirements for supervisors and employees to conduct regular Health and Safety inspections of equipment and work conditions at all worksite(s)? If yes reference appropriate Health and Safety manual section(s).	3	3	1.8	4	2.4	3	1.8	3	1.8	4	2.4	4	2.4	4	2.4	3	1.8	4	2.4
22. HAZARD REPORTING - Does your Health and Safety program require the prompt reporting of hazardous conditions at all worksite(s)? If yes reference appropriate Health and Safety manual section(s).	5	4	4	4	4	3	3	4	4	4	4	4	4	4	4	4	4	4	4
23.HEALTH AND SAFETY TRAINING Have your employees received the required Health and Safety training and retraining? Do you have a specific Health and Safety training program for supervisors? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	4	2.4	4	2.4	3	1.8	3	1.8	4	2.4	4	2.4	3	1.8	3	1.8	4	2.4
24. TRAINING RECORDS - Do you have Health and Safety training records for your employees? How do you verify competency of the training (job monitoring? written test? competency check? oral test? other?). Are all training records available upon request? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	4	2.4	3	1.8	3	1.8	4	2.4	4	2.4	4	2.4	3	1.8	4	2.4	4	2.4
Score	100	72.20		73.20		71.20		72.60		70.60		77.80		72.20		72.00		70.20	
	Percentage	**72.20%**		**73.20%**		**71.20%**		**72.60%**		**70.60%**		**77.80%**		**72.20%**		**72.00%**		**70.20%**	
	Pass/Fail	**Pass**		**Pass**		**Pass**		**Pass**		**Pass**		**Pass**		**Pass**		**Pass**		**Pass**	
		Company does not have Employee		All areas evaluated meets the H&S		All areas evaluated meets the H&S		H&S Management system is adequate		Overall H&S program and documentation		Strong overall H&S Program		H&S Management system is adequate		All areas evaluated meets the H&S		H&S Management system is adequate	

Health, Safety Environment (HSE) Scoring Grid

Table C.3.3 Scoring for Health and Safety Evaluation

medical program as required. Remainder of H&S Management System meets the requirements	requirements of the evaluation program	requirements of the evaluation program	but lacks active employee Drug and Alcohol Program in alignment with the Canadian Model	meets the requirements. Company did not provide H&S Injury performance as requested.		but lacks active employee Drug and Alcohol Program in alignment with the Canadian Model	requirements of the evaluation program	but lacks active employee Drug and Alcohol Program in alignment with the Canadian Model

