



**NATIONAL CAPITAL COMMISSION**  
**COMMISSION DE LA CAPITALE NATIONALE**

<b>NCC Tender File #</b>	AL1718
<b>Project Description</b>	Renaud Creek Culvert Replacement – Secondary Access to Lac Philippe Campground, Gatineau Park, Québec
<b>Site visit</b>	A NON MANDATORY site visit will be held on Friday, September 1, 2017 at 10am, EDT. The meeting place will be the Lac Philippe entrance to Gatineau Park off of Hwy 366, Sainte-Cecile-de-Masham, QC. All costs incurred by the Bidder to attend the site visit will be at their expense. The NCC will not reimburse any Bidder for expenses related to the site visit. <a href="https://goo.gl/maps/aEhaKu7EP6z">https://goo.gl/maps/aEhaKu7EP6z</a> (Google maps link)
<b>Closing date and time</b>	Friday, September 8, 2017 at 3pm EDT

<b>RETURN TENDERS TO:</b> National Capital Commission 40 Elgin Street, Security Office on the 2 <sup>nd</sup> floor Ottawa, ON K1P 1C7	<b>NCC Tender Number</b>  <b>AL1718</b>
	<b>NCC Contract Number</b>
<b>TENDER CLOSING DATE AND TIME:</b> Friday, September 8, 2017 at 3:00 p.m., EDT	

<b>DESCRIPTION OF WORK:</b> Renaud Creek Culvert Replacement – Secondary Access to Lac Philippe Campground, Gatineau Park, Québec
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**1. BUSINESS NAME AND ADDRESS OF BIDDER**

**Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

\_\_\_\_\_

**Telephone number:** \_\_\_\_\_ **Fax number:** \_\_\_\_\_

**E-mail address:** \_\_\_\_\_

**2. THE OFFER**

The Bidder offers to the National Capital Commission (NCC) to perform and complete the work for the above mentioned project in accordance with the tender documents for the total tender amount (to be expressed in numbers only) of:

Sub Total        \$ \_\_\_\_\_

GST/QST –  
 14.975%        \$ \_\_\_\_\_

**TOTAL**        \$ \_\_\_\_\_

**3. TENDER VALIDITY PERIOD**

The tender shall not be withdrawn for a period of 60 days following the date and time of tender closing.

**4. CONTRACT DOCUMENTS**

1. The following are the contract documents:
  - (a) Invitation to Tender & Acceptance Form when signed by the NCC;
  - (b) Duly completed Invitation to Tender & Acceptance Form and any Appendices attached thereto;
  - (c) Drawings and Specifications;
  - (d) General Conditions (GC1 to GC10);
  - (e) Supplementary Conditions, if any;
  - (f) Insurance Terms;
  - (g) Occupational Health and Safety Requirements;
  - (h) Addenda
  - (i) Any amendments issued or any allowable tender revision received before the date and time set for tender closing;
  - (j) Any amendment incorporated by mutual agreement between the NCC and the Contractor before acceptance of the tender; and
  - (k) Any amendment or variation of the contract documents that is made in accordance with the General Conditions;
  - (l) Security Requirements.
  
2. The language of the contract documents shall be the language of the Invitation to Tender & Acceptance Form submitted.

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NCC Contract Number

**5. APPENDICES**

The tender includes Appendix(ces) Nos I and II to the Invitation to Tender & Acceptance Form.

**6. ACCEPTANCE AND CONTRACT**

Upon acceptance of the Contractor’s offer by the NCC, a binding Contract shall be formed between the NCC and the Contractor. The documents forming the Contract shall be the contract documents referred to in 4 – CONTRACT DOCUMENTS.

**7. CONSTRUCTION TIME**

The Contractor shall perform and complete the Work within four (4) weeks from the date of notification of acceptance of the offer.

**8. UNIT PRICE TABLE**

The Bidder agrees that

- (a) the Unit Price Table designates that part of the Work to which a Unit Price Arrangement applies.
- (b) the Price per Unit (excluding taxes) and the Estimated Total Price (excluding taxes) must be entered for each item listed;
- (c) the Price per Unit (excluding taxes) as tender governs in calculating the Total Estimated Amount, and any errors in the extension of the Price per Unit (excluding taxes) and in the addition of the Estimated Total Prices shall be corrected by the NCC in order to obtain the Total Estimated Amount; and
- (d) the following table is the Unit Price Table for the purposes of the tender and the Contract:

**UNIT PRICE TABLE**

**Note:** Transfer the Total Estimated Amount from the Unit Price Table to item 2 – THE OFFER of this Invitation to Tender & Acceptance Form

	Description	Unit	Qty.	Unit price	Total for ITEM or lump sum price
<b>1.</b>	<b>CULVERT</b>				
1.1	Removal of temporary bridge	LS	1		
1.2	Demolition of the existing culverts	LS	1		
1.3	Cofferdams	LS	1		
1.4	Temporary retaining work	LS	1		
1.5	Temporary diversion channel and/or by-pass pumping	LS	1		

1.6	New culvert, 2100 mm in diam. Circular helical corrugated galvanized steel pipe with stapled joints	m	10.5		
1.7	Weirs in circular helical corrugated galvanized steel pipe with stapled joints (weirs welded in the field).	each	5		
<b>2.</b>	<b>RETAINING WALLS</b>				
2.1	Demolition of existing retaining walls	LS	1		
2.2	New retaining walls	m <sup>2</sup>	79		
2.3	Extend existing CSP pipe	LS	1		
<b>3.</b>	<b>ROAD AND PAVEMENT STRUCTURE</b>				
3.1	Demolition of the existing pavement	m <sup>2</sup>	118		
3.2	Demolition of existing asphalt curb	m	6		
3.3	Demolition of the existing road structure (approximately 300 mm in thickness)	m <sup>2</sup>	118		
3.4	Demolition of existing catchbasins	each	2		
3.5	Clay seal on upstream embankment	LS	1		
3.6	New road structure (300 mm of MG-20), including final earthworks	m <sup>2</sup>	136		
3.7	New asphalt curb (ESG-10)	m	17		
3.8	New asphalt pavement (40 mm ESG-10 and 50 mm ESG-14)	m <sup>2</sup>	136		
3.9	New guardrails	m	20		
<b>4.</b>	<b>ENVIRONMENTAL MEASURES</b>				
4.1	Environmental Action Plan	LS	1		
4.2	Soil and Surface Water Protection	LS	1		
4.3	Vegetation Protection	LS	1		

4.4	Erosion and Sediment Control on Site	LS	1		
4.5	Other measures, as per specifications document	LS	1		
<b>5.</b>	<b>INLET EXTREMITY OF THE CULVERT</b>				
5.1	Rip-rap type 5 (caliber 300-500), 800 mm in thickness.	m <sup>2</sup>	58		
5.2	Sealed rip-rap strip, 800 mm in thickness.	m <sup>2</sup>	13		
<b>6.</b>	<b>OUTLET EXTREMITY OF THE CULVERT – ENERGY DISSIPATION BASIN</b>				
6.1	Rip-rap type 5 (caliber 300-500), 800 mm in thickness.	m <sup>2</sup>	101		
6.2	Sealed rip-rap strip, 1000 mm in thickness.	m <sup>2</sup>	46		
6.3	Shelter rocks (1m x 1m x 1m)	each	3		
6.4	Threshold to control flow at the outlet of the basin.	LS	1		
<b>7.</b>	<b>REINSTATEMENT OF EXISTING CONDITIONS</b>				
7.1	Sodding on 100 mm of new topsoil.	m <sup>2</sup>	175		
7.2	Trees and Shrubs	LS	1		
7.3	Reinstatement of existing waterlines	LS	1		
<b>8.</b>	<b>MISCELLANEOUS</b>				
8.1	Temporary signage and temporary fencing	LS	1		
				<b>SUB-TOTAL</b>	

- 9. The basis of award is low total cost to the NCC including all taxes.
- 10. I/We acknowledge receipt of the following addenda \_\_\_\_\_ (Bidder to enter number of addenda issued, if any) and have included for the requirement of it/them in my/our tendered price.
- 11. **TENDER SECURITY**
  - 1. The Bidders shall enclose tender security with its tender in accordance with GI08 TENDER SECURITY REQUIREMENTS.
  - 2. If the security furnished does not comply fully with the requirements referred to in paragraph 1) herein, the tender shall be disqualified.
  - 3. If a security deposit is furnished as tender security, it shall be forfeited in the event that the tender is accepted by the NCC and the Contractor fails to provide Contract Security in accordance with GC9 CONTRACT SECURITY, provided that the NCC may, if it is in the public interest, waive the forfeiture of the security deposit.

We hereby offer to supply to the NCC in accordance with the terms and conditions set out herein, the construction work listed above and on any attached sheets at the submitted price(s).

Name and title of person authorized to sign on behalf of Bidder (please print or type)	Signature	Date
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Your tender is accepted to supply to the NCC, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the construction services listed herein and on any attached sheets at the price(s) set out therefore.

Name and title of the person authorized to sign on behalf of the NCC (please print or type)	Signature	Date
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**INVOICING**

Send the original invoice and 1 copy to:

**Accounts Payable  
National Capital Commission  
202-40 Elgin Street  
Ottawa, ON K1P 1C7**

Or by email at the following address: [pavables@ncc-ccn.ca](mailto:pavables@ncc-ccn.ca)

To ensure prompt payment, please prepare your invoice in accordance with the prices quoted. Errors in invoicing can cause delay of payment. Submit your invoice to the address shown above and clearly indicate the Purchase Order number.

<b>INVITATION TO TENDER &amp; ACCEPTANCE FORM</b>	<b>APPENDIX 1</b>
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- 1) The Bidder will subcontract the parts of the work listed below to the subcontractor named for each part. The Bidder agrees not to make changes in the list of subcontractors without the written consent of the NCC Representative. The Bidder understands that for each part of the work identified as Mandatory, if more than one subcontractor is named or no subcontractor is named, or, the Bidder fails to state that the work will be done by its own forces where applicable, the tender will be disqualified.
- 2) The Bidder certifies that tenders for the part(s) of the Work listed below were received from the following subcontractors:

**MANDATORY REQUIREMENT:** The subcontractors performing the work listed below must be identified. Failure to disclose the name of the sub-contractor for any work identified will result in the disqualification of your tender.

(a) **XXXX**

Sub-contractor: \_\_\_\_\_

Address: \_\_\_\_\_

(b) **XXXX**

Sub-contractor: \_\_\_\_\_

Address: \_\_\_\_\_

(c) **XXXX**

Sub-contractor: \_\_\_\_\_

Address: \_\_\_\_\_

(d) **XXXX**

Sub-contractor: \_\_\_\_\_

Address: \_\_\_\_\_

**NON-MANDATORY REQUIREMENT:**

(a) Any other work not listed above

Type of work: \_\_\_\_\_ Sub-contractor: \_\_\_\_\_

Type of work: \_\_\_\_\_ Sub-contractor: \_\_\_\_\_

Type of work: \_\_\_\_\_ Sub-contractor: \_\_\_\_\_

Type of work: \_\_\_\_\_ Sub-contractor: \_\_\_\_\_

Type of work: \_\_\_\_\_ Sub-contractor: \_\_\_\_\_

Type of work: \_\_\_\_\_ Sub-contractor: \_\_\_\_\_

Supplier No. / N° du fournisseur

New supplier / Nouveau fournisseur  Update / Mise à jour

**SUPPLIER-DIRECT DEPOSIT PAYMENT AND TAX INFORMATION FORM  
FOURNISSEUR-FORMULAIRE DE PAIEMENT PAR DÉPÔT DIRECT ET RENSEIGNEMENTS AUX FINS DE L'IMPÔT**

For NCC use only / À l'usage de la CCN seulement

**PART 'A' - IDENTIFICATION / PARTIE 'A' - IDENTIFICATION**

Legal name of entity or individual / Nom légal de l'entité ou du particulier	Operating name of entity or individual (if different from Legal Name) / Nom commercial de l'entité ou du particulier (s'il diffère du nom légal)
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Former Public Servant in receipt of a PSSA Pension / Ancien fonctionnaire qui reçoit une pension en vertu de la LPPF	<input type="checkbox"/> Yes / Oui	<input type="checkbox"/> No / Non
An entity, incorporated or sole proprietorship, which was created by a Former Public Servant in receipt of a PSSA pension or a partnership made of former public servants in receipt of PSSA pension or where the affected individual has a controlling or major interest in the entity. / Une entité, constituée en société ou à propriétaire unique, créée par un ancien fonctionnaire touchant une pension en vertu de la LPPF, ou un partenariat formé d'anciens fonctionnaires touchant une pension en vertu de la LPPF, où les entités dans lesquelles ils détiennent le contrôle ou un intérêt majoritaire.	<input type="checkbox"/> Yes / Oui	<input type="checkbox"/> No / Non

Address / Adresse	Telephone No. / N° de téléphone :	Fax No. / N° de télécopieur :
Postal code / Code postal	( )	( )

**PART 'B' - STATUS OF SUPPLIER / PARTIE 'B' - STATUT DU FOURNISSEUR**

**IMPORTANT : CHOOSE ONLY ONE OF THE FOLLOWING/CHOISIR SEULEMENT UNE DES OPTIONS SUIVANTES:**

(1) Sole proprietor / Propriétaire unique <input type="checkbox"/>	If sole proprietor, provide: / Si propriétaire unique, indiquez :	Last Name / Nom de famille	First name / Prénom	Initial / Initiale
(2) Partnership / Société de personnes <input type="checkbox"/>	(3) Corporation / Société <input type="checkbox"/>			

Business No. (BN) / N° de l'entreprise (NE) -	<b>OR / OU</b>	SIN / NAS -
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GST/HST / TPS et TVH	QST / TVQ (Québec)
Number / Numéro : Not registered / non inscrit <input type="checkbox"/>	Number / Numéro : Not registered / non inscrit <input type="checkbox"/>

Type of contract / Genre de contrat	Contract for services only / Contrat de services seulement <input type="checkbox"/>	Contract for mixed goods & services / Contrat de biens et services <input type="checkbox"/>	Contract for goods only / Contrat de biens seulement <input type="checkbox"/>
Type of goods and/or services offered / Genre de biens et / ou services rendus :			

**PART 'C' - FINANCIAL INSTITUTION / PARTIE 'C' - RENSEIGNEMENTS SUR L'INSTITUTION FINANCIÈRE**

**Please send a void cheque with this form / Veuillez, s.v.p., envoyer un spécimen de chèque avec ce formulaire**

Branch Number / N° de la succursale	Institution No. / N° de l'institution :	Account No. / N° de compte :
Institution name / Nom de l'institution :	Address / Adresse :	Postal Code / Code postal :

**PART 'D' - DIRECT DEPOSIT PAYMENT NOTIFICATION / PARTIE 'D' - AVIS DE PAIEMENT PAR DÉPÔT DIRECT**

E-mail address / Adresse courriel :

**PART 'E' - EMAIL ADDRESS TO SEND CONTRACTS / PARTIE 'E' - ADRESSE COURRIEL POUR ENVOYER LES CONTRATS**

E-mail address / Adresse courriel :

**PART 'F' - CERTIFICATION / PARTIE 'F' - CERTIFICATION**

I certify that I have examined the information provided above and it is correct and complete, and fully discloses the identification of this supplier.	Je déclare avoir examiné les renseignements susmentionnés et j'atteste qu'ils sont exacts et constituent une description complète, claire et véridique de l'identité de ce fournisseur.		
Where the supplier identified on this form completes part C, he hereby requests and authorizes the National Capital Commission to directly deposit into the bank account identified in part C, all amounts payable to the supplier.	Lorsque le fournisseur indiqué sur ce formulaire remplit la partie C, par la présente, il demande et autorise la Commission de la capitale nationale à déposer directement dans le compte bancaire indiqué à la partie C, tous les montants qui lui sont dus.		
Name of authorized person / Nom de la personne autorisée	Title / Titre	Signature	Date
Telephone number of contact person / Numéro de téléphone de la personne ressource : ( )			

**IMPORTANT**

Please fill in and return to the National Capital Commission with one of your business cheque unsigned and marked « VOID » (for verification purposes).	Veillez remplir ce formulaire et le retourner à la Commission de la capitale nationale avec un spécimen de chèque de votre entreprise non signé et portant la mention « ANNULÉ » (à des fins de vérification).
Mail or fax to: Procurement Services National Capital Commission 202-40 Elgin Street Ottawa, ON K1P 1C7 Fax: (613) 239-5007	Poster ou télécopier à : Services de l'approvisionnement Commission de la capitale nationale 40, rue Elgin, pièce 202 Ottawa (Ontario) K1P 1C7 Télécopieur : (613) 239-5007



**SUPPLIER – DIRECT DEPOSIT PAYMENT AND TAX INFORMATION FORM**

**FOURNISSEUR – FORMULAIRE DE PAIEMENT PAR DÉPÔT DIRECT ET RENSEIGNEMENTS AUX FINS DE L'IMPÔT**

**Supplier Tax Information**

Pursuant to paragraph 221(1) (d) of the *Income Tax Act*, NCC must declare form T-1204, contractual payments of government for services, all payments made to suppliers during the calendar year in accordance to related service contracts (including contracts for mixed goods and services).

The paragraph 237(1) of the *Income Tax Act* and the article 235 of the Income Tax Regulations require the supplier to provide all necessary information below to the organization who prepares the fiscal information forms.

Questions: Sylvie Monette, Accounts Payable Supervisor  
(613) 239-5678 ext. 5156 or [sylvie.monette@ncc-ccn.ca](mailto:sylvie.monette@ncc-ccn.ca)

**Direct deposit payment information**

All amounts payable by NCC to the supplier will be deposited directly into the account you identified in part C. A NCC payment advice notice will also be sent to you by e-mail detailing the particularities of the payment to the address identified in part D.

Until we process your completed form, we will still pay you by check.

You must notify the NCC of any changes to your financial institution, branch or account number. You will then have to complete a new form.

The account you identified has to hold Canadian funds at a financial institution in Canada.

**The advantages of direct deposit payment**

Direct deposit payment is a convenient, dependable, safe and timesaving way to receive your invoice payment. Direct deposit payment is completely confidential.

There are fewer risks of direct deposit payment being lost, stolen, or damaged as may happen with cheques.

Funds made by direct deposit payment will be available in your bank account on the same day that we would have mailed your cheque.

**Renseignements sur les fournisseurs aux fins de l'impôt**

En vertu de l'alinéa 221(1) (d) de la *Loi de l'impôt sur le revenu*, la CCN est tenu de déclarer, à l'aide du formulaire T-1204, Paiements contractuels de services du gouvernement, tous paiements versés aux fournisseurs pendant une année civile en vertu de marchés de services pertinents (y compris les marchés composés à la fois de biens et de services).

Le paragraphe 237 (1) de la *Loi de l'impôt sur le revenu* et l'article 235 du Règlement de l'impôt sur le revenu obligent les fournisseurs à fournir toutes les informations demandées ci-dessous à l'organisme qui prépare les formulaires de renseignements fiscaux.

Questions : Sylvie Monette, Superviseure aux comptes payable  
(613) 239-5678 poste 5156 ou [sylvie.monette@ncc-ccn.ca](mailto:sylvie.monette@ncc-ccn.ca)

**Renseignements sur le paiement par dépôt direct**

Tous les montants versés par la CCN au fournisseur seront déposés directement dans le compte identifié à la partie C. Un avis de paiement de la CCN détaillant les particularités du paiement par dépôt direct vous sera envoyé par courriel à l'adresse courriel identifiée à la partie D.

Nous continuerons à vous payer par chèque jusqu'à ce que nous ayons traité votre formulaire.

Vous devez aviser la CCN de tout changement d'institution financière, de succursale ou de numéro de compte. Vous devrez donc remplir un nouveau formulaire.

Le compte que vous désignez doit être un compte en monnaie canadienne, détenu dans une institution financière au Canada.

**Avantages du paiement par dépôt direct**

Le paiement par dépôt direct est une méthode pratique, fiable et sécuritaire, qui permet de gagner du temps dans la réception de vos paiements de factures. Le paiement par dépôt direct est entièrement confidentiel.

Avec les paiements par dépôt direct, il y a moins de risques de perte, de vol ou de dommage, comme cela peut se produire dans le cas des chèques.

Les paiements effectués par paiement par dépôt direct sont versés dans votre compte le jour même où nous aurions posté votre chèque.

- SI01 Tender Documents
- SI02 Enquiries during the Solicitation Period
- SI03 [\[Non Mandatory\] Site Visit](#)
- SI04 Revision of Tender
- SI05 Tender Results
- SI06 Negotiations
- SI07 Tender Validity Period
- SI08 Construction Documents
- SI09 Public Tender Opening

**SI01 TENDER DOCUMENTS**

- 1) The following are the tender documents:
  - (a) Invitation to Tender & Acceptance Form and any Appendices attached thereto;
  - (b) Special Instructions to Bidders; and
  - (c) General Instructions to Bidders.

Submission of a tender constitutes acknowledgement that the Bidder has read and agrees to be bound by these documents.

**SI02 ENQUIRIES DURING THE SOLICITATION PERIOD**

- 1) Enquiries regarding this tender must be submitted in writing to the following: Sr. Contract Officer, Allan Lapensée, e-mail address – [allan.lapensee@ncc-ccn.ca](mailto:allan.lapensee@ncc-ccn.ca) as early as possible within the solicitation period. Except for the approval of alternative materials as described in GI15 of the General Instructions to Bidders, enquiries should be received no later than five (5) calendar days prior to the date set for solicitation closing to allow sufficient time to provide a response. Enquiries received after that time may result in an answer not being provided.
- 2) To ensure consistency and quality of the information provided to Bidders, the Sr. Contract Officer shall examine the content of the enquiry and shall decide whether or not to issue an amendment.
- 3) All enquiries and other communications related to this tender sent throughout the solicitation period are to be directed ONLY to the Sr. Contract Officer named above. Non-compliance with this requirement during the solicitation period can, for that reason alone, result in disqualification of a tender.

**SI03 [\[NON MANDATORY\] SITE VISIT](#)**

- 1) A NON MANDATORY site visit will be held on Friday, September 1, 2017 at 10am, EDT. The meeting place will be the Lac Philippe entrance to Gatineau Park off of Hwy 366, Sainte-Cecile-de-Masham, QC. All costs incurred by the Bidder to attend the site visit will be at their expense. The NCC will not reimburse any Bidder for expenses related to the site visit.
- 2) <https://goo.gl/maps/aEhaKu7EP6z> (Google maps link)

**SI04 REVISION OF TENDER**

- 1) A tender may be revised by letter or facsimile in accordance with GI10 of the General Instructions to Bidders. The facsimile number for receipt of revisions is 613-239-5012.

**SI05 TENDER RESULTS**

- 1) Following solicitation closing, tender results may be obtained by calling or emailing the Sr. Contract Officer (see SI02).

**SI06 NEGOTIATIONS**

- 1) In the event that the lowest compliant tender exceeds the amount of funding the NCC has allocated for the construction phase of the work:
  - (a) by 15% or less, the NCC, at its sole discretion, shall either:
    - (i) cancel the invitation to tender; or
    - (ii) obtain additional funding and, subject to the provisions of GI11 and GI09 of the General Instructions to Bidders, award the Contract to the Bidder submitting the lowest compliant tender; or
    - (iii) revise the scope of the work accordingly and negotiate, with the Bidder submitting the lowest compliant tender, a corresponding reduction in its tender price.
  - (b) by more than 15%, the NCC, at its sole discretion, shall either:
    - (i) cancel the invitation to tender; or
    - (ii) obtain additional funding and, subject to the provisions of GI11 and GI09 of the General Instructions to Bidders, award the Contract to the Bidder submitting the lowest compliant tender; or
    - (iii) revise the scope of the work accordingly and invite those who submitted compliant tenders at the original invitation to tender to re-tender the work.
- 2) If negotiations or a re-tender are undertaken as is contemplated in subparagraphs 1)(a)(iii) or 1)(b)(iii) above, Bidders shall retain the same subcontractors and suppliers as they carried in their original tenders.
- 3) If the NCC elects to negotiate a reduction in the tender price as is contemplated in subparagraph 1)(a)(iii) herein and the negotiations fail to reach an agreement, the NCC shall then exercise either of the options referred to subparagraphs 1)(a)(i) or 1)(a)(ii).

**SI07 TENDER VALIDITY PERIOD**

- 1) The NCC reserves the right to seek an extension to the tender validity period prescribed in 3 of the Invitation to Tender & Acceptance Form. Upon notification in writing from the NCC, Bidders shall have the option to either accept or reject the proposed extension.
- 2) If the extension referred to in paragraph 1) of SI07 is accepted, in writing, by all those who submitted tenders, then the NCC shall continue immediately with the evaluation of the tenders and its approvals processes.
- 3) If the extension referred to in paragraph 1) of SI07 is not accepted in writing by all those who submitted tenders then the NCC shall, at its sole discretion, either:

- (a) continue to evaluate the tenders of those who have accepted the proposed extension and seek the necessary approvals; or
  - (b) cancel the invitation to tender.
- 4) The provisions expressed herein do not in any manner limit the NCC's rights in law or under GI11 of the General Instructions to Bidders.

**SI08 CONSTRUCTION DOCUMENTS**

- 1) The successful contractor will be provided with one paper copy of the sealed and signed plans, the specifications and the amendments upon acceptance of the offer. Additional copies, may be available free of charge upon request by the contractor. If not, obtaining more copies shall be the responsibility of the contractor including costs.

**SI09 PUBLIC TENDER OPENING**

- 1) A public tender opening will be held on [Friday, September 8, 2017 at 3:00pm](#) EDT at 40 Elgin Street, Ottawa, ON beside the security office on the 2<sup>nd</sup> floor.

- GI01 Completion of Tender
- GI02 Identity or Legal Capacity of the Bidder
- GI03 Goods and Services Tax / Harmonized Sales Tax
- GI04 Québec Sales Tax
- GI05 Capital Development and Redevelopment Charges
- GI06 Registry and Pre-qualification of Floating Plant
- GI07 Listing of Subcontractors and Suppliers
- GI08 Tender Security Requirements
- GI09 Submission of Tender
- GI10 Revision of Tender
- GI11 Acceptance of Tender
- GI12 Procurement Business Number
- GI13 Bid Depository
- GI14 Compliance with Applicable Laws
- GI15 Approval of Alternative Materials
- GI16 Performance Evaluation

**GI01 Completion of Tender**

- 1) The tender shall be:
  - (a) submitted on the Invitation to Tender and Acceptance Form provided through the Government Electronic Tendering Service (GETS) or on a clear and legible reproduced copy of such Invitation to Tender and Acceptance Form that must be identical in content and format to the Invitation to Tender and Acceptance Form provided through GETS;
  - (b) based on the Tender Documents listed in the Special Instructions to Bidders;
  - (c) correctly completed in all respects;
  - (d) signed by a duly authorized representative of the Bidder; and
  - (e) accompanied by
    - (i) tender security as specified in GI08; and
    - (ii) any other document or documents specified elsewhere in the solicitation where it is stipulated that said documents are to accompany the tender.
- 2) Subject to paragraph 6) of GI11, any alteration to the pre-printed or pre-typed sections of the Invitation to Tender and Acceptance Form, or any condition or qualification placed upon the tender shall be cause for disqualification. Alterations, corrections, changes or erasures made to statements or figures entered on the Invitation to Tender and Acceptance Form by the Bidder shall be initialled by the person or persons signing the tender. Initials shall be original(s). Alterations, corrections, changes or erasures that are not initialled shall be deemed void and without effect.
- 3) Unless otherwise noted elsewhere in the Tender Documents, facsimile copies of tenders are not acceptable.

**GI02 Identity or Legal Capacity of the Bidder**

- 1) In order to confirm the authority of the person or persons signing the tender or to establish the legal capacity under which the Bidder proposes to enter into Contract, any Bidder who carries on business in other than its own personal name shall, if requested by the NCC prior to award of contract, provide satisfactory proof of:

- (a) such signing authority; and
- (b) the legal capacity under which it carries on business.

Proof of signing authority may be in the form of a certified copy of a resolution naming the signatory(ies) that is (are) authorized to sign this tender on behalf of the corporation or partnership. Proof of legal capacity may be in the form of a copy of the articles of incorporation or the registration of the business name of a sole proprietor or partnership.

**GI03 Goods and Services Tax / Harmonized Sales Tax**

- 1) The National Capital Commission (NCC) is a Crown Corporation subject to the Goods and Services Tax (GST), the Ontario Provincial Sales Tax (OST) and the Quebec Sales Tax (QST). The rates quoted are exclusive of the GST and the OST/QST. The successful firm will be required to indicate separately, on all invoices or requests for payments, the amount of Goods and Services Sales Tax (GST), the amount of Ontario Sales Tax (OST) and the amount of Quebec Sales Tax (QST), to the extent applicable, that the Commission must pay. These amounts will be paid to the successful Bidder who is required to make the appropriate remittances to Revenue Canada and the respective provincial governments.

Pursuant to paragraph 221 (1)(d) of the Income Tax Act, payments made by Crown Corporations under applicable service contracts (including contracts involving a mix of goods and services) must be reported on a “T1204” slip. To comply with this requirement, the Bidder is required to provide the following information on the “Supplier – Direct Payment and Tax Information Form” (see Appendix 11).

By signing this form, the Bidder/Proponent certifies that he/she has examined the information provided on the form and that it is correct, complete, and fully discloses the identification of the Contractor.

This “Supplier – Direct Payment and Tax Information Form” must be completed and returned to the Commission prior to any contract being awarded to your firm (see Appendix 11).

**GI04 Quebec Sales Tax**

- 1) See GI03.

**GI05 Capital Development and Redevelopment Charges**

- 1) For the purposes of GC1.8 LAWS, PERMITS AND TAXES in the General Conditions of the Contract, only fees or charges directly related to the processing and issuing of building permits shall be included. The Bidder shall not include any monies in the tender amount for special municipal development, redevelopment or other fees or charges which a municipal authority may seek as a prerequisite to the issuance of building permits.

**GI06 Registry and Pre-qualification of Floating Plant**

- 1) Dredges or other floating plant to be used in the performance of the Work must be on Canadian registry. For dredges or other floating plant that are not of Canadian make or manufacture, the Bidder must obtain a certificate of qualification from Industry Canada, if applicable, and this certificate must accompany the tender. Plant so qualified by Industry Canada may be accepted on this project.

**GI07 Listing of Subcontractors and Suppliers**

- 1) Notwithstanding any list of Subcontractors that the Bidder shall be required to submit as part of the tender, the Bidder submitting the lowest acceptable tender shall, within 24 hours of receipt of a notice to do so, submit all information requested in the said notice including the names of Subcontractors and Suppliers for the part or parts of the Work listed. Failure to do so may result in the disqualification of its tender.

**GI08 Tender Security Requirements**

- 1) The Bidder shall submit tender security with the tender in the form of a bid bond or a security deposit in an amount that is equal to not less than 10% of the tender amount including all applicable taxes.

The maximum amount of tender security required with any tender is \$2,000,000.00.

- 2) A bid bond shall be in an approved form, properly completed, with original signature(s) and issued by an approved company whose bonds are acceptable to the NCC either at the time of solicitation closing or as identified on the list displayed at the following Website:

<http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=12027>

The approved form for the bid bond is enclosed at the end of this section.

- 3) A security deposit shall be an original, properly completed, signed where required and be either:
  - (a) a bill of exchange, bank draft or money order payable to the NCC;
  - (b) bonds of, or unconditionally guaranteed as to principal and interest by, the Government of Canada; or
- 4) A bill of exchange, bank draft or money order referred to in subparagraph 3)(a) of GI08 shall be certified by or drawn on:
  - (a) a corporation or institution that is a member of the Canadian Payments Association;
  - (b) a corporation that accepts public deposits and repayment of the deposits is unconditionally guaranteed by Her Majesty in right of a province;
  - (c) a corporation that accepts deposits that are insured by the Canada Deposit Insurance Corporation or the "Régie de l'assurance-dépôts du Québec" to the maximum permitted by law;
  - (d) a corporation, association or federation incorporated or organized as a credit union or cooperative credit society that conforms to the requirements of a credit union which are more particularly described in paragraph 137 (6)(b) of the *Income Tax Act*; or
  - (e) Canada Post Corporation.
- 5) If a bill of exchange, bank draft or money order is drawn on an institution or corporation other than a chartered bank, it must be accompanied by proof that the said institution or corporation meets at least one of the criteria described in paragraph 4) of GI08, either by letter or by a stamped certification on the bill of exchange, bank draft, or money order.
- 6) For the purposes of this section, a bill of exchange is an unconditional order in writing signed by the Bidder and addressed to an approved financial institution, requiring the said institution to pay, on demand, at a fixed or determinable time, a certain sum of money to, or to the order of, the NCC.

- 7) Bonds referred to in subparagraph 3)(b) of GI08 shall be provided on the basis of their market value current at the date of solicitation closing, and shall be:
  - (a) payable to bearer;
  - (b) accompanied by a duly executed instrument of transfer of the bonds to the NCC in the form prescribed by the Domestic Bonds of Canada Regulations; or
  - (c) registered as to principal or as to principal and interest in the name of the NCC pursuant to the Domestic Bonds of Canada Regulations.
- 8) As an alternative to a security deposit an irrevocable standby letter of credit is acceptable to the NCC and the amount shall be determined in the same manner as a security deposit referred to above.
- 9) An irrevocable standby letter of credit referred to in paragraph 8) of GI08 shall:
  - (a) be an arrangement, however named or described, whereby a financial institution (the “Issuer”) acting at the request and on the instructions of a customer (the “Applicant) or on its own behalf:
    - (i) is to make a payment to, or to the order of, the NCC as the beneficiary;
    - (ii) is to accept and pay bills of exchange drawn by the NCC;
    - (iii) authorizes another financial institution to effect such payment or accept and pay such bills of exchange; or
    - (iv) authorizes another financial institution to negotiate against written demand(s) for payment provided that the terms and conditions of the letter of credit are complied with.
  - (b) state the face amount which may be drawn against it;
  - (c) state its expiry date;
  - (d) provide for sight payment to the NCC by way of the financial institution’s draft against presentation of a written demand for payment signed by the NCC Contract Administrator identified in the letter of credit by his/her office;
  - (e) provide that more than one written demand for payment may be presented subject to the sum of those demands not exceeding the face value of the letter of credit;
  - (f) provide that it is subject to the International Chamber of Commerce (ICC) Uniform Customs and Practice for Documentary Credits, 2007 Revision, ICC Publication No. 600;
  - (g) clearly specify that it is irrevocable or deemed to be irrevocable pursuant to article 6 c) of the International Chamber of Commerce (ICC) Uniform Customs and Practice for Documentary Credits, 2007 Revision, ICC Publication No. 600; and
  - (h) be issued or confirmed, in either official language, by a financial institution which is a member of the Canadian Payments Association and is on the letterhead of the Issuer or Confirmer. The format is left to the discretion of the Issuer or Confirmer.
- 10) Tender security shall lapse or be returned as soon as practical following:
  - (a) the solicitation closing date, for those Bidders submitting non-compliant tenders; and



- (b) the administrative tender review, for those Bidders submitting compliant tenders ranked fourth to last on the schedule of tenders; and
  - (c) the award of contract, for those Bidders submitting the second and third ranked tenders; and
  - (d) the receipt of contract security for the successful Bidder; or
  - (e) the cancellation of the solicitation, for all Bidders.
- 11) Notwithstanding the provisions of paragraph 10) of GI08 and provided more than three (3) compliant tenders have been received, if one or more of the tenders ranked third to first is withdrawn or rejected for whatever reason, then the NCC reserves the right to hold the security of the next highest ranked compliant tender in order to retain the tender security of at least three (3) valid and compliant tenders.

**GI09 Submission of Tender**

- 1) The Invitation to Tender and Acceptance Form, duly completed with the bid security, shall be enclosed and sealed in an envelope provided by the Bidder, and shall be addressed and submitted to the office designated on the front page of the Invitation to Tender and Acceptance Form for the receipt of tenders.
- 2) Unless otherwise specified in the Special Instructions to Bidders:
  - (a) the tender shall be in Canadian currency;
  - (b) exchange rate fluctuation protection is not offered; and
  - (c) any request for exchange rate fluctuation protection shall not be considered.
- 3) Prior to submitting the tender, the Bidder shall ensure that the following information is clearly printed or typed on the face of the tender envelope:
  - (a) Solicitation Number;
  - (b) Name of Bidder.
- 5) Timely and correct delivery of the tender is the sole responsibility of the Bidder. The tender must be received on or before the date and time set for solicitation closing. Late tenders shall be disqualified.

**GI10 Revision of Tender**

- 1) A tender submitted in accordance with these instructions may be revised by letter or facsimile (fax number only 613-239-5012 provided the revision is received at the office designated for the receipt of tenders, on or before the date and time set for the closing of the solicitation. The letter or facsimile shall:
  - (a) be on the Bidder's letterhead or bear a signature that identifies the Bidder;
  - (b) for the Total Bid Amount, clearly identify the amount of the current revision. The total aggregate sum of all revisions submitted, including the current revision, shall be shown separately; and
  - (c) for the Price per unit portion of a tender, clearly identify the current revision(s) to the Price(s) per unit and the specific item(s) to which each revision applies. If a revision is to be applied to a specific Item that was previously amended then, in addition to the amount of the current

revision, the total aggregate sum of all revisions submitted, including the current revision, for that Item shall be shown separately.

- 2) A letter or facsimile submitted to confirm an earlier revision shall be clearly identified as "CONFIRMATION ONLY", for each contemplated change.
- 3) Failure to comply with any of the above provisions shall result in the rejection of the non-compliant revision(s) only. The tender shall be evaluated based on the original tender submitted and all other compliant revision(s).

#### **GI11 Acceptance of Tender**

- 1) The NCC may accept any tender, whether it is the lowest or not, or may reject any or all tenders.
- 2) Without limiting the generality of paragraph 1) of GI11, the NCC may reject a tender if any of the following circumstances are present:
  - (a) the Bidder, or any employee or subcontractor included as part of the tender, have been convicted under section 121 ("Frauds on the government" & "Contractor subscribing to election fund"), 124 ("Selling or purchasing office"), 380 (Fraud committed against Her Majesty) or 418 ("Selling defective stores to Her Majesty") of the Criminal Code of Canada, or under paragraph 80(1)(d) (False entry, certificate or return), subsection 80(2) (Fraud against her Majesty) or Section 154.01 (Fraud against her Majesty) of the Financial Administration Act;
  - (b) the Bidder's bidding privileges are suspended or are in the process of being suspended;
  - (c) the bidding privileges of any employee or subcontractor included as part of the tender are suspended or are in the process of being suspended, which suspension or pending suspension would render that employee or subcontractor ineligible to tender on the Work, or the portion of the Work the employee or subcontractor is to perform;
  - (d) with respect to current or prior transactions with the NCC
    - (i) the Bidder is bankrupt or if, for whatever reason, its activities are rendered inoperable for an extended period;
    - (ii) evidence, satisfactory to the NCC, of fraud, bribery, fraudulent misrepresentation or failure to comply with any law protecting individuals against any manner of discrimination, has been received with respect to the Bidder, any of its employees or any subcontractor included as part of its tender;
    - (iii) the NCC has exercised, or intends to exercise, the contractual remedy of taking the work out of the contractor's hands with respect to a contract with the Bidder, any of its employees or any subcontractor included as part of its tender; or
    - (iv) the NCC determines that the Bidder's performance on other contracts is sufficiently poor to jeopardize the successful completion of the requirement being tendered on.
- 3). In assessing the Bidder's performance on other contracts pursuant to subparagraph 2)(d)(iv) of GI11, the NCC may consider, but not be limited to, such matters as:
  - (a) the quality of workmanship in performing the Work;
  - (b) the timeliness of completion of the Work;

- (c) the overall management of the Work and its effect on the level of effort demanded of the NCC and its representative; and
  - (d) the completeness and effectiveness of the Contractor's safety program during the performance of the Work.
- 4) Without limiting the generality of paragraphs 1), 2) and 3) of GI11, the NCC may reject any based on an unfavourable assessment of the:
- (a) adequacy of the tender price to permit the work to be carried out and, in the case of a tender providing prices per unit, whether each such price reasonably reflects the cost of performing the part of the work to which that price applies;
  - (b) Bidder's ability to provide the necessary management structure, skilled personnel, experience and equipment to perform competently the work under the Contract; and
  - (c) Bidder's performance on other contracts.
- 5) If the NCC intends to reject a tender pursuant to a provision of paragraphs 1), 2), 3) or 4) of GI11, other than subparagraph 2)(b) of GI11, the NCC shall so inform the Bidder and provide the Bidder ten (10) days within which to make representation, prior to making a final decision on the tender rejection.
- 6) The NCC may waive informalities and minor irregularities in tenders received, if the NCC determines that the variation of the tender from the exact requirements set out in the Tender Documents can be corrected or waived without being prejudicial to other Bidders.

**GI12 Procurement Business Number**

- 1) Not applicable.

**GI13 Bid Depository**

- 1) If the solicitation advertisement states that a Bid Depository shall be used, the Bidder shall obtain bids in accordance with local Bid Depository rules and procedures.

**GI14 Compliance with Applicable Laws**

- 1) By submission of a tender, the Bidder certifies that the Bidder has the legal capacity to enter into a contract and is in possession of all valid licences, permits, registrations, certificates, declarations, filings, or other authorizations necessary to comply with all federal, provincial and municipal laws and regulations applicable to the submission of the tender and entry into any ensuing contract for the performance of the work.
- 2) For the purpose of validating the certification in paragraph 1) of GI14, a Bidder shall, if requested, provide a copy of every valid licence, permit, registration, certificate, declaration, filing or other authorization listed in the request, and shall provide such documentation within the time limit(s) set out in the said request.
- 3) Failure to comply with the requirements of paragraph 2) of GI14 shall result in the disqualification of the tender.

**GI15 Approval of Alternative Materials**

- 1) When materials are specified by trade names or trademarks, or by manufacturers' or suppliers' names, the tender shall be based on use of the named materials. During the solicitation period,

alternative materials may be considered provided full technical data is received in writing by the Contracting Officer at least seven (7) calendar days, unless otherwise noted in the Tender documents, prior to the solicitation closing date. If the alternative materials are approved for the purposes of the tender, an addendum to the tender documents shall be issued.

**GI16 Performance Evaluation**

- 1) Bidders shall take note that the performance of the Contractor during and upon completion of the work shall be evaluated by the NCC. The evaluation shall be based on the quality of workmanship, timeliness of completion of the work, project management, contract management and management of health and safety. Should the Contractor's performance be considered unsatisfactory, the Contractor's bidding privileges on future work may be suspended indefinitely. Contractor Evaluation Report Form is enclosed at the end of this section.

# BID BOND

Bond Number \_\_\_\_\_

Amount \$ \_\_\_\_\_

**KNOW ALL MEN BY THESE PRESENTS**, that \_\_\_\_\_ as Principal, hereinafter called the Principal, and \_\_\_\_\_ as Surety, hereinafter called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto the National Capital Commission as Obligee, hereinafter called the NCC, In the amount of \_\_\_\_\_ dollars (\$ \_\_\_\_\_ ), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**SIGNED AND SEALED** this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_. WHEREAS, the Principal has submitted a written tender to the NCC, dated the \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, for: \_\_\_\_\_.

**NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION** are such that if:

- (a) The Principal, should his tender be accepted within the period be specified by the NCC, or, if no period be specified, within sixty (60) days after closing date of the tender:
  - 1. does execute within a period specified by the NCC, or, if no period be specified therein, within fourteen (14) days after the prescribed forms are presented to him for signature, execute such further contractual documents, if any, as may be required by the terms of the tender as accepted; and does
  - 2. furnish a Performance Bond and a Labour and Material Payment Bond, each in the amount of 50% of the Contract price and satisfactory to the NCC, or other security acceptable to the NCC; or
- (b) the Principal does pay to the NCC the difference between the amount of the Principal's tender and the amount of the Contract entered into by the NCC for the work, supplies and services which were specified in the said tender, if the latter amount be in excess of the former,

then, this obligation shall be void; otherwise it shall remain in full force and effect.

**PROVIDED, HOWEVER**, that the Surety and the Principal shall not be liable to the NCC for an amount greater than the amount specified in the bond.

**PROVIDED FURTHER** that the Surety shall not be subject to any suit or action unless such suit or action is instituted and process therefore served upon the Surety at its Head Office in Canada, within twelve (12) months from the date of this bond.

**IN TESTIMONY WHEREOF**, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and first above written.

**SIGNED, SEALED AND DELIVERED in the presence of:**

Principal \_\_\_\_\_

Witness \_\_\_\_\_

Surety \_\_\_\_\_

Note: Affix Corporate seal if applicable.

Date	Contract no. / No du contrat		
Description of work / Description des travaux			
Contractor's business name / Nom de l'entreprise de l'entrepreneur		Contractor's site superintendent / Contremaître de l'entrepreneur	
Contractor's business address / Adresse de l'entreprise de l'entrepreneur			
<b>NCC representative / Représentant de la CCN</b>			
Name / Nom	Telephone no. / N <sup>o</sup> . de téléphone	E-mail address / Adresse électronique	
<b>Contract information / Information sur le contrat</b>			
Contract award amount / Montant du marché adjugé		Contract award date / Date de l'adjudication du marché	
Final amount / Montant final		Actual contract completion date / Date réelle d'achèvement du contrat	
Number of change orders / Nombre d'ordres de changement		Final certificate date / Date du certificat final	
<b>Quality of workmanship / Qualité des travaux exécutés</b>			
<p>This is the rating of the quality of the workmanship. At final completion the quality of the materials and equipment incorporated in the work must meet the requirements set out in the plans and specifications.</p> <p>Il s'agit de l'évaluation de la qualité des travaux exécutés. À l'achèvement des travaux, la qualité des matériaux et de l'équipement doit satisfaire les exigences établies dans les plans et devis.</p>	Unacceptable / Inacceptable	0 – 5	<div style="border: 1px solid black; width: 60px; height: 60px; margin: auto;"></div>
	Not satisfactory / Non-satisfaisant	6 – 10	
	Satisfactory / Satisfaisant	11 – 16	
	Superior / Supérieur	17 – 20	
<b>Time / Délai d'exécution</b>			
<p>This is the rating of the timeliness of completion considering the actual completion date compared with the original (or amended) contract completion date and allowing for conditions beyond the control of the contractor.</p> <p>Il s'agit de l'évaluation du délai d'exécution des travaux en prenant en considération la date actuelle d'achèvement des travaux par rapport à la date originale (ou modifiée) et en tenant compte des conditions indépendantes de la volonté de l'entrepreneur.</p>	Unacceptable / Inacceptable	0 – 5	<div style="border: 1px solid black; width: 60px; height: 60px; margin: auto;"></div>
	Late / En retard	6 – 10	
	On time / À temps	11 – 16	
	Ahead of schedule / En avance sur le calendrier	17 – 20	
<b>Project management / Gestion de projet</b>			
<p>This is the rating of how the project, as described in the drawings and specifications, was managed including co-ordination, quality control, effective schedule development and implementation.</p> <p>Voici l'évaluation de la façon dont le projet décrit dans les documents contractuels a été géré, y compris la coordination, le contrôle de la qualité, l'élaboration d'un calendrier efficace et la mise en œuvre.</p>	Unacceptable / Inacceptable	0 – 5	<div style="border: 1px solid black; width: 60px; height: 60px; margin: auto;"></div>
	Not satisfactory / Non-satisfaisant	6 – 10	
	Satisfactory / Satisfaisant	11 – 16	
	Superior / Supérieur	17 – 20	
		Criteria not applicable / Critère non-applicable	<input type="checkbox"/> N/A / S/O
<b>Contract management / Gestion de contrat</b>			
<p>This is the rating of how the contract was administered in accordance with the provisions expressed in the "front end" portion of the documents.</p> <p>Voici l'évaluation de la façon dont le contrat a été administré conformément aux dispositions comprises dans la partie « prioritaire » des documents.</p>	Unacceptable / Inacceptable	0 – 5	<div style="border: 1px solid black; width: 60px; height: 60px; margin: auto;"></div>
	Not satisfactory / Non-satisfaisant	6 – 10	
	Satisfactory / Satisfaisant	11 – 16	
	Superior / Satisfaisant	17 – 20	
		Criteria not applicable / Critère non-applicable	<input type="checkbox"/> N/A / S/O
<b>Health and safety / Santé et sécurité</b>			
<p>This is the rating of the effectiveness of how the occupational health and safety provisions (whether identified in the contract or those of provincial legislation or those otherwise applicable) were managed and administered.</p> <p>Voici l'évaluation de l'efficacité avec laquelle les dispositions relatives à la santé et à la sécurité au travail (dans le contrat, dans les règlements provinciaux ou dans tout autre document) ont été gérées et administrées.</p>	Unacceptable / Inacceptable	0 – 5	<div style="border: 1px solid black; width: 60px; height: 60px; margin: auto;"></div>
	Not satisfactory / Non-satisfaisant	6 – 10	
	Satisfactory / Satisfaisant	11 – 16	
	Superior / Satisfaisant	17 – 20	
<b>Total points / Pointage total</b>			<b>/100</b>
<b>Comments / Commentaires</b>			
Name / Nom	Title / Titre	Signature	Date

**INSTRUCTIONS AND ADDITIONAL INFORMATION (Contractor Performance Evaluation Report)**  
**INSTRUCTIONS ET RENSEIGNEMENTS SUPPLÉMENTAIRES (Rapport d'évaluation du rendement de l'entrepreneur)**

**QUALITY OF WORKMANSHIP – QUALITÉ DES TRAVAUX EXÉCUTÉS**

The NCC representative is to consider how the workmanship compares with:

- the norms in the area in which the work was carried out
- the contractor's compliance with any quality provisions outlined in the drawings and specification
- the quality of workmanship provided by other contractors on similar projects in the same facility/facilities

Le représentant de la CCN doit évaluer la qualité de l'exécution en fonction de ce qui suit :

- le respect des normes s'appliquant aux travaux réalisés
- la conformité de l'entrepreneur aux exigences de qualité comprises dans les dessins et dans les devis
- la qualité de l'exécution des travaux accomplis par d'autres entrepreneurs dans le cadre de projets similaires réalisés dans la même installation ou dans des installations semblables.

**TIME / DÉLAIS D'EXÉCUTION**

For the purpose of evaluation the contractor's time performance, consideration must be given to conditions beyond the contractor's control including NCC / Consultant / Client performance.

Afin d'évaluer le rendement de l'entrepreneur en matière de délai d'exécution, on doit prendre en considération les conditions indépendantes de la volonté de l'entrepreneur, y compris le rendement de la CCN, de l'expert-conseil et du client.

