

# CONSULTING SERVICES AGREEMENT



**Title: Engineering Design Services for Road and Bridge Infrastructure Works for the Site C Clean Energy Project**

Contract No RFP 671 Project: Site C Clean Energy Project

THIS AGREEMENT is made as of the \_\_\_\_ day of \_\_\_\_ 2011

**BETWEEN:**

**BRITISH COLUMBIA HYDRO AND POWER AUTHORITY**, a British Columbia Crown Corporation having its head office at 333 Dunsmuir Street, Vancouver, B.C. V6B 5R3

(referred to as "BC Hydro")

**AND:** R. F. Binnie & Associates Ltd. with offices at  
205-4946 Canada Way  
Burnaby, BC V5G 4H7

(referred to as "Contractor" or "Consultant")

**WHEREAS:**

BC Hydro may require certain services from time to time, pursuant to a Request for Proposals issued under BC Hydro Reference # 671 has selected Consultant for the performance of such services on an 'as needed' basis in accordance with this Agreement.

**NOW THEREFORE THIS AGREEMENT WITNESSES THAT** BC Hydro and Consultant mutually agree as follows:

**1. The Agreement**

This Cover Agreement and the Appendices listed below, all as amended are herein collectively, the "**Agreement**" or, alternatively, the "Contract". The Agreement includes the following Appendices:

- A. Definitions and Interpretation
- B. Scope of Services
- C. Compensation
- D. Insurance
- E. Change Order Form
- F. Special Conditions
- G. Sample Work Order Template

Definitions and rules of interpretation in Appendix A apply to this Agreement. The Agreement is the entire agreement between the parties concerning the subject matter

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hereof, and all prior communications related to the subject matter hereof, whether written, oral or in any other format, are of no legal effect.

**2. Services**

Services may be requested by BC Hydro from time to time under the Agreement by way of written Work Orders issued by BC Hydro for acceptance by the Consultant, substantially in the form set out in Schedule G or in such other form as may be agreed between the parties. Without limitation, each Work Order shall specify the scope of the required Services (including any required deliverables), the schedule for the performance of the Services, a cap on fees payable under the Work Order, if applicable, and any other terms and conditions specific to the Work Order as may be agreed between the parties. The terms and conditions set out in the Agreement, including any pricing set out in Schedule C, shall be deemed incorporated into each Work Order unless expressly stated otherwise. In case of conflict between the terms and conditions set out in a Work Order and the terms and conditions set out in the Agreement, the Work Order shall prevail. Each Work Order shall constitute a separate agreement for the performance of the Services described therein and shall not be valid until signed by BC Hydro. Any changes, including additional terms and conditions, that the Consultant may purport to impose in response to a Work Order issued by BC Hydro shall not be valid unless and until expressly accepted in writing by BC Hydro's Representative.

BC Hydro shall have no liability to the Consultant under the Agreement except to the extent of Work Orders actually issued. BC Hydro does not guarantee that any Work Orders will be issued to Consultant or that, if issued, they will be issued for any particular scope, volume, value, duration, or frequency of Services. BC Hydro reserves the right to request services similar to the services covered by this Agreement from third parties pursuant to contracts with such third parties, howsoever arising, awarded in accordance with relevant BC Hydro policies and procedures.

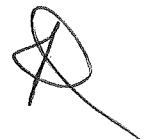
Consultant shall perform the Services and observe and perform all of its other obligations hereunder subject to, and in accordance with, the applicable Work Order.

**3. Included Services**

Consultant acknowledges that there are functions or tasks that will not be specifically included in the description of the Services but that are customarily required for the proper performance and provision of the Services. Consultant agrees that such functions or tasks are implied, and therefore included, in the scope of the Services to the same extent and in the same manner as if those functions or tasks had been specifically described in the applicable Work Order and will be performed by Consultant as part of the Services.

**4. Submittals**

In a timely manner, Consultant will submit any drawings showing details of the Services and any other reports or documents required by the applicable Work Order to BC Hydro (the "Submittals"). BC Hydro or individuals on behalf of BC Hydro may review any Submittals prepared by or on behalf of Consultant or conduct technical reviews of the Work Product. Notwithstanding that Consultant incorporates changes in the Submittals or Work Product that have been suggested by or on behalf of BC Hydro, Consultant is solely responsible for the content, accuracy and completeness of the Submittals and Work Product. In the event that BC Hydro supplies any drawings or technical information to Consultant, BC Hydro does not guarantee and is not responsible for the content, accuracy and completeness of such drawings or technical information.

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**5. Changes**

BC Hydro may make a change (addition, deletion or modification) in the Services by Change Order, signed by BC Hydro. If a change in the Services affects the cost to Consultant of performing the Services or affects the schedule, the Change Order will specify an adjustment to the schedule and/or the Compensation, as determined by BC Hydro, acting reasonably, after consultation with Consultant. Changes will be valued using applicable unit prices or labour and/or equipment rates, as specified in Appendix C – Compensation or the applicable Work Order, as the case may be, and otherwise will be valued based on a reasonable estimate of cost or cost savings, including an allowance for overhead and profit.

Where BC Hydro considers it necessary to proceed with a change in the Services before it has been valued or any extension of the schedule determined, it may issue a Change Directive, with cost to be determined by BC Hydro, acting reasonably, pending final determination of value and time extension, if any, and Consultant will perform the work as so directed. Consultant will not undertake a change in the Services without a Change Order or Change Directive signed by BC Hydro.

**6. Compensation**

BC Hydro will pay Compensation for the Services in accordance with Appendix C and/or the applicable Work Order. Consultant's Canadian federal Goods and Services Tax (HST/GST) number is [REDACTED].

**7. Term and Schedule**

The term of this Agreement commences on the date first above written and continues until the expiry date of September 30, 2013 unless earlier terminated in accordance with its terms. The term may be extended at BC Hydro's sole discretion for up to three additional terms of three year(s) each by BC Hydro giving written notice to Consultant no less than 30 days prior to expiration of the then current term. The extensions shall be on the same terms and conditions of the Agreement in effect immediately prior to the extension unless otherwise expressly agreed in writing by the parties. Consultant will commence, perform and complete the Services (including attain CSA Contract Completion) in accordance with any schedule prescribed in the applicable Work Order or subsequently agreed between the parties.

Consultant will perform the Services continuously, diligently, faithfully and in a timely manner under each Work Order. BC Hydro may require Consultant to submit a detailed schedule for BC Hydro's approval. Consultant will perform the Services in accordance with any such approved schedule and will comply with any timetable for deliverables set out in the applicable Work Order.

**8. Standard Of Care**

Consultant will perform the Services in a good and proficient manner and with no less than the standard of professional skill, care and diligence customarily applied by qualified and experienced professional consultants performing similar services for similar projects at the time and place the services are delivered.

**9. Relationship**

Consultant is an independent contractor to BC Hydro. Consultant is not, and will not represent itself to be, an agent, partner or joint venturer of or with BC Hydro. None of



Consultant and its personnel and independent contractors will be entitled to membership in any BC Hydro pension or benefit program as a result of this Agreement. If Consultant or any of its personnel or independent contractors become an employee of BC Hydro at any time, BC Hydro will not recognize any portion of their service as a consultant or independent contractor for BC Hydro employment purposes (including BC Hydro pension or benefit programs).

#### 10. Personnel

Consultant will assign to the Services persons who are qualified and experienced in the work to be performed by them, including the project manager and other key personnel, if any, specified as follows:

Name	Position	Availability
[REDACTED]	Senior Project Manager	50-70%
[REDACTED]	Senior Project Manager	80-100%
[REDACTED]	Project Manager	50%
[REDACTED]	Project Manager/Reporting	80-100%
[REDACTED]	Intermediate Project Manager	80-100%
[REDACTED]	Senior Project Advisor	25%
[REDACTED]	Quality Manager	50-70%
[REDACTED]	Design Manager	60-80%
[REDACTED]	Highway Design EOR	80-100%
[REDACTED]	Geotechnical Engineering Lead	50-70%
[REDACTED]	Environmental Lead	50-70%
[REDACTED]	Bridge Design Manager	60-80%
[REDACTED]	Bridge Hydraulics Lead	As Required
[REDACTED]	Ice Engineering Lead	As Required
[REDACTED]	Safety Officer	As Required

or otherwise identified in the applicable Work Order. None of these key personnel will be changed without BC Hydro's prior approval, except for death, disability, termination of employment or personal compassionate reasons or unless so agreed by BC Hydro, such agreement not to be unreasonably withheld. In addition, Consultant will remove from the Project Site any of its personnel to whom BC Hydro has reasonable objection based on qualifications, experience or conduct.

If any Consultant Key Personnel are so changed, they will be replaced with a person approved by BC Hydro and at no additional cost to BC Hydro. Consultant's Project Manager is authorized to act for and bind Consultant on all matters relating to the Agreement. BC Hydro appoints [REDACTED], [REDACTED], [REDACTED], as Hydro's Representative, provided always BC Hydro may, upon notice to Consultant, change such appointment from time to time.

#### 11. Compliance With Laws And Standards

Consultant will comply, will cause its personnel and each subcontractor to comply, and will ensure that the Services and each part thereof, complies with: (a) all Laws that are applicable to Consultant's Services under the Agreement; (b) the terms and conditions of all Permits of which timely notice is given by BC Hydro, that are applicable to Consultant's Services under the Agreement; and (c) all policies, practices and



procedures (including Contractor Code of Conduct) established by BC Hydro with respect to safety, environment, security, conduct, use of BC Hydro's information and communications technology and systems and other matters related to the performance of the Services which are communicated by BC Hydro to Consultant from time to time.

Consultant, in the event of any injury to a worker in the course of the performance of the Services on the Project Site will, within 10 days, provide a safety incident report through BC Hydro's web-based contractor incident reporting facility. If Consultant is without Internet access or if Internet access is not available, Consultant will promptly obtain the required report form from Hydro's Representative and promptly after obtaining it will complete and return the completed report to BC Hydro Safety and Health (telephone 604 528-2414).

**11A. Privacy**

If Consultant provides BC Hydro with copies of, or access to copies of, any records containing the personal information of Consultant or subcontractor employees during the term of the Agreement, Consultant will first obtain and provide to BC Hydro the written consents of those individuals to the indirect collection of such personal information by BC Hydro. The consents will be in a form to be supplied by BC Hydro. Consultant acknowledges that the foregoing is a requirement of the BC *Freedom of Information and Protection of Privacy Act*.

**12. Subcontracts/Assignment**

Consultant will not subcontract performance of all or part of the Services, and will not assign the Agreement or any Work Order, without the prior approval of BC Hydro, not to be unreasonably withheld or delayed. Consultant is liable to BC Hydro for acts and omissions of its subcontractors and of other persons utilized, directly or indirectly, by them to the same degree as it is liable for its own acts and omissions and those of its own personnel.

**13. Payment Of Accounts**

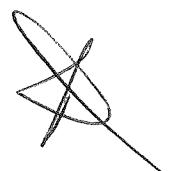
Consultant will pay when due all salaries, wages and benefits to which its personnel assigned to the Services are entitled and will make all tax and other statutory withholdings and remittances in respect thereof, and Consultant will pay upon becoming due all accounts of third persons incurred in connection with the Services. To the extent lienable, Consultant will keep the Project Site free of all liens arising from a failure of Consultant to comply with this clause of the Agreement.

**14. Site Conditions**

It shall be the responsibility of the Consultant to visit and conduct a visual inspection of the Project Site and the local area in the vicinity of the Project Site, including surface conditions and means of access, if and as appropriate in the context of each Work Order. Consultant may not make or enforce any claim against BC Hydro, whether for extension of time or financial compensation, based upon actual Project Site or local conditions that could reasonably have been observed or foreseen in the course of Consultant's visual inspections of the Project Site surface and local area in the vicinity of the Project Site.

**15. Use Of The Project Site**

Consultant will not have exclusive use or possession of the Project Site and will cooperate with other contractors and coordinate Consultant's Services with the work of

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the other contractors. Consultant will confine its equipment, tools and materials to areas designated by BC Hydro. Consultant will not interfere with the access and use of the Project Site or adjacent areas by BC Hydro and other contractors. On a daily basis and in a manner acceptable to BC Hydro, Consultant will remove from the Project Site and dispose of all waste materials and rubbish created by or on behalf of Consultant and, before CSA Contract Completion, Consultant will clean up such materials and rubbish and leave the Services and the Project Site in a safe and tidy condition.

**16. Safety**

Safety measures will be undertaken to the standards of good practice and the requirements of all occupational safety and health legislation and regulations. Consultant will provide all appropriate safety equipment, barriers and personnel necessary for the protection of persons and property on and adjacent to the location of the Services conducted at the Project Site. Before commencing the Services on the Project Site Consultant will establish and submit to BC Hydro, in accordance with clause 4, written work procedures, established by a person knowledgeable in safety regulations and work procedures, which address all site specific safety hazards and necessary work procedures that comply with all safety regulations and procedures required by Law or by BC Hydro.