Minimum Pass Score is 70%

Evaluated By	Sean Lee
Reviewed By	Randy Walker
Review Date	2012-08-02

RFP #: CH0007 Table C.3.4 Scoring for the Environmental Evaluation

			Applicant 1		Applicant 2						Applicant 3		Applicant 4		Applicant 5		Applicant 6								Applicant 7				Applicant 8		Applicant 9		
	Weight	Max Score	Actions Infrastructure Canada Inc		Aecon (lead)		Flatiron		Construction Dumas Inc and Sard		Astaldi S.P.A.		Barnard (lead)		Dragados		Impregilo		Innu-Kiewit (lead)		H.J. O'Connell Const.		Nelson Inc.		ESC Inc		Salini S.P.A (lead)		FCC Construccion		OHL Construction Canada Inc		Strabag		Scoring Instructions
			Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	
1. MANAGEMENT INVOLEMENT, LEADERSHIP AND ADMINISTRATION																																	
1.1 Environmental Management System (ISO or Not)?	4.0	20	5.0	4.00	5.0	2.40	5.0	4.00	5.0	4.00	5.0	4.00	0.0	0.00	5.0	4.00	5.0	4.00	5.0	4.00	5.0	4.00	0.0	0.00	3.0	2.40	5.0	4.00	5.0	4.00	5.0	4.00	0.0	0.00	If ISO Score 5, if not ISO Score 3, if No System score 0
1.2 Adequacy of TOC (if provided)	3.0	15	5.0	3.00	5.0	3.00	5.0	3.00	2.0	1.20	5.0	3.00	4.0	2.40	5.0	3.00	5.0	3.00	5.0	3.00	4.0	2.40	2.0	1.20	4.0	2.40	5.0	3.00	5.0	3.00	5.0	3.00	4.0	2.40	Rank adequacy 1 - 5; if not provided Score 0
1.3 Adequacy of Environmental Policy (if provided)	3.0	15	5.0	3.00	0.0	0.00	3.0	1.80	4.0	2.40	5.0	3.00	4.0	2.40	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	0.0	0.00	0.0	0.00	5.0	3.00	5.0	3.00	5.0	3.00	3.5	1.50	Rank adequacy 1 - 5; if not provided Score 0
1.4 Are Environmental Performance Targets developed and reviewed on a regular basis?	3.0	15	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	0.0	0.00	0.0	0.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	Yes = 5; No = 0
1.5 Adequacy of Environmental Performance Target development and review process	3.0	15	5.0	3.00	3.0	1.80	4.0	2.40	2.0	1.20	5.0	3.00	3.0	1.80	5.0	3.00	4.0	2.40	5.0	3.00	0.0	0.00	0.0	0.00	4.0	2.40	5.0	3.00	5.0	3.00	0.0	0.00	4.0	2.40	Rank adequacy 1 - 5; if not provided Score 0
1.6 Has a formal system, including the use of audits and inspections, been developed to define responsibilities for verifying that environmental performance objectives are met?	4.0	20	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	0.0	0.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
1.7 Adequacy of audit and inspection information	3.0	15	5.0	2.00	4.0	1.60	4.0	1.60	4.0	1.60	5.0	2.00	3.5	1.40	5.0	2.00	4.0	1.60	5.0	2.00	0.0	0.00	0.0	0.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	4.0	1.60	Rank adequacy 1 - 5; if not provided Score 0
2. ENVIRONMENTAL HAZARD IDENTIFICATION AND RISK MANAGEMENT																																	
2.1 Does the Bidder conduct formal Risk Assessments when planning and implementing operations and activities?	4.0	20	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
2.2 If "Yes", does that risk assessment include environmental risks?	3.0	15	5.0	1.50	5.0	1.50	5.0	1.50	4.0	1.20	5.0	1.50	3.0	0.90	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	3.0	0.90	4.0	1.20	Yes = 5; No = 0
2.3 adequacy of Risk Management System in assessing probabilities and consequences associated with environmental risks	3.0	15	5.0	1.50	3.0	0.90	5.0	1.50	2.0	0.60	4.0	1.20	3.0	0.90	5.0	1.50	4.0	1.20	4.0	1.20	3.0	0.90	2.0	0.60	2.0	0.60	5.0	1.50	5.0	1.50	1.0	0.30	3.0	0.90	Rank adequacy 1 - 5; if not provided Score 0
2.4 Has a formal Hazard Observation Program been implemented at the Bidder's worksites?	1.0	5.0	5.0	1.00	5.0	1.00	5.0	1.00	5.0	1.00	0.0	0.00	5.0	1.00	5.0	1.00	5.0	1.00	0.0	0.00	5.0	1.00	0.0	0.00	5.0	1.00	5.0	1.00	5.0	1.00	5.0	1.00	5.0	1.00	Yes = 5; No = 0
2.5 Adequacy of Hazard Observation Program in identifying environmental hazards and environmental non-compliances.	2.0	10	5.0	1.00	4.0	0.80	5.0	1.00	2.0	0.40	0.0	0.00	3.5	0.70	5.0	1.00	4.0	0.80	0.0	0.00	5.0	1.00	0.0	0.00	4.0	0.80	5.0	1.00	5.0	1.00	1.0	0.20	3.5	0.70	Rank adequacy 1 - 5; if not provided Score 0
3. ORGANIZATIONAL RULES AND WORK PROCEDURES																																	
3.1 Does the Bidder have documented environmental protection plans for all jobs/work activities?	3.0	15	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
3.2 Does the Bidder have environmental contingency plans (i.e. spill response plans)?	3.0	15	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
3.3 adequacy of contingency plans and organizational chart for relevant plans.	2.5	12.5	5.0	2.50	4.0	2.00	3.5	1.75	2.0	1.00	3.0	1.50	4.0	2.00	3.0	1.50	3.0	1.50	4.0	2.00	4.0	2.00	5.0	2.50	5.0	2.50	5.0	2.50	4.0	2.00	4.0	2.00	4.0	2.00	Rank adequacy 1 - 5; if not provided Score 0
3.4 Does the plan outline responsibilities, available resources and actions to be taken in the event of an environmental incident?	3.0	15	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	3.0	1.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	4.0	2.00	Yes = 5; No = 0
4. EMPLOYEE KNOWLEDGE, TRAINING AND AWARENESS																																	
4.1 Does the Bidder have an environmental awareness program?	3.0	15	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
4.2 Does the Bidder provide environmental awareness training to supervisory staff?	3.0	15	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	3.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	Yes = 5; No = 0
4.3 What is frequency of environmental awareness training?	3.0	15	5.0	3.00	5.0	1.80	3.0	1.80	3.0	1.80	3.0	1.80	4.0	2.40	4.0	2.40	3.0	1.80	1.0	0.60	1.0	0.60	4.0	2.40	4.0	2.40	5.0	3.00	1.0	0.60	5.0	3.00	1.0	0.60	Score 1-5. If monthly score 5; if bimonthly score 4; if quarterly score 3; if biannually score 2; if annually score 1
5. PERSONAL COMMUNICATIONS/ENVIRONMENT MEETINGS																																	
5.1 Are personal communications conducted to impart environmental awareness with other workers and thereby reducing the likelihood of non compliances or environmental incidents?	2.5	12.5	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	0.0	0.00	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	Yes = 5; No = 0
5.2 Is there a system for sharing best practices and procedures, incidents and other information across the Bidder's organization?	2.5	10	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	0.0	0.00	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	Yes = 5; No = 0
6. ENVIRONMENTAL MONITORING AND REPORTING																																	
6.1 Has the Bidder developed specific procedures for environmental monitoring and reporting on incidents that occur at its worksites?	4.0	20	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
6.2 Adequacy of monitoring and incident procedure	3.0	15	5.0	1.50	3.0	0.90	5.0	1.50	2.0	0.60	3.0	0.90	4.0	1.20	5.0	1.50	4.0	1.20	4.0	1.20	4.0	1.20	0.0	0.00	3.0	0.90	5.0	1.50	5.0	1.50	4.0	1.20	4.0	1.20	Rank adequacy 1 - 5; if not provided Score 0
6.3 Does the Bidder use an EMS system to establish standards, reporting and follow up and corrective action?	3.0	15	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
6.4 Adequacy of this process	1.0	5.0	5.0	1.00	5.0	1.00	5.0	1.00	0.0	0.00	5.0	1.00	4.0	0.80	5.0	1.00	4.0	0.80	5.0	1.00	5.0	1.00	0.0	0.00	2.0	0.40	4.0	0.80	4.0	0.80	5.0	1.00	4.0	0.80	Rank adequacy 1 - 5; if not provided Score 0
6.5 Are supervisors formally trained in accident/investigations?	1.0	5.0	5.0	1.00	5.0	1.00	5.0	1.00	0.0	0.00	5.0	1.00	5.0	1.00	5.0	1.00	5.0	1.00	5.0	1.00	5.0	1.00	0.0	0.00	5.0	1.00	0.0	0.00	5.0	1.00	5.0	1.00	5.0	1.00	Yes = 5; No = 0
6.6 Adequacy of training program and frequency	1.5	7.5	2.0	0.30	5.0	1.50	4.0	1.20	0.0	0.00	4.0	1.20	3.0	0.90	5.0	1.50	4.0	1.20	3.0	0.90	5.0	1.50	0.0	0.00	4.0	1.20	0.0	0.00	5.0	1.50	4.0	1.20	3.5	1.05	Rank adequacy 1 - 5; if not provided Score 0
6.7 Does the Bidder have dedicated environmental personnel?	2.0	10	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
6.8 Adequacy of organization and roles	1.5	7.5	5.0	1.50	4.0	1.20	5.0	1.50	3.0	0.90	4.0	1.20	3.5	1.05	5.0	1.50	5.0	1.50	4.0	1.20	2.0	0.60	3.0	0.90	4.0	1.20	5.0	1.50	5.0	1.50	4.0	1.20	5.0	1.50	Rank adequacy 1 - 5; if not provided Score 0