Consider conditions beyond the contractor's control, e.g.,

Prendre en considération les conditions indépendantes de la volonté de l'entrepreneur, par exemple :

- availability of, and access to the site
- changes in soil or site conditions
- weather extremes
- strikes
- material / equipment supply problems originating from manufacturers/suppliers
- quality of plans and specifications
- major change(s) in scope
- cumulative effect of changes
- was the NCC able to meet its obligations?
- timely decisions, clarifications, approvals, payments in due time
- delays caused by other contractors in the same facility

- disponibilité du chantier et accès au chantier
- modifications des conditions du sol ou du chantier
- température
- grèves
- problèmes d'approvisionnement en matériel et en équipement provenant des manufacturiers/fournisseurs
- qualité des plan et devis
- modifications importantes à l'étendue des travaux
- effets cumulatifs des modifications
- la CCN a-t-elle été capable de remplir ses obligations?
- décisions, clarifications, approbations, paiements en temps opportun
- les retards occasionnés par d'autres entrepreneurs travaillant dans la même installation.

The NCC representative's estimate of a reasonable maximum time allowance resulting from conditions beyond the contractor's control is

L'estimation, par le représentant de la CCN, du temps maximum alloué pour les conditions indépendantes de la volonté de l'entrepreneur est



The period of delay attributable to the contractor is

La période de retard attribuable à l'entrepreneur est



Did the contractor make an effective effort / Est-ce que l'entrepreneur s'est efforcé :

- to meet the schedule / de respecter l'échéancier des travaux



Yes  
Oui

No  
Non

- to clean up deficiencies in a reasonable time / de corriger les vices dans un délai raisonnable



Yes  
Oui

No  
Non

Have you recommended assessments and damages for late completion under the contract?  
Avez-vous recommandé des dédommagements pour retard d'exécution aux termes du marché?



Yes  
Oui

No  
Non

**PROJECT MANAGEMENT / GESTION DU PROJET**

The extent to which the contractor takes charge of and effectively manages the work has a direct effect on the inputs required of the NCC.

La mesure dans laquelle l'entrepreneur assume efficacement la gestion des travaux a une incidence directe sur les services qu'on attend de la CCN.

Consideration should be given to: Did the contractor

Il faut examiner si l'entrepreneur a :

- employ a knowledgeable site superintendent
- required additional input from the NCC staff above that which is normal for a project of similar size and nature
- promptly commence the work
- provide realistic schedules and updates in accordance with the terms of the contract
- provide a comprehensive work plan and adhere to its milestones
- order material promptly and in such a way as to expedite the progress of the work
- provide shop drawings promptly and were they of sufficient detail

- fait appel aux services d'un surintendant de chantier expérimenté
- demandé au personnel de la CCN une plus grande contribution que ce qui est normal pour un projet de cette importance et de cette nature
- commencé les travaux dans les plus brefs délais
- fourni un calendrier réaliste et des mises à jour conformément aux modalités du contrat
- présenté un plan de travail complet et a respecté les échéances
- commandé le matériel rapidement et de façon à accélérer l'avancement des travaux.
- fourni rapidement des dessins d'atelier comprenant suffisamment de détails

## PROJECT MANAGEMENT (cont'd) / GESTION DU PROJET (suite)

- effectively manage and complete all Division 1 work site activities
- promptly provide reasonable quotations for changes to the original scope of work
- cooperate when issued directions by the NCC representative
- interpret the contract documents accurately
- establish effective quality control procedures
- effectively coordinate and manage the work of its subcontractors
- promptly correct defective work as the project progressed
- promptly clean-up all deficiencies and incomplete work after issuance of the Interim Certificate of Completion
- satisfactorily clean the work site periodically and at the completion of the project
- g r  et achev  efficacement toutes les activit s sur le chantier de la Division 1
- propos  rapidement des prix raisonnables pour les modifications   l' nonc  des travaux initial
- accept  les directives du repr sentant de la CCN
- interpr t  les documents contractuels avec exactitude
- mis en place des proc dures de contr le de la qualit  efficaces
- coordonn  et g r  efficacement les travaux confi s   des sous-traitants
- corrig  promptement le travail d fectueux en cours de projet
- corrig  rapidement les travaux non acceptables et termin  les travaux incomplets apr s r ception du certificat provisoire d'ach vement
- nettoy  de fa on satisfaisante le chantier p riodiquement ainsi qu'  la fin du projet.

## CONTRACT MANAGEMENT / GESTION DU CONTRAT

The effectiveness of the contractor to administer the contract in accordance with the provisions expressed in the "front end" portion of the contract documents.

Consideration should be given to: Did the contractor

- in the time frame specified, provide its contract security, Insurance Certificate fully executed and WSIB form where applicable
- submit progress claims in the correct format, accurately representing the work successfully completed and material delivered to the site but not yet installed for each payment period
- submit a Statutory Declaration correctly completed with each progress claim
- submit an updated Schedule if so specified
- pay subcontractors and suppliers in a timely fashion in accordance with the terms and conditions of its subcontracts
- promptly appoint a competent site superintendent
- notify the NCC representative of all its subcontracting activities
- apply for, obtain and pay for all necessary permits, licenses and certificates
- cooperate with other contractors sent onto the site of the work
- remove a superintendent or unsuitable worker when requested by the NCC representative to do so
- effectively protect the work and the contract documents provided by the NCC
- comply with all warranty provisions up to the date of the Contractor Performance Evaluation Report Form (CPERF)
- effectively manage the site during a suspension or termination of the work to mitigate any additional costs to the NCC
- deal promptly with any claims from creditors
- maintain complete records of the project
- provide information promptly when requested to do so
- expedite and co-operate in the settlement of all disputes

Efficacit  avec laquelle l'entrepreneur a administr  le contrat conform ment aux dispositions continues dans la partie « prioritaire » des documents contractuels.

Il faut examiner si l'entrepreneur a :

- fourni, dans le d lai prescrit, une garantie contractuelle, un certificat d'assurance d ment sign s et le formulaire de la CSST, le cas  ch ant
- pr sent  des r clamations p riodiques dans le bon format, en d crivant avec pr cision les travaux ex cut s et le mat riel livr  sur le chantier mais non encore install , pour chaque p riode de paiement
- pr sent  une d claration solennelle correctement remplie avec chaque r clamation p riodique
- fourni un calendrier   jour, sur demande
- pay  rapidement les sous-traitants et les fournisseurs conform ment aux conditions des contrats de sous-traitance
- d sign  dans les plus brefs d lais un surintendant de chantier qualifi 
- tenu au courant le repr sentant de la CCN de toutes les activit s de sous-traitance
- demand , obtenu et pay  tous les permis, licences et certificats n cessaires
- collabor  avec les autres entrepreneurs envoy s sur le lieu des travaux
- remplac  un surintendant ou un travailleur inapte   la demande du repr sentant de la CCN
- prot g  efficacement les travaux et les documents relativement aux travaux et au contrat fournis par la CCN
- respect  toutes les dispositions de garantie jusqu'  la date du Formulaire Rapport d' valuation du rendement de l'entrepreneur (FRERE)
- g r  efficacement le chantier pendant une suspension des travaux ou lors de leur ach vement, afin de limiter tout c t  suppl mentaire pour la CCN
- trait  dans les plus brefs d lais les demandes de paiement des cr anciers
- tenu des dossiers complets sur le projet
- fourni promptement les renseignements demand s
- acc l re et coop re dans le r glement des diff rends



## HEALTH AND SAFETY / SANTÉ ET SÉCURITÉ

The effectiveness to which the contractor managed and administered the occupational health and safety provisions as stipulated in the contract documents and those required by provincial legislation or those that would otherwise be applicable to the site of the work.

Consideration should be given to: Did the contractor

- provide the NCC with a copy of its health and safety program prior to award of contract
- provide the NCC with a copy of its site specific hazardous assessment prior to award of contract
- apply for and obtain the provincial Notice of Project prior to commencement of the work
- apply for and obtain the Building Permit prior to commencement of the work
- provide a competent superintendent who
  - is qualified in health and safety matters because of her/his knowledge, training and experience
  - is familiar with the OH&S Act and its Regulations that apply to the site of the work
  - remedies any potential or actual danger of health and safety to those employed at the work site
- respond in a timely manner to any non-compliance safety issues noted by the NCC or a representative of the authority having jurisdiction
- implement its safety program in a proactive manner

Efficacité avec laquelle l'entrepreneur a géré et administré les dispositions relatives à la santé et à la sécurité au travail telles que stipulées dans les documents contractuels et dans les règlements provinciaux ou ceux s'appliquant normalement au lieu des travaux.

Il faut examiner si l'entrepreneur a :

- fourni à la CCN une copie de son programme en matière de santé et de sécurité avant l'octroi du contrat
- fourni à la CCN une copie de son évaluation des dangers pouvant survenir sur les lieux avant l'octroi du contrat
- demandé et obtenu l'avis de projet provincial avant le début des travaux
- demandé et obtenu le permis de construction avant le début des travaux
- engagé un surintendant qui :
  - est qualifié en matière de santé et de sécurité de par ses connaissances, sa formation et son expérience
  - connaît bien les dispositions de la Loi sur la santé et la sécurité au travail et de son règlement qui s'applique sur le lieu des travaux
  - remédie à tout danger possible ou réel en matière de santé et de sécurité pouvant toucher toutes les personnes travaillant sur le lieu des travaux
- traité rapidement tous les problèmes de non-conformité à la sécurité relevés par la CCN ou par un représentant de l'autorité qui a juridiction
- mis en œuvre son programme de sécurité de façon proactive

- GC1.1 INTERPRETATION
  - GC1.1.1 Headings and References
  - GC1.1.2 Terminology
  - GC1.1.3 Application of Certain Provisions
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- GC1.15 SUCCESSION
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- GC1.18 CERTIFICATION - CONTINGENCY FEES
- GC1.19 INTERNATIONAL SANCTIONS

**GC1.1 INTERPRETATION**

**GC1.1.1 Headings and References**

- 1) The headings in the contract documents, other than those in the drawings and specifications, form no part of the Contract but are inserted for convenience of reference only.
- 2) A reference made to a part of the Contract by means of numbers preceded by letters is a reference to the particular part of the Contract that is identified by that combination of letters and numbers and to any other part of the Contract referred to therein.
- 3) A reference to a paragraph or subparagraph followed by an identifying number, letter or combination thereof is, unless specifically stated otherwise, a reference to the paragraph or subparagraph that forms part of the clause within which the reference is made.

**GC1.1.2 Terminology**

- 1) In the Contract

"Contract" means the contract documents referred to as such therein and every other document specified or referred to in any of them as forming part of the Contract, all as amended by agreement of the parties;

"Contract Amount" means the amount set out in the Contract to be payable to the Contractor for the Work, subject to the terms and conditions of the Contract;

"Contract Security" means any security given by the Contractor to the NCC in accordance with the Contract;

"Contractor" means the person contracting with the NCC to provide or furnish all labour, Material and Plant for the execution of the Work under the Contract, and includes the Contractor's superintendent as designated in writing to the NCC;

"Certificate of Completion" means a certificate issued by the NCC when the Work reaches Completion;

"Certificate of Measurement" means a certificate issued by the NCC certifying the correctness of the final quantities, prices per unit and values of labour, Plant and Material performed, used and supplied by the Contractor for the construction of the part of the Work to which a Unit Price Arrangement applies;

"Certificate of Substantial Performance" means a certificate issued by the NCC when the Work reaches Substantial Performance;

"NCC Representative" means the person designated in the Contract, or by written notice to the Contractor, to act as the NCC Representative for the purposes of the Contract, and includes a person, designated and authorized in writing by the NCC Representative to the Contractor;

"herein", "hereby", "hereof", "hereunder" and similar expressions refer to the Contract as a whole and not to any particular section or part thereof;

"Lump Sum Arrangement" means that part of the Contract that prescribes a lump sum as payment for performance of the Work to which it relates;

"Material" includes all commodities, articles, machinery, equipment, fixtures and things required to be furnished in accordance with the Contract for incorporation into the Work;

"NCC" means the National Capital Commission;

"Person" also includes, unless there is an express stipulation in the Contract to the contrary, any partnership, proprietorship, firm, joint venture, consortium or corporation;

"Plant" includes all tools, implements, machinery, vehicles, structures, equipment, articles and things that are necessary for the performance of the Contract, other than Material and those tools customarily provided by a tradesperson in practicing a trade;

"Security screening" is a generic term that applies to all types and levels of personnel security screening including Reliability Status, Site Access, and CONFIDENTIAL, SECRET and TOP SECRET security clearances conducted by the NCC;

"Sensitive Information and Assets" means information or assets that have been identified by the NCC as TOP SECRET, SECRET, CONFIDENTIAL or protected;

"Subcontractor" means a person having a direct contract with the Contractor, subject to GC3.6 SUBCONTRACTING, to perform a part or parts of the Work, or to supply Material customized for the Work;

"Superintendent" means the employee or representative of the Contractor designated by the Contractor to act pursuant to GC2.6 SUPERINTENDENT;

"Supplementary Conditions" means the part of the Contract that amends or supplements the General Conditions;

"Supplier" means a person having a direct contract with the Contractor to supply Plant or Material not customized for the Work;

"Unit Price Arrangement" means that part of the Contract that prescribes the product of a price per unit of measurement multiplied by a number of units of measurement for performance of the Work to which it relates;

"Unit Price Table" means the table of prices per unit set out in the Contract;

"Work" means, subject only to any express stipulation in the Contract to the contrary, everything that is necessary to be done, furnished or delivered by the Contractor to perform the Contract in accordance with the contract documents; and

"Working Day" means a day other than a Saturday, Sunday, or a statutory holiday that is observed by the construction industry in the area of the place of the Work.

#### **GC1.1.3 Application of Certain Provisions**

- 1) Any provisions of the Contract that are expressly stipulated to be applicable only to a Unit Price Arrangement are not applicable to any part of the Work to which a Lump Sum Arrangement applies.
- 2) Any provisions of the Contract that are expressly stipulated to be applicable only to a Lump Sum Arrangement are not applicable to any part of the Work to which a Unit Price Arrangement applies.

#### **GC1.1.4 Substantial Performance**

- 1) The Work shall be considered to have reached Substantial Performance when:
  - (a) the Work or a substantial part thereof has passed inspection and testing and is, in the opinion of the NCC, ready for use by the NCC or is being used for the intended purposes; and
  - (b) the Work is, in the opinion of the NCC, capable of completion or correction at a cost of not more than
    - (i) 3% of the first \$500,000;
    - (ii) 2% of the next \$500,000; and
    - (iii) 1% of the balanceof the Contract Amount at the time this cost is calculated.
- 2) Where the Work or a substantial part thereof is ready for use or is being used for the purposes intended and:
  - (a) the remainder of the Work or a part thereof cannot be completed by the time specified in the Contract, or as amended in accordance with GC6.5 DELAYS AND EXTENSION OF TIME, for reasons beyond the control of the Contractor; or
  - (b) the NCC and the Contractor agree not to complete a part of the Work within the specified time;

the cost of that part of the Work that was either beyond the control of the Contractor to complete or the NCC and the Contractor have agreed not to complete by the time specified, shall be deducted from the value of the Contract referred to in subparagraph 1)(b) of GC1.1.4, and the said cost shall not form part of the cost of the Work remaining to be done in determining Substantial Performance.

**GC1.1.5 Completion**

- 1) The Work shall be deemed to have reached Completion when all labour, Plant and Material required have been performed, used or supplied, and the Contractor has complied with the Contract and all orders and directions made pursuant thereto, all to the satisfaction of the NCC.

**GC1.2 CONTRACT DOCUMENTS****GC1.2.1 General**

- 1) The contract documents are complementary, and what is required by any one shall be as binding as if required by all.
- 2) References in the contract documents to the singular shall be considered to include the plural as the context requires.
- 3) Nothing contained in the contract documents shall create a contractual relationship between the NCC and any Subcontractor or Supplier, their subcontractors or suppliers, or their agents or employees.

**GC1.2.2 Order of Precedence**

- 1) In the event of any discrepancy or conflict in the contents of the following documents, such documents shall take precedence and govern in the following order:
  - (a) any amendment or variation of the contract documents that is made in accordance with the General Conditions;
  - (b) any amendment issued prior to tender closing;
  - (c) Supplementary Conditions;
  - (d) General Conditions;
  - (e) the duly completed Invitation to Tender and Acceptance Form when accepted;
  - (f) drawings and specifications.

later dates shall govern within each of the above categories of documents.

- 2) In the event of any discrepancy or conflict in the information contained in the drawings and specifications, the following rules shall apply:
  - (a) specifications shall govern over drawings;
  - (b) dimensions shown in figures on a drawings shall govern where they differ from dimensions scaled from the same drawing; and
  - (c) drawings of larger scale govern over those of smaller scale.

**GC1.2.3 Security and Protection of Documents and Work**

- 1) The Contractor shall guard and protect all sensitive contract information (TOP SECRET, SECRET, CONFIDENTIAL and PROTECTED) including printed and digital documents, drawings, information, models, copies thereof and processing systems, whether supplied by the NCC or the Contractor, against loss or compromise and damage from any cause.
- 2) The Contractor shall limit access to sensitive NCC information only to those with a “need-to-know” and who have been successfully security screened to at least the level of sensitivity of the information.
- 3) The Contractor shall ensure all contract information indicated in paragraph 1) is guarded and protected by any subcontractors, agents or suppliers and access limited only to those with a “need-to-know” and who have been successfully security screened to at least the level of sensitivity of the information.
- 4) The Contractor shall keep confidential all information provided to the Contractor by or on behalf of the NCC in connection with the Work, and all information developed by the Contractor as part of the Work, and shall not disclose any such information to any person without the written permission of the NCC, except that the Contractor may disclose to a subcontractor, authorized in accordance with the Contract, information necessary to the performance of a subcontract. This section does not apply to any information that:
  - (a) is publicly available from a source other than the Contractor; or
  - (b) is or becomes known to the Contractor from a source other than the NCC, except any source that is known to the Contractor to be under an obligation to the NCC not to disclose the information.
- 5) When the Contract, the Work, or any information referred to in paragraph 4) is identified as TOP SECRET, SECRET, CONFIDENTIAL or PROTECTED by the NCC, the Contractor shall, at all times, take all measures reasonably necessary for the safeguarding of the material so identified, including such measures as may be further specified elsewhere in the Contract or provided, in writing, from time to time by the NCC.
- 6) Without limiting the generality of paragraphs 4) and 5) of GC1.2.3, when the Contract, the Work, or any information referred to in paragraph 4) is identified as TOP SECRET, SECRET, CONFIDENTIAL or PROTECTED by the NCC, the NCC shall be entitled to inspect the Contractor's premises and the premises of its subcontractors or suppliers and any other person at any tier, for security purposes at any time during the term of the Contract, and the Contractor shall comply with, and ensure that any such subcontractors or suppliers comply with all written instructions issued by the NCC dealing with the material so identified, including any requirement that employees of the Contractor and its subcontractors and suppliers and any other person at any tier execute and deliver declarations relating to reliability status, site access security clearances and other procedures.
- 7) The Contractor shall report any suspected or actual security incidents immediately to the NCC involving loss, compromise or damage of NCC information or assets.
- 8) The Contractor shall safeguard the Work and the Contract, the specifications, drawings and any other information provided by the NCC to the Contractor, and shall be liable to the NCC for any loss or damage from any causes.

**GC1.3 STATUS OF THE CONTRACTOR**

- 1) The Contractor is engaged under the Contract as an independent contractor.
- 2) The Contractor, its subcontractors and suppliers and any other person at any tier and their employees are not engaged by the Contract as employees, servants or agents of the NCC.
- 3) For the purposes of the contract the Contractor shall be solely responsible for any and all payments and deductions required to be made by law including those required for Canada or Quebec Pension Plans, Employment Insurance, Worker's Compensation, provincial health or insurance plans, and Income Tax.

**GC1.4 RIGHTS AND REMEDIES**

- 1) Except as expressly provided in the Contract, the duties and obligations imposed by the Contract and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

**GC1.5 TIME OF THE ESSENCE**

- 1) Time is of the essence of the Contract.

**GC1.6 INDEMNIFICATION BY CONTRACTOR**

- 1) The Contractor shall pay all royalties and patent fees required for the performance of the Contract and, at the Contractor's expense, shall defend all claims, actions or proceedings against the NCC charging or claiming that the Work or any part thereof provided or furnished by the Contractor to the NCC infringes any patent, industrial design, copyright trademark, trade secret or other proprietary right enforceable in Canada.
- 2) The Contractor shall indemnify and save the NCC harmless from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings by any third party, brought or prosecuted and in any manner based upon, arising out of, related to, occasioned by, or attributable to the activities of the Contractor, its subcontractors and suppliers and any other person at any tier, in performing the Work.
- 3) For the purposes of paragraph 2) of GC1.6, "activities" means any act improperly carried out, any omission to carry out an act and any delay in carrying out an act.

**GC1.7 INDEMNIFICATION BY THE NCC**

- 1) Subject to the Crown Liability and Proceedings Act, the Patent Act, and any other law that affects the NCC's rights, powers, privileges or obligations, the NCC shall indemnify and save the Contractor harmless from and against all claims, demands, losses, costs, damage, actions, suits or proceedings arising out of the Contractor's activities under the Contract that are directly attributable to:
  - (a) a lack of or a defect in the NCC's title to the Work site if owned by the NCC, whether real or alleged; or
  - (b) an infringement or an alleged infringement by the Contractor of any patent of invention or any other kind of intellectual property occurring while the Contractor was performing any act for the purposes of the Contract employing a model, plan or design or any other thing related to the Work that was supplied by the NCC to the Contractor.

**GC1.8 LAWS, PERMITS AND TAXES**

- 1) The Contractor shall comply with all federal, provincial and municipal laws and regulations applicable to the performance of the Work or any part thereof including, without limitation, all laws concerning health and labour conditions and the protection of the environment, and shall require compliance therewith by all of its subcontractors and suppliers at any tier as if the Work were being performed for an owner other than the NCC. The Contractor shall furnish evidence of compliance with such laws and regulations to the NCC at such times as the NCC may reasonably request.
- 2) Unless stipulated otherwise in the Contract, the Contractor shall obtain and maintain all permits, certificates, licences, registrations and authorizations required for the lawful performance of the Work.
- 3) Prior to the commencement of the Work at the site, the Contractor shall tender to a municipal authority an amount equal to all fees and charges that would be lawfully payable to that municipal authority in respect of building permits as if the Work were being performed for an owner other than the NCC.
- 4) Within 10 days of making a tender pursuant to paragraph 3) of GC1.8, the Contractor shall notify the NCC of the amount properly tendered and whether or not the municipal authority has accepted that amount.
- 5) If the municipal authority has not accepted the amount tendered, the Contractor shall pay that amount to the NCC within 6 days after the time stipulated in paragraph 4) of GC1.8.
- 6) For the purposes of this clause, "municipal authority" means any authority that would have jurisdiction respecting permission to perform the Work if the owner were not the NCC.
- 7) Notwithstanding the residency of the Contractor, the Contractor shall pay any applicable tax arising from or related to the performance of the Work under the Contract.
- 8) In accordance with the Statutory Declaration referred to in paragraph 4) of GC5.5 SUBSTANTIAL PERFORMANCE OF THE WORK, a Contractor who has neither residence nor place of business in the province or territory in which work under the Contract is being performed shall provide the NCC with proof of registration with the provincial sales tax authorities in the said province.
- 9) For the purpose of the payment of any applicable tax or the furnishing of security for the payment of any applicable tax arising from or related to the performance of the Work, and notwithstanding the provision that all Material, Plant and interest of the Contractor in all real property, licences, powers and privileges, become the property of the NCC after the time of purchase in accordance with GC3.10 MATERIAL PLANT AND REAL PROPERTY BECOME PROPERTY OF THE NCC, the Contractor shall be liable, as a user or consumer, for the payment or for the furnishing of security for the payment of any applicable tax payable, at the time of the use or consumption of that Material, Plant or interest of the Contractor in accordance with the relevant legislation.

**GC1.9 WORKERS' COMPENSATION**

- 1) Prior to award of contract, at the time of submitting its first progress claim, at the time of Substantial Performance of the Work, and prior to issuance of the Certificate of Completion, the Contractor shall provide evidence of compliance with workers' compensation legislation applicable to the place of the Work, including payments due thereunder.



- 2) At any time during the term of the Contract, when requested by the NCC, the Contractor shall provide such evidence of compliance by the Contractor, its subcontractors and any other person at any tier and any other person performing part of the Work who is required to comply with such legislation.

**GC1.10 NATIONAL SECURITY**

- 1) If the NCC determines that the Work is of a class or kind that involves national security, the NCC may order the Contractor to:
  - (a) provide the NCC with any information concerning persons employed or to be employed by the Contractor for purposes of the Contract; and
  - (b) remove any person from the site of the Work if, in the opinion of the NCC, that person may be a risk to the national security;and the Contractor shall comply with the order.
- 2) In all contracts with persons who are to be employed in the performance of the Contract, the Contractor shall make provision for the performance of any obligation that may be imposed upon the Contractor under paragraph 1) of GC1.10.

**GC1.11 UNSUITABLE WORKERS**

- 1) The NCC shall instruct the Contractor to remove from the site of the Work any person employed by the Contractor for purposes of the Contract who, in the opinion of the NCC, is incompetent or is guilty of improper conduct, and the Contractor shall not permit a person who has been removed to return to the site of the Work.

**GC1.12 PUBLIC CEREMONIES AND SIGNS**

- 1) The Contractor shall not permit any public ceremony in connection with the Work without the prior consent of the NCC.
- 2) The Contractor shall not erect nor permit the erection of any sign or advertising on the Work or its site without the prior consent of the NCC.

**GC1.13 CONFLICT OF INTEREST**

- 1) It is a term of the Contract that no individual, for whom the post-employment provisions of the Conflict of Interest and Post-Employment Code for Public Office Holders or the Values and Ethics Code for the Public Service apply, shall derive a direct benefit from the Contract unless that individual is in compliance with the applicable post-employment provisions.

**GC1.14 AGREEMENTS AND AMENDMENTS**

- 1) The Contract constitutes the entire and sole agreement between the parties with respect to the subject matter of the Contract and supersedes all previous negotiations, communications and other agreements, whether written or oral, relating to it, unless they are incorporated by reference in the Contract. There are no terms, covenants, representations, statements or conditions binding on the parties other than those contained in the Contract.
- 2) The failure of either party at any time to require performance by the other party of any provision hereof shall not affect the right thereafter to enforce such provision. Nor shall the waiver by either

party of any breach of any covenant, term or condition hereof be taken to be held to be a waiver of any further breach of the same covenant, term or condition.

- 3) The Contract may be amended only as provided for in the Contract.

#### **GC1.15 SUCCESSION**

- 1) The Contract shall inure to the benefit of and be binding upon the parties hereto and their lawful heirs, executors, administrators, successors and, subject to GC1.16 ASSIGNMENT, permitted assigns.

#### **GC1.16 ASSIGNMENT**

- 1) The Contractor shall not make any assignment of the Contract, either in whole or in part, without the written consent of the NCC.

#### **GC1.17 NO BRIBE**

- 1) The Contractor represents and covenants that no bribe, gift, benefit, nor other inducement has been nor shall be paid, given, promised or offered directly or indirectly to any official or employee of the NCC or to a member of the family of such a person, with a view to influencing the entry into the Contract or the administration of the Contract.

#### **GC1.18 CERTIFICATION - CONTINGENCY FEES**

- 1) In this clause:
  - (a) "contingency fee" means any payment or other compensation that is contingent upon or is calculated upon the basis of a degree of success in soliciting or obtaining a Government contract or negotiating the whole or any part of its terms;
  - (b) "employee" means a person with whom the Contractor has an employer/employee relationship; and
  - (c) "person" includes an individual or a group of individuals, a corporation, a partnership, an organization and an association and, without restricting the generality of the foregoing, includes any individual who is required to file a return with the registrar pursuant to section 5 of the Lobbyists Registration Act R.S.C. 1985 c.44 (4th Supplement) as the same may be amended from time to time.
- 2) The Contractor certifies that it has not directly or indirectly paid nor agreed to pay and covenants that it shall not directly or indirectly pay nor agree to pay a contingency fee for the solicitation, negotiation or obtaining of the Contract to any person other than an employee acting in the normal course of the employee's duties.
- 3) All accounts and records pertaining to payments of fees or other compensation for the solicitation, obtaining or negotiation of the Contract shall be subject to the accounts and audit provisions of the Contract.
- 4) If the Contractor certifies falsely under this section or is in default of the obligations contained therein, the NCC may either take the Work out of the Contractor's hands in accordance with the provisions of the Contract or recover from the Contractor by way of reduction to the Contract Amount or otherwise, the full amount of the contingency fee.

**GC1.19 INTERNATIONAL SANCTIONS**

- 1) Persons and companies in Canada, and Canadians outside of Canada are bound by economic sanctions imposed by the Government of Canada. As a result, the the NCC cannot accept delivery of goods or services that originate, either directly or indirectly, from the countries or persons subject to economic sanctions.  
Details on existing sanctions can be found at:  
<http://www.dfait-maeci.gc.ca/trade/sanctions-en.asp>.
- 2) It is a condition of the Contract that the Contractor not supply to the NCC any goods or services which are subject to economic sanctions.
- 3) By law, the Contractor must comply with changes to the regulations imposed during the life of the Contract. During the performance of the Contract should the imposition of sanctions against a country or person or the addition of a good or service to the list of sanctioned goods or services cause an impossibility of performance for the Contractor, the Contractor may request that the Contract be terminated in accordance with GC7.3 TERMINATION OF CONTRACT.

- GC2.1 NCC REPRESENTATIVE'S AUTHORITY
- GC2.2 INTERPRETATION OF CONTRACT
- GC2.3 NOTICES
- GC2.4 SITE MEETINGS
- GC2.5 REVIEW AND INSPECTION OF WORK
- GC2.6 SUPERINTENDENT
- GC2.7 NON-DISCRIMINATION IN HIRING AND EMPLOYMENT OF LABOUR
- GC2.8 ACCOUNTS AND AUDITS

**GC2.1 NCC REPRESENTATIVE'S AUTHORITY**

- 1) The NCC shall designate an NCC Representative and shall notify the Contractor of the name, address and telephone number of the NCC Representative.
- 2) The NCC Representative shall perform the NCC's duties and functions under the contract.
- 3) The NCC Representative shall be authorized to issue notices, instructions and directions to the Contractor and to accept on behalf of the NCC any notice, order or other communication from the contractor relating to the Work.
- 4) The NCC Representative shall, within a reasonable time, review and respond to submissions made by the Contractor in accordance with the requirements of the Contract.

**GC2.2 INTERPRETATION OF CONTRACT**

- 1) If, at any time before the NCC has issued a Certificate of Completion, any question arises between the parties about whether anything has been done as required by the Contract or about what the Contractor is required by the Contract to do, and in particular but without limiting the generality of the foregoing, about:
  - (a) the meaning of anything in the drawings and specifications;
  - (b) the meaning to be given to the drawings and specifications in case of any error therein, omission therefrom, or obscurity or discrepancy in their wording or intention;
  - (c) whether or not the quality or quantity of any Material or workmanship supplied or proposed to be supplied by the Contractor meets the requirements of the Contract;
  - (d) whether or not the labour, Plant or Material performed, used and supplied by the Contractor for performing the Work and carrying out the Contract are adequate to ensure that the Work shall be performed in accordance with the Contract and that the Contract shall be carried out in accordance with its terms;
  - (e) what quantity of any of the Work has been completed by the Contractor; or
  - (f) the timing and scheduling of the various phases of the performance of the Work as specified in the Contract;

the question shall be decided, subject to the provisions of GC8 DISPUTE RESOLUTION, by the NCC.

- 2) The Contractor shall perform the Work in accordance with any decisions of the NCC that are made under paragraph 1) of GC2.2 and in accordance with any consequential directions given by the NCC.

- 3) If the Contractor fails to comply with any instruction or direction issued by the NCC pursuant to the Contract, the NCC may employ such methods as the NCC deems advisable to do what the Contractor failed to do, and the Contractor shall, on demand, pay the NCC an amount that is equal to the aggregate of all costs, expenses and damages incurred or sustained by the NCC by reason of the Contractor's failure to comply with such instruction or direction, including the cost of any methods employed by the NCC in doing what the Contractor failed to do.

### **GC2.3 NOTICES**

- 1) Subject to paragraph 3) of GC2.3, any notice, order or other communication may be given in any manner, and if required to be in writing, shall be addressed to the party to whom it is intended at the address in the Contract or at the last address of which the sender has received written notice in accordance with this section.
- 2) Any notice, order or other communication given in writing in accordance with paragraph 1) of GC2.3 shall be deemed to have been received by either party:
  - (a) if delivered personally, on the day that it was delivered;
  - (b) if forwarded by mail, on the earlier of the day it was received or the sixth day after it was mailed; and
  - (c) if forwarded by facsimile or electronic mail, 24 hours after it was transmitted.
- 3) A notice given under GC7.1 TAKING THE WORK OUT OF THE CONTRACTOR'S HANDS, GC7.2 SUSPENSION OF WORK, and GC7.3 TERMINATION OF CONTRACT shall be given in writing and, if delivered personally, shall be delivered, if the Contractor is a sole proprietor, to the Contractor or, if the Contractor is a partnership or corporation, to an officer thereof.

### **GC2.4 SITE MEETINGS**

- 1) In consultation with the NCC, the Contractor shall arrange site meetings at regular intervals, with all involved parties who are to attend, in order to ensure, among other things, the proper co-ordination of the Work.

### **GC2.5 REVIEW AND INSPECTION OF WORK**

- 1) The NCC shall review the Work to determine if it is proceeding in conformity with the Contract and to record the necessary data to make an assessment of the value of Work completed. The NCC shall measure and record the quantities of labour, Plant and Material performed, used or supplied by the Contractor in performing the Work or any part thereof that is subject to a Unit Price Arrangement and, on request, shall inform the Contractor of those measurements, and permit the Contractor to inspect any records pertaining thereto.
- 2) The NCC shall reject Work or Material which in the NCC's opinion does not conform to the requirements of the Contract, and shall require inspection or testing of Work, whether or not such Work is fabricated, installed, or completed. If such Work is not in accordance with the requirements of the Contract, the Contractor shall correct the Work and shall pay the NCC, on demand, all reasonable costs and expenses that were incurred by the NCC in having the examination performed.
- 3) The Contractor shall provide the NCC with access to the Work and its site at all times, and at all times shall provide sufficient, safe, and proper facilities for the review and inspection of the Work by persons authorized by the NCC and any representatives of those authorities having jurisdiction. If parts of the Work are in preparation at locations other than the site of the Work, the NCC shall be given access to such Work whenever it is in progress.

- 4) The Contractor shall furnish the NCC with such information respecting the performance of the Contract as the NCC may require, and render every possible assistance to enable the NCC to verify that the Work is performed in accordance with the Contract, carry out any other duties and exercise any powers in accordance with the Contract.
- 5) If Work is designated for tests, inspections, or approvals in the Contract or by the NCC's instructions, or by laws or ordinances of the place of the Work, the Contractor shall give the NCC reasonable notice of when such Work shall be ready for review and inspection. The Contractor shall arrange for and shall give the NCC reasonable notice of the date and time of inspections, tests or approvals.
- 6) If the Contractor covers, or permits to be covered, Work that has been designated for tests, inspections or approvals before such tests, inspections or approvals are made, completed or given, the Contractor shall, if so directed by the NCC, uncover such Work, have the inspections, tests or approvals satisfactorily made, completed or given and make good the covering of the Work at the Contractor's expense.

#### **GC2.6 SUPERINTENDENT**

- 1) Prior to commencing the Work, the Contractor shall designate a Superintendent and shall notify the NCC of the name, address and telephone number of the Superintendent. The Contractor shall keep the Superintendent at the Work site during working hours until the Work has reached completion.
- 2) The Superintendent shall be in full charge of the operations of the Contractor during the performance of the Work and shall be authorized to accept on behalf of the Contractor any notice, order or other communication given to the Superintendent or the Contractor relating to the Work.
- 3) Upon request of the NCC, the Contractor shall remove any Superintendent who, in the opinion of the NCC, is incompetent or has been guilty of improper conduct, and shall forthwith designate another Superintendent who is acceptable to the NCC.
- 4) The Contractor shall not substitute a Superintendent without the written consent of the NCC. If a Superintendent is substituted without such consent, the NCC shall be entitled to refuse to issue any documentation or certification relating to progress payments, Substantial Performance or Completion of the Work until the Superintendent has returned to the Work site or another Superintendent who is acceptable to the NCC has been substituted.

#### **GC2.7 NON-DISCRIMINATION IN HIRING AND EMPLOYMENT OF LABOUR**

- 1) For the purposes of this clause, "persons" include the Contractor, its subcontractors and suppliers at any tier and their respective employees, agents, licensees or invitees and any other individual involved in the performance of the Work or granted access to the Work site. A "person" includes any partnership, proprietorship, firm, joint venture, consortium and corporation.
- 2) Without restricting the provisions of paragraph 3) of GC2.6, SUPERINTENDENT, the Contractor shall not refuse to employ and shall not discriminate in any manner against any person because:
  - (a) of that person's race, national origin, colour, religion, age, sex or marital status;
  - (b) of the race, national origin, colour, religion, age, sex, or marital status of any person having any relationship or association with that person; or
  - (c) a complaint has been made or information has been given by or in respect of that person relating to an alleged failure by the Contractor to comply with subparagraphs 2)(a) and 2)(b) of GC2.7.

- 3) Within two Working Days immediately following receipt of a written complaint pursuant to paragraph 2) of GC2.7, the Contractor shall:
  - (a) cause to have issued a written direction to the person or persons named by the complainant to cease all actions that form the basis of the complaint;
  - (b) forward a copy of the complaint to the NCC by registered mail or courier service; and
  - (c) when the Labour Conditions are applicable under the circumstances of the complaint, forward a copy of the complaint to HRSDC - Labour to the attention of the appropriate Director as described in the Labour Conditions ("HRSDC - Labour" means the labour component of the federal Department of Human Resources and Skills Development).
- 4) Within twenty four (24) hours immediately following receipt of a direction from the NCC to do so, the Contractor shall cause to have removed from the site of the Work and from the performance of Work under the Contract, any person or persons whom the NCC believes to be in breach of the provisions of paragraph 2) of GC2.7.
- 5) No later than thirty (30) days after receipt of the direction referred to in paragraph 4) of GC2.7, the Contractor shall cause the necessary action to be commenced to remedy the breach described in the direction.
- 6) If a direction is issued pursuant to paragraph 4) of GC2.7, the NCC may withhold from monies that are due and payable to the Contractor or setoff pursuant to GC5.9 RIGHT OF SETOFF, whichever is applicable, an amount representing the sum of the costs and payment referred to in paragraph 8) of GC2.7.
- 7) If the Contractor fails to proceed in accordance with paragraph 5) of GC2.7, the NCC shall take the necessary action to have the breach remedied, and shall determine all supplementary costs incurred by the NCC as a result.
- 8) The NCC may make a payment directly to the complainant from monies that are due and payable to the Contractor upon receipt from the complainant of:
  - (a) a written award issued pursuant to the federal Commercial Arbitration Act, R.S.C. 1985, c. 17 (2nd Supp.);
  - (b) a written award issued pursuant to the Canadian Human Rights Act, R.S.C. 1985, c. H-6;
  - (c) a written award issued pursuant to provincial or territorial human rights legislation; or
  - (d) a judgement issued by a court of competent jurisdiction.
- 9) If the NCC is of the opinion that the Contractor has breached any of the provisions of this clause, the NCC may take the Work out of the Contractor's hands pursuant to GC7.1 TAKING THE WORK OUT OF THE CONTRACTOR'S HANDS.
- 10) Subject to paragraph 7) of GC3.6 SUBCONTRACTING, the Contractor shall ensure that the provisions of this clause are included in all agreements and contracts entered into as a consequence of the Work.

**GC2.8 ACCOUNTS AND AUDITS**

- 1) The Contractor shall, in addition to the requirements expressed in paragraph 6) of GC3.4 EXECUTION OF THE WORK, maintain full records of the Contractor's estimated and actual cost of the Work together with all tender calls, quotations, contracts, correspondence, invoices, receipts and vouchers relating thereto, and shall make them available on request to audit and inspection by the NCC or by persons designated to act on behalf of the NCC.
- 2) The Contractor shall allow any of the persons referred to in paragraph 1) of GC2.8 to make copies of and take extracts from any of the records and material, and shall furnish such persons or entities with any information those persons or entities may require from time to time in connection with such records and material.
- 3) The Contractor shall maintain and keep the records intact until the expiration of two years after the date that a Certificate of Completion has been issued or until the expiration of such other period of time as the NCC may direct.
- 4) The Contractor shall cause all subcontractors at any tier and all other persons directly or indirectly controlled by or affiliated with the Contractor and all persons directly or indirectly having control of the Contractor to comply with the requirements of this clause as if they were the Contractor.



- GC3.1 PROGRESS SCHEDULE
- GC3.2 ERRORS AND OMISSIONS
- GC3.3 CONSTRUCTION SAFETY
- GC3.4 EXECUTION OF THE WORK
- GC3.5 MATERIAL
- GC3.6 SUBCONTRACTING
- GC3.7 CONSTRUCTION BY OTHER CONTRACTORS OR WORKERS
- GC3.8 LABOUR
- GC3.9 TRUCK HAULAGE RATES **(CANCELLED)**
- GC3.10 MATERIAL, PLANT AND REAL PROPERTY BECOME PROPERTY OF THE NCC
- GC3.11 DEFECTIVE WORK
- GC3.12 CLEANUP OF SITE
- GC3.13 WARRANTY AND RECTIFICATION OF DEFECTS IN WORK

**GC3.1 PROGRESS SCHEDULE**

- 1) The Contractor shall:
  - (a) prepare and submit to the NCC, prior to the submission of the Contractor's first progress claim, a progress schedule in accordance with the requirements set out in the Contract;
  - (b) monitor the progress of the Work relative to the schedule and update the schedule as stipulated by the contract documents;
  - (c) advise the NCC of any revisions to the schedule required as the result of any extension of time for completion of the Contract that was approved by the NCC; and
  - (d) prepare and submit to the NCC, at the time of issuance of an Certificate of Substantial Performance, an update of any schedule clearly showing a detailed timetable that is acceptable to the NCC for the completion of any unfinished Work and the correction of all listed defects.

**GC3.2 ERRORS AND OMISSIONS**

- 1) The Contractor shall report promptly to the NCC any errors, discrepancies, or omissions the Contractor may discover when reviewing the contract documents. In making a review, the Contractor does not assume any responsibility to the NCC for the accuracy of the review. The Contractor shall not be liable for damage or costs resulting from such errors, discrepancies, or omissions in the contract documents prepared by or on behalf of the NCC that the Contractor did not discover.

**GC3.3 CONSTRUCTION SAFETY**

- 1) Subject to GC3.7 CONSTRUCTION BY OTHER CONTRACTORS OR WORKERS, the Contractor shall be solely responsible for construction safety at the place of the Work and for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Work. In any emergency, the Contractor shall either, stop the Work, make changes or order extra work to ensure the safety of life and the protection of the Work and neighbouring property.
- 2) Prior to commencing the Work, the Contractor shall notify the authorities having jurisdiction for construction safety at the site of the Work with respect to the intended commencement of the Work, and shall provide such authority with whatever additional information may be required by that authority.

**GC3.4 EXECUTION OF THE WORK**

- 1) The Contractor shall perform, use or supply and pay for, all labour, Plant, Material, tools, construction machinery and equipment, water, heat, light, power, transportation and other facilities and services necessary for the performance of the Work in accordance with the Contract.
- 2) The Contractor shall, at all times, perform the Work in a proper, diligent and expeditious manner as is consistent with construction industry standards and in accordance with the progress schedule prepared pursuant to GC3.1 PROGRESS SCHEDULE and shall provide sufficient personnel to fulfil the Contractor's obligations in accordance with that schedule.
- 3) Subject to paragraph 4) of GC3.4, the Contractor shall have complete care, custody and control of the Work and shall direct and supervise the Work so as to ensure compliance with the Contract. The Contractor shall be responsible for construction means, methods, techniques, sequences and procedures and for co-ordinating the various parts of the Work.
- 4) When requested in writing by the NCC, the Contractor shall make appropriate alterations in the method, Plant or workforce at any time the NCC considers the Contractor's actions to be unsafe or damaging to either the Work, existing facilities, persons at the site of the Work or the environment.
- 5) The Contractor shall have sole responsibility for the design, erection, operation, maintenance and removal of temporary structures and other temporary facilities and for the construction methods used in their erection, operation, maintenance and removal. The Contractor shall engage and pay for registered professional engineering personnel, skilled in the appropriate discipline to perform these functions if required by law or by the Contract, and in all cases when such temporary facilities and their methods of construction are of such a nature that professional engineering skill is required to produce safe and satisfactory results.
- 6) The Contractor shall keep at least one copy of current contract documents, submittals, reports, and records of meetings at the site of the Work, in good order and available to the NCC.
- 7) Except for any part of the Work that is necessarily performed away from or off the site of the Work, the Contractor shall confine Plant, storage of Material, and operations of employees to limits indicated by laws, ordinances, permits or the contract documents.

**GC3.5 MATERIAL**

- 1) Unless otherwise specified in the Contract, all Material incorporated in the Work shall be new.
- 2) Subject to paragraph 3) of GC3.5, if a specified reused, refurbished, or recycled item of Material is not available, the Contractor shall apply to the NCC to substitute a similar item for the one specified.
- 3) If the NCC agrees that the Contractor's application for substitution of a reused, refurbished or recycled item is warranted, and that the substitute item is of acceptable quality and value to that specified and is suitable for the intended purpose, the NCC may approve the substitution, subject to the following:
  - (a) the request for substitution shall be made in writing to the NCC and shall be substantiated by information in the form of the manufacturer's literature, samples and other data that may be required by the NCC;
  - (b) the Contractor shall make the request for substitution in a manner that shall not negatively affect the progress schedule of the Contract and well in advance of the time the item of Material must be ordered;

- (c) substitution of Material shall be permitted only with the prior written approval of the NCC, and any substituted items that are supplied or installed without such approval shall be removed from the site of the Work at the expense of the Contractor, and specified items installed at no additional cost to the NCC; and
- (d) the Contractor shall be responsible for all additional expenses incurred by the NCC, the Contractor, its subcontractors and suppliers at any tier due to the Contractor's use of the substitute.

**GC3.6 SUBCONTRACTING**

- 1) Subject to the provisions of this clause, the Contractor may subcontract any part of the Work but not the whole of the Work.
- 2) The Contractor shall notify the NCC in writing of the Contractor's intention to subcontract.
- 3) A notification referred to in paragraph 2) of GC3.6 shall identify the part of the Work and the Subcontractor with whom the Contractor intends to subcontract.
- 4) The NCC may for reasonable cause, object to the intended subcontracting by notifying the Contractor in writing within six (6) days of receipt by the NCC of a notification referred to in paragraph 2) of GC3.6.
- 5) If the NCC objects to a subcontracting, the Contractor shall not enter into the intended subcontract.
- 6) The Contractor shall not change, nor permit to be changed, a Subcontractor engaged by the Contractor, in accordance with this clause, without the written consent of the NCC.
- 7) The Contractor shall ensure that all the terms and conditions of the Contract that are of general application shall be incorporated in every other contract issued as a consequence of the Contract, at whatever tier, except those contracts issued solely to suppliers at any tier for the supply of Plant or Material.
- 8) Neither a subcontracting nor the NCC's consent to a subcontracting shall be construed to relieve the Contractor from any obligation under the Contract or to impose any liability upon the NCC.

**GC3.7 CONSTRUCTION BY OTHER CONTRACTORS OR WORKERS**

- 1) The NCC reserves the right to send other contractors or workers, with or without Plant and Material, onto the site of the Work.
- 2) When other contractors or workers are sent on to the site of the Work, the NCC shall:
  - (a) enter into separate contracts, to the extent it is possible, with the other contractors under conditions of contract that are compatible with the conditions of the Contract;
  - (b) ensure that the insurance coverage provided by the other contractors is co-ordinated with the insurance coverage of the Contractor as it affects the Work; and
  - (c) take all reasonable precautions to avoid labour disputes or other disputes arising from the work of the other contractors or workers.
- 3) When other contractors or workers are sent on to the site of the Work, the Contractor shall:
  - (a) co-operate with them in the carrying out of their duties and obligations;

- (b) co-ordinate and schedule the Work with the work of the other contractors and workers;
  - (c) participate with other contractors and workers in reviewing their construction schedules when directed to do so;
  - (d) where part of the Work is affected by or depends upon the work of other contractors or workers for its proper execution, promptly report to the NCC in writing and prior to proceeding with that part of the Work, any apparent deficiencies in such work. Failure by the Contractor to so report shall invalidate any claims against the NCC by reason of the deficiencies in the work of other contractors or workers except those deficiencies that are not then reasonably discoverable; and
  - (e) when designated as being responsible for construction safety at the place for work, in accordance with the applicable provincial or territorial laws, carry out its duties in that role and in accordance with those laws.
- 4) If, when entering into the Contract, the Contractor could not have reasonably foreseen nor anticipated the sending of other contractors or workers on to the site of the Work and provided the Contractor:
- (a) incurs extra expense in complying with the requirements of paragraph 3) of GC3.7; and
  - (b) gives the NCC written notice of a claim for that extra expense within thirty (30) days of the date that the other contractors or workers were sent onto the Work or its site,

the NCC shall pay the Contractor the cost of the extra labour, Plant and Material that was necessarily incurred, calculated in accordance with GC6.4 DETERMINATION OF PRICE.

### **GC3.8 LABOUR**

- 1) The Contractor shall maintain good order and discipline among the Contractor's employees and workers engaged in the Work shall not employ, on the site of the Work, anyone not skilled in the tasks assigned.

### **GC3.9 TRUCK HAULAGE RATES**

**CANCELLED**

### **GC3.10 MATERIAL, PLANT AND REAL PROPERTY BECOME PROPERTY OF THE NCC**

- 1) Subject to paragraph 9) of GC1.8 LAWS PERMITS AND TAXES, all Material and Plant and the interest of the Contractor in all real property, licences, powers and privileges purchased, used or consumed by the Contractor for the Work shall, immediately after the time of their purchase, use or consumption be the property of the NCC for the purposes of the Work and they shall continue to be the property of the NCC:
- (a) in the case of Material, until the NCC indicates that the Materials shall not be required for the Work; and
  - (b) in the case of Plant, real property, licences, powers and privileges, until the NCC indicates that the interest vested in the NCC therein is no longer required for the purposes of the Work.
- 2) Material or Plant, that is the property of the NCC by virtue of paragraph 1) of GC3.10, shall not be taken away from the site of the Work nor used nor disposed of except for the purposes of the Work without the written consent of the NCC.

- 3) The NCC is not liable for loss of nor damage from any cause to the Material or Plant referred to in paragraph 1) of GC3.10, and the Contractor is liable for such loss or damage notwithstanding that the Material or Plant is the property of the NCC.