**17. Protection Of Work And Property**

Consultant will protect the Services and Work Product and take reasonable measures to protect and prevent loss or damage to the property of BC Hydro and third parties which is on or adjacent to the Project Site, from loss or damage due to Consultant's activities. Consultant will be responsible for promptly making good any such loss or damage at Consultant's expense, if requested by BC Hydro, or alternatively, BC Hydro may recover such cost of making good from Consultant, including by way of set offs. Notwithstanding the foregoing, Consultant will not bring explosives or hazardous materials on the Project Site without the prior consent of BC Hydro, and will be responsible for the safe and lawful handling, storage and use of any such explosives or materials. All artifacts or other items of value found on the Project Site are, as between BC Hydro and Consultant, the property of BC Hydro.

**18. Environment**

Consultant shall demonstrate in the performance of the Services that it is environmentally responsible by complying with all applicable environmental legislation and regulations, being observant for, and immediately notifying Hydro's Representative of, any environmental problems that develop on the Project Site, and taking all reasonable and necessary measures in the performance of the Services to avoid causing negative impacts to the environment. Where negative impacts occur, Consultant must immediately advise Hydro's Representative and take all reasonable and necessary measures to minimize the effect of such negative impacts. Notwithstanding the foregoing, Consultant will not be liable for any pre-existing environmental site conditions, surface or subsurface, including but not limited to any hazardous, toxic or regulated waste, materials or substances, except to the extent that Consultant fails to notify BC Hydro promptly upon becoming aware of any such pre-existing condition or to follow (at BC Hydro's expense) any instruction from BC Hydro with respect to any such pre-existing condition, or to the extent that, after becoming aware of any such pre-existing condition, Consultant's act or omission aggravates the pre-existing condition in any manner whatsoever. Consultant will promptly remedy any breach by Consultant of its obligations under this clause and, without limiting the foregoing, will remove all

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contaminants brought onto or released to the Project Site by Consultant or any person for whom Consultant is responsible.

**19. Insurance**

Consultant will comply with the insurance provisions in Appendix D.

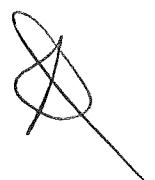
**20. Ownership Of Work Product And Embedded IP**

Consultant agrees that BC Hydro will own all of the Work Product and Consultant irrevocably assigns to BC Hydro all of Consultant's right, title and interest in the Work Product and hereby waives in favour of BC Hydro all rights (including, all moral rights), and will cause all of its personnel working on the Project to waive in favour of BC Hydro such rights, in and to the Work Product. Consultant retains ownership of the Embedded IP, if any, but grants BC Hydro and its other contractors and consultants an irrevocable, perpetual, assignable, royalty free right to load, transmit, access, execute, use, store, display, modify, alter or otherwise change the Embedded IP for the Project or for such other projects as BC Hydro may undertake. Any and all modifications of the Embedded IP prepared by or on behalf of BC Hydro will be owned by BC Hydro.

**21. Confidential Information**

Consultant will not use or disclose to third persons: (a) BC Hydro Confidential Information; or (b) Confidential Information of any third party ("Third Party CI"), in either case received or otherwise obtained by Consultant in connection with this Agreement or any Work Order, except with the prior written consent of BC Hydro. As between BC Hydro and Consultant, BC Hydro owns and retains ownership of all BC Hydro Confidential Information and all Third Party CI (collectively, the "Agreement CI"). Upon request of BC Hydro from time to time, Consultant will execute separate confidentiality agreement(s) in respect of Third Party CI on terms and conditions reasonably required by BC Hydro to comply with any obligations BC Hydro may have with such third parties. Consultant will inform all of its personnel having access to any Agreement CI of the confidential nature thereof and will ensure that its personnel maintain the confidentiality of the Agreement CI in accordance with the terms of this Agreement, any applicable Work Order, and/or such other confidentiality agreements, as the case may be.

Upon request of BC Hydro, Consultant will return to BC Hydro or destroy, as directed by BC Hydro, all copies of the Agreement CI, whether written, in the form of computer data or otherwise, and all documents and materials prepared by or for Consultant which include or refer to the Agreement CI and will delete the same from any computer system, retrieval system or database of Consultant. Notwithstanding the foregoing, Consultant will not be in breach of its obligation to return to BC Hydro or destroy and not to disclose such Agreement CI if that retention or disclosure is required by Law (including professional obligation) or a court order, provided that (a) Consultant gives BC Hydro as much notice as is reasonably possible in the circumstances prior to disclosing any such Agreement CI, (b) Consultant cooperates with BC Hydro in any application, proceedings or other action BC Hydro may undertake to obtain a protective order or other means of protecting the confidentiality of the Agreement CI required to be disclosed, and (c) if Consultant is required to retain the Agreement CI, Consultant will continue to maintain the confidentiality of such Agreement CI in accordance with this clause.



**22. Work Compliance**

Consultant will ensure that:

- a) the Services, including all Work Product, will comply with the requirements of the applicable Work Order; and
- b) the Services will be performed in a good and proficient manner and with no less than the standard of professional skill, care and diligence customarily applied by qualified and experienced professional consultants performing similar work for similar projects.

**23. Remedies**

Consultant, at BC Hydro's request and in addition to all other rights and remedies of BC Hydro, will promptly correct or cause to be corrected, by repair, replacement or re-performance, at Consultant's expense including, without limitation, all costs of removal, repair, replacement, installation, freight, taxes, duties and insurance, any Services failing to meet any or all of the obligations set out in clause 22.

**24. Acceleration/Suspension By BC Hydro**

If Consultant is responsible for a delay of the Services or a default, BC Hydro may order acceleration of the Services by any available means and Consultant is responsible for the resulting costs. BC Hydro may also at any time suspend performance of the Services, in whole or in part, by notice to Consultant, in which case BC Hydro will pay to Consultant the documented reasonable costs actually incurred by Consultant for (a) the de-mobilization of Consultant's workforce at the Project Site upon notice of the suspension, and (b) the mobilization of Consultant's workforce at the Project Site upon resumption of the Services, if applicable. In any event, Consultant's entitlement on any suspension of Services will not include any allowance for overhead, profit or loss of profit.

**25. Termination By BC Hydro**

BC Hydro, by notice to Consultant, may terminate this Agreement or any Work Order

- a) immediately for BC Hydro's convenience, or
- b) upon the failure of Consultant to cure a default within 7 days of notice by BC Hydro to Consultant of such default or, where BC Hydro determines that it is not possible to cure the default within 7 days and that it is prepared to extend such time, upon the failure of Consultant to commence curing a default within 7 days notice by BC Hydro to Consultant of such default, to thereafter diligently continue curing such default, or to cure such default within the time period identified by BC Hydro in its notice, or
- c) immediately if Consultant is bankrupt, insolvent or unable to discharge its liabilities when due.

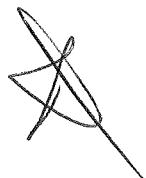
**26. Termination By Consultant**

Consultant may terminate the Agreement or any Work Order by notice to BC Hydro if:

- a) BC Hydro is bankrupt, insolvent or unable to discharge its liabilities when due; or
- b) BC Hydro defaults in payment of any undisputed Compensation for 30 days after the receipt of notice of overdue payment.

**27. Obligations On Termination**

If a Work Order is terminated, Consultant will deliver to BC Hydro all completed but previously undelivered Work Product under that Work Order and all work-in-progress under that Work Order, including any partially completed Work Product for which Consultant has received some Compensation. In addition, BC Hydro may take



possession of the Services, all Consultant equipment and all materials and other goods delivered to the Project Site, subject to the rights of third parties, and finish the Services by whatever method BC Hydro may consider expedient.

If a Work Order is terminated under clause 25(a), BC Hydro will pay Consultant for Services performed to the date of termination, including committed costs for materials, which will be delivered to BC Hydro, plus reasonable demobilization costs actually incurred by Consultant. If a Work Order is terminated under clause 25(b) or (c), BC Hydro will make no further payments to Consultant, and termination will be without prejudice to any other right or remedy available under the relevant Work Order or at law or in equity for the default or any prior default. Except for Work Order-related compensation as specified in this paragraph, no compensation is payable to Consultant upon termination of the Agreement.

#### **28. Force Majeure**

A party is excused from performance under this Agreement if and to the extent and for the time that performance is prevented or materially hindered by events or circumstances, including any unreasonable acts or omissions of the other party and its agents, consultants and its and their employees, (collectively, "**Force Majeure Events**") beyond the reasonable control of that party and which by the exercise of reasonable diligence by such party could not have been prevented (except lack of financial capability or lack of labour, material or utilities will not be Force Majeure Events hereunder unless caused by an event or circumstance that would otherwise excuse a party from performance of its obligations), provided that prompt notice is given to the other party. If either party gives notice of a Force Majeure Event, each party will exercise reasonable efforts to avoid or minimize any delay occasioned thereby. The party prevented or delayed in the performance or observance of its obligations under the Agreement will resume promptly the performance and observance of those obligations after cessation of the particular Force Majeure Event unless the Agreement or the applicable Work Order has been terminated.

#### **29. Consultant's Indemnity**

Consultant will indemnify and hold harmless BC Hydro, its directors, officers and employees, for Claims and Claim Costs for or arising out of:

- a) infringement of any patent or intangible, intellectual, proprietary or industrial property rights of the third person to the extent it results from BC Hydro's use of the Work Product for the Project or in the manner contemplated in the applicable Work Order;
- b) personal injury, including death, or property damage to the extent caused by the negligence and/or wilful misconduct of Consultant, its subcontractors, or their respective employees or agents; and/or
- c) breach of this Agreement or any Work Order by Consultant, its subcontractors, or their respective employees or agents.

#### **30. Indemnity Conditions**

Consultant agrees that each of BC Hydro and its directors, officers and employees may enforce the above indemnity for their benefit directly against Consultant. The right of BC Hydro, or its directors, officers and employees to be indemnified by Consultant under clause 29 is subject to the conditions that:

- (a) BC Hydro gives Consultant prompt notice of any Third Party Claim, the right and opportunity to select counsel and defend or settle the Third Party Claim, all documents and other information, including access to witnesses, available to



BC Hydro that may assist in the favourable defence or settlement of the Third Party Claim; and

(b) BC Hydro does not make any admission, or do any other act or thing, that is materially prejudicial to the favourable defence or settlement of the Third Party Claim.

**31. Liability Exclusions**

Neither party is liable to the other for special, punitive, contingent, indirect or consequential loss or damage. In addition, BC Hydro releases Consultant from any claims that arise as a result of BC Hydro's use of the Work Product in a manner or for purposes inconsistent with BC Hydro's intended use of the Work Product provided such intended use is specifically described in the applicable Work Order.

**32. Maximum Liability**

The maximum aggregate liability of Consultant to BC Hydro for Claims under or relating to any Work Order, whether or not terminated, and whether arising in contract, tort, including negligence, by statute or as matters of strict or absolute liability, is limited:

- a) for Claims, or portions thereof, insured under a policy of insurance, if any, required to be maintained in respect of that Work Order under the Agreement or the applicable Work Order, to the amount of Claims payments to which Consultant is entitled under those policies, but not exceeding the minimum insurance amount prescribed in the Agreement or the applicable Work Order for those policies; and
- b) for all other Claims, including deductibles and excluded risks and Claims, or portions thereof, not insured under the policies or in excess of the minimum insurance amount prescribed in the Agreement or the applicable Work Order for those policies, if any, referenced in (a) above, to an amount equal to the maximum for fees or Contract Price, as the case may be, set out in the applicable Work Order, as amended from time to time by agreed Change Orders.

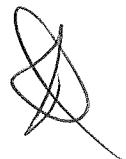
**33. Exceptions To Maximum Liability**

Notwithstanding anything in the Agreement to the contrary, the limits on Consultant's liability under or relating to any Work Order will not apply to:

- a) Claims or Claim Costs arising out of the wilful, fraudulent or criminal misconduct of Consultant, its subcontractors, or their respective employees or agents; or
- b) Third Party Claims or Claim Costs arising out of the breach by Consultant, its subcontractors or their respective employees or agents of any confidentiality obligations under the Agreement or the applicable Work Order.

**34. Response To Injunctive Relief**

Without limiting any other rights or remedies of BC Hydro or any other obligation of Consultant under the Agreement or any applicable Work Order, if the use of the Work Product, or any part thereof, by BC Hydro is enjoined by a court of competent jurisdiction as a result of any infringement for which Consultant has agreed to indemnify BC Hydro under clause 29, Consultant, on notice from BC Hydro and at Consultant's option, either will procure and pay for an irrevocable, non-exclusive, royalty free and perpetual license in favour of BC Hydro permitting continued use by BC Hydro of the Work Product, or applicable part thereof, or will replace or modify the Work Product, or applicable part thereof, with non-infringing work of quality and performance capability that is substantially equivalent in all material respects to that specified by the applicable Work Order, in each case, all at the expense of Consultant.



**35. Dispute Resolution**

Before resorting to any other dispute resolution mechanism, BC Hydro and Consultant will use commercially reasonable efforts to resolve their disputes by discussion and negotiation and agree to provide, without prejudice, frank, candid and timely disclosure of relevant facts, information and documents to facilitate these negotiations. If BC Hydro and Consultant are unable to resolve the dispute, the parties may agree to have the dispute resolved by mediation, arbitration or such other means. If no agreement as to the method of dispute resolution is reached between BC Hydro and Consultant within 30 days of the dispute arising, then either party may at any time submit the dispute to such British Columbia judicial tribunal as may be appropriate in the circumstances.