RFP #: CH0007 Table C.3.4 Scoring for the Environmental Evaluation

	Weight	Max Score	Applicant 1		Applicant 2				Applicant 3		Applicant 4				Applicant 5		Applicant 6								Applicant 7				Applicant 8		Applicant 9		Scoring Instructions
			Actione Infrastructure Canada Inc		Aecom (lead)		Flatiron		Construction Dumas Inc and Bird		Ashaldi S.P.A.		Barnard (lead)		Dragados		Impregilo		Innu-Kiewit (lead)		H.J. O'Connell Const.		Neilson Inc		EBC Inc		Salini S.P.A (lead)		PCC Construction		OHL Construction Canada Inc		Strabag		
			Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	
7. ENVIRONMENTAL INCIDENT ANALYSIS																																	
7.1 Does the Bidder have in place a formal system for the collection, analysis, trending and evaluation of environmental incident data and statistical analysis?	1.0	5.0	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
7.2 Does the Bidder develop monthly environmental incident analysis reports, which are reviewed during management review meetings?	1.0	5.0	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
7.3 Does senior management review and comment on serious and significant environmental incidents?	1.0	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
7.4 Are all incident reports followed through from recommendations to completion and closure?	1.0	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
8. LEADERSHIP TRAINING																																	
8.1 Does Bidder's management receive formal environmental management training which provides a thorough understanding of the philosophies and principles behind environmental management?	2.0	10.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	Yes = 5; No = 0
8.2 Adequacy of environmental management training	2.0	10.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	4.0	1.60	3.0	1.20	4.0	1.60	4.0	1.60	3.0	1.20	0.0	0.00	3.0	1.20	5.0	2.00	5.0	2.00	5.0	2.00	2.0	0.80	Rank adequacy 1 - 5; if not provided Score 0
8.3 Does the Bidder's management receive an orientation to the Bidder's Environmental Management System that includes an introduction to individual accountabilities and responsibilities?	2.0	10.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	Yes = 5; No = 0
8.4 Adequacy of EMS orientation in communicating accountability and responsibility to management personnel.	2.0	10.0	3.0	1.20	5.0	2.00	4.0	1.60	3.0	1.20	3.0	1.20	4.0	1.60	5.0	2.00	4.0	1.60	2.0	0.80	2.0	0.80	0.0	0.00	3.0	1.20	4.0	1.60	4.0	1.60	3.0	1.20	2.0	0.80	Rank adequacy 1 - 5; if not provided Score 0
9. ENVIRONMENTAL AUDITS, INSPECTIONS AND PREVENTATIVE MAINTENANCE																																	
9.1 Is there a documented process for performing environmental audits?	1.5	7.5	5.0	2.50	5.0	2.50	5.0	2.50	0.0	0.00	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	0.0	0.00	0.0	0.00	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	Yes = 5; No = 0
9.2 Has a formal process been developed to ensure routine environmental monitoring?	2.0	10.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
9.3 Does the Bidder have planned preventative measures in place to prevent environmental incidents?	1.0	5.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
10. ENVIRONMENTAL COMPLIANCE																																	
10.1 Has a systematic approach been developed to identify and inventory all tasks based on mandatory rules, regulations and applicable codes, guidelines and standards?	1.0	5.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	0.0	0.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
10.2 Is there a formal process to assess the environmental requirements associated with the tasks to ensure compliance with the requirements?	2.0	10.0	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
11. SYSTEMS REVIEW AND EVALUATION																																	
11.1 Does the Bidder's senior management conduct regular reviews of the Environmental Management System, at least annually or at more frequent intervals, as the organization may deem necessary?	2.0	10.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
11.2 Do these reviews include environmental management policies and procedures and other inputs such as the results and recommendations from environmental audits, monitoring and surveys and analysis of incident investigations?	2.0	10.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	0.0	0.00	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
12. STATISTICS																																	
12.1 Number and type of directives from clients or regulators	2.0	10.0	5.0	1.00	5.0	1.00	5.0	1.00	2.0	0.40	1.0	0.20	5.0	1.00	0.0	0.00	5.0	1.00	3.0	1.00	5.0	1.00	0.0	0.00	0.0	0.00	0.0	0.00	5.0	1.00	0.0	0.00	5.0	1.00	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.2 Oil spill incidents;	1.5	7.5	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	4.0	1.20	0.0	0.00	5.0	1.50	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	5.0	1.50	0.0	0.00	0.0	0.00	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.3 Waste management incidents;	1.0	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	0.0	0.00	0.0	0.00	5.0	1.50	0.0	0.00	5.0	1.50	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.4 Hazardous materials incidents;	1.0	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	0.0	0.00	0.0	0.00	5.0	1.50	0.0	0.00	5.0	1.50	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.5 Water degradation incidents;	1.0	5.0	5.0	1.50	5.0	1.50	5.0	1.50	2.0	0.60	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	0.0	0.00	5.0	1.50	0.0	0.00	0.0	0.00	0.0	0.00	5.0	1.50	0.0	0.00	0.0	0.00	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.6 Air degradation incidents; and	1.0	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	0.0	0.00	0.0	0.00	5.0	1.50	0.0	0.00	5.0	1.50	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.7 Soil degradation incidents.	1.5	7.5	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	0.0	0.00	5.0	1.50	0.0	0.00	5.0	1.50	0.0	0.00	0.0	0.00	0.0	0.00	5.0	1.50	0.0	0.00	5.0	1.50	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.8 Total Environmental Incidents	2.0	10.0	5.0	2.00	5.0	2.00	5.0	2.00	1.0	0.40	1.0	0.40	5.0	2.00	0.0	0.00	5.0	2.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	5.0	2.00	0.0	0.00	0.0	0.00	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
Total Weighted Scores (individual firms)	100.0			98.30		90.40		95.15		78.00		89.90		85.95		85.60		93.70		85.50		74.70		20.10		77.10		83.40		96.50		80.20		75.95	
Total Weighted Scores (of Applicant)				**98.30**				**88.82**				**89.90**				**85.78**						**93.70**				**68.58**				**89.95**		**80.20**		**75.95**	