**GC3.11 DEFECTIVE WORK**

- 1) The Contractor shall promptly remove from the site of the Work and replace or re-execute defective Work whether or not the defective Work has been incorporated in the Work and whether or not the defect is the result of poor workmanship, use of defective Material, or damage through carelessness or other act or omission of the Contractor.
- 2) The Contractor, at the Contractor's expense, shall promptly make good other work destroyed or damaged by such removals or replacements.
- 3) If, in the opinion of the NCC, it is not expedient to correct defective Work or Work not performed as provided for in the Contract documents, the NCC may deduct from the amount otherwise due to the Contractor the difference in value between the Work as performed and that called for by the Contract documents.
- 4) The failure of the NCC to reject any defective Work or Material shall not constitute acceptance of the defective Work or Material.

**GC3.12 CLEANUP OF SITE**

- 1) The Contractor shall maintain the Work and its site in a tidy condition and free from an accumulation of waste material and debris.
- 2) Before the issue of a Certificate of Substantial Performance, the Contractor shall remove waste material and debris, and all Plant and Material not required for the performance of the remaining Work and, unless otherwise stipulated in the Contract Documents, shall cause the Work and its site to be clean and suitable for occupancy by the NCC.
- 3) Before the issue of a Certificate of Completion, the Contractor shall remove all surplus Plant and Materials and any waste products and debris from the site of the Work.
- 4) The Contractor's obligations described in paragraphs 1) to 3) of GC3.12 do not extend to waste products and other debris caused by the NCC's servants, or by other contractors and workers referred to in GC3.7 CONSTRUCTION BY OTHER CONTRACTORS OR WORKERS.

**GC3.13 WARRANTY AND RECTIFICATION OF DEFECTS IN WORK**

- 1) Without restricting any warranty or guarantee implied or imposed by law or contained in the Contract, the Contractor shall, at the Contractor's expense:
  - (a) rectify and make good any defect or fault that appears in the Work or comes to the attention of the NCC with respect to those parts of the Work accepted in connection with the Certificate of Substantial Performance within 12 months from the date of Substantial Performance; and
  - (b) rectify and make good any defect or fault that appears in or comes to the attention of the NCC in connection with those parts of the Work described in the Certificate of Substantial Performance within 12 months from the date of the Certificate of Completion;
  - (c) transfer and assign, to the NCC, any subcontractor, manufacturer or supplier extended warranties or guarantees implied or imposed by law or contained in the Contract covering periods beyond the 12 months stipulated above. Extended warranties or guarantees referred to

herein shall not extend the 12-month period whereby the Contractor, except as may be provided elsewhere in the Contract, must rectify and make good any defect or fault that appears in the Work or comes to the attention of the NCC;

- (d) provide, to the NCC prior to the issuance of the Certificate of Completion, a list of all extended warranties and guarantees referred to in paragraph (c) above.
- 2) The NCC may direct the Contractor to rectify and make good any defect or fault referred to in paragraph 1) of GC3.13 or covered by any other expressed or implied warranty or guarantee and the Contractor shall rectify and make good such defect within the time stipulated in the direction.
- 3) A direction referred to in paragraph 2) GC3.13 shall be in writing and shall be given to the Contractor in accordance with GC2.3 NOTICES.

- GC4.1 PROTECTION OF WORK AND PROPERTY
- GC4.2 PRECAUTIONS AGAINST DAMAGE, INFRINGEMENT OF RIGHTS, FIRE AND OTHER HAZARDS
- GC4.3 MATERIAL, PLANT AND REAL PROPERTY SUPPLIED BY THE NCC
- GC4.4 CONTAMINATED SITE CONDITIONS

**GC4.1 PROTECTION OF WORK AND PROPERTY**

- 1) The Contractor shall protect the Work and its site against loss or damage from any cause and shall similarly protect all Material, Plant and real property under the Contractor's care, custody and control whether or not such Material, Plant and real property are supplied by the NCC to the Contractor.
- 2) The Contractor shall provide all facilities necessary for the purpose of maintaining security, and shall assist any person authorized by the NCC to inspect or to take security measures in respect of the Work and its site.
- 3) The NCC may direct the Contractor to do such things and to perform such work as the NCC considers reasonable and necessary to ensure compliance with or to remedy a breach of paragraphs 1) or 2) of GC4.1, and the Contractor, shall comply with such direction.

**GC4.2 PRECAUTIONS AGAINST DAMAGE, INFRINGEMENT OF RIGHTS, FIRE AND OTHER HAZARDS**

- 1) The Contractor shall do whatever is necessary to ensure that:
  - (a) no person, property, right, easement nor privilege is injured, damaged or infringed upon by reasons of the Contractor's activities in performing the Work;
  - (b) pedestrian and other traffic on any public or private road or waterway is not unduly impeded, interrupted nor endangered by the performance or existence of the Work, Material or Plant;
  - (c) fire hazards in or about the site of the Work are eliminated and any fire is promptly extinguished;
  - (d) the health and safety of all persons employed in the performance of the Work is not endangered by the methods nor means of their performance;
  - (e) adequate medical services are available to all persons employed on the Work or its site at all times during the performance of the Work;
  - (f) adequate sanitation measures are taken in respect of the Work and its site; and
  - (g) all stakes, buoys and marks placed on the Work or its site by the NCC are protected and are not removed, defaced, altered nor destroyed.
- 2) The NCC may direct the Contractor to do such things and to perform such work as the NCC considers reasonable and necessary to ensure compliance with or to remedy a breach of paragraph 1) of GC4.2, and the Contractor shall comply with the direction of the NCC.

**GC4.3 MATERIAL, PLANT AND REAL PROPERTY SUPPLIED BY THE NCC**

- 1) Subject to paragraph 2) of GC4.3, the Contractor is liable to the NCC for any loss of or damage to Material, Plant or real property that is supplied or placed in the care, custody and control of the Contractor by the NCC for use in connection with the Contract, whether or not that loss or damage is attributable to causes beyond the Contractor's control.

- 2) The Contractor is not liable to the NCC for any loss or damage to Material, Plant or real property referred to in paragraph 1) of GC4.3 if that loss or damage results from and is directly attributable to reasonable wear and tear.
- 3) The Contractor shall not use any Material, Plant or real property supplied by the NCC except for the purpose of performing the Contract.
- 4) When the Contractor fails to make good any loss or damage for which the Contractor is liable under paragraph 1) within a reasonable time, the NCC may cause the loss or damage to be made good at the Contractor's expense, and the Contractor shall thereupon be liable to the NCC for the cost thereof and shall, on demand, pay to the NCC an amount equal to that cost.
- 5) The Contractor shall keep records of all Material, Plant and real property supplied by the NCC as the NCC requires and shall satisfy the NCC, when requested, that such Material, Plant and real property are at the place and in the condition in which they ought to be.

**GC4.4 CONTAMINATED SITE CONDITIONS**

- 1) For the purposes of GC4.4, a contaminated site condition exists when a solid, liquid, gaseous, thermal or radioactive irritant or contaminant, or other hazardous or toxic substance or material, including moulds and other forms of fungi, is present at the site of the Work to an extent that constitutes a hazard, or potential hazard, to the environment, property, or the health or safety of any person.
- 2) If the Contractor encounters a contaminated site condition of which the Contractor is not aware or about which the Contractor has not been advised, or if the Contractor has reasonable grounds to believe that such a site condition exists at the site of the Work, the Contractor shall:
  - (a) take all reasonable steps, including stopping the Work, to ensure that no person suffers injury, sickness or death, and that neither property nor the environment is injured or destroyed as a result of the contaminated site condition;
  - (b) immediately notify the NCC of the circumstances in writing; and
  - (c) take all reasonable steps to minimize additional costs that may accrue as a result of any work stoppage.
- 3) Upon receipt of a notification from the Contractor, the NCC shall promptly determine whether a contaminated site condition exists, and shall notify the Contractor in writing of any action to be taken, or work to be performed, by the Contractor as a result of the NCC's determination.
- 4) If the Contractor's services are required by the NCC, the Contractor shall follow the direction of the NCC with regard to any excavation, treatment, removal and disposal of any polluting substance or material.
- 5) The NCC, at the NCC's sole discretion, may enlist the services of experts and specialty contractors to assist in determining the existence of, and the extent and treatment of contaminated site conditions, and the Contractor shall allow them access and co-operate with them in the carrying out of their duties and obligations.
- 6) Except as may be otherwise provided for in the Contract, the provisions of GC6.4 DETERMINATION OF PRICE shall apply to any additional work made necessary because of a contaminated site condition.



- GC5.1 INTERPRETATION
- GC5.2 AMOUNT PAYABLE
- GC5.3 INCREASED OR DECREASED COSTS
- GC5.4 PROGRESS PAYMENT
- GC5.5 SUBSTANTIAL PERFORMANCE OF THE WORK
- GC5.6 FINAL COMPLETION
- GC5.7 PAYMENT NOT BINDING ON THE NCC
- GC5.8 CLAIMS AND OBLIGATIONS
- GC5.9 RIGHT OF SETOFF
- GC5.10 ASSESSMENTS AND DAMAGES FOR LATE COMPLETION
- GC5.11 DELAY IN MAKING PAYMENT
- GC5.12 INTEREST ON SETTLED CLAIMS
- GC5.13 RETURN OF SECURITY DEPOSIT

**GC5.1 INTERPRETATION**

In these Terms of Payment

- 1) The "payment period" means a period of 30 consecutive days or such other longer period as may be agreed between the Contractor and the NCC.
- 2) An amount is "due and payable" when it is due and payable by the NCC to the Contractor according to GC5.4 PROGRESS PAYMENT, GC5.5 SUBSTANTIAL PERFORMANCE OF THE WORK or GC5.6 FINAL COMPLETION.
- 3) An amount is overdue when it remains unpaid on the first day following the day upon which it is due and payable.
- 4) The "date of payment" means the date of the negotiable instrument of an amount due and payable by the NCC.
- 5) The "Bank Rate" means the rate of interest established by the Bank of Canada as the minimum rate at which it makes short term advances to members of the Canadian Payments Association.
- 6) The "Average Bank Rate" means the simple arithmetic mean of the Bank Rate in effect at 4:00 p.m. Ottawa Time each day during the calendar month which immediately precedes the calendar month in which payment is made.

**GC5.2 AMOUNT PAYABLE**

- 1) Subject to any other provisions of the Contract, the NCC shall pay the Contractor, at the times and in the manner hereinafter set out, the amount by which the amounts payable by the NCC to the Contractor in accordance with the Contract exceed the amounts payable by the Contractor to the NCC, and the Contractor shall accept that amount as payment in full satisfaction for everything furnished and done by the Contractor in respect of the Work to which the payment relates.
- 2) When making any payment to the Contractor, the failure of the NCC to deduct an amount payable to the NCC by the Contractor shall not constitute a waiver of the right to do so, or an admission of lack of entitlement to do so in any subsequent payment to the Contractor.
- 3) No payment other than a payment that is expressly stipulated in the Contract, shall be made by the NCC to the Contractor for any extra expense or any loss or damage incurred or sustained by the Contractor.

**GC5.3 INCREASED OR DECREASED COSTS**

- 1) The Contract Amount shall not be increased nor decreased by reason of any increase or decrease in the cost of the Work that is brought about by an increase or decrease in the cost of labour, Plant, Material or any wage adjustment arising pursuant to the Labour Conditions.
- 2) Notwithstanding paragraph 1) of GC5.3, if any change, including a new imposition or repeal, of any tax, customs or other duty, charge, or any similar imposition that is imposed under sales, customs or excise tax legislation of the Government of Canada or any Provincial or Territorial legislation, affects the cost of the Work to the Contractor, and occurs:
  - (a) after the date of submission by the Contractor of its tender; or
  - (b) after the date of submission of the last revision, if the Contractor's tender was revised,the Contract Amount shall be adjusted in the manner provided in paragraph 3) of GC5.3.
- 3) If a change referred to in paragraph 2) of GC5.3 occurs, the Contract Amount shall be increased or decreased by an amount established by an examination by the NCC of the relevant records of the Contractor referred to in GC2.8 ACCOUNTS AND AUDITS to be the increase or decrease in the cost incurred by the Contractor that is directly attributable to that change.
- 4) For the purpose of paragraph 2) of GC5.3, if a tax is changed after the tender closing, but public notice of the change has been given by the Minister of Finance or the corresponding Provincial or Territorial authority before that closing, the change shall be deemed to have occurred before the solicitation closing.
- 5) Notwithstanding paragraphs 2) to 4) of GC5.3, no adjustment to the Contract Amount in respect of the Work or a part thereof shall be made for a change in any imposition referred to in this section that occurs after the date required by the Contract for completion of the Work or that part of the Work.

**GC5.4 PROGRESS PAYMENT**

- 1) On the expiration of a payment period, the Contractor shall deliver to the NCC:
  - (a) a written progress claim in a form acceptable to the NCC that fully describes any part of the Work that has been completed, and any Material that was delivered to the Work site but not incorporated into the Work, during that payment period: and
  - (b) a completed and signed statutory declaration containing a declaration that, up to the date of the progress claim, the Contractor has complied with all lawful obligations with respect to the Labour Conditions and that, in respect of the Work, all lawful obligations of the Contractor to its Subcontractors and Suppliers, referred to collectively in the declaration as "subcontractors and suppliers", have been fully discharged.
- 2) Within 10 days of receipt of a progress claim and statutory declaration from the Contractor, the NCC shall inspect, or cause to have inspected, the part of the Work and the Material described in the progress claim, and shall issue a progress report to the Contractor, that indicates the value of the part of the Work and the Material described in the progress claim that, in the opinion of the NCC:
  - (a) is in accordance with the Contract; and
  - (b) was not included in any other progress report relating to the Contract.

- 3) Subject to GC5.2 AMOUNT PAYABLE, and paragraph 5) of GC5.4, the NCC shall pay the Contractor an amount that is equal to:
  - (a) 95% of the value that is indicated in the NCC's progress report if a labour and material payment bond has been furnished by the Contractor; or
  - (b) 90% of the value that is indicated in the NCC's progress report if a labour and material payment bond has not been furnished by the Contractor.
- 4) Subject to GC5.2, "Amount Payable", and paragraph 5) of GC5.4, the NCC shall pay the Contractor an amount that is equal to 90% of the value that is indicated in the NCC's progress report
- 5) In the case of the Contractor's first progress claim, it is a condition precedent to the NCC's obligation under paragraph 3) of GC5.4 that the Contractor has provided all necessary documentation required by the Contract for the first progress claim and has provided evidence of compliance with workers' compensation legislation applicable to the place of the Work in accordance with GC1.9 WORKERS' COMPENSATION.

**GC5.5 SUBSTANTIAL PERFORMANCE OF THE WORK**

- 1) If, at any time before the issuance of a Certificate of Completion, the NCC determines that the Work has reached Substantial Performance as described in subparagraph 1) (b) of GC1.1.4 SUBSTANTIAL PERFORMANCE, the NCC shall issue a Certificate of Substantial Performance to the Contractor. The Certificate of Substantial Performance shall state or describe:
  - (a) the date of Substantial Performance;
  - (b) the parts of the Work not completed to the satisfaction of the NCC; and
  - (c) all things that must be done by the Contractor before a Certificate of Completion is issued and before the 12-month warranty period referred to in GC3.13 WARRANTY AND RECTIFICATION OF DEFECTS IN WORK commences for the said parts and all the said things.
- 2) The issuance of a Certificate of Substantial Performance does not relieve the Contractor from the Contractor's obligations under GC3.11 DEFECTIVE WORK.
- 3) Subject to GC5.2 AMOUNT PAYABLE and paragraph 4) of GC5.5, the NCC shall pay the Contractor the amount referred to in paragraph 1) of GC5.2 AMOUNT PAYABLE, less the aggregate of:
  - (a) the sum of all payments that were made pursuant to GC5.4 PROGRESS PAYMENT;
  - (b) an amount that is equal to the NCC's estimate of the cost to the NCC of rectifying defects described in the Certificate of Substantial Performance; and
  - (c) an amount that is equal to the NCC's estimate of the cost to the NCC of completing the parts of the Work described in the Certificate of Substantial Performance other than defects listed therein.
- 4) The NCC shall pay the amount referred to in paragraph 3) of GC5.5 not later than:
  - (a) 30 days after the date of issue of a Certificate of Substantial Performance, or
  - (b) 15 days after the Contractor has delivered to the NCC:

- (i) a statutory declaration containing a declaration by the Contractor that up to the date of the Certificate of Substantial Performance, the Contractor has complied with all lawful obligations with respect to the Labour Conditions, discharged all its lawful obligations to its Subcontractors and Suppliers in respect of the work under the Contract, and discharged its lawful obligations referred to in GC1.8 LAWS, PERMITS AND TAXES;
- (ii) evidence of compliance with workers' compensation legislation in accordance with GC1.9 WORKERS' COMPENSATION; and
- (iii) an update of the progress schedule in accordance with the requirements of GC3.1 PROGRESS SCHEDULE;

whichever is later.

#### **GC5.6 FINAL COMPLETION**

- 1) When the NCC is of the opinion that the Contractor has complied with the Contract and all orders and directions made pursuant thereto, and that the Work has been completed as described in GC1.1.5 COMPLETION, the NCC shall issue a Certificate of Completion to the Contractor and, if the Work or a portion of the Work is subject to a Unit Price Arrangement, the NCC shall issue a Certificate of Measurement that shall, subject to GC8, be binding upon and conclusive between the NCC and the Contractor as to the quantities referred to therein.
- 2) Subject to GC5.2 AMOUNT PAYABLE and paragraph 3) of GC5.6, the NCC shall pay the Contractor the amount referred to in GC5.2 AMOUNT PAYABLE, less the aggregate of the sum of all payments that were made pursuant to GC5.4 PROGRESS PAYMENT and GC5.5 SUBSTANTIAL PERFORMANCE OF WORK.
- 3) The NCC shall pay the amount referred to in paragraph 2) of GC5.6 not later than:
  - (a) 60 days after the date of issue of a Certificate of Completion; or
  - (b) 15 days after the Contractor has delivered to the NCC:
    - (i) a statutory declaration which contains a declaration by the Contractor that all of the Contractor's lawful obligations and any lawful claims against the Contractor that arose out of the performance of the Contract have been discharged and satisfied; and
    - (ii) evidence of compliance with workers' compensation legislation in accordance with GC1.9 WORKERS' COMPENSATION;

whichever is later.

#### **GC5.7 PAYMENT NOT BINDING ON NCC**

- 1) Neither acceptance of a progress claim or progress report, nor any payment made by the NCC under the Contract, nor partial or entire use or occupancy of the Work by the NCC shall constitute an acceptance by the NCC of any portion of the Work or Material that is not in accordance with the requirements of the Contract.

#### **GC5.8 CLAIMS AND OBLIGATIONS**

- 1) The Contractor shall discharge all the Contractor's lawful obligations and shall satisfy all lawful claims against the Contractor arising out of the performance of the Work at least as often as the Contract requires the NCC to pay the Contractor.

- 2) Whenever requested to do so by the NCC, the Contractor shall make a statutory declaration declaring to the existence and condition of any obligations and claims against the Contractor arising out of the performance of the Work.
- 3) In order to discharge lawful obligations of and satisfy lawful claims against the Contractor or its Subcontractors arising out of the performance of the Contract, the NCC may pay an amount that is due and payable to the Contractor directly to the claimant. Such payment is, to the extent of the payment, a discharge of the NCC's liability to the Contractor under the Contract and may be deducted from any amount payable to the Contractor under the Contract.
- 4) For the purposes of paragraph 3) of GC5.8, and subject to paragraph 6) of GC5.8, a claim or obligation shall be considered lawful when it is so determined by:
  - (a) a court of legal jurisdiction;
  - (b) an arbitrator duly appointed to arbitrate the claim; or
  - (c) the written consent of the Contractor authorizing payment of the claim or obligation.
- 5) If a claim or obligation would have been subject to the provisions of Provincial or Territorial lien legislation or, in the Province of Quebec, the law relating to legal hypothecs had the Contractor been performing the Work for an entity other than the NCC:
  - (a) such amount as may be paid by the NCC pursuant to paragraphs 3) and 4) of GC5.8 shall not exceed the amount that the Contractor would have been obliged to pay had the provisions of such legislation or law been applicable to the Work;
  - (b) a claimant need not comply with the provisions of such legislation, setting out the steps by way of notice, registration or otherwise as might have been necessary to preserve or perfect any claim for lien or privilege which the claimant might have had; and
  - (c) for the purposes of determining the entitlement of a claimant, the notice required by paragraph 8) of GC5.8 shall be deemed to replace the registration or provision of notice after the performance of work as required by any applicable legislation and no claim shall be deemed to have expired, become void or unenforceable by reason of the claimant not commencing any action within the time prescribed by such legislation.
- 6) The Contractor shall, at the request of any claimant, submit to binding arbitration those questions that need to be answered to establish the entitlement of the claimant to payment. The arbitration shall have as parties to it any Subcontractor or Supplier to whom the claimant supplied Material, performed work or rented equipment should such Subcontractor or Supplier wish to be adjoined, and the NCC shall not be a party to such arbitration. Subject to any agreement between the Contractor and the claimant, the arbitration shall be conducted in accordance with the governing Provincial or Territorial legislation applicable to the site of the Work.
- 7) Paragraph 3) of GC5.8 shall apply only to claims and obligations:
  - (a) the notification of which has set forth the amount claimed to be owing and the person who by contract is primarily liable and has been received by the NCC in writing before final payment is made to the Contractor pursuant to GC5.6 FINAL COMPLETION, and within 120 days of the date on which the claimant:

- (i) should have been paid in full under the claimant's contract with the Contractor, its Subcontractor or Supplier if the claim is for money that was lawfully required to be held back from the claimant; or
  - (ii) performed the last of the services, work or labour, or furnished the last of the Material pursuant to the claimant's contract with the Contractor or its Subcontractor or Supplier where the claim is for money not lawfully required to be held back from the claimant; and
- (b) the proceedings to determine the right to payment of which, pursuant to paragraph 5) of GC5.8, shall have commenced within one year from the date that the notification required by subparagraph 7)(a) of GC5.8 was received by the NCC.
- 8) Upon receipt of a notice of claim, the NCC may withhold, from any amount that is due and payable to the Contractor pursuant to the Contract, the full amount of the claim or any portion thereof.
- 9) The NCC shall notify the Contractor in writing in a timely manner of receipt of any claim and of the intention of the NCC to withhold funds. At any time thereafter and until payment is made to the claimant, the Contractor may be entitled to post, with the NCC, security in a form acceptable to the NCC in an amount equal to the value of the claim, and upon receipt of such security the NCC shall release to the Contractor any funds that would be otherwise payable to the Contractor, that were withheld pursuant to the provisions of this clause in respect of the claim of any claimant for whom the security stands.

**GC5.9 RIGHT OF SETOFF**

- 1) Without limiting any right of setoff or deduction given or implied by law or elsewhere in the Contract, the NCC may set off any amount payable to the NCC by the Contractor under the Contract, or under any current contract, against any amount payable to the Contractor under the Contract.
- 2) For the purposes of paragraph 1) of GC5.9, "current contract" means a contract between the NCC and the Contractor:
- (a) under which the Contractor has an undischarged obligation to perform or supply work, labour or material; or
  - (b) in respect of which the NCC has, since the date of the Contract, exercised any right to take the work that is the subject of that contract out of the Contractor's hands.

**GC5.10 ASSESSMENTS AND DAMAGES FOR LATE COMPLETION**

- 1) For the purposes of this clause:
- (a) the Work shall be deemed to be completed on the date of the Certificate of Completion; and
  - (b) the "period of delay" means the number of days commencing on the day fixed for completion of the Work and ending on the day immediately preceding the day on which the Work is completed but does not include any day within a period of extension granted pursuant to GC6.5 DELAYS AND EXTENSION OF TIME and any other day on which, in the opinion of the NCC, completion of the Work was delayed for reasons beyond the control of the Contractor.
- 2) If the Contractor does not complete the Work by the day fixed for its completion but completes it thereafter, the Contractor shall pay the NCC an amount equal to the aggregate of:
- (a) all salaries, wages and travelling expenses incurred by the NCC in respect of persons overseeing the performance of the Work during the period of delay;

- (b) the cost incurred by the NCC as a result of the inability to use the completed Work for the period of delay; and
  - (c) all other expenses and damages incurred or sustained by the NCC during the period of delay as a result of the Work not being completed by the day fixed for its completion.
- 3) The NCC may waive the right of the NCC to the whole or any part of the amount payable by the Contractor pursuant to paragraph 2) of GC5.10 if, in the opinion of the NCC, it is in the public interest to do so.

**GC5.11 DELAY IN MAKING PAYMENT**

- 1) Notwithstanding GC1.5 TIME OF THE ESSENCE, any delay by the NCC in making any payment when it is due pursuant to GC5 TERMS OF PAYMENT, shall not be a breach of the Contract by the NCC.
- 2) Subject to paragraph 3) of GC5.11, the NCC shall pay to the Contractor simple interest at the Average Bank Rate plus 3 percent per annum on any amount that is overdue pursuant to paragraph 3) of GC5.1 INTERPRETATION, and the interest shall apply from and include the day such amount became overdue until the day prior to the date of payment.
- 3) Interest shall be paid, on demand by the Contractor, except that:
- (a) in respect of amounts that are less than 15 days overdue, no interest shall be paid in respect of payment made within such 15 days; and
  - (b) interest shall not be payable or paid on overdue advance payments, if any.

**GC5.12 INTEREST ON SETTLED CLAIMS**

- 1) For the purposes of this clause, a claim means a disputed amount subject to negotiation between the NCC and the Contractor under the Contract.
- 2) A claim is deemed to have been settled when an agreement in writing is signed by the NCC and the Contractor setting out the amount of the claim to be paid by the NCC and the items of work for which the said amount is to be paid.
- 3) A settled claim is deemed to be outstanding from the day immediately following the date the said claim would have been due and payable under the Contract had it not been disputed.
- 4) The NCC shall pay to the Contractor simple interest on the amount of a settled claim at the Average Bank Rate plus 3 per cent per annum from the date the settled claim was deemed to be outstanding until the day prior to the date of payment.

**GC5.13 RETURN OF SECURITY DEPOSIT**

- 1) After a Certificate of Substantial Performance has been issued, and if the Contractor is not in breach of nor in default under the Contract, the NCC shall return to the Contractor all or any part of a Security Deposit that, in the opinion of the NCC, is not required for the purposes of the Contract.
- 2) After a Certificate of Completion has been issued, the NCC shall return to the Contractor the remainder of any security deposit unless the Contract stipulates otherwise.
- 3) If the security deposit was paid to the NCC, the NCC shall pay interest thereon to the Contractor at a rate established pursuant to section 21(2) of the Financial Administration Act.

- GC6.1 CHANGES IN THE WORK
- GC6.2 CHANGES IN SUBSURFACE CONDITIONS
- GC6.3 HUMAN REMAINS, ARCHAEOLOGICAL REMAINS AND ITEMS OF HISTORICAL OR SCIENTIFIC INTEREST
- GC6.4 DETERMINATION OF PRICE
  - GC6.4.1 Price Determination Prior to Undertaking Changes
  - GC6.4.2 Price Determination Following Completion of Changes
  - GC6.4.3 Price Determination - Variations in Tendered Quantities
- GC6.5 DELAYS AND EXTENSION OF TIME
- GC6.6 ALLOWABLE COSTS FOR CONTRACT CHANGES UNDER GC6.4.1
  - GC6.6.1 General
  - GC6.6.2 Hourly Labour Rates
  - GC6.6.3 Material, Plant and Equipment Costs
  - GC6.6.4 Allowance to the Contractor or Subcontractor

**GC6.1 CHANGES IN THE WORK**

- 1) At any time before issuance of a Certificate of Completion, Canada may issue orders for additions, deletions or other changes to the Work, or changes in the location or position of the whole or any part of the Work, if the addition, deletion, change or other revision is deemed by Canada to be consistent with the general intent of the Contract.
- 2) An order referred to in paragraph 1) of GC6.1 shall be in writing and given to the Contractor in accordance with GC2.3 NOTICES.
- 3) Upon receipt of an order, the Contractor shall promptly perform the work in accordance with the order as if the order had appeared in and been part of the original Contract.
- 4) If anything done or omitted by the Contractor pursuant to an order increases or decreases the cost of the Work to the Contractor, payment for the work shall be made in accordance with GC6.4 DETERMINATION OF PRICE.

**GC6.2 CHANGES IN SUBSURFACE CONDITIONS**

- 1) If, during the performance of the Work, the Contractor encounters subsurface conditions that are substantially different from the subsurface conditions described in the tender documents supplied to the Contractor, or a reasonable assumption of fact based thereon, the Contractor shall give notice to Canada immediately upon becoming aware of the situation.
- 2) If the Contractor is of the opinion that the Contractor may incur or sustain any extra expense or any loss or damage that is directly attributable to the changed subsurface conditions, the Contractor shall within 10 days of the date the changed subsurface conditions were encountered, give Canada written notice of intention to claim for that extra expense, loss or damage.
- 3) If the Contractor has given a notice referred to in paragraph 2) of GC6.2, the Contractor shall give Canada a written claim for extra expense, loss or damage no later than 30 days after the date that a Certificate of Substantial Performance is issued.
- 4) A written claim referred to in paragraph 3) of GC6.2 shall contain a sufficient description of the facts and circumstances of the occurrence that is the subject of the claim to enable Canada to determine whether or not the claim is justified, and the Contractor shall supply such further and other information for that purpose as Canada requires.



- 5) If Canada determines that a claim referred to in paragraph 3) of GC6.2 is justified, Canada shall make an extra payment to the Contractor in an amount that is calculated in accordance with GC6.4 DETERMINATION OF PRICE.
- 6) If, in the opinion of Canada, the Contractor effects a saving of expenditure that is directly attributable to a substantial difference between the information relating to subsurface conditions at the site of the Work that is contained in the tender documents, or a reasonable assumption of fact based thereon, and the actual subsurface conditions encountered by the Contractor, the Contract Amount shall be reduced by the amount of the saving of expenditure determined in accordance with GC6.4 DETERMINATION OF PRICE.
- 7) If the Contractor fails to give a notice referred to in paragraph 2) of GC6.2 and a claim referred to in paragraph 3) of GC6.2 within the times stipulated, an extra payment shall not be made to the Contractor in respect of the occurrence.
- 8) Canada does not warrant the content expressed in any subsurface report available for the perusal of the Contractor that does not form part of the tender and contract documents.

**GC6.3 HUMAN REMAINS, ARCHAEOLOGICAL REMAINS AND ITEMS OF HISTORICAL OR SCIENTIFIC INTEREST**

- 1) For the purposes of this clause
  - (a) "human remains" means the whole or any part of a deceased human being, irrespective of the time of death;
  - (b) "archaeological remains" are items, artefacts or things made, modified or used by human beings in antiquity and may include, but not be limited to, stone, wood or iron structures or monuments, dump deposits, bone artefacts, weapons, tools, coins, and pottery; and
  - (c) "items of historical or scientific interest" are naturally occurring or manufactured objects or things of any age that are not archaeological remains but may be of interest to society because of their historical or scientific significance, value, rarity, natural beauty, or other quality.
- 2) If, during the course of the Work, the Contractor encounters any object, item or thing which is described in paragraph 1) of GC6.3 or which resembles any object, item or thing described in paragraph 1) of GC6.3, the Contractor shall
  - (a) take all reasonable steps, including stopping work in the affected area, to protect and preserve the object, item or thing;
  - (b) immediately notify Canada of the circumstances in writing; and
  - (c) take all reasonable steps to minimize additional costs that may accrue as a result of any work stoppage.
- 3) Upon receipt of a notification in accordance with subparagraph 2)(b) of GC6.3, Canada shall promptly determine whether the object, item or thing is one described in, or contemplated by paragraph 1) of GC6.3, and shall notify the Contractor in writing of any action to be performed, or work to be carried out, by the Contractor as a result of Canada's determination.
- 4) Canada may, at any time, enlist the services of experts to assist in the investigation, examination, taking of measurements or other such recordings, placing of permanent protection around or removing of the object, item or thing encountered by the Contractor, and the Contractor shall, to the satisfaction

of Canada, allow them access and co-operate with them in the carrying out of their duties and obligations.

- 5) Human remains, archaeological remains and items of historical or scientific interest encountered at the site of the Work shall be deemed to be the property of Canada.
- 6) Except as may be otherwise provided for in the Contract, the provisions of GC6.4 DETERMINATION OF PRICE and GC6.5 DELAYS AND EXTENSION OF TIME shall apply.

**GC6.4 DETERMINATION OF PRICE****GC6.4.1 Price Determination Prior to Undertaking Changes**

- 1) If a Lump Sum Arrangement applies to the Contract or a part thereof, the price of any change shall be the aggregate estimated cost of labour, Plant and Material that is required for the change as agreed upon in writing by the Contractor and Canada plus an allowance for supervision, co-ordination, administration, overhead, margin and the risk of undertaking the work within the stipulated amount, which allowance shall be equal to
  - (a) 20% of the aggregate costs referred to herein for that portion of the Work done by the Contractor's own forces, if the aggregate cost of the Work does not exceed \$50,000;
  - (b) 15% of the aggregate costs referred to herein for that portion of the Work that is done by subcontract, if the aggregate cost of the Work does not exceed \$50,000; or
  - (c) a negotiated percentage of the aggregate costs referred to herein or a negotiated amount
    - (i) if the aggregate cost of the Work exceeds \$50,000; or
    - (ii) if the Contractor and Canada agree in writing.
- 2) If a Unit Price Arrangement applies to the Contract or a part thereof, the Contractor and Canada may, by agreement in writing, add items, units of measurement, estimated quantities and prices per unit to the Unit Price Table.
- 3) A price per unit referred to in paragraph 2) of GC6.4.1 shall be determined on the basis of the aggregate estimated cost of labour, Plant and Material that is required for the additional item as agreed upon by the Contractor and Canada, plus an allowance determined in accordance with paragraph 1) of GC6.4.1.
- 4) To facilitate approval of the price of the change or the additional price per unit as applicable, the Contractor shall submit a cost estimate breakdown identifying, as a minimum, the estimated cost of labour, Plant, Material, each subcontract amount, and the amount of the allowance.
- 5) If no agreement is reached as contemplated in paragraph 1) of GC6.4.1, the price shall be determined in accordance with GC6.4.2.
- 6) If no agreement is reached, as contemplated in paragraphs 2) and 3) of GC6.4.1, Canada shall determine the class and the unit of measurement of the item of labour, Plant or Material and the price per unit shall be determined in accordance with GC6.4.2.

**GC6.4.2 Price Determination Following Completion of Changes**

- 1) If it is not possible to predetermine, or if there is failure to agree upon the price of a change in the Work, the price of the change shall be equal to the aggregate of

- (a) all reasonable and proper amounts actually expended or legally payable by the Contractor in respect of the labour, Plant and Material that fall within one of the classes of expenditure described in paragraph 2) of GC6.4.2, that are directly attributable to the performance of the Contract;
  - (b) an allowance for profit and all other expenditures or costs, including overhead, general administration costs, financing and interest charges, in an amount that is equal to 10% of the sum of the expenses referred to in subparagraph 1)(a) of GC6.4.2; and
  - (c) interest on the amounts determined under subparagraphs 1)(a) and 1)(b) of GC6.4.2 calculated in accordance with GC5.12 INTEREST ON SETTLED CLAIMS;
- 2) The cost of labour, Plant and Material referred to in subparagraph 1)(a) of GC6.4.2 shall be limited to the following categories of expenditure:
- (a) payments to Subcontractors and Suppliers;
  - (b) wages, salaries, bonuses and, if applicable, travel and lodging expenses of employees of the Contractor located at the site of the Work and that portion of wages, salaries, bonuses and, if applicable, travel and lodging expenses of personnel of the Contractor generally employed at the head office or at a general office of the Contractor provided they are actually and properly engaged on the Work under the Contract;
  - (c) assessments payable under any statutory authority relating to workers' compensation, employment insurance, pension plan or holidays with pay, provincial health or insurance plans, environmental reviews, and GST / HST collection costs;
  - (d) rent that is paid for Plant, or an amount equivalent to the said rent if the Plant is owned by the Contractor, that is necessary for and used in the performance of the Work, if the rent or the equivalent amount is reasonable and use of that Plant has been approved by Canada;
  - (e) payments for maintaining and operating Plant necessary for and used in the performance of the Work, and payments for effecting repairs thereto that, in the opinion of Canada, are necessary for the proper performance of the Contract, other than payments for any repairs to the Plant arising out of defects existing before its allocation to the Work;
  - (f) payments for Material that is necessary for and incorporated in the Work, or that is necessary for and consumed in the performance of the Contract;
  - (g) payments for preparation, delivery, handling, erection, installation, inspection, protection and removal of the Plant and Material necessary for and used in the performance of the Contract; and
  - (h) any other payments made by the Contractor with the approval Canada that are necessary for the performance of the Contract in accordance with the Contract Documents.

**GC6.4.3 Price Determination - Variations in Tendered Quantities**

- 1) Except as provided in paragraphs 2), 3), 4) and 5) of GC6.4.3, if it appears that the final quantity of labour, Plant and Material under a price per unit item shall exceed or be less than the estimated tendered quantity, the Contractor shall perform the Work or supply the Plant and Material required to complete the item and payment shall be made for the actual Work performed or Plant and Material supplied at the price per unit set out in the Contract.
- 2) If the final quantity of the price per unit item exceeds the estimated tendered quantity by more than 15%, either party to the Contract may make a written request to the other party to negotiate an

amended price per unit for that portion of the item which exceeds 115% of the estimated tendered quantity, and to facilitate approval of any amended price per unit, the Contractor shall, on request, provide Canada with

- (a) detailed records of the actual cost to the Contractor of performing or supplying the tendered quantity for the price per unit item up to the time the negotiation was requested; and
  - (b) the estimated unit cost of labour, Plant and Material required for the portion of the item that is in excess of 115% of the tendered quantity.
- 3) If agreement is not reached as contemplated in paragraph 2) of GC6.4.3, the price per unit shall be determined in accordance with GC6.4.2.
- 4) If it appears that the final quantity of labour, Plant and Material under a price per unit item shall be less than 85% of the estimated tendered quantity, either party to the Contract may make a written request to the other party to negotiate a change to the price per unit for the item if
- (a) there is a demonstrable difference between the unit cost to the Contractor of performing or supplying the estimated tendered quantity and the unit cost to the Contractor for performing or supplying the final quantity; and
  - (b) the difference in unit cost is due solely to the decrease in quantity and not to any other cause.
- 5) For the purposes of the negotiation referred to in paragraph 4) of GC6.4.3
- (a) the onus of establishing, justifying and quantifying a proposed change lies with the party making the request for negotiation; and
  - (b) in no event shall the total price for an item that has been amended as a result of a reduction in quantity pursuant to paragraph 4) of GC6.4.3 exceed the amount that would have been payable to the Contractor had 85% of the tendered quantity actually been performed or supplied.

#### **GC6.5 DELAYS AND EXTENSION OF TIME**

- 1) Upon application of the Contractor made before the date first fixed for completion of the Work or before any other date previously fixed under this clause, Canada may extend the time for completion of the Work by fixing a new date if Canada determines that causes beyond the control of the Contractor have delayed its completion.
- 2) The Contractor's application shall be accompanied by the written consent of the bonding company whose bond forms part of the Contract Security.
- 3) Subject to paragraph 4) of GC6.5, no payment, other than a payment that is expressly stipulated in the Contract, shall be made by Canada to the Contractor for any extra expense, loss or damage incurred or sustained by the Contractor due to delay, whether or not the delay is caused by circumstances beyond the control of the Contractor.
- 4) If the Contractor incurs or sustains any extra expense or any loss or damage that is directly attributable to any neglect or delay that occurs after the date of the Contract on the part of Canada in providing any information or in doing any act that the Contract either expressly requires Canada to do or that would ordinarily be done by an owner in accordance with the practice of the trade, the Contractor shall give Canada written notice of intention to claim for that extra expense or loss or damage within ten working days of the date the neglect or delay first occurred.

- 5) When the Contractor has given a notice referred to in paragraph 4) of GC6.5, the Contractor shall give Canada a written claim for the extra expense, loss or damage no later than 30 days after the date that a Certificate of Completion is issued and not afterwards.
- 6) A written claim referred to in paragraph 5) of GC6.5 shall contain a sufficient description of the facts and circumstances of the occurrence that is the subject of the claim to enable Canada to determine whether or not the claim is justified and the Contractor shall supply such further and other information for that purpose as Canada may require.
- 7) If Canada determines that a claim referred to in paragraph 5) of GC6.5 is justified, Canada shall make an extra payment to the Contractor in an amount that is calculated in accordance with GC6.4 DETERMINATION OF PRICE.
- 8) If the Contractor fails to give a notice referred to in paragraph 4) and a claim referred to in paragraph 5) of GC6.5 within the times stipulated, an extra payment shall not be made to the Contractor in respect of the occurrence.

#### **GC6.6 ALLOWABLE COSTS FOR CONTRACT CHANGES UNDER GC6.4.1**

##### **GC6.6.1 General**

- 1) The Contractor shall submit a cost estimate breakdown for each contemplated change, in accordance with paragraph 4) of GC6.4.1 PRICE DETERMINATION PRIOR TO UNDERTAKING CHANGES. The breakdown shall itemize all labour, material, plant and equipment costs estimated by the Contractor and subcontractors, and the amount of each allowance.
- 2) It is the responsibility of the Contractor to ensure that all prices included in the Contractor's breakdown to the NCC, including those of subcontractors, are fair and reasonable in view of the terms expressed herein.
- 3) The labour hours required for the contemplated change shall be based on the estimated number of hours to perform the work.
- 4) Time spent by a working foreman may be included in the number of labour hours, at a rate agreed to in writing by the Contractor and the NCC.
- 5) Time attributable to material handling, productivity factors and approved rest periods is to be included in the number of hours required by the contemplated change and will not be paid as a separate item under hourly rates.
- 6) Allowances referred to in section 04 below are not to be included in the hourly labour rates.
- 7) Credit for work deleted will only be for the work directly associated with the change.
- 8) When a change deletes work which has not yet been performed, the NCC is entitled to an adjustment in the Contract Amount equal to the cost the Contractor would have incurred had the work not been deleted.
- 9) Allowances referred to in Section 04 below shall not be applied to any credit amounts for deleted work.
- 10) In those cases where the change involves additions and deletions to the work, the allowances referred to in section 04 below shall apply only when the cost of the additions minus the cost of the deletions would result in an increase in the Contract Amount. The percentage allowance shall only be applied to that portion of the costs of the additions that is in excess of the cost of the deletions.

- 11) If the contemplated change in the work necessitates a change in the contract completion date, or has an impact on the work, the Contractor shall identify and include the resulting cost in the breakdown.

**GC6.6.2 Hourly Labour Rates**

- 1) The hourly labour rates listed in the Contractor's breakdown shall be determined in accordance with the collective agreements that are applicable at the site of the work and shall include:
- (a) the base rate of pay;
  - (b) vacation pay;
  - (c) benefits which includes:
    - (i) welfare contributions;
    - (ii) pension contributions;
    - (iii) union dues;
    - (iv) training and industry funds contributions; and
    - (v) other applicable benefits, if any, that can be substantiated by the Contractor.
  - (d) statutory and legislated requirements, assessed and payable under statutory authority, which includes:
    - (i) Employment Insurance contributions;
    - (ii) Canada Pension Plan or Québec Pension Plan contributions;
    - (ii) Worker's Compensation Board or Commission de la santé et de la sécurité du travail premiums;
    - (iv) Public Liability and Property Damage insurance premiums; and
    - (v) health tax premiums.
- 2) In the case of nonunion labour, all rates claimed shall be in accordance with the terms of the Labour Conditions forming part of this contract and the Contractor must provide satisfactory proof of the rates actually paid.

**GC6.6.3 Material, Plant and Equipment Costs**

- 1) The costs of all purchases and rentals must be based on the actual amount paid to the suppliers by the Contractor or subcontractor and said costs are to include all applicable discounts.

**GC6.6.4 Allowance to the Contractor or Subcontractor**

- 1) The allowances determined in accordance with paragraph 1) of GC6.4.1 PRICE DETERMINATION PRIOR TO UNDERTAKING CHANGES shall be considered as full compensation for:
- (a) supervision, co-ordination, administration, overhead, margin and the risk of undertaking the work within the stipulated amount; and

- (b) miscellaneous additional costs related to:
  - (i) the purchase or rental of material, plant and equipment;
  - (ii) the purchase of small tools and supplies;
  - (iii) safety and protection measures; and
  - (iv) permits, bonds, insurance, engineering, as built drawings, commissioning and site office.

- GC7.1 TAKING THE WORK OUT OF THE CONTRACTOR'S HANDS
- GC7.2 SUSPENSION OF WORK
- GC7.3 TERMINATION OF CONTRACT
- GC7.4 SECURITY DEPOSIT - FORFEITURE OR RETURN

**GC7.1 TAKING THE WORK OUT OF THE CONTRACTOR'S HANDS**

- 1) By giving notice in writing to the Contractor in accordance with GC2.3 NOTICES, the NCC, without any other authorization, may take all or any part of the Work out of the Contractor's hands, and may employ such means as the NCC sees fit to have the Work completed if the Contractor:
  - (a) fails to remedy any delay in the commencement or default in the diligent performance of the Work to the satisfaction of the NCC within six days of the NCC giving notice to the Contractor in writing in accordance with GC2.3 NOTICES;
  - (b) defaults in the completion of any part of the Work within the time fixed for its completion by the Contract;
  - (c) becomes insolvent, or has committed an act of bankruptcy, and has neither made a proposal to its creditors nor filed a notice of intention to make such a proposal, pursuant to the Bankruptcy and Insolvency Act;
  - (d) abandons the work;
  - (e) makes an assignment of the Contract without the consent required by GC1.16 ASSIGNMENT;  
or
  - (f) otherwise fails to observe or perform any of the provisions of the Contract.
- 2) If the whole or any part of the Work is taken out of the Contractor's hands, the Contractor's right to any further payment that is due or accruing due under the Contract is, subject only to paragraph 3) of GC7.1, extinguished, and the Contractor is liable to pay the NCC, upon demand, an amount that is equal to the amount of all loss and damage incurred or sustained by the NCC in respect of the Contractor's failure to complete the Work.
- 3) If the whole or any part of the Work that is taken out of the Contractor's hands is completed by the NCC, the NCC may pay the Contractor the amount, if any, of the holdback or a progress claim as determined by the NCC that had accrued and was due prior to the date on which the Work was taken out of the Contractor's hands and that is not required for the purposes of having the Work performed or of compensating the NCC for any other loss or damage incurred or sustained by reason of the Contractor's default.
- 4) The taking of the Work or any part thereof out of the Contractor's hands does not relieve the Contractor from any obligation under the Contract or imposed by law except the obligation to complete the performance of that part of the Work that was taken out of the Contractor's hands.
- 5) If the Work or any part thereof is taken out of the Contractor's hands, all Plant and Material and the interest of the Contractor, or its suppliers or subcontractors at any tier, in all real property, licences, powers and privileges acquired, used or provided by the Contractor, or its suppliers or subcontractors at any tier, under the Contract shall continue to be the property of the NCC without compensation.
- 6) When the NCC certifies that any Plant, Material, or any interest of the Contractor is no longer required for the purposes of the Work, or that it is not in the interests of the NCC to retain that Plant, Material, or interest, it shall revert to the Contractor.



- 7) If the Contractor has become insolvent or has committed an act of bankruptcy, and has either made a proposal to its creditors or filed a notice of intention to make such a proposal, pursuant to the Bankruptcy and Insolvency Act, the Contractor shall immediately forward a copy of the proposal or the notice of intention to the NCC.

**GC7.2 SUSPENSION OF WORK**

- 1) When, in the NCC's opinion, it is in the public interest to do so, the NCC may require the Contractor to suspend performance of the Work either for a specified or an unspecified period, by giving a notice of suspension in writing to the Contractor in accordance with GC2.3 NOTICES.
- 2) When a notice of suspension is received by the Contractor, the Contractor shall suspend all operations in respect of the Work except those that the NCC determines are necessary for the care and preservation of the Work, Plant and Material.
- 3) During a period of suspension, the Contractor shall not remove any part of the Work, Plant or Material from its site without the consent of the NCC.
- 4) If a period of suspension is 60 days or less, the Contractor shall resume the performance of the Work on the expiration of that period, and the Contractor is entitled to be paid the extra costs necessarily incurred by the Contractor as a result of the suspension, determined in accordance with GC6.4 DETERMINATION OF PRICE.
- 5) If a period of suspension is more than 60 days, the NCC and the Contractor may agree that the performance of the Work shall be continued by the Contractor, and the Contractor shall resume performance of the Work subject to any terms and conditions agreed upon by the NCC and the Contractor. If the NCC and the Contractor do not agree that performance of the Work shall be continued by the Contractor, or upon the terms and conditions under which the Contractor shall continue the Work, the notice of suspension shall be deemed to be a notice of termination pursuant to GC7.3 TERMINATION OF CONTRACT.

**GC7.3 TERMINATION OF CONTRACT**

- 1) The NCC may terminate the Contract at any time by giving a notice of termination in writing to the Contractor in accordance with GC2.3 NOTICES.
- 2) If the Contractor receives a notice of termination, the Contractor shall forthwith cease all operations in performance of the Contract, subject to any conditions stipulated in the notice.
- 3) Subject to paragraph 4) of GC7.3, if the Contract is terminated, the NCC shall pay the Contractor an amount determined to be due to the Contractor pursuant to GC6.4 DETERMINATION OF PRICE less the aggregate of all amounts that were paid to the Contractor by the NCC and all amounts that are due to the NCC from the Contractor pursuant to the Contract.
- 4) In no event shall the total amount payable by the NCC to the Contractor exceed the amount, calculated in accordance with GC5 TERMS OF PAYMENT, that would have been payable to the Contractor had the Contractor completed the Work.
- 5) Payment to the Contractor, if any, shall be made as soon as practicable under the circumstances.

**GC7.4 SECURITY DEPOSIT - FORFEITURE OR RETURN**

- 1) If the Work is taken out of the Contractor's hands, or the Contractor is in breach of, or in default under, the Contract, the NCC may convert a security deposit to the NCC's own use.

- 2) If the NCC converts a security deposit, the amount realized shall be deemed to be an amount due from the NCC to the Contractor under the Contract.
- 3) Any balance of the amount realized that remains after payment of all losses, damage and claims of the NCC and others shall be paid by the NCC to the Contractor if, in the opinion of the NCC, it is not required for the purposes of the Contract.