Each party shall continue performance of its obligations under issued Work Orders notwithstanding the existence of a dispute.

**36. Governing Law**

The Agreement and each Work Order shall be governed by and construed in accordance with the laws of the Province of British Columbia and the laws of Canada applicable therein, excluding conflict of laws principles that would impose a law of another jurisdiction for the construction of the Agreement. The parties hereby irrevocably and unconditionally attorn to the non-exclusive jurisdiction of the courts of the Province of British Columbia and all courts competent to hear appeals therefrom. The United Nations Convention on Contracts for the International Sale of Goods set out in the schedule to the *International Sale of Goods Act* (British Columbia) does not apply.

**37. Miscellaneous**

- a) *Currency.* All references herein to currency are to the lawful money of Canada, unless expressly stated otherwise.
- b) *Disclosure.* Consultant will not make any public releases or announcements or issue advertising pertaining to the Agreement or any Work Order without the prior written approval of BC Hydro.
- c) *Further Assurances.* Each of the parties will execute all further documents and instruments and do all further and other things as may be necessary to implement and carry out the terms of this Agreement or any Work Order.
- d) *Survival.* All rights, obligations and remedies of the parties which accrued prior to the time of expiry or earlier termination of this Agreement or any Work Order, or which are by their nature continuing and all other provisions necessary for the interpretation or enforcement of such provisions will survive expiry or earlier termination of this Agreement or the applicable Work Order.
- e) *Notices.* Notices will be in writing and may be given personally or by fax transmission or by e-mail to the addresses supplied under the Agreement or the applicable Work Order, or other addresses given by subsequent notice. Notices given: (a) personally are deemed effective upon actual receipt; and (b) by fax transmission or e-mail are deemed received upon actual receipt, if received during recipient's normal business hours, or at the beginning of the recipient's next business day if not received during recipient's normal business hours.
- f) *Waiver.* A waiver of any breach of this Agreement or any applicable Work Order is not a waiver of any continuing or subsequent breach. A waiver must be written and signed by the party against whom enforcement thereof is sought.



- g) *Severability.* If any provision of this Agreement or any Work Order is illegal or unenforceable, it will be severed and the balance of the Agreement or the applicable Work Order enforced.
- h) *Enurement.* The Agreement and each Work Order enures to the benefit of and binds the parties and their respective successors and permitted assigns.
- i) *Amendment.* The Agreement and each Work Order may be amended only by written agreement between the parties, including a Change Order.
- j) *Counterparts.* This Agreement and each Work Order may be executed in counterparts, which when taken together will constitute one and the same document. This Agreement may be executed by the exchange of signed counterparts by facsimile transmission or electronically in PDF or similar secure format.

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IN WITNESS WHEREOF the parties have executed this Agreement, effective as of the date first above written.

**BRITISH COLUMBIA HYDRO AND POWER AUTHORITY**

Authorized Signatory: [REDACTED]

Print Name: [REDACTED]

[REDACTED] EVP - Site C

Date Signed: March 25 2011

**CONSULTANT'S FULL LEGAL NAME:**

R.F. Binnie & Associates Ltd

Authorized Signatory: [REDACTED]

Print Name: [REDACTED]

Title: President

Date Signed: March 18th 2011

## APPENDIX A DEFINITIONS AND INTERPRETATION

### **1 Definitions**

- 1.1 **"Affiliate"** means, with respect to a party, a corporation that controls, is controlled by, or is under common control with, that party.
- 1.2 **"Agreement"** (also referred to as "Contract") has the meaning ascribed to it in clause 1 of the Cover Agreement.
- 1.3 **"Change Order"** and **"Change Directive"** are the documents issued and signed by BC Hydro under clause 5 of the Cover Agreement in the form set out in Appendix E that changes the scope of the Services."
- 1.4 **"Claim"** means any claim, demand, action, cause of action, suit and proceeding.
- 1.5 **"Claim Costs"** means any and all loss, damage, cost and expense, including but not limited to all legal, accounting and expert costs and expenses incurred in the investigation, defence or settlement of a Claim.
- 1.6 **"Compensation"** means amounts payable to Consultant in accordance with Appendix C of the Agreement and/or the applicable Work Order.
- 1.7 **"Confidential Information"** means technical, financial, commercial, legal or other information, that is disclosed or otherwise made available by one party to the other whether orally or in any other media or form and includes the Work Product, the existence of this Agreement and any Work Order and the contents hereof, but excluding information that is:
  - a) in the public domain before disclosure to the receiving party, or becomes in the public domain thereafter otherwise than as a result of a breach by the receiving party of its obligations of confidentiality under this Agreement or any Work Order;
  - b) known to the receiving party before it is disclosed by the disclosing party;
  - c) developed independently by the receiving party without reference to the information disclosed by the disclosing party as evidenced by written or other tangible records; or
  - d) received by the receiving party from a third person, who is not under any obligation to the disclosing party to restrict disclosure.
- 1.8 **"Contractor Code of Conduct"** means the Code of Conduct Guidelines Applicable to BC Hydro Contracts, a copy of which is available at [http://www.bchydro.com/etc/medialib/internet/documents/policies/pdf/policies\\_guidelines\\_applicable\\_to\\_bc\\_hydro\\_contracts.Par.0001.File.attachment\\_1\\_policies\\_guidelines\\_applicable\\_to\\_bc\\_hydro\\_contracts.pdf](http://www.bchydro.com/etc/medialib/internet/documents/policies/pdf/policies_guidelines_applicable_to_bc_hydro_contracts.Par.0001.File.attachment_1_policies_guidelines_applicable_to_bc_hydro_contracts.pdf) or by contacting Hydro's Representative.
- 1.9 **"Cover Agreement"** means the agreement made between BC Hydro and Consultant to which this Appendix is attached.
- 1.10 **"CSA Contract Completion"** means that the Services have been completed in all respects, all deficiencies have been corrected, all Submittals have been made and



completed in accordance with the applicable Work Order, and all materials, tools and equipment have been removed from the Project Site, all to the satisfaction of BC Hydro.

- 1.11 **"Embedded IP"** has the meaning ascribed to it in 1.21 of this Appendix A.
- 1.12 **"Force Majeure Events"** has the meaning ascribed to it in clause 28 of the Cover Agreement.
- 1.13 **"Hydro's Representative"** means the person appointed by BC Hydro who has responsibility for managing the Agreement, and unless Contractor is expressly advised otherwise, Hydro's Representative (a) has full authority to act on behalf of and bind BC Hydro, and (b) may, in writing, delegate any or all of his or her authority to any other person.
- 1.14 **"Laws"** means all applicable constitutions, charters, acts, laws, statutes, regulations, ordinances, by-laws, rules, protocols, codes, guidelines, judgments, orders, notices, directions, decrees, treaties or other requirements whether national, provincial or local made or issued by any government or governmental agency or authority.
- 1.15 **"Permits"** means permits, licenses, approvals and similar authorisations issued by any government or governmental agency or authority for the Project.
- 1.16 **"Project"** or **"Site C Project"** means the planned construction by BC Hydro of a new hydroelectric dam and generating station (commonly referred to as "Site C") on the Peace River in north-eastern British Columbia downstream of the existing Peace Canyon dam, including all preparatory work and studies in advance of actual construction, and, with respect to individual Work Orders, means the project described in the applicable Work Order.
- 1.17 **"Project Site"** means any site owned, operated or controlled by BC Hydro or which BC Hydro has directed Consultant to attend as necessary to perform the Services.
- 1.18 **"Services"** or **"Work"** means the work to be performed by Consultant under a Work Order issued under the Agreement, as generally described in Appendix B and specifically identified in the relevant Work Order, as amended from time to time by Change Order or Change Directive.
- 1.19 **"Submittals"** has the meaning ascribed to in clause 4 of the Cover Agreement.
- 1.20 **"Third Party Claim"** means a Claim made against a party to this Agreement by a third party.
- 1.21 **"Work Order"** means the contract between BC Hydro and Consultant for specific Services, created in accordance with clause 2 of the Cover Agreement, as the same may be amended from time to time.
- 1.22 **"Work Product"** means all permanent structures, if any, added at the Project Site, all samples, and all drawings, data, plans, models, designs, reports, specifications and other documents and all concepts, inventions, methods, mechanisms, know-how, products and processes and any other deliverables to be prepared, produced or supplied by Consultant under the applicable Work Order as part of the Services, and all copyright and other



intellectual property rights therein. For greater certainty, Work Product does not include intellectual property that is proprietary to Consultant and (a) used by Consultant to prepare, produce or supply the Work Product; or (b) that is otherwise embedded within the Work Product ("**Embedded IP**"), provided such intellectual property was not specified as a deliverable under the applicable Work Order; or (c) specifically identified in the applicable Work Order as not being part of Work Product.

## **2 Interpretation**

Grammatical variations of defined terms have similar meanings, the singular includes the plural and vice versa, and the masculine includes the feminine and neuter, where the context requires. The division of the Agreement into clauses, subclauses, paragraphs and Appendices is for convenience and does not affect the interpretation of the Agreement. The word "including" is deemed to be followed by "without limitation". Special Conditions, if any, govern over the Cover Agreement.

A handwritten signature in black ink, appearing to read "John Doe".

## APPENDIX B SCOPE OF SERVICES

### 1. Introduction

The Services to be provided by the Consultant in general consist of engineering, project management, project support, and related services required by BC Hydro for the design of the Highway 29 road and bridge infrastructure realignment associated with the Site C Project, all as more particularly described in this Appendix B. The particular Services required by BC Hydro and to be provided by the Consultant for specific phases or components of the Project will be set out in Work Orders from time to time agreed upon between BC Hydro and the Consultant in accordance with clause 2 of the Cover Agreement.

Following execution of the Agreement, the Consultant will be expected, in consultation with BC Hydro, to prepare a complete and detailed project plan for the phases of the Services that incorporates the requirements described in this Appendix B and Consultant's Response to RFP 671 dated January 27, 2011.

### 2. Background

The Site C Stage 2 Report summarizes work completed to date in the Highway 29 Relocation component, along with all other project disciplines. The Stage 2 Report and its Appendices are available at <http://www.bchydro.com/sitec>. In addition, many historical Site C reports are available on the British Columbia Utilities Commission ("BCUC") website, at [www.bcuc.com](http://www.bcuc.com), under "search archives".

BC Hydro is one of North America's leading providers of clean, renewable energy, and the largest electric utility in British Columbia, servicing approximately 95% of the province's population and 1.8 million customers. BC Hydro's goal is to provide reliable power, at low cost, for generations.

As a provincial Crown corporation established in 1962 under the Hydro and Power Authority Act, BC Hydro reports to the Ministry of Energy, and is regulated by the BCUC.

BC Hydro's various facilities generate between 42,000 and 52,000 gigawatt hours of electricity annually, depending on prevailing water levels. Electricity is delivered through a network of 18,000 kilometres of transmission lines and 57,000 kilometres of distribution lines.

Under the direction of the Province, BC Hydro is advancing the Site C Clean Energy Project to the environmental and regulatory review stage, which includes an independent environmental assessment process. Subject to approvals, Site C will be a third dam and hydroelectric generating station on the Peace River in northeast B.C. It will be an earth fill dam, approximately 1,100 meters in length and 60 metres high above the river bed. Site C will be a source of clean and renewable electricity for more than 100 years. Based on the historic project design, it will provide approximately 900 megawatts ("MW") of capacity, and produce about 4,600 gigawatt hours ("GWh") of electricity each year – enough to power more than 400,000 homes per year.

Construction of the project will be subject to environmental certification and other regulatory approvals, and ensuring that the Crown's constitutional duties to First Nations are met.

### 3. ROAD INFRASTRUCTURE PROJECT SCOPE

The road infrastructure project scope is to design and construct relocated segments of Highway 29, between Fort St. John and Hudson's Hope, BC, impacted by the construction of the reservoir associated with the Site C Dam Project. The scope will include design and



construction of new bridge structures and associated roadway infrastructure, including side roads and accesses to Highway 29.

Four segments have been identified for relocation:

1. Cache Creek/Bear Flats
2. Halfway River
3. Farrell Creek
4. Lynx Creek

#### **4. NATURE OF SERVICES**

The objective of the engineering services work is to develop designs which support the environmental regulatory process BC Hydro is conducting in Stage 3 of the Site C Project. The Consultant will be required to identify and provide a definition design of the preferred option for regulatory review and public consultation. The Consultant shall utilize the feedback and direction from the Stage 3 processes to develop and complete the 50% Preliminary Design Stage. Upon regulatory approval of the Project and with direction from Hydro's Representative, the Consultant will further develop the designs to 100% detailed design level, to be issued for construction.

Construction works shall be in accordance with the BC Ministry of Transportation and Infrastructure's (BC MoT) current Standard Specifications for Highway Construction.