Bidder must achieve a minimum of 60% to be acceptable.

0 - Question not answered or no relevant information pro
1 - Response does not meet key Criteria
2 - Response only meets a few of the key criteria
3 - Response meets a majority of the key criteria
4 - Response meets all key criteria
5 - Response meets and exceeds key criteria

Comments:

Of the nine applicants evaluated, five were prime contractors and four were joint ventures/partnerships, the latter composed of two to four partners. In total, sixteen (16) separate firms were evaluated individually. In addition, a single weighted average for the joint venture/partnership was calculated based on individual partner scores. In general, most firms had well developed environmental management systems, based on information submitted in the Applications for Prequalification. However, Neilson Inc (a 20% partner in the IKC-ONE Civil Constructors partnership) scored below the required minimum category score of 60% as per Section 8(c) of the Prequalification Evaluation Plan. Nothwithstanding this, weighted average of all nine applicants were all above the 60% threshold. Given that the managing partner of the IKC-ONE partnership, Innu-Kiewit, has a well developed environmental management system (as do other JV leads and prime contractors) , and provided that all members of the JV/Partnerships adhere to the lead's environmental management system, it is recommended that all nine applicants prequalify from an environmental perspective, including Neilson and the IKC-ONE partnership.

Environmental Manager:	
Signed:	
Date:	

Table C.3.5 Scoring for Quality Evaluation

Scoring Guide: EOI Stage
0 - Question not answered or no relevant information provided in response
1 - Response does not meet key Criteria
2 - Response only meets a few of the key criteria
3 - Response meets a majority of the key criteria
4 - Response meets all key criteria
5 - Response meets and exceeds key criteria

Package Name:	INTAKE, POWERHOUSE, SPILLWAY AND TRANSITION DAMS
Package No.:	CH0007
Project :	Lower Churchill Project
Scored By:	K. Morrison
Date:	2012-07-30