- 1) The Contractor may, within 10 days after the communication to the Contractor of any decision or direction referred to in GC6.1 CHANGES IN THE WORK and GC2.2 INTERPRETATION OF CONTRACT, protest that decision or direction.
- 2) A protest referred to in paragraph 1) of GC8 shall be in writing, contain full reasons for the protest, be signed by the Contractor and be given to the NCC.
- 3) If the Contractor gives a protest pursuant to paragraph 2) of GC8, any compliance by the Contractor with the decision or direction that was protested shall not be construed as an admission by the Contractor of the correctness of that decision or direction, or prevent the Contractor from taking whatever action the Contractor considers appropriate in the circumstances.
- 4) The giving of a protest by the Contractor pursuant to paragraph 2) of GC8 shall not relieve the Contractor from complying with the decision or direction that is the subject of the protest.
- 5) Subject to paragraph 6) of GC8, the Contractor shall take any action referred to in paragraph 3) of GC8 within 3 months after the date of the Certificate of Completion referred to in GC5.6 FINAL COMPLETION and not afterwards, except where it is otherwise provided by law.
- 6) The Contractor shall take any action referred to in paragraph 3) of GC8 resulting from a direction under GC3.13 WARRANTY AND RECTIFICATION OF DEFECTS IN WORK, within 3 months after the expiry of a warranty or guarantee period and not afterwards, except where it is otherwise provided by law.
- 7) Subject to paragraph 8) of GC8, if the NCC determines that the Contractor's protest is justified, the NCC shall pay the Contractor the cost of the additional labour, Plant and Material necessarily incurred by the Contractor in carrying out the protested decision or direction.
- 8) Costs referred to in paragraph 7) of GC8 shall be calculated in accordance with GC6.4 DETERMINATION OF PRICE.

- GC9.1 OBLIGATION TO PROVIDE CONTRACT SECURITY
- GC9.2 TYPES AND AMOUNTS OF CONTRACT SECURITY
- GC9.3 IRREVOCABLE STANDBY LETTER OF CREDIT

**GC9.1 OBLIGATION TO PROVIDE CONTRACT SECURITY**

- 1) The Contractor shall, at the Contractor's expense and within 7 days after the date that the Contractor receives notice that the Contractor's bid was accepted by the NCC, obtain and deliver Contract Security to the NCC in one or more of the forms prescribed in GC9.2 TYPES AND AMOUNTS OF CONTRACT SECURITY.
- 2) If the whole or a part of the Contract Security provided is in the form of a security deposit, it shall be held and disposed of in accordance with GC5.13 RETURN OF SECURITY DEPOSIT and GC7.4 SECURITY DEPOSIT - FORFEITURE OR RETURN.
- 3) If a part of the Contract Security provided is in the form of a labour and material payment bond, the Contractor shall post a copy of that bond at the site of the Work.
- 4) It is a condition precedent to the release of the first progress payment that the Contractor has provided the Contract Security as specified herein.
- 5) In addition to the limitation imposed in paragraph 4) of GC9.1, the Contractor further acknowledges and agrees that it will not be entitled to have access to the site, nor to commence work pursuant to this contract until it has delivered the Contract Security as specified herein.

**GC9.2 TYPES AND AMOUNTS OF CONTRACT SECURITY**

- 1) The Contractor shall deliver to the NCC (a), (b) or (c):
  - (a) A performance bond and a labour and material payment bond each in an amount that is equal to not less than 50% of the Contract Amount including taxes
  - (b) A labour and material payment bond in an amount that is equal to not less than 50% of the Contract Amount including taxes, and a security deposit in an amount that is equal to not less than 10% of the Contract Amount including taxes.
  - (c) A security deposit in an amount prescribed by subparagraph 1)(b) of GC9.2, plus an additional amount that is equal to 10% of the Contract Amount including taxes.
- 2) The amount of a security deposit referred to in subparagraph 1)(b) of GC9.2 shall not exceed \$2,000,000 regardless of the Contract Amount including taxes.
- 3) A performance bond and a labour and material payment bond referred to in paragraph 1) of GC9.2 shall be in a form and be issued by a bonding or surety company that is approved by the NCC.
  - (a) The approved form for the performance bond is enclosed at the end of GC9.
  - (b) The approved form for the labour and material payment bond is enclosed at the end of GC9
  - (c) The list of approved bonding or surety companies is displayed at the following Website:  
<http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=12027> .
- 4) A security deposit referred to in subparagraphs 1)(b) and 1)(c) of GC9.2 shall be in the form of:

- (a) a bill of exchange, bank draft or money order made payable to the NCC and certified by an approved financial institution or drawn by an approved financial institution on itself; or
  - (b) bonds of, or unconditionally guaranteed as to principal and interest by, the Government of Canada.
- 5) For the purposes of subparagraph 4)(a) of GC9.2:
- (a) a bill of exchange is an unconditional order in writing signed by the Contractor and addressed to an approved financial institution, requiring the said institution to pay, on demand, at a fixed or determinable future time a certain sum of money to, or to the order of, the NCC;
  - (b) if a bill of exchange, bank draft or money order is certified by or drawn on an institution or corporation other than a chartered bank, it must be accompanied by proof that the said institution or corporation meets at least one of the criteria described in subparagraph 5)(c) of GC9.2, either by letter or by a stamped certification on the bill of exchange, bank draft or money; and
  - (c) An approved financial institution is:
    - (i) a corporation or institution that is a member of the Canadian Payments Association as defined in the Canadian Payments Act;
    - (ii) a corporation that accepts deposits that are insured, to the maximum permitted by law, by the Canada Deposit Insurance Corporation or the Régie de l'assurance-dépôts du Québec;
    - (iii) a corporation that accepts deposits from the public if repayment of the deposit is guaranteed by Her Majesty the Queen in right of a province;
    - (iv) a corporation, association or federation incorporated or organized as a credit union or co-operative credit society that conforms to the requirements of a credit union which are more particularly described in paragraph 137(6) of the Income Tax Act; or
    - (v) Canada Post Corporation.
- 6) Bonds referred to in subparagraph 4)(b) of GC9.2 shall be provided on the basis of their market value current at the date of the Contract, and shall be:
- (a) made payable to bearer; or
  - (b) accompanied by a duly executed instrument of transfer of the bonds to the NCC in the form prescribed by the Domestic Bonds of Canada Regulations; or
  - (c) registered as to principal, or as to principal and interest, in the name of the NCC pursuant to the Domestic Bonds of Canada Regulations.

### **GC9.3 IRREVOCABLE STANDBY LETTER OF CREDIT**

- 1) As an alternative to a security deposit, an irrevocable standby letter of credit is acceptable to the NCC, the amount of which shall be determined in the same manner as a security deposit referred to in GC9.2  
**TYPES AND AMOUNTS OF CONTRACT SECURITY.**
- 2) An irrevocable standby letter of credit shall:
  - (a) be an arrangement, however named or described, whereby a financial institution (the "Issuer") acting at the request and on the instructions of a customer (the "Applicant") or on its own behalf:

- (i) is to make a payment to, or to the order of, the NCC as the beneficiary;
- (ii) is to accept and pay bills of exchange drawn by the NCC;
- (ii) authorizes another financial institution to effect such payment or accept and pay such bills of exchange; or
- (iv) authorizes another financial institution to negotiate against written demand(s) for payment provided that the terms and conditions of the letter of credit are complied with;
- (b) state the face amount that may be drawn against it;
- (c) state its expiry date;
- (d) provide for sight payment to the NCC by way of the financial institution's draft against presentation of a written demand for payment signed by the NCC;
- (e) provide that more than one written demand for payment may be presented subject to the sum of those demands not exceeding the face value of the letter of credit;
- (f) provide that it is subject to the International Chamber of Commerce (ICC) Uniform Customs and Practice for Documentary Credits, 2007 Revision, ICC Publication No. 600;
- (g) clearly specify that it is irrevocable or deemed to be irrevocable pursuant to article 6 c) of the International Chamber of Commerce (ICC) Uniform Customs and Practice for Documentary Credits, 2007 Revision, ICC Publication No. 600; and
- (h) be issued or confirmed, in either official language in a format left to the discretion of the issuer or confirmer, by an approved financial institution on its letterhead.

# PERFORMANCE BOND

Bond Number \_\_\_\_\_

Amount \$ \_\_\_\_\_

**KNOW ALL MEN BY THESE PRESENTS**, that \_\_\_\_\_ as Principal,  
hereinafter called the Principal, and \_\_\_\_\_ as Surety, hereinafter

called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto the National Capital Commission as

Obligee, hereinafter called the NCC, In the amount of \_\_\_\_\_ dollars

(\$ \_\_\_\_\_), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the

Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**SIGNED AND SEALED** this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_. WHEREAS, the Principal has

entered into a Contract with the NCC, dated the \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_,

for: \_\_\_\_\_.

**NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION** are such that if the Principal shall well and faithfully observe and perform all the obligations on the part of the Principal to be observed and performed in connection with the Contract, then this obligation shall be void, otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. Whenever the Principal shall be, and declared by the NCC to be, in default under the Contract, the Surety shall
  - (a) if the work is not taken out of the Principal's hands, remedy the default of the Principal,
  - (b) if the work is taken out of the Principal's hands and the NCC directs the Surety to undertake the completion of the work, complete the work in accordance with the Contract provided that if a contract is entered into for the completion of the work,
    - (i) it shall be between the Surety and the completing contractor, and
    - (ii) the selection of such completing contractor shall be subject to the approval of the NCC,
  - (c) if the work is taken out of the Principal's hands and the NCC, after reasonable notice to the Surety, does not direct the Surety to undertake the completion of the work, assume the financial responsibility for the cost of completion in excess of the moneys available to the NCC under the Contract,
  - (d) be liable for and pay all the excess costs of completion of the Contract, and
  - (e) not be entitled to any Contract moneys earned by the Principal, up to the date of his default on the Contract and any holdbacks relating to such earned Contract moneys held by the NCC, and the liability of the Surety under this Bond shall remain unchanged provided, however, and without restricting the generality of the foregoing, upon the completion of the Contract to the satisfaction of the NCC, any Contract moneys earned by the Principal or holdbacks related thereto held by the NCC may be paid to the Surety by the NCC.
2. The Surety shall not be liable for a greater sum than the amount specified in this Bond.
3. No suit or action shall be instituted by the NCC herein against the Surety pursuant to these presents after the expiration of two (2) years from the date on which final payment under the Contract is payable.

**IN TESTIMONY WHEREOF**, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and year first above written.

**SIGNED, SEALED AND DELIVERED in the presence of:**

Principal \_\_\_\_\_

Witness \_\_\_\_\_

Surety \_\_\_\_\_

Note: Affix Corporate seal if applicable.

# LABOUR AND MATERIAL PAYMENT BOND

Bond Number \_\_\_\_\_

Amount \$ \_\_\_\_\_

**KNOW ALL MEN BY THESE PRESENTS**, that \_\_\_\_\_ as Principal,  
hereinafter called the Principal, and \_\_\_\_\_ as Surety, hereinafter

called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto the National Capital Commission as Oblige, hereinafter called the NCC, In the amount of \_\_\_\_\_ dollars

(\$ \_\_\_\_\_), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**SIGNED AND SEALED** this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ . WHEREAS, the Principal has entered into a Contract with the NCC, dated the \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, for: \_\_\_\_\_

\_\_\_\_\_ which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

**NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION** are such that, if payment is promptly made to all Claimants who have performed labour or services or supplied material in connection with the Contract and any and all duly authorized modifications and extensions of the Contract that may hereafter be made, notice of which modifications and extensions to the Surety being hereby waived, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. For the purpose of this bond, a Claimant is defined as one having a direct contract with the Principal or any Sub-Contractor of the Principal for labour, material or both, used or reasonably required for use in the performance of the Contract, labour and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone services or rental of equipment (but excluding rental of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract.
2. For the purpose of this Bond, no payment is required to be made in respect of a claim for payment for labour or services performed or material supplied in connection with the Contract that represents a capital expenditure, overhead or general administration costs incurred by the Principal during the currency or in respect of the Contract.
3. The Principal and the Surety hereby jointly and severally agree with the NCC that if any Claimant has not been paid as provided for under the terms of his contract with the Principal or a Sub-Contractor of the Principal before the expiration of a period of ninety (90) days after the date on which the last of such Claimant's labour or service was done or performed or materials were supplied by such Claimant, the NCC may sue on this bond, have the right to prosecute the suit to final judgment for such sum or sums as may be due and have execution thereon; and such right of the NCC is assigned by virtue of Part VIII of the Financial Administration Act to such Claimant.
4. For the purpose of this bond the liability of the Surety and the Principal to make payment to any claimant not having a contract directly with the Principal shall be limited to that amount which the Principal would have been obliged to pay to such claimant had the provisions of the applicable provincial or territorial legislation on lien or privileges been applicable to the work. A claimant need not comply with provisions of such legislation setting out steps by way of notice, registration or otherwise as might have been necessary to preserve or perfect any claim for lien or privilege which the claimant might have had. Any such claimant shall be entitled to pursue a claim and to recover judgment hereunder subject to the terms and notification provisions of the Bond.
5. Any material change in the Contract between the Principal and the NCC shall not prejudice the rights or interest of any Claimant under this Bond who is not instrumental in bringing about or has not caused such change.
6. No suit or action shall be commenced hereunder by any Claimant:
  - (a) Unless such Claimant shall have given written notice within the time limits hereinafter set forth to the Principal and the Surety above named, stating with substantial accuracy the amount claimed. Such notice shall be served by mailing the same by registered mail to the Principal and the Surety at any place where an office is regularly maintained for the transaction of business by such persons or served in any manner in which legal process may be served in the Province or other part of Canada in which the subject matter of the Contract is located. Such notice shall be given
  - (i) in respect of any claim for the amount or any portion thereof required to be held back from the Claimant by the Principal or by the Sub-Contractor of the Principal under either the terms of the Claimant's Contract with the Principal or the Claimant's Contract with the Sub-Contractor of the Principal within one hundred and twenty (120) days after such Claimant should have been paid in full under this Contract;



- (ii) in respect of any claim other than for the holdback or portion thereof referred to above within one hundred and twenty (120) days after the date upon which such Claimant did or performed the last of the service, work or labour or furnished the last of the materials for which such claim is made under the Claimant's Contract with the Principal or a Sub-Contractor of the Principal
  - (b) After the expiration of one (1) year following the date on which the Principal ceased work on the said Contract, including work performed under the guarantees provided in the Contract;
  - (c) Other than in a court of competent jurisdiction in the province or district of Canada in which the subject matter of the Contract or any part thereof is situated and not elsewhere, and the parties hereto hereby agree to submit to the jurisdiction of such court.
7. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder.
  8. The Surety shall not be entitled to claim any moneys relating to the Contract and the liability of the Surety under this Bond shall remain unchanged and, without restricting the generality of the foregoing, the Surety shall pay all valid claims of Claimants under this Bond before any moneys relating to the Contract held by the NCC are paid to the Surety by the NCC.
  9. The Surety shall not be liable for a greater sum than the amount specified in this bond.

**IN TESTIMONY WHEREOF**, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and year first above written.

**SIGNED, SEALED AND DELIVERED in the presence of:**

Principal \_\_\_\_\_

Witness \_\_\_\_\_

Surety \_\_\_\_\_

Note: Affix Corporate seal if applicable.

- GC10.1 INSURANCE CONTRACTS
- GC10.2 INSURANCE PROCEEDS
- GC10.3 INSURANCE TERMS
  - GC10.3.1 General
    - GC10.3.1.1 Proof of Insurance
    - GC10.3.1.2 Payment of Deductible
  - GC10.3.2 Commercial General Liability
    - GC10.3.2.1 Scope of Policy
    - GC10.3.2.2 Insured
    - GC10.3.2.3 Period of Insurance
  - GC10.3.3 Builder's Risk / Installation Floater
    - GC10.3.3.1 Scope of Policy
    - GC10.3.3.2 Amount of Insurance
    - GC10.3.3.3 Insurance Proceeds

**GC10.1 INSURANCE CONTRACTS**

- 1) The Contractor shall, at the Contractor's expense, obtain and maintain insurance contracts in respect of the work and shall provide evidence thereof to the NCC in accordance with the requirements of GC10.
- 2) The insurance contracts referred to in paragraph 1) of GC10.1 shall:
  - (a) be in a form, of the nature, in the amounts, for the periods and containing the terms and conditions specified in GC10; and
  - (b) provide for the payment of claims under such insurance contracts in accordance with GC10.2 INSURANCE PROCEEDS.

**GC10.2 INSURANCE PROCEEDS**

- 1) In the case of a claim payable under a Builders Risk/Installation (All Risks) insurance contract maintained by the Contractor pursuant to GC10.1 INSURANCE CONTRACTS, the proceeds of the claim shall be paid directly to the NCC, and:
  - (a) the monies so paid shall be held by the NCC for the purposes of the contract; or
  - (b) if the NCC elects, shall be retained by the NCC, in which event they vest in the NCC absolutely.
- 2) In the case of a claim payable under a General Liability insurance contract maintained by the Contractor pursuant to GC10.1 INSURANCE CONTRACTS, the proceeds of the claim shall be paid by the insurer directly to the claimant.
- 3) If an election is made pursuant to paragraph 1) of GC10.2, the NCC may cause an audit to be made of the accounts of the Contractor and of the NCC in respect of the part of the work that was lost, damaged or destroyed for the purpose of establishing the difference, if any, between:
  - (a) the aggregate of the amount of the loss or damage suffered or sustained by the NCC, including any costs incurred in respect of the clearing of the work and its site and any other amount that is payable by the Contractor to the NCC under the contract, minus any monies retained pursuant to subparagraph 1)(b) of GC10.2; and
  - (b) the aggregate of the amounts payable by the NCC to the Contractor pursuant to the contract up to the date of the loss or damage.

- 4) A difference that is established pursuant to paragraph 3) of GC10.2 shall be paid forthwith by the party who is determined by the audit to be the debtor to the party who is determined by the audit to be the creditor.
- 5) When payment of a deficiency has been made pursuant to paragraph 4) of GC10.2, all rights and obligations of the NCC and the Contractor under the contract shall, with respect only to the part of the work that was the subject of the audit referred to in paragraph 3) of GC10.2, be deemed to have been expended and discharged.
- 6) If an election is not made pursuant to subparagraph 1)(b) of GC10.2, the Contractor shall, subject to paragraph 7) of GC10.2, clear and clean the work and its site and restore and replace the part of the work that was lost, damaged or destroyed at the Contractor's expense as if that part of the work had not yet been performed.
- 7) When the Contractor clears and cleans the work and its site and restores and replaces the work referred to in paragraph 6) of GC10.2, the NCC shall pay the Contractor out of the monies referred to in paragraph 1) of GC10.2 so far as they will thereunto extend.
- 8) Subject to paragraph 7) of GC10.2, payment by the NCC pursuant to paragraph 7) of GC10.2 shall be made in accordance with the contract but the amount of each payment shall be 100% of the amount claimed notwithstanding subparagraphs 3)(a) and 3)(b) of GC5.4 PROGRESS PAYMENT.

### **GC10.3 INSURANCE TERMS**

#### **GC10.3.1 General**

##### **GC10.3.1.1 Proof of Insurance**

- 1) Before commencement of the Work, and prior to contract award, the Contractor shall deposit with the NCC a Certificate of Insurance (approved Insurance form is enclosed at the end of this section).
- 2) Upon request by the NCC, the Contractor shall provide originals or certified true copies of all contracts of insurance maintained by the Contractor pursuant to the provisions contained herein.
- 3) The insurance policies shall be endorsed to provide the NCC with no less than 30 days notice in writing in advance of a cancellation of insurance or any reduction in coverage.

##### **GC10.3.1.2 Payment of Deductible**

- 1) Any moneys paid or payable in respect of a deductible amount shall be borne exclusively by the Contractor.

#### **GC10.3.2 Commercial General Liability**

##### **GC10.3.2.1 Scope of Policy**

- 1) The insurance coverage provided shall not be less than that provided by IBC Form 2100, as amended from time to time, and shall have:
  - (a) an Each Occurrence Limit of not less than \$5,000,000;
  - (b) a Products/Completed Operations Aggregate Limit of not less than \$5,000,000; and
  - (c) a General Aggregate Limit of not be less than \$10,000,000 per policy year, if the policy is subject to such a limit.

- 2) The policy shall either include or be endorsed to include coverage for the following exposures or hazards if the Work is subject thereto:
  - (a) Blasting;
  - (b) Pile driving and caisson work;
  - (c) Underpinning;
  - (d) Removal or weakening of support of any building or land whether such support be natural or otherwise if the work is performed by the insured Contractor.

#### **GC10.3.2.2 Insured**

- 1) The policy shall insure the Contractor and shall include the NCC as an additional Insured, with respect to liability arising out of the operations of the Contractor with regard to the work.

#### **GC10.3.2.3 Period of Insurance**

- 1) Unless otherwise directed in writing by the NCC, or, otherwise stipulated elsewhere herein, the policy required herein shall be in force and be maintained from the date of contract award until the day of issue of the Certificate of Completion except that the coverage for Completed Operations Liability shall, in any event, be maintained for a period of at least six (6) years beyond the date of the Certificate of Substantial Performance.

#### **GC10.3.3 Builder's Risk / Installation Floater**

##### **GC10.3.3.1 Scope of Policy**

- 1) The insurance coverage provided by a Builder's Risk policy or an Installation Floater policy shall not be less than that provided by IBC Forms 4042 and 4047, as amended from time to time.
- 2) The policy shall permit use and occupancy of the project, or any part thereof, where such use and occupancy is for the purposes for which the project is intended upon completion.
- 3) The policy may exclude or be endorsed to exclude coverage for loss or damage caused by any of the following:
  - (a) Asbestos;
  - (b) Fungi or spores;
  - (c) Cyber;
  - (d) Terrorism.

##### **GC10.3.3.2 Amount of Insurance**

- 1) The amount of insurance shall not be less than the sum of the contract value plus the declared value (if any) set forth in the contract documents of all material and equipment supplied by the NCC at the site of the project to be incorporated into and form part of the finished Work. If the value of the Work is changed, the policy shall be changed to reflect the revised contract value.

##### **GC10.3.3.3 Insurance Proceeds**

- 1) The policy shall provide that the proceeds thereof are payable to the NCC may direct in accordance with GC10.2, "Insurance Proceeds".
- 2) The Contractor shall, without delay, do such things and execute such documents as are necessary to effect payment of the proceeds.

• To be completed by the insurer / À être rempli par l'assureur

CONTRACT / MARCHÉ					
Description and location of work / Description et endroit des travaux				Contract no. / N° de contrat	
INSURER / ASSUREUR					
Name / Nom					
Address / Adresse		No., Street / N°, rue			
		City / Ville	Province	Postal code / Code postal	
BROKER / COURTIER					
Name / Nom					
Address / Adresse		No., Street / N°, rue			
		City / Ville	Province	Postal code / Code postal	
INSURED / ASSURÉ					
Name of contractor / Nom de l'entrepreneur					
Address / Adresse		No., Street / N°, rue			
		City / Ville	Province	Postal code / Code postal	
ADDITIONAL INSURED / ASSURÉ ADDITIONNEL					
The National Capital Commission / La Commission de la capitale nationale					
<p><b>This insurer certifies that the following policies of insurance are at present in force covering all operations of the Insured, in connection with the contract made between the named insured and the National Capital Commission.</b></p> <p><b>L'assureur atteste que les polices d'assurances suivantes sont présentement en vigueur et couvrent toutes les activités de l'assuré en fonction du marché conclu entre l'Assuré dénommé la Commission de la capitale nationale</b></p>					
POLICY / POLICE					
Type Genre	Number Numéro	Inception Date Date d'effet	Expiry Date Date d'expiration	Limit of Liability Limites de garantie	
Commercial General Liability Responsabilité civile des entreprises					
Builder's Risk "All Risks" Assurance des chantiers « tous risques »					
Installation Floater "All Risks" Risques d'installation « tous risques »					
Other (list) / Autre (énumérer)					
<p>Each of these policies includes the coverages and provisions as specified in Insurance Terms and each policy has been endorsed to cover the National Capital Commission as an Additional Insured. The Insurer agrees to notify the National Capital Commission in writing thirty (30) days prior to any material change in, or cancellation of any policy or coverage.</p>			<p>Chacune des présentes polices renferment des garanties et dispositions spécifiées aux Conditions d'assurance, et chaque police a été amendée pour couvrir la Commission de la capitale nationale en tant qu'assuré additionnel. L'assureur convient de donner un préavis de trente (30) jours à la Commission de la capitale nationale en cas de changement visant la garantie d'assurance ou les conditions ou de l'annulation de n'importe quelle police ou garantie.</p>		
<p>_____ Name of Insurer's Office or Authorized Employee / Nom du cadre ou de la personne autorisée</p>			<p>_____ Telephone number / Numéro de téléphone</p>		
<p>_____ Signature</p>			<p>_____ Date</p>		

**1. General**

- 1.1 In this Contract “OHS” means “occupational health and safety”.
- 1.2 With respect to the work to be performed under the Contract, the Contractor covenants and agrees to perform at, and to enforce conformity with, a standard equivalent to or greater than the best practices prevailing in the construction industry at that time.
- 1.3 The Contractor acknowledges that, to the extent that the following matters may be affected by conduct of the work, it is responsible for the:
- 1.3.1 health and safety of persons on site;
  - 1.3.2 safety of property on site;
  - 1.3.3 protection of persons adjacent to the site; and,
  - 1.3.4 protection of the environment.
- 1.4 Without limiting the generality of section 1.3, the Contractor acknowledges that it is required to, and covenants and agrees to, comply and to enforce compliance with all laws or regulations that may be applicable to the conduct of the work including, without limitation:
- (a) the provisions of the *Occupational Health and Safety Act* of Ontario and all regulations, policies or directives issued thereunder for work performed in Ontario;
  - (b) *La Loi sur la santé et la sécurité du travail* of Québec and all regulations, policies or directives issued thereunder for work performed in Québec;
  - (c) Applicable provisions of the *Canada Labour Code, Part II*;
  - (d) Employment standards legislation in the province(s) in which any part of the work is performed; and
  - (e) Any policies or directives issued by the NCC in respect of the subject matter of the contract.

The NCC will present any such policies or directives referred to in paragraph (e) to the Contractor in written form by not later than the pre-construction meeting. The Contractor is obliged to ensure that the relevant policies and directives have been communicated to and acknowledged by all its employees and that they will be complied with. The NCC reserves the right to require the Contractor to produce evidence satisfactory to the NCC acting reasonably that the Contractor has discharged the foregoing obligations.

- 1.5 By entering into the Contract with the NCC, the Contractor represents and warrants to the NCC that it has informed itself of and is knowledgeable about the obligations imposed by the legislation referred to in 1.4. above.
- 1.6 For purposes of the relevant provincial OHS legislative regime the Contractor acknowledges and agrees that it is the “Constructor” and covenants to discharge and accept all liability for the performance of the obligations of the “Constructor” in respect of the work provided for in the Contract. Notwithstanding a determination by the relevant authority having jurisdiction that the NCC is the “Constructor” in the event of a dispute between the Contractor and the NCC, the Contractor acknowledges and agrees that the Contractor shall be financially responsible for the implementation of protective measures necessary to fulfill the obligations of the “Constructor”.

- 1.7 As between the NCC and the Contractor, the NCC's decision as to whether the Contractor is discharging its obligations in respect of OHS issues shall be definitive. Without limiting the generality of the foregoing, in the event of any dispute with respect to instructions given by the NCC's designated representative, the Contractor may note such dispute, but must nevertheless forthwith comply with any such instructions.
- 1.8 The Contractor hereby indemnifies and agrees to hold harmless the NCC, its agents and employees, from and against any and all claims, demands, losses, costs (including legal fees on a full indemnity basis), damages, actions, suits or proceedings (hereinafter collectively referred to as "claims") by third parties that arise out of or are attributable to the Contractor's errors or omissions in the performance of the Contract. Without limiting the generality of the foregoing, this indemnification extends to any claims related to any violation of any statute or regulation relating to OHS matters.
- 1.9 The NCC shall provide the contractor:
- 1.9.1 a written description of every known and foreseeable health and safety hazard to which persons employed in the performance of the work may be exposed because of the nature of the site;
  - 1.9.2 a list of any prescribed materials, equipment, devices and clothing necessary because of the nature of the site;
  - 1.9.3 with written information indicating the prescribed circumstances and manner to use all prescribed materials, equipment, devices and clothing listed pursuant to 1.9.2; and,
  - 1.9.4 with a copy of any NCC policies and procedures that may be applicable in relation to the work site.
- 1.10 Without limiting the generality of 1.9, prior to the commencement of the work by the contractor, the contractor shall, at the contractor's expense:
- 1.10.1 take all reasonable care to ensure that all persons employed in the performance of the work or granted access to the work or its site are informed of any health and safety hazard described pursuant to 1.9.1;
  - 1.10.2 provide all persons employed in the performance of the work or granted access to the work or its site with prescribed materials, equipment, devices and clothing listed pursuant to 1.9.2;
  - 1.10.3 take all reasonable care to ensure that all persons employed in the performance of the work or granted access to the work or its site are familiar with the prescribed circumstances and manner all prescribed materials, equipment, devices and clothing listed pursuant to 1.9.2; and
  - 1.10.4 take all reasonable care to ensure that all persons employed in the performance of the work or granted access to the work or its site are familiar with policies and procedures referred to in 1.9.4.

## **2. Qualifications of Personnel**

- 2.1 By entering into this agreement the contractor represents and warrants that it has the requisite experience, training, formal certification and equipment to enable it to discharge the obligations enumerated in sections 1.3, 1.4, 1.5 and 1.6 above.
- 2.2 The Contractor represents and warrants that supervisory personnel employed by the Contractor in respect of performance of any part of the work have the requisite experience, authority, training, formal certification and equipment to ensure that the obligations enumerated in sections 1.3, 1.4, 1.5



and 1.6 above are discharged and agrees to deliver such evidence as may be required by the NCC from time to time to verify same.

### **3. Certification**

3.1 After receiving notification that its bid has been retained and prior to and as a condition of contract award, the Contractor covenants and agrees to deliver a Worker's Compensation Clearance Certificate. Where the duration of the project is greater than sixty days, the Contractor covenants and agrees to deliver up-dated certificates at least every 60 days. In the event of a failure by the Contractor to deliver up-dated certificates, the NCC shall be entitled to immediately terminate the contract without notice and without incurring any liability to the Contractor.

3.2 After receiving notification that its bid has been retained and prior to and as a condition of contract award, the Contractor covenants and agrees to deliver historical information on its injury experience including any pertinent Worker's Compensation Experience Reports. Such historical information shall report data for the previous three years.

### **4. Plans Policies and Procedures**

4.1 After receiving notification that its bid has been retained and prior to and as a condition of contract award, the Contractor covenants and agrees to deliver for the review and approval of the NCC:

- (a) A copy of the contractor's OHS policy;
- (b) A safety program and plan specific to the work to be performed pursuant to the Contract which plan shall include a risk assessment and analysis, a description of safe working methods, injury and incident reporting protocols, regular periodic reporting on compliance with OHS obligations including any policies, practices and procedures otherwise provided for herein, and a site-specific contingency and emergency response plan; and
- (c) Health and safety training records of personnel and alternates responsible for OHS issues on site.

The Contractor covenants and agrees to deliver the necessary material safety data sheets for the review and approval of the NCC prior to entering the site to perform work related to the relevant material.

Approval by the NCC does not amend the provisions of the Contract with respect to the allocation of liability for discharging or failing to discharge OHS obligations. Such liability remains with the Contractor notwithstanding the granting of such approval.

4.2 The Contractor acknowledges and agrees that prior to commencement of work it must attend a pre-construction briefing at which any special or additional practices and procedures to be followed in completing the work are to be established. Without limiting the provisions of section 1.4(e) above, the representatives of the Contractor attending the briefing will be required to deliver a signed acknowledgement that the practices and procedures set out in the pre-construction briefing have been understood and will be complied with.

4.3 At any time and from time to time during the performance of the work, the NCC shall have the right to audit the manner in which the Contractor is discharging its OHS obligations and to determine whether the project specification and/or OHS policies, practices and procedures are being complied with. In the event that the audit discloses any failure by the Contractor to discharge such OHS obligations, the NCC shall be entitled to forthwith rectify at the Contractor's expense any such deficiency and the NCC shall have the further right to immediately terminate the contract without notice and without incurring any liability to the Contractor.

- 4.4 The Contractor covenants and agrees to conform with all requirements of the Workplace Hazardous Materials Information System.
- 4.5 The Contractor acknowledges and agrees that where required by any law or regulation applicable to the performance of the work it must establish and maintain a project health and safety committee. The contractor further acknowledges and agrees that it must enable staff to attend all relevant safety meetings, and that the cost of same, including costs attributable to standing down equipment is included in its bid price and is not independently recoverable.
- 4.6 Where required by the relevant provincial regulatory regime, the Contractor acknowledges and agrees that it is responsible for delivery of notice of the project to the relevant regulatory authority, and for the performance of any other administrative activity required to meet the obligations imposed in the pertinent provincial regulatory regime.
- 4.7 **(Optional depending on hazard or scope of project)**. The contractor covenants and agrees that it shall employ and assign to the work, a competent OHS professional as Health and Safety Coordinator that must:
- (a) have a minimum two (2) years' site-related working experience specific to activities associated with.(identify specific subject matter)
  - (b) have basic working knowledge of specified occupational safety and health regulations,
  - (c) be responsible for completing health and safety training session and ensuring that personnel not successfully completing the required training are not permitted to enter the site to perform the Work,
  - (d) be responsible for implementing, enforcing daily and monitoring the site-specific Health and Safety Plan, and
  - (e) be on site during execution of the Work.

The parties acknowledge that in lieu of employing an OHS professional, the Contractor may provide same by sub-contracting for such services.

- 4.8 Upon completion of the work the Contractor covenants and agrees to participate with the NCC in a post performance interview to evaluate the performance of the Contractor in respect of the OHS obligations under the contract. Without limiting the generality of the foregoing, the interview will identify areas of compliance and non-compliance in terms of:
- (a) actual performance of the work;
  - (b) reporting or procedural requirements;
  - (c) resolution of deficiencies.

The contractor acknowledges and agrees that the results of the post-completion interview may be relied upon by the NCC in evaluating bids subsequently submitted by the Contractor on other NCC projects.

### Security Requirements

The NCC complies with Treasury Board's *Policy on Government Security* and consequently, it will require that the Contractor's employees submit to a personal security screening process (Security Clearance Form TBS/SCT 330-60E). The NCC may also perform a credit check when the duties or tasks to be performed require it or in the event of a criminal record containing a charge/offence of a financial nature.

The NCC reserves the right to not award the Contract until such time as the Contractor's core employees have obtained the required level of security screening as identified by the NCC's Corporate Security. In this case the level of security required will be **Reliability/Site Access/Secret**.

The NCC also reserves the right to request that the Contractor submit to a *Designated Organisation Screening* and/or *Facility Security Clearance*— depending on the nature of the information it will be entrusted with. In the event that the Contractor does not meet the requirements to obtain the requested clearance, the Contractor shall take the corrective measures recommended by the Canadian Industrial Security Directorate (of PWGSC) or by the NCC's Corporate Security in order to meet these requirements. If no corrective measures are possible or if the Contractor fails to take the recommended measures, then the Contractor shall be in default of its obligations under this Contract and the NCC shall have the rights and remedies listed in section 2.14, including the right to terminate the Contract without further notice to the Contractor.

### Additional information

As part of their personal screening, individuals may be required to provide evidence of their status as a Canadian citizen or permanent resident as well as any other information/documentation requested by the NCC's Corporate Security in order to complete the screening.

The NCC reserves the right to refuse access to personnel who fail to obtain the required level of security screening.

The NCC reserves the right to impose additional security measures with respect to this Contract as the need arises.

### Company Security Representative

The Contractor shall appoint one Company Security Representative (CSR) as well as one alternate (for companies who have more than five employees).

Selection criteria for the CSR and the alternate are the following:

- They must be employees of the Contractor;
- They must have a security clearance (the NCC will process the clearances once the individuals have been identified).

### Responsibilities of the Company Security Representative

The CSR's responsibilities are the following:

- Act as liaison between the NCC's Corporate Security and the Contractor to ensure coordination;
- In collaboration with the NCC's Corporate Security, identify the Contractor's employees who will require access to NCC information/assets/sites **as well as any recurring subcontractors** (and their employees) who will require similar access and may not be supervised by the Contractor at all times during such access. Ensure that accurate and complete Personnel Security Screening documentation is

**SECURITY REQUIREMENTS**

submitted to the NCC's Corporate Security for the employees/subcontractors who have been identified;

- Ensure that employees/subcontractors, upon notification of having been granted a reliability status, sign the *Security Screening Certificate and Briefing Form* and return to the NCC's Corporate Security;
- Ensure that only persons who have been security screened to the appropriate level and who are on a "need-to-know basis" will have access to information and assets;
- Maintain a current list of security screened employees/subcontractors;
- Ensure proper safeguard of all information and assets, including any information/assets entrusted to subcontractors;
- If a Security incident or suspected breach of security occurs, prepare and submit to the NCC an occurrence report as soon as possible.

**NATIONAL CAPITAL COMMISSION**

**RENAUD CREEK CULVERT REPLACEMENT -  
SECONDARY ACCESS TO LAC PHILIPPE  
CAMPGROUND**

**DC3061-9**

**ENGINEERING DRAWINGS AND SPECIFICATIONS**




Partners in excellence  
240 Catherine St., Suite 110  
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FILE: A000186D  
August 10<sup>th</sup>, 2017 – Re-issued for Tender

NATIONAL CAPITAL COMMISSION  
RENAUD CREEK CULVERT REPLACEMENT  
SECONDARY ACCESS TO LAC PHILIPPE CAMPGROUND  
DC3061-9  
ENGINEERING DRAWINGS AND SPECIFICATIONS

Prepared by:

  
\_\_\_\_\_  
Tim Kennedy

Verified by:

\_\_\_\_\_  
For: Hugues Bisson, ing., MBA



**NOTICE TO READERS:**

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**A. ENGINEERING SPECIFICATIONS**

- .1 General Instructions – Section 01005
- .2 Description of Items in the Tender Form
- .3 Geotechnical Report, prepared by LVM Associates (July 2011)
- .4 Environmental Measures
- .5 Temporary Installations – Section 01500
- .6 Health and Safety – Section 01705
- .7 Temporary Bridge Sketch

**B. ENGINEERING DRAWINGS**

- C-000 Cover Sheet
- C-001 General Notes

**MAIN CULVERT**

- C-201 Survey Plan
- C-202 Removals Plan
- C-203 Culvert Replacement
- C-204 Creek Profile
- C-205 Cross-Sections

**DETAILS**

- C-301 Details
- C-302 Retaining Walls
- C-303 Weir Detail

**C. OTHER TENDER DOCUMENTS  
(THAT THE BIDDERS MUST PURCHASE AT THEIR OWN COST)**

1. Devis normalisé – BNQ 1809-300/2004 (R2007) : Travaux de construction –  
Clauses techniques générales – Conduites d’eau potable et d’égout
2. Cahier des charges et devis généraux (CCDG) – Infrastructures routières –  
Construction et réparation, édition 2009 (produit et publié par le ministère des  
Transports du Québec)
3. Following specifications CCDG referring to drawings and specifications and  
which are not available in English version on the web site of “ministère des  
Transports du Québec” are attached at the end of English version of contractual  
documents only: Sections 13, 15.2, 15.7 and 15.13.



PART 1 - GENERAL

- 1.1 References .1 BNQ 1809-300/2004 (R2007), published by the *Bureau de normalisation du Québec*, to the *Cahier des charges et devis généraux (CCDG)*, 2011 edition, published by the *Ministère des Transports du Québec (MTQ)* and to the norms and regulations in effect.
- 1.2 Description of Work .1 Scope of work includes full excavation and replacement of a culvert at Renaud Creek at the Lac Philippe Campground in Gatineau Park. Work includes the removal of the temporary bridge, the affected embankments soils, new head walls and roadway above as well as the temporary feed of existing waterline during the construction and its re-instatement. Work to be undertaken as soon as possible. It also includes mobilisation/demobilisation, traffic protection measures, site clean up and re-instatement.
- Additional information can be found in General Provisions found on page C-001 of the drawings.
- 1.3 Codes .1 Perform work in accordance with BNQ 1809-300/2004 (R2007), published by the *Bureau de normalisation du Québec*, to the *Cahier des charges et devis généraux (CCDG)*, 2011 edition, published by the *Ministère des Transports du Québec (MTQ)* and to the norms and regulations in effect.
- .2 Meet or exceed requirements of:  
.1 contract documents,  
.2 specified standards, codes and referenced documents.
- 1.4 Documents Required .1 Maintain at job site, one copy each of following:  
.1 Contract drawings.  
.2 Specifications.  
.3 Addenda.  
.4 Reviewed shop drawings if required.  
.5 Change orders.  
.6 Other modifications to Contract.  
.7 Copy of approved work schedule.  
.8 Instructions for the supply and installation provided by Suppliers
- 1.5 Work Schedule .1 Provide within 10 working days after Contract award, schedule showing anticipated progress stages and final completion of work within time period required by Contract documents.
- .2 Construction works shall be done from 7h00 to 17h30 during weekdays. Work shall be at a minimum during weekend to avoid tourist disruption and shall be approved by Engineer.
- .3 Provide in form acceptable to Engineer, within 10 working days after Contract award, a detailed schedule showing activities and dates for:  
.1 Submission of shop drawings, material lists and samples.  
.2 Delivery of equipment and materials

- .3 Final completion date within time period required by Contract documents.
- .4 Interim reviews of work progress based on work schedule will be conducted as decided by Engineer and schedule updated by Contractor in conjunction with and to approval of Engineer.
- 1.6 Cost Breakdown
  - .1 Before submitting first progress claim submit breakdown of contract price in detail as directed by engineer and aggregating contract price. After approval by Engineer cost breakdown will be used as basis for progress payment.
- 1.7 Contractor's Use of Site
  - .1 Use of site: as specified in contract documents and as per Engineer's instructions. Additional information can be found in General Provisions found on page C-001 of the drawings.
  - .2 Contractor shall be responsible for all damages, dirt and oil on site and shall removed them.
- 1.8 Project Meetings
  - .1 Hold project meetings at times and locations approved by Engineer.
  - .2 Notify participants of date and time of meetings.
  - .3 Record minutes of meetings, and distribute to participants within 7 days of meeting.
- 1.9 Setting Out of Work
  - .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
  - .2 Provide devices needed to lay out and construct work.
  - .3 Supply such devices as straight edges and templates required to facilitate Engineer's inspection work.
- 1.10 Cutting, and Patching
  - .1 Obtain Engineer's approval before cutting or boring in areas not indicating on drawings.
  - .2 Cut and patch as required to make work fit.
  - .3 Make cuts with clean, true, smooth edges.
  - .4 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.
- 1.11 Existing Services
  - .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by authorities having jurisdiction, with minimum of disturbance to pedestrian and vehicular traffic.
  - .2 Before commencing work, establish location and extent of scope of work and notify Engineer of findings.
  - .3 Where unknown services are encountered, immediately advise Engineer and confirm findings in writing.

1.12 Additional  
Drawings

- .1 Engineer may furnish additional drawings for clarification. These additional drawings have same meaning and intent as if they were included with plans referred to in Contract documents.

END OF SECTION

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## I. GENERAL GUIDELINES

This section describes the materials the Contractor will be able to use for this project, as well as the required method of execution. Notwithstanding the following, the Contractor must conform to the standardized specification BNQ 1809-300/2004 (R2007), published by the *Bureau de normalisation du Québec*, to the *Cahier des charges et devis généraux (CCDG)*, 2017 edition, published by the *Ministère des Transports du Québec (MTQ)* and to the norms and regulations in effect.

**THE LUMP SUM AMOUNT OR UNIT PRICE FOR EACH ITEM IN THE TENDER FORM MUST INCLUDE ALL COSTS FOR LABOUR, MATERIALS AND EQUIPMENT, AS WELL AS, MOBILIZATION/DEMobilIZATION COSTS, NECESSARY FOR THE COMPLETE EXECUTION OF THE WORK, AS SPECIFIED IN THE SPECIFICATIONS AND ON THE DRAWINGS.**

## II. DESCRIPTION OF MATERIALS

### 1.1 Culvert

<b>1.1.1 Culvert</b>	
	<b>Materials</b>
Culvert	Circular Helicoidal Pipe (Corrugated Galvanized Steel Pipe with stapled joints): <ul style="list-style-type: none"> <li>- Minimum Interior Diameter = 2100 mm</li> <li>- Minimum Pipe Thickness = 3.5 mm</li> <li>- Profile = 68 mm x 13 mm</li> <li>- Maximum Backfill Depth = 3 m</li> <li>- Standard = ASTM A760 / A760M - 10</li> </ul>
<b>1.1.2 Bedding and Cover</b>	
Bedding	MG-20 crushed granular, as per standard NQ 2560-114, compacted to 95% of the “Modified Proctor”.
Bedding (non compacted)	MG-20 crushed granular, as per standard NQ 2560-114, not compacted.
Cover	CG-14 crushed granular, as per standard NQ 2560-114, compacted to 95% of the “Modified Proctor” in layers having a maximum of 200 mm in thickness.

Pipe Cover	CG-14 crushed granular, as per standard NQ 2560-114, not compacted.
<b>1.1.3 Backfill Over Culvert</b>	
Backfill Over Culvert	MG-112 crushed granular, as per standard NQ 2560-114, compacted to 90% of the “Modified Proctor” in layers having a maximum of 150 mm in thickness.

**1.2 Retaining Walls**

<b>1.2.1 Retaining Walls</b>	
	<b>Materials</b>
Retaining Wall	SierraScape System - Stone Face Option by Tensar or approved equivalent.

**1.3 Road and Pavement Structure**

<b>1.3.1 Foundation</b>	
Granular Base	MG-20 crushed granular, as per standard NQ 2560-114 compacted to 95% of the “Modified Proctor”.
<b>1.3.2 Asphalt</b>	
Base Course	EB-14 or ESG-14, (PG 58-34).
Surface Course	EB-10S or ESG-10, (PG 58-34).
Asphalt Curb	EB-10S or ESG-10, (PG 58-34).
<b>1.3.3 Clay Seal Key</b>	
Clay Seal Key	Imported clay material (refer to Item 4. under Section III “Execution of Work”), to be approved by the Engineer prior to delivery to the site.

**1.4 Miscellaneous**

<b>1.4.1 Rip-rap</b>	
	<b>Materials</b>
Rip-Rap	Type 5 rip-rap (300-500 calibre).



Rip-Rap (sealed)	Homogeneous mix composed of 60% natural stones (100-200 calibre), 20% MG-20 crushed granular (NQ 2560-114), 5% gravel (5-35 calibre, D50 = 15 mm) and 15% fine particles passing 80 microns.
<b>1.4.2 Shelter Rocks</b>	
Shelter Rocks	Natural Stones (1m x 1m x 1m)
<b>1.4.3 Sodding</b>	
Sodding	Rolled turf on 100 mm of topsoil.
<b>1.4.4 Topsoil</b>	
Topsoil	Friable soil composed of 45% sand, 30% silt, 20% clay, 5% organic matter and a pH value between 6 and 7, free of sub-soil, roots, vegetation, contaminated materials and rocks larger than 10 mm in diameter.
<b>1.4.5 Guardrail</b>	
Posts	Wooden posts, 200 mm in diameter, treated following ACNOR-080 standard.
Guardrail	Galvanized steel in compliance with BNQ-3315-112 standard.

### **III. EXECUTION OF WORK**

#### **1. CULVERT**

##### **1.1 Removal of temporary bridge**

Removal of the temporary bridge is paid as a lump sum. The lump sum price includes, without limitations, removal of the existing temporary wood bridge and steel I-beams, disposal of demolition materials off-site, as well as, execution of the work (labor, machinery, etc.). It also includes all incidental expense incurred for the removal of the structure.

##### **1.2 Demolition of the existing culverts**

Demolition of the existing culverts is paid as a lump sum. The lump sum price includes, without limitations, excavation, stockpiling of re-usable materials on-site, disposal of unsuitable and surplus materials off-site, removal of the existing circular CSP culverts, excavation backfill, supply of materials, disposal of demolition materials off-site, as well

as, execution of the work (labor, machinery, etc.). It also includes all incidental expense incurred for the demolition of the structure.

### **1.3 Cofferdams**

Cofferdams are paid as a lump sum. The lump sum price includes, without limitations, design of the work, the production of all plans, calculation worksheet and report required, supply of materials, inspection with a video camera, removal of the cofferdams as well as execution of the work (labor, machinery, etc.). It also includes all incidental expense incurred for the installation of the cofferdams.

Refer to GC3.4.5 for Contractor's full responsibility.

### **1.4 Temporary retaining work**

Temporary retaining work is paid as a lump sum. The lump sum price includes, without limitations, design of the work, the production of all plans, calculation worksheets and reports required, supply of materials, removal of the temporary retaining work as well as execution of the work (labor, machinery, etc.). It also includes all incidental expense incurred for temporary retaining work.

### **1.5 Temporary diversion channel and/or by-pass pumping**

Temporary diversion channel is paid as a lump sum. The lump sum price includes, without limitations, design of the work, the production of all plans, calculation worksheets and reports required, supply of materials, excavation, stockpiling of re-usable materials on-site, disposal of unsuitable and surplus materials off-site, construction of the channel as per specifications, excavation backfill, reinstatement of existing conditions as well as execution of the work (labor, machinery, etc.). It also includes all incidental expense incurred for the construction of the temporary diversion channel.

By-pass pumping can be used at the Contractor's own risk; see the Environmental Measures section for limitations and restrictions. Should by-pass pumping be used, it will be paid as part of this lump sum item. This lump sum price includes without limitations, the development and submission of a pumping plan (with pump capacities, pump locations, environmental protection and contingency plan), all material, preparation of the site, required environmental protection, and reinstatement to existing conditions. It also includes all execution of the work (labor, machinery, etc.), record keeping and incidental expenses incurred for utilizing by-pass pumping instead of, or in addition to, the diversion channel.

## **1.6 New culvert**

The culvert is paid per linear meter. The unit price for the culvert includes, without limitations, production of all plans, calculations worksheet and reports required, supply of materials, excavation, stocking of re-usable materials on-site, disposal of unsuitable and surplus materials off-site, trench dewatering, preparation of the foundation, pipe bedding, pipe cover, new culvert, transportation, assembly if any, connection to existing, welding if required, excavation backfill up to the infrastructure elevation and the required fill material for when the infrastructure elevation is found above the existing ground level before excavation, as well as, the execution of the work (labor, machinery, etc.). This lump sum price also includes all expenses incurred for coordination with the supplier for delivery, unloading and storage of the pipe on-site as well as for the installation of the culvert. All work as per engineering drawings.

## **1.7 Weirs**

Weirs are paid per unit. The unit price includes, without limitations, the supply of material, including zinc rich paint, transportation, welds, as well as, the execution of the work (labor, machinery, etc.). It also includes all incidental expense incurred for the installation of the weirs.