Design Engineering Services shall include:

1. Review alignment options identified in previous studies;
2. Provide recommendations for preferred alignment options and as directed by Hydro's Representative to initiate further investigation and development;
3. Provide topographical survey and site plans for each of the 4 relocation segments;
4. Conduct geotechnical assessment of preferred alignments;
5. Provide support for Multiple Account Evaluation process to determine preferred alignment options;
6. Provide full roadway and structural designs for the "Definition" stage through the 50% Preliminary Design Stage, and subject to BC Hydro obtaining approvals to proceed beyond Stage 3 through, 90% and 100% detailed design stages; and
7. Incorporate environmental mitigation and compensation measures into design development.
8. Comply with BC MoT's Engineer of Record and Field Review Guidelines (Technical Circular T-06/09) which can be found on the BC MoT website at [http://www.th.gov.bc.ca/publications/Circulars/Current/T\\_Circ/2009/t06-09.pdf](http://www.th.gov.bc.ca/publications/Circulars/Current/T_Circ/2009/t06-09.pdf).

#### **4.1 ENGINEERING COMPONENTS**

##### **4.1.1 Survey and Highway Design General Requirements**

###### **a. Surveying**

The Consultant shall provide topographical survey and site plans, in accordance with the current edition of the BC MoT General Survey Guide, for alignment options analysis and highway design:

1. Lynx Creek      Approximate location LKI 4.48 to LKI 13.34
  - a. (LKI reference according to BC MoT Landmark Kilometre Inventory)



2. Farrell Creek      Approximate location LKI 15.30 to LKI 18.30
3. Halfway River      Approximate location LKI 36.93 to LKI 41.43
4. Cache Creek/Bear Flats      Approximate location LKI 53.95 to LKI 61.35

The survey scope is as follows:

1. Primary control at 1 km intervals
2. Field survey to supplement LiDAR survey (Hydro's Representative to provide LiDAR data; accuracy is 45cm or better in the horizontal and 30 cm or better in the vertical; point to point accuracy (RMS error) is warranted to be 25cm horizontally and 15 cm or better vertically) for utilities, culverts, bridges, intersecting roads, overhead power lines, etc.

Survey deliverables shall include the following:

1. all survey data in CAiCE Survey Project Data format (BC MoT General Survey Guide, Section 900). Include control points defined by point identifier, northing, easting, elevation & feature code. Define the elevation datum. The legacy Survey Results File (SRF) format may be acceptable under some circumstances;
2. survey data reduced electronically in ASCII file format, tiled to respect the file sizes;
3. text files that include topographic and planimetric feature break lines, thinned spot elevations, and/or CAiCE project files and AutoCAD drawings. The files shall be tiled to respect CAiCE point limits;
4. high resolution colour orthophotos in TIFF and ECW format;
5. all legal plans used to define rights-of-way and property lines in TIFF format if available;
6. all underground utility plans and other drawings used;
7. contour plans meeting standards and contents specified in Section 600 of the General Survey Guide; and
8. quality management documentation.

### **b. Highway Design Engineering**

The consultant shall:

1. Produce a cost-effective roadway and drainage design solution for the construction and maintenance of the Project's infrastructure; explore all reasonable design criteria to achieve a safe solution that has the lowest life cycle cost possible and minimizes the overall footprint of the project; and include necessary maintenance, emergency, and traffic operation features as may be necessary both during construction and after project completion.
2. Liaise with the BC Hydro Owner's Engineer with respect to roadway and drainage design criteria. The Consultant shall determine Project Design Criteria for each design segment at the start of the design process and finalize the Project Design Criteria with BC Hydro Owner's Engineer signoff prior to the start of the design. Any variance from TAC or the current edition of the BC Supplement to TAC Geometric Design Guide will require formal approval by the appropriate BC Hydro official.
3. Apply iterative design procedures to:
  - a. deliver a result that addresses safety and operational issues,
  - b. address stakeholders' interests to find a workable solution,



- c. optimize the solution for a particular situation minimizing risk to the BC Hydro, and
- d. fit construction and maintenance costs within a Project's budget.

4. Identify and develop viable design alternatives that are geotechnically and operationally feasible while giving consideration to appropriate methods of handling highway runoff, e.g., open channel versus enclosed drainage systems.
5. Evaluate and compare alternatives by summarizing the impacts and costs, and making recommendations as to what would be the best solution that fulfils BC Hydro's requirements. Alternatives should include evaluating layouts for intersections, property impacts, drainage requirements, environmental constraints, sources of construction materials and other relevant matters as required.
6. Provide technical support to BC Hydro by providing technical reports, plans, drawings and other relevant documents that are necessary for BC Hydro use or at stakeholder meetings.
7. Utilize relevant BC MoT publications such as the latest edition of the BC Supplement to TAC Geometric Design Guide in conjunction with Ministry technical bulletins and the TAC Geometric Design Guide for Canadian Roads in preparing a design. Reference manuals, forms and Standard Specifications for Highway Construction are available either at <http://www.th.gov.bc.ca/publications/repopubs.htm> or through the Queen's Printer.
8. Use relevant Product Specifications when applicable such as:
  - a. BC MoT Qualified Proprietary Structures Guidelines, and
  - b. Recognized Products List,  
[http://www.th.gov.bc.ca/publications/eng\\_publications/geotech/rpl.htm](http://www.th.gov.bc.ca/publications/eng_publications/geotech/rpl.htm).
9. Utilize A Policy on Geometric Design of Highways and Streets (AASHTO) and Master Municipalities Contract Documents (MMCD) as secondary references and consider MMCD documents and drawings to meet local municipal government requirements.
10. Examine legal plans and land titles to update existing cadastral boundaries as required. Identify proposed right-of-way acquisition boundaries and required working easements on Right-of-Way Acquisition Plans. Calculate and record the required areas on the plans showing the breakdown of right-of-way areas by parcel. Forward the completed plans to Hydro's Representative in order that the purchase of required right-of-way and easements may commence prior to the completion of design. Investigate the feasibility of design revisions to address concerns identified during the property acquisition process and incorporate these changes where feasible in revised Right-of-Way Acquisition Plans.
11. Prepare plans and profiles in conformance with BC Supplement to TAC Geometric Design Guide using all BC MoT standard symbols, C-Lines, line types and text fonts. Illustrate complete construction details, laning and geometry on the drawings as required.
  - a. Confirm the required scale of drawings prior to starting a design.
  - b. Use the drawing series number provided by the BC Hydro Owner's Engineer to ensure the drawing numbers are unique.
12. Prepare reproducible cross sections as reference information in accordance with the format and content specified in Section 400 of the BC Supplement to TAC Geometric Design Guide.
13. Comply with the requirements of Section 1270 of the BC Supplement to TAC Geometric Design Guide. Confirm CAiCE Construction Archive has been reviewed by the BC Hydro



Owner's Engineer as meeting Section 1270 requirements prior to completing a detailed design.

14. Use CAiCE or approved alternate software to generate all design and construction earthworks information. Advise the BC Hydro Owner's Engineer at appropriate stages of a design when an alternative software program (like LDD) may be beneficial and timely when exploring alternative design concepts. Obtain Hydro's Representative approval prior to using an alternative software program (like LDD) and converting a design into CAiCE.
15. Identify all public or private utilities to be removed, relocated, adjusted or protected as a result of the proposed highway relocation work, and contact the owners to review their requirements and time schedule to complete the required modifications.
16. Prepare an Engineer's Estimate describing and listing work items
17. Prepare cost estimates for alternatives including estimates of all Project costs such as general engineering during construction, contingencies, construction supervision, environmental monitoring and compensation, relocation of utilities, property acquisition, and cost of materials and services to be provided by the Ministry and others. Maintain an updated estimate of all Project-related costs as the engineering design services progress.
18. The required accuracy of cost estimates under normal circumstances is as follows:
  - a. Definition/conceptual design stage: +/-35%
  - b. Functional/preliminary design stage: +/-20%
  - c. Detailed design stage: +/-10%
19. Notify Hydro's Representative in writing giving details of any factors considered to be beyond the Consultant's control that qualify, or are likely to qualify, the accuracy of cost estimates. Submit further information and recommendations required to assist Hydro's Representative in making an evaluation of such qualifications for the necessary budgeting process and for other decision-making purposes of BC Hydro.
20. Conduct a constructability review of the design. Identify and summarize key constructability issues during the design process to ensure that constructability has been considered and factored into the construction cost estimate and schedule.
21. Should the Project receive favourable approval through the regulatory process, and upon further authorization of Hydro's Representative, the consultant in Stage 4 shall complete 90% and 100% designs and prepare drafts of all schedules and tender documents meeting BC Hydro requirements and formats for tendering.
  - a. Include and incorporate Special Provisions and tender drawings (electrical design, bridge and structural design, landscaping design, utility relocation design, environmental compensation design, etc.) prepared by others.

Highway Design Engineering deliverables may include the following:

1. a Drainage Report including all drainage calculations, design return year periods, and other relevant information;
2. full size signed and sealed Right of Way Acquisition Plans;
3. original full size and half size (11" x 17") highway design drawings signed and sealed by the Engineer of Record;
4. electronic copies (DWG and PDF files) of design drawings;



5. cross sections and other reference drawings;
6. draft Special Provisions and other tender documents;
7. construction cost estimates (Engineer's Estimate) for the appropriate level of design using BC MoT Form H0088  
[http://www.th.gov.bc.ca/publications/const\\_maint/contract\\_serv/contract\\_services.htm](http://www.th.gov.bc.ca/publications/const_maint/contract_serv/contract_services.htm);
8. cost estimates for proposed utility relocations;
9. a Highway Design Folder containing the following:
  - a. a signed and sealed copy of the Project Design Criteria document with supporting documentation for exceeding or not meeting values specified within TAC/Ministry guidelines,
  - b. a completed CAiCE Design Project Electronic Deliverables Quality Checklist (Supplement to TAC, Section 1270.13) indicating what tasks have been completed, and
  - c. one or more of the following CAiCE deliverables:
    - i. Preliminary Design Archive for a preliminary design,
    - ii. Functional Design Archive for a functional design,
    - iii. Detailed Design Archive for a detailed design, and
    - iv. Construction Archive for a Project to be tendered;
10. quantity calculation sheets cross referenced to the Engineer's Estimate showing how the "most probable" approximate quantities were derived;
11. a completed quality management (QC & QA) checklist;
12. copies of all project correspondence, including letters, memos, facsimiles, emails, conversation records, meeting minutes, decision papers, reports, and other relevant documents;
13. copies of project photos;
14. a brief Design Report summarizing the following:
  - a. existing conditions,
  - b. the initial Project scope,
  - c. design processes that have resulted in revisiting previous designs, and their outcomes,
  - d. proposed major revisions and scope changes and their rationale;
  - e. significant features of the design that may require special attention from the Project Supervisor, Environmental Monitor, Geotechnical Engineer, Engineer of Record or others during construction;
  - f. all utility contacts, potential infrastructure conflicts and required relocations and their status;
  - g. critical construction staging and traffic control considerations;
  - h. a summary of key constructability issues;
  - i. all environmental agency contacts;



- j. a summary of environmental constraints and proposed mitigation measures;
- k. all provisional sums shown on a Schedule for Approximate Quantities and Unit Prices, including a brief explanation for each;
- l. all unresolved design issues, all agreements, and any other special conditions and considerations that may impact the construction of a Project; and
- m. variances in design criteria, including a signed and sealed copy of the Project Design Criteria document with supporting documentation.

## 4.2 GEOTECHNICAL

The Consultant shall:

- 1. Examine and assess all geotechnical information, designs and reports provided by the Site C Project Team to establish the extent of additional geotechnical work required for the project (This work shall not be a review or appraisal of the geotechnical design). Liaise with the Site C Project Team with respect to the geotechnical design requirements.
- 2. As each design component/work order package is identified that requires site specific geotechnical investigation and assessment, the Consultant will prepare a draft recommended detailed geotechnical field investigation plan and estimate, which will be submitted for review and approval by BC Hydro's Representative. The timing and schedule for submission and approval of such plans and estimates will be mutually established by the Consultant and BC Hydro's Representative.
- 3. Upon acceptance by Hydro's Representative of the proposed geotechnical work, undertake a complete and accurate geotechnical investigation using state of the practice methods and equipment in order to provide a detailed geotechnical design supporting the project's detailed roadway, drainage and structural design process, components of which would be expected to encompass, but not be limited to: drill holes, test pits, in-situ testing, sampling, identification, classification, mapping, laboratory testing and evaluation of data along proposed alignments to establish or identify:
  - a. Characterization of subsoil for pavement structure design.
  - b. Location of aggregate source.
  - c. Extent, types and properties of soils and rocks.
  - d. Stripping depth for removal of organic and unsuitable materials and a total volume estimate of stripping quantities listed station to station and grubbing requirements. (Consultant will apply a maximum of 200 meter interval testing with special consideration in areas with observed surficial changes.)
  - e. Use of excavated cut materials with estimated shrink and swell factors.
  - f. Foundation design including seismic evaluation and design.
  - g. Potential settlement and stability analysis, monitoring and remediation measures.
  - h. Surcharge, instrumentation and special construction techniques to ensure a safe and cost effective design. Identify by specific location with x, y and z coordinates, a monitoring schedule and data collection requirements for any instrumentation required for monitoring during construction; e.g., Piezometers, Settlement plates, Slope indicators, Extensometers.
  - i. Detailed installation procedures for special construction techniques (e.g. light weight fill).