	Question Weight (%)	Acciona		Aecon		Astaldi		Barnard		Impreglio		IKC-ONE		Salini		OHL		Strabag	
		Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
Quality Part A - To be Completed by all Proponents																			
Q1. Does your company have a registered Quality Management System? If "yes" please provide a copy of the registration certificate. If "No" proceed to part B of the Questionnaire.	50	4	40		0	4	40	4	40	4	40	4	40	4	40	4	40	4	40
Q2. If company has a registered Quality management system, please provide the Table of Contents of your Quality Manual.	50	4	40		0	4	40	4	40	4	40	4	40	4	40	4	40	4	40
Score Part A	100	80.00		0.00		80.00		80.00		80.00		80.00		80.00		80.00		80.00	
	Percentage	**80.00%**		**0.00%**		**80.00%**		**80.00%**		**80.00%**		**80.00%**		**80.00%**		**80.00%**		**80.00%**	
Quality Part B - To be completed by proponent that "does not" have a registered ISO 9001:2008 QMS																			
Q3. If you do not have a registered Quality Management System, please explain how your organization controls its processes to ensure that you meet the customer's requirements.	15		0	4	12		0		0		0		0		0		0		0
Q4. Are there written procedures for your core processes? Please list.	15		0	0	0		0		0		0		0		0		0		0
Q5. How do you ensure that your main subcontractors meet specified requirements (including requirements for Quality)?	15		0	4	12		0		0		0		0		0		0		0
Q6. What are your processes for addressing problems and opportunities for improvement? Provide details.	10		0	4	8		0		0		0		0		0		0		0
Q7. Do you have a documented audit schedule for both internal and external audits?	10		0	4	8		0		0		0		0		0		0		0
Q8. What is your process for responding to customer complaints or corrective action requests?	10		0	4	8		0		0		0		0		0		0		0
Q9. Describe your process for investigating the root cause of problems and implementing effective corrective action.	10		0	3	6		0		0		0		0		0		0		0
Q10. Is there a procedure for management of hard copy and electronic records?	10		0	4	8		0		0		0		0		0		0		0
Q11. Please provide contact information for two client references and details of products or services provided.	5		0	4	4		0		0		0		0		0		0		0
Score Part B	100	0.00		66.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
Total Percentage		**80.00%**		**66.00%**		**80.00%**		**80.00%**		**80.00%**		**80.00%**		**80.00%**		**80.00%**		**80.00%**	

Table C.4.1 Findings – IKC-ONE

APPLICANT	Overall Score
IKC-ONE	

Category		Score
Technical	• Strongest score of the potential bidders • Perfect score on projects of a similar nature and complexity • Perfect score on concreting in extreme cold conditions • Near perfect score on Powerhouses and gated spillways • Two excellent subcontractors • Strong experienced team with Hydro and Powerhouse experience • Known to have top notch equipment and an extensive equipment fleet • Strong administrative systems • Sterling reputation	
Commercial	**Average Revenue Last 3 years (Million)**: IKC: 2,200; O'Connell:133; Neilson: 128; EBC: 524. **Bank & Surety References**: Positive ++ Letters of Comfort. **Current Commitments:** Does not appear to be overextended with CH0007 **CH0007 Within Applicant Bidding Range: Acceptable** **Parent Company Guarantee Required NO**	
Health and Safety	Strong overall H & S program.	
Environment	The system of Neilson, one of the partners of IKC-ONE, did not meet requirements. However, Neilson would use the system of IKC, the lead partner of the Joint Venture; thus this finding should not be an impediment to the qualification of IKC-ONE.	
Quality	Qualify by virtue of their registered quality systems.	

Table C.4.2 Findings – Impregilo S.p.A

APPLICANT	Overall Score
IMPREGILO S.p.A	

Category		Score
Technical	• Second strongest score of the potential bidders • Perfect score on projects of a similar nature and complexity • Perfect score on large batch plant operation • Perfect scores on experience in Powerhouses, Gravity dams, Gated spillways • Excellent experience in concreting in extreme cold conditions • Team presented has strong pertinent experience. Subs not yet presented which will only improve the score • Strong administrative systems • Strong plant • Work to be subcontracted yet to be defined	
Commercial	**Average Revenue Last 3 years (Million)**: 2,300 **Bank & Surety References**: Positive + Letters of comfort **Current Commitments:** With CH0007, seems full, but not overextended. **CH0007 Within Applicant Bidding Range:** YES **Parent Company Guarantee Required?** NO	
Health and Safety	Overall, H & S program and documentation meets the requirements. Comany did not provide H&S injury performance as requested.	
Environment		
Quality	Qualify by virtue of their registered quality systems.	

Table C.4.3 Findings – Astaldi S.p.A

APPLICANT	Overall Score
ASTALDI S.p.A	

Category		Score
Technical	• Strong score on projects of a similar nature and complexity • Perfect score on large batch plant operation • Adequate experience in concreting under winter conditions • Strong experience in Power Houses, Gated spillways and gravity dams • Excellent local subcontractors identified • Good overall site team presented. A few holes to be plugged • Good identification of work to be subcontracted • Appears to have excellent internal administrative systems	
Commercial	**Average Revenue Last 3 years (Million)**: 2,400 **Bank & Surety References**: Positive ++ Letters of comfort **Current Commitments:** With CH0007, seems full, but not overextended. **CH0007 Within Applicant Bidding Range:** YES **Parent Company Guarantee Required?** NO	
Health and Safety	Meets the H & S requirements of the evaluation program.	
Environment		
Quality	Qualify by virtue of their registered quality systems.	