## **2. RETAINING WALLS**

### **2.1 Demolition of the existing retaining walls**

Demolition of the existing retaining wall is paid as a lump sum. The lump sum price includes, without limitations, excavation, stocking of re-usable materials on-site, disposal of unsuitable and surplus materials off-site, excavation backfill, supply of materials, removal of the existing stone and concrete retaining wall, disposal of demolition materials as well as execution of the work (labor, machinery, etc.). It also includes all incidental expense incurred for the demolition of the structure.

### **2.2 New retaining walls**

The retaining walls are paid per square meter. The unit price for the retaining walls includes, without limitations, design of the walls, production of all plans, calculation worksheets and reports required, supply of materials, including granular materials required for the walls, excavation, stockpiling of re-usable materials on-site, disposal of unsuitable and surplus materials off-site, bedding, prefabricated footings, all drains as indicated on plans, backfill up to the top of the wall, finishes, including wall caps, if required, inspection of welds using nondestructive methods if necessary, cleaning, transportation, verification on site, installation and assembly of all metal parts as well as

execution of the work (labor, machinery, etc.). It also includes all incidental expense incurred for the installation of the retaining walls.

### **2.3 Extend existing CSP pipe**

Extension of the existing 400 mm Ø CSP pipe through the new retaining wall on the downstream side will be paid as a lump sum. The lump sum price for the culvert includes, without limitations, supply of materials, excavation, stocking of re-usable materials on-site, disposal of unsuitable and surplus materials off-site, trench dewatering, preparation of the foundation, pipe bedding, pipe cover, new culvert (galvanized CSP), cutting culvert end flush with new retaining wall, transportation, assembly if any, connection to existing, welding if required, excavation and backfill, as well as, the execution of the work (labor, machinery, etc.). This lump sum price also includes all expenses incurred for coordination with the supplier for delivery, unloading and storage of the pipe on-site as well as for the installation of the culvert. All work as per engineering drawings.

## **3. ROAD AND PAVEMENT STRUCTURE**

The demolition, construction or reconstruction of the road and pavement structure, including supply of materials, shall be performed in conformity with plans and specifications as well as in conformity with the “CCDG” prepared by “Transports Québec” and the standardized specifications document BNQ 1809-500/2017.

### **3.1 Demolition of the existing pavement**

The demolition of the existing pavement is paid per square meter. Work includes, without limitations, saw cuts, demolition of existing pavement, disposal off-site of demolition materials, all as per drawings. It also includes all incidental expense incurred for the demolition.

### **3.2 Demolition of existing asphalt curb**

The demolition of the existing asphalt curb is paid per linear meter. Work includes, without limitations, saw cuts, demolition of existing asphalt curb, disposal off-site of demolition materials, all as per drawings. It also includes all incidental expense incurred for the demolition.

### **3.3 Demolition of the existing road structure**

The demolition of the road structure will be paid per square meter. Work includes, without limitations, excavation, disposal off-site of demolition materials, all as per drawings. The unit price includes all incidental expense incurred for the demolition.

**3.4 Demolition of existing catch basins**

The demolition of the existing catch basins will be paid per unit. Work includes, without limitations, demolition of the existing catch basins, disposal off-site of demolition materials, all as per drawings. The unit price includes all incidental expense incurred for the demolition.

**3.5 Clay seal on upstream embankment**

Before sodding the embankment, the Contractor must seal the embankment upstream using a clay material. The clay seal key must be built using a material mainly composed of clay having good impervious properties. The Contractor must have the material's quality approved and its compaction requirement confirmed by the Engineer prior to delivery to the site.

The clay seal will be paid as a lump sum. Work includes, without limitations, supply, installation and compaction of materials, all as per drawings.

**3.6 New road structure**

The new road structure is paid per square meter. Work includes, without limitations, supply, installation and compaction of granular materials, all final earthworks, all as per drawings.

**3.7 New asphalt curb**

The new asphalt curb is paid per linear meter. Work includes, without limitations, supply, installation and compaction of asphalt curb, all as per drawings.

**3.8 New pavement**

The new pavement is paid per square meter. Work includes, without limitations, supply, installation and compaction of asphalt layers, all as per drawings.

**3.9 New Guardrails**

Guardrail will be paid per linear meter. Work includes, without limitations, supply and installation of all materials, installation and final grading of Guardrail and end treatments, all as per the drawings.

#### **4. ENVIRONMENTAL MEASURES**

Environmental measures will be paid as a lump sum. These measures are described under the section “ENVIRONMENTAL MEASURES” in the Engineering Specifications document.

ITEM 1 – General

ITEM 2 – Contractor Obligations

ITEM 3 – Environmental Protection Plan

ITEM 4 – Soil and Surface Water Protection

ITEM 5 – Migratory Bird Protection

ITEM 6 – Vegetation Protection

ITEM 7 – Erosion and Sediment Control on Site

ITEM 8 – Chelsea Creek Protection (including Fish Habitats)

ITEM 9 – Wetland Protection

ITEM 10 – Noise Protection

ITEM 11 – Air Quality

ITEM 12 – Archeology

ITEM 13 – Safety

ITEM 14 – Restoration

ITEM 15 – Penalties

#### **5. INLET EXTREMITY OF THE CULVERT**

##### **5.1 Rip-rap**

Rip-rap will be paid per square meter. Work includes, without limitations, clearing, grubbing, removal of topsoil excavation, stocking of re-usable materials on-site, disposal of unsuitable and surplus materials off-site, excavation backfill, construction of access roads, grading, supply and installation of materials, all as per drawings.

The Contractor must refer to section “ENVIRONMENTAL MEASURES” in the Engineering Specifications document for applicable environmental measures. The cost for the environmental measures implemented must be included in the specific item in the tender form.

##### **5.2 Sealed Rip-Rap Strip**

The sealed rip-rap strips will be paid per square meter. Work includes, without limitations, clearing, grubbing, removal of topsoil excavation, stocking of re-usable materials on-site, disposal of unsuitable and surplus materials off-site, excavation

backfill, construction of access roads, grading, supply and installation of materials, all as per drawings.

The Contractor must refer to section “ENVIRONMENTAL MEASURES” in the Engineering Specifications document for applicable environmental measures. The cost for the environmental measures implemented must be included in the specific item in the tender form.

## **6. OUTLET EXTREMITY OF THE CULVERT – ENERGY DISSIPATION BASIN**

### **6.1 Rip-rap**

Rip-rap will be paid per square meter. Work includes, without limitations, clearing, grubbing, removal of topsoil excavation, stocking of re-usable materials on-site, disposal of unsuitable and surplus materials off-site, excavation backfill, construction of access roads, grading, supply and installation of materials, all as per drawings.

The Contractor must refer to section “ENVIRONMENTAL MEASURES” in the Engineering Specifications document for applicable environmental measures. The cost for the environmental measures implemented must be included in the specific item in the tender form.

### **6.2 Sealed Rip-Rap Strip**

The sealed rip-rap strips will be paid per square meter. Work includes, without limitations, clearing, grubbing, removal of topsoil excavation, stocking of re-usable materials on-site, disposal of unsuitable and surplus materials off-site, excavation backfill, construction of access roads, grading, supply and installation of materials, all as per drawings.

The Contractor must refer to section “ENVIRONMENTAL MEASURES” in the Engineering Specifications document for applicable environmental measures. The cost for the environmental measures implemented must be included in the specific item in the tender form.

### **6.3 Shelter Rocks**

Shelter rocks will be paid per unit. Work includes the supply and installation of natural stones, as shown on drawings.

**6.4 Threshold to control flow at the outlet of the basin**

The construction of the threshold to control flow at the outlet of the basin will be paid as a lump sum. Work includes, without limitations, excavation, grading, supply and installation of materials, compaction as well as all the required tests to ensure the threshold and the sealed rip-rap strip are impervious, all as per drawings.

**7. REINSTATEMENT OF EXISTING CONDITIONS**

**7.1 Sodding**

Sodding will be paid per square meter. Work includes, without limitations, grading, supply and installation of topsoil, fertilizer and rolled turf, as well as watering, all as per drawings.

Work must be performed to the satisfaction of the NCC and, if required, repaired at the Contractor's expense.

**7.2 Trees and Shrubs**

Trees and shrubs will be paid as a lump sum. The Contractor must refer to the section "ENVIRONMENTAL MEASURES" in the Engineering Specifications document and must evaluate the quantity of trees and shrubs required to complete the reinstatement of existing conditions (diversion channel, access roads, pipe inlet and outlet, etc.).

**7.3 Reinstatement of existing waterlines**

Removal and reinstatement of the existing waterlines and valve, including providing for temporary water throughout construction will be paid as a lump sum. Work includes, but is not limited to, supply and installation of materials, protect remaining lines from contamination, provide for temporary water supply throughout construction, reconnect the lines as indicated by the Owner on-site, disposal of materials as well as execution of the work (labor, machinery, etc.). It also includes all incidental expenses incurred for the reinstatement of existing waterlines.

The existing waterlines at the culvert will be drained of water for the winter by the Owner on 10 October 2017.



## **8. MISCELLANEOUS**

### **8.1 Temporary signage and temporary fencing**

Signage will be paid as a lump sum. Work includes, without limitations, supply and installation of safety signs (as required), supply, installation and anchoring of a metallic fence (height of 1.8 meters) at the perimeter of the site. Signs and fence must be removed by the Contractor following completion of work.

The Contractor must provide for approval to the Engineer, at least 72 hours in advance, an MTQ type signposting plan clearly demonstrating truck access to the site, fence location and sign location (as required). Work cannot start until approval is issued by the Engineer to the Contractor.

### **8.2 Temporary fencing - Park users' safety**

The Contractor must carry a cash allowance of \$10,000 for the installation of additional temporary fencing at the discretion of the Owner's Site Representative.

### **8.3 Shop Drawings**

The Contractor must provide the Engineer with shop drawings of all products to be installed, including, but not limited to, the following:

- Temporary Works:
  - I. Cofferdam
  - II. Temporary Retaining Works
  - III. Shoring
  - IV. Sedimentation Basin
  - V. Sediment Traps
  - VI. Filter Barrier
  - VII. Temporary Diversion Channel and Dyke (and/or pumping system)
  - VIII. Other Erosion and Sediment Control Measures (if any)
  - IX. Access Roads
- Culvert (including extremities)
- Weirs
- Retaining Walls and Appurtenances
- Granular Materials
- Asphalt Mix Design
- Environmental Protection Action Plan (provided at start-up meeting)

- Health and Safety Plan

The Engineer must return approved or commented shop drawings within 48 hours. The cost for the preparation of shop drawings must be included in the cost of the products.

#### **8.4 Geotechnical Information**

Geotechnical information providing from LVM's geotechnical report have been included in the Engineering Specifications document.

# **National Capital Commission (NCC)**

## **Culvert Reconstruction on Chemin du Lac Philippe, Gatineau Park, Gatineau, Qc**

### **Geotechnical Investigation Report**

Date: 2011-07-21

O/Ref. : 033-P039908-0100-GE-0001-00





## **National Capital Commission (NCC)**

### **Culvert Reconstruction on Chemin du Lac Philippe, Gatineau Park, Gatineau, Qc**

#### **Geotechnical Investigation Report**

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## Property and Confidentiality

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If tests have been done, the results of these tests are valid only for the sample described in the present report.

Testing (either in the field or in laboratory) has been completed by sub-contractors duly qualified according to the purchasing procedure of our quality manual. For more information, please contact your project engineer.

### Register of revisions and emissions

Revision No	Date	Description of the modification and/or of the emission
00	2011-07-21	Final Report





## **INTRODUCTION**

National Capital Commission (NCC) awarded a contract to LVM to carry out a geotechnical investigation for the reconstruction of a 1,8 m diameter culvert into chemin du Lac Philippe in the Gatineau Park in the municipality of Ste-Cécile-de-Masham, Quebec.

The purpose of the investigation was to determine the nature and properties of soils and groundwater conditions at the site by means of two (2) boreholes (TF-01-11 and TF-04-11) with sampling near the actual culvert site. The gathered information allowed the formulation of geotechnical recommendations for the subsoil properties, the geotechnical limits, the temporary excavation consideration, the recycling of the excavated material, the groundwater seeping and any other relevant information regarding the project realisation.

Three (3) additional boreholes (TF-02-11, TF-03-11 and TF-05-11) were done for dynamic cone penetration testing purposes. The objective of the penetration test was to characterize the compaction level of the natural granular deposit underlining the granular fill around the culvert structure.

The investigation was performed in accordance to our proposal dated June 27<sup>th</sup> 2011 (O/Ref.:11-0516-033).

This report contains a description of the site, the methodology used during the site investigation as well as a detailed description of the soil nature, their properties and the groundwater level. It also contains a section where geotechnical recommendations are provided for the design of the project.

The specific limitations of the investigation, outlined in Appendix 1, should be read jointly with this report.



# 1 SITE AND PROJECT DESCRIPTION

## 1.1 PROJECT DESCRIPTION

Based on the information provided by the NCC, geotechnical services were required to investigate on a future culvert reconstruction site. The previous culvert was dragged by flooding waters causing parts of the road above it to collapse. The culvert is 1,8 meters in diameter by 20 m in length. At the moment of the redaction of this report, the new design is unknown but the representative of the NCC indicates that the new culvert is intended to be of similar design of the old one.

## 1.2 SITE DESCRIPTION

The study site is located on Chemin du Lac Philippe in Gatineau Park in the municipality of Ste-Cécile-de-Masham, Québec. The road above the culvert is made of two (2) paved roadways separated by a lawn trim in the middle allowing two-way traffic. The following pictures give a general view of the study site.



Picture # 1 : General view of the site.



**Picture # 2 : Two paved roadways separated by a lawn trim.**



**Picture # 3 : General view and borehole location.**





## **2 INVESTIGATION PROCEDURES (FIELD WORK)**

### **2.1 LOCATION OF THE BOREHOLES**

The site survey to determine the borehole locations was carried out by LVM and NCC representatives. Elevations of the boreholes were taken from an arbitrary level of 0,00 m. at the ground surface. The exact locations of the boreholes are shown on each borehole report in Appendix 2 and the borehole locations are also shown on the site plan 033-P039908-100-GE-0001 included in Appendix 4.

### **2.2 FIELD WORK**

The fieldwork was performed on June 29<sup>th</sup>, 2011. A total of five (5) boreholes were carried out and, of that number, two (2) were done with sampling. The boreholes were identified from TF-01-11 to TF-05-11.

The two (2) boreholes with sampling were carried out using a Geoprobe drill to a total depth ranging from 4.37 m to 5.49 m. Soil sampling and Standard Penetration Testing, in accordance with ASTM Standard D 1586-98, were performed with a standard split-spoon sampler of 51 mm outer diameter. It is important to note that the Geoprobe drill cannot go through asphalt which is why boreholes were carried out on the shoulder of the road.

Boreholes TF-02-11, TF-03-11 and TF-05-11 were done using a dynamic cone penetration test until depths of 9.04 m, 6.93 m and 7.97 m respectively, obtaining a refusal on a very dense soil.

Perforated pipes were installed into boreholes TF-01-11 and TF-04-11 in order to allow measurements of the groundwater level.

All field work was carried out under the full time supervision of a geotechnical technician from LVM. The subsoil details are presented in the individual borehole logs in Appendix 2.

### **2.3 LABORATORY TESTING**

All recovered samples were carefully preserved and transported to LVM's laboratory for identification, laboratory testing and classification. All soil samples were examined by a geotechnical engineer and were classified in accordance with the requirements specified in ASTM D2488. Six (6) representative soil samples from the boreholes were submitted for grain size analysis. The complete laboratory test results are presented in Appendix 3 and are also included on the borehole logs in Appendix 2.

All geotechnical samples recovered from boreholes which were not consumed during laboratory analysis will be stored for a period of six (6) months from the date of completion of the fieldwork; after which, they will be destroyed unless written instructions on the sample storage and/or disposition are received by LVM.

### 3 NATURE AND PROPERTIES OF SUBSOIL

The following paragraphs present a summary of the different soil layers encountered in the borehole. The locations of the five (5) boreholes are presented on the plan n° 033-P039908-0100-GE-0001 in Appendix 4. The detailed borehole logs are presented in Appendix 2.

Table 1: Borehole Summary

Borehole n°	Granular fill (m)	Natural deposit (m)	End of borehole (m)
TF-01-11	0.05 – 3.05	3.05 – 4.27	4.37
TF-04-11	0.08 – 3.66 <sup>(1)</sup>	3.66 – 5.49	5.49

<sup>(1)</sup> probable fill from 3.05 m to 3.66 m  
 N.B.: TF-02-11, TF-03-11 and TF-05-11: no sampling, dynamic cone penetration test only.

#### 3.1 GRANULAR FILL

A granular fill was intercepted in all boreholes on a thickness between 3.00 m and 3.66 m. It is noted that directly on the surface of all the boreholes, a layer of topsoil and organic matter was intercepted with a thickness varying between 50 mm and 130 mm. Four (4) sieve analyses were performed based on representative fill samples. Table 2 shows the results of the analyses which are also presented in Appendix 3.

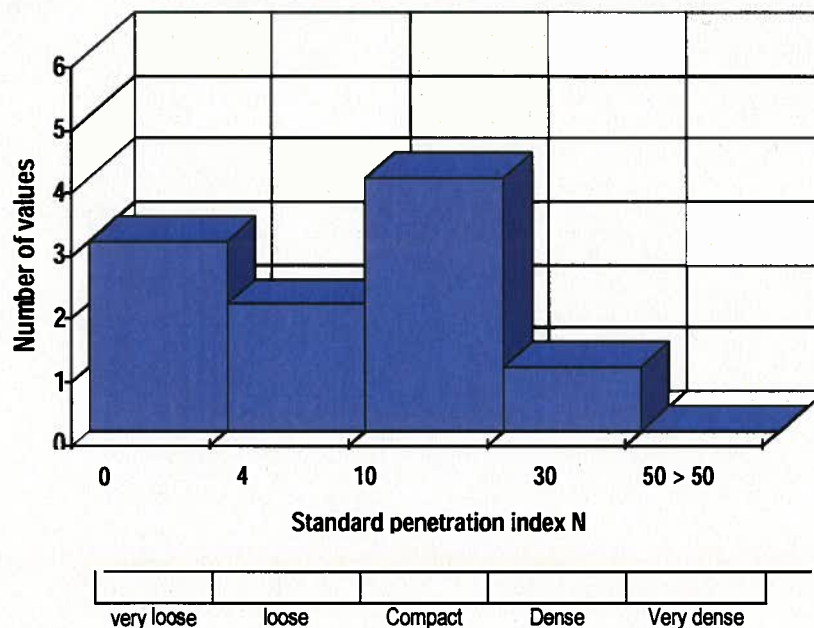
Table 2: Sieve Analysis of the Granular fill

Borehole n°	Sample n°	Depth (m)	Gravel > 4.75 mm (%)	Sand < 4.75 mm et > 75 µm (%)	Silt and Clay < 75 µm (%)
TF-01-11	CF-1	0.00 – 0.61	12	78	10
	CF-3	1.22 – 1.83	13	52	35
TF-04-11	CF-2	0.61 – 1.22	24	53	23
	CF-5	2.44 – 3.05	19	57	24

According to the grain size distribution, the tested sample is grey sand with varying proportions of gravel and silt. According to the Unified Soil Classification System (USCS), the deposit is classified as a SM-SW.

Standard penetration index (N) was recorded around ten (10) times in this layer. It generally varies from 1 to 39 blows per 300 mm of a split spoon sampler, indicating the fill has a variable loose to compact relative density, but can be generally qualified as compact. Figure 1 shows the statistical distribution of the Standard penetration index and the corresponding compactness on the fill layer.

Figure 1: Site location Distribution of Standard Penetration Index (N), Granular Deposit



(According to the Canadian foundation engineering manual - Second edition)

### 3.2 NATURAL DEPOSIT (GRANULAR DEPOSIT)

A natural deposit of grey gravel or grey sand, depending on the borehole, was intercepted in boreholes TF-01-11 and TF-04-11 immediately beneath the granular fill. This deposit was intercepted at a depth between 3.05 m and 3.66 m. Two (2) sieve analyses were performed based on a representative samples. Table 3 shows the results of the analyses which are also presented in Appendix 3.

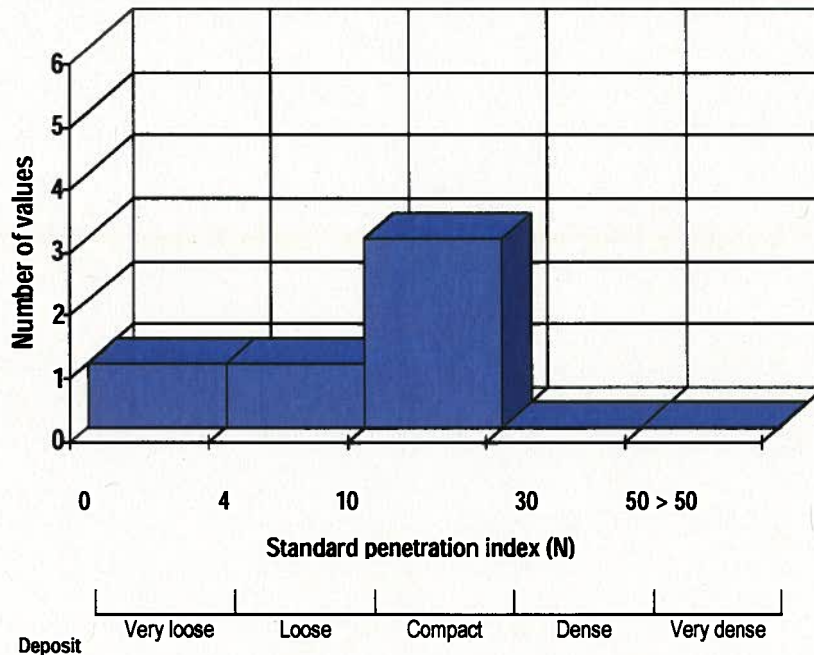
**Table 3 : Sieve Analysis of Natural Deposit**

Borehole n <sup>o</sup>	Sample n <sup>o</sup>	Depth (m)	Gravel > 4.75 mm (%)	Sand < 4.75 mm and > 75 µm (%)	Silt and Clay < 75 µm (%)
TF-01-11	CF-7	3.66 – 4.27	55.1	39.7	5.2
TF-04-11	CF-7	3.66 – 4.27	18.3	56.2	25.5

According to the grain size distribution, the tested samples are, on one hand, sandy gravel with traces of silt and, on the other hand, silty sand with some gravel. According to the Unified Soil Classification System (USCS), the deposit is classified as a GW-GP for the first one and SM for the second one.

Standard penetration index (N) was recorded around five (5) times in this layer, and generally varies from 0 to 27 blows per 300 mm of a split spoon sampler, indicating the fill has a variable loose to compact relative density, but can be generally qualified as compact. Figure 2 shows the statistical distribution of the Standard penetration index and the corresponding compactness on the fill layer.

**Figure 2 : Site location Distribution of Standard Penetration Index (N), Natural Deposit**



(According to the Canadian Foundation Engineering Manual - Second Edition)



## 4 GROUNDWATER

Two (2) perforated plastic tubes were installed into boreholes TF-01-11 and TF-04-11 in order to allow further readings of the groundwater level. On July 12<sup>th</sup>, 2011, groundwater levels were recorded. The results are shown in table 4.

Table 4: Groundwater levels

Borehole n <sup>o</sup>	Type	Date Recorded	Depth (m)	Bottom of pipe (m)
TF-01-11	Perforated pipe	2011-07-12	3.75	4.23
TF-04-11	Perforated pipe	2011-07-12	3.24	4.65

It is important to note that the groundwater level can be influenced by several factors including rainfalls, snow melts and modifications made to the physical environment and, thus, can vary by seasons and over time.

## 5 DISCUSSION AND RECOMMENDATIONS

### 5.1 GENERAL REMARKS

Based on the information received, the project consists in the reconstruction of a culvert and road that were dragged and collapsed due to flood water on Chemin du Lac Philippe in Gatineau Park in the municipality of Ste-Cécile-de-Masham, Qc.

The information from the boreholes indicates that the site subsurface stratigraphy is essentially a compact granular deposit. On July 12<sup>th</sup>, 2011, groundwater level was recorded at a depth varying between 3.25 m and 3.75 m from ground surface.

According to the available data and the information collected out from the boreholes, our geotechnical commentaries and recommendations for the conception of the project are presented in the following sections.

### 5.2 FROST PROTECTION

In order to ensure protection against frost, the culvert foundation should be placed at a depth of at least 1,8 m from to the final ground level, for heated buildings. In the eventuality that the designer wishes to install the foundations at a depth lower than 1.8 m, an adequate insulation material should be used.

### **5.3 FOUNDATION**

Based on the nature and properties of the natural soil deposit and the type of culvert that will be installed, we do not expect any bearing capacity problems or any excessive movement or settlement, if the following recommendations are respected, for a culvert of a maximum diameter of 2 m with the base implanted at a maximum depth of 3 m from the ground surface.

### **5.4 EXCAVATION**

In order to reach the foundation implantation level, excavation will be required in the fill material and in the granular deposit.

If there is sufficient space, the required excavation to reach the footings can be done by doing open trenches. Because the slopes are only temporary, the contractor will be responsible for their stability.

These excavations must be done in accordance to the specifications of the ``Ministry of Labour``. If excavations without any support system stay open for a long duration, it is recommended that frequent inspections be done by specialized geotechnical personnel in order to detect any risk of soil slip and to determine the measures to be taken to correct any anomalies.

It is recommended to avoid parking any vehicles at the top of the excavation at a distance lower than the depth of the excavation. It is also suggested to avoid any vehicle circulation at the top of the excavation at a distance lower than the depth of the excavation, in order to minimize the vibrations.

It will be important to keep a distance of at least equal to the depth of the excavation between the top of the slope and the base of the excavated material pile on site. This condition must be respected at all times, unless studies are carried out for any specific case.

### **5.5 BACKFILL ALONG THE CULVERT**

The backfill along the culvert must be done using compactable granular material of type "MG-112", as defined by the Ministry of Transportation of Québec "MTQ".

This material must be set up in layers of a maximum thickness of 300 mm and must be compacted to at least 95 percent of the maximum dry density. Backfill must be brought up evenly on both sides of the walls, because these walls are not designed to resist lateral pressures.

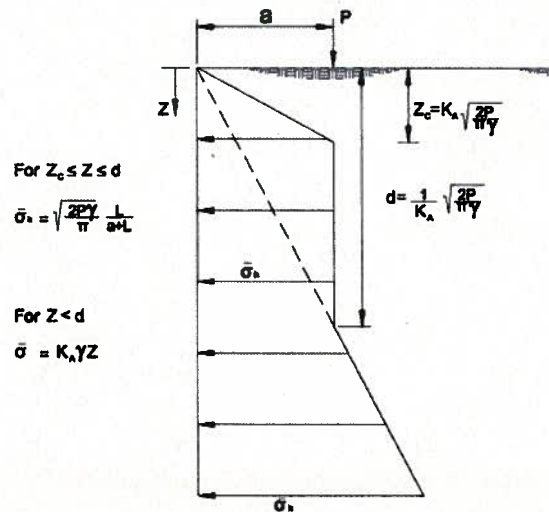


### 5.5.1 Lateral pressure

Each side of the culvert will be subjected to lateral pressure from the backfill and, for that reason, section 6.9 of the “Canadian Highway Bridge Design Code” must be followed.

In general, if the backfill is compacted at a distance less than 3 m from the culvert, the lateral distribution chart presented on Figure 3 for the calculation of the soil pressure as mentioned in the “Canadian Highway Bridge Design Code”.

Figure 3 : Distribution chart of lateral pressure from compacted backfill



$$P(\text{charge du rouleau}) = \frac{\text{Poids du rouleau} + \text{Force centrifuge}}{\text{Largeur du rouleau}}$$

a = Distance du rouleau au mur

L = Longueur du rouleau

Soil properties of the granular material used for the culvert backfill are presented at Table 5.

The active pressure coefficient is used for structures that are not retained on top. Otherwise, the at-rest earth pressure must be used.

Table 5: Geotechnical parameters – Granular type MG-112

Parameter	Value
Angle of friction	$\phi' : 34^\circ$
Saturated Unit weight	20 kN/m <sup>3</sup>
At-rest earth pressure coefficient *	$K_0 : 0.44$
Active earth pressure coefficient *	$K_a : 0.29$
Passive earth pressure coefficient *	$K_p : 3.5$

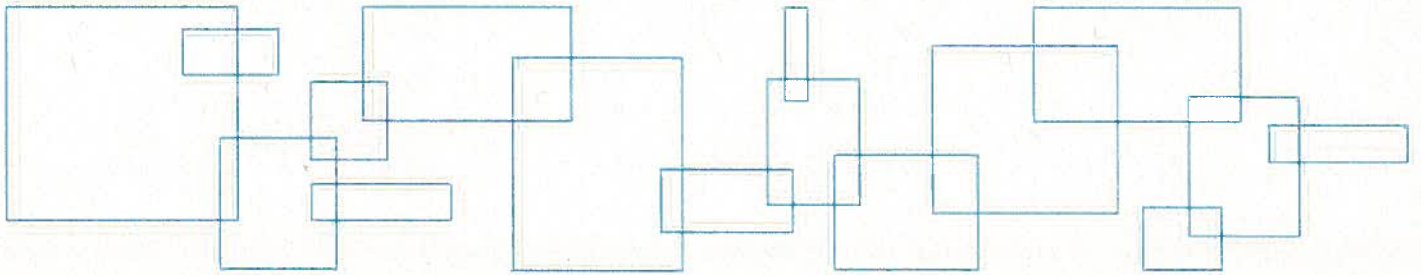
## 5.6 DEWATERING

It is recommended that an adequate pumping system be available in order to evacuate surface run-off and infiltration water that could accumulate at the bottom of the excavations, depending on the weather conditions and allow a dry working environment. In this particular project, the dam upstream of the culvert could be used to temporarily block the water flow in order to permit dry conditions on the worksite.

However, because the culvert is located in Gatineau Park, where environmental protection is paramount, it should be taken into consideration that blocking the flow of the stream may affect the aquatic life and wildlife that rely on the stream. Therefore, a derivation canal may be the best solution, but will increase the cost and the time of construction.

## Appendix 1

## Limitations of the Investigation



## **SCOPE OF THE GEOTECHNICAL STUDY**

### **1.0 *Characteristics of soil and rock***

The soil and rock characteristics described in this report originate from geotechnical investigations conducted within a given period and correspond to the nature of the terrain only at the specific locations where these investigations were carried out.

Soil and rock formations have natural variations. The limits between the different formations presented in the sounding logs must therefore be considered as transitions between the formations rather than set boundaries. The precision of these limits depends on the type and number of soundings, the sounding methods used, as well as sampling frequency and methods.

The descriptions of the samples taken are based on recognized identification and classification methods used in geotechnics. They can call into play the judgement and interpretation of the personnel who carried out the examination of materials and can be presumed to be accurate and correct in keeping with current best practices in the field of geotechnics. Finally, if tests were carried out, the results of these tests apply solely to the samples tested, as described in this report.

The properties of the soil and rock can undergo significant modifications in the wake of construction activities such as excavation, blasting, pile driving or drainage activities, carried out on the site under study or an adjacent site. They can also be indirectly modified by the exposure of the soil or rock to freezing or weather stresses.

### **2.0 *Groundwater***

The groundwater conditions presented in this report apply only to the site under study. The accuracy and representation of these conditions must be interpreted based on the type of instrumentation used, as well as the period, duration, and number of observations carried out. These conditions can vary depending on precipitation, the seasons and, ultimately, the tides. They can also vary as a result of construction activities or the modification of physical elements on the site under study or in its vicinity. The problematic of ferrous ochre and its effects is not covered in this report.

### **3.0 *Use of the report***

The comments and recommendations contained in this report are intended primarily for the project's design team. The number of soundings required to identify all of the underground conditions that could impact construction costs, techniques, the choice of equipment and planning of operations could be greater than the number required for design purposes. All contractors bidding on or carrying out the work on the site under study must undertake their own interpretation of the results of the soundings and, if need be, carry out their own investigations to determine how site conditions could influence their operations or work methods.

Any modifications to the design, position and elevation of the works must be quickly communicated to LVM, allowing the validity of the recommendations presented to be verified. Complementary site or laboratory work could ultimately be required.

This report cannot be reproduced, in whole or in part, without the authorization of LVM.

### **4.0 *Project tracking***

The interpretation of the on-site and laboratory results obtained, as well as the recommendations presented in this report, apply solely to the site under study and to the information available about the project at the time this report was drafted.

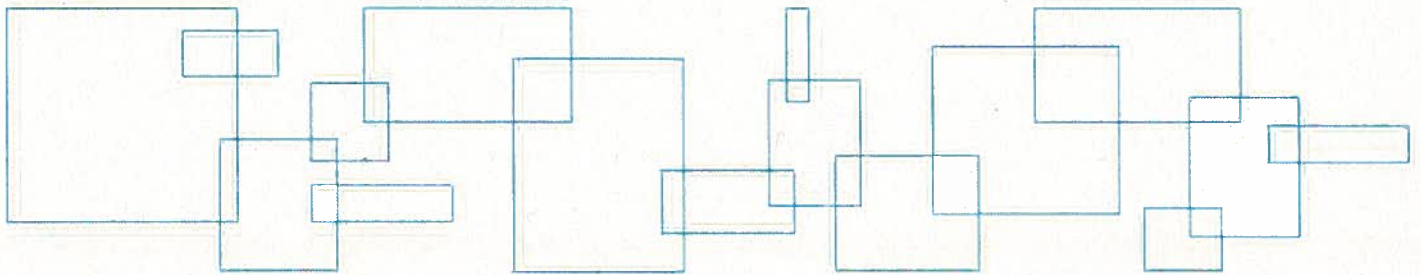
Information available concerning the site and groundwater conditions increases as construction work progresses. As site conditions were interpreted and correlated between sounding points, LVM should be allowed to verify these conditions, during site visits conducted as work progresses, in order to confirm the information provided by the drillings soundings. If it is not possible for us to conduct these verifications, LVM shall assume no responsibility for geotechnical interpretations by third parties concerning recommendations contained in this report, particularly if the design has been modified or if site conditions different from those described in this report are encountered. The identification of such changes requires experience and must be carried out by an experienced geotechnical engineer.

### **5.0 *Environment***

The information contained in this report does not cover the environmental aspects of the site conditions, as these aspects were not included in the study mandate.

**Appendix 2**

**Explanation Notes on the  
Boring Log, Boring Logs**





The following sounding logs summarize soils and rock geotechnical properties as well as ground water conditions, as collected during field work and/or obtained from laboratory tests. This note explains the different symbols and abbreviations used in these logs.

### STRATIGRAPHIC UNITS

**Elevation/Depth:** Reference to the geodesic elevation of the soil or to a bench mark of arbitrary elevation, at the location of the sounding. Depth of the different geological boundaries as measured from ground surface. On the left, the scale is in meters while on the right, it is in feet.

**Description of the stratigraphic units:** Every geological formation is detailed. The proportion of the different elements of the soil, defined according to the size of the particles, is given following the classification hereafter. The relative compactness of cohesionless soils is defined by the "N" index of the Standard Penetration Test. The consistency of cohesive soils is defined by their shear resistance.

<u>Classification</u>	<u>Particle size (mm)</u>
Clay	< 0.002
Clay and silt (undifferentiated)	< 0.08
Sand	0.08 to 5
Gravel	5 to 80
Cobble	80 to 300
Boulder	> 300

<u>Descriptive terminology</u>	<u>Proportion (%)</u>
"Traces" (tr.)	1 to 10
"Some" (s.)	10 to 20
Adjective (ex.: sandy, silty)	20 to 35
"And" (ex.: sand and gravel)	35 to 50

<u>Compactness of cohesionless soils</u>	<u>Standard Penetration Test index ("N" value), ASTM D-1586 (blows for a 300mm penetration)</u>
Very loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very dense	> 50

<u>Consistency of cohesive soils</u>	<u>Undrained shear strength (kPa)</u>
Very soft	< 12
Soft	12 to 25
Firm	25 to 50
Stiff	50 to 100
Very stiff	100 to 200
Hard	> 200

<u>Plasticity of cohesive soils</u>	<u>Liquid limit (%)</u>
Low	< 30
Medium	30 to 50
High	> 50

<u>Sensitivity of cohesive soils</u>	<u><math>S_t = (C_u/C_{ur})</math></u>
Low	$S_t < 2$
Medium	$2 < S_t < 4$
High	$4 < S_t < 8$
Extra-sensitive	$8 < S_t < 16$
Quick (sensitive) clay	$S_t > 16$

<u>Classification of rock</u>	<u>RQD (%)</u>
Very poor quality	< 25
Poor quality	25 to 50
Fair quality	50 to 75
Good quality	75 to 90
Excellent quality	90 to 100

### SYMBOLS

TOP SOIL		SAND		COBBLE	
BACKFILL		SILT		BOULDER	
GRAVEL		CLAY		ROCK	

### WATER LEVEL

This column shows the ground water level, as measured at a given time during the geotechnical investigation. The details of the installation (type and depth) are also illustrated in this column.

### SAMPLES

**Type and number:** Each sample is labelled in accordance with the number of this column and the given notation refers to samples types.

**Sub-sample:** When a sample contains two or more different stratigraphic units, it is sometimes necessary to separate it and create sub-samples. This column allows for the identification of the latter and the association to *in situ* or laboratory measurements to these sub-samples.

**Condition:** The position, length and condition of each sample are shown in this column. The symbol shows the condition of the sample, following the legend given on the sounding log.

**Size:** This column indicates the split spoon sampler size.

**"N" index** The standard penetration index shown in this column is expressed with the letter "N". This index is obtained with the Standard Penetration Test. It corresponds to the number of blows required to drive the last 300mm of the split spoon, using a 622 Newton hammer falling freely from a height of 762mm (ASTM D-1586). For a 610mm long split spoon, the "N" index is obtained by adding the number of blows required for the driving of the 2<sup>nd</sup> and 3<sup>rd</sup> 150mm of the split spoon. Refusal (R) indicates a number of blows greater than 100. A set of numbers such as 28-30-50/60mm indicates that the number of blows required to drive the 1<sup>st</sup> and 2<sup>nd</sup> 150mm of the split spoon are respectively 28 and 30. Moreover, it indicates that 50 blows were necessary to get a penetration of 60mm, whereupon the test was suspended.

**RQD Index:** Rock Quality Designation index: This index is defined as the ratio between the total length of all rock cores of 100mm and more in length over the total length of the core run. The RQD index is an indirect measurement of the number of "natural" fractures and of the amount of the alteration in a rock mass.

### TESTS

**Results:** This column shows, for the corresponding depth, the results of tests carried out in the field or in the laboratory (shear strength, dynamic penetration, Atterberg limits with the cone, etc.). For more information, please refer to the legend in the upper part of the sounding log. However, an abbreviation indicating the type of analysis performed is shown next to the sample tested.

**Graph:** This graph shows the undrained shear strength resistance of cohesive soils, as measured *in situ* or in the laboratory (NQ 2501-200). It is also used to present the Dynamic Cone Penetration Test (NQ 2501-145) results. Moreover, this graph is used for the representation of the water content and Atterberg limits test results.

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Client :  
**National Capital Commission**

# BOREHOLE REPORT

File n°: **P039908-0100**  
Borehole n°: **BH-01-11**  
Date: **2011-06-29**

**Project:** Reconstruction of culvert  
**Location:** Lac Philippe - Parc de la Gatineau

**Coordinates (m):** North 5051781.7 (Y)  
East 342779.3 (X)  
Elevation **0.00 (Z)**  
**Bedrock:** m End depth: 4.37 m

**Sample condition**

Intact 
 Remoulded 
 Lost 
 Core

**Organoleptic soil examination:**

Visual aspect: Non-existent(N); Disseminated(D); Soaked(S)  
Odor: Non-existent(N); Light(L); Medium(M); Persistent(P)

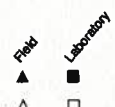
**Sample type**

**SS** Split Spoon  
**TM** Thin wall Tube  
**PS** Piston Tube  
**RC** Rock core  
**TA** Auger  
**MA** Bulk sample  
**PW** LVM Mega-Sampler  
**FG** Frozen ground

**Tests**

**L** Consistency Limits  
**W<sub>L</sub>** Liquid Limit (%)  
**W<sub>p</sub>** Plastic Limit (%)  
**I<sub>p</sub>** Plasticity Index (%)  
**I<sub>L</sub>** Liquidity Index  
**W** Natural Water Content (%)  
**GS** Grain Size Analysis  
**S** Hydrometer analysis  
**R** Refusal  
**VBS** Methylene Blue Value  
**WR** Weight of Rods  
**O.M.** Organic Matter (%)  
**K** Permeability (cm/s)  
**UW** Unit Weight (kN/m<sup>3</sup>)  
**A** Absorption (l/min. m)  
**U** Uniaxial Compressive strength (MPa)  
**RQD** Rock Quality Designation (%)  
**CA** Chemical Analysis  
**P<sub>L</sub>** Limit Pressure (kPa)  
**E<sub>m</sub>** Pressuremeter Modulus (MPa)  
**E** Modulus of subgrade reaction (MPa)  
**SP<sub>o</sub>** Segregation Potential (mm<sup>2</sup>/H °C)

**▼** Water Level  
**N** Std Penetration test (blows/300mm)  
**N<sub>c</sub>** Dyn. Penetration test (blows/300mm) ●  
**σ<sub>p</sub>** Preconsolidation Pressure (kPa)  
**SCI** Soil Corrosivity Index  
**Undrained shear strength**  
**C<sub>u</sub>** Undisturbed (kPa) ▲  
**C<sub>ur</sub>** Remoulded (kPa) △



DEPTH - ft	DEPTH - m	LITHOLOGY			SAMPLES							FIELD AND LABORATORY TESTS					
		ELEVATION - m DEPTH - m	SOIL OR BEDROCK DESCRIPTION	SYMBOLS	WATER LEVEL (m) / DATE	TYPE AND NUMBER	SUB-SAMPLE	CONDITION	SIZE	RECOVERY %	Blows/150mm	"N" or RQD	Organo. Exam		RESULTS	NATURAL WATER CONTENT AND LIMITS (%) W <sub>p</sub> W WL	UNDRAINED SHEAR STRENGTH (kPa) OR DYNAMIC PENETRATION
													Odor	Visual			
	0.00	0.00	Topsoil and organic matter														
	-0.05	-0.05	Fill: Grey sand with some silt, traces of gravel and traces of clay.														
	0.05																
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11		-3.05	Natural deposit : Grey sand with some silt and traces of gravel, a little wet.														
12		3.05															
13																	
14																	
15		-4.37	End of the borehole at 4.37 m after getting a refusal at the auger.														
16		4.37															
17																	
18																	
19																	

Remarks:

Borehole type: **Auger sampler hole**

Boring equipment:

Prepared by: **S. Séguin, tech.**

Approved by: **Y. Coullbaty, Eng.**

2011-07-19

Page: 1 of 1

Vertical Scale = 1 : 50

EQ-09-06-66A R.1 04.03.2009



Client :  
**National Capital Commission**

# BOREHOLE REPORT

File n°: **P039908-0100**  
Borehole n°: **BH-02-11**  
Date: **2011-06-29**

Project: **Reconstruction of culvert**

Coordinates (m): North **5051781.7 (Y)**  
East **342779.3 (X)**  
Elevation **0.00 (Z)**  
Bedrock: m End depth: **9.04 m**

**Sample condition**

Intact  
  Remoulded  
  Lost  
  Core

**Organoleptic soil examination:**

Visual aspect: Non-existent(N); Disseminated(D); Soaked(S)  
Odor: Non-existent(N); Light(L); Medium(M); Persistent(P)

**Sample type**

**SS** Split Spoon  
**TM** Thin wall Tube  
**PS** Piston Tube  
**RC** Rock core  
**TA** Auger  
**MA** Bulk sample  
**PW** LVM Mega-Sampler  
**FG** Frozen ground

**Tests**

**L** Consistency Limits      **O.M.** Organic Matter (%)  
**W<sub>L</sub>** Liquid Limit (%)      **K** Permeability (cm/s)  
**W<sub>p</sub>** Plastic Limit (%)      **UW** Unit Weight (kN/m<sup>3</sup>)  
**I<sub>p</sub>** Plasticity index (%)      **A** Absorption (l/min. m)  
**I<sub>L</sub>** Liquidity Index      **U** Uniaxial Compressive strength (MPa)  
**W** Natural Water Content (%)      **RQD** Rock Quality Designation (%)  
**GS** Grain Size Analysis      **CA** Chemical Analysis  
**S** Hydrometer analysis      **P<sub>L</sub>** Limit Pressure (kPa)  
**R** Refusal      **E<sub>m</sub>** Pressuremeter Modulus (MPa)  
**VBS** Methylene Blue Value      **E** Modulus of subgrade reaction (MPa)  
**WR** Weight of Rods      **SP<sub>o</sub>** Segregation Potential (mm<sup>2</sup>/H °C)

▼ Water Level  
**N** Std Penetration test (blows/300mm)  
**N<sub>c</sub>** Dyn. Penetration test (blows/300mm) ●  
**σ<sub>p</sub>** Preconsolidation Pressure (kPa)  
**SCI** Soil Corrosivity Index

**Undrained shear strength**

**C<sub>u</sub>** Undisturbed (kPa) ▲  
**C<sub>ur</sub>** Remoulded (kPa) □

Field ▲  
 Laboratory □

DEPTH - ft	DEPTH - m	ELEVATION - m DEPTH - m	LITHOLOGY		SAMPLES							FIELD AND LABORATORY TESTS				
			SOIL OR BEDROCK DESCRIPTION	SYMBOLS	TYPE AND NUMBER	SUB-SAMPLE	CONDITION	SIZE	RECOVERY %	Blows/150mm	"N" or RQD	Organo. Exam	RESULTS	NATURAL WATER CONTENT AND LIMITS (%)		
													Wp	W	WL	
		0.00														
		0.00	Dynamic penetration test.													
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																

Remarks: Done at 2.74 m northeast of the TF-01-11.

Borehole type: **Dynamic penetration test**

Boring equipment:

Prepared by: **S. Séguin, tech.**

Approved by: **Y. Coullbaly, Eng.**

2011-07-19

Page: 1 of 2





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Client :  
**National Capital Commission**

# BOREHOLE REPORT

File n°: **P039908-0100**  
 Borehole n°: **BH-03-11**  
 Date: **2011-06-29**

Project: **Reconstruction of culvert**

Coordinates (m): North **5051781.7 (Y)**  
 East **342779.3 (X)**  
 Elevation **0.00 (Z)**  
 Bedrock: m End depth: **6.93 m**

**Sample condition**

Intact  
  Remoulded  
  Lost  
  Core

**Organoleptic soil examination:**

Visual aspect: Non-existent(N); Disseminated(D); Soaked(S)  
 Odor: Non-existent(N); Light(L); Medium(M); Persistent(P)

**Sample type**

**SS** Split Spoon  
**TM** Thin wall Tube  
**PS** Piston Tube  
**RC** Rock core  
**TA** Auger  
**MA** Bulk sample  
**PW** LVM Mega-Sampler  
**FG** Frozen ground

**Tests**

**L** Consistency Limits  
**W<sub>L</sub>** Liquid Limit (%)  
**W<sub>p</sub>** Plastic Limit (%)  
**I<sub>p</sub>** Plasticity Index (%)  
**I<sub>L</sub>** Liquidity Index  
**W** Natural Water Content (%)  
**GS** Grain Size Analysis  
**S** Hydrometer analysis  
**R** Refusal  
**VBS** Methylene Blue Value  
**WR** Weight of Rods  
**O.M.** Organic Matter (%)  
**K** Permeability (cm/s)  
**UW** Unit Weight (kN/m³)  
**A** Absorption (l/min. m)  
**U** Uniaxial Compressive strength (MPa)  
**RQD** Rock Quality Designation (%)  
**CA** Chemical Analysis  
**P<sub>L</sub>** Limit Pressure (kPa)  
**E<sub>m</sub>** Pressuremeter Modulus (MPa)  
**E<sub>r</sub>** Modulus of subgrade reaction (MPa)  
**SP<sub>o</sub>** Segregation Potential (mm²/H °C)

**▼** Water Level  
**N** Std Penetration test (blows/300mm)  
**N<sub>c</sub>** Dyn. Penetration test (blows/300mm) ●  
**σ<sub>p</sub>** Preconsolidation Pressure (kPa)  
**SCI** Soil Corrosivity Index  
**Undrained shear strength**  
**C<sub>u</sub>** Undisturbed (kPa) ▲  
**C<sub>ur</sub>** Remoulded (kPa) □

DEPTH - ft	DEPTH - m	LITHOLOGY			SAMPLES							FIELD AND LABORATORY TESTS		
		ELEVATION - m DEPTH - m	SOIL OR BEDROCK DESCRIPTION	SYMBOLS	WATER LEVEL (m) / DATE	TYPE AND NUMBER	SUB-SAMPLE CONDITION	SIZE RECOVERY %	Blows/150mm	"N" or RQD	Organo. Exam		RESULTS	NATURAL WATER CONTENT AND LIMITS (%) W <sub>p</sub> W WL 20 40 60 80 100 120
											Odor	Visual		
	0.00 0.00		Dynamic penetration test.											
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														

Remarks: Fait à 1.52 m au nord-ouest de TF-01-11.