- j. Soil and rock slope and retaining structure design to ensure stability under static and earthquake loading for the design life of the project.
- k. Surface, groundwater, drainage, erosion, siltation, and acid rock drainage issues, required monitoring and any remediation measures.
- l. Specific recommendations to address ditch depth and width, rock fall and snow catchment, subsurface drainage requirements and side slope seepage problems to prevent erosion of slope faces. (Reference; BC MoT Manual of Erosion and Shallow Slope Movement, August 1997).
- m. Geosynthetics specifications, if being recommended for construction of project, with detailed installation procedures.
- n. Special foundation requirements.
- o. Pavement structural design and rehabilitation options for existing structure for the project.
- p. Reclamation plan for the de-commissioned segments of Highway 29 which shall include re-cycling opportunities of the existing infrastructure materials into the realigned segments or other areas for its utilization.
- q. Construction supervision requirements to confirm geotechnical assumptions.

4. Conduct a Stage 1 Preliminary Site Investigation (PSI) to identify potential contaminated sites. In areas of potential environmental concern, identified during the Stage 1 PSI, undertake a Stage 2 PSI to confirm the presence or absence of contamination. Follow the requirements of Contaminated Sites Regulation of the BC Environmental Management Act, BC Reg. 375/96 O.C.1480/96.

5. As the detailed design progresses, reappraise all aspects of the pavement structure design to achieve the most economical solution compatible with the proposed profile and geometric design and submit any modifications to the BC Hydro Owner's Engineer.

**NOTE 1:** Classification and Identification of soils is to be done according to BC MoT Standards using the Modified Unified Soils Classification System as outlined in the current BC Ministry of Transportation "Manual of Test Procedures, Soils and Aggregate".

**NOTE 2:** All test hole, test pit and seismic lines must be located by survey (to a horizontal accuracy of 2 metres) and by UTM (NAD83) co-ordinates (Northing, Easting and UTM Zone).

#### **4.2.1 Geotechnical Design Criteria**

##### **a. Pavement Structural Design**

The Consultant shall provide pavement structure designs for a Rural Arterial Undivided (RAU) Highway Standard. The roadway template includes 3.6 m paved travel lanes, 1.5m paved shoulders, and 0.5m gravel shoulders with proposed 3:1 side slopes.

Pavement structures shall be designed as outlined below and in the Technical Circular T-01/04 "Pavement Structure Design Guidelines" and shall meet or exceed the structures outlined in the BC MoT Highway Engineering Design Manual for the various road classifications.

[http://www.th.gov.bc.ca/publications/Circulars/All/T\\_Circ/2004/t01-04.pdf](http://www.th.gov.bc.ca/publications/Circulars/All/T_Circ/2004/t01-04.pdf)

Use of Geotextile and Geogrid shall be considered to minimize the migration of fine grain soil into the Selected Granular Sub-base (SGSB) and to add reinforcement to the Base



Course. Addition of Geogrid may lead to a reduction in the thickness of the Base Course materials.

**b. New Construction**

New roadway designs shall be conducted in accordance with the 1993 Version of the AASHTO (1993) Guide for Design of Pavement Structures. The AASHTO pavement design software program DARWIN 2.01 or 3.0 may be utilized.

The following design criteria and input parameters shall be used in conjunction with the AASHTO Pavement Design Method:

<b>Analysis Period</b>	20 YEARS
<b>Reliability</b>	$R = 85\%$
<b>Standard Deviation</b>	$So = 0.45$
<b>Pavement Serviceability Index (PSI):</b>	
Initial Serviceability Index:	$p_i = 4.2$
Terminal Serviceability Index:	$p_t = 2.5$

**c. Materials Characterization**

The Consultant shall develop Resilient Modulus ( $M_R$ ), Structural Layer Coefficients ( $a_i$ ) and Drainage Coefficients ( $m_i$ ) values for Asphalt Pavement (AP), Well Graded or Intermediate Graded Crushed Base (WGB or IGB: 25mm and 75mm) and Select Granular Sub-base (SGSB) materials that are specific to the Site and conditions.

**d. Minimum Select Granular Sub-base (SGSB) Thickness Requirements**

A minimum thickness of 150mm SGSB shall be applied over rock sub-grades. No SGSB is required where Structural Design Criteria is satisfied and subgrade material consists of clean granular deposits that satisfy the SGSB specification.

**e. Traffic Data**

Traffic data computations shall be determined using methods referenced in the AASHTO (93) Guide for Design of Pavement Structures and/or the TAC97 Pavement Design and Management Guide.

The load equivalency factors (ESALs) for the designated design vehicle(s) shall be obtained from the Canadian Vehicle Weights and Dimensions Study.

The Consultant may obtain available traffic information, if any, from BC MoT.

1. Ministry technical circulars are available on the web at:  
[http://www.th.gov.bc.ca/publications/Circulars/technical\\_circulars.asp](http://www.th.gov.bc.ca/publications/Circulars/technical_circulars.asp)

The Geotechnical Design shall follow applicable sections of the following documents:

1. CSA S6-06 (Canadian Highway Bridge Design Code, CHBDC)



2. British Columbia Ministry of Transportation and Infrastructure (BC MoT) Supplement to CHBDC S6-06.  
[http://www.th.gov.bc.ca/Publications/eng\\_publications/bridge/standards/BSM-Volume-1\\_2007/BSM\\_Vol\\_1\\_Sec\\_01\\_Aug\\_2007.pdf](http://www.th.gov.bc.ca/Publications/eng_publications/bridge/standards/BSM-Volume-1_2007/BSM_Vol_1_Sec_01_Aug_2007.pdf)
3. BC MoT Seismic Retrofit Criteria (June 2005).  
[http://www.th.gov.bc.ca/publications/eng\\_publications/bridge/standards/MoT\\_SRDC\\_June-30-20051.pdf](http://www.th.gov.bc.ca/publications/eng_publications/bridge/standards/MoT_SRDC_June-30-20051.pdf)
4. AASHTO "Standard Specifications for Highway Bridges", Seventeenth Edition, 2002.
5. ATC-49 "Recommendations LRFD Guidelines for the Seismic Design of Highway Bridges"

#### **f. Seismic Design**

The Consultant shall use the performance levels for structures that are defined in the (BC MoT) Supplement to S6-06 and CSA S6-06 documents referenced above. For site-specific numerical analyses of site response and soil-structure interaction, Hydro's Representative may provide the acceleration time histories. If the project doesn't provide the data, a site specific seismic hazard value can be obtained from the Geological Survey of Canada at the following website:

[http://earthquakescanada.nrcan.gc.ca/hazard/interpolator/index\\_e.php](http://earthquakescanada.nrcan.gc.ca/hazard/interpolator/index_e.php)

Liquefaction potential of the sub soils shall be evaluated for structures, walls and embankments, and the design shall incorporate ground improvements and other methods of addressing potential liquefaction in accordance with ATC-49 "Recommendations LRFD Guidelines for the Seismic Design of Highway Bridges".

Seismic design of the stability of any retaining walls and embankments shall be done in accordance with AASHTO, Standard Specifications for Highway Bridges, Seventeenth Edition, 2002. Seismic demand and expected performance levels shall be consistent for the project.

#### **g. Soil Slope and Rock Slope Design**

The Consultant shall conduct state of the practice field investigation to satisfy design requirements; conduct an overall stability assessment; and provide an economic cut/fill slope design including any support measures that may be necessary to ensure stability for the design life of the project.

The rock cut design shall include a practical ditch design based on geometric criteria proposed for the project. Recommendations for the rock cut at the detailed design stage shall be based on a site-specific investigation and shall take priority over the requirements outlined in Technical Bulletin GM2001 Rock Slope Design

[http://www.th.gov.bc.ca/publications/eng\\_publications/geotech/TB\\_GM02001\\_Rock\\_Slope\\_Design.pdf](http://www.th.gov.bc.ca/publications/eng_publications/geotech/TB_GM02001_Rock_Slope_Design.pdf)

The rock-fall containment strategies outlined in the Technical Bulletin may be incorporated in the detailed design if the site-specific stability assessment allows and if it is cost effective to do so.

Where the failure of a slope would affect highway operation (i.e. failure envelope encroaches the paved surface, failure causes lane closures for repairs or failure



necessitates excessive maintenance) the following minimum Factor of Safety shall apply:

	<b>Soil Slopes</b> Minimum Factor of Safety	<b>Rock Slopes</b> Minimum Factor of Safety
Static Conditions	1.5	1.3
Already Constructed Slopes under Pseudo-static Seismic Analysis*	1.0	1.0
Newly Constructed Slopes under Pseudo-Static Seismic Analysis*	1.1	1.1

\*Alternatively, dynamic analysis or displacement-based methods may be used to determine specific displacements values acceptable to the project.

#### **h. Foundation Design**

Both shallow and deep foundations design must be completed in accordance with the B.C. Ministry of Transportation and Infrastructure Supplement to S6-06 and CSA S6-06.

#### **i. Settlement Analysis**

Settlement analysis of pre-existing and new structures/embankments shall be performed. Foundations shall be designed such that differential settlements are limited to tolerable amounts as specified by the structural design, geometric design and utility considerations. Settlement analysis must consider and separately tabulate expected static settlement and any seismic induced settlement under the specified earthquake loading conditions.

Embankment settlement shall be predicted and appropriate means to minimize the impacts, such as surcharging, overbuilding, use of lightweight fills and special construction requirements shall be evaluated.

#### **j. Retaining Wall Design**

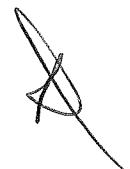
Slope angles steeper than 45 degrees shall be designed as walls. Wall design must follow the method outlined in UAASHTO Standard Specifications for Highway Bridges, Seventeenth Edition, 2002, Section 5, Retaining Walls.

For the design life of components, wherever there are time dependent calculations, use 100 years. Examples would be for corrosion and creep calculations.

#### **k. MSE Wall Design – External Stability**

The following Factors of Safety shall be used for external stability of MSE wall design:

Condition	Minimum Factor of Safety
Bearing Capacity	2.5



Sliding	1.5
Overturning	2.0
Global Stability	1.5

Wall heights, proprietary wall systems and Geosynthetics materials are restricted to those shown in the BC Ministry of Transportation and Infrastructure's Recognized Products Book under 'R' on the website: <http://www.th.gov.bc.ca/siteindex.htm>

### **I. Deliverables**

The Consultant shall supply a report summarizing investigations and presenting the results of field activities and laboratory analysis in the consultant's format.

The consultant shall provide a template for approval to BC Hydro Owner's Engineer which provides a format for Pit development and reclamation recommendations and plans.

### **m. Reporting Standards**

**Draft Report** – The Consultant shall prepare a report when fieldwork, data collection, analyses and interpretation have been completed. The report shall be submitted to Hydro's Representative for internal discussion.

**Final Report** – The Consultant shall prepare a final report that addresses any issues and comments raised with earlier deliverables and the draft report.

Reports shall follow guidelines for geotechnical reports as contained in the BC MoT Technical Bulletin GM9801 available at:

[http://www.th.gov.bc.ca/publications/eng\\_publications/geotech/TB\\_GM9801\\_Guide\\_Geotech\\_Rpts.pdf](http://www.th.gov.bc.ca/publications/eng_publications/geotech/TB_GM9801_Guide_Geotech_Rpts.pdf)

Consultant shall summarize all subsurface data investigation results by plotting electronic data on plans, profile and cross sections using computer aided drafting software compatible with the most current BC Hydro format and provide all electronic data, including any and all survey data used to produce drawings.

All drawings must have a unique drawing number in the title block.

All drawings are to be prepared using AutoCAD and in accordance with BC MoT AutoCAD Standards available at:

<http://www.th.gov.bc.ca/AutoCAD/>.

**Summary Logs** - All summary test-hole and test-pit logs must be in accordance with standard BC MoT format as described in "Geotechnical and Materials Engineering Standards for Bridge Foundation Investigations (January 1991)" - Section 2 Summary Log available at:

[http://www.th.gov.bc.ca/publications/eng\\_publications/geotech/Geotech\\_Materials\\_Eng\\_Stand\\_Bridge\\_LR.pdf](http://www.th.gov.bc.ca/publications/eng_publications/geotech/Geotech_Materials_Eng_Stand_Bridge_LR.pdf)

Note: Templates in gINT format for the test-hole, test-pit and rock core logs are available from Information Wranglers Technical Services Inc (IWTSI) through a onetime payment for a single copy license. Template support services via e-mail and periodic updates to



the templates are also available on an annual subscription basis at additional cost. Licensing details, support services, and costs are outlined on IWTSI's website at:

[www.informationwranglers.com](http://www.informationwranglers.com)

Survey information on all Logs shall include local project referencing (station, offset and elevation above mean sea level) and UTM (NAD83) coordinates (Northing, Easting and UTM zone).

Summary logs shall be submitted on a CD in gINT, DXF (AutoCAD) and PDF format. In addition, a scanned Driller's field log is required to be submitted. Scans shall be 250 dots per inch, greyscale and in JPEG format, saved at 80% of the maximum quality setting.