Table C.4.4.Findings – Salini S.p.A

APPLICANT	Overall Score
SALINI S.p.A	

Category		Score
Technical	• Perfect score on projects of a similar nature and complexity • Perfect score on large batch plant operation • Middle of the pack for cold weather concreting experience • Perfect scores on experience in Powerhouses and Gated spillways • Middle of the pack for team relevant experience however few CV's sent and none for subs. Score can only improve for this item • Clear answers on subcontracting portions of questionnaire • Low score on appearance of adequate administrative systems to manage subs	
Commercial	**Average Revenue Last 3 years (Million)**: Salini: 1,459; FCC: 8,388 **Bank & Surety References**: Positive + Letters of comfort **Current Commitments:** Joint Venture not overextended. **CH0007 Within Applicant Bidding Range:** YES **Parent Company Guarantee Required?** NO	
Health and Safety	H & S management system is adequate but lacks active employee drug and alcohol program in alignment with the Canadian model.	
Environment		
Quality	Qualify by virtue of their registered quality systems.	

Table C.4.5 Findings – Aecon-Flatiron-Construction Dematheiu & Bard – JV

APPLICANT	Overall Score
Aecon-Flatiron-Construction Dematheiu & Bard – JV	

Category		Score
Technical	• Aecon has the second lowest score on projects of a similar nature and complexity yet stands fourth overall on technical scoring. The low score is due to size and not complexity. • Excellent score on batch plant operation • Excellent experience in concreting in extreme cold conditions • Good on large Hydro Electric powerhouse experience. Plenty of smaller P/H experience • Highest score on site organization, experienced individuals including subs • Clear logical answers on subcontracting portions of questionnaire • Low score on appearance of adequate administrative systems to manage subs	
Commercial	**Average Revenue Last 3 years (Million)**: Aecon group: 2,600; Flatiron Constructors Inc.: 1,030; Dematheiu & Bard: 44 **Bank & Surety References:** Positive Letters of comfort **Current Commitments:** With CH0007 Joint Venture partners do not appear to be overextended. **CH0007 Within Applicant Bidding Range:** YES **Parent Company Guarantee Required?** YES, for all 3 partrners	
Health and Safety	Meets the H & S requirements of the evaluation program.	
Environment		
Quality	Aecon did not provide ISO 9001:2008 registration; they were evaluated on their responses to the individual questions.	

Table C.4.6 Findings – Barnard – Dragados JV

APPLICANT	Overall Score
Barnard – Dragados JV	

Category		Score
Technical	• Middle of the pack on projects of a similar nature and complexity • Lowest score on batch plant experience • Low score on cold weather concreting experience • Respectable score for P/H and Gated spillway experience but this is the JV partner (Dragados),not Barnard • Relatively low score on team strength. Little hydro experience (about 2 years for those that have any) • Low score on subcontracting portions of questionnaire • Middle of the pack on appearance of adequate administrative systems to manage subs	
Commercial	**Average Revenue Last 3 years (Million)**: Barnard: 206; Dragados: 2,807. **Bank & Surety References**: Barnard: Positive ++ Letters of comfort; Dragados: Positive Letters of Comfort. **Current Commitments:** With CH0007 does not appear overextended. **CH0007 Within Bidding Range:** YES **Parent Company Guarantee Required?** YES	
Health and Safety	H & S management system is adequate but lacks active employee drug and alcohol program in alignment with the Canadian model.	
Environment		
Quality	Qualify by virtue of their registered quality systems.	

Table C.4.7 - Findings – Strabag Inc.

APPLICANT	Overall Score
Strabag Inc.	

Category		Score
Technical	• Overall score 10 points below next better rank (stands 6/9) • Strong showing on projects of similar nature and complexity • Tied for lowest score on cold weather concreting • Strong experience in Power Houses and Gated spillways • Lowest score on gravity dam experience • Tied for lowest score on rock plug excavation • Low team score with virtually no Hydro experience • Low score on subcontracting portions of questionnaire • Appears to have excellent internal administrative systems	
Commercial	**Average Revenue Last 3 years (Million)**: 15,990 **Bank & Surety References**: Positive + Letters of comfort **Current Commitments:** With CH0007 does not appear overextended. **CH0007 Within Bidding Range:** YES **Parent Company Guarantee Required?** NO	
Health and Safety	H & S management system is adequate but lacks active employee drug and alcohol program in alignment with the Canadian model.	
Environment		
Quality	Qualify by virtue of their registered quality systems.	

Table C.4.8 - Findings –OHL Construction Canada Inc.

APPLICANT	Overall Score
OHL Construction Canada Inc.	

Category		Score
Technical	• Moderate score on projects of similar nature and complexity • At the low end of batch plant experience...still respectable • Tied for lowest score on cold weather concreting • Indicated that concrete might be stopped during winter months. Has not grasped schedule constraints. Also mentions the use of antifreeze additives demonstrating lack of knowledge of concrete placement in (extreme) winter conditions • Middle of the pack relative to experience in Power Houses, Gated spillways and gravity dams • Tied for lowest score on rock plug excavation • Second lowest score on team strength with absolutely no CV's containing Hydro experience • Low score on subcontracting portions of questionnaire • Middle of the pack on appearance of adequate administrative systems to manage subs	
Commercial	**Average Revenue Last 3 years (Million)**: 5,900 (parent company) **Bank & Surety References**: Positive + Letters of comfort; **Current Commitments:** With CH0007 does not appear overextended. **CH0007 Within Bidding Range:** YES **Parent Company Guarantee Required?** YES	
Health and Safety	Meets H&S requirements of the evaluation program.	
Environment		
Quality	Qualify by virtue of their registered quality systems.	

Table C.4.9 - Findings – Acciona Infrastructure Canada Inc.

APPLICANT	Overall Score
Acciona Infrastructure Canada Inc.	

Category		Score
Technical	• Lowest score overall • Lowest score on projects of similar nature and complexity • Excellent experience in large batch plant operations • Good cold weather concreting experience • Lowest score on construction of large Hydro Electric powerhouses • Tied for lowest score on large Gated spillway experience (score still respectable 80/100) • At the low end on rock plug excavation • Lowest team score. Only two persons with (limited hydro experience). Few CV's submitted but increase here would not counterbalance overall score enough to change rank	
Commercial	**Average Revenue Last 3 years (Million)**: 2,377 **Bank & Surety References**: None Submitted. **Current Commitments:** With CH0007 does not appear overextended. **CH0007 Within Bidding Range:** YES **Parent Company Guarantee Required?** YES	
Health and Safety	Company does not have Employee medical program as required. Remainder of H & S management System meets the Reqirements.	
Environment		
Quality	Qualify by virtue of their registered quality systems.	

APPENDIX D– RECOMMENDED BIDDERS LIST

Table D – Recommended Bidders List- Package CH0007

BIDDERS	CONTACT	TELEPHONE/FAX/E-MAIL
IKC-ONE Civil Constructors, a Partnership 215 Water Street Atlantic Place, Suite 505 St. John's, NL, Canada, A1C 6C9	Stephen Paul Carter Jr.	Tel: 1 (709) 738-6160 Cell: TBD Fax: TBD Email:
Astaldi S.p.A. Via Giulio Vincenzo Bona N.65 Rome/Italy - 00144	Mario Lanciani	Tel: +39 6 417661 Cell: TBD Fax: TBD Email: mlanciani@astaldi.com
Salini S.p.A./FCC/Impregilo S.p.A. – Joint Venture. Via della Dataria, 22 Rome/Italy - 00187	Claudio Lautizi	Tel: +39 06 6776903 Cell: TBD Fax: TBD Email: d.onori@salini.it
Aecon-Flatiron-Construction Demathieu & Bard – Joint Venture 20 Carlson Court, Suite 800, Toronto, Ontario Canada, M9W 7K6	Don Brophy	Tel: 1 (416) 293-7004 Cell: TBD Fax: TBD Email: DBrophy@aecon.com

APPENDIX E–NALCOR CREDITWORTHINESS CHECK OF RECOMMENDED COMPANIES

From: ScottPelley@nalcorenergy.com
To: Adamcyk, Ronald
Cc: Over, Ed; pat.hussey@nalcorenergy.com; JamesMeaney@nalcorenergy.com
Subject: Re: FW: LOWER CHURCHILL PROJECT - PREQUALIFICATION FOR PACKAGE CH0007 - RFI-5
Date: August 15, 2012 9:59:02 AM
Attachments: EOI-Prequal FINANCIAL Scoring Sheet_CH0007.xlsx

Ron,

I just completed the review of Spalini SpA. Like the other bidding entities (and as outlined in my email dated August 14), the Spalini Joint Venture would currently meet Nalcor's creditworthiness criteria, assuming that they provided the required performance security which, in the case of CH0007, will be a reducing letter of credit, 50% performance bond and a 50% materials bond. Therefore, from a financial perspective, all the respondents to the EOI are qualified bidders.

I also updated the scoring sheet which determines the **relative** creditworthiness of each bidding entity using a notional scale of 20 points. The final results are as follows:

1. AECON JV - 20/20
2. IKC JV and the Spalini JV - 18/20
3. Imregilio SpA - 17/20
4. Astaldi SpA - 16/20

1.

nalcor energy

Scott W. Pelley
Assistant Treasurer
Treasury and Risk Management
Nalcor Energy
t. (709) 737-1364 c. (709) 730-2927 f. (709) 737-1901
e. ScottPelley@nalcorenergy.com
w. nalcorenergy.com

From: "Adamcyk, Ronald" <Ronald.Adamcyk@snclavalin.com>
To: <ScottPelley@nalcorenergy.com>
Cc: <pat.hussey@nalcorenergy.com>, "Over, Ed" <Ed.Over@snclavalin.com>
Date: 08/14/2012 05:17 PM

From:	ScottPelley@nalcorenergy.com
To:	Adamcyk, Ronald
Cc:	Grant, Joselyn; pathussey@nalcorenergy.com; JamesMeaney@nalcorenergy.com; MBradbury@nalcorenergy.com
Subject:	Re: CH0007 FINANCIAL STATEMENTS
Date:	August 13, 2012 6:34:59 PM
Attachments:	EOI-Prequal FINANCIAL Scoring Sheet_CH0007.xlsx

Ronald,

Further to your request below, we've evaluated the creditworthiness of each of the entities that responded to the EOI for CH007, with the exception of the JV between Spalini and FCC Construccion. As per my email earlier this afternoon, we need more up to date financial statements for Spalini. Therefore, any conclusions below are not relevant to the Spalini JV.

Our review was based on the most recent financial statements provided by each entity, which were used to determine financial ratio scores for each entity. The particular ratios used, which are meant to reflect the ability of each individual entity to absorb the impact of potential adverse financial events, are documented in LCP-PT-MD-0000-FI-PR-0003-01 (*Guidelines for Creditworthiness).* We also considered the size of the contract relative to each entities annual sales and whether the entities in question experienced adverse events in the past as well as willingness to provide performance security.

If we were assessing these entities as part of the RFP process as of today's date, our conclusion would be that each bidder would be considered a creditworthy counterparty, provided that the required credit support was provided. [While not relevant to the current exercise, it's worth noting that in the case of CH0007, the required credit support will be a letter of credit (declining balance with % to be determined) issued by a Schedule 1 Canadian Bank as well as a 50% performance bond and a 50% materials bond].

In case its of any use to you or your team, (i.e. in case its necessary to rank the bidders relative to one another), I calculated a relative financial score for each bidder on a notional 20 point scale. The scores for the JV's represent a weighted average for each participating entity and are thus an estimate of the financial strength of the JV (Note: We have individual scores for each entity if you need them). This is summarized in the attached spreadsheet.

Obviously, if any of the entities covered in this review eventually reply to our RFP, we'll need to repeat this process and undertake a full review based on circumstances at that time

If you have any questions, please feel free to give me a call

nalcor energy
Scott W. Pelley
Assistant Treasurer
Treasury and Risk Management

nalcor energy

EXPRESSION OF INTEREST / PREQUALIFICATION
FINANCIAL SCORING SHEET

Package Number: CH0007
Package Name: Intake, Powerhouse, Spillway and Transition Dams

Est Pkg Value:

Score assigned: 20

Section	Scoring	Weight	Description	Impregilo SpA				Astaldi SpA				AECON - Flatiron - Deamthieu JV				IHC - CRIE Joint Venture				Salini - FCC Joint Venture			
3.2			Financial																				
3.2.1			**Turnover Score**	Score	Target	Score/ Target	Final Score	Score	Target	Score/ Target	Final Score	Score	Target	Score/ Target	Final Score	Score	Target	Score/ Target	Final Score	Score	Target	Score/ Target	Final Score
	Note 1	8.00		3.92	2.00	196%	8.00	4.34	2.00	217%	8.00	4.71	2.00	236%	8.00	1.54	2.00	77%	6.16	6.51	2.00	326%	8.00
3.2.2			**Financial Ratio Scores**	Score	Target	Score/ Target	Final Score	Score	Target	Score/ Target	Final Score	Score	Target	Score/ Target	Final Score	Score	Target	Score/ Target	Final Score	Score	Target	Score/ Target	Final Score
	Note 1	2.00	FFO to Debt	22%	45%	49%	0.99	12%	45%	28%	0.55	49%	45%	100%	2.00	12853%	45%	100%	2.00	37%	45%	82%	0.82
	Note 1	2.00	Debt to Capital*	47%	35%	75%	1.50	71%	35%	50%	0.99	35%	35%	100%	2.00	13%	35%	100%	2.00	60%	35%	58%	0.58
	Note 1	2.00	Debt to EBITDA*	3.7	2.0	54%	1.08	6.4	2.0	31%	0.63	2.4	2.0	84%	1.67	0.3	2.0	100%	2.00	2.9	2.0	145%	1.45
	Note 1	2.00	EBIT to Interest Coverage	3.3	1.5	100%	2.00	1.5	1.5	100%	2.00	8.0	1.5	100%	2.00	25.8	1.5	100%	2.00	4.3	1.5	287%	2.87
	Note 1	2.00	Quick Ratio	0.6	1.0	61%	1.23	0.7	1.0	75%	1.49	1.3	1.0	100%	2.00	1.6	1.0	100%	2.00	1.2	1.0	120%	1.20
Subtotal		10.00					6.79				5.66				9.67				10.00				6.92
3.2.3			**Performance Security**																				
		0.50	Is Company (or Parent Company) willing to provide a performance bond	Yes	Yes	100%	0.50	Yes	Yes	100%	0.50	Yes	Yes	100%	0.50	Yes	Yes	100%	0.50	Yes	Yes	100%	1.00
		0.50	Is Parent Company Guarantee Available from a parent with adequate financial strenth	Yes	Yes	100%	0.50	Yes	Yes	100%	0.50	Yes	Yes	100%	0.50	Yes	Yes	100%	0.50	Yes	Yes	100%	1.00
Subtotal		1.00					1.00				1.00				1.00				1.00				2.00
3.2.4			**General**																				
		0.25	Outstanding Legal Claims?	No	No	100%	0.25	No	No	100%	0.25	No	No	100%	0.25	No	No	100%	0.25	No	No	100%	0.25
		0.25	Bankruptcy or reorganization proceedings?	No	No	100%	0.25	No	No	100%	0.25	No	No	100%	0.25	No	No	100%	0.25	No	No	100%	0.25
		0.25	Contract cancellation before work completion?	No	No	100%	0.25	No	No	100%	0.25	No	No	100%	0.25	No	No	100%	0.25	No	No	100%	0.25
		0.25	Litigation Last 10 Years	No	No	100%	0.25	No	No	100%	0.25	No	No	100%	0.25	No	No	100%	0.25	No	No	100%	0.25
Subtotal		1.00					1.00				1.00				1.00				1.00				1.00
TOTAL		20.00					16.79				15.66				19.67				18.16				17.92

* Targets represent maximum scores

Completed By: Scott Pelley

Completed on: August 13, 2012