Borehole type: **Dynamic penetration test**

Boring equipment:

Prepared by: **S. Séguin, tech.**

Approved by: **Y. Coullbaly, Eng.**

2011-07-19

Page: 1 of 2

Vertical Scale = 1 : 50

EQ-08-06-66A R.1 04.03.2009



Client :

**National Capital Commission**

**BOREHOLE REPORT**

File n°: **P039908-0100**  
 Borehole n°: **BH-03-11**  
 Date: **2011-06-29**

Project: **Reconstruction of culvert**

Coordinates (m): North **5051781.7 (Y)**  
 East **342779.3 (X)**  
 Elevation **0.00 (Z)**  
 Bedrock: m End depth: **6.93 m**

Location: **Lac Philippe - Parc de la Gatineau**

Vertical Scale = 1 : 50

DEPTH - ft	DEPTH - m	ELEVATION - m DEPTH - m	LITHOLOGY		SAMPLES							FIELD AND LABORATORY TESTS		
			SOIL OR BEDROCK DESCRIPTION	SYMBOLS	TYPE AND NUMBER	SUB-SAMPLE	CONDITION	SIZE	RECOVERY %	Blows/150mm	"N" or RQD	Organo. Exam	RESULTS	NATURAL WATER CONTENT AND LIMITS (% WL)
				WATER LEVEL (m) / DATE							Odor	Visual		UNDRAINED SHEAR STRENGTH (kPa) OR DYNAMIC PENETRATION
														20 40 60 80 100 120
20														
21														
22														
23	7	-6.93 <b>6.93</b>	End of the dynamic penetration test after obtaining a refusal on ground or dense blocks.											
24														
25														
26	8													
27														
28														
29														
30	9													
31														
32														
33	10													
34														
35														
36	11													
37														
38														
39														
40	12													
41														
42														
43	13													
44														
45														
46	14													
47														
48														

Remarks: **Fait à 1.52 m au nord-ouest de TF-01-11.**

Borehole type: **Dynamic penetration test**

Boring equipment:

Prepared by: **S. Séguin, tech.**

Approved by: **Y. Coullbaly, Eng.**

2011-07-19

Page: **2** of **2**





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Client :  
**National Capital Commission**

# BOREHOLE REPORT

File n°: **P039908-0100**  
Borehole n°: **BH-05-11**  
Date: **2011-06-29**

Project: **Reconstruction of culvert**  
Location: **Lac Philippe - Parc de la Gatineau**

Coordinates (m): North **5051752.0 (Y)**  
East **342780.8 (X)**  
Elevation **0.00 (Z)**  
Bedrock: m End depth: **7.97 m**

**Sample condition**

Intact  
  Remoulded  
  Lost  
  Core

**Organoleptic soil examination:**

Visual aspect: Non-existent(N); Disseminated(D); Soaked(S)  
Odor: Non-existent(N); Light(L); Medium(M); Persistent(P)

**Sample type**

**SS** Split Spoon  
**TM** Thin wall Tube  
**PS** Piston Tube  
**RC** Rock core  
**TA** Auger  
**MA** Bulk sample  
**PW** LVM Mega-Sampler  
**FG** Frozen ground

**Tests**

**L** Consistency Limits      **O.M.** Organic Matter (%)  
**W<sub>L</sub>** Liquid Limit (%)      **K** Permeability (cm/s)  
**W<sub>p</sub>** Plastic Limit (%)      **UW** Unit Weight (kN/m<sup>3</sup>)  
**I<sub>p</sub>** Plasticity Index (%)      **A** Absorption (l/min. m)  
**I<sub>L</sub>** Liquidity Index      **U** Uniaxial Compressive strength (MPa)  
**W** Natural Water Content (%)      **RQD** Rock Quality Designation (%)  
**GS** Grain Size Analysis      **CA** Chemical Analysis  
**S** Hydrometer analysis      **P<sub>L</sub>** Limit Pressure (kPa)  
**R** Refusal      **E<sub>u</sub>** Pressuremeter Modulus (MPa)  
**VBS** Methylene Blue Value      **E<sub>s</sub>** Modulus of subgrade reaction (MPa)  
**WR** Weight of Rods      **SP<sub>o</sub>** Segregation Potential (mm<sup>2</sup>/H °C)

▽ Water Level  
 N Std Penetration test (blows/300mm)  
 N<sub>c</sub> Dyn. Penetration test (blows/300mm) ●  
 σ<sub>p</sub> Preconsolidation Pressure (kPa)  
 SCI Soil Corrosivity Index  
**Undrained shear strength**  
 C<sub>u</sub> Undisturbed (kPa) ▲  
 C<sub>ur</sub> Remoulded (kPa) □

DEPTH - ft	DEPTH - m	LITHOLOGY				SAMPLES							FIELD AND LABORATORY TESTS		
		ELEVATION - m DEPTH - m	SOIL OR BEDROCK DESCRIPTION	SYMBOLS	WATER LEVEL (m) / DATE	TYPE AND NUMBER	SUB-SAMPLE CONDITION	SIZE RECOVERY %	Blows/150mm	"N" or RQD	Organo. Exam		RESULTS	NATURAL WATER CONTENT AND LIMITS (%)	
											Odor	Visual		W <sub>p</sub>	W
	0.00		Dynamic penetration test.												
1												N <sub>c</sub> = 5			
2												N <sub>c</sub> = 8			
3												N <sub>c</sub> = 3			
4												N <sub>c</sub> = 4			
5												N <sub>c</sub> = 3			
6												N <sub>c</sub> = 3			
7												N <sub>c</sub> = 2			
8												N <sub>c</sub> = 7			
9												N <sub>c</sub> = 65			
10												N <sub>c</sub> = 45			
11												N <sub>c</sub> = 63			
12												N <sub>c</sub> = 60			
13												N <sub>c</sub> = 51			
14												N <sub>c</sub> = 34			
15												N <sub>c</sub> = 29			
16												N <sub>c</sub> = 23			
17												N <sub>c</sub> = 20			
18												N <sub>c</sub> = 22			
19												N <sub>c</sub> = 32			

Remarks:

Borehole type: **Dynamic penetration test**      Boring equipment:

Prepared by: **S. Séguin, tech.**      Approved by: **Y. Coulibaly, Eng.**      2011-07-19      Page: 1 of 2

Vertical Scale = 1 : 50

EQ-09-Ge-66A R.1 04.03.2009

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Client :  
**National Capital Commission**

# BOREHOLE REPORT

File n°: **P039908-0100**  
 Borehole n°: **BH-05-11**  
 Date: **2011-06-29**

Project: **Reconstruction of culvert**  
 Location: **Lac Philippe - Parc de la Gatineau**

Coordinates (m): North **5051752.0 (Y)**  
 East **342780.8 (X)**  
 Elevation **0.00 (Z)**  
 Bedrock: m End depth: **7.97 m**

DEPTH - ft	DEPTH - m	ELEVATION - m DEPTH - m	LITHOLOGY		SAMPLES								FIELD AND LABORATORY TESTS	
			SOIL OR BEDROCK DESCRIPTION	SYMBOLS	TYPE AND NUMBER	SUB-SAMPLE	CONDITION	SIZE	RECOVERY %	Blows/150mm	"N" or RQD	Organo. Exam	RESULTS	NATURAL WATER CONTENT AND LIMITS (% WL)
				WATER LEVEL (m) / DATE							Odor	Visual		UNDRAINED SHEAR STRENGTH (kPa) OR DYNAMIC PENETRATION
20														
21														
22														
23														
23														
24														
25														
26														
26		-7.97 7.97	End of the dynamic penetration test after obtaining a refusal on block or rock.											
27														
28														
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Remarks:

Borehole type: **Dynamic penetration test**      Boring equipment:

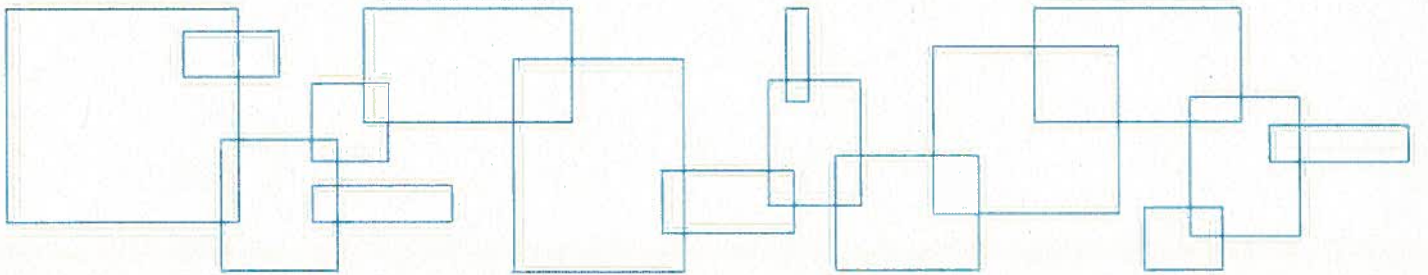
Prepared by: **S. Séguin, tech.**      Approved by: **Y. Coullbaly, Eng.**      2011-07-19      Page: 2 of 2

Vertical Scale = 1 : 50

EQ-09-Ge-66A R:1 04.03.2009



## Appendix 3 Laboratory Tests





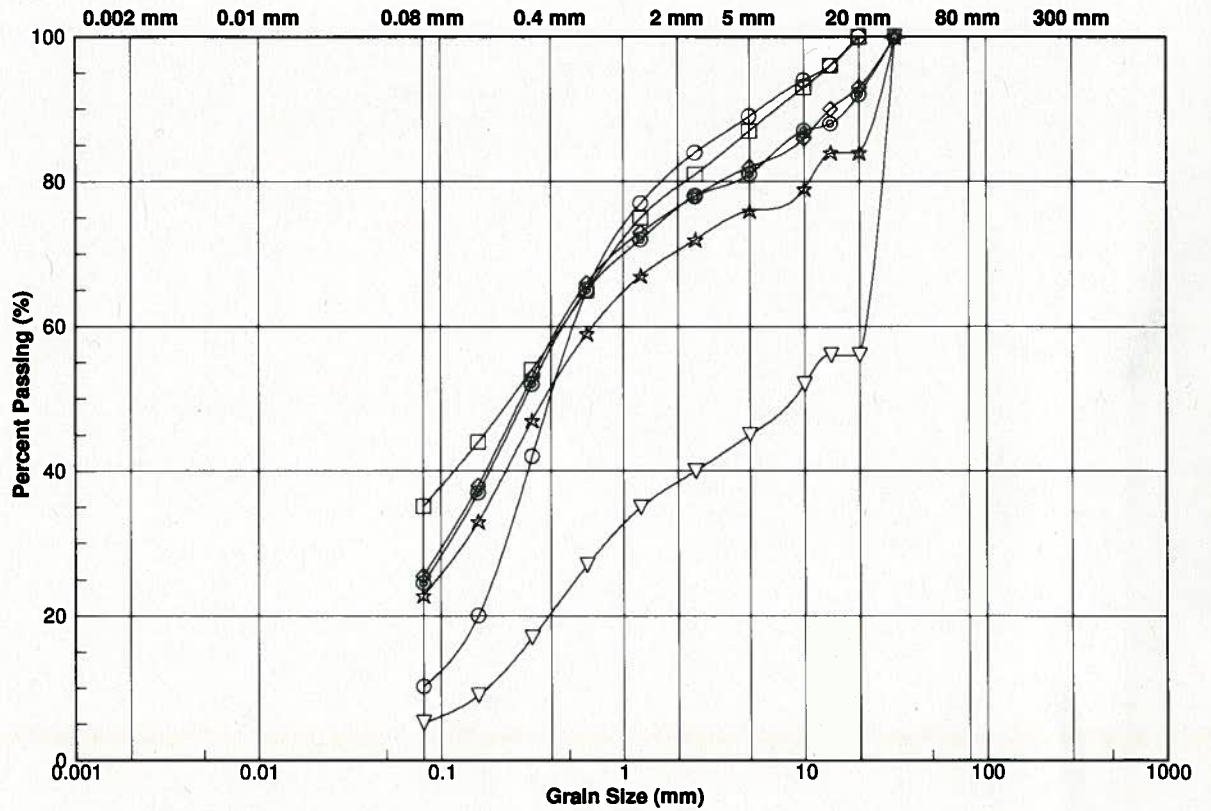
# GRAIN-SIZE ANALYSIS

Project: **Reconstruction of culvert**

Figure n°: **1**

Location: **Lac Philippe - Parc de la Gatineau**

File n°: **P039908-0100**

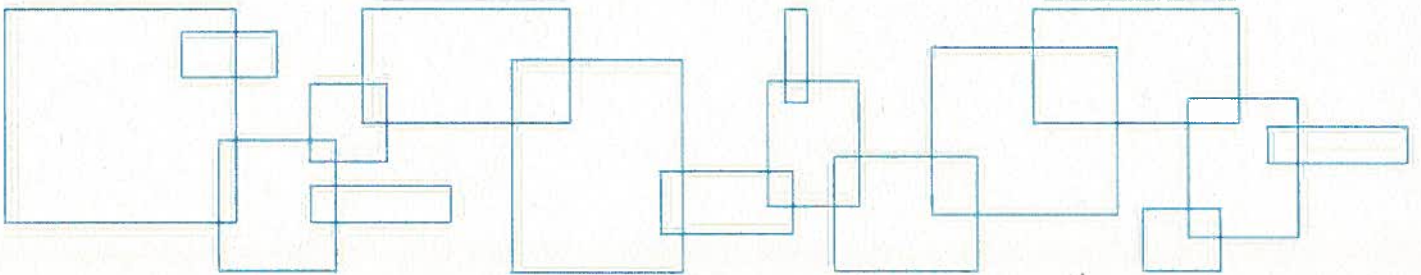


CLAY	SILT	SAND			GRAVEL		COBBLE	BOULDER
		FINE	MEDIUM	COARSE	FINE	COARSE		

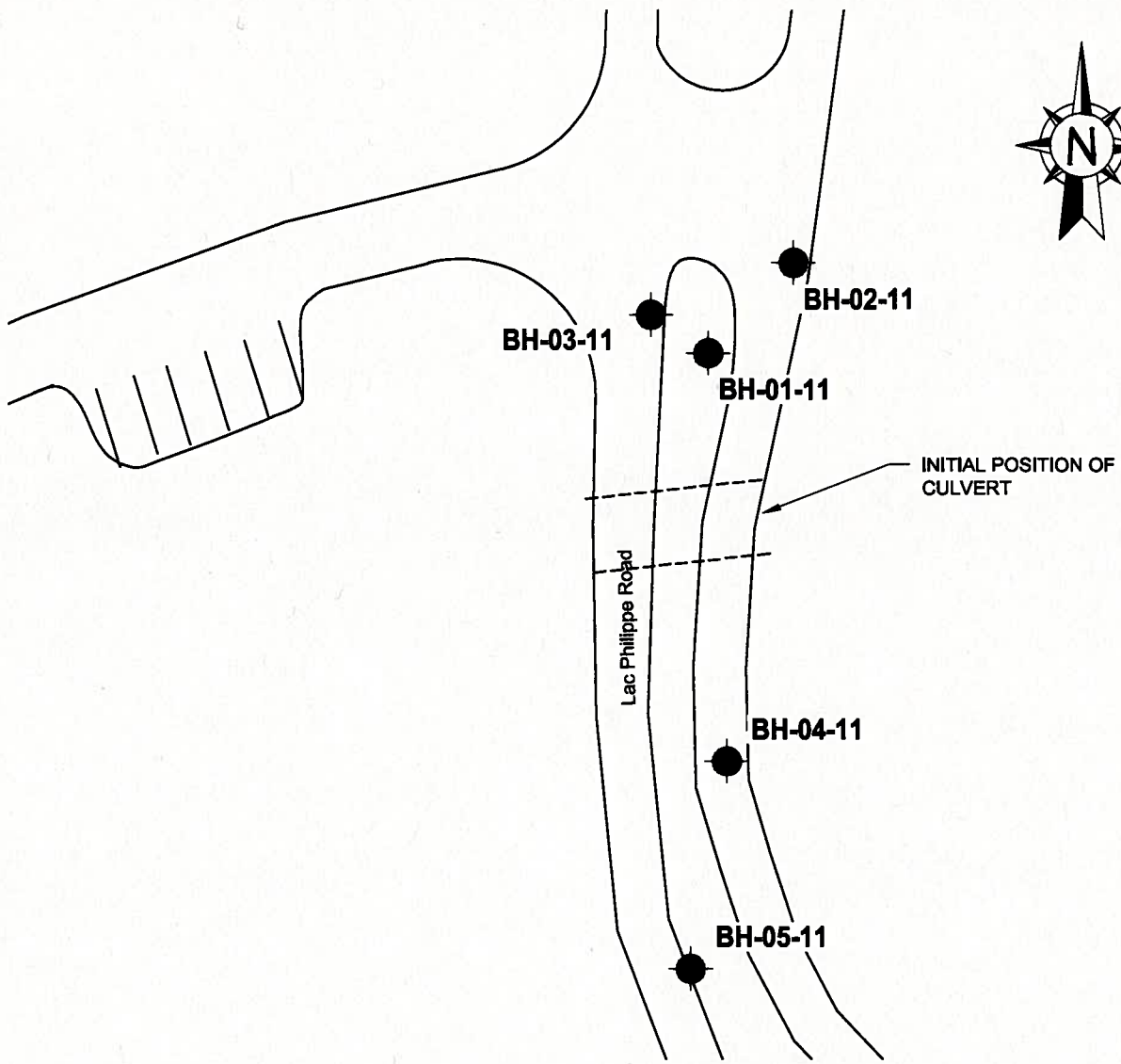
Symbol	Borehole n°	Sample n°	Depth (m)	Description	USCS class. (ASTM D-2487)
○	BH-01-11	SS-1	0.00 - 0.61	N/A	N/A
□	BH-01-11	SS-3	1.22 - 1.83	N/A	N/A
▽	BH-01-11	SS-7	3.66 - 4.27	N/A	N/A
★	BH-04-11	SS-2	0.61 - 1.22	N/A	N/A
⊙	BH-04-11	SS-5	2.44 - 3.05	N/A	N/A
◇	BH-04-11	SS-7	3.66 - 4.27	N/A	N/A




## Appendix 4 Plan of Borehole Locations



10 cm  
5  
4  
3  
2  
1  
0



**LEGEND :**

 **BH-NN-AA**      BOREHOLE-NUMBER-YEAR

COORDINATES SURVEY		
BOREHOLE	NORTH (Y)	EAST (X)
BH-01-11	5051781.7	342779.3
BH-02-11	5051788.3	342785.5
BH-03-11	5051784.5	342775.2
BH-04-11	5051736.9	342777.9
BH-05-11	5051752.0	342780.6

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Project

**National Capital Commission  
Reconstruction of culvert**

Lac Philippe - Parc de la Gatineau

Title

**Boreholes locations**

**LVM**

LVM inc.  
900, de la Carrière Blvd, Suite 100  
Gatineau (Quebec) J8Y 6T5  
Telephone : 819.778.3143  
Fax : 819.770.1373

Prepared <b>S. Séguin</b>	Discipline <b>GEOTECHNICAL</b>	Project manager <b>Y. Coullbaly</b>
Drawn <b>R. Frenette</b>	Scale <b>None</b>	Sequence no.      Rev. <b>00</b>
Checked <b>Y. Coullbaly</b>	Date <b>2011-07-19</b>	

M. dept.	Project	Work pkg.	Sub-w.p.	Disc.	Drawing no.	Rev.
<b>033</b>	<b>P039908</b>	<b>0100</b>	<b>000</b>	<b>GE</b>	<b>0001</b>	<b>00</b>

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## **1. GENERAL**

This section describes the requirements relative to environmental protection. The Contractor must comply with the requirements in this document. The abbreviation NCC refers to the National Capital Commission.

## **2. CONTRACTOR OBLIGATIONS**

The Contractor must comply with the recommendations issued by the Department of Fisheries and Oceans Canada (DFO).

If the Contractor, by way of his work methods, needs to perform tasks outside the authority of the NCC, prior documented approval is required from the relevant authorities. The Contractor will provide a copy of these documents to the Supervisor. Additionally the Contractor must include the costs involved in obtaining permits and compliance requirements in his estimate, including delays in obtaining these approvals.

## **3. ENVIRONMENTAL PROTECTION ACTION PLAN**

At the first project meeting the Contractor must submit the environmental protection action plan to the Supervisor. This plan will clearly outline the methodology through which the Contractor will implement the actions required. If certain elements of the plan require clarification, they must be presented to the Supervisor for approval before work begins.

The action plan must include the following elements:

- The identification of those responsible for environment protection;
- How the employees of the Contractor will be informed of the pro-active measures required to protect the Environment;
- The emergency measures that would be implemented by the Contractor in case of oil or toxic material spillage;
- Work Schedules;
- Sketches showing :
  - The on-site location of environmental protection devices which will be used;
  - The on-site location of temporary fencing determining the perimeter of the work area;
  - The on-site location of temporary structures to be constructed in the Renaud Creek or on its banks (ex. cofferdams);
  - The on-site location of parking areas, construction trailers, storage areas, refuelling stations and areas of mechanical maintenance;
  - Areas of vegetation to be restored.
- Detailed descriptions of:
  - Temporary structures which will be located in the Renaud Creek or its banks (ex. cofferdams);

- The diversion method to be implemented in Renaud Creek;
- The demolition method of the existing culvert (incl. secondary or access roads);
- How the weather will be measured on site, including measurements taken in heavy rainfall;
- Management plan for different types of residual materials.

Prior to beginning the project the Contractor must have in his possession, on site, all of the equipment needed to realize the procedures outlined in this quote. The Contractor must respond immediately to any event deemed harmful by the Supervisor or likely to cause environmental damage.

#### **4. SOIL AND SURFACE WATER PROTECTION**

##### **4.1 Keeping the Site Clean**

The Contractor shall provide all the necessary equipment (portable toilets, garbage cans, tubs...etc) to prevent the spreading of waste into the surrounding environment.

Materials and waste must be disposed of outside Park boundaries, at a site authorized by the Ministry of Sustainable Development, Environment and Parks.

Any debris which falls into the Creek must be recovered immediately.

##### **4.2 Machinery Traffic**

It is prohibited to have any machinery in Renaud Creek.

The Contractor must use equipment suitable for the bearing capacity of the soil.

The movement of machinery must be restricted to existing roads.

The movement of machinery on the shore of the creek must be limited to the minimum requirement for the replacement of the culvert.

Machinery shall be operated so as to avoid or minimize disturbances to the stream bank.

##### **4.3 Refuelling and Mechanical Maintenance**

Refuelling, mechanical inspection, the cleaning of (rolling) vehicles, as well as handling and storage of hydrocarbons must be carried out in places where there is no risk of contamination to the water environment and at a minimum distance of 60 meters from a lake, a stream or a wetland.

The Contractor shall provide in each supply area : absorbent materials, as well as airtight containers for recovering petroleum products and waste. The containers containing petroleum products must be clearly identified.

##### **4.4 Oil Spills**

The Contractor must comply with the following conditions to prevent oil spills or contain them if necessary:

- The Contractor shall ensure that the equipment is clean and free of leaks upon arrival at the site and continue to maintain that standard by conducting regular inspections, maintenance and repairs thereafter;
- No machinery or gas-powered equipment should remain on a bulkhead or within 60 meters of a stream, lake or wetland during off-hours construction. The inability to meet this requirement will result in the implementation of environmental protection measures (monitoring or other);
- An emergency kit for recovering petroleum products must be permanently available on site. The kit must include at least 30 meters of absorbent materials, a floating boom with a length of at least 30 meters, one box of absorbent pads, shovels, an empty 45 gallon barrel, rope and absorbent in solid form (powder or granules). The kit should be stored near the work and machinery and be easily accessible at all times for rapid response;
- Recovery bins should be placed under all stationary equipment that leak or require refuelling, including generators. The accumulated water in these tanks must be emptied regularly and disposed of in accordance with the standards of the Ministry of Sustainable Development, the Environment and Parks;
- During an accidental release of contaminants, the affected site must be cleaned immediately. The construction Supervisor, the Emergency Service department of the NCC (613-239-5353), the NCC project manager and the Province of Quebec's Environmental Emergency department (1-866-694-5454) must be notified directly;
- A list of resource personnel and organizations to contact in case of emergency must be posted in a visible place on site throughout the construction period.

#### 4.5 Materials

The Contractor must use clean and non-contaminated materials.

The quality of the soil brought to the site must be equal to or greater than the quality of the soil already on the site.

The wood in contact with the surface water, used as part of the work, must be untreated. Similarly, the stones in contact with surface water must be clean.

All temporary structures must be constructed of materials free of fine particles and contaminants.

#### 4.6 Management and Storage of Materials, Debris and Waste

The Contractor shall observe the following as part of the management and storage of materials, debris and waste on site:

- All temporary storage sites must be located in an area closed to traffic or in the parking lot at a minimum of 40 m from the work area, on the main road;
- All snow removed from the work area must be stockpiled at least 60 m from any stream, ditch or wetland;

- It is prohibited to store, even temporarily, hazardous materials or contaminants (oil, paint, solvents, etc) near a ditch and within 60m of a stream, ditch or wetland;
- A management plan for different types of residual materials should be developed by the Contractor and approved by the construction Supervisor;
- The Contractor must create separate piles for materials, soils and wastes based on whether they are hazardous, contaminated or not;
- The Contractor shall implement the 3R<sub>1</sub>s principle in the management of waste, scrap and surplus excavated material - disposal should be the last option;
- The surplus excavated materials and waste, if disposed, must be disposed of in a site that meets the requirements of the Ministry of Sustainable Development, Environment and Parks;
- The dumping of waste or garbage in a stream, a wetland or on their banks is strictly prohibited;
- No natural material can be dumped on site without permission from the NCC;
- Wood debris should be reused<sup>2</sup>, recovered, or disposed off site at a site authorized by the Ministry of Sustainable Development, Environment and Parks and the construction Supervisor;
- No waste can be left on site. The Contractor is responsible for collecting garbage in proper containers;
- Storage and disposal sites provided by the Contractor are subject to approval by the Supervisor prior to work beginning, to ensure compliance with the standards and requirements in effect.

## **5. MIGRATORY BIRD PROTECTION**

All clearing and deforestation should occur between August 16<sup>th</sup> and March 31<sup>st</sup> to avoid the breeding and nesting season of migratory birds.

Should work be required outside this period the Contractor must obtain approval and recommendations from the NCC prior to clearing and deforestation.

## **6. VEGETATION PROTECTION**

Prior to the cutting of any vegetation, the project Supervisor must first outline the perimeter of the work area. Once approved, the perimeter must be lined by temporary fencing.

The Contractor must keep the cutting of vegetation to a strict minimum, including vegetation which interferes with the project itself. The cutting must be performed prior to the starting of earthwork and excavation. No trees or other debris should fall into stream.

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<sup>1</sup> Reduce, Reuse and Recycle.

For details please consult [www.recyc-quebec.gouv.qc.ca/Client/fr/gerer/travail/dechet-boulot/3rv.html](http://www.recyc-quebec.gouv.qc.ca/Client/fr/gerer/travail/dechet-boulot/3rv.html)

<sup>2</sup> They are reusable in shredded form only.



Should debris fall into stream or wetland areas, the debris must be removed immediately by the least intrusive method available.

It is prohibited to cut vegetation to create storage sites for materials, waste, machinery or equipment.

The Contractor shall avoid uprooting vegetation. It must focus on pruning and topping.

## 7. EROSION AND SEDIMENT CONTROL ON SITE

The Contractor shall implement the following measures to control erosion and sediments on site;

- Runoff water from outside the work area must be intercepted and re-directed to a settling pond or a vegetation zone more than 30 meters away from streams or wetlands;
- It is forbidden to perform earthwork or excavation near streams or wetlands during periods of flooding or heavy rain;
- A tarp should cover the extra excavation and unconsolidated material stored in the work area at the end of the day;
- A geotextile membrane must cover the wells located within the perimeter of the work area and those identified by the Supervisor for the duration of the work period;
- The principles of good environmental protection must be implemented and maintained in good standing for the duration of the work period;
- The water pump from the dewatering area must be directed at a settling pond, or towards an area of dense vegetation located more than 30 meters from streams or wetlands. The water should be returned to streams only when they have no suspended solids;
- When the water pumped from the dewatering area is directed to a vegetation zone, a geotextile membrane covered with clean stones must be set up under the end of the hose where the water drains.

In order to avoid any distribution of suspended solids in streams, the Contractor shall implement the following provisions prior to starting work:

### 7.1 Sediment Barriers

In accordance with Standard Drawing II-9-14 (Appendix 1), the Contractor must put in place sediment barriers across ditches and along streams and other locations required by the Supervisor;

In accordance with Standard Drawing II-9-14, the geotextile membrane must be mounted on wooden posts 1450 millimetres in length, installed at a maximum spacing of 1.5 meters.

The installation of sediment barriers should include the following steps;

- Dig a trench between 100-150mm deep and 150 wide in the proposed barrier;
- Push the poles next to the trench (the side of the stream or wetland), with the exception of the last post;



- Unroll the membrane along the fence line;
- Expand the base of the membrane in the trench to a width of 150mm;
- Hang the membrane, making sure the bottom of the membrane is placed well into the trench;
- Attach the membrane between posts;
- Attach the last post to the membrane;
- Cover the bottom of the membrane with compacted soil.

Sediment barriers must be removed and recovered only when reworked surfaces are permanently stabilized, including re-vegetation.

## 7.2 Turbidity Curtain

The Contractor shall install turbidity curtains<sup>3</sup> in the Renaud Creek downstream from construction below the high water line (HWL) to capture suspended fine materials;

The components of the turbidity curtain and their installation in the Renaud Creek must conform to Figures 1 and 2 (Appendix 3). The curtains should have openings of less than 0.060mm filtration. Turbidity curtains should be installed more than 5 meters away from the work zone under the natural high water line of the Renaud Creek and at a height adjusted to that of the current water line present in the Creek.

Before the silt curtains can be removed, captured sediment must be recovered and disposed of in an approved location.

## 7.3 Sediment Basin

The Contractor will develop, in accordance with Stand Drawing II-9-18 (Appendix 4), sediment basins where necessary in addition to those recommended by the Supervisor. These basins should be placed at least 10m away of streams.

The capacity of the basins must be provided in accordance with the quantity of water to put in. However, the minimum capacity of a sediment basin should be 20 cubic meters.

When the sediment basin is 50% full, it must be cleaned. Additionally, a final cleaning must be done at the temporary closure of the site. One preventative cleaning will also be undertaken during a weather alert predicting heavy rains.

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<sup>3</sup> Turbidity curtain = geotextile membrane kept vertically using a sleeve comprised of a flotation device on its superior edge. The bottom portion of the curtain must rest on the bottom of the creek using a heavy steel chain.

## 8. RENAUD CREEK PROTECTION (INCLUDING FISH AND FISH HABITAT)

### 8.1 Free flow of water

The construction of new culverts should be done in dry conditions. During the dewatering of a section of Renaud Creek, the Contractor shall ensure free flow of water by pumping. If this method is not sufficient to maintain the free flow of the creek, a temporary diversion canal must be installed.

Fish captured in the dewatered area must be recovered using a net and released immediately in a natural portion of the creek.

#### Water pumping

The water of Renaud Creek must be pumped from upstream to downstream of the work area. The pump shall be installed outside Renaud Creek. A filter must be installed on the intake port of the hose, in order to limit sedimentation. A geotextile membrane must be installed under the discharge port of the hose located downstream of the dewatering area (see Appendix 4).

In order to minimize entrapment of fish in the work area, the Contractor shall conduct a fish drive in the stream from the dam (downstream of the Little Renaud Lake) to 20 m upstream of the culvert replacement site, immediately before blocking the creek. The drive must be done to favor downstream movement of fish.

A biologist or someone with experience in fish monitoring must be on-site the work area during the fish drive and the blocking of Renaud Creek. If required, fish trapped upstream of the dewatering area must be recovered using a net and released immediately to a flooded area of the creek, downstream from the work area. The cost of this monitoring is excluded from the Contractor costs.

#### Diversion canal

The temporary diversion canal must respect the completion stages in Standard Drawing II-9-19 (Appendix 5). The floodway must have a flow capacity equal to the replaced culvert. The water leaving the diversion canal must not erode the banks of Renaud Creek.

### 8.2 Fish Habitat Protection

To preserve the Renaud Creek bed, the Contractor must provide and install a geotextile membrane between the temporary structures and the creek bed.

Should stone cofferdams be used, they must be watertight and their disturbance to fish habitats must be as minimal as possible.

## 9. NOISE PROTECTION

The noise level emitted by all equipment and machinery must be in compliance with the regulations of the municipality of La Pêche.

The days of construction are Monday through Friday (inclusive) from 7:00am until 9:00pm. The construction site is closed Saturdays, Sundays and public holidays (unless special permission is granted by the NCC).

The Contractor must maintain good working equipment and heavy machinery (silencers, regular maintenance, etc), to keep the noise level as low as possible.

Noise filtering equipment, if available, must be used (for example: close the side panels of compressors etc).

The Contractor must shut off any powered equipment when not in use on site.

## **10. AIR QUALITY**

The Contractor must use equipment with functioning exhaust systems.

All machinery must be stopped when not in use.

Soil excavation should be carried out so that it produces the least dust possible.

Construction related-activities have the potential to release airborne particles, should be avoided during periods of prolonged drought and high winds.

The Contractor will take steps to limit the release of dust particles into the air. However, only water is permitted as a stabilizing product within a protected area of 30m measured horizontally, from a stream, wetland and a source of drinking water.

## **11. ARCHEOLOGY**

The Contractor must cease work immediately upon the discovery of archaeological remains. The site must then be examined by a qualified archaeologist. The Contractor must notify the region office of the Outaouais Ministry of Culture, Communications and the Status of Women (819-772-3992) and also the archaeologist (Heritage Program) at the NCC (613-239-5751).

The Contractor must cease work immediately upon the discovery of human remains. The Contractor must notify the Senior Capital Planner (613-239-5462).

## **12. SAFETY**

Prior to starting work, the Contractor must mark the location of all underground utility lines.

During the construction period, traffic signs should be put in place where required and the Contractor must clearly identify areas of work.

Heavy machinery must have reverse (back-up) alarms.

The Contractor must inform his employees of procedures in case of an accident.

Any complaints related to culvert replacements should be directed to the NCC, who will coordinate public relations.

## 13. RESTORATION

### 14.1 Fish Habitats

Following construction, the Contractor must restore the profile and substrate of Renaud Creek to original conditions. The Contractor must use the bathymetric studies and grain size analyses<sup>4</sup> acquired at the start of the project. The areas occupied by new culverts and bed stabilisation are excluded from the restoration requirement.

### 14.2 Vegetation

The restoration of vegetation must be performed as early as possible, at a proper time for the re-growth of the vegetation.

The Contractor shall replace the herbaceous plants and shrubs cut or damaged by construction. To do this he must:

- Cover the disturbed soil with clean topsoil (from off-site) ;
- Cover topsoil with roll-on turf. This turf must be installed without overlap or gaps, and be pinned to the ground where slopes exceed 30%;
- Shrubs replaced must be endemic to the area and non-invasive. The Contractor shall produce a planting plan. This plan must be approved by the NCC prior to re-planting. The plan must show shrubs species used, location of the plants and the distance between them.

The Contractor must replace trees with a diameter of 10 cm or more at breast height that were cut or damaged during construction. These trees must be replaced with tree species native to the Park area at a ratio of 2:1 or 2 trees planted per 1 tree lost or damaged. The Contractor shall produce a planting plan to address tree replacement. This plan must be approved by the NCC prior to planting. The plan must show tree species used and diameter, location of the trees and the distance between each specimen.

In the case where it is too late in the growing season to restore the vegetation, the Contractor will stabilize the disturbed soil with an erosion control mat to limit the amount of fine material intake to streams. The mat should be dismantled only at the restoration stage.

#### **Warranty Period**

The Contractor will offer a two year warranty on roll-on turf, shrubs and trees.

All vegetation in poor condition the following year must be replaced at the expense of the Contractor. It is the same after the second year.

### 14.3 Ditches

Ditches which damaged by machinery during construction must be reinstated to their original state (slope, width, etc.).

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<sup>4</sup> See Appendix 6 for Renaud Creek grain size analyses. The bathymetric surveys must be requested from the NCC.

#### **14. PENALTIES**

The failure to comply with any provision in this quote may result in a fine up to \$2000, payable per violation.

Any violation not corrected by the subsequent day is liable for an additional penalty of the same amount, and this will continue until the correction is made.

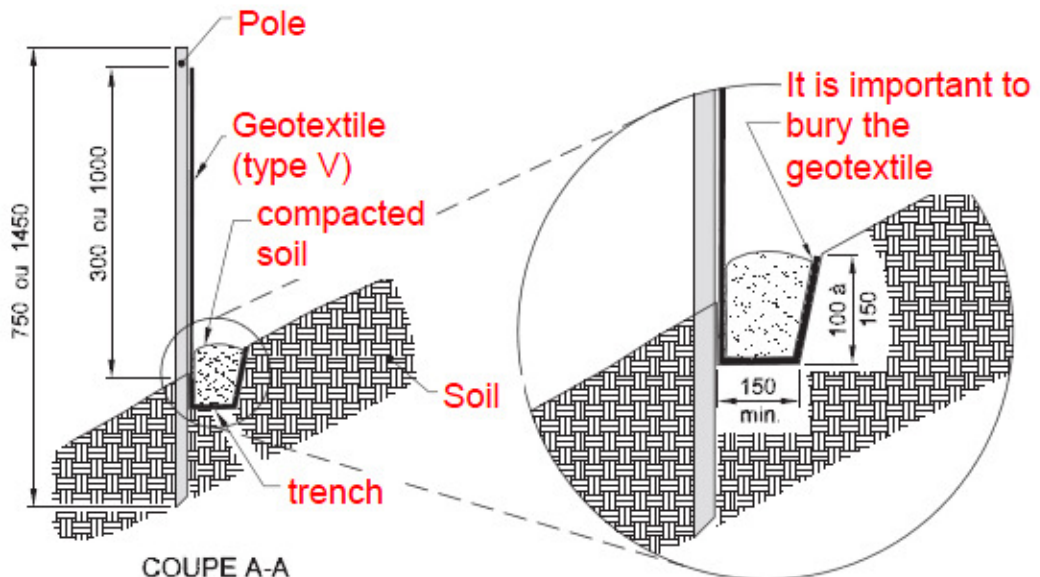
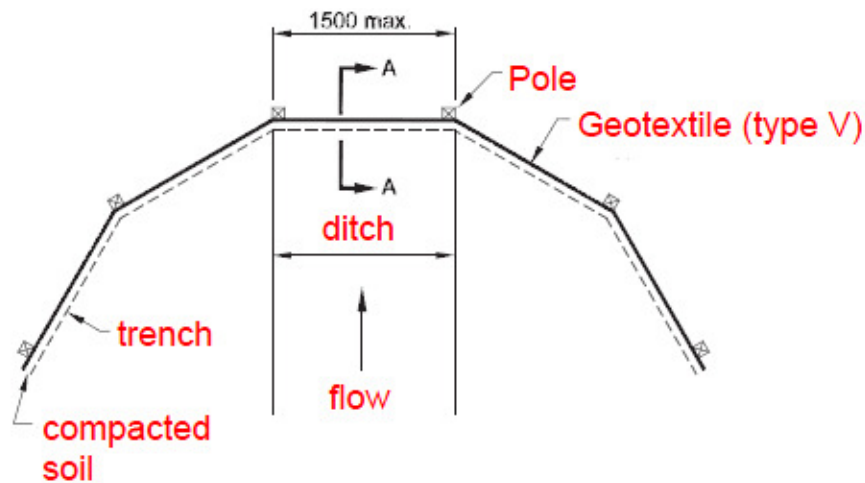
Additionally, any expense related to environmental damage is incurred at the expense of the Contractor. In the case of non-performance by the Contractor, the NCC makes the correction and is paid by the Contractor the cost of such work and delays through the withholding of payments.

# APPENDIX

APPENDIX 1 STANDARD DRAWING II-9-14 SHOWING A SILT FENCE WITH A GEOTEXTILE

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MESURES D'ATTÉNUATION  
 ENVIRONNEMENTALES  
 TEMPORAIRES



Note :

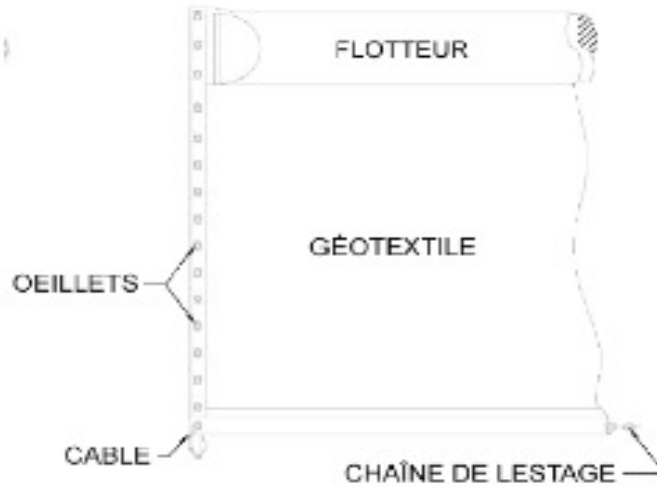
COUPE A-A

- All measurements are in mm.

Figure 9.4-2

Silt fence with a geotextile

APPENDIX 2      **DIAGRAM SHOWING THE COMPONENTS OF A TURBIDITY CURTAIN AND ITS INSTALLATION WITHIN A STREAM**



Source : Web site of Solmax Texel

**FIGURE 1**  
Turbidity curtain design.



Source : Web site of Solmax Texel

**FIGURE 2**  
An exemple of a turbidity curtain installed in a river.



APPENDIX 3 STANDARD DRAWING II-9-18 SHOWING A SETTLING POND

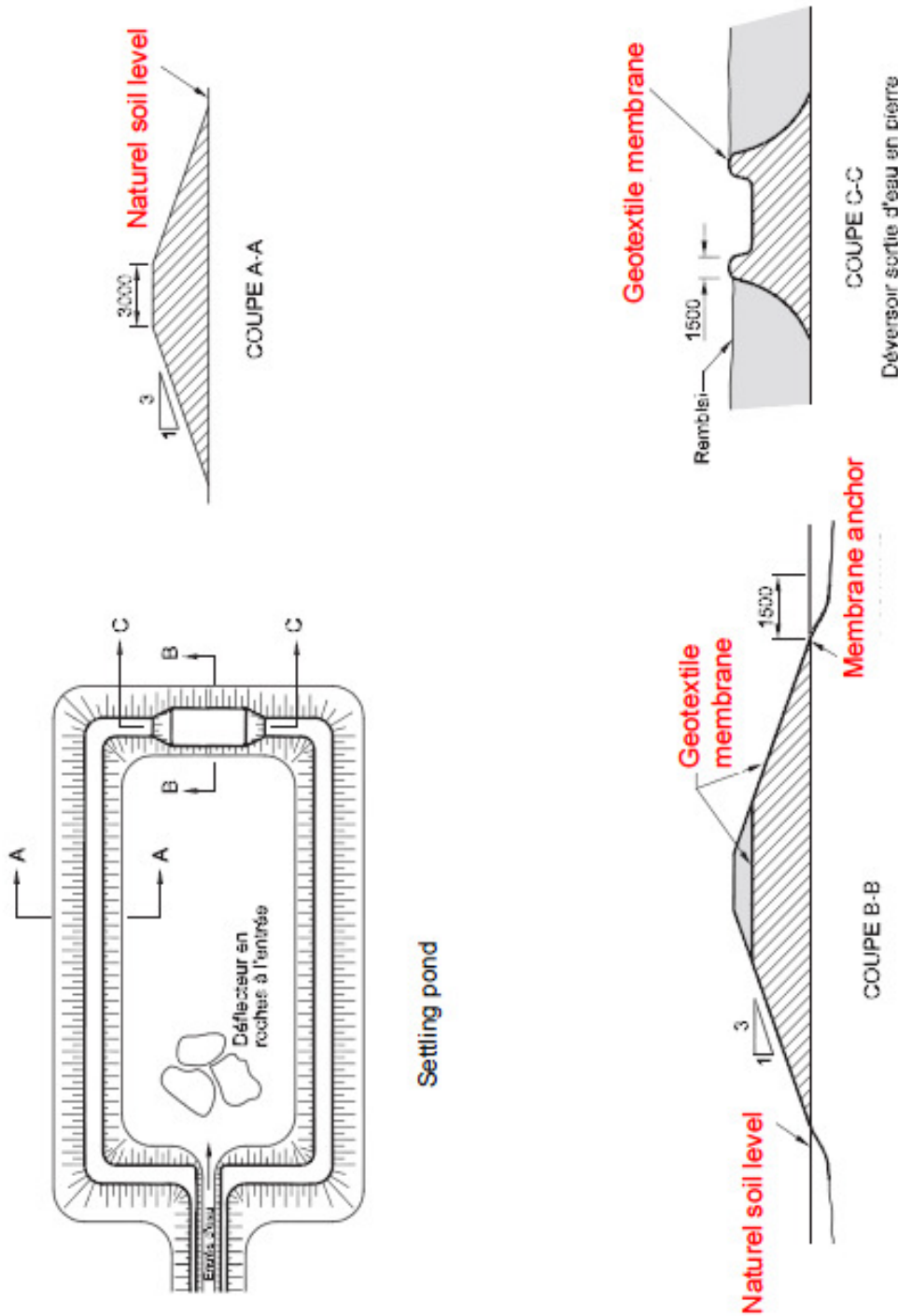


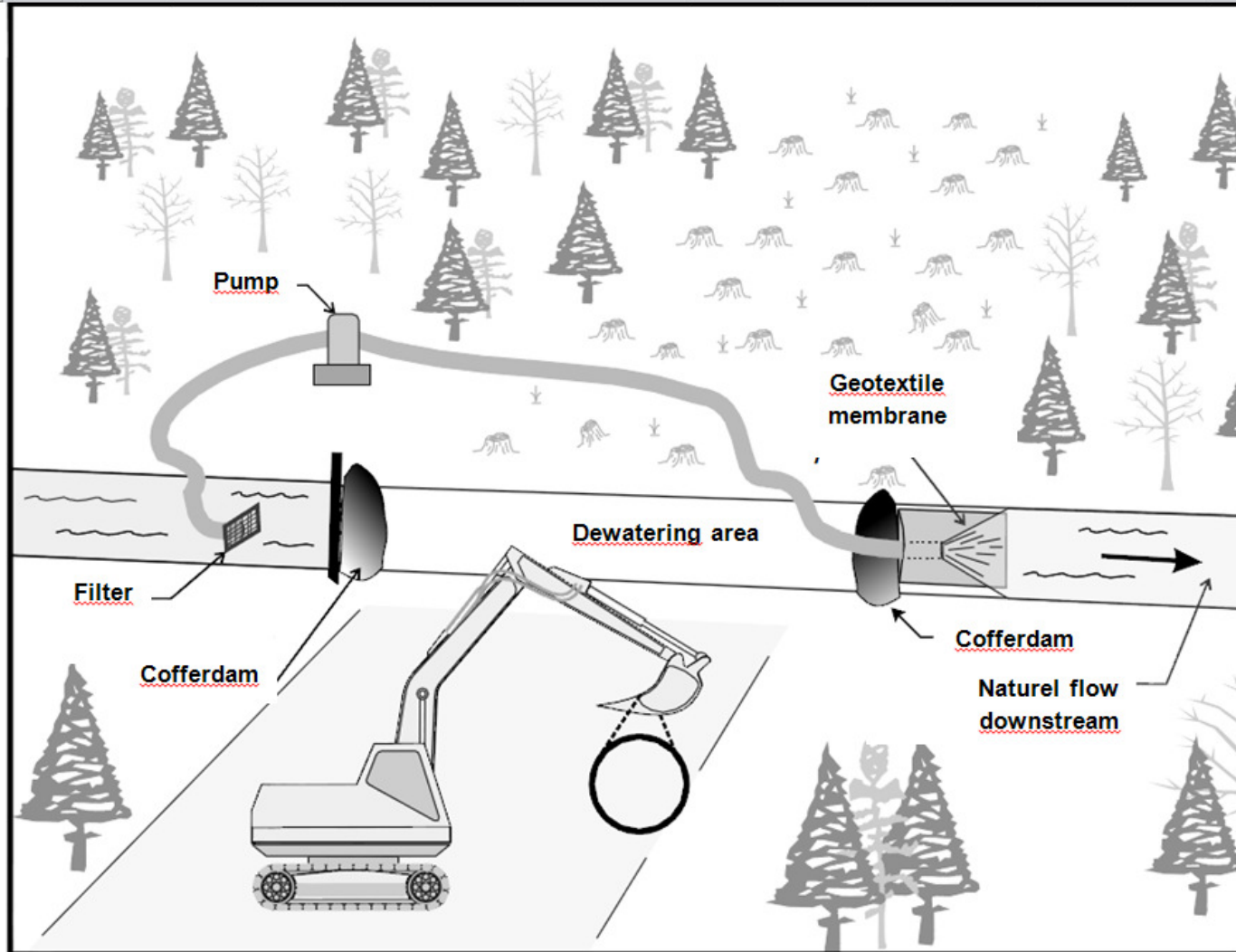
Figure 9.4-4  
 Settling pond

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MESURES D'ATTÉNUATION  
 ENVIRONNEMENTALES  
 TEMPORAIRES

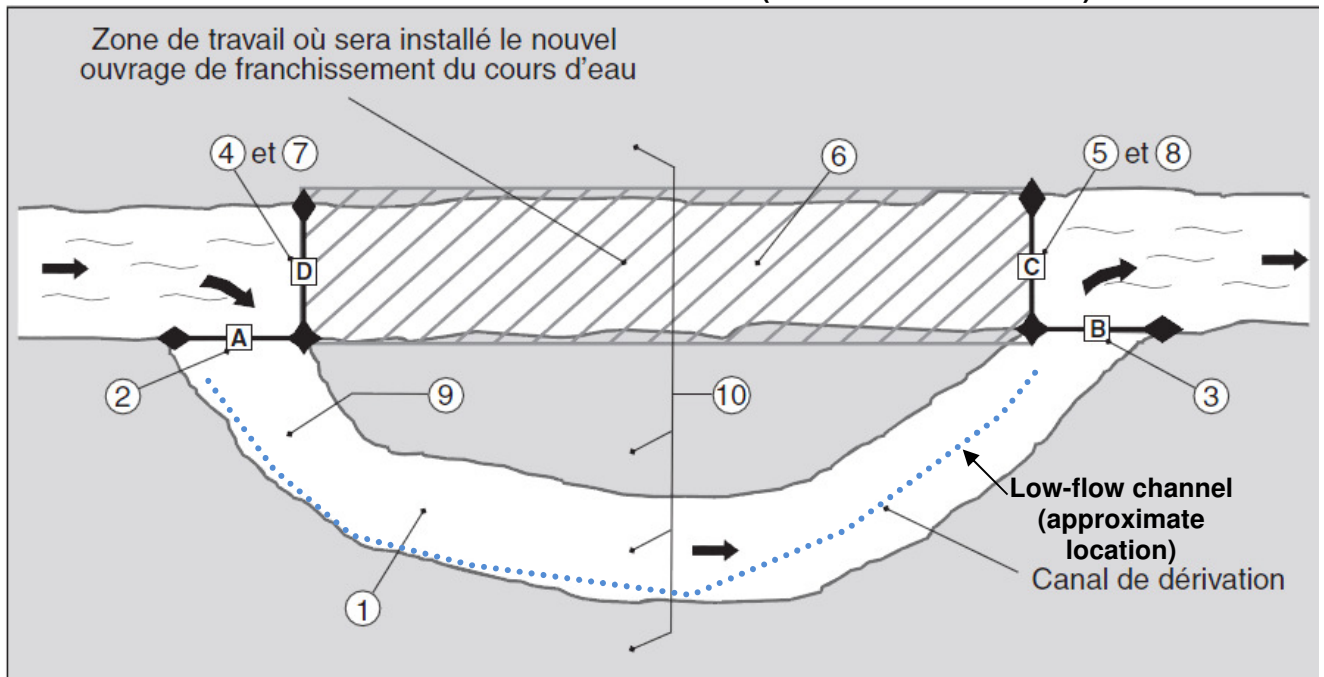


APPENDIX 4 SKETCH SHOWING DIVERSION OF THE STREAM BY PUMPING



Adapted of *L'aménagement des ponts et des ponceaux dans le milieu forestier*, Ministère des Ressources naturelles (1997)

APPENDIX 5 STANDARD DRAWING II-9-19 DIAGRAM SHOWING THE STEPS REQUIRED TO DIVERT A STREAM (DIVERSION CHANNEL)



STEP	EXPLANATION
1	Dig the temporary diversion channel, leaving dams at points "A" and "B" closed, and cover the channel with a geotextile membrane (waterproof if the slope is low) or stones, or both. Develop a low-flow channel (in the middle of the temporary diversion channel);
2	Remove dam "A" gradually at the upstream portion of the diversion stream. Allow time for the disposal of suspended sediment;
3	Remove dam "B" downstream in the diversion canal;
4	Install dam "D" upstream from stream extension;
5	Once the water bed is empty or the construction zone is dry, install dam "C";
6	Install the new dam crossing over the stream and stabilize approaches;
7	Open dam ("D") gradually installed upstream;
8	Remove the dam ("C") downstream of the new opening and gradually close the dam ("A") upstream;
9	Recover the geotextile membrane (or stones) and fill the channel slowly starting upstream;
10	Complete the approach stabilization of the new crossing and restore vegetative cover where necessary.

APPENDIX 6 RENAUD CREEK GRAIN SIZE ANALYSES (WORK SITES)

**SITE # 2, ALTERNATIVE ROAD**

SUBSTRATE (%)		Clay <0,002 mm	Loam 0,002 à 0,125 mm	Sand 0,125 à 5 mm	Gravel 5 à 40 mm	Pebble 40 à 80 mm	Cobble 80 - 250 mm	Block 250 - 500 mm	Larger block > 500 mm	Rock	Org.
	Ups.		20		20	5	5	5	15	30	
Down.				40	5	10	15	15	15		

PART 1 – GENERAL

- 1.1 Access
- .1 Provide and maintain adequate access to project site.
  - .2 If authorised to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.
  - .3 Clean all areas where used by Contractor's equipment.
- 1.2 Sanitary Facilities
- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
  - .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.
- 1.3 Power
- .1 Arrange, pay for and maintain temporary electrical power supply in accordance with governing regulations and ordinances.
- 1.4 Water Supply
- .1 Arrange, pay for and maintain temporary water supply in accordance with governing regulations and ordinances.
- 1.5 Shoring
- .1 Get approval of shoring and scaffolding to erect structure including all temporary structures erected during construction.
- 1.6 Removal of  
Temporary  
Facilities
- .1 Remove temporary facilities from site when directed by Engineer.
  - .2 When project is closed down for a period of time keep temporary facilities operational until close down or removal is approved by Engineer.

END OF SECTION

1 Related  
Sections

- .1 Section 01 33 00 - Submittal procedures

2 References

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Province of Québec  
.1 Loi sur la santé et la sécurité du travail, L.R.Q., c. S-2.1 and the corresponding regulations.
- .3 CSA s269.1-1975 Falsework for Construction Purposes.
- .4 CAN/CSA-s269.2-M87 Access Scaffolding for construction Operations.
- .5 FCC No. 301-1982 Standard for Construction Operations.

3 Submittals

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 2 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:  
.1 Results of site specific safety hazard assessment.  
.2 Results of safety and health risk or hazard analysis for site tasks and operation.
- .3 Submit two (2) copies of Contractor's authorized representative's work site health and safety inspection reports to Engineer.
- .4 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .5 Submit copies of incident and accident

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reports.

- .6 Submit Material Safety Data Sheets (MSDS) to Engineer.
- .7 Engineer will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Engineer within 2 days after receipt of comments from Engineer.
- .8 Engineer's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: Where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Engineer.

4 Filing of  
Notice

- .1 File Notice of Project with Provincial authorities prior to commencement of Work.

5 Safety  
Assessment

- .1 Perform site specific safety hazard assessment related to project.

6 Meetings

- .1 Schedule and administer Health and Safety meeting with Engineer prior to commencement of Work.

7 General  
Requirements

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Engineer may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

8 Responsibility

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

9 Compliance  
Requirements

- .1 Comply with Ontario Health and Safety Act and Regulations for Construction Projects.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.



- 
- |  |    |   |
|--|----|---|
| <u>10 Unforeseen Hazards</u>           | .1 | Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, and follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction. Advise Engineer verbally and in writing. |
| <u>11 Posting of Documents</u>         | .1 | Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Engineer.  |
| <u>12 Correction of Non-Compliance</u> | .1 | Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Engineer.   |
|  | .2 | Provide Engineer with written report of action taken to correct non-compliance of health and safety issues identified.  |
|  | .3 | Engineer may stop Work if non-compliance of health and safety regulations is not corrected.   |
| <u>13 Work Stoppage</u>                | .1 | Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.   |
| <u>14 Construction Safety Measures</u> | .1 | Observe construction safety measures of National Building Code 1995 Part 8, Provincial Government, Workers'/Workmen's Compensation Board and municipal authority provided that in any case of conflict or discrepancy more stringent requirements shall apply.  |

.2 Comply with requirements of FCC No. 301.

15 WHMIS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada and Health and Welfare Canada.

.2 Deliver copies of WHMIS data sheets to Engineer on delivery of materials.

16 Overloading

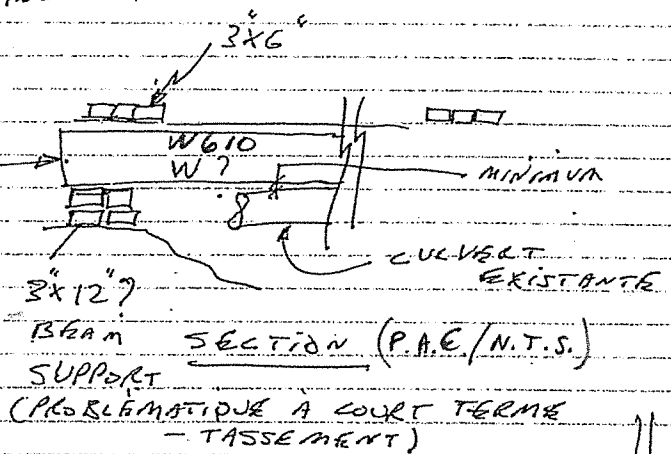
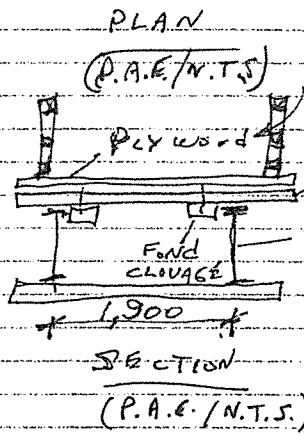
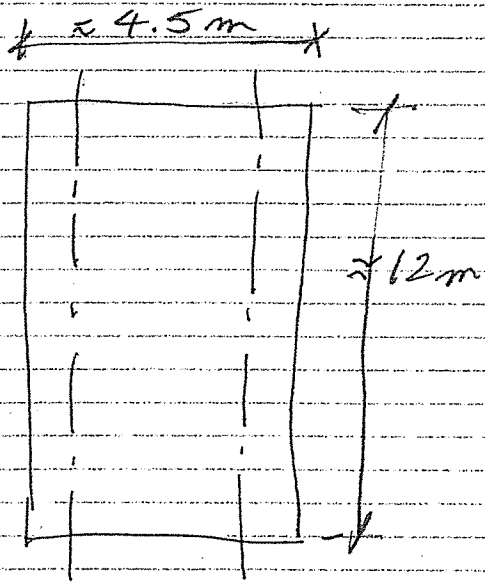
.1 Ensure no part of Work is subjected to loading that will endanger its safety or will cause permanent deformation.

17 Falsework

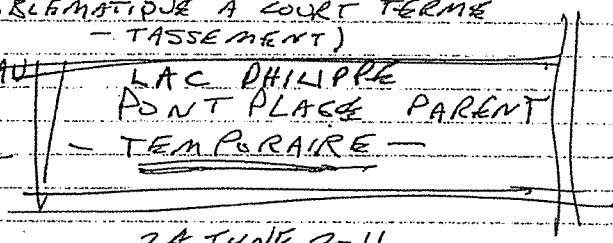
.1 Design and construct falsework in accordance with CSA S269.1.

18 Scaffolding

.1 Design and construct scaffolding in accordance with CSA S269.2



PARC DE LA GATINEAU  
— CROQUIS  
APPROXIMATIF —



24 JUNE 2011

B.K.

**National Capital Commission**

**Renaud Creek Culvert Replacement  
Access to Lac Philippe Campground**

**PAGE 1**

**C Other Tender Documents**

**Project Specifications and General instructions – Road Infrastructure –  
Construction and Repair (Partial English version of Cahier des charges et devis  
généraux – Infrastructures routières – Construction et réparation)**

**Selected Sections**

## 13.1 Surface Preparation

### 13.1.1 Materials

Aggregate materials must conform to NQ 2560–114 “Civil Engineering Work – Aggregate”, “Part II: Foundation, sub-foundation, surface course and shoulder” following application of the materials.

The Contractor shall submit a certificate of compliance to the Supervisor for each reserve of aggregate material used to correct the road alignment profile. The certificate of compliance must include the information described in the quality assurance section for materials used in road foundations.

### 13.1.2 Equipment

Equipment used for planing remediation must provide a level, even surface, free of irregularities, smooth in texture and less than 8mm deep in relation to striations. It must be equipped with an automatic profile control device (margin of error:  $\pm 3$  mm).

### 13.1.3 Execution

Shaping of the surface to be covered must allow for correction of longitudinal and transversal profiles, while providing the required alignment camber and superelevation. Shaping must be executed across the full width of the alignment or as required by the plans and specifications to ensure the unobstructed runoff of water toward ditches.

A minimum of 2500 m<sup>2</sup> of surface to be covered must be prepared before commencing plant mix surfacing work.

#### 13.1.3.1 Aggregate surface

##### 13.1.3.1.1 Foundation correction and shoulder construction

When required, the Contractor shall scarify the existing alignment to a minimal depth of 100 mm to loosen and even out the material and to allow shaping.

Stones 80mm or more dislodged during scarification as well as contaminants must be removed and discarded.

Aggregate for foundations and shoulder construction is spread and packed according to requirements for the application of alignment foundation materials, although the corrective course may be spread at variable rates depending on the work and profile correction to be performed.

##### 13.1.3.1.2 Aggregate surface preparation

When the contract includes foundation and plant mix surfacing work, the execution of foundations and the preparation of aggregate surfaces prior to the placement of plant mix are two separate operations.

In areas where vehicle traffic must be maintained, the Contractor will perform plant mix surfacing work within 5 days after receiving the granulometric results for foundation materials. This time frame does not include days when weather conditions restrict the performance of work.

#### 13.1.3.2 Plant mix or concrete surfaces

##### 13.1.3.2.1 Hot-mix plant correction

The surface to be covered must be free of mud, debris or other deleterious material.

For all surfaces to be covered with plant mix or concrete, the Contractor shall apply a tack coat.

Rough and uneven surfaces will be corrected using a hot-mix plant mixture.

If compaction is not performed using a wheeled roller, a 12-hour waiting period is required following correction activities prior to placement of the subsequent course.

##### 13.1.3.2.2 Correction by planing

Surfaces swept are corrected to restore their longitudinal and transversal profiles by planing the existing surface and eliminating all visible surface imperfections.

At locations where adherence between the surface layer and adjacent layer is poor, the planing depth is increased until the surface course has been completely removed.

At straight sections, planing lines intersect at the traffic lane separation point; a 2% slope is restored on each lane, within a precision margin of  $\pm 0.2$  %. In curves, superelevations are restored through a uniform, rectilinear planing plan.

Planing is performed in continuously from shoulder to shoulder. Planing of a single lane begins at the centre of the road heading toward the shoulder.

At the end of each work period, the temporary cross joint must be perpendicular to the road.

The Contractor shall ensure that the edges, valve covers, grills and deck joints of a structure, etc., are not damaged during planing operations. The Contractor is responsible for any damage caused during these operations.

The surface is then cleaned and mechanically

## 13 | Plant Mix Surfacing

The Contractor is responsible for the disposal of recovered bituminous aggregate, unless such material is subject to a specific clause concerning its recycling. Recovered materials considered unfit for recycling must be discarded.

In the case of a structure, the Contractor shall also comply with the planing correction requirements of the "Bridge Infrastructure" section.

### 13.1.4 Receiving inspection

The MTQ performs a receiving inspection by verifying the final profile prior to paving. This profile shall vary no more than 10 mm from the required profile. Irregularities or depressions shall not exceed 10 mm every 3 m.

The bridge deck joints and the sides of railroad tracks must be kept free of materials at all times.

After the surface to be covered is accepted by the supervisor, the Contractor is authorized to proceed with paving work. The Contractor remains responsible for any damage caused to the surface to be paved.

### 13.1.5 Method of Payment

Clean-up and disposal of contaminated materials are covered in the price of hot-mix plant mixture work.

#### 13.1.5.4 Planing remediation

Planing is paid by the square metre. In particular, the price includes planing, removal of old pavement, clean-up of planed surface and the removal and disposal of waste materials, and includes all incidental expenses.

The disposal of recovered bituminous aggregate is also included in the price unless covered by a special clause on the recycling of such material.

For structures, planing is paid according to the method set out in the "Bridge Infrastructure" section.

#### 13.1.5.5 Sweeping

When sweeping is including in a specific item on the worksheet, it is paid by the square meter. Otherwise, it is included in the price of planing remediation, tack coat and hot-mix plant work.

#### 13.1.5.1 Aggregate for foundation remediation and shoulder construction

Aggregate used to correct foundations and construct shoulders are paid according to the terms and conditions provided for road foundation materials.

#### 13.1.5.2 Aggregate surface preparation

When specified on the worksheet, aggregate surface preparation is paid by the square meter. The price includes scarification, the removal and disposal of contaminated materials, shaping and compaction, and includes all incidental expenses.

The surface area paid corresponds to the plant mix surfacing area. However, when scarification to a minimum depth of 1.00 mm is required across the entire width of the road, the surface area subject to payment corresponds to the plant mix surfacing area plus the top area of shoulders.

When this work is not included in a specific worksheet item, the Contractor shall incorporate the cost into the hot-mix plant price.

#### 13.1.5.3 Hot-mix plant correction

Plant mix is paid according to the terms and conditions provided for hot-mixed and hot-laid plant.

The binder is paid according to the terms and conditions specific to tack coat or impregnation binder.

### **13.2 Impregnation binder or tack coat**

Where required by the plans and specifications, the Contractor shall spread an impregnation binder on an aggregate surface.

The Contractor shall apply a tack coat to all plant mix or concrete surfaces to be paved, and between each course of hot-mix plant mixture. The surface to be covered must be clean and free of excess dust to foster adhesion of the tack coat.

A tack coat is also applied where contact occurs with vertical surfaces on curbs, sidewalks and other structures, as well as walls and construction joints.

For structures, the Contractor shall also comply with the tack coat requirements set out in the "Bridge Infrastructure" section.

#### **1321 Materials**

Impregnation binders are slow-setting, low-viscosity bitumen emulsions conforming to MTQ Standard 4105. With the permission of the MTQ, the Contractor may use fluidified bitumen conforming to MTQ Standard 4104 after October 1 and before May 1.

Tack coats are bitumen emulsions conforming to MTQ Standard 4105. With the permission of the MTQ, the Contractor may use fluidified bitumen conforming to MTQ Standard 4104 October 1 and before May 1.

At no time may fluidified bitumen be used on plant mix installed within the previous 12 months.

13 | Plant mix surfacing

13.2.2 Quality assurance

13221 Quality system to ISO standards

Fluidified bitumen and bitumen emulsions must be produced by a manufacturer with factory that has a registration certificate confirming that the quality system meets the requirements of ISO 9001:2008 "Quality management systems."

If fluidified bitumen and bitumen emulsions are stored and shipped at a location other than the manufacturing location, the company responsible for storage and shipping must have a registration certificate certifying that its quality system meets the requirements of ISO 9001:2008, "Quality management systems."

13.2.2.2 Compliance certification

For each delivery of fluidified bitumen or bitumen emulsion, the Contractor shall provide the supervisor with compliance certification as specified in MTQ Standard 4104 or 4105. At the time of shipping, the following information is included on the compliance certification:

- Contractor's name;
- Shipper's name and, for materials delivered in bulk, the tank truck number;
- Loading date;
- Amount delivered.

13.2.2.3 Receiving inspection

The MTQ performs a receiving inspection of the tack coat or impregnation binder. Sampling consists of gathering a representative 1-litre sample of the binder/tack coat at the sampling valve of the spreader in accordance with ASTM D140 "Standard Practice for Sampling Bituminous Materials." The sample is collected in a metal container with an enamelled interior or in a plastic container.

1323 Equipment

The tack coat spreader must be equipped with a flowmeter to control of application rates.

1324 Execution

The tack coat or impregnation binder is applied evenly using a pressure manifold:

- at a residual bitumen rate of 1.20 l/m<sup>2</sup> for impregnation binder on a scarified aggregate surface;
- at a residual bitumen rate of 0.20 l/m<sup>2</sup> for tack coat on new plant mix;
- at a residual bitumen rate of 0.25 l/m<sup>2</sup> for tack coat on used plant mix or smooth concrete surfaces;
- at a residual bitumen rate of 0.30 l/m<sup>2</sup> for tack coat on planed plant mix or rough concrete surfaces;

- At a residual bitumen rate of 0.10 l/m<sup>2</sup> for tack coat on a plant mix surface following cold recycling.

Spread rates and evenness must be measured and verified by the Contractor using a method submitted to the MTQ prior to the commencement of work. The spread rate allowance is 10%.

During setting and curing of the binder, vehicle traffic must be diverted or controlled. Also, to limit ravelling of the binder and deposit build-up on roads near the work site, the above-mentioned rates are to be reduced by 0.05 l/m<sup>2</sup> for night work. Also, with the approval of the MTQ, during daytime work when weather conditions and the organization of the work site prevent adequate curing of the tack coat, these rates may be reduced by 0.05 l/m<sup>2</sup>, with a price adjustment.

Tack coats or impregnation binders may not be applied during rain, or on wet or frozen surfaces, or when the ambient air temperature is lower than recommended by the manufacturer.

To foster penetration of the impregnation binder, the Contractor shall scarify the aggregate surface to a minimum depth of 25 mm. The application temperature of the impregnation binder on an aggregate surface must conform to the manufacturer's recommendations. After a waiting period of at least 30 minutes following application of the binder, the aggregate surface is packed to a minimum 98.0% of the maximum dry density provided for site compactness of road foundation materials. The binder must be fully cured before placing the plant mix.

Surfaces coated with an impregnation binder or tack coat must be paved on the same day if the road is open to traffic.

In all cases, the Contractor shall take the necessary precautions to prevent the tack coat or impregnation binder from spreading to adjacent surfaces already paved or not intended for paving.

1325 Method of Payment

The tack coat and impregnation binder are paid by the square metre. In particular, the price covers the supply, shipment, heating (as needed) and application of the binder, and all incidental expenses.



## 13 | Plant mix surfacing

The treatment of vertical contact surfaces is not included in a specific worksheet item. All costs incurred by the Contractor to perform this work are included in the price of the tack coat.

### 13.3 Ready-made hot-mix plant

Hot-mix plant must conform to the requirements of the plans and specifications and to MTQ Standard 4202.

For structures, the Contractor shall also comply with requirements for ready-made hot-mix plant specified in the "Bridge Infrastructure" section.

#### 1331 Materials

##### 13.3.1.1 Aggregate

Aggregate used in the plant mix composition must conform to the requirements of the plans and specifications and to MTQ Standard 4202.

The Contractor shall prepare a reserve of each aggregate category specified to last a minimum of 3 production days, except in cases where supplies are obtained from commercial quarries that perform production control.

Different grain sizes of aggregate and bituminous aggregate shall be stored in separate reserves. Stockpiles are located at locations that have been levelled, drained and cleared of all contaminants.

Bituminous aggregate from significantly different sources must be stored in separate stockpiles. Weight gain by bituminous aggregate must be avoided.

When density agreements are necessary, the Contractor shall notify the supervisor of the commencement of aggregate crushing and sorting work at least three (3) days in advance.

##### 13.3.1.2 Bitumen

The bitumen component of plant mix must conform to the requirements of the plans and specifications and to MTQ Standard 4101.

##### 13.3.2 Quality assurance

###### 13.3.2.1 Bitumen

###### 13.3.2.1.1 Quality system to ISO standards

The bitumen used to manufacture plant mixes must be produced by a manufacturer whose factory has a registration certificate confirming that its quality system meets the requirements of ISO 9001:2008 "Quality management systems."

If the bitumen is stored and shipped at a location other than the manufacturing location, the company responsible for storage and shipping must have a registration certificate certifying that its quality system meets the requirements of ISO 9001:2008, "Quality management systems."

##### 13.3.2.1.2 Certification of compliance

For each delivery of bitumen, the Contractor shall provide the supervisor with a compliance certificate as specified in MTQ Standard 4101.

At the time of shipping, the following information is included in the compliance certificate:

- Contractor's name;
- Shipper's name and tank truck number;
- Loading date;
- Amount delivered.

##### 13.3.2.1.3 Bitumen receiving inspection

###### a) Bitumen sampling

The Contractor takes a random sample of the bitumen for each 3000 t of plant mix (minimum one per contract).

Sampling is performed at the valve on the conduits connecting the tank to the mixing system device used to incorporate the bitumen. The Contractor takes the necessary steps to ensure that the sample gathered is representative of the product in the bitumen tank. The plant mix sample is collected in a metal container with an enamelled interior.

A sample consists of two 1-litre samples. The first is used for MTQ bitumen control testing and the other litre is kept by the MTQ as a control sample in the event of any possible recourse by the Contractor. At the supervisor's request, a greater amount of plant mix may be collected.

The Contractor submits the sample to the supervisor along with the corresponding compliance certification at the pre-determined frequency. The following information is written on the sample label and on the compliance certification by the sample-taker:

- The file number;
- The compliance certification number;
- Mix plant identification;
- Tank number at the asphalt mix plant;
- Sample-taker's name;
- Sampling date;
- Temperature of bitumen at time of sampling.

**13 | Plant mix surfacing**

**b) Control tests**

The MTQ performs a receiving inspection of the sampled bitumen in accordance with the provisions described earlier. The control parameters and acceptance criteria are specified in MTQ Standard 4101.

**c) Contractor recourse**

The Contractor may ask the supervisor to repeat tests that show the bitumen is non-compliant using the control sample collected at the time of bitumen sampling.

Such requests must be submitted to the supervisor within 15 consecutive days following receipt by the Contractor of the MTQ analysis results. In its request, the Contractor shall show that performed all of its quality control procedures properly and that the bitumen was kept intact.

Repeat testing of bitumen found non-compliant with requirements is performed by a registered laboratory approved by both parties. This laboratory may not be the same used by the bitumen manufacturer to perform checks at the manufacturing site or the storage and shipping site. Following the supervisor's receipt of a request for repeat testing, the Contractor has 30 days to have testing performed at the selected laboratory.

The cost involved in repeating each of these tests will be paid by the Contractor, unless the results of each test prove that the sample is compliant. Such costs are determined at the rates in effect within the MTQ.

The new results replace the original results of tests performed by the MTQ. In this way, the results of tests performed using the control sample become the official results and the recourse procedure ends.

**13.3.2.2 Hot-mix plant**

**13.3.2.2.1 Quality system conforming to ISO standard**

Plant mixes must be manufactured by a company that operates an asphalt mix plant with a registration certificate confirming that its quality system meets ISO standard requirements.

At least two weeks prior to the commencement of plant mix placement work, the Contractor shall submit a copy of the mix plant registration and a quality plan conforming to MTQ Standard 4202.

If the quality plan is deemed non-compliant with requirements, the Contractor shall make the changes requested by the supervisor.

An appraisal of the quality plan by the MTQ does not release the Contractor from its contract obligations in any manner whatsoever

The Contractor shall notify the supervisor of any non-compliance detected.

**13.3.2.2.2 Hot-mix plant formulated according to the Laboratoire des chaussées method**

**a) Theoretical and final formulas for hot-mix asphalt using the Laboratoire des chaussées method**

At least three (3) days prior to the placement of plant mix and after receiving confirmation of test and calculation results, the Contractor submits the theoretical and final formulas for hot-mix plant formulated according to the Laboratoire des chaussées formulation method, which contain the information prescribed by MTQ Standard 4202 along with all test results and calculations performed, showing that the production assessment requirements related to theoretical formulas and the determination of final formulas were followed and respected, as well as the traceability of samples and tests performed.

The Contractor is also required to inform the MTQ in writing of the following values:

- the value of the maximum density for each of the 5 samples taken during the production assessment of theoretical formulas and the average value;
- The value of the percentage of "Marshall" voids calculated using MTQ test method LC 26-320 for each of the five samples taking during assessment during production of the theoretical formulas, as well as the average value if it wishes to use the Marshall method to monitor voids during production.

In addition to the obligation to meet the requirements of the plans and specifications and MTQ Standard 4202, only new materials are permitted for use in plant mix intended for the surface course of the highway. In other cases, the percentage of recovered bituminous aggregate is limited to 20% of aggregate mass. Aggregate from recovered bituminous aggregate is exempted from the check of their inherent properties, along with class "PG" bitumen from recovered bituminous aggregate, which is not taken into consideration. The Contractor is required to specify the gross density of its recovered bituminous aggregate.

The use of post-fabrication asphalt shingles (PFAS) is also permitted in proportions amounting to 5% (base course) and 3% (surface course) subject to the criteria specified in MTQ Standard 4202. Post-fabrication shingles are not permitted in the surface course of highways.

### 13 | Plant mix surfacing

When a rut resistance test is required by the plans and specifications and when, for a given formula, this test has never been performed by an MTQ laboratory, the following provisions apply:

- This test is performed by MTQ laboratories;
- Plant mix sampling is performed according to the MTQ LC 26-005 method and sampling of components is performed to MTQ test method LC 21-010 for aggregates and according to bitumen sampling requirements for plant mixes;
- Following the receipt at MTQ laboratories of plant mix samples and the formula accompanied by test results showing that the plant mix meets the requirements of MTQ Standard 4202 in relation to the final formula, 7 days (excluding Saturdays and Sundays), depending on the conditions established by the department, is allowed to perform rut-resistance tests. Rut-resistance testing is performed only on samples with laboratory-mixed components (granulometric and bitumen combination). However, tests performed during plant mix production (verification) may be performed on plant mix boxes. In this case, results will be forwarded as soon as possible. No financial compensation for this time is provided.
- When a rut-resistance test has already been performed by an MTQ laboratory for a plant mix, but the test results are over three years old, a new rut-resistance test for the plant mix in question is mandatory, even if the Contractor's formula remains the same.

#### b) Production control by Contractor

##### 1- Sampling

A plant mix sample is collected during production of each 300 t of plant mix manufactured for a single contract at the same asphalt mix plant using the same final plant mix formula.

These samples are consistently collected at the location and using the method specified in the Contractor's quality plan, in accordance with MTQ test method LC 26-005.

When production begins for each plant mix, according to the same final formula, at least one plant mix sample must be taken.

##### 2- Control tests

The purpose of control tests is to prove the Contractor's ability to produce compliant and stable plant mixes at each of its asphalt mixing plants.

The Contractor submits the results of tests prescribed by MTQ Standard 4202 to the

supervisor within 2 days of collecting the sample. These tests are performed according to the testing methods specified in MTQ Standard 4202 and at the following frequency:

Granulometry	1 test per 300 t
Corrected bitumen content, except for type EGA-1 0 plant mixes	1 test per 300 t
Maximum density	1 test per 300 t
% of voids by GSP or gross density	3 tests per 1500 t

The frequency is reassessed according to MTQ Standard 4202. If the frequency is reassessed, the Contractor shall notify the supervisor. The supervisor may require the Contractor to submit documentation supporting the frequency change.

Unanalyzed samples are identified and kept by the Contractor for subsequent analysis in case of need.

For each day of production, test results are grouped together by final plant mix formula.

In each report submitted to the supervisor, the Contractor will identify the laboratory that performed the tests and calculations, and specify its location.

#### 13.3.2.2.3 Statistical control of hot-mix plant

The Contractor shall assess the reliability of the process and show that the final plant mix formula has been followed and that any production variation is less than the maximum standard deviations stipulated in MTQ Standard 4202.

Control charts are updated continually and periodically submitted to the supervisor in accordance with the agreement entered at the first site meeting.

#### 13.3.2.2.4 Plant mix receiving inspection

The MTQ determines compliance of the plant mix based on the findings forwarded by the Contractor. However, if the MTQ performs a validation of test results and calculations of various factors performed by the Contractor, the following provisions apply:

- If the test results and calculations of various factors performed by the Contractor are validated by the MTQ, the MTQ determines the compliance of the plant mix based on the findings submitted by the Contractor;

**13 | Plant mix surfacing**

- If the results of tests and calculations of various factors by the Contractor are not validated by the MTQ, notice is sent to the Contractor requesting proof of the test results and calculations of various factors, along with copies of quality recordings to determine the cause of the discrepancy. If the Contractor is unable to prove the validity of its test results and calculations of various factors, and the source of the discrepancy cannot be determined, the MTQ will decide on the compliance of the plant mix based on the results of its own tests and calculations.

For a plant mix to be compliant:

- The pass-through percentage confirmed by the analysis results for the first screening, where retention must not fall below the minimal requirement specified in Table 4020-1 of MTQ Standard 4202 by more than 3%, with a 100% pass-through requirement for the upper screen, as specified in the same Table;
- Statistical control tests of Standard 4202 are passed;
- The daily average of Marshall void percentages, calculated according to the MTQ LC 26-320 test method is greater than 1.0% and does not deviate by more than 1.5% from the average Marshall void percentage obtained during the assessment during production of theoretical formulas and the determination of final formulas;

or

- The void percentages shown in Table 4202-1 of MTQ Standard 4202 using a gyratory shear press (GSP) for each number of gyrations are met.

If any of these criteria are not met, each sample resulting in non-compliance with these criteria is analyzed individually against the requirements of Table 4202-1 of MTQ Standard 4202 to assess any applicable impact.

All plant mix produced that does not meet the requirements of the plans and specifications is considered non-compliant.

**13.3.2.2.5 Receiving inspection of pavement compactness**

This item does not apply to plant mixes used for patching or remediation prior to pavement installation.

**a) Compactness check**

The MTQ checks the compactness of bituminous pavement using a moisture density gauge.

**1- Calibration of moisture density gauge**

The moisture density gauge used is calibrated at least once a year according to the

procedure set out in ASTM D2950, "Standard Test for Density of Bituminous Concrete in Place by Nuclear Methods."

**2- Correction factor**

When the moisture density gauge uses a backscatter reading method, the correction factor is determined according to test method LC 26-500, "Determination of corrective factor applicable to establish the *in situ* volumetric weight of plant mixes using a moisture density gauge."

**3- Compactness**

The compactness percentage is determined according to test method LC 26-510 "Determination of corrective factor applicable to establish the *in situ* volumetric weight of plant mixes using a moisture density gauge."

**4- Sampling rate**

The acceptance unit batch comprises the amount of plant mix placed during the day for each hot mix plant mixture formula.

**5- Batch acceptance**

A batch is accepted when the average of 6 compactness results for the day falls between 93.0% and 98.0%.

If the average compactness value for the day falls below the 93.0% requirement, the supervisor notifies the Contractor in writing, informing it that a reassessment of compactness by means of core sampling-type test specimens will be performed as described in the following section.

**b) Reassessment of compactness using core sampling test specimens**

The supervisor sets a date to reassess compactness for the day in question using six core drilled test specimens covering the area of a plant mix placed during the day, collected at randomly chosen locations. The test specimens must be gathered within 20 days of issuing notice to the Contractor.

The pavement compactness percentage is the ratio of gross density of the core sample taken from the road and the average maximum density for the day determined at the time of the receiving inspection, multiplied by 100.

Gross density core sample tests are performed at the MTQ laboratory according to MTQ test method LC 26-040.

## 13 | Plant mix surfacing

The Contractor may delegate an observer to attend the sampling and testing activities; any comment concerning a procedure deemed incorrect must be reported immediately, and any discrepancy must be brought to the supervisor's attention.

If the average of these 6 compactness measurements performed using core sample test specimens falls below the minimum compactness requirement of 93.0%, the plant mix installed that day is considered non-compliant.

The costs of this reassessment will be paid by the MTQ.

### 13.3.3 Equipment

#### 13.3.3.1 Asphalt mixing plant

All asphalt mixing plants used to produce hot-mix plant must conform to ASTM D995, "Standard Specification for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures" and be equipped with a dust collection system meeting the requirements of the Environment Quality Act (R.S.Q., c.-Q2).

The output of the mixing plant must be such that the plant mix provided conforms to the final formula.

Conduits that connect the tank to the bitumen incorporation device on the mixing system must be equipped with a valve to allow sampling of the bitumen at all times. This valve must be easily accessible and include a burner system to ensure that it functions effectively at all times.

#### 13.3.3.2 Paver

Unless indicated otherwise, plant mixes are mechanically spread using a self-propelled paver capable of placing the plant mix according to the alignment, slope and camber specified. Pavers are equipped with hoppers and distribution augers in order to place the plant mix evenly in front of the adjustable fine graders. Pavers must be capable of spreading plant mixes in thickness ranging from 15 mm to the thickness indicated in the plans and specifications without segregation or ripping. The term "fine grader" includes all levelling devices that level the plant mix, by cutting or compaction, at the application temperature without causing rips, deformations or grooves, while producing a surface with characteristics that meeting requirements.

Variable width pavers are acceptable for curb lanes and longitudinal joints provided that the jointing tool vibrates and heats, and can achieve all of the required pavement characteristics.

#### 13.3.3.3 Road roller

Road rollers must achieve the compactness and surface characteristics required by the plans and specifications. The following three types may be used:

- Steel drum static rollers;
- Steel drum vibrating rollers;
- Rubber-tired rollers.

#### 13.3.3.4 Trucks

The dump body of the truck used to haul plant mix must be watertight.

Prior to loading the plant mix, the dump body interior must be cleared of any dust, pellets, petroleum-based hydrocarbons or any other material that could deteriorate the plant mix. The use of petroleum-based hydrocarbons as an anti-adhesive agent is prohibited.

The dump body must be equipped with a tarp large enough to cover the entire plant mix, slow cooling and protect it from weather. The supervisor may refuse to accept any truck of a capacity, size, speed or condition that detracts from normal operations.

#### 13.3.3.5 Hand tools

The tampers used to compress plant mix at locations inaccessible to rollers must weigh at least 10 kg and cover a maximum area of 300 cm<sup>2</sup>. Tampers may be replaced by mechanical compactors. Hand tools must be cleaned away from surfaces to be paved and newly placed plant mix surfaces.

#### 13.3.3.6 Template

A rigid template in straight ruler shape at least 3 m long, light-weight and equipped with a level must be provided by the Contractor and made available to the MTQ for the duration of the work.

### 13.3.4 Execution

The placement of plant mix on an aggregate surface is performed when the surface is free of puddles, mud or any wet or frozen material. If the surface to be covered consists of a plant mix, the installation of new plant mix shall be performed on surfaces covered by a tack coat at a sufficient curing stage. The surface must be dry, clean and unfrozen.

The ambient temperature must be higher than 10°C and rising during placement of a plant mix with a post-compaction thickness of less than 50 mm. For other thicknesses, the ambient temperature must be higher than 2 °C and rising.

**13 Plant mix surfacing**

Temperature is measured using a thermometer accurate to 1 °C. Measurements are taken 1.5 m from ground level and over 5 m away from work site engines or other heat sources.

**13.3.4.1 Plant mix transport**

Overheating plant mix to compensate for cooling caused during transportation is prohibited for any amount of time. The temperature loss in plant mix between mixing and placement at the site must not exceed 15 °C.

**13.3.4.2 Mechanical spreading**

The forward speed of a paver must provide pavement whose density and characteristics conform to the requirements of the plans and specifications.

**13.3.4.3 Joints**

Longitudinal joints must run parallel to the road alignment without becoming superimposed.

Longitudinal joints on the wearing or surface course must not be located under normal wheeled traffic.

Plant mix placement at the end of the day is planned in a way that avoids leaving a longitudinal joint for completion the following day.

All cross joints or longitudinal joints at a temperature below 85 °C must be brushed with an even layer of tack coat. All joints must have the surface characteristics required for pavement courses.

**13.3.4.4 Irregularities**

Immediately after placing a course and before beginning compaction, the surface is checked and any unevenness is corrected. Any accumulation of materials must be removed. Indentations and other depressions are levelled and filled with hot-mix plant.

**13.3.4.5 Manual spreading**

At locations inaccessible to the paver, plant mix is spread manually. Plant mix is spread evenly over a loose course of even density, taking care to prevent segregation. Prior to compaction, the Contractor shall verify the surface with a ruler and correct any unevenness. To prevent the aggregate from fanning out, plant mix shall not be thrown on surfaces.

**13.3.4.6 Plant mix compaction**

The following provisions apply to all pavement courses.

Except where work is performed at night, compaction must be completed before sunset. The supervisor may allow a deviation from this rule if the precautions taken are deemed acceptable.

When vibrating rollers are used, the Contractor shall pay special attention to avoid damaging adjoining or neighbouring structures and conduits; in case of doubt, all vibration is prohibited.

The compaction sequence must result in a surface course and compactness conforming to requirements.

**13.3.4.7 Surface characteristics of pavement courses**

Each course must be even in texture, free of segregation or bleeding, even and conforming to the transversal and longitudinal profiles stipulated in the plans and specifications.

After final compaction of each course, the MTQ verifies alignments and slopes. The profile of each course shall not vary by more than 6 mm against the specified profile. No irregularities or depressions shall exceed 5 mm per 3 m for the surface course, or 6 mm per 3 m for other courses. The thickness of each course shall vary by no more than 6 mm against the average thickness specified by the coverage rate per square metre; this rate is converted into thickness using the gross average density obtained from compactness measurements.

**13.3.4.8 Pavement repairs to private driveways**

Pavement on private driveways, removed during adjacent reconstruction, reinforcing or reloading work, will be replaced and reconnected to new road pavement.

**13.3.5 Method of Payment**

**13.3.5.1 Bitumen transport**

When the MTQ supplies the bitumen to manufacture plant mix, transportation of the bitumen used is paid by the tonne, transported from the supply site. Where the MTQ asks the Contractor to obtain supplies from a location other than that specified in the plans and specifications, the price shown on the worksheet is adjusted, higher or lower, according to the annual rate set by the MTQ.

### 13 | Plant mix surfacing

#### 13.3.5.2 Bitumen price adjustment

When the Contractor supplies the bitumen under a contract awarded by public tender for the fabrication of plant mixes paid by the tonne, and where the weight of such plant mixes amounts to more than 250 t, a bitumen price adjustment (excluding transportation) is made (higher or lower) according to the variation in the bitumen benchmark price.

The benchmark price used to calculate the adjustment is the minimal bitumen price for performance class PG 58-28, PG 58-34 or PG 64-34, as applicable, provided in the standing offers awarded to supply the MTQ with bitumen.

The following table indicates the benchmark price used to calculate the adjustment, depending on the performance class of the bitumen used for the work.

Performance class of bitumen used	Chosen benchmark price for adjustment calculation
PG 52-34	PG 58-28
PG 58-28	
PG 64-28	
PG 52-40	PG 58-34
PG 58-34	
PG 58-40	PG 64-34
PG 64-34	
PG 70-28	
PG 70-34	

In all other cases, the benchmark price chosen to calculate the adjustment is the one used for performance class PG 58-34.

If the work is not performed during a period when a bitumen supply order for the performance class chosen for the work can be placed, the benchmark price used for the price adjustment of bitumen for this benchmark class is the benchmark price for PG 58-34. If the price of grade PG 58-34 bitumen is unavailable, the benchmark price for PG 58-34 bitumen from the previous period is used.

For each bitumen performance class, an adjustment is made in every month that plant mix is placed and in the event of variations exceeding 5% of the applicable bitumen benchmark price included in the plans and specifications.

The adjustment is calculated as follows:

1. If  $PR_e > 1.05 PR_s$ , the MTQ pays the Contractor compensation comparable to the increase in the benchmark bitumen price above 105%. This compensation is calculated as follows:

$$MA = (PR_e - 1.05 PR_s) \times (\text{amount of bitumen used in the month})$$

2. If  $PR_e < 0.95 PR_s$ , the MTQ deducts from the Contractor an amount comparable to the drop in the price of the benchmark bitumen below 95%. This deduction is calculated as follows:

$$MA = (0.95 PR_s - PR_e) \times (\text{amount of bitumen used in the month});$$

MA: amount of bitumen price adjustment (\$);

$PR_s$ : benchmark price of bitumen included in plans and specifications (\$/t);

$PR_e$ : benchmark price of bitumen for the month in which work is performed (\$/t).

In both cases, the amount of bitumen used is determined according to the bitumen percentage established by the final plant mix formula, regardless of whether the mixture partly includes recovered bituminous material.

#### 13.3.5.3 Non-negotiable supply rate contracts and non-negotiable rate contracts for both the fabrication and installation of plant mix without a call for tenders

##### 13.3.5.3.1 Bitumen reconciliation

When the MTQ supplies the bitumen used to manufacture plant mixes paid by the ton, the Contractor shall obtain supplies from the location specified in the plans and specifications at the time that paving work is performed.

The amount of bitumen used is established according to the bitumen percentage determined by the final plant mix formula.

Bitumen shipment is paid by the ton based on the amount thus calculated.

During each fiscal year, from April 1 of a given year to March 31 of the next year, a reconciliation and settlement shall take place between the MTQ and the Contractor:

- Each time, during the manufacturing period for plant mixes required to carry out the contract, that the bitumen unit price paid by the MTQ changes;
- On the last day that plant mixes required to carry out the contract are manufactured.

**13 | Plant mix surfacing**

With each reconciliation, the amount deducted from or paid to the Contractor to supply the bitumen required to perform work under the contract is determined according to the following rules:

- If the amount of bitumen used is higher than the amount supplied by the MTQ before or during the plant mix manufacturing period, the difference is paid out at the price paid by the MTQ on the plant mix manufacturing date;
- If lower, the difference is deducted from the price that the MTQ pays on the plant mix manufacturing date.

In special circumstances, if the bitumen supplied by the MTQ cannot be used to under the contract during a fiscal year, either because it was delivered after the last plant mix manufacturing date included in the contract or because no plant mix is required to perform the contract, such bitumen will be subject to a special reconciliation and settlement at the price paid by the MTQ at the time of supply, as soon as it has the necessary information.

**13.3.5.3.2 Heating oil price adjustment**

The amount allocated to plant mix suppliers to cover the heating of plant mix components is determined at the start of each year by the MTQ for each production season. The benchmark is the average sale price of heating oil # 2 for Montréal according to the "Canadian Unbranded Rack Prices" published in the *Oil Buyers Guide*.

However, if a variation equal to or higher than \$0.03 /l occurs in the benchmark price during the year, the allocated amounts are raised or lowered, in accordance with the rules established by the MTQ.

**13.3.5.3.3 Annual plant mix price adjustment**

For pricing purposes, the price of plant mix set by the Department applies to a total output of 65,300 t or more. When a plant has not achieved this tonnage by the end of the production season, the price of the plant mix may be adjusted at the manufacturer's request subject to the terms and conditions established by the MTQ.

**13.3.5.4 Plant mix**

Plant mix is paid by the tonne. Specifically, the price covers the supply and delivery of all materials required to fabricate the plant mix, except plant mix bitumen when supplied by the MTQ, fabrication of the plant mix, loading, placement, compaction and tack coating for joint treatment, and all incidental expenses. Shipment from the asphalt mixing plant to the work site is also included in full in the price, except if additional transportation is covered by a separate item in the worksheet.

**13.3.5.5 Private driveway pavement**

When the work is not covered in a separate worksheet item, the required work, such as surface preparation, aggregate, tack coat and plant mix, is covered by road work budgets provided and included on the worksheet. The amounts and prices of such work specified on the worksheet include all additional work required to repair private driveways.

When private driveway repair is included as a separate item on the worksheet, it is paid by square meter of repaired pavement surface. The price includes surface preparation, aggregate, tack coat and plant mix, and any incidental expenses. Furthermore, aggregate, tack coat and plant mixes used to repair private driveways are paid under the same work as road work, and indicated on the worksheet.

**13.4 Replenishing and shaping aggregate shoulders after asphaltting**

Where specified, the Contractor shall spread aggregate material to replenish and shape aggregate shoulders after plant mix surfacing work is completed, to the same level as the pavement surface course.

**1341 Materials**

The aggregate material used must meet the requirements of the plans and specifications and conform to Standard NQ 2560-114 "Civil Engineering Work – Aggregate," "Part II: Foundation, sub-foundation, surface course and shoulder" following the application of materials.

**1342 Execution**

Aggregate material must be superelevated along the edge of the pavement only when the temperature of the pavement installed is below 50°C. Aggregate material must be spread and levelled to achieve the theoretical slope of the shoulder, even at private driveways, but without creating a raised edge. The shoulder must be of uniform width and roller compressed at least twice.



### 13 | Plant mix surfacing

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Aggregate material left on the pavement must be removed.

Shoulder construction must be completed no later than 48 hours after the completion of plant mix surfacing work performed on a given day.

#### 1343 METHOD OF PAYMENT

Aggregate material is paid according to the Method of Payment for road foundation materials.

## 15.2.3 MATERIALS

### 15.2.3.1 Aggregate and stone

Type MG aggregate material must conform to NQ 2560–114 “Civil Engineering Work – Aggregate,” “Part II: Foundation, subfoundation, surface course and shoulder,” after installation of the materials.

Type CG aggregate material must conform to NQ 2560–114 “Civil Engineering Work - Aggregate”, “Part III: Pad, pavement, separator course and filtering medium”, after installation of the materials.

Stones used for stone protective pavement and cemented stone pavements must conform to MTQ Standard 14501. For wet set stone pavement, stones must be sized 200 - 300 and free of foreign materials; mortar shall conform to CAN/CSA–A1 79 “Mortar and Grout for Unit Masonry,” type N.

### 15.2.3.2 Geotextiles

Geotextiles shall be type V and shall conform to MTQ Standard 13101.

### 15.2.3.3 Paving stones

Paving stones for protective pavement shall conform to MTQ Standard 3402.

### 15.2.3.4 Concrete

Concrete used for tightening bases, support pads or protective pavement must be type V. Type XV may also be used for tightening bases.

## 15.2.4 Quality Assurance

### 15.2.4.1 Aggregate material

#### 15.2.4.1.1 Certification of compliance

For each source of aggregate material and at least 7 days prior to the first delivery, the Contractor shall provide the supervisor with compliance certification containing the following information:

- the manufacturer’s name;
- the production site;
- complete granulometric analysis results;
- test results concerning properties, fabrication and complementary control tests;
- name of the registered laboratory responsible for performing the analyses and tests.

#### 15.2.4.1.2 Receiving inspection

The MTQ receiving inspection consists of taking samples for granulometric analysis and performing characteristic and fabrication control tests and complementary control tests.

### 15.2.4.2 Stones

For each stone source, the Contractor shall provide the supervisor, at least 7 days prior to the first delivery, with compliance certification containing the following information:

- the complete results of the qualitative stone analysis when such analysis is required and control test results for the properties specified in MTQ Standard 14501;

- the name of the registered laboratory responsible for performing the qualitative stone analysis when required, and control tests;
- the location of the reserve and area to be developed.

### 15.2.4.3 Geotextiles

Geotextiles must meet the geotextile quality assurance requirements of “Road Foundation.”

### 15.2.4.4 Paving stones

The MTQ performs the receiving inspection to MTQ Standard 3402 except if the number of paving stones required is equal to 8 instead of 24.

## 15.2.5 Execution

### 15.2.5.1 Barrier

Following construction of the structure and its inspection by an engineer belonging to the Ordre des ingénieurs du Québec, the Contractor shall submit a written notice to the supervisor signed by the engineer indicating that the barrier constructed conforms to the plan submitted. This notice must also indicate the date and time of the inspection.

The Contractor shall drain the barrier.

If a tightening base is required, the Contractor shall allow the necessary time for suspended solids to settle and perform an inspection of the excavation bed using a video camera before proceeding with underwater concreting. The camera must be fastened to the diver’s helmet and pointed according to the instructions of the supervisor, positioned at a monitor, if the Contractor is unable to limit turbidity of the water to the supervisor’s satisfaction. The concrete must have compressive strength of 10 MPa minimum before pumping water at a tightening base.

When the barrier is no longer needed, the Contractor shall remove it; removal is performed in a downstream to upstream direction. Immediately before removing an in-ground barrier in cold weather, the Contractor shall break up frozen materials on the top portion of the barrier.

### 15.2.5.2 Temporary support

After construction of the work and its inspection by an Engineer member of the Ordre des ingénieurs du Québec, the Contractor shall submit a written notice to the supervisor signed by the engineer indicating that temporary supports have been constructed in accordance with the submitted plan. This notice must also indicate the date and time of the inspection.

If temporary supports constructed from metal sheeting pilings are built exactly at the location and to the dimensions of the work to be executed, the Contractor may use them as forms following acceptance by the supervisor. When the temporary support is no longer necessary, the Contractor shall remove the material or cut it flush with the foundation, taking care not to damage new construction.

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(Partial version)

### 15.2.5.3 Excavation

Excavations must be performed according to the excavation requirements specified in the "Earthworks" section. However, excavated materials may not be reused for work under this section except where specified otherwise by the plans and specifications.

The Contractor shall submit written notification at least 24 hours in advance to the supervisor to specify the date and time of the start of excavation of the bottom 500 millimetres when a structure is not built on pilings or rock.

#### 15.2.5.3.1 Excavation dimensions

When the Contractor, at its own initiative, excavates below the determined depth, it must pay the cost of work required to correct the defect and, after correction, receive written notice from the supervisor before proceeding with its work. The theoretical dimensions of an excavation (length, width and slope of walls) are as follows:

- in solid rock, the walls of the excavation are vertical and the dimensions of the bottom of the excavation are the same as the base of the structure (footing, mat). In cases where the rock has not been cut to the specified dimensions, additional work performed shall be at the Contractor's expense;
- In rock other than solid rock, the perimeter of the base of the excavation must exceed the base of the structure by at least 600 mm (footing, mat but not the pad);
- When a sheet pile barrier is required by the plans and specifications, the horizontal dimensions of the excavation are limited to the dimensions of the barrier. However, when excavation must continue into rock, below the barrier, the requirements concerning excavation in solid rock apply;
- The width of the base of excavations for a reinforced backfill wall or multi-anchor wall is equal to the distance from the front face of the side of the wall, adjustment footing or support pad when any of these components is required, and a

point located 300 mm beyond the free end of inclusions or anchors;

- When the purpose of the excavation is to install conduit under a road, the width of the bottom of the excavation will exceed 600 mm on each side of the outside diameter of the conduit.

#### 15.2.5.3.2 Bottom of excavations

The bottom of an excavation must run parallel to the base of the structure, generally horizontal or arranged in tiers, with a uniform bearing capacity conforming to the requirements of the plans and specifications. Unstable soil must be stabilized or replaced.

The surface of the rock must be rough and clean, free of rock debris, stones, gravel or earth. Schistic rock must be cleaned of all loose components.

For structures not built on pilings or rock, excavation of the last 500 millimetres of soil above the planned elevation of the bottom of excavations must be performed using a toothless lipped bucket immediately before installing footing formwork. The soil at the bottom of an excavation site must not be disturbed.

When work at the bottom of the excavation is completed, the Contractor shall inform the supervisor by submitting written notice at least 24 hours prior to commencing formwork installation. The supervisor provides the Contractor with a written notice authorizing it to proceed with formwork installation once any defects detected by the supervisor have been corrected.

#### 15.2.5.3.3 Drainage at excavation sites

Excavation sites must be drained and kept dry for the time required to perform the work.

#### 15.2.5.4 Pad

##### 15.2.5.4.1 Support pad

The Contractor shall give the supervisor written notice at least 24 hours in advance of the date and time that support pad installation work is scheduled to commence.

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A support pad constructed from aggregate material, minimum 150 mm thick, is placed on a wet bed or on foundation soil of a material other than aggregate. For certain rated walls, the Contractor shall comply instead with the requirements of the relevant technical bulletin. For pipes used as culverts, an aggregate support pad must be installed to equalize any rock base. For other structures, a concrete support pad is installed to equalize a rock base.

The aggregate support pad must consist of a type MG-20 material. For rated support walls, the aggregate must be type MG 20 or MG 56, depending on the requirements of the relevant MTQ technical bulletin. This pad is installed in layers 150 mm thick, and packed to 95.0% of the maximum dry density specified in CAN/BNQ 2501-255 "Soils- Determination of the water-density relation: modified effort compaction test (2700 kN m/m<sup>3</sup>)."

### 15.2.5.4.2 Anti-contamination pad

An anti-contamination pad fabricated from aggregate minimum 150 mm thick is installed over a wet base of non-bearing soil such as that intended for pilings.

The anti-contamination pad must consist of an aggregate material, type CG 14, MG 56 or in clean stone, 20 mm.

### 15.2.5.5 Filling and backfilling

The Contractor shall give written notice at least 24 hours in advance to the supervisor to specify the date and time that filling and backfilling work is scheduled to begin.

Filling and backfilling at excavation sites must be performed simultaneously on both sides of narrow structures such as culverts, portal frames, piers or other similar structures.

Around abutments and piers for structures not located above a water body, and also around support walls, excavation filling and placement of backfill must be performed using type MG 112 aggregate material. For excavation filling, the aggregate material is placed across a minimum width of 1.2 m starting at the drain of the structure, or at the footing if no drain is present, with a slope of 1.5V:1H to ground level before the excavation. To backfill above this level, aggregate material is placed with a slope of 1.5 V: 1 H, across a minimum width of 1.2 m or the width required to fill excavations, whichever of the two sizes is the largest, level with the road sub-foundation for abutments, to the level shown on plans for piers or to the top of a wall. For certain rated walls, excavation filling and placement of backfill must also take account of requirements set out in the relevant technical bulletins.

Around the piers of a structure built over a waterway, and unless indicated otherwise in the plans and specifications, excavation filling and the placement of backfill must be performed as indicated

for abutments, but with stones sized 100 – 200 and D<sub>50</sub> equal to 150mm, from the actual bottom of the excavation to riverbed level or to 600 mm above the footing, whichever of the two is highest.

Around culverts, excavation filling and the placement of backfill must be performed as indicated in the plans and specifications. For certain rated culverts with requirements not specified in a technical bulletin, excavation filling and placement of backfill must be performed using type MG 20 or CG 14 aggregate to a height of 600 mm above the construction.

Aggregate materials must be placed in layers to a maximum 300 mm thick. Compaction of material, including the degree of compactness, must be performed to the requirements governing compaction of materials in the "Earthworks" section. In the area adjacent to the wall of the structure, over a section 1500 mm wide, compaction must be performed with dynamic compactors, vibrating plates or vibrating rollers with a roller weight per metre of less than 800 kg. For culverts, material is to be applied until the thickness of the aggregate above the culvert reaches 1000 mm minimum; in addition, aggregate material 300 mm thick must be maintained at all times between the compaction material and the top of the construction.

At all times during filling at conduits manufactured from sheet metal or polyethylene, vertical and horizontal conduit deformation limits must be checked. Checks shall be performed by the Contractor in the supervisor's presence. The total deformation of the conduit shall at no time exceed 5% of the maximum vertical clearance for a span less than or equal to 3 m, or 2% of the maximum vertical clearance for a span greater than 3 m. Any deformation exceeding the maximum allowable limits will result in non-acceptance of the conduit. Deformation must be measured during and after backfill operations. If deformation exceeds the maximum allowable limits during the placement of backfill above the conduit, the backfill must be removed and placed again to lower any deformation of the conduit below the allowable limits.

### 15.2.5.6 Protective pavement

Before placing pavement, the Contractor shall clean and clear away vegetation, and grade the surfaces to be covered to the profile shown on the plans.

Surfaces must be compressed and compacting must ensure the uniform bearing capacity of the ground. For pavement of a new structure, surfaces to be covered must be compressed to 90.0% of the maximum dry density determined by Standard CAN/BNQ 2501-255 "Soils- Determination of the water-density relation: modified effort compaction test (2700 kN m/m<sup>3</sup>)."

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#### 15.2.5.6.1 Stone covering

The Contractor shall give written notice to the supervisor no less than 24 hours in advance to indicate the date and time that geotextile placement work is scheduled to start.

Stone coverings must comply to the requirements of the following table:

Stone pavement			
Type	Size (mm)	D <sub>50</sub> (mm)	Thickness (mm)
1	0 – 200	100	300
2	100 – 200	150	300
3	200 – 300	250	500
4	300 – 400	350	700
5	300 – 500	400	800

Stones must be placed carefully, embedded solidly and tightly together in all directions according to the slope provided, with no overhang exceeding one-half the average size of the stones.

#### 15.2.5.6.2 Mortared paving stones

Stones must be placed in a sufficient layer of mortar to ensure contact on all sides, except the outside face of the stone. Joints between stones must be staggered. Stones must be laid to form a unified surface parallel to the theoretical slope of the bank.

#### 15.2.5.6.3 Pavers

Pavers must be placed so that horizontal and vertical joints are arranged according to the plans and specifications. The layout of self-blocking paving stones must be chosen to provide the best stability.

#### 15.2.5.6.4 Paver covering

Wire mesh must be placed at mid-thickness of the paver and fastened at the ends to prevent any shifting when the concrete is poured. The Contractor shall use plastic spacers set maximum 1200 mm centre-to-centre to keep wire mesh at the required distance from the ground. Each wire mesh section must overlap the previous section by 300 mm.

The surface of the pavement must be graded to the profile shown and finished using an aluminum or magnesium alloy trowel, taking care not to cause cement paste to rise to the surface. The finished surface must be smooth and free of ripples.

### 15.2.6 METHOD OF PAYMENT

#### 15.2.6.1 Barrier

Barriers are paid by the unit, at a rate of 1 barrier per foundation unit, or at an all-inclusive price. Specifically, the price includes the supply of materials, installation, video camera inspection and removal of the barrier, as well as all incidental expenses.

If barriers are not covered by a specific item on the worksheet, the Contractor shall allocate the costs to the unit price or inclusive price for work requiring a barrier.

#### 15.2.6.2 Temporary supports

Temporary supports are paid at a unit or inclusive price. Specifically, the price includes the supply of materials, installation and removal of the temporary support, and all incidental expenses.

If temporary supports are not covered by a specific item on the worksheet, the Contractor shall allocate the cost to the unit price or inclusive price of work requiring temporary support.

#### 15.2.6.3 Excavations

Excavations, except excavations for rated support walls and pre-fabricated culverts, are paid according to the methods provided in the "Earthworks" section for class 1 excavations, and for class 2 excavations, except that excavation materials cannot be reused for the work under this section. Prices cover preparation and drainage of excavation beds, filling excavations to the surrounding ground level prior to excavation, and unless indicated otherwise on the worksheet, the placement of backfill. These prices include all incidental expenses.

If excavation is not included as a separate item on the worksheet, all costs incurred by the Contractor to perform such work, including preparation and drainage of the excavation bed, filling of excavation to the surrounding ground level prior to excavation and placement of backfill are included in the price of the work requiring the excavation.

#### 15.2.6.4 Pad

Aggregate pads and concrete pads are paid per cubic metre based on the theoretical dimensions of excavations. The price includes the supply and installation of materials and all incidental expenses.

If the pad is not included as a separate item on the worksheet, all costs incurred by the Contractor for its execution are included in the price of the work requiring a pad.

#### 15.2.6.5 Protective pavement

Protective pavement is paid by the square meter. Specifically, the price includes excavation, preparation of the surface to be paved including the base under the pavement, when required, the supply of materials and installation, and all incidental expenses. The price also includes any demolition of existing pavement and correction using fill required for installing new pavement.

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### 15.7 STEEL AND ALUMINUM STRUCTURES

The expression “steel and aluminum structures” refers to any type of structure made in whole or in part from structural steel or aluminum. It also refers to any steel component such as pilings, bridge bearings, deck joints, guide rails and parapets, drains, interface drains and steel support wall components.

#### 15.7.1 REQUIRED DOCUMENTS

The Contractor shall provide the supervisor with shop drawings of the steel or aluminum structure, assembly plans and, for structures other than signage or lighting structures, drawings and calculations pertaining to the assembly procedure, the calibration certificate of the device used to measure bolt tension and the bolting procedure. These documents must be signed and sealed by an engineer belonging to the Ordre des ingénieurs du Québec. Shop plans must be provided at least two weeks before the pre-fabrication meeting. The bolting procedure must be submitted at least 7 days before the meeting prior to bolting. Assembly plans, drawings and assembly procedure calculations must be submitted two weeks before the start of installation work on site.

In particular, shop drawings shall detail the site joints of the main girders and show their location if they are not indicated on the plan. A design note and details concerning the site joints on main girders not included on the plans must be forwarded to the supervisor before shop drawings are completed. The design note and joint detail documents must be signed and sealed by an engineer belonging to the Ordre des ingénieurs du Québec.

The data sheet number for the welding procedure and type of non-destructive testing for welds must be shown on the shop drawings and for welds performed on site, in the installation plans.

Once fabrication is completed, the Contractor shall submit shop drawings showing the casting number for each part used to fabricate the main girders, main tensile members and other critical tensile strength members.

Drawings and calculations for the assembly procedure, describing the method used to install components of the structure and the location and capacity of the material used, must conform to CAN/CSA-S6 “Canadian Highway Bridge Code,” unless otherwise specified in this section. These documents must include wind bracing and temporary stress resistance structures used during construction and to maintain components of the structure plumb and in their exact location until completion of the work and thus to ensure the stability of beams by preventing any lateral or longitudinal movement of lower and upper footings. The Contractor shall perform a stability and resistance study to ensure that temporary stresses resulting from installation of the structure or any portion of the structure, and others caused

during casting of the concrete slab, including wind stress, do not cause stresses exceeding the allowable stress limit, or create conditions causing instability in the structure, including bridge bearings. Stresses to consider include all stresses occurring at different stages of construction as specified in Standard CSA-S269.1, “Falsework for Construction Purposes,” including stresses caused by wind determined over a 10-year period, with a gust effect factor ( $C_g$ ) of 2 and a horizontal external pressure coefficient ( $C_p$ ) of 2. For overpasses, to account for localized excess stress generated by traffic on the overpass, the wind bearing pressure must be increased by 0.24 kPa perpendicular to the construction. For alterations or repairs of a steel structure, installation procedure drawings and calculations must describe the procedure to be used to maintain the stability of the structure during replacement of a main girder, strut, member or a component of an open-web joist.

The bolting procedure must describe the method used on site to install bolts. This procedure must include a description of the equipment used at each stage of tightening, and for site joints on the main girders, must specify the adjustment method used for girder sections, and the bolt installation and tightening sequence. Furthermore, the calibration certificate of the device used to measure bolt tension must also be appended to the bolting procedure; this certificate must contain information concerning the device model and serial number, and must have been issued within less than 12 months.

The Contractor shall also provide the supervisor, at least 7 days before the start of on-site fabrication and welding work, with documents concerning fabrication and on-site welding, and at least 14 days before the shipment of girders, documents concerning transport. These documents include:

- The fabrication schedule;
- The list of persons assigned to fabrication and their qualifications, including the qualification cards of personnel performing the welds: engineers, welding inspectors, welding supervisors, welders, pointers, welding machine operators and quality control officers;
- The qualification certificate of the company responsible for welding work;
- The name of the welding inspection laboratory responsible for performing non-destructive testing;
- The welding procedures, including procedures for pins, corrections and repairs, as well as data sheets approved by the Canadian Welding Bureau; these documents must be signed and sealed by an engineer belonging to the Ordre des ingénieurs du



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- Québec. Methods pertaining to weld sequencing, distortion control, pre-heating, heating between passes, bead specifications, etc., when welds are performed under conditions where contraction or distortion stresses could lower strength or deform members, must be included in the welding procedures. These methods must be established by the Contractor in accordance with the requirements of Standard CSA-W59 "Welded Steel Construction (Metal Arc Welding)" or CSA-W59.2 "Welded Aluminum Construction" and receive the supervisor's approval;
- A list of steel structures designed to meet CAN/CSA-S6 "Canadian Highway Bridge Design Code" recently produced by the manufacturer;
- A list of work recently completed by the manufacturer using the submerged arc welding procedure (SAW procedure) for corner welds at the footing-main girder web junction;
- Documents concerning the solid-web girder support system when such girders cannot be shipped in a vertical position. The Contractor shall submit documents concerning the support system to the supervisor, detailing the bearing points for each girder. These documents, to be signed and sealed by an engineer belonging to the Ordre des ingénieurs du Québec, consist of a design note and support system plan. The design note must contain the results of a stability and strength analysis to ensure that the stresses applied to the girder during shipment, caused by the weight of the girder itself combined with an impact factor of 100%, do not generate stresses above the allowable limit or unstable conditions. Furthermore, stresses must not exceed the constant amplitude deviator stress limit ( $F_{st}$ ) associated with the fatigue detail category governing design of the girder. The maximum length of any overhang must not exceed 12 times the width of the smallest girder footing.
- A minimum distance of 150 mm is required between a transversal stiffener and a butt weld in a footing or web;
- A minimum distance of 125 mm is required between the edge of a bolt hole and a butt weld in a footing or web;
- A butt weld in a footing for welded profiles (WWF, WRF) and for assembled girders shall not be located within 300 mm of a butt weld in the web. However, for steel-wood bridges, joints between girders fabricated from welded sections (WWF, WRF) in the rolling plant or rolled sections must be placed at the same locations in footings and in webs;
- For girders and girder sections less than 20 m in length, footing and web plates must be in one-piece lengths free of joints; when this length is greater than 20 m, a single butt weld in footings and in webs is permitted, not including those required by changes in footing thickness. For WWF welded sections or rolled sections less than 24 m long, used for steel-wood bridge construction, sections shall be of a single one-piece length free of joints;
- The web of the girder, which can be fabricated from plates 3800 mm wide or less, shall be free of any longitudinal joints;
- Butt welds and longitudinal welds on aluminum parts are prohibited;
- Welded assemblies on traffic or lighting structures, between a post and an anchor footing, must be performed by fitting the post in the anchor footing and performing two circumferential corner welds. For aluminum assemblies, post-wall spinning must be performed against the edge of the anchor footing. The allowable deviation between the post and the inside edge of the anchor footing is 0.5 mm around the outside edges. Another possibility is to construct these assemblies using full penetration circumferential welds with a corner weld and an added groove weld.

**15.7.2 DESIGN REQUIREMENTS**

Unless indicated otherwise in this section or in the plans and specifications, the design must conform to Standard CAN/CSA-S6 "Canadian Highway Bridge Design Code".

Weld design must meet the following requirements:

- Butt welds in a traction footing and in the web of welded sections (WWF, WRF) and assembled girders must not be located at maximum stress points;
- Design of site joints on the main girders must meet the following requirements:
  - site joints on the main girders not shown on plans are not permitted for single-span bridges less than 36 m in length;
  - joints must not be made at maximum stress locations. If the stress table is not show on the plans, the supervisor will provide the Contractor with stress values at the joint location;
  - The bearing surface of bolted parts must be class A for non-covered steel surfaces;



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- Steel used for joint plates and fillers must have the same elastic limit, the same designation and the same resilience as the girder steel;
- The web joint must conform to the following:
  - joint plates must cover the full height of the web. There must be at least two rows of bolts on each side of the joint;
  - in addition to shearing, the assembly design must take account of the portion of torque absorbed by the web;
  - shear force must be evenly distributed to all bolts;
  - at ultimate limit states, according to the distance between the two end bolts of a vertical line, a reduction factor must be applied to bolt shear resistance;
  - the centre of rotation of the assembly must be the same as the bolts' centre of gravity;
  - the assembly being exocentric in shearing, the torque caused by shear force exocentricity must be considered as well as the portion of torque transmitted to the web;
  - the shearing stress on each bolt must be obtained by vectorial addition of the forces caused by shear force, by the torque from the shear force and by the portion of torque transmitted to the web.

Joints in steel pilings, including caisson piles, must be fabricated with complete penetration welds.

When temporary structures used for handling girders must be fastened to them, they must be bolted but without diminishing girder capacity. These temporary structures must appear in the assembly plans.

For signage or lighting structures, the Contractor shall also provide the supervisor with a design note mentioning design details not provided in the plans and specifications. When the design is developed by the Contractor, the design note must include the mechanical resistance and - fatigue resistance calculations for the support structure. The design note must be signed by an engineer belonging to the Ordre des ingénieurs du Québec.

Except for aerial signage structures in the aluminum caisson section, the parts used for aluminum structures must be free of longitudinal welds.

### 15.7.3 MATERIALS

Structural steel must conform to MTQ Standards 6101 and 6301.

To alter or repair a structure, new members must comply to Standard CSA-G40.21 "Structural Steel," minimal designation 300 W. Bolts must conform to ASTM- A325 "Standard

Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength", type 1. Washers must be bevelled as needed.

Aluminum must conform to MTQ Standard 6401. The finish of surfaces must be even and polished to a gloss, 80 grit type.

Steel bolts, anchor rods, nuts and washers must conform to MTQ 6201. Bolts, washers and nuts must have the same anticorrosive properties as the material to be assembled. If the structure is metallic, the Contractor shall use galvanized bolts.

Shearing pins must conform to CAN/CSA-S6 "Canadian Highway Bridge Design Code".

### 15.7.4 QUALITY ASSURANCE

#### 15.7.4.1 Structural steel

##### 15.7.4.1.1 Certification of the company and qualification of personnel performing welds

Welding work shall be performed by companies certified by the Canadian Welding Bureau to the requirements of CSA W47.1 "Certification of companies for fusion welding of steel." Divisions 1 or 2 are required for steel structures, but Division 3 is sufficient for drains or interface drains as well as sealing joints, bolted assembly joints and deck joints.

Qualification certificates must be obtained prior to the commencement of welding work, and certification must remain in force for the duration of the work.

Welders, pointers and welding machine operators must have adequate qualification cards according to the welds to be performed. These qualification cards are issued by the Canadian Welding Bureau to the requirements of CSA-W47.1, "Certification of companies for fusion welding of steel."

##### 15.7.4.1.2 Certification of compliance

For each delivery of steel to the manufacturer, the Contractor shall provide the supervisor with certification of compliance containing the following information for each production batch:

- the name of the steel mill;
- the date and location of fabrication;
- nominal size;
- designation;
- thermal and energy requirements (Charpy resilience test);
- casting number;
- analysis and test results;
- batch lot number.

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A production batch comprises structural steel parts of the same designation, resilience, dimensions and from the same casting run.

### 15.7.4.1.3 Receiving inspection

When a receiving inspection is performed by the MTQ, the samples gathered are sized minimum 200 mm by 75 mm; the 200 mm size must reflect the rolling direction.

### 15.7.4.2 Aluminum

#### 15.7.4.2.1 Certification of company and qualifications of personnel performing welds

Welding work must be performed by companies approved by the Canadian Welding Bureau to the requirements of CSA-W47.2-M "Certification of companies for fusion welding of aluminum," Division 1 or 2.1.

The engineer responsible for designing welds, procedures and the execution of welding work must report to the plant upon request.

The qualification certificate must be obtained prior to the start of fabrication and remain in force for the duration of fabrication operations.

Welders must have acceptable qualification cards according to the welding position, type of electrodes used and welding procedure followed. These qualification cards are issued by the Canadian Welding Bureau to the requirements of CSA-W47.2-M "Certification of companies for fusion welding of aluminum."

#### 15.7.4.2.2 Certification of compliance

For each delivery of aluminum to the manufacturer, the Contractor shall provide the supervisor with a certification of compliance including the following information for each production batch:

- the manufacturer's name;
- la date et le lieu de fabrication;
- type of alloy and its state;
- heat-treatment charter;
- nominal size;
- casting number;
- results of analyses and tests.
- production batch number.

A production batch consists of aluminum parts from the same casting that underwent the same processing.

### 15.7.4.3 Steel bolts, anchor rods, nuts and washers

#### 15.7.4.3.1 Certification of compliance

When a receiving inspection is performed by the MTQ, samples gathered are sized at least 200 mm by 75 mm; the 200 mm size must run in the direction of the roll.

The size of parts must be sufficient to allow sample gathering.

For each delivery of steel bolts, anchor rods, nuts and washers, the Contractor shall provide the supervisor with certification of compliance containing the following information for each production batch of each part:

- the manufacturer's name;
- manufacturing date;
- marking identification;
- nominal sizes;
- the designation of the steel or the ASTM designation;
- the type, alloy or grade;
- casting number;
- analyses and test results;
- coating information;
- The production batch number. For assembled bolts, the batch number of each part (bolts, nuts and washers) must also be provided.

A production batch consists of parts (steel bolts, anchor rods, nuts and washers) from the same steel casting, of the same size and from the same operating sequence.

#### 15.7.4.3.2 Receiving inspection

A receiving inspection must be performed for bolts subject to tightening by rotation of the nut. For each production batch of assembled bolts (same ASTM designation, same type, same size, same anticorrosive properties and same steel casting for each component). The Contractor shall verify the minimum required tension, with the supervisor present, using at least 3 assembled bolts (bolt, nut and washer) according to the installation conditions provided in the bolting procedure submitted, and in the case of galvanized bolts, will perform a rotation test on a fourth assembled bolt. These checks are made using a calibration device capable of measuring bolt tension and performed before bolts included in the batch are installed.

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### 15.7.4.4 Pins

For each delivery of pins and at least 7 days before their use, the Contractor shall provide the supervisor with a compliance certification showing that the pins meet the requirements of CAN/CSA-S6 "Canadian Highway Bridge Design Code" and appear on the list of pins approved by the Canadian Welding Bureau.

### 15.7.5 FABRICATION

Unless otherwise specified in this section or in the plans and specifications, fabrication must conform to CAN/CSA-S6 "Canadian Highway Bridge Design Code".

Verification and approval by the supervisor of reports confirming conformity with requirements is necessary at each major stage of fabrication, such as the assembly of footings at webs, installation of stiffeners and the drilling of parts before moving on to the next stage.

For girders with no camber specified in the plans, the Contractor shall ensure that the camber resulting from permitted fabrication allowances is mitigated by permanent loads.

Solid web girders shall not be cambered or hot bent.

Wind bracing, diaphragms and assembly joint plates shall be identified to allow for easy localization during execution of the structure on site.

Before parts leave the factory, the steel surfaces of the structure fabricated from Type A or AT steel not covered by an anti-corrosion procedure shall be cleaned to the requirements of SSPC-SP 6 / NACE #3, "Commercial Blast Cleaning."

#### 15.7.5.1 Prior meeting

A meeting prior to the fabrication of assembled girders, including representatives of the Contractor, the manufacturer and the MTQ shall be held at the manufacturer's factory at least 7 days before the start of fabrication. Where the manufacturer has assigned all or part of fabrication work to one or more subcontractors, a prior meeting shall be held at the factory of each subcontractor. The agenda shall include a tour of the factory and distribution of the required documents. The meeting with the manufacturer takes place only after shop plans are certified by the MTQ and, in such cases,

after the supervisor receives a list of the manufacturer's subcontractors.

### 15.7.5.2 Cutting

#### 15.7.5.2.1 Structural steel

Factory torch cutting shall be performed using mechanical guides. Welds are to be performed in a continuous manner with no stopping-starting, to obtain an evenly cut surface.

Torch cutting on site is prohibited except for pilings and complete demolition of a structure. For welded joints on pilings, torch cutting is permitted provided that the method used is compatible with the relevant welding procedure.

Burrs and deformations must be removed by grinding. For parts to be painted or metal-coated, sharp edges must also be rounded to a radius of at least 1.5 mm.

Cast number markings on parts cut from plates must be performed in the supervisor's presence. When a punch is used for marking, the Contractor shall use a punch that produces dotted characters causing limited stress.

#### 15.7.5.2.2 Aluminum

Cutting by shearing is not permitted except for plates 12 mm or less in thickness.

Torch cutting is prohibited.

At least 1 mm of material must be removed by grinding along the entire edge of arc cut parts, except if the edge in question is to be welded.

When an access opening is cut and pressed, at least 1.5 mm of the material must be removed by grinding along the entire pressed edge.

In all cases, edge preparation shall be performed to the requirements of CSA-W59.2 "Welded Aluminum Construction." Sharp edge shall be rounded and surfaces coated with silicone wax.

#### 15.7.5.3 Drilling

Torch drilling is prohibited.

Punched holes of the final diameter are not permitted except for plates 16 mm thick or less for steel with an elasticity limit equal to or lower than 350 MPa. However, for site joints on main girders, girder and plate holes shall be made by bit drilling; for on-site assemblies, holes are drilled with a bit sized to the final diameter using a metal template.

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All burrs and other deformations around the edge of holes must be removed to ensure full contact between the parts to be assembled; parts already assembled must be dismantled to allow this work.

All holes must be drilled precisely perpendicular to the surface. Parts are rejected if these requirements are not met during factory assembly:

- Prior to any boring: 75% of holes located along the same alignment must allow a cylindrical pin 3 mm less in diameter than the diameter of the hole to pass freely through the hole; 100% of holes located along the same alignment must allow a cylindrical pin 5 mm less in diameter than the diameter of the hole to pass freely through the hole. The pin must be inserted perpendicularly in the surface of the member;
- At least 85% of holes bored or drilled to full size, contiguous and located on the same alignment must not be more than 1 mm off centre in relation to the holes of adjacent parts. For aluminum, the applicable allowance for the distance of a hole to the free edge of a part is from 0 to +2 mm.

**15.7.5.4 Welds**

For steel structures, welds must conform to CSA-W59 "Welded Steel Construction (Metal Arc Welding)." Furthermore, plates to be welded must be preheated immediately prior to welding work in order to eliminate moisture.

For aluminum structures, welds must conform to CSA-W59.2 "Welded Aluminum Construction."

Arc welding of pins require the use of an automatic device; manual corner welding is prohibited.

Electrodes must be basic-coated or controlled hydrogen (HC) designated.

The size of corner weld sides shown in the plans must not be reduced on the ground that the manufacturer uses a submerged arc welding (SAW) procedure.

Welds must be performed prior to galvanization or metallization.

Once welds have been completed, adjoining steel surfaces must be brushed to remove any welding spills or splatters that are not firmly attached to the metal.

**15.7.5.4.1 Girder assembly**

All butt welds in webs and footings used to fabricate welded sections (VWF and WRF) and assembled girders must be completed before fastening the footing to the web.

Corner welds at the footing-web junction of main girders shall be performed using the submerged arc welding (SAW) procedure, and executed with no

stopping/staring on each section comprising the main girders. An appendage of at least 150 mm is required to begin and finish the corner weld.

**15.7.5.4.2 Weld control**

Destructive tests may be required to determine the tension or deflection limits of welded assemblies.

With the exception of drains, interface drains and tightness welds for bolted joints of deck joints, and unless otherwise specified in the plans and specifications, non-destructive weld tests shall be performed by a registered laboratory certified by the Canadian Welding Bureau, to the requirements of CSA-W1 78.1 "Qualification of welding inspection agencies".

Unless otherwise indicated in the plans and specifications, destructive weld tests are performed as follows:

- visual inspection is performed 100% (before, during and after welding) to the requirements of CSA-W59 "Welded Steel Construction (Metal Arc Welding)" by a certified welding inspector to the requirements of CSA-W178.2 "Certification of welding inspectors." For drains, interface drains and watertight welds at joints of bolted assemblies for deck joints, the welding inspector may be replaced by a certified welding supervisor to the requirements of CSA-W47.1 "Certification of companies for fusion welding of steel";
- Visual inspection is performed 100% (before, during and after welding) to the requirements of CSA-W59.2, "Welded Aluminum Construction" by a certified welding supervisor to the requirements of CSA-W47.2, "Certification of companies for fusion welding of aluminum";
- Welds on main girders, diaphragms, wind bracings and bridge jacking brackets must also undergo the following inspections, in addition to visual inspection:

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- 100% x-ray inspection of butt weld in footings;
- 100% x-ray inspection of a transversal or longitudinal butt weld in web;
- A corner weld between the web and footing on each member section is inspected by magnetic particle inspection over a distance equal to 25% of the length of weld beads; the inspection must focus on the ends of the weld;
- A corner weld between support stiffeners and the web and footings of a member is inspected 100% by magnetic particle inspection;
- A full penetration groove weld between support stiffeners and the footings of a member is inspected 100% by magnetic particle inspection and 100% by ultrasound;
- A corner weld between transversal stiffeners and the web of a member is inspected 50% by magnetic particle inspection; the inspection must focus on the ends of the weld;
- A corner weld between transversal stiffeners and the footing of a member is inspected 100% by magnetic particle inspection;
- All welds on bracing components are inspected 25% by magnetic particle inspection; the inspection must focus on the ends of the weld;
- welds on steel pilings, in addition to visual inspection, are to be inspected as follows:
  - Butt welds in a steel post are inspected by ultrasound across 100% of their length at 25% of joints; these joints are chosen by the supervisor. When a joint is non-compliant, the next joint shall be inspected and so on until two consecutive joints are compliant before resuming the initial inspection rate;
  - Groove welds and corner welds between the point and a steel post are inspected by magnetic particle inspection across 100% of their length and at 25% of pilings. When a weld is non-compliant, the next post shall be inspected and so on until two consecutive posts are compliant, before resuming the initial inspection rate;
- A butt weld in a caisson post is checked by ultrasound across 100% of its length;
- Corner welds between footings and girders and bridge bearings, in addition to visual inspection, are inspected 100% by magnetic particle inspection;
- Welds on reinforcement plates or on prestressed vertical members must be inspected as follows, in addition to visual inspection:
  - A butt weld is x-ray inspected 100%;
  - A corner weld is inspected by magnetic particle inspection over a distance equal to 25% the length of the weld beads;
- in addition to visual inspection, welds on a signage or lighting structure shall be inspected as follows:
  - a butt weld in a steel part is inspected 100% by ultrasound or x-ray;
  - a complete penetration weld is inspected 100% by ultrasound or x-ray;
  - a partial penetration longitudinal weld is inspected by magnetic particle inspection over a distance equal to 25% of the length of the welding bead. For high masts, each section is inspected;
  - a corner weld on a steel structure is inspected by magnetic particle inspection over a distance equal to 25% of the length of the welding beads;
- In a partial weld check, the inspection first focuses on the ends of the weld and critical points, such as changes in geometry or material;
- When a partial check reveals a defect requiring repair, 100% of the length of the weld is inspected;
- The repaired portion of the weld is inspected 100% again using the original weld checking procedure.

The supervisor must be notified at least 12 hours prior to the commencement of non-destructive testing. These tests, including visual inspection, must be detailed in a written, documented inspection report completed by the inspector or supervisor who performed and interpreted them. This report must include x-rays and be submitted to the supervisor at least 24 hours prior to the shipment of parts from the factory. For welds performed on sight, oral notification by the welding inspector or supervisor. For welds performed on site, the welding inspector or supervisor shall give verbal notification to the supervisor, certifying their compliance with requirements.



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A report must then be submitted to the supervisor within 7 days after non-destructive testing is performed.

Welding checks must be performed prior to galvanization or metallization.

When the posts of a steel structure are assembled using WWF or WRF profiles welded at the rolling mill, non-destructive testing of web-footing welds shall be performed at the structure manufacturer's factory. If butt welds in the footings or web are performed at the rolling mill, x-rays and non-destructive test reports for these welds shall be included in the above-mentioned inspection report.

When the assembly of signage or lighting structure parts is performed in whole or in part at a factory other than the manufacturer's factory, non-destructive weld tests shall be performed at such structure manufacturer's factory. X-rays and non-destructive test reports for these welds shall be included in the above-mentioned inspection report.

**15.7.5.5 Factory pre-assembly**

Main girders that including site joints must be factory pre-assembled.

All sections of the girder must be preassembled and adjusted in compliance with the plans, with the web in horizontal position.

All sections of a girder in a single span must be pre-assembled in a single operation. For girders comprising more than 3 sections, each pre-assembly operation shall include at least 3 sections, one of them the last section of the previous pre-assembly operation, to ensure alignment continuity. However, where this procedure is not possible for very long or curved spans, the Contractor shall provide the supervisor with a detailed pre-assembly plan explaining each of the stages at least 14 days prior to such work; the Contractor shall await written notification from the supervisor before proceeding with the pre-assembly.

At a site joint on a main girder, holes shall be drilled using a footing-web joint plates with holes drilled in advance for use as a template. Drilling of joint plates is also permitted as well as drilling of one of the two girder sections with a digital control drill for later use as templates when drilling the other section of the girder. During all pre-assembly activities, the sequence of drilling work in girder sections, joint plates and fillers must include a sufficient number of assembly pins and bolts to maintain the alignment of the holes at all times.

For signage or lighting structures, open-web steel joists and monotubular girders with site joints including a flange connection must be factory pre-assembled; identification numbers must be etched on the flange connections before disassembly and application of a corrosion-resistant coating.

**15.7.5.6 Final inspection**

A part may not leave the factory before the non-destructive weld testing inspection report has been

submitted to the supervisor and the supervisor has performed a final inspection and issued written acceptance to the Contractor. The manufacturer shall set girders and girder sections, in a standing position prior to their final inspection.

**15.7.6 HANDLING, SHIPPING AND ASSEMBLY**

The components of the structure must be handled with care to prevent damage or any deformation. Girders must be lifted at least two hoisting points during handling and assembly operations. Aluminum signage or lighting structures must be protected during shipment.

All dust and grease must be removed from aluminum structure before they leave the factory.

Solid web girders must be shipped with the web in a vertical position. Where this is not possible in certain specific cases, girders are shipped in accordance with documents concerning the transportation system. The supervisor issued written notice to the Contractor authorizing it to ship a girder when the support system provided is deemed compliant with the documents issued.

Unless otherwise indicated in this section or in the plans and specifications, the installation of bolts and inspection of assemblies must conform to CAN/CSA-S6 "Canadian Highway Bridge Design Code."

Before commencing the placement of girders, the Contractor must verify the location and elevation of bridge bearings, and any irregularities noted must be corrected. In the case of steel girders, the Contractor shall provide the supervisor with a survey at least 7 days before the installation of girders showing the location (longitudinal and transversal to the structure), elevation and levelling of each bridge bearing installed, as well as the corresponding values shown on the plans. This drawing must be signed by an engineer belonging to the Ordre des ingénieurs du Québec.

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To prevent water in contact with unpainted steel surfaces from staining the adjacent bases and surfaces of foundation units, these units must be adequately protected before assembly of the structure begins. Any soiling on girders or foundation units, such as oil or grease stains, shall be removed once the structure is completed.

As indicated in the drawings and assembly procedure calculations, the first girder erected must be laterally retained; other girders must be wind-braced without delay following their placement.

At the end of each work shift during which girders have been set in place, and following inspection of these girders by an engineer belonging to the Ordre des ingénieurs du Québec, the Contractor shall submit a written notice to the supervisor, signed by the engineer in question, indicating that wind bracing and temporary structures have been installed in accordance with drawings and installation procedure calculations. This notice shall also specify the date and time of the inspection.

Holes left by the removal of temporary work used when handling girders shall be filled with A325 bolts. If girders are painted, bolts shall have the same coating as the girder; otherwise, bolts shall be galvanized.

Wind bracing and other temporary structures shall remain in place until the concrete slab has reached 70% of the compressive strength required at 28 days.

When the deck is constructed in stages, drilling and bolting of diaphragms and wind bracing, connecting adjacent girders to the slab strip provided between each phase shall be performed before concreting of the strip but after completion of each adjacent phase.

### 15.7.6.1 Bolted joints

Steel surfaces that are not galvanized and are to come in contact following installation shall be cleaned to the requirements of SSPC-SP 6 / NACE n°3, "Commercial Blast Cleaning" or to Standard SSPC-SP 15 "Commercial Grade Power Tool Cleaning."

Galvanized steel surfaces to come in contact following torque movement in the assembly shall be manually cleaned using a metal brush to dull their shine but without altering the zinc coating.

Bolts, nuts and washers must be delivered assembled on site in containers sealed at the supplier's factory. Identification of each container must include the production batch number of the assembled bolts and the main properties of the

bolts, nuts and washers. Sealed containers, or container opened on site, must be stored in a sheltered location, away from moisture, dust and soil to maintain bolts, nuts and washers in their original condition at the time of delivery until their installation. After each day of work, unused bolts, nuts and washers shall be placed back in their original containers.

### 15.7.6.1.1 Bolted Installation

All bolts must be installed with a steel washer placed under the part (nut or bolt head) and turned during tightening. A washer must be installed at each end of bolts with an assembly that includes an oversized hole.

Unless otherwise indicated in the plans and specifications, nuts must be installed on the least exposed side of the structure.

The only tightening permitted is tightening by rotation of the nut. Therefore, the use of bolt tightening torque as a method of tightening or verifying bolt snugness is prohibited.

Snug-tightening is tightening that ensures full contact between plate surfaces, corresponding to an initial tension in the bolts of  $15\% \pm 3\%$  of the minimum value specified in section 10.24.6.3 of CAN/CSA-S6 "Canadian Highway Bridge Design Code."

After snug-tightening and before final tightening by rotation of the nut, all bolts and nuts in the assembly must be marked with a pen to show their degree of rotation in relation to the two parts. Each nut must be marked opposite the closest edge at the 12 o'clock position, and the mark on the corresponding bolt must be made on the half-diameter of the bolt at the same position as the nut.

After tightening, the threaded end of bolts must protrude at least 3 mm beyond the nut.

All bolts that are untightened after final tightening must be replaced with a new bolt.

If the Contractor uses bolts that are tightened without torque control during adjustment of the parts to be installed, such bolts shall be marked with red-coloured paint at the start of bolting work; these bolts must be replaced with new bolts in accordance with the bolting procedure submitted.

Holes must be aligned using assembly pins and parts must be kept assembled with a sufficient number of pre-assembled snug-tightened bolts.

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A maximum 20 % of holes in a single joint may be aligned using pins. No boring of holes is permitted on site.

A girder section must be held in place by assembly bolts and pins filling at least 50% of site joint holes before they are unfastened from hoisting equipment. Bolts and their nuts (manually tightened) and assembly pins (concentrated along the edge of assembly plates) must be evenly distributed at joints (footings and web).

Prior to the final tightening of site joint bolts, girder sections must be adjusted to the vertical and horizontal alignments specified in the plans, using sufficient assembly pins, with a maximum limit of 20% of pins in the same joint.

Regardless of the assembly method used, the final joint installation stage consists of replacing assembly pins with bolts tightened during final tightening. At this stage, all other bolts in the joint have been pre-installed and tightened during final tightening.

In cases where the installation of girder sections does not occur at their final location, the final tightening of all bolts at site joints shall be performed before moving the girders to their final location.

#### **15.7.7 Alteration or Repair of Existing Structures**

Unless otherwise indicated in this section or in the plans and drawings, any alteration or repair of steel structures must conform to the following requirements.

New elements must be fabricated to ensure a perfect fit with existing elements to be retained. Prior to fabrication, the Contractor shall take the dimensions of all existing elements on site, check them against the dimensions shown on plans and determine the position of installation holes on existing parts.

During the replacement of various steel elements, when assembly details are not shown on the plans, new assemblies shall be identical to existing assemblies in size and in the number of bolts or rivets; however, rivets will be replaced by bolts of the same diameter.

During the removal of rivets to allow for bolt installation, the Contractor can expect that holes for steel parts may not be perfectly aligned. Some holes in existing parts must be drilled to allow for bolt installation.

Steel surfaces intended to come in contact during installation must be cleaned to the requirements of SSPC–SP6/NACE #3, “Commercial Blast Cleaning” or SSPC–SP 15, “Commercial Grade Power Tool Cleaning.”

Existing painted surfaces altered during the execution of work shall be touched up in accordance with requirements concerning touch-up painting in the galvanization section of the “Bridge Infrastructure” section.

#### **15.7.8 Method of Payment**

Steel or aluminum structures, except for signage or lighting structures, pilings, bridge bearings, deck joints, guide rails and parapets, drains, interface drains and steel support wall members, are paid at an inclusive price, by the unit or per kilogram. In particular, the price covers submission of the documents required, supply of material, fabrication, handling, shipping and installation, as well as all incidental expenses.

Unless the removal of existing elements is included as a specific item on the worksheet, all costs incurred by the Contractor to perform this work, including the disposal of materials, are included in the cost of steel structures.

If the removal of existing elements is covered in a specific item on the worksheet, it is paid at an inclusive price. In particular, the price covers the removal of parts and disposal of material, as well as all incidental expenses.

### **15.13 PREFABRICATED CULVERTS**

#### **15.13.1 Required documents**

In the cases of homologous culverts, Contractor shall supply to the supervisory resident the calculation notes, shop drawings, and construction specifications for the culvert to be built, including for the footings or radier. These documents shall be signed by an engineer member of l'Ordre des ingénieurs du Québec, and shall be verified and signed by another engineer member of l'Ordre des ingénieurs du Québec.

For all the prefabricated culverts, when lifting equipments are required for the handling of elements, their description shall be stipulated on the shop drawings.

In the case of prefabricated culverts made of reinforced concrete, at the exception of pipes, the Contractor shall provide the shop drawings of mechanical device permitting the assembly and retaining of elements altogether.

In the case of corrugated and curved steel culverts, the Contractor shall provide the mounting drawing to resident.

#### **15.13.2 Design Requirements**

Minimal length of a component of a rectangular culvert in prefabricated culvert made of reinforced concrete shall be 1000 mm; the maximum length shall take in consideration the constraints of fabrication, of handling, of transport and of installation. In the case of extremity components of askew work or with change of direction in the culvert alignment, the minimal length of the smallest side of component shall vary between 600 mm and 1000 mm, at the condition that the longest side measures at least 1000 mm; if not satisfying these criterias, these components shall be poured in place.

When cavities in the walls of the structure are necessary to manipulate the components, the depth of cavities shall be smaller than the thickness of the walls of component.

The design of the culverts in concrete or in corrugated steel which span is longer than 3 m shall be complaint to chapter 7 of standard CAN/CSA-S6 "Canadian Code for Bridges and Highways".

##### **15.3.2.1 Homologous Culverts**

The design, fabrication and installation of an homologous culvert shall be compliant to the requirements planned in the pertinent technical notice.

The pertinent technical notice is available on the internet site of Ministère du Transport du Québec.

Contractor shall verify if the culvert type to be built is the object of disposed patent in Canada. If it is the case, He shall comply to legal requirements pertaining to its exploitation.

#### **15.3.3 MATERIAL**

##### **15.13.3.1 Concrete**

The concrete, other than for the pipes, shall be of type V, V-P or XIV-C compliant to standard 3101 of Ministère. The concrete V-DC compliant with the same standard may also be used for rectangular concrete culvert.

##### **15.13.3.2 Culverts in concrete**

The culverts in reinforced concrete and non-reinforced concrete including couplings of connection assembly shall comply to standard BNQ 2622-126 "Tuyaux et branchements latéraux monolithiques en béton armé et non armé pour l'évacuation des eaux d'égoût domestique et pluvial."

##### **15.13.3.3 Steel Corrugated Culverts**

Steel corrugated culverts and assembly couplings shall comply to standard 7101 of Ministère.

##### **15.13.3.4 Polyethylene Culverts**

Polyethylene culverts including assembly joints and couplings shall comply to standard BNQ 3624-120 "Tuyaux et raccords en polyéthylène (PE) – Tuyaux a profil ouvert a paroi interieure lisse pour l'egout pluvial et le drainage des sols – Caracteristiques et methodes d'essais", type 1 et categorie R320."

No plastic already used or recycled as defined in standard BNQ 3624-001 "Tuyauteries de plastique – Définitions, désignations et dimensions" shall enter in the fabrication of these pipes.

#### **15.13.3.5 Geotextiles**

Geotextiles shall be of type III and comply to standard 13101 of Ministère and, in the case of homologous culverts, shall be of type indicated as per the pertinent technical note.

#### **15.13.3.6 Waterproofing Membrane**

Waterproofing Membrane shall comply to standard 3701 of Ministère.

### **15.13.4 QUALITY ASSURANCE**

#### **15.13.4.1 Certification of Culverts**

Round culverts in reinforced and unreinforced concrete shall be produced by a fabricator which manufacturing plant has a certificate of compliance delivered by BNQ compliant to certification protocol NQ 2622-951 "Tuyaux et branchements latéraux monolithiques en béton armé et non armé et regards d'égout, puisards et chambres de vannes prefabriqués en béton armé – Protocole de certification."

Steel corrugated culverts shall be produced by a fabricator which manufacturing plant has a certificate of compliance delivered by BNQ.

Polyethylene culverts shall be produced by a fabricator which manufacturing plant has a certificate of compliance delivered by BNQ compliant to certification protocol NQ 3624-907 "Tuyaux et raccords en polyéthylène (PE) – Protocole de certification".

#### **15.13.4.2 Steel corrugated culverts helicoidal or curved**

##### **15.13.4.2.1 Attestation of compliance**

Except for steel corrugated culverts certified by BNQ, Contractor shall provide to resident at least 7 days before each delivery an attestation of compliance containing the following information for each produced lot:

- Name of fabricator;
- Date and location of fabrication;
- Category, shape and nominal dimensions including thickness of steel wall;
- Name of supplier of steel;
- Number of poured;
- Number of drum;
- Chemical properties of steel;
- Type of coating and surfacial mass;
- Resistance of joint to traction;
- Production lot number.

A production lot consists of culverts of same category, same shape, same dimensions coming from same drum and from same steel supplier and being fabricated in the same conditions.

##### **15.14.4.2.2 Control at reception**

When a control is done at reception by the Ministère, the sampling consists of:

- A sample of steel culvert measuring approximately 300 mm x 300 mm, sampling randomly among the ones stored on site to perform mechanical and chemical tests and determine thickness of steel and coating;
- A sample of steel culvert measuring approximately 100 mm x 200 mm, sampling randomly among the ones stored on site to perform lateral strength test on joint.

### **15.13.4.3 Polyethylene Culverts**

#### **15.13.4.3.1 Attestation of compliance**

For each delivery of polyethylene culverts, Contractor shall provide to resident at least 7 days before each delivery an attestation of compliance indicating that no plastic already used or recycled was introduced in the fabrication of the culverts. Attestation of compliance shall also contain the following information for each produced lot:

- Name of fabricator;
- Date and location of fabrication;
- Type (perforated or non perforated), category and nominal dimensions;
- Number of production lot.

A production lot consists of culverts of same category, same shape, same dimensions, and being fabricated during a total continuous production and in the same conditions.

#### **15.13.4.3.2 Control at reception**

When a control is done at reception by the Ministère, the sampling consists of 1 m of culvert sampled randomly among the ones stored on site.

#### **15.13.4.4 Geotextiles**

Geotextiles shall comply to assurance quality requirements for geotextiles in the Section "Fondations de chaussée".

#### **15.13.4.5 Waterproofing Membrane**

When a control is done at reception by the Ministère, the sampling consists of:

- In 1L of adherence/glue coating coming from a scelled container which content has been previously homogenized;
- In 1 m<sup>2</sup> of membrane sampled from a roll.

### **15.13.5 INSTALLATION**

The handling, storage and transport of all components shall be executed in a manner to eliminate risks of flaking/scalling, cracking and flexion stress. Particular caution shall be taken to avoid damage to culverts made of unreinforced concrete during the handling on site.

Steel corrugated culverts helicoïdal or curved shall be handled with caution so to protect metal coating. Particular caution shall be taken to avoid any deformation; buckled or deformed culverts shall be rejected. Damages caused to zinc galvanizing shall be repaired according requirements relative to the galvanization in the Section "Ouvrages d'art / Bridge Infrastructure".

Damages caused to aluminum coating shall be repaired according same requirements with the exception of damaged surfaces exceeding 5 mm in width or exceeding 100 mm in length, which shall be repaired only with metallization process.

Components shall be assembled and placed according the planned alignments and levels, starting from downstream end extremity of culvert. Contractor shall built the foundation with required precision to insure the proper closing of joints between all components of work.

As indicated in drawings and specifications, the top of culvert in prefabricated reinforced concrete shall be covered with a waterproofing membrane.

Openings in the walls of the culvert shall be drilled with a rotative tool. Hole diameter shall correspond at the one from sellette or coupling ring to guarantee waterproofed joint. Cutting of element shall be done with a saw.

#### **15.13.5.1 Assembly**

In the case of steel corrugated culverts helicoïdal or curved, the assembly shall comply to requirements of standard CAN/CSA-G401 Steel Corrugated Culverts and according to the assembly drawing submitted. Tightness torque to applied on bolts shall be between 200 N.m and 340 N.m.

#### **15.13.5.2 Joining of Elements**

The joining of elements of the culvert shall be executed so to impede infiltration of granular material into these elements; there shall be no dust or foreign matters between the elements. In the case of steel culverts or polyethylene culverts, the coupling sleeves shall have the same number of ondulations or helicoidals on each side of joint.

A geotextile strip 1 m wide shall be installed all around the joints of culverts which have no waterproofing and be tight around the elements. Geotextile strip shall be in place around the elements prior to dispose the latter in place. Length of geotextile strip shall be equal to 300 and 500 mm; strip of 300 mm shall be put in place first.

When joint is a joint of overlapping, inferior extremity of the section shall be upstream.