#### **n. Scope of Aggregate Investigation**

To provide an aggregate supply strategy for the upgrading and construction of each of the four segments of Highway 29, which includes the evaluation of developed and undeveloped pits as well as the identification and random testing of potential sources to meet the material volume requirements of the project with respect to surfacing, base, sub-base and borrow.

#### **o. Field Investigations**

The anticipated volume of materials based on the roadway design template for the four segments is 1,264,500 m<sup>3</sup> of borrow material and 185,400 m<sup>3</sup> of produced aggregates.

The Consultant shall review the findings documented in previous studies and conduct additional field studies where required. The consultant shall coordinate their investigation requirements with other similar BC Hydro investigations in order to achieve efficiencies and minimal disruptions to property owners and land operators.

#### **p. Exploration Phase**

The Consultant shall conduct reconnaissance level subsurface bulk sampling to evaluate granular potential of target area using +/- 100 meter horizontal spacing of subsurface sample locations.

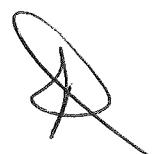
Consultant and BC Hydro Owner's Engineer shall discuss the results and Consultant's recommendations prior to equipment leaving the site or the Consultant initiating verification phase investigations. The discussion may be verbal and/or by e-mail at the discretion of the BC Hydro Owner's Engineer. Further investigations shall only proceed after receiving approval from the BC Hydro Owner's Engineer

#### **q. Verification Phase**

The Consultant shall conduct further subsurface sampling on a tighter horizontal spacing to adequately assess the quality, quantity and consistency of granular materials identified during the exploration phase. Prior to start of verification testing the Consultant shall prepare an investigation plan and discuss the plan with the BC Hydro Owner's Engineer. Discussion may be verbal and/or by e-mail at the discretion of the BC Hydro Owner's Engineer. Consultant shall proceed with investigations in accordance with the plan only after receiving approval from the BC Hydro Owner's Engineer.

#### **r. Subsurface Sampling**

1. Excavators capable of advancing to minimum 6 metres depth shall be used for test pits.



2. Where greater depth is required, drilling equipment capable of acquiring bulk representative samples and penetrating to a minimum depth of 20 metres shall be used.
3. Consultant shall:
  - a. Perform complete visual identification of all major soil horizons and note such on appropriate field log sheets (in Consultant's format),
  - b. Take composite and representative samples of each major granular soil horizon,
  - c. Note moisture content, seepage and water table if applicable, and
  - d. Provide digital photos of test-pit excavations and of excavated material piles.

#### **s. Laboratory Testing**

The Consultant shall perform appropriate analysis of the granular samples taken. The following table presents the frequency of tests BC Hydro expects to be completed per site and the testing standard. Additional testing shall be at the discretion of the BC Hydro Owner's Engineer.

TEST	FREQUENCY	STANDARD
Sieve Analysis of Coarse & Fine Aggregates	All	ASTM C117
Laboratory Crush / Sieve	Representative of Area Tested (requires Ministry representative approval)	25mm / C117
Fracture Count	Every Lab Crush	SS202 Appendix 1*
Micro-Deval – Coarse & Fine Aggregate	3 sets representative of the aggregate site	ASTM-D6928 or CSA-A23.2-29A, A23.2-23A
Sand Equivalent	3 sets representative of the aggregate site	ASTM D2419
Soundness (MgSO4)	2 sets representative of the aggregate site	ASTM C88
Specific Gravity & Absorption of Coarse Aggregate	2 sets representative of the aggregate site	ASTM C127
Specific Gravity & Absorption of Fine Aggregate	2 sets representative of the aggregate site	ASTM C128
Plastic Determination Limit	Optional at BCH request	ASTM D421, D4318



Clay Lumps & Friable Particles	Optional at BCH request	ASTM C142
Petrographic Analysis	Optional at BCH request	SS202 Appendix 2*

*\*Reference to BC MoT current Standard Specifications for Highway Construction.*

All samples taken shall be retained by the Consultant until project completion and their disposal is authorized in writing by the BC Hydro Owner's Engineer.

#### 4.3 BRIDGE ENGINEERING

Consultant shall:

1. Provide a detailed report on structure options identified in Stage 2 reports for each of the 4 segments,
2. Develop designs within phasing stages as identified in the scope of this RFP on the preferred alignment option,
3. Follow BC Hydro approved Design Criteria:

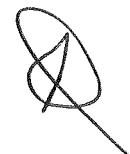
The design of the proposed new structures shall be in accordance with the Canadian Highway Bridge Design Code (CHBDC) CAN/CSA-S6-06 and the BC Ministry of Transportation Supplement to CHBDC S6-06.

##### a. General

Design Service Life	75 years
Deck Widths	The bridge crossing shall consist of 2 – 3.65 m lanes with 1.5m shoulders plus cast-in-place concrete parapets for a total width of 11.0±m.
Alignment	The new alignment would be as per the Highway Design Drawings, USL 2008/2009
Clearance	The bridge design shall meet the requirements of the Navigable Waterway Protection Act and have a minimum clearance of 2.0m above the 200 year water level
Utilities	The structures shall be designed to accommodate major utilities as required and directed by Hydro's Representative
Sidewalks	Not to be provided
Parapets and Railings	The parapets and railings shall meet the Performance Level 2 requirements. Railings shall consist of a standard combination bicycle/pedestrian rail mounted directly onto the parapets.
Illumination	Illumination not to be provided on the structures
Bridge End Flares	End flares shall be in accordance with the BC MoT Highway Engineering Standards

##### b. Design Loads

Design Loads	BCL-625 design truck and lane load
Future Allowance	Provision shall be made for an additional dead load allowance for a future 50mm concrete overlay or placement of waterproof membrane and 50mm asphalt surface
Wind Loads	Reference Wind Pressure $q_{50} = 385\text{Pa}$ . (return period for a bridge structure with a maximum span of 125m).



Earthquake Loads	Bridge Importance factor = "Other Bridges"; Zone Acceleration Zone A = 0; Seismic Performance Zone = 1; Soil Profile Type III (depending on the depth of sound shale).
Temperature	Maximum effective temperature = 41° C; minimum effective temperature = -37°C.

c. Materials

Reinforcing Steel	Reinforcing steel shall meet the requirements of CAN/CSA-G30.18 Grade 400R. The top mat of the deck reinforcing steel shall be stainless steel.
Concrete	All substructure concrete shall have a minimum 28 day strength of 30 MPa. Deck concrete would have a minimum 28 day strength of 35 MPa.; maximum cement content of 380kg
Structural Steel	Superstructure members shall be 350 AT, bracing members may be 350 A. Superstructure members located within a distance of 1.5 h of all deck joints would be coated for increased corrosion resistance. The parameter "h" shall be the overall depth of the superstructure. Surfaces of weathering steel shall be painted at all locations that are in contact with galvanized steel. In general, all shop connections shall be high strength bolted.
Corrosion rates	For steel below ground the sacrificial thickness shall be computed for each surface exposed to the soil as follows: Galvanization Loss = 15 micrometers/year for the first two years = 4 micrometers/year for subsequent years Carbon Steel Loss = 12 micrometers/year Design Service Life = 100 years

d. Drainage

Runoff water from the surface of bridges and approach roads shall be conveyed to discharge locations that are acceptable to the regulatory agencies such as the Ministry of Transportation and Infrastructure, Department of Fisheries and Oceans, and Ministry of Water, Land, and Air Protection. Runoff water from the 1 in 10 year design storm shall not extend more than 1 m into the adjacent traffic lane. Except near the crowns of vertical crest curves, a minimum longitudinal gradient of 1.0% and a minimum cross-fall of 2% shall be provided on bridge decks.

e. Bearings

Bearings shall be designed for easy maintenance, inspection and replacement. Bearing replacement procedure, including jacking locations and jacking loads, shall be shown on the bridge drawings. Proprietary products listed in MOT's Recognized Products List shall be used.

f. Piles

1. Design dead and live loads combinations, ultimate capacities, and details of splices and tips shall be indicated on the Drawings. Anticipated and maximum (highest elevation) pile tip elevations and minimum depth of penetration shall be shown on the drawings.

2. Steel piles shall meet the requirements of ASTM A252 grade 3.

g. No Water Ingress



Water ingress into or onto the substructure or abutment wall backfill from the superstructure above shall be prevented. Joints between the superstructure/end diaphragm and the substructure shall be waterproofed.

#### **4.3.1 Engineer-of-Record**

The Engineer-of-Record shall provide the following parameters in an MS Excel spreadsheet with no protection applied, with bridge number inserted in cell A1 and bridge name inserted in cell B1. (Consultant shall provide a template spreadsheet including calculated fields for review by the BC Hydro Owner's Engineer prior to populating it with data.)

1. Skew angle [degrees rounded to the nearest degree]
2. Deck max width [m]
3. Deck min width [m]
4. Deck length [m]
5. Deck area [abutment end to abutment end – drip line to drip line] [ $m^2$ ]
6. Effective deck width [total deck area divided by total length] [m]
7. Effective deck area [Deck area plus 1.5 times the sum of visually exposed abutment heights multiplied by drip line to drip line deck width] [ $m^2$ ]
8. Deck thickness
9. Total deck volume [ $m^3$ ]
10. Effective deck thickness, total deck volume divided by total deck area [mm]
11. Kg of reinforcing steel by reinforcing type [stainless, black, coated, galvanized, and by material type] and by component.
12.  $M^3$  of concrete by component
13. Kg reinforcing/ $m^3$  of concrete by component
14. For the above three parameters, components are abutment footings/pile caps; abutment walls; pier footings/pile caps; pier walls and/or columns; pier caps; approach slabs; deck slab; barriers; sidewalks and/or median
15.  $M^2$  deck area per MLE [ $m^2/MLE$ , where MLE = main longitudinal element]
16. MLE type, number and depth [for variable depth members use depth max, depth min and equivalent depth = vertical face surface area divided by length]
17. MLE span/MLE depth ratio
18. Total MLE weight [tonne]
19. Total MLE weight divided by total deck area [ $Kn/m^2$ ]
20. Total MLE weight divided by total deck area to MLE depth [m] ratio [ $Kn/m$ ]
21. Deck slab span to slab depth ratio
22. Total superstructure weight [tonne]
23. Equivalent thick slab depth for total superstructure weight [mm]
24. Pier height by pier [m]



25. Sum pier heights [m]
26. Total tributary area for piers to total pier footing/pile cap area ratio
27. Total structure weight to piers [tonne]
28. Total structure weight for piers to total pier foundation area ratio [kPa]
29. Total structure weight taken to underside of pier foundations [tonne]
30. Total structure weights for piers divided by total pier footing/pile cap area [kPa]
31. Total type, number and length of piles for piers [pile coding as per abutments]
32. Equivalent wall thickness per pier, total pier volume divided by pier area [top of footing/pile cap to top of pier cap and deck drip line to drip line] [mm]
33. Pier height to equivalent wall thickness ratio by pier
34. Total structure weight for abutments to total abutment foundation area ratio [kPa]
35. Total structure weight to abutments [tonne]
36. Total abutment weight by abutment [tonne]
37. Total type, number and length of piles for abutments [pile code xx/Dia where xx = TB for timber, ST for steel, MP for mini-pile, SC for concrete filled steel, PC for precast concrete or HP d and weight from steel manual]
38. Abutment height by abutment [m]
39. Sum of abutment heights [m]
40. MSE wall area [ $m^2$ ]
41. Equivalent wall thickness per abutment, total abutment volume divided by abutment wall area [top of footing/pile cap to underside of deck and deck drip line to deck drip line] [mm]
42. Abutment height to equivalent wall thickness ratio by abutment
43. Abutment tributary area to abutment footing/pile cap area ratio
44. Abutment wall area to abutment footing/pile cap area ratio
45. Total foundation area [sum of spread footings and/or pile caps] [ $m^2$ ]
46. Total structure weight [tonne]
47. Total structure weight to total foundation area [sum of spread footing or pile cap plan areas] ratio [kPa]
48. Total weight of structure to total pile earth contact surface area ratio [kPa]
49. Total weight of structure to total pile tip area ratio [kPa]

In addition to the above noted parameters Hydro's Representative shall provide the Engineer-of-Record a MS Excel spreadsheet containing data fields for bridge inventory data required to populate the BC MoT Bridge Management Information System database. The Engineer-of-Record shall provide values for all the data fields that are applicable to the bridge structures it is responsible for designing or having designed by others.

#### **4.3.2 Environmental**



The design shall meet the requirements of the environmental and fisheries agencies having jurisdiction.

#### **4.4 ENVIRONMENT**

The services to be provided by the Consultant related to the Highway 29 portion of the Site C Project shall include the following:

##### **4.4.1 Tasks**

1. Review existing environmental studies and information generated for the Highway 29 portion of the Site C Project and perform gap analysis to determine additional study requirements.
2. Complete environmental studies as determined above in any or all of the following areas:
  - a) Fish and aquatic habitat, including riparian areas
  - b) Wildlife and wildlife habitat
  - c) Vegetation
  - d) Potential presence of species at risk or provincially listed species
  - e) Watercourse classification
3. Identify emerging environmental issues in consultation with the BC Hydro Site C Project Team.
4. Where necessary, develop enhancement, mitigation, and compensation plans for select sites in collaboration with BC Hydro's Project Team that shall be acceptable to provincial and federal government agencies and other stakeholders.
5. Provide strategic advice, strategies and solutions to address environmental issues as required during design, construction and post-construction stages of the Highway 29 portion of the Site C Project .
6. Recommend measures to avoid or otherwise mitigate adverse environmental impacts caused by the Highway 29 portion of the Site C Project .
7. Provide support in negotiation of potential mitigation and compensation strategies with environmental agencies as necessary.
8. Provide support to the BC Hydro Site C Project Team to secure environmental permits, authorizations and approvals as necessary, including screening under the Canadian Environmental Assessment Act.
9. Develop an Environmental Management Plan for the Highway 29 portion of the Site C Project in accordance with the BC MoT current Standard Specifications for Highway Construction, Section 165.
10. Comment and respond to audits carried out by BC Hydro or independent agents during the design and construction phases of the Project.

##### **4.4.2 Meetings, Communications and Liaison**

1. Liaise with BC Hydro and provide information, documentation and advice concerning environmental issues along the Highway 29 portion of the Site C Project.



2. Provide liaison and communication as required with BC Hydro representatives, external government agencies, external engineering and environmental consultants, First Nations, and the public throughout the duration of the contract.
3. Coordinate and document environmental team meetings and communications to ensure that all Project participants have relevant project information.
4. Participate in field visits and on-site and office meetings with BC Hydro, government agencies, consultants and other stakeholders as required.
5. Participate in public information meetings and other government agency and stakeholder meetings as required.

#### **4.4.3 Anticipated Deliverables**

The Consultant shall provide the following deliverables:

1. Environmental Management Plan
2. Technical Reports, as required.
3. Letter responses to environmental agencies, consultants and stakeholders, as required.
4. Briefing notes, as required.

The content and format of the above documents shall be determined in consultation with Hydro's Representative.

### **4.5 TRAFFIC ENGINEERING**

Consultant shall:

1. Provide a traffic design in accordance with the BC MoT Electrical and Traffic Engineering Manual:  
[http://www.th.gov.bc.ca/publications/eng\\_publications/electrical/electrical\\_and\\_traffic\\_eng/2004-Electrical\\_Signing\\_Design\\_Manual/tableofcontents.htm](http://www.th.gov.bc.ca/publications/eng_publications/electrical/electrical_and_traffic_eng/2004-Electrical_Signing_Design_Manual/tableofcontents.htm)
2. Provide a Traffic Signs and Pavement Marking evaluation, design and recommendations for the installation of appropriate warning, regulatory and guide signs, pavement markings and delineators in accordance with the Ministry's Manual of Standard Traffic Signs & Pavement Markings. The signing and pavement marking plan shall be approved by the Regional Traffic Engineer. Guide sign reviews shall be in accordance with section 203.4 of the Electrical and Traffic Engineering Manual, and shall be approved by the Regional Traffic Engineer, who shall submit to the Ministry's Provincial Sign Shop for sign records production.

#### **4.5.1 Traffic Engineering Deliverables**

Consultant shall submit Traffic Engineering Deliverables in digital format on compact disc including:

1. BC MoT Sign Record (H172) sheets,
2. Signing and pavement marking drawings,
3. Traffic Count Reports as required. Use the Ministry traffic count spreadsheet "CountSample.xls" expectations. Submit in paper format and Excel spreadsheet for entry in the BC MoT Data Management database.
4. Three copies of a Traffic Engineering Report signed and sealed by a professional engineer,



5. Traffic Management plan as required, and
6. A suggested Construction staging plan.

#### **4.5.2 Traffic Engineering And Operations**

Consultant shall for the preferred road alignment options:

1. Review data requirements to support traffic operation analysis and collect the necessary data e.g., turning movement traffic counts. Traffic counts shall be submitted to BC Hydro in paper format and Excel spreadsheet for entry into the BC MoT data management database.
2. Assess the traffic operation of the intersections on opening day (TBD) and future horizon year(s) (TBD).
3. Recommend necessary traffic signage such as warning, regulatory and guide signs, and pavement markings.
4. Develop an implementation strategy, if appropriate, including milestone dates or thresholds for improvements that may not be needed on opening day but can be phased in over time as part of the ultimate preferred solution.
5. Provide a traffic management plan during construction including vehicle rerouting, signage and traffic control as required.

#### **5. CONTRACT MANAGEMENT**

Over the course of the contract Hydro's Representative expects to manage the contract through the development of work plans outlining specific tasks, budgets and deliverables. The Consultant will provide excellent communications and regular reporting in the following areas:

<b>Work Package: Deliverables / Milestones</b>	<b>Date</b>
<p>Detailed work plan for base load, including but not limited to:</p> <ul style="list-style-type: none"> <li>o Quality Management Plan</li> <li>o Safety Management Plan</li> <li>o Identification of data and information requirements;</li> <li>o Communication plan;</li> <li>o Monthly cash flow estimate and total project budget estimate</li> </ul>	<p>Draft work plan due: Within one month of contract award</p> <p>Final work plan due: within two months of contract award</p>
Identify and commence early start activities - work with BC Hydro to identify and initiate select early start activities to commence prior to finalized work plan	Commence within one month of contract award



Additional work plans as required; <ul style="list-style-type: none"> <li>○ When new Work Order assignments are identified, develop a proposed scope of work, proposed individuals / resources / subcontractors, budget, schedule and deliverables for Hydro's Representative consideration;</li> <li>○ As agreed with Hydro's Representative, implement any new Work Orders to meet the project schedule;</li> </ul>	As required
Submission of all field work plans, including 90 days notice of any private and crown property access requirements	90 days prior to start date
Monthly reporting on: <ul style="list-style-type: none"> <li>○ Tasks completed,</li> <li>○ Progress on deliverables,</li> <li>○ Next month deliverables and cost forecasts,</li> <li>○ Tasks and scope changes,</li> <li>○ Any changes to project team members, partners, or subcontractors;</li> </ul>	7 <sup>th</sup> working day of each month
Quarterly reporting on issue identification, escalation processes and resolution between Consultant and Hydro's Representative.	

## **6. Communication and Consultation**

BC Hydro requires its consultants to document all external communications and to provide BC Hydro with the communication log on a monthly basis. BC Hydro will provide a template for this tracking.

Hydro's Representative will work with the successful Proponent to ensure that any and all communications and interaction with external parties is planned and documented.

## **7. Property Access**

BC Hydro requires that all access by the Consultant onto private lands or onto BC Hydro lease lands be done with explicit permission and / or notification. The Consultant would be required to provide BC Hydro with up to 90 days notice of land access requirements, and to provide technical support to BC Hydro's acquisition of permissions and notifications of entry.

Entry onto crown land may also be subject to permissions or notifications depending on any pre-existing land tenures, and the nature of the activity proposed. BC Hydro will support the Consultant to ensure any crown land access permissions or notifications are identified and obtained as required.

In the event that site work is required, the Consultant will be required to provide BC Hydro with information about the proposed site work in advance, to enable coordination among other contractors and to identify if any property permissions would be required. BC Hydro will provide the Consultant with project procedures for planning site work.



Any access by consultants onto private lands, Crown Lands or onto BC Hydro lease lands shall be in accordance with the current policies and protocols in place as established by BC Hydro and the Site C project team.

The Consultant shall be fully responsible and liable for entry and all work on lands to complete the survey and field investigation work. Use approved BC Hydro Letter of Authorization for entry onto property to ensure BC Hydro protocol is followed. Advise BC Hydro if entry is denied but required to properly collect survey information. The Consultant is required to develop its program such that it clearly demonstrates the access requirements have been minimized to provide the least amount of disruption and disturbance to property owners and operators.

### **8. Public Communications**

BC Hydro posts a monthly field studies notice to alert the public to field work being conducted in the area (a template will be provided). The consultant will provide advance notice of monthly field programs for this purpose.

BC Hydro will provide the successful consultant with additional information prior to initiation of field work to ensure that communication with external parties is consistent and that any commitments are known and kept.

### **9. Quality Assurance**

BC Hydro may engage internal, external or agency-based subject matter experts to support its quality assurance review of key Consultant deliverables, such as the assessment approach and methodology, land staking, work plan, mitigation recommendations, and draft reports.

### **10. Safety**

The Proponent should submit the company's safety management plan as part of the Proposal, as specified in the Questionnaire in Schedule 3-1 of this RFP.

Additionally, the successful Proponent may be required to prepare a detailed work safety plan specific to this project for review by BC Hydro prior to initiation of fieldwork. A safety plan should meet all legal requirements in BC, and any applicable BC Hydro policies or procedures for work on BC Hydro lands, job sites or requiring the use of aircraft. Work in the general vicinity of the Peace River is subject to BC Hydro job site procedures with the objective of a coordinated approach to safety across multiple programs and consultants. If required, an aviation safety plan would need to ensure that the Proponent has policies and practices in place that meet or exceed those outlined in BC Hydro's Occupational Safety and Health Standard 407 (Exhibit 1 to Schedule 3-4 to this RFP)

### **11. Environment**

An overview of the Proponent's environmental management program should be submitted to BC Hydro as part of the Proposal, as specified in the Questionnaire in Schedule 3-1 of this RFP. In the event that fieldwork is to be undertaken, the successful Proponent may be asked to submit a detailed environmental management plan to BC Hydro for review. An environmental management plan should meet all legal requirements in BC, and any applicable BC Hydro policies or procedures for work on BC Hydro lands or job sites. For example, work in the general vicinity of the Peace River requires consideration of appropriate measures (e.g. use of portable wash stations and checking for clean vehicles) to minimize the transmission of noxious weeds between sites, use of spill kits, and explicit consideration of archaeology and potential permits if any ground disturbance may occur.



## APPENDIX C COMPENSATION

### 1. FEES

**Note: Fees, expenses (if applicable) and timing of invoices may be negotiated separately for individual Work Orders. For example if compensation is to be by lump sum fee and/or if invoices are to be submitted otherwise than monthly, the Work Order should so specify,**

1.1 **Fees** - Subject to clause 1.2 of this Appendix C, BC Hydro will pay Consultant for performance of the Services fees in accordance with the following:

#### R.F. Binnie & Associates Ltd.

Name	Position	Hourly Rate	Availability
	Senior Project Manager		50-70%
	Senior Project Manager		80-100%
	Project Manager		50%
	Project Manager/Reporting		80-100%
	Intermediate Project Manager		80-100%
	Senior Project Advisor		25%
	Quality Manager		50-70%
	Design Manager		60-80%
	Highway Design EOR		80-100%
	Safety Officer		As Required
	VA/VE Facilitator		50%
	Senior Highway Design Team Lead		80-100%
	Intermediate Highway Design Engineer		80-100%
	Senior Highway Designer		60-80%
	Traffic Engineer		50-70%
	Intermediate Traffic Engineer		80-100%
	Highway Design CAiCE Technician		80-100%
	Highway Design CAiCE Technician		80-100%
	Highway Design CAiCE Technician		80-100%
	Highway Design AutoCAD Technician		80-100%
	Junior AutoCAD Technician		80-100%
	Senior Drainage Design Engineer		80-100%
	Drainage Design Engineer		60-80%
	Drainage Design Engineer		60-80%
	Administration Assistant		As-Required



	Survey Manager		50-70%
	Senior Survey Data Processor		60-80%
	Survey Data Processor		60-80%
	2 Person GPS Survey Crew		As-Required
	2 Person Survey Crew		As-Required
	1 Person Robotic Survey Crew		As-Required
	Manager, Construction Services		50-70%
	Constructability Reviewer		50-70%
	Construction Project Supervisor		80-100%
	Construction Project Assistant		80-100%

Name	Position	Hourly Rate	Availability
	Geotechnical Engineering Lead		50-70%
	Geotechnical and Materials Engineer		50-70%
	Senior Geotechnical Engineer		60-80%
	Senior Geotechnical Engineer		60-80%
	Geotechnical Engineer		60-80%
	Geotechnical Engineer		60-80%
	Geotechnical Engineer		60-80%
	Intermediate Geotechnical Engineer		As-Required
	Junior Geotechnical Engineer		As-Required
	Geotechnical Technicians		As-Required
	Environmental Lead		50-70%
	Environmental Project Manager		60-80%
	Fisheries Biologist		60-80%
	Aquatic & Vegetation Ecologist		60-80%
	Highway Design Manager & EOR		50-70%
	Senior Highway Design Engineer		60-80%
	Senior Highway Design Engineer		50-70%
	Senior Highway Designer		60-80%
	Senior Highway Designer		80-100%
	Highway Design CAiCE Technician		80-100%
	Senior Highway Design AutoCAD Technician		80-100%
	Highway Designer		80-100%
	Highway Design AutoCAD Technician		80-100%
	Junior AutoCAD Technician		80-100%



Name	Position	Hourly Rate	Availability
[REDACTED]	Bridge Hydraulics Lead	[REDACTED]	As Required
	Ice Engineering Lead	[REDACTED]	As Required
	Project Engineer Level III	[REDACTED]	As Required
	Project Engineer Level IV	[REDACTED]	As Required
	AutoCAD Technician Level II	[REDACTED]	As Required
[REDACTED]	Multiple Account Evaluation Specialist	[REDACTED]	As-Required
[REDACTED]	Road Safety Audit Specialist	[REDACTED]	As-Required
[REDACTED]	Bridge Design Manager	[REDACTED]	60-80%
	Senior Bridge Design Reviewer	[REDACTED]	60-80%
	Design Coordinator	[REDACTED]	70-100%
	Bridge Design Lead	[REDACTED]	60-80%
	Bridge Designer	[REDACTED]	70-100%
	Bridge Designer	[REDACTED]	70-100%
	Bridge Designer	[REDACTED]	70-100%
	Bridge Designer	[REDACTED]	70-100%
	Technical Lead	[REDACTED]	70-100%
	Bridge Designer 1	[REDACTED]	100%
	Bridge Designer 2	[REDACTED]	100%
	Technician 1	[REDACTED]	100%
	Technician 2	[REDACTED]	100%

1.2 **Maximum Fees** - Each Work Order may specify a cap on fees payable under it and, where so specified, BC Hydro will not pay or otherwise be liable to Consultant for fees in excess of such amount unless otherwise expressly agreed to in writing by BC Hydro.

## 2. EXPENSES

2.1 **Expenses** - [REDACTED]



Travel Disbursements - [REDACTED]

Travel Expenses	Rate
Airfare	[REDACTED]
Hotel Accommodation	[REDACTED]
Car Rental	[REDACTED]
Meals	[REDACTED]
Mileage	[REDACTED]

**Working Locations And Offices** - Most of the Consultant project team offices are located within the Metro Vancouver region, with the exception of the [REDACTED] offices, which are located in [REDACTED] and the [REDACTED], which will open on June 1", 2011 and it will also be located in [REDACTED]. Consultant will use video conferencing and other technologies to reduce the amount of travel for project meetings. We will also schedule separate meetings concurrently to reduce the amount of travel. For example, a design review meeting could be scheduled immediately after a project status meeting.

### 3. PAYMENT CONDITIONS

3.1 **Invoicing** - For ongoing general engineering services, not associated with a specific Work Order, if any, Consultant will submit monthly invoices for the services provided. The invoices will identify the project team members, the hours worked, the hourly rates and associated disbursements.

For each Work Order, Consultant will assign a project manager and develop a work plan / proposal to complete the assignment. The proposal will contain Consultant's understanding of the assignment and scope of work, identify the team members and key tasks to complete the assignment, and give the proposed schedule and the budget for each of the deliverables for the assignment. If the Work Order is fixed fee, invoices will be submitted upon acceptance of the deliverables. Otherwise, invoices will be submitted each month for the services provided.

Consultant shall send invoices to:

BC Hydro Accounts Payable  
6911 Southpoint Drive  
Burnaby, BC V3N 4X8

The following information is required on all invoices:

Order Number;  
Invoice Number; and  
Total invoice value.



The following information is required on invoices only where applicable:

Blanket order release number;

Order line number;

Shipping information;

Quantity;

Unit price; and

GST registration number, if applicable.

Undisputed invoices or, if BC Hydro exercises its discretion under clause 3.2, undisputed portions of invoices, are due 30 days after the invoice date.

3.2 **Disputed Invoices** - BC Hydro reserves the right to withhold payment of any invoice, or, at BC Hydro's discretion, any portion of an invoice, which BC Hydro determines is not in accordance with the applicable Work Order and will on receipt of such invoice promptly notify Consultant in writing of the reason for such withholding.

3.3 **Holdbacks** - NOT USED

3.4 **Taxes** - Fees and expenses do not include any applicable Canadian federal Goods and Services Tax ("GST"), which will be calculated and included as a separate line item in invoices, for payment by BC Hydro in accordance with applicable Laws. Notwithstanding the foregoing, if Consultant is obliged to collect GST in respect of the Services performed under this Agreement, Consultant must be registered for GST under the *Excise Tax Act* (Canada) and must provide to BC Hydro on all invoices, Consultant's GST registration number. British Columbia Social Service Tax is not chargeable by Consultant or payable by BC Hydro under this Agreement.

3.5 **Non-Resident Withholding** - Where Consultant is a non-resident of Canada, BC Hydro may withhold from any payments to Consultant, and remit to such applicable governmental agency or authority, such amounts as may be required to be withheld and remitted pursuant to applicable Laws.

3.6 **Records** - Consultant will maintain for a period of 6 years accurate records of time spent by its personnel in performing Services and of expenses incurred and provide to BC Hydro copies of all applicable receipts (other than credit card receipts) for which Consultant seeks reimbursement. In addition, Consultant will permit BC Hydro, at its request, to examine those records at Consultant's offices during normal business hours for the purpose of verifying the accuracy of invoices

3.7 **Contract Personnel - Persons** who are retained by Consultant as independent contractors under contract and assigned to perform Services will be invoiced using a charge rate that is equal to that of employees of Consultant in equivalent positions.

3.8 **Affiliate Personnel/Expenses** - Affiliate personnel assigned to perform Services, whether by secondment from, or subcontract with, the Affiliate will be invoiced at the rates determined under clause 1.1, without further mark-up, as though they were employees of Consultant. Expenses incurred by an Affiliate will be invoiced at the rates provided in clause 2.1 without further mark-up.



3.9 **Currency** - Fees and expenses will be paid in Canadian dollars ("Contract Currency"). If wages, salaries or expenses are incurred and paid in any other currency, they will be converted to the Contract Currency at the conversion rate quoted by Royal Bank of Canada for the business day preceding the invoice date.

3.10 **Fixed Rates** - Consultant acknowledges and agrees that, except for any escalation or other adjustment expressly permitted in this Agreement, charge rates for Consultant's personnel and expenses are fixed for the duration of the Agreement and are not subject to review and adjustment.

If BC Hydro elects to extend the contract Consultant will negotiate with BC Hydro an acceptable rate adjustment. Typically, rate adjustments have been similar to cost of living increases.

A handwritten signature in black ink, appearing to read "John Smith".

## APPENDIX D INSURANCE

### 1. Insurance Required

In respect of each Work Order, Consultant will obtain, maintain until CSA Contract Completion or earlier termination of the applicable Work Order or such longer period as may be specified below, and pay the premiums for, the following insurance coverage:

- a) Automobile Liability Insurance. Automobile liability insurance covering liability for bodily injury, including death, and property damage arising out of ownership, use or operation of Consultant owned or leased licensed motor vehicles of [REDACTED] inclusive per occurrence.
- b) Professional Liability Insurance. A "Professional liability insurance policy" in an amount of [REDACTED] per claim and in the aggregate, to cover damages because of any error, omission or negligent act in professional services rendered by Consultant. Subject to reasonable commercial availability coverage will be maintained for at least 24 months after CSA Contract Completion or earlier termination of the applicable Work Order.
- c) Commercial General Liability Insurance. A "commercial general liability insurance policy", in an amount of [REDACTED] per occurrence, with cross liability and severability of interest clauses or equivalent wording, and a standard "non-owned automobile liability endorsement". The policy will name BC Hydro as an additional insured with respect to liabilities that arise out of Consultant's operations. All insurance policies required under this paragraph 1(c) must be considered primary but only with respect to the Named Insured's negligence in the performance of the applicable Work Order.
- d) Property Insurance. Property insurance covering loss or damage to tools, property and equipment of Consultant or for which Consultant is legally liable or responsible in an amount equal to the full replacement value of such tools, property and equipment (or on such basis as BC Hydro may approve) with a waiver of the insurer's rights of subrogation against BC Hydro, with coverage and terms satisfactory to BC Hydro.

### 2. Proof Of Insurance

Upon request by BC Hydro, Consultant will provide BC Hydro with a completed Certificate of Insurance evidencing insurance coverage in place meeting the requirements set out above in this Appendix D, except that no evidence of automobile insurance required under paragraph 1(a) above is required unless evidence of such insurance is specifically requested.

### 3. Notice Of Cancellation

All insurance policies required under paragraphs 1(b), (c) and (d) of this Appendix D must provide that 30 days written notice of cancellation must be given to BC Hydro. Consultant is solely responsible to determine the appropriate type and amount of insurance to carry, but must maintain at least the amount and type of insurance specified in this Appendix D.

### 4. Workers Compensation

Consultant will comply with workers compensation or equivalent legislation that is applicable to it, including the payment of assessments and dues thereunder. Consultant's Workers' Compensation Board registration number is [REDACTED] in the jurisdiction of British Columbia. If Consultant has workers compensation coverage by



insurance, the insurance certificate provided under paragraph 2 of this Appendix D must identify such coverage under "OTHER".

At any time on request of BC Hydro when Consultant is registered with a Workers' Compensation Board, Consultant will deliver to BC Hydro a statement from the applicable Workers' Compensation Board that Consultant is registered and in good standing.

A handwritten signature in black ink, appearing to read "John Doe".

**APPENDIX E**  
**CHANGE ORDER FORM**

**BRITISH COLUMBIA HYDRO AND POWER AUTHORITY**

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Contract No.

PAGE 1 of 2

Work Order No.

Consultant: \_\_\_\_\_

**CHANGE ORDER**

*Notes:*

- 1) *Where space on this form is insufficient, please reference and attach additional sheets.*
- 2) *Terms used in this form and defined in the Agreement or applicable Work Order have the meaning given them in the Agreement or the applicable Work Order unless otherwise defined.*

DESCRIPTION OF CHANGE IN THE WORK: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**REFERENCE:**

Notice of Claim - Changes No. \_\_\_\_\_

Drawings: \_\_\_\_\_

Specifications: \_\_\_\_\_

Other Instructions: \_\_\_\_\_

**CONTRACT PRICE ADJUSTMENT:**

**Method of Valuation**

*Tick one:*

CONTRACT UNIT PRICE  
 ADDITIONAL UNIT PRICES  
 LUMP SUM  
 COST PLUS PERCENTAGE

**Details of Valuation**

\_\_\_\_\_  
\_\_\_\_\_

**Contract Price**

Estimated Contract Price before this Change Order: \$ \_\_\_\_\_

Adjustment (firm /estimated): \$ \_\_\_\_\_

*(Tick the appropriate box)*



Estimated Contract Price after this Change Order: \$ \_\_\_\_\_

SCHEDULE ADJUSTMENT

No Adjustment  
 Adjustment: +/- \_\_\_\_\_ days

Date required for CSA Contract Completion: \_\_\_\_\_, 20\_\_\_\_

SPECIAL CONDITIONS

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DATE: \_\_\_\_\_, 20\_\_\_\_\_

SIGNED:

**Consultant**

**British Columbia Hydro & Power Authority**

By: \_\_\_\_\_ By: \_\_\_\_\_  
Authorized Signatory Authorized Signatory



## APPENDIX F SPECIAL CONDITIONS

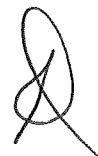
### **SC1      CONFLICT OF PROVISIONS**

In the event of conflicts or inconsistencies, if any, between or among the special conditions contained within this Appendix F and the other terms and conditions of the Agreement, the special conditions set out in this Appendix F take precedence and govern over the other terms and conditions of the Agreement.

### **SC2      FAILURE TO COMPLY WITH BC HYDRO POLICIES**

SC2.1      Safety: The Contractor shall comply with BC Hydro's Safety policy and procedures. Failure to do so may result in termination of the contract per the provisions paragraph 16 Suspension/Termination By BC Hydro of the Cover Agreement.

SC2.2      Trespass: The Contractor shall ensure all permissions are in place prior to the entry onto Crown, private and/or leased lands. Failure to comply may be cause for termination of the contract per the provisions paragraph 15 Suspension/Termination By BC Hydro of the Cover Agreement.

A handwritten signature in black ink, appearing to read "John Doe".

**APPENDIX G**  
**SAMPLE WORK ORDER TEMPLATE**

**WORK ORDER**

This Work Order No. \_\_\_\_ is made as of the \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ between British Columbia Hydro and Power Authority ("BC Hydro"), and \_\_\_\_\_ ("Consultant") and incorporates by reference the terms and conditions of the Consulting Services Agreement between the parties dated \_\_\_\_\_, 20\_\_\_\_ (the "Master Agreement"). In case of conflict between the terms and conditions of this Work Order and the terms and conditions of the Master Agreement, this Work Order shall prevail. However, any changes, including additional terms and conditions, that Consultant may purport to impose in response to this Work Order will not be valid unless and until expressly accepted in writing by BC Hydro's Representative as identified in the Master Agreement or this Work Order.

BC Hydro and Consultant agree that Consultant will perform the Services described in this Work Order on the following terms:

- A. Project Description and Location:
- B. Scope of Services and Deliverables:
- C. Key Personnel (if different from, or additional to, Master Agreement):
- D. Timeline and Schedule (including project meeting schedule):
- E. Compensation and Expenses (including Maximum Fee):
- F. BC Hydro's Representative (if different than "Hydro's Representative" under Master Agreement):
- G. Other Terms and Conditions (if applicable):

APPROVED AND ACCEPTED BY BOTH PARTIES as of the date first above written.

<b>BRITISH COLUMBIA HYDRO AND POWER AUTHORITY, BY ITS AUTHORIZED SIGNATORY:</b>	<b>[CONSULTANT], BY ITS AUTHORIZED SIGNATORY:</b>
NAME: TITLE:	NAME: TITLE:

