



City of Coquitlam

**Contract Documents
86481B**

**2014 Water Supply Point
Metering**



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Invitation to Tender



INVITATION TO TENDER

DATE OF ISSUE: **March 18th, 2014**

Tender No. 86481B

2014 Water Supply Point Metering

The City of Coquitlam invites Tenders for **Contract 86481B – 2014 Water Supply Point Metering**. Work in general consists of installation of Flowmeter chambers, instrumentation & electrical components, and associated conduit & pipe works at following two locations:

- Gatineau Place at North Road
 - Supply & install Flowmeter chamber & interconnection piping;
 - Trench & install conduit runs for power and signal cabling;
 - Restore concrete sidewalks, curbing, and boulevard vegetation;

- Dewdney Trunk Road at Viewmount Drive
 - Supply & install combined PRV/Flowmeter chamber & interconnection piping;
 - Supply & install monitoring kiosk, base, antenna pole, and conduit runs;
 - Restore grass boulevard;

Tender Documents and Drawings are available for downloading from the City of Coquitlam website: www.coquitlam.ca/BidOpportunities

Printing of Tender documents and drawings is the sole responsibility of the Tenderers.

Tenders submitted must be accompanied by a copy of the original specified 10% Bid Bond and will be received:

On or Before 2:00 p.m. (local time), Tuesday April 1st, 2014

("Closing Date and Time*")

Instructions for Tender Submission

Tender submissions are to be uploaded through QFile, the City's file transfer service accessed at website: qfile.coquitlam.ca/bid

1. In the "Subject Field" enter: Tender Number and Name
2. Add files in .pdf format and Send (ensure your web browser remains open until you receive 2 emails from Qfile to confirm upload is complete)

Tenders will not be opened in public. Information on unevaluated Tender results will be forwarded on Tender Day to all participants by email.

Addenda

Tenderers are required to check the City's website for any updated information and Addenda issued before the Closing Date at:

www.coquitlam.ca/BidOpportunities

Any changes to the Tender Documentation will be issued by means of written Addenda and posted on the City's website and will form part of the Tender. No amendment of any kind to the Tender is effective unless it is posted in a formal written Addendum on the City website. Upon submitting a Tender, Tenderers will be deemed to have received notice of all Addenda that are posted on the City's website and deemed to have considered the information for inclusion in the Tender submitted.

The City does not retain a bidder's list or bidder's registry. Tenderers are encouraged to register as plan takers and view the Tender Documents and Drawings by contacting the Vancouver Regional Construction Association (VRCA): website: www.vrca.bc.ca, ph: 604-870-9293, or email vrca@vrca.bc.ca, and quoting the Coquitlam Tender Reference Number.

Should there be any discrepancy in the Tender Documentation provided, the City's original file copy shall prevail.

All inquiries are to be submitted in writing by email, no later than 3 full business days prior to Tender Closing Time quoting the Tender Name and Number sent to:

Email: bid@coquitlam.ca

Tenders shall remain open for acceptance for 60 days following the submission Closing Date.

The City reserves the right to accept or reject any or all Tenders and the lowest or any Tender may not necessarily be accepted. The City also reserves the right to cancel any request for Tender at any time without recourse by the Tenderer.

The City will not under any circumstances be responsible for any costs incurred by the Tenderer in preparing the Tender.

D. Trudeau
Purchasing Manager

***Instructions to
Tenderers, Part 1***

Tender 86481B

2014 Water Supply Point Metering

**INSTRUCTIONS TO TENDERERS
PART I**

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Instructions to Tenderers - Part I

(FOR USE WHEN UNIT PRICES FORM THE BASIS OF PAYMENT - TO BE USED ONLY WITH THE GENERAL CONDITIONS AND OTHER STANDARD DOCUMENTS OF THE UNIT PRICE MASTER MUNICIPAL CONSTRUCTION DOCUMENTS.)

(TO BE READ WITH “INSTRUCTIONS TO TENDERERS - PART II”
CONTAINED IN THE EDITION OF THE PUBLICATION
“MASTER MUNICIPAL CONSTRUCTION DOCUMENTS” SPECIFIED IN ARTICLE 2.2 BELOW)

The City of Coquitlam

Contract **2014 Water Supply Point Metering**

Reference No. **86481B**

Introduction

1

1.1

These Instructions apply to and govern the preparation of Tenders for this *Contract*. The *Contract* in general consists of installation of Flowmeter chambers, instrumentation & electrical components, and associated conduit & pipe works at two locations:

- Gatineau Place at North Road
 - Supply & install Flowmeter chamber & interconnection piping;
 - Trench & install conduit runs for power and signal cabling;
 - Restore concrete sidewalks, curbing, and boulevard vegetation;
- Dewdney Trunk Road at Viewmount Drive
 - Supply & install combined PRV/Flowmeter chamber & interconnection piping;
 - Supply & install monitoring kiosk, base, antenna pole, and conduit runs;
 - Restore grass boulevard;

1.2

All inquiries regarding this Tender are to be submitted in writing referencing the **Tender Name and Number** sent to:

E-mail bid@coquitlam.ca

All inquiries will be received a minimum of 3 full business days prior to Tender Closing Time.

Inquiries received after that time may not receive a response.

- | | | |
|---|------------|---|
| Tender Documents | 2 | <p>2.1 The Tender Documents which a Tenderer should review to prepare a Tender consist of all of the <i>Contract Documents</i> listed in Schedule 1 entitled “Schedule of Contract Documents”. Schedule 1 is attached to the Agreement which is included as part of the Tender Package. The <i>Contract Documents</i> include the drawings listed in Schedule 2 to the Agreement, entitled “List of Contract Drawings”.</p> <p>2.2 <u>A portion of the Contract Documents are included by reference. Copies of these documents have not been included with the tender package.</u> These documents are the Instructions to Tenderers - Part II, General Conditions, Specifications and Standard Detail Drawings. They are those contained in the publication entitled “Master Municipal Construction Documents - General Conditions, Specifications and Standard Detail Drawings”. Refer to Schedule 1 to the Agreement or, if not specified in Schedule 1, then the applicable edition shall be the most recent edition as of the date of the <i>Tender Closing Date</i>. <u>All sections of this publication are by reference included in the <i>Contract Documents</i>.</u></p> <p>2.3 Any additional information made available to Tenderers prior to the Tender Closing Time by the Owner or representative of the Owner, such as geotechnical reports, video reports or as-built plans, which is not expressly included in Schedule 1 or Schedule 2 to the Agreement, is not included in the Contract Documents. Such additional information is made available only for the assistance of Tenderers who must make their own judgments about its reliability, accuracy, completeness and relevance to the <i>Contract</i>, and neither the Owner nor any representative of the Owner gives any guarantee or representation that the additional information is reliable, accurate, complete or relevant.</p> |
| Submission of Tenders | 3 | <p>Tenders must be submitted on the Tender Form provided, accompanied by a copy of the original 10% Bid Bond quoting the Tender Name and Number, and be uploaded to the City’s file transfer website.</p> <p>Tenders must be received on or before:</p> <p><i>Tender Closing Time:</i> 2:00 p.m. local time
 <i>Tender Closing Date:</i> April 1st, 2014</p> <p>For the purpose of the Tender submission, digital copies of original documents and signatures sent electronically are accepted. Original documents are required upon request by the City.</p> |
| Instructions for Tender Submission | 3.1 | <p>Tender submissions are to be uploaded through QFile, the City’s file transfer service accessed at website: qfile.coquitlam.ca/bid</p> <ol style="list-style-type: none"> 1. In the “Subject Field” enter: Tender Number and Name 2. Add files in .pdf format and “Send” (ensure your web browser remains open until you receive 2 emails from Qfile to confirm upload is complete) |

Tenderers are responsible to allow for ample time to complete the submission process. For assistance, phone 604-927-3060 or Fax 604-927-3035.

- 3.2 Tenders submitted shall be deemed to be successfully received when displayed as a new email in the in-box of the City email address. The City will not be responsible for any delay or for any Tenders not received for any reason, including technological delays or issues by either party's network or email program, and the City will not be liable for any damages associated with Tenders not received. Late receipt will be a cause for rejection.
- 3.3 Late Tenders will not be accepted or considered.
- 3.4 Tenders will not be opened in public. The unevaluated Tender results will be forwarded to participants by email.
- 3.5 Tender submissions are subject to the Freedom of Information and Protection of Privacy Act and contents may be disclosed if required to do so, pursuant to the Act.

**Additional
Instructions to
Tenderers**

4 Additions and Deletions to Instructions to Tenderers, Part II

- 4.1 The *Contractor* must achieve ***Substantial Performance of the Work on or before August 15th, 2014*** (milestone date), subject to the provisions of the *Contract Documents* for adjustments to the *Contract Time*.

The construction work on Gatineau at North Road location must be carried out between Middle of May and end of June 2014. Any reasonable adjustment to this schedule requested by Evergreen Contractor will be accepted without any additional cost to the City.

Should *Substantial Performance* not be achieved by the milestone date (Late completion), liquidated damages will be assessed at the amount as stated in section 13.8.1(a) of Supplementary General Conditions.

**Obtaining
Documents**

- 4.2 The following documents which are referred to and form part of the Contract Document package may be obtained as follows:
- Copies of the Master Municipal Construction Documents Volume II (2000), Instructions to Tenderers - Part II, General Conditions, Specifications and Standard Detail Drawings are available separately from:

Support Services Unlimited
Suite 302
1107 Homer Street
Vancouver BC V6B 2Y1
Tel: 604-681-0295
Fax: 604-681-4545

- City of Coquitlam Supplementary Specifications and Detailed Drawings to the MMCD 2000 Edition.

City of Coquitlam Engineering & Public Works Department
3000 Guildford Way

Coquitlam, BC V3B 7N2
 Tel: 604-927-3500
 Fax: 604-927-3525

Copies of the City of Coquitlam Supplementary Specifications and Detailed Drawings to the MMCD 2000 Edition are available for viewing and downloading off the City of Coquitlam web site

http://www.coquitlam.ca/Libraries/City_Hall_Files/Supplementary_Specifications_and_Detailed_Drawings_to_MMCD.sflb.ashx

Tender Requirements	4.3	<i>Delete:</i> Instructions to Tenderers, Part II, Section 5.2.2
Amendment of Tenders	4.4	<i>Delete:</i> Instructions to Tenderers Part II, Section 12 Amendments of Tenders.
Award	4.5	<i>Add to:</i> Instructions to Tenderers Part II, Section 15.1;

Tenders received will be evaluated to provide the City with greatest value based on quality, service, price and experience. Evaluation Criteria will include but is not limited to:

1. Ability to meet specifications and required completion date
2. Contractor's past experience, references, reputation and compliance to specifications
3. Demonstrated successful experience on similar projects and specific equipment installation
4. Price: purchase price, maintenance costs, availability of parts and service, warranty and compatibility with existing equipment and/or conditions
5. Any other criteria, the City deems, at its sole discretion, necessary to evaluate Tenders;
6. Lowest price will not necessarily be accepted.

The City may, in its absolute discretion, reject a Tender submitted by the Tenderer if the Tenderer, or any officer or director of a corporate Tenderer, is or has been engaged, either directly or indirectly through another corporation or legal entity, in a legal action against the City and its elected and appointed officers and employees or any of them in relation to:

- a) any other contract or services; or
- b) any matter arising from the City's exercise of its powers, duties or functions under the *Local Government Act*, the *Community Charter* or any other enactments; within five years of this Tender Offer.

For purposes of this section, the words "legal action" includes, without limitation, mediation, arbitration, hearing before an administrative tribunal or lawsuit filed in any court.

Without limiting the City's sole discretion, in determining whether or not to reject a Tender pursuant to this clause, the City will consider such factors as whether the legal action is likely to affect the Tenderer's ability to work with the City and its employees, agents, consultants and representatives or any of them and whether the City's past experience with the Tenderer in the matter that resulted in the legal action indicates that the City is likely to incur increased staff and legal costs or either of them in the administration of this

		contract if it is awarded to the Tenderer.
Certificate of Compliance for Contract Insurance	4.6	Each Tender should be accompanied by a Certificate of Compliance (on the form provided in Appendix 7 of Form of Tender) to provide proof that the Tenderer can obtain the insurance specified herein.
		A Certificate of Compliance is to be submitted for each insurer called upon.
Proof of Ability	4.7	Tenderer shall be competent and capable of performing the various items of work. Tenderer shall complete the following statement sheets appended to the Form of Tender, which shall form a part of the Contract Documents: Appendix 1 Schedule of Quantities and Unit Prices Appendix 2 Preliminary Construction Schedule Appendix 3 Experience of Superintendent Appendix 4 Contractor's Comparable Work Experience Appendix 5 Subcontractors Appendix 6 Bid Bond Appendix 7 Certificate of Compliance for Contract Insurance
Test Excavations	4.8	Prior to the excavation of test holes on road allowances or privately owned property the Tenderer shall obtain permission from the Municipality or Owner of the property and comply with their requirements for restoration of disturbed surfaces and utilities. Failure to comply with Municipal by-laws restricting this practice may result in prosecution of the offending party.
Business License	4.9	The successful Tenderer shall have or obtain a Business License in the municipality in which the work is performed. Successful Tenderers will be required to supply a photocopy of a valid Coquitlam business licence prior to commencement of work or supply of materials. Contact Business Licence Division at 604-927-3085 for detailed information.
No Claim	4.10	Except as expressly and specifically permitted in these Instructions to Tenderers, no Tenderer shall have any claim for any compensation of any kind whatsoever, as a result of participating in this Tender, including accepting a non-compliant bid and by submitting a Tender, each Tenderer shall be deemed to have agreed that it has no claim.
No Cost	4.11	The City will not under any circumstances be responsible for any costs incurred by the Tenderer in preparing the Tender.
Right to Accept or Reject any Tender	4.12	The City reserves the right to accept or reject any or all Tenders and the lowest or any Tender may not necessarily be accepted. The City specifically reserves the right to reject all Tenders if none is considered to be satisfactory and, in that event, at its option, to call for additional Tenders.
Cancellation of Tender	4.13	The City reserves the right to cancel any request for Tender at any time without recourse by the Tenderer. The City has the right to not award this work for any reason including choosing to complete the work with the City's own forces.

Form of Tender



THE CITY OF COQUITLAM

Form of Tender

Summary

2014 Water Supply Point Metering

Tender No. 86481B

Name of *Contractor*: _____

Tender Price (exclude GST): \$ _____
(FROM APPENDIX 1 OF FORM OF TENDER)

Tender submission must be accompanied by a copy of the original 10% Bid Bond and will be received

On or before 2:00 p.m. (local time) on Tuesday April 1st, 2014

Instructions for Tender Submission

Tender submissions are to be uploaded through QFile, the City's file transfer service accessed at website: qfile.coquitlam.ca/bid

1. In the "Subject Field" enter: **Tender Number and Name**
2. **Add files in .pdf format and "Send"**
3. (ensure your web browser remains open until you receive 2 emails from Qfile to confirm upload is complete)

Tenderers are responsible to allow ample time to complete the Tender submission process. If assistance is required, phone 604-927-3060 or fax 604-927-3035.

THE CITY OF COQUITLAM
 3000 Guildford Way
 Coquitlam, BC V3B 7N2

Form of Tender

(FOR USE WHEN UNIT PRICES FORM THE BASIS OF PAYMENT - TO BE USED ONLY WITH THE GENERAL CONDITIONS AND OTHER STANDARD DOCUMENTS OF THE UNIT PRICE MASTER MUNICIPAL CONSTRUCTION DOCUMENTS.)

The City of Coquitlam

Contract: **2014 Water Supply Point Metering**

Reference No. **86481B**

TO OWNER:

1 WE, THE UNDERSIGNED:

- 1.1 have received and carefully reviewed all of the *Contract Documents*, including the Instructions to Tenderers, the City of Coquitlam Supplementary General Conditions, the City of Coquitlam Supplementary Contract Specifications, the specified edition of the "Master Municipal Construction Documents - General Conditions, Specifications and Standard Detail Drawings" and the following Addenda:

_____;

(ADDENDA, IF ANY)

- 1.2 have full knowledge of the *Place of the Work*, and the *Work* required; and
- 1.3 have complied with the Instructions to Tenderers; and

2 ACCORDINGLY WE HEREBY OFFER:

- 2.1 to perform and complete all of the *Work* and to provide all the labour, equipment and material all as set out in the *Contract Documents*, in strict compliance with the *Contract Documents*; and
- 2.2 to achieve *Substantial Performance* of the *Work* on or before **August 15th, 2014**; and
- 2.3 to do the *Work* for the price, which is the sum of the products of the actual quantities incorporated into the *Work* and the appropriate unit prices set out in Appendix 1, the "*Schedule of Quantities and Prices*", plus any lump sums or specific prices and adjustment amounts as provided by the *Contract Documents*. For the purposes of tender comparison, our offer is to complete the *Work* for the "*Tender Price*" as set out on Appendix 1 of this Form of Tender. Our *Tender Price* is based on the estimated quantities listed in the *Schedule of Quantities and Prices*, and excludes *GST*.

3 WE CONFIRM:

- 3.1 that we understand and agree that the quantities as listed in the Schedule of Quantities and Prices are estimated, and that the actual quantities will vary.
- 3.2 that we understand and agree that the Owner is in no way obliged to accept this Tender.

4 WE CONFIRM:

- 4.1 that the following Appendices are attached to and form a part of this tender:
- 4.1.1 the Appendices as required by paragraph 5.3 of the Instructions to Tenderers - Part II; and
 - 4.1.2 the Bid Security as required by paragraph 5.2 of the Instructions to Tenderers - Part II.
 - 4.1.3 the Certificate of Compliance on the form provided in Appendix 7 of this Form of Tender.

5 WE AGREE:

- 5.1 that this Tender will be irrevocable and open for acceptance by the *Owner* for a period of 60 calendar days from the day following the *Tender Closing Date and Time*, even if the tender of another Tenderer is accepted by the *Owner*. If within this period the *Owner* delivers a written notice ("*Notice of Award*") by which the *Owner* accepts our tender we will:
- 5.1.1 within 10 *Days* of receipt of the written *Notice of Award* deliver to the *Owner*:
 - 5.1 a) a Performance Bond and a Labour and Material Payment Bond, each in the amount of 50% of the *Contract Price*, issued by a surety licensed to carry on the business of suretyship in the province of British Columbia, and in a form acceptable to the *Owner*;
 - 5.1 b) a *Construction Schedule*, as provided by SGC 4.6.1; and
 - 5.1 c) a "clearance letter" indicating that the Tenderer is in WorkSafeBC compliance; and
 - 5.1 d) a copy of the insurance policies as specified in SGC 24 indicating that all such insurance coverage is in place and;
 - 5.1 e) a letter confirming the *Contractor* as "Prime Contractor" for the Contract as specified in SGC 4.2.2.
 - 5.1.2 within 5 *Days* of receipt of written "*Notice to Proceed*", or such longer time as may be otherwise specified in the *Notice to Proceed*, commence the *Work*; and
 - 5.1.3 sign the Contract Documents as required by GC 2.1.

6 WE AGREE:

- 6.1 that, if we receive written *Notice of Award* of this *Contract* and, contrary to paragraph 5 of this Form of Tender, we:
- 6.1.1 fail or refuse to deliver the documents as specified by paragraph 5.1.1 of this Form of Tender; or
 - 6.1.2 fail or refuse to commence the *Work* as required by the *Notice to Proceed*, then such failure or refusal will be deemed to be a refusal by us to enter into the *Contract* and the *Owner* may, on written notice to us, award the *Contract* to another party. We further agree that, as full compensation on account of damages suffered by the *Owner* because of such failure or refusal, the *Bid Security* shall be forfeited to the *Owner*, in an amount equal to the lesser of:
 - 6.1.3 the face value of the *Bid Security*; and
 - 6.1.4 the amount by which our *Tender Price* is less than the amount for which the *Owner* contracts with another party to perform the *Work*.

7 OUR ADDRESS is as follows:

Phone: ____ - ____ - ____ Fax: ____ - ____ - ____

Email: _____

Attention: _____

This Tender is executed this _____ day of _____, 20_____.

Contractor:

(FULL LEGAL NAME OF CORPORATION, PARTNERSHIP OR INDIVIDUAL)

(AUTHORIZED SIGNATORY)

(AUTHORIZED SIGNATORY)

8 WE CONFIRM:

8.1 our Goods and Services (GST) registration status is as follows:

8.1.1 for information purposes, our GST Tax Registration Number is:

(GST REGISTRATION NUMBER)

or;

8.1.2 by signature hereunder, we certify we are **not required** to provide a registration number:

(AUTHORIZED SIGNATORY)

(AUTHORIZED SIGNATORY)

**2014 SUPPLY POINT METERING PROGRAM
CONTRACT 86481B**

**SCHEDULE OF QUANTITIES AND PRICES
(see paragraph 5.3.1 of the Instruction to Tenderers – Part II)**

(All prices and quotations including the Contract Prices shall Exclude GST)

Should there be any discrepancy in the information provided or submitted, the City's original file copy shall prevail

Item	Description of Work	Unit	Est.Qty.	Unit Price	Total Price
1. GENERAL					
1.1	Bonding and Insurance	L.S.	1		
1.2	Mobilization/Demobilization	L.S.	1		
	Subtotal Items 1.1 and 1.2				
2. NORTH ROAD AND GATINEAU PLACE					
2.1	Sitework	L.S.	1		
2.2	Supply and Installation of Flowmeter Chamber	L.S.	1		
2.3	Underground Piping/Ducting and Connection to Existing Watermain	L.S.	1		
2.4	Electrical	L.S.	1		
	Subtotal Items 2.1 to 2.4 Inclusive				
3. DEWDNEY TRUNK AND VIEWMOUNT DRIVE					
3.1	Sitework	L.S.	1		
3.2	Supply and Installation of Flowmeter/PRV Chamber	L.S.	1		
3.3	Underground Piping/Ducting and Connection to Existing Watermain	L.S.	1		
3.4	Electrical	L.S.	1		
	Subtotal Items 3.1 to 3.4 Inclusive				
4. INDETERMINATE ITEMS					
4.1	Additional Mass Concrete Requested by Engineer Incl. Disposal	Cu.m.	10		
4.2	Additional Drain Rock Requested by Engineer	tonne	28		
4.3	Additional 19 mm Minus Granular Base Requested by Engineer	tonne	36		
4.4	Additional Paving at 75 mm Thickness Requested by Engineer	Sq.m.	24		
	Subtotal Items 4.1 to 4.4 Inclusive				
	Subtotal Items 1 to 4 Inclusive				
	TOTAL TENDER PRICE (total items 1 through 4) - Exclude Tax				

* Please Transfer Amount of Tender "TOTAL Tender Price" to Form of Tender Summary Page FT1

Form of Tender - Appendix 2

**2014 Water Supply Point Metering
Contract: 86481B**

**PRELIMINARY CONSTRUCTION SCHEDULE
(See paragraph 5.3.2 of the Instructions to Tenderers - Part II)**

INDICATE SCHEDULE WITH BAR CHART WITH MAJOR ITEM DESCRIPTIONS AND DATES

CONSTRUCTION ACTIVITY	APRIL					MAY					JUNE					JULY				AUGUST			
	31	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25	
Mobilization																							
Restoration & Demobilization																							

Completion Date: Must be complete before August 15, 2014

Construction work at Gatineau location to be completed before June 30, 2014

Proposed Disposal Site: _____

Form of Tender - Appendix 3

**2014 Water Supply Point Metering
Contract: 86481B**

**EXPERIENCE OF SUPERINTENDENT
(See paragraph 5.3.3 of the Instructions to Tenderers - Part II)**

Proposed Project Superintendent _____

List of Project Experience

PROJECT:		Dates:	
Work Description:			
Responsibility:			
Owner/Reference:		Phone NO:	

PROJECT:		Dates:	
Work Description:			
Responsibility:			
Owner/Reference:		Phone NO:	

PROJECT:		Dates:	
Work Description:			
Responsibility:			
Owner/Reference:		Phone NO:	

Form of Tender - Appendix 4

2014 Water Supply Point Metering
Contract:86481B

CONTRACTOR'S COMPARABLE WORK EXPERIENCE
(See paragraph 5.3.4 of the Instructions to Tenderers - Part II)

PROJECT:		VALUE (\$):	
OWNER:		Phone Number:	
Work Description:			

PROJECT:		VALUE (\$):	
OWNER:		Phone Number:	
Work Description:			

PROJECT:		VALUE (\$):	
OWNER:		Phone Number:	
Work Description:			

PROJECT:		VALUE (\$):	
OWNER:		Phone Number:	
Work Description:			

Form of Tender - Appendix 5

2014 Water Supply Point Metering
 Contract: 86481B

SUBCONTRACTORS
 (See paragraph 5.3.5 of the Instructions to Tenderers - Part II)

Trade:		Tender Item:	
Work Description:			
Subcontractor:		Phone No:	

Trade:		Tender Item:	
Work Description:			
Subcontractor:		Phone No:	

Trade:		Tender Item:	
Work Description:			
Subcontractor:		Phone No:	

Trade:		Tender Item:	
Work Description:			
Subcontractor:		Phone No:	

Trade:		Tender Item:	
Work Description:			
Subcontractor:		Phone No:	

Form of Tender – Appendix 6

**2014 Water Supply Point Metering
Contract: 86481B**

BID BOND

NO. _____

\$ _____

KNOW ALL MEN BY THESE PRESENTS THAT

As Principal, hereinafter called the Principal, and

As Surety, hereinafter called the Surety, are held and firmly bound unto

As Oblige, hereinafter called the Oblige, 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.

WHEREAS, the Principal has submitted a written Tender to the Oblige, dated the _____ day of _____, 2014 for Contract _____

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the aforesaid Principal shall have the Tender accepted within sixty (60) days from the Closing Date of Tender and the said Principal will, within the time required, enter into a formal contract and give good and sufficient bonds to secure the performance of the terms and conditions of the Contract, then this obligation shall be null and void; otherwise the Principal and Surety will pay unto the Oblige the difference in money between the amount of the bid of the said Principal and the amount for which the Oblige legally contracts with another party to perform the work if the latter amount be in excess of the former.

The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the expiration of six (6) 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 Attorney-In-Fact, this _____ day of _____, 2014.

SIGNED, SEALED AND DELIVERED)

in the presence of:

)
)
)
)
)
)
)
_____)

PRINCIPAL

SURETY

Form of Tender – Appendix 7

**2014 Water Supply Point Metering
Contract: 86481B**

**CERTIFICATE OF COMPLIANCE
For
CONTRACT INSURANCE**

This is to certify that the Tenderer does hereby undertake and agree to supply to the City of Coquitlam, upon demand, contract insurance listed below for the project requirements indicated:

Contract Number: 86481B
Contract Name: 2014 Water Supply Point Metering

Description of Work:

Work in general consists of installation of Flowmeter chambers, instrumentation & electrical components, and associated conduit & pipe works at two locations:

- Gatineau Place at North Road
 - Supply & install Flowmeter chamber & interconnection piping;
 - Trench & install conduit runs for power and signal cabling;
 - Restore concrete sidewalks, curbing, and boulevard vegetation;

- Dewdney Trunk Road at Viewmount Drive
 - Supply & install combined PRV/Flowmeter chamber & interconnection piping;
 - Supply & install monitoring kiosk, base, antenna pole, and conduit runs;
 - Restore grass boulevard

Commercial General Liability: \$5,000,000 limit

Special Coverage Required:	YES	NO	<u>Special Coverage Description</u>
	(X)	()	Shoring and Underpinning Hazard
	()	(X)	Pile Driving and Vibrations
	(X)	()	Excavation Hazard
	()	(X)	Demolition
	()	(X)	Blasting

We also certify that the insurance coverage will meet the requirements of the Supplementary General Conditions Section 24 – Insurance, included as part of the Contract Documents, and that the proof of insurance will be provided on the City of Coquitlam Certificate of Insurance form, without amendments, except for the exclusions noted above.

Name of Tenderer (printed)

Authorized Signature

Date

Agreement

Agreement

Between Owner and Contractor

(FOR USE WHEN UNIT PRICES FORM THE BASIS OF PAYMENT - TO BE USED ONLY WITH THE GENERAL CONDITIONS AND OTHER STANDARD DOCUMENTS OF THE UNIT PRICE MASTER MUNICIPAL CONSTRUCTION DOCUMENTS.)

THIS AGREEMENT made in duplicate the _____ day of _____, 2014.

Contract: **2014 Water Supply Point Metering**
Reference No. **86481B**

BETWEEN:

The City of Coquitlam
3000 Guildford Way
Coquitlam, BC V3B 7N2

(the "*Owner*")

AND:

(the "*Contractor*")

The *Owner* and the *Contractor* agree as follows:

1 THE WORK - START/COMPLETION DATES

- 1.1 The *Contractor* will perform all *Work* and provide all labour, equipment and material and do all things strictly as required by the *Contract Documents*.
- 1.2 The *Contractor* will commence the *Work* in accordance with the *Notice to Proceed*. The *Contractor* will proceed with the *Work* diligently, will perform the *Work* generally in accordance with the construction schedules as required by the *Contract Documents* and will achieve ***Substantial Performance of the Work on or before August 15th, 2014*** subject to the provisions of the *Contract Documents* for adjustments to the *Contract Time*.
- 1.3 Time shall be of the essence of the *Contract*.

2 CONTRACT DOCUMENTS

- 2.1 The "*Contract Documents*" consist of the documents listed or referred to in Schedule 1, entitled "Schedule of Contract Documents", which is attached and forms a part of this Agreement, and includes any and all additional and amending documents issued in accordance with the provisions of the *Contract Documents*. All of the *Contract Documents* shall constitute the entire *Contract* between the *Owner* and the *Contractor*.
- 2.2 The *Contract* supersedes all prior negotiations, representations or agreements, whether written or oral, and the *Contract* may be amended only in strict accordance with the provisions of the *Contract Documents*.

3 CONTRACT PRICE

- 3.1 The price for the *Work* ("*Contract Price*") shall be the sum in Canadian dollars of the following:
- a) the product of the actual quantities of the items of *Work* listed in the *Schedule of Quantities and Prices* which are incorporated into or made necessary by the *Work* and the unit prices listed in the *Schedule of Quantities and Prices*; plus
 - b) all lump sums, if any, as listed in the *Schedule of Quantities and Prices*, for items relating to or incorporated into the *Work*; plus
 - c) any adjustments, including any payments owing on account of *Changes* and agreed to *Extra Work*, approved in accordance with the provisions of the *Contract Documents*.
- 3.2 The *Contract Price* shall be the entire compensation owing to the *Contractor* for the *Work* and this compensation shall cover and include all profit and all costs of supervision, labour, material, equipment, overhead, financing, and all other costs and expenses whatsoever incurred in performing the *Work*.

4 PAYMENT

- 4.1 Subject to applicable legislation and the provisions of the *Contract Documents*, the *Owner* shall make payments to the *Contractor*.
- 4.2 If the *Owner* fails to make payments to the *Contractor* as they become due in accordance with the terms of the *Contract Documents* then interest calculated at 2% per annum over the prime commercial lending rate of the Royal Bank of Canada on such unpaid amounts shall also become due and payable until payment. Such interest shall be calculated and added to any unpaid amounts monthly.

5 RIGHTS AND REMEDIES

5.1 The duties and obligations imposed by the *Contract Documents* 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.

5.2 Except as specifically set out in the *Contract Documents*, no action or failure to act by the *Owner*, *Contract Administrator* or *Contractor* shall constitute a waiver of any of the parties' rights or duties afforded under the *Contract*, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach under the *Contract*.

6 NOTICES

6.1 Communications among the *Owner*, the *Contract Administrator* and the *Contractor*, including all written notices required by the *Contract Documents*, may be delivered by hand, by email, by fax, or by pre-paid registered mail to the addresses as set out below:

The *Owner*:

The City of Coquitlam
3000 Guildford Way
Coquitlam, BC V3B 7N2

Phone: 604-927-3500
Fax: 604-927-3505

The *Contractor*:

The *Contract Administrator*:

The City of Coquitlam
3000 Guildford Way
Coquitlam, BC V3B 7N2

Phone:
Fax:
Email:

Attention: _____, Project Coordinator / Contract Administrator

- 6.2 A communication or notice that is addressed as above shall be considered to have been received:
- a) immediately upon delivery, if delivered by hand; or
 - b) immediately upon transmission if sent or received by email or fax; or
 - c) after 5 days from date of posting if sent by registered mail.
- 6.3 The *Owner* or the *Contractor* may, at any time, change its address for notice by giving written notice to the other at the address then applicable. Similarly if the *Contract Administrator* changes its address for notice then the *Owner* will give or cause to be given written notice to the *Contractor*.
- 6.4 The sender of a notice by email or fax assumes all risk that the email or fax will be received properly, and the provisions of paragraph 12.5 of the Instructions to Tenderers Part II apply to the sender.

7 GENERAL

- 7.1 This *Contract* shall be construed according to the laws of British Columbia.
- 7.2 The *Contractor* shall not, without the express written consent of the *Owner*, assign this *Contract*, or any portion of this *Contract*.
- 7.3 The headings included in the *Contract Documents* are for convenience only and do not form part of this *Contract* and will not be used to interpret, define or limit the scope or intent of this *Contract* or any of the provisions of the *Contract Documents*.
- 7.4 A word in the *Contract Documents* in the singular includes the plural and, in each case, vice versa.
- 7.5 This agreement shall insure to the benefit of and be binding upon the parties and their successors, executors, administrators and assigns.

IN WITNESS WHEREOF the parties hereto have executed this Agreement the day and year first written above.

Contractor:

(FULL LEGAL NAME OF CORPORATION, PARTNERSHIP OR INDIVIDUAL)

(AUTHORIZED SIGNATORY)

(PRINTED NAME AND POSITION)

Owner:

The City of Coquitlam

(MAYOR)

(MUNICIPAL CLERK)

Schedule 1**Schedule of Contract Documents**

(INCLUDE IN LIST ALL DOCUMENTS INCLUDING, IF ANY, SUPPLEMENTARY GENERAL CONDITIONS, SUPPLEMENTARY SPECIFICATIONS, SUPPLEMENTARY STANDARD DETAIL DRAWINGS) (INCLUDE ATTACHMENTS WHICH WILL FORM A PART OF THE CONTRACT. DO NOT LIST ITEMS WHICH ARE PROVIDED FOR INFORMATION ONLY)

The following is an exact and complete list of the *Contract Documents*, as referred to in Article 2.1 of the Agreement.

NOTE: The documents noted with "*" are contained in the "Master Municipal Construction Documents - General Conditions, Specifications and Standard Detail Drawings", edition dated 2000. All sections of this publication are included in the *Contract Documents*.

- 1 Agreement, including all Schedules;
- 2 Supplementary General Conditions, if any;
- 3 General Conditions*;
- 4 Supplementary Specifications, if any;
- 5 Specifications*;
- 6 Supplementary Detail Drawings, if any;
- 7 Standard Detail Drawings*;
- 8 Executed Form of Tender, including all Appendices;
- 9 Instructions To Tenderers - Part I;
- 10 Instructions to Tenderers - Part II*;
- 11 The following Addenda:
 - As issued.
- 12 City of Coquitlam Supplementary Specifications for Contract Documents.

**2014 Water Supply Point Metering
Reference No: 86481B**

Schedule 2

List of Drawings

(Complete Listing of All Drawings, Plans and Sketches That Are Part of the Contract Documents)

Bound in this Document (Appendix C):

TITLE	DRAWING NO.	DATE
Trench Details for Standard Section	COQ-G4	Jun 12/02

Bound Separately:

Full Size Drawings – (KWL Consulting Engineers/PBA Consulting Engineers):

TITLE	SHEET NO	DATE	DRAWING NO.	REVISION DATE	REVISION NUMBER
City of Coquitlam 2014 Supply Point Metering Program					
Location Plan, Key Plan and Drawing List	n/a	March 04/14	G-101	n/a	A
Dewdney Trunk Rd and Viewmount Dr Flowmeter Chamber Site Plan, Chamber Plan and Sections	n/a	March 04/14	M-101	n/a	A
North Rd at Gatineau Place Flowmeter Chamber Site Plan, Chamber Plan and Details	n/a	March 04/14	M-102	n/a	A
Standard Details	n/a	March 04/14	M-501	n/a	A
Dewdney/Viewmount Location Kiosk Layout	n/a	Feb 28/14	E101	n/a	0
Dewdney/Viewmount Location RTU Panel Layout	n/a	Feb 28/14	E102	n/a	0

Bound Separately (Con't):
Full Size Drawings – (KWL Consulting Engineers/PBA Consulting Engineers):

TITLE City of Coquitlam 2014 Supply Point Metering Program	SHEET NO	DATE	DRAWING NO.	REVISION DATE	REVISION NUMBER
Dewdney/Viewmount Location Single Line and Control Block Diagram	n/a	Feb 28/14	E103	n/a	0
Dewdney/Viewmount Location Control Schematic	n/a	Feb 28/14	E104	n/a	0
Dewdney/Viewmount Location Control Output Schematic Diagram	n/a	Feb 28/14	E105	n/a	0
Dewdney/Viewmount Location Antenna Mounting Detail	n/a	Feb 28/14	E106	n/a	0
North/Gatineau Flow Metering Station Kiosk Layout	n/a	Feb 28/14	E112	n/a	0
North/Gatineau Flow Metering Station RTU Panel Layout	n/a	Feb 28/14	E113	n/a	0
North/Gatineau Flow Metering Station Kiosk Layout Single Line and Control Block Diagram	n/a	Feb 28/14	E114	n/a	0
North/Gatineau Flow Metering Station Control Schematic	n/a	Feb 28/14	E115	n/a	0
North/Gatineau Flow Metering Station Control Output Schematic	n/a	Feb 28/14	E116	n/a	0
North/Gatineau Flow Metering Station Antenna Mounting Detail	n/a	Feb 28/14	E117	n/a	0

End

Supplementary General Conditions

**SUPPLEMENTARY GENERAL CONDITIONS
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These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2000

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CONTRACT 3

ADMINISTRATOR

Appointment 3.1.3

(Add new clause 3.1.3 as follows):

The Contractor shall promptly and efficiently comply with any reasonable instruction issued by the Contract Administrator.

Contract Administration 3.3.10

(Add new clause 3.3.10 as follows):

The Contractor is responsible for all survey layout for the construction of the Work to the design specifications and/or elevations as shown on the contract drawings or as amended on site by the Contract Administrator.

Inspection and Site Inspector 3.4

3.4.9

(Add new clause 3.4.9 as follows):

The Contractor shall, before commencing the work, satisfy himself as to the meaning and correctness of all stakes, marks, grade sheets and other as-built notes.

The Contractor will be required to work with the City's Project Inspector with respect to line and grade of the pavement rehabilitation work including base gravel grading to ensure final surface drainage.

The Contractor will be responsible to provide all construction Survey and information for completion of the as-builts.

If at any time during the progress of the work any error shall appear or arise in the position, levels, dimensions or alignment of any part of the work, the Contractor shall stop work on his portion of the project and notify the Contract Administrator who will within a reasonable time verify the same. If the Contractor proceeds with the work after a discrepancy is discovered, he does so at his own risk. The Contractor shall make allowances in his work schedule for delays of this nature and shall not claim or be paid for related stand-by or shut-down time.

CONTRACTOR 4

Control of the Work

4.1

(Add to clause 4.1.2 as follows):

4.1.2

During all phases of the operation the Contractor shall take precautions to abate nuisance caused by mud or dust by clean-up, sweeping, sprinkling with water, or other means as necessary to accomplish results satisfactory to the Contract Administrator.

The Contractor shall take care to prevent spillage on streets over which hauling is done and the Contractor shall immediately clean up any such spillage or debris deposited on streets due to his operations.

The Contractor shall not deposit any material upon any street, sidewalk, boulevard or other property, without the Contract Administrator's or the Owner's permission, nor shall he allow the same to remain longer than necessary. All surplus spoil and rubbish and other waste material shall be removed from the site so that the area of work is cleaned up and restored to as clean a condition as it was before the Contract started, within four days of the Contract Administrator's written

request to do so, failing which the Owner may carry out the work or have the work carried out by others and recover the costs from the Contractor or may deduct the cost from any monies due or that may become due to the Contractor.

Hours of Work

4.1.3

(Add new Clause 4.1.3 as follows):

Work can be performed during the normal weekday working hours of 0700h to 1900h. Written permission from the Contract Administrator will be required for any works to be performed outside of the normal working days of Monday to Friday.

No Sunday work will be permitted, except in case of emergency and then only with the written permission of the Contract Administrator and to such extent as he deems necessary.

In case the Contractor decides to work on a day which is a Statutory Holiday, he shall provide the Contract Administrator in writing at least (4) days in advance of such holiday, stating those places where said work is to be conducted. In case the Contractor fails to give such notice in advance of any Statutory Holiday, no work within the terms of the contract shall be done on such holiday.

The Contractor shall not schedule work that will require inspection beyond the Owner's normal office hours and working days without prior approval from the Contract Administrator. Any extra cost incurred by the Owner for work done outside of normal office hours and working days will be deducted from the Contractor's monthly payments unless pre-approved by the Contract Administrator. The cost of inspections on a Sunday or on a Statutory Holiday by City staff/s will be at Contractor's expense. No greater quantity of work shall be undertaken at any one time than can be properly conducted with due regard to the rights and interests of the public, as may be determined by the Contract Administrator.

If Road and Sidewalk Closure Permits are issued, the work will be restricted to the time limits indicated on the permit.

Traffic Control Management

4.1.4

(Add new clause 4.1.4 as follows):

The Contractor shall ensure safe passage of vehicles and pedestrian through the work zone and have a traffic management plan, approved by Contract Administrator, and an approved Road and Sidewalk Closure Permit in place prior to start of work. The Contractor shall follow City's Traffic Management Detail Specifications.

Refer to Contract's Supplementary Specifications - Appendix A: Traffic Management Detail Specifications

Safety

4.2

(Add new clause 4.2.2 as follows):

4.2.2

For the purposes of Occupational Health and Safety, the *Contractor* is the "Prime Contractor" as detailed in the Worker's Compensation Act,

Section 118. The *Contractor* shall have and maintain an Occupational Health and Safety Program that meets the requirements of the WCB and the WCB OH&S Regulations.

**Protection of Work,
Property and the
Public**

4.3

(Replace Clause 4.3.4 as follows):

4.3.4

Before commencing any *Work* at the *Place of the Work*, the *Contractor* shall be responsible to locate in three dimensions all underground utilities and structures indicated on the *Contract Documents* as being the *Place of the Work*. The *Contractor* shall also be responsible to consult with all the utility corporations that provide electricity, communications, gas or other utility services in the area of the *Place of Work*, to locate all underground utilities for which they have records. The *Contractor* shall also locate in three dimensions any other utilities or underground structures that are reasonably apparent in an inspection of the *Place of the Work*. Costs to do the locates will be incidental to the contract.

4.3.7

(Add new clause 4.3.7 as follows):

Any lands other than those upon which the work is to be performed, which may be required for temporary facilities, storage purposes or access to the work site, other than those provided by the *Owner*, shall be provided by the *Contractor* at his own cost, with no liability to the *Owner*.

4.3.8

(Add new clause 4.3.8 as follows):

The *Contractor* shall conduct his operations so as to cause the minimum obstruction and inconvenience to traffic and to places of business and residences adjacent to the *Place of Work*. No greater quantity of work shall be undertaken at any one time than can be properly conducted with due regard to the rights and interests of the public as may be determined by the *Contract Administrator*.

The *Contractor* is to provide at all times safe and convenient means of approach and entrance to adjoining lanes, driveways, buildings and property both for vehicles and pedestrians to the satisfaction of the *Contract Administrator*. For this purpose he shall construct and maintain suitable and safe platforms, approaches, structures, bridges, diversions or other works.

Where traffic must cross open trenches, the *Contractor* shall provide suitable bridges. Where trenches have been backfilled or where road improvements are incomplete the *Contractor* shall take any steps necessary to prevent potholes or other traffic hazards. Where the *Contract Administrator* so instructs or where Contract Specifications so require, the *Contractor* shall provide temporary asphalt patching of such hazards.

**Construction
Schedule**

4.6

(Replace Clause 4.6.1 as follows):

4.6.1

The *Contractor* shall within the time set out in the Form of Tender prepare and submit to the *Contract Administrator* for his approval a construction schedule (the Baseline Construction Schedule) indicating the planned start and completion dates of major activities of the *Work*. The Baseline Construction Schedule shall be in more detail than the Preliminary Construction Schedule and shall indicate completion of the *Work* in

compliance with any specified Milestone Dates, including Substantial Performance.

4.6.6

(Replace Clause 4.6.6 as follows):

The time for the performance of the Work shall commence on the date specified in the Notice to Proceed, or if not so specified, on the date the Notice to Proceed is issued. The Notice to Proceed will not be issued until the construction schedule has been approved.

4.6.7

(Add new Clause 4.6.7 as follows):

Any requests to lengthen the work schedule shall be made in writing by the Contractor within five working days of knowledge of the reason for the extension. The Contract Administrator will adjust the schedule at his discretion upon receipt of a written request.

Workers

4.8

(Add new Clause 4.8.2. as follows):

4.8.2

The Contractor shall, upon the request of the Contract Administrator, remove any person employed by him for the purposes of the Contract who, in the opinion of the Contract Administrator, is incompetent or has conducted himself improperly, and the Contractor shall not permit a person who has been removed to return to the Place of Work.

Materials

4.9

4.9.3

(Add new clause 4.9.3 as follows):

The Contractor shall, at his cost,

- a) Be responsible for storing all of the materials supplied for the Work either by himself or the Owner, until it has been incorporated into the completed Work;
- b) Store all materials in a manner which will prevent damage from the weather, dirt, foreign matter, vandalism and theft;
- c) Arrange for and/or verify the time of delivery of all materials to be supplied by himself or the Owner to ensure that delivery will coincide with his work schedules.
- d) Examine with the Contract Administrator the quantities and details of all materials supplied by the Owner at the time and place of delivery or those materials already at the Place of Work, and prepare and sign a Statement of Materials Acceptance, specifically noting and rejecting any defective material;
- e) Replace all materials supplied by himself or the Owner which are found to be stolen, missing or damaged while under his care;
- f) Assume responsibility, upon signing of the Contract, for all materials supplied by the Owner and already at the Place of Work.
- g) Replace all materials found to be defective in manufacture which have been supplied by himself.

Subcontractors

4.11

4.11.3

(Delete clause 4.11.3 and replace with):

These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2000

The Contractor shall, upon notice of the Contract Administrator, remove any Subcontractor employed by him for the purposes of the Contract who, in the opinion of the Contract Administrator, is incompetent or has conducted himself improperly, and the Contractor shall not permit the Subcontractor who has been removed to return to the Place of Work. The removal of a Subcontractor under this clause shall not be considered a Change and the Contract Price and the Contract Time shall not be adjusted.

Test and Inspections 4.12

4.12.2 ***(Delete clause 4.12.2(a) and replace with):***

The Owner is to perform or arrange for all the tests, inspections or approval as part of the Quality Assurance process. If test results indicate a non-conformance to the Contract, all testing subsequent to initial testing, will be performed by the Owner, at the expense of the Contractor, and those costs will be deducted from payments to the Contractor.

4.12.8 ***(Add Clause 4.12.8 as follows):***

The Contractor shall give the Contract Administrator two (2) full working days' notice to arrange and witness any testing required by the Contract.

4.12.9 ***(Add Clause 4.12.9 as follows):***

Failure to follow DFO/MOE BMPs for Instream Works or as instructed by Contract Administrator will result in shut-down of the work. Failure to comply on what is stated on the approved permit will result in shut-down of the work. The Contractor will be required to safely restore facility conditions to allow traffic and creek flow at their expense. The Contractor must take all steps to mitigate impacts to aquatic resources, environment and habitats before work can re-start on site. No claim will be accepted by the Owner for costs associated with this work shut-down.

Final Clean-up 4.14

4.14.3 ***(Add new Clause 4.14.3 as follows):***

The Contractor will be responsible for the complete clean-up of the work site at the end of construction and prior to the Substantial Performance review. The clean-up is considered incidental to the Contract.

The work will include cleaning of all catch basins within the work area, or nearby location as affected by the Work, regardless of the condition of the catch basins prior to starting the Work and all manholes and/or sewers affected by work done under this contract. All cleaning is to be performed by vacuum truck to the satisfaction of the Contract Administrator and will include off-site disposal of waste material.

Notice of Disruption	4.16	
	4.16.2	<i>(Add new Clause 4.16.2 as follows):</i> Written notice must be provided to all properties which may be physically affected by the construction not less than one week and not more than two weeks prior to construction. Notify occupants directly affected by the work 48 hours in advance of commencement of construction. Cost of notifying area occupants of ensuing construction and delivery of the notices is incidental to the Contract. Cost of obtaining releases from area occupants affected by construction is incidental to the Contract.
OTHER CONTRACTORS	6	
Coordination and Connection	6.2	
	6.2.1	<i>(Delete clause 6.2.1 and replace with):</i> The Contractor shall, in accordance with usual construction practice, coordinate the Work with the Other Work and connect to Other Work as specified or shown in the Contract Documents. The Contractor shall not be entitled to additional payment or an extension of contract time for delays where connections to works were specified in the Contract.
CHANGES	7	
Optional Work	7.4	
	7.4.2	<i>(Add new clause 7.4.2 as follows):</i> If there are Optional items or Provisional items included in the <i>Schedule of Quantities and Prices</i> , those items shall be used only as directed and at the sole discretion of the Contract Administrator. These items will be paid at the contract unit price as part of regular progress payments. Only quantities used will be eligible for payment. No claim will be accepted for unused Optional or Provisional quantities.
VALUATION OF CHANGES AND EXTRA WORK	9	
Valuation Method	9.2.4	<i>(Replace Clause 9.2.4 as follows):</i> Once a quotation is accepted by the Contract Administrator, or other agreement reached between the Contract Administrator and the Contractor regarding adjustments to the Contract Price or Contract Time on account of a Change or Extra Work, the Contractor shall not be entitled to claim or receive additional payment, or adjustment to the Contract Time on account of a Change or Extra Work.

**CONCEALED OR
UNKNOWN
CONDITIONS**

11

**Confirmation of
Existing Utility
Information**

11.4

(Add new clause 11.4 as follows):

Further to the requirements of the General Conditions, the Contractor shall expose and locate all existing utilities to be crossed prior to construction. Information shown on drawings is derived from existing record drawings and no responsibility is implied or assumed by the City or Consultants who prepared the designs as to the location, accuracy or omissions. Cost to do the pre locating will be incidental to the contract.

The Contract Administrator will not authorize any pipe or culvert installation to proceed until all existing utility locations are verified, and all conflicts with proposed designs are resolved.

DELAYS

13

**Delay by Owner or
Contract
Administrator**

13.1.2

(Add new Clause 13.1.2 as follows):

The Owner may at any time suspend the work or any portion thereof provided he gives the Contractor five (5) days' written notice of delay. The Contractor shall resume work upon written notice from the Owner, The Contractor shall be entitled to:

a) An extension of the Contract time equivalent to the length of suspension of work.

b) Reimbursement by the Owner for directly related out-of-pocket additional costs, reasonably and necessarily incurred by the Contractor as a result of such suspension. No additional payment will be made to the Contractor for any loss of profits or overhead.

**Direction to Stop or
Delay**

13.7.3

(Add new Clause 13.7.3 as follows):

The Contract Administrator may order the Contractor to stop work if at any time the Contract Administrator is of the opinion that there exists a danger to life or property.

**Liquidated Damages
for Late Completion**

13.8.1

(Delete Clause 13.8.1 (a) and replace as follows):

a) An amount of **\$1000.00** per calendar day for each day, or portion, that *Substantial Performance* is achieved after the date established for *Substantial Performance* in the *Contract*; plus

PAYMENT

18

**Preparation of
Payment Certificate**

18.1.1

(Delete 18.1.1 and replace as follows):

The Contract Administrator shall prepare and issue a certificate for the period ending the last calendar day of the month.

**Substantial
Performance**

18.6.5

(Delete Clause 18.6.5 and replace as follows):

The Owner may release any builders lien holdback on the 56th day

These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2000

following the date of Substantial Performance, or other date as required by law, but the Owner may hold back the amounts for any deficiencies or filed builders liens as provided in GC 18.4.2, GC 18.4.3 and 18.4.4.

18.6.6

(Replace Clause 18.6.6 as follows):

The *Contract Administrator*, as defined herein, shall be the *Payment Certifier* responsible under Section 7 of the *Builders Lien Act* for certifying *Substantial Performance* of the *Work* of the *Contractor*, but not the *Work* of *Subcontractors*. The *Contractor* shall cooperate with and assist the *Contract Administrator* by providing information and assistance in as timely manner as the *Contract Administrator* considers necessary to carry out the duties of the *Payment Certifier* for the *Contract*.

The *Contractor* shall be the *Payment Certifier* responsible under Section 7 of the *Builders Lien Act* for certifying *Substantial Performance* of the *Work* of each *Subcontractor*. Prior to certifying completion for a *Subcontractor*, the *Contractor* shall consult the *Contract Administrator* and obtain the *Contract Administrator's* comments on the status of completion by the *Subcontractor*, including any deficiencies or defects in the *Subcontractor's Work* noted by the *Contract Administrator*. The *Contractor* will indemnify and save the *Owner* harmless from any and all liability the *Owner* may have to anyone arising out of the certification by the *Contractor* of *Substantial Performance* for that *Subcontractor*.

Notwithstanding any other provision of the *Contract*, no payments will be due or owing to the *Contractor* so long as a Lien filed by anyone claiming under or through the *Contractor* remains registered against the Project of any lands, or interest therein, on which *Work* for the project was performed. Failure of the *Contractor* to remove all Liens promptly will entitle the *Owner* to damages.

**LAWS, NOTICES,
PERMITS AND FEES** 20

Environmental Laws 20.4.2

(Add new Clause 20.4.2 as follows):

The successful tenderer will be required to observe and achieve all terms and conditions required under the Fisheries Act. The following is a partial list of conditions that the Contractor shall allow for in its tendered prices:

- All work must be undertaken and completed in such a manner as to prevent the release of silt, sediment or sediment-laden water, raw concrete, concrete leachate, or other deleterious substance into any water courses;
- Silt fences must be erected and maintained around all construction areas;
- All work must be undertaken and completed in isolation of all flowing water to maintain downstream water quality, and unrestricted flows;

- The guidelines for sediment and erosion control outlined in the jointly published BC Environment/Fisheries and Oceans Canada document “Land Development Guidelines For the Protection of Aquatic Habitat” must be adhered to;
- All work must be carried out during favorable and low water conditions;
- All equipment and machinery must be in good working condition (power washed), free of leaks or excess oil and grease. No equipment refueling or servicing shall be undertaken within a minimum of 30 metres of any water course or surface water drainage;
- A spill containment kit must be readily accessible on site. **Any spill of reportable quantities must be immediately reported to the Provincial Emergency Program’s 24 hour phone line at 1-800-663-3456;**
- Machinery must not enter the watercourses without approval of the Contract Administrator;

Any fill used on this project shall be certified inert and from a source which is confirmed to be free of contaminants;

**WORKERS
COMPENSATION
REGULATIONS** 21

**Workers
Compensation
Regulations** 21.4

(Add new clause 21.4 as follows):

All works shall be in strict compliance with WorkSafe BC OHS Regulation Part 19 when working near or under any overhead power lines.

The Contractor must be fully aware of the danger to workers and shall take all necessary safety precautions when working near to existing utilities, such as high pressure gas, water line and BC Hydro lines.

21.5

(Add new clause 21.5 as follows):

All works shall be in strict compliance with WorkSafe BC OHS Regulations.

INSURANCE 24

(Delete Clause 24 Insurance and replace as follows):

Introduction 24.1
24.1.1

Importance of Prompt Attention to Insurance and Bond Requirements:

The City Council has directed that the apparently successful Contractor, after being so informed, shall complete the “Supplementary General Conditions Regarding Contract Insurance and Bond Specifications”. Contractors are advised, however, to make themselves familiar with the Specifications as undue delay may result if advance investigations are not carried out.

24.1.2

Format of the Supplementary General Conditions:

Section 24 deals generally with insurance and bonding with respect to

the Contract. Certain documents must be provided at the time of tendering. These requirements are set out in Section 24.3.

Before any work may commence, and no exceptions will be allowed to this rule, certain other documentation will be required and this is set out in Sections 24.4 and 24.5.

General

24.2 **Supplementary General Conditions Forming Part of the Contract:**

24.2.1 The Supplementary General Conditions regarding Contract insurance and bond specifications set out herein shall be attached to and form part of the Contract Documents.

24.2.2 **Acceptable Insurance Carriers:**

The insurer issuing any policy, or other document which is evidence of insurance to the Contractor, shall be an insurer licensed by the Superintendent of Insurance in the Province of British Columbia and registered with the Department of Insurance for Canada at Ottawa, except the Insurance Corporation of British Columbia, which is not subject to this condition.

24.2.3 **Owner's Right to Change Terms:**

Notwithstanding anything contained in the Contract Documents, the Owner will have the right to request a change to the specified terms and conditions respecting insurance at the sole option of the Owner. The Contractor will be notified in writing of any changes required by the Owner and will provide a quotation for such work.

24.2.4 **Delivery of Insurance Documents:**

All insurance policies or other acceptable specified documents shall be delivered to, and accepted by, the Owner before the Contract Documents are signed. No work shall be commenced by the Contractor or by anyone acting on the instructions of the Contractor, until the required Insurance Documents have been accepted by the Owner and the Contract Documents have been duly signed by the Owner and the Contractor.

24.2.5 **Owner's Right to Insure:**

Should the Contractor for any reason not comply with the specified requirements with respect to the insurance, the Owner will, at the Owner's option, have the right to purchase all or any part of such insurance which, in the opinion of the Owner, may be required to provide the specified insurance, and, in the event of so doing, the Owner will have the right to pay the premiums for such insurance and to withhold the amount of premiums so paid from any amount due and payable to the Contractor under the Contract.

Procedure Respecting 24.3

Tendering 24.3.1

Security Deposit:

Each tender must be accompanied by a Bid Bond on the form included as Appendix 6 in the Form of Tender, said Bid Bond to be issued by a

surety company licensed to conduct business in the Province of British Columbia and shall be in the amount of ten percent (10%) of the Tender Price.

24.3.2 **Certificate of Compliance:**

The Contractor shall submit the Certificate(s) of Compliance included as Appendix 7 of the Form of Tender with respect to the insurance required to be provided by the successful Tenderer.

**Procedure Respecting
Contract Insurance
and Bonding**

24.4

General Conditions:

24.4.1

Damage to work (excluding Building Contracts where Section 24.5, Paragraph 24.5.1, Further Responsibilities of Contractor, applies).

The Contractor shall be responsible for any and all loss, or damage, whatsoever which may occur on or to the works, completed or otherwise, until such time as the entire works have been completed and the Notice of Acceptance has been issued by the Owner, except that loss or damage caused solely by an act of the Owner. In the event of any loss or damage occurring, the Contractor shall, on notice from the Contract Administrator, immediately put the works into the condition it was immediately prior to such loss or damage, all at the Contractor's expense, except where such loss or damage was caused solely by an act of the Owner.

The Contractor shall be responsible for any and all loss or damage whatsoever which may occur on or to the works, completed or otherwise, arising out of the negligence of the Contractor, any subcontractors, and the employees or agents of any of them.

Indemnity

The Contractor shall indemnify and save harmless the Owner from and against any and all losses, claims, demands, payments, suits, actions, recoveries, and judgements of every nature and description brought or recovered against him, and/or the Owner, by reason of any act or omission of the said Contractor, his agents, or employees in the execution of the work.

24.4.2

Bonds:

To ensure the faithful execution and proper fulfilment of the Contract, the Contractor shall provide the Owner with the following bonds at the time of his execution of the Contract Agreement:

- A Performance Bond in the amount of fifty percent (50%) of the total Contract amount covering the faithful performance of the Contract; and
- A Labour and Material Payment Bond in the amount of fifty percent (50%) of the total Contract Price.

The above bonds must be issued by a surety company licensed to carry on business in the Province of British Columbia and shall be provided

on the forms included as Appendix I and Appendix II respectively.

24.4.3 **Public Liability Insurance**
(Other than Automobile Third Party Liability Insurance):

Evidence of Insurance

The Contractor shall deposit with the Owner, before the work commences, a Certificate of Insurance, signed by an authorized representative of the insurer, such certificate to be as shown in Appendix III.

Effective Dates and Terms:

The effective date of the Certificate of Insurance shall be the date of the execution of the Contract Agreement and the term of this policy shall be from such effective date until a date not less than twelve (12) months after the date of completion of all work under the Contract.

Limits of Liability:

For bodily injury and for property damage shall be inclusive limits not less than \$5,000,000.

24.4.4 **Public Liability Insurance (Automobile):**

The Contractor shall deposit with the Owner before the work commences a Certificate of Insurance with respect to owned automobiles on ICBC Form No. APV 47 entitled "Confirmation of Insurance Coverage" and with respect to Non-Owned Automobiles including hired automobiles and Contractual Liability on ICBC non-owned automobile policy Form APV 29 (if non-owned automobile coverage is not included under the comprehensive general liability coverage) each signed by an authorized representative of the Insurance Corporation of British Columbia.

**Physical Loss or
Damage With Respect
to New Buildings
under Construction
and/or Major
Additions to Existing
Structures**

24.5 **Responsibility for Placing Insurance:**

24.5.1 The types of insurance required under this section will be provided and maintained at the expense of the City of Coquitlam during the term of the Contract and will be as follows unless otherwise changed by specific endorsement to these Insurance Specifications.

24.5.2 **Insurance Coverage Required:**

Builders Risk Completed Value "All Risks" Course of Construction Insurance. This policy will be written in the names of the City of Coquitlam and the Contractor with loss payable as their respective interests may appear.

24.5.3 **Responsibility of Contractor – Limitations of cover and deductibles:**

The insurance provided by the City of Coquitlam as described herein will not provide the Contractor with full protection against any and all kinds of loss or damage which may arise out of the Contract. It is,

therefore, the responsibility of the Contractor to fully understand the scope of the cover provided with particular attention to the exclusions, limitations of cover and deductible provisions contained in the Insuring Agreements of the policies and it is further the responsibility of the Contractor to take out at the Contractor's expense, whatever other additional insurance the Contractor may consider necessary or desirable for his protection subject as hereinafter provided. The Contractor shall act in the same manner on insurance made available through the City of Coquitlam as he would if he had arranged such insurance himself.

24.5.4 **Responsibility of Contractor – Direct Damage Insurance:**

If the Contractor fails to do all or anything that is required of him concerning insurance, the City of Coquitlam may do what is required and any monies expended by the City of Coquitlam for that purpose shall be repayable and recoverable from the Contractor. Should any action failure, or negligence of the Contractor result in higher insurance costs being incurred by the City of Coquitlam, such additional costs shall be payable or recoverable from the Contractor.

24.5.5 **Responsibility of Contractor – Machinery and Equipment Belonging to Others:**

Unless otherwise directed by the City of Coquitlam in writing, the Contractor shall carry insurance covering loss or damage to construction machinery, tools and equipment owned by and/or on bare rental from a third party or parties and used by the Contractor in performing the work, which insurance shall be in a form satisfactory to the City of Coquitlam and having coverage in accordance with the actual cash value of such construction machinery, tools and equipment. Such policies shall also provide for subrogation to be waived against the City of Coquitlam. A certified copy of the policy shall be delivered to the City of Coquitlam not later than thirty days after the commencement of work under the Contract.

24.5.6 **Contractor's Waiver of Liability to Coquitlam:**

The Contractor hereby releases the City of Coquitlam from any and all liability for damages to the extent that such damages are covered by the course of construction insurance referred to in Section 24.5 of these specifications.

24.5.7 **Liability of Contractor:**

Neither the providing of insurance by the Contractor or the City of Coquitlam in accordance with the requirements hereof, nor the insolvency, bankruptcy, nor failure of any insurance company to pay any claim accruing shall be held to waive any of the provisions of this Contract with respect to the liability of the Contractor or otherwise.

24.5.8 **Responsibility of Contractor for protection of work, persons and**

property:

The Contractor and all persons employed by the Contractor or under his control, and all employees and subcontractors, shall use due care that no person or property is injured, and that no rights are infringed in the prosecution of the work. Contractors shall take particular care to protect the work against loss or damage caused by riot, vandalism or malicious mischief and shall be at the expense of the Contractor provide all necessary safeguards in the form of watchmen and/or watch dog protection to prevent loss or damage of this type. The payment of deductibles is the responsibility of the Contractor and if not paid by the Contractor such amounts shall be deducted by the City of Coquitlam from payment due to the Contractor. These deductibles will normally be \$250.00 each claim.

24.5.9 **Action to be taken in the event of loss or damage to the work covered by the Contract:**

When any loss or damage occurs to the work or to any materials and supplies on the site of the work, the Contractor shall remove any and all damaged or destroyed property and shall rebuild or replace the damaged or destroyed work, materials, or supplies and complete the work to the satisfaction of the Owner. For such removal, rebuilding, or replacing, the Contractor shall be entitled to receive from the Owner the amount of insurance monies received by the Owner pursuant to the said adjustment which amount shall be paid to the Contractor as the work of rebuilding or replacing proceeds, and in accordance with the Agreement. Damage or destruction of the whole or any part of the work shall not affect the rights and obligations of either party under the Agreement, except that in such event the Contractor shall be entitled to such reasonable extension of time to complete the work as the Architect and/or Contract Administrator may decide.

24.5.10 **Further responsibility of Contractor:**

Other than with respect to loss or damage arising out of insured risks and herein before specified, the Contractor shall be responsible for all loss or damage whatsoever which may occur on or to the works completed or otherwise, until such time as the entire works have been completed and the Notice of Acceptance has been issued by the Owner, except that loss or damage caused solely by an act of the Owner.

In the event of any loss or damage occurring, the Contractor shall on notice from the Owner immediately put the works into the condition it was immediately prior to such loss or damage, all at the Contractor's expense except as previously stated.

24.5.11 **Owner Not Responsible for Loss or Damage or Loss of Use of Property of Contractors and their Employees:**

The Owner will not be responsible for securing or paying for insurance

of any kind other than as specified in Section 24.5 of these specifications nor will the Owner have any responsibility whatsoever for loss or damage from whatever cause occurring to property owned, leased, or otherwise in the possession of the Contractor, subcontractors or their employees including, without restricting the generality of the foregoing, machinery, equipment, tools, supplies, and clothing at the construction site or elsewhere including loss of use of same.

Additional Insured 24.6 The Contractor shall ensure the following are named as "additional insured" on the liability policy for this contract:

- The City of Coquitlam

The City or Contractor may identify private properties that are directly affected by construction. If so, the Contractor shall include the legal owners of these properties named as "additional insured" on the liability policy for this contract.

MAINTENANCE PERIOD 25

Correction of Defects 25.1
25.1.4

(Add new Clause 25.1.4 as follows):

The Owner is authorized to make repairs to defects or deficiencies if, ten days after giving written notice, the Contractor has failed to make or undertake with due diligence the required repairs. However, in the case of emergency where, in the opinion of the Owner, delay is not reasonable, repairs may be made without notice being sent to the Contractor. All expenses incurred by the Owner in connection with repairs made pursuant to GC 25 shall be paid by the Contractor or may be deducted from the Maintenance Security, or other holdbacks. The Contractor shall promptly pay any shortfall.

TERMINATION FOR REASONS OTHER THAN DEFAULT 27

(Add new Section 27 as follows):

27.1 Notwithstanding any other provision of the contract, the Owner may at any time, upon giving fifteen (15) days written notice to the Contractor, terminate the Contract.

27.2 Upon receipt of the Notice from the City pursuant to clause 27.1, the Contractor shall only proceed with those portions of the Work specifically authorized in writing by the Contract Administrator, and shall perform such other related work required to leave the site in a safe condition as is specified by the Contract Administrator, at a cost agreed to by the Owner and the Contractor.

27.3 Upon the termination of the contract in accordance with clause 27.1, the Owner shall have no further obligation to the Contractor save and except to pay the Contractor:

- (a) the amount the Contractor is entitled to for Work completed satisfactorily on the Project to the date of termination; and
- (b) other actual expenses of the Contractor, such as demobilization and compensation for unrecovered fixed expenses which are, in the opinion of the Contract Administrator reasonable in the circumstances.

APPENDIX I

PERFORMANCE BOND

No. _____ \$ _____

KNOW ALL MEN BY THESE PRESENTS THAT

As Principal, hereinafter called the Principal, and

As Surety, hereinafter called the Surety, are held and firmly bound unto

As Obligee, hereinafter called the Obligee, 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.

WHEREAS, the Principal has entered into a written contract with the Obligee, dated the

day of _____ 2014 , for

in accordance with the drawings and specifications submitted, therefore, which contract, drawings and specifications and addenda thereto, to the extent provided for, are by reference made part hereof and are hereinafter referred to as the Contract.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Principal shall promptly and faithfully perform said Contract (including any addenda thereto, provided such addenda do not collectively increase the amount to be paid to the Principal by more than twenty per cent (20%) of the amount of the Contract except with the written consent of the Surety) then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

Whenever the Principal shall be, and declared by Obligee to be, in default under the Contract, the Obligee having performed Obligee's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master
Municipal Construction Documents, Volume II, Printed 2000

APPENDIX II

LABOUR AND MATERIAL PAYMENT BOND

(Private Contracts - Trustee Form)

Note: This Bond is issued simultaneously with another Bond in favour of the Obligee conditioned for the full and faithful performance of the Contract.

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

As Trustee, hereinafter called the Obligee, for the use and benefit of the Claimants, their and each of their heirs, executors, administrators, successors and assigns 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 _____ 2014.

WHEREAS, the Principal has entered into a written contract with the Obligee dated the day of _____ 2014, for

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

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Principal shall make payment to all Claimants for all labour and material used or reasonably required for use in the performance of the Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. A Claimant for the purpose of this Bond, is defined as one having a direct contract with 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 the part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment directly applicable to the Contract provided that a person, firm or corporation who rents equipment to the Principal to be used in the performance of the Contract under a contract which provides that all or any part of the rent is to be applied towards the purchase price thereof shall only be a Claimant to the extent of the prevailing industrial rental value of such equipment for the period during which the equipment was used in the performance of the Contract. The prevailing industrial rental value of equipment shall be determined, insofar as it is practical to do so, in accordance with and in the manner provided for in the latest revised edition of the publication of the Canadian Construction Association entitled "Rental Rates on Contractors' Equipment" published prior to the period during which the equipment was used in the performance of the Contract.
2. The Principal and the Surety hereby jointly and severally agree with the Obligee as Trustee that every Claimant who has not been paid as provided for under the terms of his contract with the Principal before the expiration of a period of ninety (90) days after the date on which the last of such Claimant's work or labour was done or performed or materials were furnished by such Claimant, may as a beneficiary of the trust herein provided for, sue on this Bond, prosecute the suite to final judgment for such sum or sums as may be justly due to such Claimant under the terms of his said contract with the Principal and have execution thereon. Provided that the Obligee is not obliged to do or take any act, action or

These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2000

APPENDIX III
CERTIFICATE OF INSURANCE

This Certificate issued to the City of Coquitlam is to certify that policies of insurance, as described below, have been issued to the Insured named below and are in force at this time. It is understood and agreed that thirty (30) days' prior written notice by registered mail of any material alterations, transfer, assignment or cancellation of any of the policies listed below, either in part or in whole, will be given to the holder of this Certificate.

- A. This Certificate is issued to: **City of Coquitlam**
3000 Guildford Way
a) Coquitlam, BC V3B 7N2
- Named Insured and Mailing Address:
- B. CONTRACT NUMBER AND/OR NAME Description of the Work:
- C. INSURANCE POLICY
- (a) Name of Insurer: Liability Limit:
Policy Number: Expiry Date:
Effective Date:
- D. INSURANCE COVERAGE
- (b) **COMMERCIAL GENERAL LIABILITY** coverage is required to insure against liability from the activities arising out of operations or work in connection with the above-described project, including liability arising out of the use of City property.
- D.1 The minimum limit shall be \$5,000,000.00 inclusive per occurrence against bodily injury, personal injury and property damage.
- D.2 The City of Coquitlam, its employees, officers, agents and volunteers are added as Additional Insureds, but only with respect to operations conducted by or on behalf of the Named Insured in connection with the above-described project, operations or work.
- D.3 This insurance shall be primary as regards the City of Coquitlam, its employees, officers, agents and volunteers as Additional Insureds.
- D.4 Any deductible or reimbursement clause contained in the policy shall not apply to the City of Coquitlam and shall be the sole responsibility of the Named Insured.
- D.5 The insurance shall include the following coverages:
- D.5.1 Cross Liability Clause
 - D.5.2 Non-Owned Automobile Liability
 - D.5.3 Unlicensed Automobile Liability
 - D.5.4 Blanket Contractual Liability
 - D.5.5 Broad Form Property Damage Liability
 - D.5.6 Owner's & Contractor's Protective Liability
 - D.5.7 Products & Completed Operations Liability
- D.6 Indicate provision of special coverage for this project as required by the City:
- | YES | NO | Special Coverage Description |
|-----|-----|---------------------------------|
| (X) | () | Shoring and Underpinning Hazard |
| () | (X) | Pile Driving and Vibrations |
| (X) | () | Excavation Hazard |
| () | (X) | Demolition |
| () | (X) | Blasting |
- D.7 () () **PROFESSIONAL LIABILITY INSURANCE for Consultant Service Agreements**

The *Consultant* shall obtain and maintain for the duration of the *Services* as described in the Agreement, at its own cost, Professional Liability Insurance on terms and from an insurer satisfactory to the City of Coquitlam.

The Professional Liability Insurance policy shall insure the *Consultant's* legal liability for errors, omissions and negligent acts, to the extent of no less than \$500,000.00 per Claim and \$1,000,000.00 Aggregate.

Authorized Signature and Stamp

Date _____ Name and Title

City' broker to return to City Representative Department

These Supplementary General Conditions must be read in conjunction with the General Conditions contained in the Master Municipal Construction Documents, Volume II, Printed 2000



APPENDIX IV

PRIME CONTRACTOR DESIGNATION

Subject: **Prime Contractor Designation**
Contract #: **86481B**
Contract Name: **2014 Water Supply Point Metering** (the "Project")

_____ (the "Contractor") represents, acknowledges and agrees that:

1. in accordance with section 118 of the *Workers Compensation Act*, R.S.B.C. 1996, c. 492 (the "*Workers Compensation Act*"), the Contractor shall be the "Prime Contractor" and is qualified to act as the "Prime Contractor" in respect of the Project ;
2. the Contractor accepts the duties and responsibilities for coordination of health and safety in accordance with the *Workers Compensation Act* and further agrees that it will do everything necessary to establish and maintain a system or process that will insure compliance with the *Workers Compensation Act* and the Regulations thereto;
3. the Contractor shall fulfill all the obligations of an "Owner" under section 119 of the *Workers Compensation Act* in respect of the Project site; and
4. that the City of Coquitlam has fulfilled its obligations as an "Owner" under section 119 of the *Workers Compensation Act*, in respect of the Project site.

Prime Contractor Name & Address:

Prime Contractor Signature

Date

Print Name

Please return a signed copy of this memo to the City of Coquitlam. If you have any questions, please contact the City's Health and Safety Advisor at 604-927-3068.

Supplementary Contract Specifications

**SUPPLEMENTARY
SPECIFICATIONS INDEX SS 1**

DIVISION 1 – GENERAL REQUIREMENTS

01000S	Contract Specific Instructions and Notations	SS 2 to SS 5
01400S	Quality Control.....	SS 6 to SS 8
01561S	Environmental Protection	SS 9
01570S	Traffic Regulation.....	SS 10
01721S	Project Record Documents	SS 11

DIVISION 2 - SITE WORK

02104S	Shrub and Tree Preservation	SS 12
02111S	Clearing and Grubbing	SS 13
02210S	Site Grading	SS 14
02223S	Excavating, Trenching and Backfilling	SS 15
02231S	Reshaping Granular Roadbed	SS 16
02233S	Granular Base	SS 17
02234S	Granular Subbase.....	SS 18
02512S	Hot-Mix Asphalt Concrete Paving.....	SS 19 to SS 20
02523S	Concrete Walks, Curbs & Gutter.....	SS 21
02574S	Cold Milling	SS 22
02580S	Painted Pavement Markings.....	SS 23
02666S	Water works	SS 24 to SS 28
02721S	Storm Sewer	SS 29 to SS 30
02725S	Manholes and Catchbasins	SS 31 to SS 32
02921S	Topsoil and Finish Grading.....	SS 33
02938S	Sodding	SS 34

1.00 Contract Specific Instructions

- 1.01 Coordination with CMBC
Arterial and collector roads are bus routes; therefore the Contractor shall be responsible to consult with the Coast Mountain Bus Company (CMBC) regarding delays, detours, temporary bus stop closures and any other works affecting the transit service in the area.
- 1.02 Outside Agency Approval
In accordance with the Contract Documents, the Contractor is responsible to consult with and/or obtain any approvals required from any outside agency such as Metro Vancouver, Evergreen Line, BC Hydro, Telus, Kinder Morgan, and Terasen Gas in the area of the place of Work.
- 1.03 Cooperation with Emergency and Maintenance Activities
The Contractor will be responsible to cooperate with regular maintenance or emergency vehicles and staff for access to the site when required including:
- Fire, Police, and Ambulance
- Waste Management (garbage pick-up)
- City Utilities Maintenance (or representatives)
- 1.04 Lane Closure Restrictions
The following lane closure restrictions shall apply,:
- At a minimum, a single lane of traffic in each direction must be accommodated at all times. Time of day restrictions for lane closures may also apply. Details specified in **Supplementary Specifications – Appendix A (Traffic Management)**
- The Contractor must take the above information into account in the preparation and submission of the Tender.
- Costs to complete the works taking the above restrictions into consideration shall be included in the unit prices bid in the Schedule of Quantities and Prices.
- A copy of the approved lane Closure Permit must be held on site by both the Site Superintendent and the person/company responsible for the traffic control implementation.
- 1.05 Hours of Work
The hours of work shall be :
- Monday to Friday: 0700 hours to 1900 hours inclusive**
Saturday: 0900 hours to 1800 hours inclusive
- Written permission from the Contract Administrator will be required for any works to be performed on a Sunday.
- In case the Contractor decides to work on a day which is a Statutory Holiday, he shall provide the Contract Administrator in writing at least (4) days in advance of such holiday, stating those places where said work is to be conducted. In case the Contractor fails to give such notice in advance of any Statutory Holiday, no work within the terms of the contract shall be done on such holiday.
- 1.06 Order of Construction
The contractor will be required to conduct the work such that construction at Gatineau location on North Road will be carried out between 15th May, 2014 and 30th June 2014.
- 1.07 Completion Date
The Contractor will achieve **Substantial Performance of the Work on or before August 15th 2014**, subject to the provisions of the Contract Documents for adjustments to the Contract Time. Should Substantial Performance not be achieved by this milestone date (Late completion), liquidated damages will be assessed at the amount as stated in section 13.8.1(a) of Supplementary General Conditions.
- 1.08 Schedule of Work
All work under this Contract is to be completed within the designated Contract Duration. The Contractor must provide sufficient resources in a continuous effort and site presence to complete all the work within the allotted time.

1.09	Survey Layout	The Contractor is responsible to provide all survey layout for construction to ensure the construction meets the design specifications and/or elevations as shown on the Contract Drawings or as amended on-site by the Contract Administrator.
1.10	Site Safety	<p>The Contractor is responsible to ensure the construction site is safe at all times for workers, pedestrians, and vehicle traffic. During non-working hours, the Contractor must ensure that the site has all potentially hazardous areas appropriately identified and protected, and also must provide appropriate signage, lighting, and markings for the direction of vehicle and pedestrian traffic, all to ensure the safety of the public.</p> <p>Manhole lids, valve boxes and other appurtenances within the roadway that may present a traffic hazard during construction must be clearly marked for traffic.</p> <p><u>Manhole lids left raised in preparation for paving must have a rubberized protector ring for traffic safety.</u> Supply and use of this equipment is considered incidental to the contract.</p>
1.11	Pre-Locate Existing Utilities & Service Connections	<p>The contractor is responsible to verify the depth and location of all utilities (watermains, storm mains, sanitary mains & etc.), including outside agency utilities (i.e. Terasen Gas Mains, Kinder Morgan Pipeline & etc.) and service connections (water, storm & sanitary services at the mains & property lines) by hand digging or by Hydro-Vac in the presence of the Inspector.</p> <p>Pre-locates must be completed as soon as possible after award of the contract so changes can be completed by the Engineer prior to site construction.</p> <p>The contractor will not receive any compensation or allowance for delays if work is halted due to utilities & services connections not located prior to commencing construction.</p> <p>City of Coquitlam does not guarantee water, storm or sanitary services connections are perpendicular to the mains or property lines, the contractor will not receive any compensation for the time to locate these connections or for exposing hidden services at the property lines.</p> <p>Payment for this work will be treated as incidental to payment for work described in other Sections.</p>
1.12	Utility Adjustments - City Infrastructure and/or Other Agency Infrastructure	<p>The Contractor is responsible for adjusting all utilities, belonging to Coquitlam and/or other agencies that are affected by the road works. All adjustments to utilities must be completed to the satisfaction of the utility owner. Utility adjustment will be considered incidental to the contract unless otherwise noted in the Contract Documents.</p> <p>The Contractor should note that certain utility owners may decide to complete their own adjustments. The Contractor will be required to cooperate with any utility company providing their own adjustments.</p> <p>The Contractor shall be responsible to contact the appropriate utility company with in minimum of seventy two (72) hours of the work. No adjustment shall be made without the written approval of the utility company.</p> <p><u>All manholes must be vertically adjusted a minimum of twenty four (24) hours prior to paving</u></p> <p>Access to manholes and valves must be maintained at all time for city utilities crews and external utility companies. In case of an emergency the cost for exposing any buried manhole or valve covers during construction will paid by the contractor.</p>
1.13	Residential & Business Accesses	The contractor is responsible to maintain all residential and business accesses open at all times. The Contractor is responsible to coordinate the work with the affected properties.
2.00	Construction Activity	

2.01	Pavement Markings	The Contractor will be responsible for installation of the permanent pavement markings after paving is complete. Payment is incidental to other works in this contract.
2.02	Asphalt Milling Operations	<p>Asphalt milling activities shall be done in such manner so as to cause the least disruption and inconvenience to traffic and area residents. The milled area must be paved with asphaltic concrete within 120 hours (5 days) of the start of the milling operation, unless otherwise approved by Contract Administrator in advance.</p> <p>Milling of extensive areas that cannot be paved within the 108 hours (4.5 days) will not be permitted. Milling of areas will not be permitted to start at the end of the work week.</p> <p>The Contractor will be required to provide a plan and schedule for milling sections and the subsequent paving activities and have that approved by the Contract Administrator. This schedule is to be updated as required and take into consideration weather conditions and weather forecasts to ensure work subsequent to milling can be completed in appropriate weather.</p>
2.03	Construction Materials in Sewer Manholes and Pipe	The Contractor is responsible to ensure that construction activities do not deposit construction materials (eg. gravels) into the storm sewer or sanitary sewer manholes or pipe. The City has a video record of the pipe before construction. Prior to Substantial Completion, the City may again video inspect the lines to ensure no problems exist due to construction activities under this contract. If problems are encountered, the Contractor will be responsible for the cost of the video and all costs associated with the cleaning of the pipe.
2.04	Site Clean-up During Construction and End of Construction	<p>The Contractor will be responsible for the complete clean-up of the work site during construction & at the end of construction <u>and prior to the Substantial Performance review</u>. This work is considered incidental to the Contract.</p> <p>The work will include cleaning of all catch basins periodically or as directed by the Contract Administrator within the Work area, or nearby location as affected by the Work, regardless of the condition of the catch basins prior to starting the Work. All cleaning is to be performed by <u>vacuum truck to the satisfaction of the Contract Administrator</u> and will include off-site disposal of waste material.</p>
3.00	Performance Evaluation	
3.01	Evaluation of Work	<p>After the completion of all work in the contract, the Contractor will be evaluated on project management, performance of work, scheduling, and the quality of the final product.</p> <p>This internal evaluation may be reviewed for reference on subsequent tenders with the City. Upon request, the Contractor may attend a meeting with the City to discuss the evaluation.</p>
4.00	Mandatory Meetings and Contractor Representatives & SubContractors	
4.01	Pre-Construction Meeting Requirements	<p>After the Award of a contract, the Contractor (Project Manager & Superintendent) will be required to attend a Pre-Construction Meeting at Coquitlam City Hall with the Contract Administrator and provide all necessary information required by the Contract Administrator prior to provision of a Notice to Proceed. Items required to be provided at the meeting include:</p> <ol style="list-style-type: none">.1 A Detailed Construction Schedule showing the start date, milestone date & completion date and the durations of major work components showing how all work will be completed within the Contract Duration..2 A Construction Staging Plan providing information & details on the number of stages being proposed by the contractor. This plan will be reviewed and must be approved

		<p>prior to commencing construction.</p> <ol style="list-style-type: none">.3 Proof of insurance.4 Performance Bond and Labour and Materials Payment Bond.5 WCB Clearance Letter and copy of Notice of Project.6 City of Coquitlam Business License.7 A copy of portions of your Health and Safety Plan including the Title Page, Table of Contents, and portion showing latest revision date.
4.02	Contract Schedule, Contract Duration, and Charges	<p>A detailed, realistic construction schedule for this project will be required to be presented at the pre-construction meeting.</p> <p>All work under this project is to be completed within the designated Contract Duration as contained in the signed Contract Agreement (Section 1.2), or as formally amended.</p> <p>Failure to complete the work by the Milestone or Substantial Performance Date will result in charges to the Contractor in the amount of <u>\$500.00 per calendar day</u> as detailed in the Supplementary General Conditions, Section 13 – DELAYS, Item 13.8.1 (a) as amended.</p>
4.03	Contract Superintendent and Subcontractors	<p>In compliance with the MMCD General Conditions, Section 4.7, Superintendent, the Contractor shall have a competent senior representative, (the "Superintendent") be in attendance at the Place of Work while work is being performed for the duration of the contract. This attendance is also required when work is being performed by SubContractors.</p> <p>Work done by SubContractors is to be directed by the Superintendent and monitored on site ensuring conformance to the Contract Documents and other particular direction to the Superintendent by the Contract Administrator.</p> <p>The Owner is not responsible for the direction of SubContractors.</p>
4.04	Changes of Contractor Representatives & SubContractors	<p>The Superintendent and SubContractors indicated in the Form of Tender shall not be changed unless:</p> <ol style="list-style-type: none">.1 the Owner requests a replacement.2 the Contractor submits an application for a change, in writing, to the Contract Administrator with the change being approved in writing..

1.0	Quality of Work and Performance Evaluation	
1.01	Quality	<p>The Contractor shall provide a final product conforming to the Contract Documents and the intent of the work.</p> <p>The work is to be accurate to the dimensional and tolerance requirements of the contract.</p> <p>Payment will be subject to adjustments based on quality assurance tests performed by the Contract Administrator</p>
1.02	Quality Control (QC) by Contractor	<p>The MMCD (2009) definition of “Quality Control” is the process by which the <i>Contractor</i> checks specific materials, products, and workmanship to ensure strict conformance with the Contract Documents.</p> <p>The Contractor is fully responsible for quality control of the materials, production, and construction processes. Quality control tests shall be performed by the Contractor, at their own expense, to ensure that products meet the contract specifications. Failure by the Contractor to conduct adequate quality control testing during production and construction will negate the Contractor’s ability to appeal the quality assurance tests used for acceptance/rejection of the work.</p> <p>Under no circumstances will QC test results produced after completion of the Quality Assurance (QA) results be considered for appeal purposes.</p> <p>Any changes in the Work with respect to the location, grade, or line shall be approved in advance by the Contract Administrator. Failure to notify the Contract Administrator of changes in writing may result in rejection of Work.</p>
1.03	Inspection of Work and Quality Assurance	<p>The MMCD (2009) definition of “Quality Assurance” means the process by which the <i>Owner</i> evaluates if the work is being constructed in accordance with the Contract Documents. This definition will be used for this contract</p> <p>The Contract Administrator will provide construction review through spot inspections.</p> <p>Inspection review by the Owner will not relieve the Contractor from providing a product that meets or exceeds the requirements of the Contract Documents</p>
1.04	Inspection	<p>Materials testing shall be as described in MMCD General Conditions and Contract’s Supplementary General Conditions, Section 4.12.</p>

1.05	Testing	Contractor shall also carry out inspection and testing to ensure quality control and compliance with Contract Documents or as designated by Contract Administrator
1.06	Contractors Responsibilities	Furnish labour and facilities to: .1 – Provide access to work to be inspected .2 – Facilitate inspections and tests .3 – Make good work disturbed by inspection and tests
1.07	Access to Work	Allow inspection testing agencies access to Work.
1.08	Tests	Test rates and frequencies (excluding failed tests), when not defined in the MMCD shall be at the following frequencies: 1. Trench Backfilling and Compaction 1.1 Compaction: 1 test / 25 lm / 0.5 m depth of trench 1.2 Sieve: 1 test / material source / 1000 m ³ 2. Granular Base 2.1 Compaction: 1 test / 200 m ² 2.2 Sieve: 1 test / material source / 1000 m ³ 3. Granular Subbase 3.1 Compaction: 1 test/500m ² / 0.15m depth of granular subbase 3.2 Sieve: 1 test / material source / 1000 m ³ 4. Embankment (Subgrade) 4.1 Compaction: 1 test/ 1000m ² / 0.15m depth of fill 4.2 Sieve: 1 test / material source / 2000 m ³ 5. Asphalt 5.1 Marshall test: test per 500 tonnes placed ASTM D1559, D3203, C117, C136 5.2 Superpave: test per 500 tonnes placed CAI-SP2, ASTM D3203, C117, C136 5.3 Cores: 1 per 1000 m ² /lift 5.4 Continuous asphalt density testing during paving. 6. Subgrade Preparation 6.1 Compaction & Moisture: 1 test / 500 m ² 7. Concrete Tests 7.1 Air, Slump & 1 Set Cylinders: 1 test / 50 m ³ , min. 1 set / day
1.9	Measurement and	Payment for quality control will include all work described in this section,

These Supplementary Specifications must be read in conjunction with the Master Municipal Specifications contained in the Master Municipal Construction Documents, Volume II, 2000.

Payment and will be incidental.

END OF SECTION

01561 Environmental Protection

1.3	Drainage	1.3	<p><i>(Replace Clause 1.3 as follows):</i> “1.3 Drainage, Erosion and Sediment Control”</p> <p>“Properly drain all portions of the site. Protect the site and the watercourses to which it drains, directly or indirectly, against erosion and siltation in accordance with a Sediment Control Plan under the City of Coquitlam Stream and Drainage System Protection Bylaw No. 4403, 2013 during construction and until the maintenance period is completed (see below). Ensure no silt, gravel, debris or other deleterious substance resulting from construction activity discharges into existing drainage systems or watercourses or onto highways or adjacent property. The Contractor is responsible for all damage that may be caused by water backing up or flowing over, through, from or along any part of the work or otherwise resulting from his operations.</p> <p>Keep existing culverts, drains, ditches and watercourses affected by the work clear of excavated material at all times. When it is necessary to remove or alter any existing drainage structure, provide suitable alternative measures for handling the drainage. Adequately support culverts and drainpipes across trenches to prevent displacement and interference with the proper flow of water due to trench settlement.</p> <p>Sweep streets, and clean catch basins, manhole sumps, detention tanks, and maintain siltation controls as often as the Contract Administrator deems necessary.</p> <p>Follow all Federal and Provincial regulations and guidelines respecting protection of fish, fish habitat, and watercourses.</p> <p>Follow all Federal and Provincial regulations and guidelines respecting protection of fish, fish habitat, and watercourses.</p>
1.6	Pollution Control	1.6	<p><i>(Add New Clauses as follows):</i></p> <ul style="list-style-type: none">.5 Immediately contain and clean up any leaks and spills of prohibited materials on the job site..6 Ensure that a well-stocked spill kit is on-site at all times and that the Contractor’s employees are familiar with appropriate spill response techniques..7 Immediately notify the Contract Administrator of any leaks or spills of prohibited materials that occur on the job site..8 Ensure that any fuel stored on-site is located at least 15 metres from the nearest stream, and is placed within a bermed and lined area, in order to prevent leaks or spills into the environment..9 Ensure that no equipment fueling or servicing is conducted within 15 metres of a stream.
1.7	Measurement for Payment	1.7	<p><i>(Replace Clause 1.7 as follows):</i></p> <p>Payment for all work performed under this section will be incidental to payment for work described in other Sections.</p>
1.9	Archaeological/Historical Resources	1.9	<p><i>(Add New Clause 1.9.1 as follows):</i></p> <p>Immediately cease work and inform the Contract Administrator, if any archaeological or historical resources are encountered during construction. Leave these resources in place and do not disturb them in any way.</p>

END OF SECTION

1.0	GENERAL	1.0.5	<p><i>(Add clause 1.0.5 as follows):</i> The contractor is responsible for all temporary traffic control on the streets within this contract. The contractor will be responsible to provide a Traffic Management Plan (TMP) for approval (5) five working days prior to any lane closures taking place. The TMP is to be prepared by a professional.</p> <p>The TMP shall outline the approach to traffic management, show recognition and minimization of risks, indicate signing locations, identify Traffic Control Persons (TCP) stations, show lane shifting and proposed closures.</p> <p>The TMP is to be altered and resubmitted as required during the progress of the work</p> <p>The TMP will be adjusted and negotiated with all concerned parties.</p>
		1.0.6	<p><i>(Add clause 1.0.6 as follows):</i> Refer to Appendix A – Traffic Management Detail Specifications.</p>
1.3	Informational and Warning Signs	1.3.3.1	<p><i>(Add clause 1.3.3.1 as follows):</i> The contractor is required to supply Construction Zone information signs (stationary), refer to Section 4.3 in Appendix A for location, size, & quantity.</p> <p>The contractor is responsible for the removal of the signs at the completion of the work.</p>
1.5	Measurement for Payment		<p><i>(Replace Clause 1.5 as follows):</i> Payment for all work performed under this section will be incidental to payment for work described in other Sections.</p>

END OF SECTION

1.0 GENERAL

1.3 Submission

1.3.2 ***(Replace Clause 1.3.2 as follows):***

Submit one copy of project record documents in final form **prior** to applying for Substantial Performance. Substantial Performance will not be issued until record documents (field mark-ups) have been submitted and accepted by the Contract Administrator.

END OF SECTION

1.3	Measurement for Payment	1.3	<i>(Replace Clause 1.3 as follows):</i> Payment for all work performed under this section will be incidental to payment for work described in other Sections.
2.1	Materials	2.1.10	<i>(Add New Clause 2.1.10 as follows):</i> Protective Fencing: Posts - Pressure treated wood 100 mm dia.; Post to be 1.8m to 2.0m in height at 2.0m O.C. Snowfence - Dupont L-70 or approved equivalent; Flagging Tape - 4" Orange glow - 'Tree Retention Area'.
3.0	Execution	3.0.1	<i>(Add New Clause 3.0.1 as follows):</i> The Contractor is responsible to minimize damage to all trees which are to remain.
		3.0.2	<i>(Add New Clause 3.0.2 as follows):</i> The Contractor will be responsible for all claims and costs including the cost of examination by an Arborist, repair, removal and replacement of trees, as required by the Arborist and the Contract Administrator for tree damage where proper notification was not received from the Contractor. Damage will be assessed based on the International Society of Arboriculture Guidelines. The term shall be for a period of one year following the date of Total Performance of the contract work.
3.1	Existing Trees	3.1.7	<i>(Add New Clause 3.1.7 as follows):</i> Place protective fencing/barricades as detailed on Standard Drawing COQ-R23 and COQ-R24. Contractor shall maintain fence in good condition during construction.
		3.1.8	<i>(Add New Clause 3.1.8 as follows):</i> When work is to be performed inside fenced areas, Contractor shall take care to avoid damage to existing vegetation. Work to be done inside areas of existing vegetation to be retained includes: .1 Removal of isolated trees as directed by Contract Administrator. .2 Selective pruning and tree removal at edges to create tidy and well shaped forest edge. .3 Placing planting soil and planting of trees.
		3.1.9	<i>(Add New Clause 3.1.9 as follows):</i> Do not park, service or fuel vehicles within the vegetation retention areas.
3.4	Pruning	3.4.2	<i>(Add New Clause 3.4.2 as follows):</i> Do not cut roots or branches of retained trees without approval of Contract Administrator.

END OF SECTION

1.4 Measurement and Payment 1.4

(Replace Clause 1.4 as follows):

Payment for all work performed under this section will be incidental to payment for work described in other Sections.

END OF SECTION

1.4 Measurement and Payment

1.4

(Replace Clause 1.4 as follows):

Payment for all work performed under this section will be incidental to payment for work described in other Sections.

END OF SECTION

1.3	Definition	1.3.2	<i>(add to Clause 1.3.2):</i> "asphaltic concrete"
3.6	Surface Restoration	3.6.2.4	<i>(Delete Clause 3.6.2.4 and replace as follows):</i> Restore lawns with approved topsoil and sod to match existing lawn.
		3.6.3.1	<i>(Delete Clause 3.6.3.1 and replace as follows):</i> Restore surface with minimum 200mm of 19mm granular road base material.
		3.6.7.5	<i>(Delete Clause 3.6.7.5 and replace as follows):</i> Restore Pavement as detailed on Coquitlam Standard Detail COQ-G4. Temporary patch shall be a minimum of 50mm thickness. Permanent restoration shall be a minimum of 75mm thickness with a 35mm key where current thickness permits.
1.10	Measurement for Payment	1.10	<i>(Replace Clause 1.10 as follows):</i> Payment for all work performed under this section will be incidental to payment for work described in other Sections.

END OF SECTION

1.0

GENERAL

1.4

Measurement and
Payment

(Replace Clause 1.4 with 1.4.1 as follows):

Payment for all work performed under this section will be incidental to payment for work described in other Sections.

END OF SECTION

1.4	Measurement and Payment	1.4	<p><i>(Delete Clause 1.4 and replace as follows):</i> Payment for all work performed under this section will be incidental to payment for work described in other Sections.</p>
3.5	Proof Rolling	3.5.7	<p><i>Clause 3.5.1</i> <i>Delete "or dual"</i> <i>Add "to 80KN (18,000 lb) minimum.</i></p> <p><i>(Add Clause 3.5.7 as follows):</i> Prior to paving with asphalt concrete, the base surface shall be checked by the Contract Administrator, for deflections utilizing a Benkleman Beam, in order to insure that the final rebound requirements can be obtained with the asphalt pavement. In the event that such deflection are in excess of those required to produce the final standards, than the base shall be adequately strengthened by additional gravel or asphalt concrete to insure that final deflections as follows are not exceeded. The Benkleman spring rebound value of the completed pavement surface shall not at any point exceed 0.75mm for arterial industrial roads and lanes, 1.15mm for collector roads, and 1.5mm for local roads and lanes as determined in the procedures outlined in the Transportation Association of Canada publication "Pavement Management Guide".</p>

END OF SECTION

1.4 Measurement and Payment

1.4 ***(Delete Clause 1.4 and replace as follows):***
Payment for all work performed under this section will be incidental to payment for work described in other Sections.

2.1 Specified Materials

2.1.1.1 ***(Delete Clause 2.1.1.1):***
Select granular subbase

2.1.1.2 ***(Delete Clause 2.1.1.2):***
75mm pit run gravel

2.1.1.4 ***(Delete Clause 2.1.1.4):***
pit run sand

2.1.1.5 ***(Delete Clause 2.1.1.5):***
approved native material

END OF SECTION

1.1	Related Work	1.1	<p>Add new clause to 1.1: “6 Roadway Excavation, Embankment & CompactionSection 02224” “7 Manholes and Catch Basins.....Section 02725”</p>
1.5	Measurement and Payment		<p>Payment for all work performed under this section will be incidental to payment for work described in other Sections.</p>
		1.5.1	<p>(Delete Clause 1.5.1 and replace as follows):Payment for asphaltic concrete paving includes all construction joint preparation, asphaltic surface milling to tie into existing asphalt, saw cutting, supply and placing of the asphaltic concrete, compaction and cleaning frames, covers and lids of castings affected and taped temporary pavement markings</p> <p>Measurement for asphaltic concrete paving for the specified design mixes for lower and upper courses will be incidental to payment for work described in other Sections.</p> <p>The contractor will not receive any additional compensation above the respective unit prices bid in the Schedule of Quantities and Prices for Hand Work, Special Equipment and Machinery to complete the Hot Mix Asphaltic Paving around Utility Poles, Slot Paving and etc. as shown on the Contract Drawings or as directed by the Contract Administrator.</p>
		1.5.2	<p>(Delete Clause 1.5.2 and replace as follows):Payment for asphaltic concrete paving includes all construction joint preparation, asphaltic surface milling to tie into existing asphalt, saw cutting, supply and placing of the asphaltic concrete, compaction and cleaning frames, covers and lids of castings affected and taped temporary pavement markings</p> <p>Measurement for asphaltic concrete paving for the specified design mixes for lower and upper courses will be made at the respective unit prices bid in the Schedule of Quantities and Prices.</p> <p>The contractor will not receive any additional compensation above the respective unit prices bid in the Schedule of Quantities and Prices for Hand Work, Special Equipment and Machinery to complete the Hot Mix Asphaltic Paving around Utility Poles, Slot Paving and etc. as shown on the Contract Drawings or as directed by the Contract Administrator.</p>
		1.5.3	<p>(Delete Clause 1.5.3 and replace as follows): Payment for asphaltic concrete sidewalks, driveways, letdowns, plumes & in-fill strips paving includes all construction joint preparation, asphaltic surface milling to tie into existing asphalt, saw cutting, supply and placing of the asphaltic concrete, compaction and cleaning frames, covers and lids of castings affected.</p>
		1.5.4	<p>(Delete Clause 1.5.4 and replace as follows): Payment for extruded 150mm depth asphalt concrete curb will include asphaltic concrete, all preparatory & construction preparation, pavement cleaning, tack coat and placing by extrusion.</p> <p>The Contractor is responsible for the protection of the new placed curb until it can accept vehicle traffic, the contractor will not receive any compensation for protecting the curb and the Contract Administrator may reject any curb that is not protected and damaged.</p>
1.6	Inspection and Testing	1.6.2	<p>Add Clause 1.6.2 as follows: Test cores will be taken by the Contract Administrator in the areas of new paving and will include cores along construction joints to ensure compliance with the</p>

required density and compaction.

2.2 Mix Design

2.2.3.2

Change Marshall Stability for both lower and upper course to “10 kN min”.

3.5 Placing

3.5.4.3

Add to Clause 3.5.4.3 as follows:

“except for local residential streets where the maximum lift thickness for asphalt paving is 75mm. Minimum lift thickness for surface course shall not be less than 50mm.

3.7 Joints

Delete Clause 3.7.5 and add:

“Construct butt joints as directed in the field by the Contract Administrator.”

END OF SECTION

1.4	Measurement and Payment	1.4.3	<i>(Delete Clause 1.4.3 and replace as follows):</i> Payment for machine placed, hand formed or precast concrete curbs and gutters, excluding granular subbase and granular base, includes supply and placing of the concrete curbs and gutters and will cover all straight and curve sections and will be incidental to payment for work described in other Sections.
		1.4.5	<i>(Delete Clause 1.4.5 and replace as follows):</i> Payment for concrete sidewalks, driveways, walkways and all concrete ramps, and wheelchair letdowns, includes 100mm thick of granular base, supply and placing of the concrete, subgrade preparation under the concrete sidewalks, infill strips, driveways and walkways and wheelchair letdowns and will be incidental to payment for work described in other Sections.
3.9	Expansion Joints	3.9.1	<i>(Delete Clause 3.9.1 and replace as follows):</i> Form transverse expansion joints at both ends of curb returns and at a maximum spacing of 9m for sidewalks, 9m for curb and gutter, at each end of driveway crossings and at tangent points on circular work.
		3.9.4	<i>(Delete Clause 3.9.4 and replace as follows):</i> Bond break compound may be used in lieu of expansion joint between sidewalk and back of abutting utility strip or sidewalk infill.

END OF SECTION

1.5	Measurement and Payment	1.5.3	Payment for all work performed under this section will be incidental to payment for work described in other Sections.
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END OF SECTION

1.2	Scope	1.2.1	<i>(Delete Clause 1.2.1 and replace as follows):</i> Pavement Markings: Miscellaneous taped temporary and permanent pavement markings including pedestrian crosswalk, merge and diverge markings, stop lines, solid and broken line road lane markings including edge lines of merge and diverge markings, bike symbols, etc. to be provided as shown on the Contract Drawings.
		1.2.2	<i>(Add Clause 1.2.2 as follows):</i> All permanent markings shall be marked with thermoplastic manufactured by LAFRENTZ ROAD MARKINGS.
1.5	Measurement and Payment	1.5.2	Payment for all work performed under this section will be incidental to payment for work described in other Sections.

END OF SECTION

1.8 Measurement for Payment

Payment for all work performed under this section will be incidental to payment for work described in other Sections.

1.8.1

(Add to Clause 1.8.1 as follows):

Refer to Coquitlam Supplementary Detail Drawings where applicable.

1.8.2

(Delete Clause 1.8.2 and replace as follows):

Payment for watermain will include location and exposure of existing utilities, support of utility poles and adjacent piping, removal & reinstatement of catch basins, sawcutting or grinding of asphalt and disposal off-site, saw cutting and disposal of concrete (sidewalks, curb and gutters, driveways, etc.), trench excavation, dewatering, disposal of unacceptable excavated material, bedding, supply and installation of pipe, bolts, gaskets, thrust blocks, couplings (Robar 1506), restraints and tie rods, approved import backfill material compacted in place, cleaning, pressure and leakage testing, flushing, disinfection where required, granular sub-base, granular base, and all other work and materials necessary to complete installation as shown on Contract Drawings and specified under this Section

Measurement for watermains will be made at the respective lump sum bid in the Schedule of Quantities and Prices.

1.8.3

(Delete Clause 1.8.3 and replace as follows):

Payment for inline gate valves or butterfly valves including valve boxes; and for fittings (crosses, tees, bends, reducers, blind flanges, caps and etc) will be made for items identified on Contract Drawings and installed as part of watermain as described under 1.8.2 in this Section.

Measurement for fittings will be made at the respective lump sum bid in the Schedule of Quantities and Prices.

1.8.4.1

(Delete Clause 1.8.4 and replace as follows):

Payment for removal of the existing hydrant includes excavation, removal of the hydrant body, barrel, boot, upper operating rod, valve box, cover and riser pipe, capping of the lead and all surface restoration as indicated in the requirements in 1.8.2 of this Section and all other incidental work necessary. Deliver the old hydrant to the City of Coquitlam.

Measurement will be made at the unit price bid for each hydrant assembly removed.

1.8.4.2

(Add Clause 1.8.4.2 as follows):

Payment for new hydrants installed on the new Main includes the hydrant body, c/w Storz "quick connect" pump nozzle, lateral connections from mainline tee off watermain to hydrants, all new pipes, integral isolation gate valve, valve box & cover, valve stem riser pipe, bends, couplings (Robar 1506), any necessary pipe extensions to achieve the required hydrant height, concrete thrust block, tie rods, bedding material, testing and disinfection, surface restoration as indicated in the requirements in 1.8.2 of this Section and all other incidental work as shown on Standard Detail Drawing W3 & W4. (Mainline tee and mainline valve payment under separate section).

Measurement will be made at the unit price bid for each hydrant assembly installed.

1.8.4.3

(Add Clause 1.8.4.3 as follows):

Payment for connecting existing hydrant to new Main shall include all new pipes, isolation gate valve, valve box and cover, bends, couplings (Robar 1506), any

necessary pipe extensions, concrete thrust block, tie rods, bedding material, testing and disinfection, all removals and surface restoration and all other incidental work necessary to reconnect the existing fire hydrant. (Mainline tee payment under separate section).

Payment for this item includes the installation of a Storz “quick connect” pump nozzle on the existing hydrant.

Measurement will be incidental to payment for work described in other Sections.

1.8.5.1

(Delete Clause 1.8.5. and replace as follows):

Payment for 19mm service connection includes, removal and disposal of concrete meter box, curb stop, piping and meter (where applicable), supply and installation of mainline double strap saddles, corporation stops, reconnecting to the existing main using a MacDonald 6130 compression coupling (where specified) or connecting to a new main, service pipes and all related fittings and appurtenances specified and/or shown on City of Coquitlam Standard Drawing W2b_a or Standard Detailed Drawing W2b (except where noted) and reconnecting to the existing service at or near property line or as shown on the Contract Drawings including any fittings and repair couplings. Payment also includes all applicable work described in 1.8.2.

Measurement and payment for service connection will be made at the unit price bid per lineal meter of water service connection installed as measured along the ground from the center of the main to the terminus of the service.

Measurement and payment for curb stops with Nelson Box and Risers will be made at the unit price bid for each box assembly installed.

NOTE: PAYMENT FOR SERVICE CONNECTIONS AND CURB STOPS WILL NOT BE MADE UNTIL RESTORATION WORK IS COMPLETE TO CITY'S SATISFACTION.

1.8.5.2

(Add Clause 1.8.5.2 as follows):

Payment to transfer existing services to a new main includes locating and cutting the existing service supply and installation of mainline double strap saddles, corporation stops, service pipes, fittings and repair couplings, at locations shown on the Contract Drawings. Payment also includes all applicable work described in 1.8.2.

Measurement and payment for reconnecting existing service connections will be made at the unit price bid for each existing service reconnected the new water main.

1.8.6.3

(Add Clause 1.8.6.3 as follows):

Payment for the installation of an Air Valve assembly and chamber on a new main includes all materials, works and appurtenances as shown on City of Coquitlam Contract Drawings, “Air Release Valve” detail, sheet 4 of 4. Payment includes all applicable work described in 1.8.2

Measurement and payment will be made at the lump sum price bid for each air valve assembly and chamber installed.

Payment for test points is considered to be incidental to payment for work described herein.

1.8.12

(Delete Clause 1.8.12 and replace as follows):

Payment for under pressure branching (Wet Tap) includes branch saddle with integral isolation valve, special under pressure branching equipment, supply and install all pipe make up pieces, couplings (Robar 1506) caps, restraints, tie-rods, and bolts as detailed on the Contract Drawings, cutting and disposal of the

existing mains, permanent capping, removal of any decommissioned valves boxes, temporary fittings to provide service changeovers and coordinating all tie-in works with City Staff. Payment will be made on a per Lump Sum basis for each tie-in. Payment for fittings such as tees, line valves, bends and reducers will be made under 1.8.3.

		1.8.14	<p>(Delete Clause 1.8.14 and replace as follows): Payment for all tie-ins to existing watermains will include all pipe materials, fittings, test points, thrust blocks, excavation to expose the existing main to confirm location, grade, size, material & condition and prepare the existing watermains, couplers (Robar 1506), caps, restraints, tie-rods, and bolts as detailed on the Contract Drawings, cutting and disposal of the existing mains, permanent capping, temporary fittings to provide service changeovers and coordinating all tie-in works with City Staff. Payment will be incidental to payment for work described in other Sections.</p>
		1.8.15	<p>(Add Clause 1.8.15 as follows): Payment for decommissioning valves includes valve box removal, backfilling riser pipe per contract drawings, compacting base, boulevard restoration, or saw cutting and restoring surface with full depth asphalt patch. (100mm).</p> <p>Measurement and payment for this item will be made at the unit price bid for each valve box removed.</p>
2.2	Mainline Pipe, Joints And Fittings	2.2.1.1	<p>(Replace Clause 2.2.1.1 as follows): Pipe: to AWWA C151, and shall meet the following Pressure Class or Thickness Class: - 100mm – 350mm – Thickness Class 50 - 400mm & greater – PC 350</p>
2.3	Valves and Valve Boxes	2.3.1.3	<p>(Replace Clause 2.3.1.3 as follows): Valves 400 mm and larger to be butterfly valves.</p>
		2.3.4	<p>(Replace Clause 2.3.4 as follows): Blowdown or Blow-Off Valves: 50 mm to 300 mm as specified for mainline gate valves.</p>
		2.3.6.1.1 2.3.6.1.2	<p>(Delete Clause 2.3.6.1.1 and 2.3.6.1.2 and replace as follows): Circular type valve box shall be Nelson Style.</p>
		2.3.7.1 2.3.7.2	<p>(Delete Clause 2.3.7.1 and 2.3.7.2 and replace as follows): Service valve boxes shall be as shown in Standard Detail drawing W2b. The circular type valve box shall be Nelson Type.</p>
		2.3.7.3	<p>(Delete Clause 2.3.7.3 and replace as follows): Curb stop valve boxes (300 mm from property line) alternative on 19 mm dia. to 38 mm dia. services without operating rods to be assembled as specified for Mainline Valve Boxes - 2.3.6.1.2 and 2.3.6.2. and shown on Standard Detail Drawing W2b.</p>
		2.3.7.5	<p>(Delete Clause 2.3.7.5 and replace as follows): Corporation stop valve boxes (at mainline tees or tappings) on services 50mm diameter and larger as specified for Mainline Valve Boxes per City of Coquitlam Standard Drawing COQ-W2E and COQ-W2F.</p>
2.5	Service Connections, Pipes, Joints and Fittings	2.5.1	<p>(Delete Clause 2.5.1 and replace as follows): Pipe diameter 19 mm to 75 mm to be Type K annealed copper to ASTM B88M.</p>
2.6	Hydrants	2.6.6.3	<p>(Delete Clause 2.6.6.3 and replace as follows):</p>

			Pump nozzle shall be Terminal City STORZ “quick connect” Adapter
2.8	Granular Pipe Bedding and Surround Material	2.8.3	(Add Clause 2.8.3 as follows): Shall conform to Type 2 gradation.
3.6	Pipe Installation	3.6.11	(Add Clause 3.6.11 as follows): When the water main crosses a storm or sanitary sewer, the water main shall be installed a minimum 0.5 m clear above the sewer. Where this is not possible, the water main shall have a minimum 0.3 m clearance under the sewer with all joints within a 3.0 m horizontal distance from the sewer wrapped with heat shrink plastic or packed and wrapped with petrolatum tape in accordance to the following standards: <ul style="list-style-type: none"> - ANSI/AWWA C214 (factory applied) - ANSI/AWWA C209 (field applied) - ANSI/AWWA C217-90 (petrolatum tape) - All materials used are to have zero health hazard
			Installation shall be in accordance with the requirements of the Regional Health Engineer under the Health Act.
		3.6.12	(Add Clause 3.6.12 as follows): Prior to construction, the contractor shall locate and expose all utilities crossing the proposed water main, water services, tie in locations and any other proposed works.
3.10	Service Connection Installation	3.10.14	(Add Clause 3.10.14 and replace as follows): Water service connections (19mm) must be installed as one continuous length of pipe.
3.12	Hydrants	3.12.1	(Delete Clause 3.12.1 and replace as follows): Install hydrant assemblies at locations shown in the Contract Drawing Booklet. Standard off-set from property line shall be 1.0 metres or as directed by the Contract Administrator.
3.23	Connections to Existing Mains	3.23.1	(Delete Clause 3.23.1 and replace as follows): Connections to existing waterworks systems will be made by the Contractor under the supervision of the Contract Administrator. Make all necessary arrangements with the Contract Administrator to schedule work to prevent construction delays.
		3.23.2	(Add Clause 3.23.2 as follows): Provide written notification to all affected residents a minimum 48 hours prior to service interruption.
		3.23.3	(Add Clause 3.23.3 as follows): Arrange shutdown of the existing valves by the City. Contractor shall not operate any valves without prior approval of the Contract Administrator.
		3.23.4	(Add Clause 3.23.4 as follows): Provide temporary service while existing service is interrupted as detailed in Contract Drawings or Detailed Specifications.
		3.23.5	(Add Clause 3.23.5 as follows): Fittings used for tie ins should be cleaned of all foreign material and sprayed with a 1% hypochlorite solution prior to assembly. Disinfect all pipes and fittings installed at the connection.
		3.23.6	(Add Clause 3.23.6 as follows): Contractor shall be responsible for the costs for the City to flush and purge all air from existing mains and services in the area affected by the service interruption.

3.23.7

(Add Clause 3.23.7 as follows):

Procedure for Watermain Tie-ins Coliform Bacterial Testing

Procedures for Bacteriological Tests shall be as described in AWWA C651-99.

No connection to existing watermains will be authorized until final results of coliform bacterial testing have been received and reviewed by the Water Foreman.

All samples shall be taken by the City Water Utility.

All valve operation shall be handled by the City Water crews.

The Contractor shall provide sampling points, one every 366m plus the end of each main segment. The Contractor shall provide all labour to temporarily connect and disconnect the new main in order to properly acquire test samples.

Initial flushing, testing and chlorination will be undertaken by the Contractor from a water source approved by the Water Superintendent.

Coordination for the bacterial testing and tie in shall be coordinated by the project Engineering Inspector and the Water Superintendent prior to final flushing.

The Engineering inspector shall review with the Water Superintendent and the Contractor sampling locations and appurtenances.

The Engineering Inspector shall check and record chlorine residual prior to final flushing.

After final flushing the City Water crew will collect two sets of samples 24 hours apart. Samples will be taken from the City supply and at least every 366m of the new main as well as the terminus and all branches.

Test results will be delivered to the Water Foreman who will provide a copy of the Engineering Inspector.

The Water Superintendent will judge the adequacy of the test results and issue an authorization to connect.

City Water crews will provide shutdown and flushing as required.

END OF SECTION

1.6	Measurement and Payment		Payment for all work performed under this section will be incidental to payment for work described in other Sections.
		1.6.1	(Replace Clause 1.6.1 as follows): Payment for storm sewer for various sections of storm sewer consistent with pipe materials, diameters and backfill requirements shown on the Contract Drawings will be incidental to payment for work described in other Sections.
		1.6.2	(Delete Clause 1.6.2 and replace as follows): Installation includes all pipe, fittings and related materials, tie-ins, bedding, import backfill (19mm Crushed Gravel in accordance to Clause 2.10 Granular Base in Section 02226 – Aggregates and Granular Materials), cleaning and flushing, testing (if applicable), videoing and all other work and materials necessary to complete installation as shown on Contract Drawings and specified under this Section.
		1.6.5	(Delete Clause 1.6.5 and replace as follows): Payment for catchbasin & Lawn basin leads include all applicable materials and work described in 1.6.2 Measurement for catchbasin leads will be made horizontally from mainline pipe to centreline of catchbasin for each pipe size installed with no regards to depth range.
2.1	Concrete Pipe	2.1.6	(Replace Clause 2.1.6 as follows): Pre-Test in accordance with Section 02731 Clause 2.1.4.
2.4	Spiral Rib Pipe-Steel	1.4	This section shall only apply where Spiral Rib Pipe-Steel is specified in the contract plans and specifications.
2.5	Service Connections	2.5.1	Replace 100mm diameter with 150 minimum diameter.
		2.5.8	(Delete Clause 2.5.8 and replace as follows): Connections to ribbed PVC pipe to be made with a manufactured wye fitting where wye locations are known in advance. For connections to ribbed PVC mainline pipe larger than 450 mm an insertable tee for ribbed PVC pipe is permitted for connections more than two sizes smaller than mainline pipe. When an insertable tee is used, hole cut into mainline pipe to cut as few ribs as possible.
		2.5.11	(Add Clause 2.5.11 as follows): .11 Insertable tee fitting shall have a rubber collar which inserts into the mainline pipe to form a tight seal and shall have stainless steel band to secure the tee insert. The tee insert shall be a standard bell end with depth control lugs.
		2.5.12	(Add Clause 2.5.12 as follows): .12 Rubber couplings for gravity sewers shall have stainless steel shear bands along the body of coupling.
2.7	Granular Pipe Bedding and Surround Material	2.7.3	(Add Clause 2.7.3 as follows): .3 Pipe bedding shall be 19 mm clear crushed rock or as approved by the Contract Administrator. Surround material above the springline within the pipe zone may be Type 2.
3.6	Pipe Installation	3.6.14	(Add Clause 3.6.14 as follows): Test pipe in accordance with Section 02731 Clause 3.12.

3.8 Connections to Existing Mainline Pipes 3.8.5

(Add Clause 3.8.5 as follows):

Connections to existing mainlines 450 mm and smaller shall be made by removal of the section of the main and replacement with a manufactured PVC wye complete with stubs and double hub PVC couplings for PVC mains and approved shear band couplings for other mainline materials.

Connections to existing concrete mainline and mainlines larger than 450 mm shall be made in accordance with this section and will be made using a core cutter.

The contractor shall video inspect all connections to existing mains following completion of installation

3.10 Service Connection Installation 3.10.1

Install service connections to 3.6 and as shown on Standard Detail Drawing S8.

3.10.5 ***(Add Clause 3.10.5 as follows):***

Inspection chambers shall be provided on all storm service connections as per Standard Detail drawing S7.

END OF SECTION

1.1 Related Work

1.1

(Add new Clause 1.1 as follows):

"6 Hot-Mix Asphalt Concrete PavingSection 02512"

1.5 Measurement and Payment

1.5.2

Payment for all work performed under this section will be incidental to payment for work described in other Sections.

(Delete Clause 1.5.2 (page 3) and replace as follows):

Catchbasin and lawn basin Installation will be defined as supplying and installing a new catch basin for each type specified and setting to the finished grade. Payment includes excavation, disposal of surplus excavated material, supply of all units, cast-in-place concrete, pipes, fittings and related materials together with all labour, materials and equipment required. Installation of the Catch basin lead and tie-in to the existing storm mainline shall be included in this item.

(Delete Clause 1.5.3 (page 3) and replace as follows):

Adjustment of tops of existing units will be measured in units adjusted as defined below and paid for under their respective Item in the Schedule of Quantities.

No payment will be made under these items for cleaning Valve Boxes, Monument Boxes, Frames, Covers and Lids of Castings as part of the operation for asphaltic concrete paving.

No Payment will be made for adjusting External Utilities Valve Boxes, Monument Boxes, Lawn Drains, Cleanouts and Inspection Chambers, these adjustments will be treated as incidental work.

All manholes & valve boxes must be vertically adjusted a minimum of 24 hours prior to paving.

1. Manhole frames and lids replacement will be defined as supplying and installing a new manhole frame and lid and setting to the finished grade. Replacements shall include jackhammering, removal and disposal of the existing frame and lid, replacement, removal or addition of concrete brick (maximum of 3 or minimum of 1) or precast concrete riser rings, cement mortar, supply and installation of new manhole frame and lid set to final grade, temporary asphalt ramping and all other incidental work.
2. Water Valve Box replacements will be defined as supplying and installing a new Water Valve Box frame & lid and setting to the finished grade. Replacements shall include jackhammering, removal and disposal of the existing frame and lid and all other incidental work.
3. Remove and replace the existing catch basin frame & grate with new and set rim to the correct elevation. Adjustments shall include jackhammering, removal of the existing grating and frame, supply of new grate & frame and all other incidental work. Payment includes excavation, removal or addition of concrete brick (maximum of 3 or minimum of 1) or precast concrete riser rings, cement mortar, disposal of surplus excavated material, cast-in-place concrete, pipes, fittings and related materials together with all labour, materials and equipment required. Catch basin lead work is considered to be incidental to payment for catch basin lead work described in other sections.
4. Remove and replace the existing catch basin barrel with new and reset catch basin frame rim to the correct elevation. Payment includes excavation, removal or addition of concrete brick (maximum of 3 or minimum of 1) or precast concrete riser rings, cement mortar, disposal of surplus excavated material, cast-in-place concrete, pipes, fittings

and related materials together with all labour, materials and equipment required.

5. Adjust Manhole frame or donut to avoid new curb and gutter. Adjustments shall include jackhammering, removal and disposal of the existing frame and lid, replacement, removal or addition of concrete brick (maximum of 3 or minimum of 1) or precast concrete riser rings, cement mortar, supply and installation of new manhole frame and lid set to final grade, temporary asphalt ramping (if required) and all other incidental work.

2.1	Materials	2.1.11	<i>(Delete Clause 2.1.11 and replace as follows):</i> Catchbasin leads to be minimum 150 mm diameter PVC DR28. Catchbasin leads larger than 150 to be as specified for mainline.
3.3	Manhole Installation	3.3.15	<i>(Replace Clause 3.3.15 as follows):</i> Install drop structures where required to Supplementary Detail Drawings Coq S4 and Standard Detail Drawings S3. Maximum allowable inside ramp shall be 250mm invert to invert.
3.5	Catch basin Installation		<i>(Delete Clause 3.5.1 and replace as follows):</i> Install catchbasins as shown on Supplementary Detail Drawing Coq S11A, Coq S11B and Standard Detail Drawing S11, to standards and installation procedures described on 3.3.

END OF SECTION

	Related Work	1.1.6	<i>(Add Clause 1.1.6 as follows):</i> Shrubs & Tree Preservation Section 02104
1.3	Source Quality Control	1.3.2	<i>(Delete Clause 1.3.2 as follows):</i> The Owner is responsible for the cost of initial testing of the planting soil. The Contractor shall submit the soil test results to the Contract Administrator for approval of the proposed material prior to placing of the planting soil on site. The test results shall determine soil amendment requirements. Testing shall be carried out by independent laboratory specializing in soil analysis.
1.4	Measurement and Payment	1.4.1	<i>(Delete Clause 1.4.1 and replace as follows):</i> Payment includes supply of material, on-site handling, preparing the landscape area subgrade, placing, grading, raking, compacting top soil and application of fertilizers. Payment for all work performed under this section will be incidental to payment for work described in other Sections.
2.1	General		<i>(Add Clause 2.1.2 as follows):</i> All materials and execution shall conform to the latest edition of the BCSLA\BCNTA British Columbia Landscape Standard following standards or as otherwise specified herein
3.4	Placing Growing Medium	3.4.6	<i>(Add Clause 3.4.6 as follows):</i> Scarify soil, feather grades and remove noxious weeds from the edge of tree preservation areas.

END OF SECTION

1.8	Measurement and Payment	1.8.1	<p><i>(Delete Clause 1.8.1 and replace as follows):</i> Payment for nursery sod includes supply and placing of sod as shown on the Contract Drawings or as directed by the Contract Administrator and grass maintenance to meet Conditions of Total Performance as specified in Section 02938 – 3.4 and 3.5.</p> <p>Payment for all work performed under this section will be incidental to payment for work described in other Sections.</p>
3.2	Sodding	3.2.5	<p><i>(Delete Clause 3.2.5 and replace as follows):</i> Lay sod smooth and flush with adjoining grass areas and paving and top surface of curbs unless shown otherwise on Contract Drawings. Ensure there is a full roll width between the new sod and adjoining surfaces. Small cut pieces from a full roll will not be accepted.</p>
		3.2.12	<p><i>(Delete Clause 3.2.12 and replace as follows):</i> Water sod area immediately with sufficient amounts to saturate sod and upper 100 mm of growing medium. Do not allow the sod to dry out so that the joints become visible.</p>
3.5	Conditions of Total Performance	3.5.1.8	<p><i>(Add Clause 3.5.1.8 as follows):</i> The prime consideration for acceptance of work of this section shall be the establishment of a dense, uniform cover of growth over 100% of all seeded areas.</p>

END OF SECTION

Appendix A
Traffic Management
Detail Specifications

1.0 GENERAL

- .1 This Traffic Management detail specification refers to the Contractor's specific plans to identify project traffic risks affecting the *Work*, provide Traffic Control Plans, and to implement the traffic control for the safe passage of vehicles and pedestrian through the work zone.

- 1.1 Related Works
 - .1 Traffic Regulation MMCD Section 01570

- 1.2 References
 - .1 WorkSafe BC, Occupational Health and Safety (OHS) Regulation, Section 18 – Traffic Control.

 - .2 B.C. Ministry of Transportation (MOT) Traffic Control Manual for Work on Roadways

- 1.3 Project Requirements
 - .1 A Road and Sidewalk Closure Permit is required by Coquitlam for all work affecting traffic flow related to construction. A permit is required for each specific construction interference with traffic flow. The Road and Sidewalk Closure Permit Request form is attached as **Appendix 1** to this document. A digital copy of the Road and Sidewalk Closure Permit form can be obtained for use during the contract from the City's website at <http://www.coquitlam.ca/city-services/licenses-and-permits/road-and-sidewalk-closure-permit.aspx>.

A Road and Sidewalk Closure Permit form application must be submitted to City's Traffic Operation Division 5 working days prior to start of work.

- 1.4 Measurement and Payment
 - .1 For this Contract, all work associated with Traffic Management Plan (TMP) and Traffic Control will be as shown in the Schedule of Quantities and Prices.

2.0 PRODUCTS

- 2.1 Traffic Management Plan
 - .1 The Contractor is required to assign a Traffic Manager for the Contract with the responsibility of preparing the Traffic Management Plan and the Traffic Control Plans, as well as the responsibility for continuing implementation of traffic control for the Work.

 - .2 The Traffic Management Plan (TMP) will consist of the following components:
 - .1 Identification of risks to traffic during the Work
 - .2 Traffic Control Plans for individual stages of the construction
 - .3 Incident Management Plan for the response to an unplanned event and recording of incident information.

These supplementary Specifications must be read in conjunction with the Master Municipal Specifications contained in the Master Municipal Construction Documents (Gold Book), Volume II, 2000.

- .3 Submission of the TMP is to be made to the *Contract Administrator* within five (5) days of the *Notice of Award* of the *Contract*, and must be approved by the *Contract Administrator* prior to start of the *Work*.
 - .4 Review of the TMP will be performed by the Contract Administrator. Comments for revisions to the TMP will be returned to the *Traffic Manager* for implementations.
 - .5 The Contractor shall comply with all the requirements of applicable laws, rules, regulations, codes and orders of the municipal and other appropriate authorities concerned with work on streets or highways and shall post proper notices and/or signals, and provide necessary barriers, guards, lights, flagmen or watchmen as may be necessary for proper maintenance of traffic and protection of persons and property from injury or damage. All costs involved in respect to the above requirements will be deemed to be included in the Contract Price.
 - .6 The Contractor shall give due notice to local police and fire departments prior to beginning construction and shall comply in all respects with their requirements.
 - .7 The Contractor, during the progress of the work, shall make adequate provision to accommodate the normal traffic along streets and highways immediately adjacent to or crossing the work so as to cause the minimum of inconvenience to the general public.
 - .8 The Contractor is required to maintain local traffic and driveway access during all stages of construction. This includes maintaining a 1.5m width walkway or pathway through the construction site for pedestrians.
 - .9 Where existing streets or roads are not available as detours, all traffic shall be permitted to pass through the work with as little inconvenience and delay as possible unless otherwise provided or authorized by the Contract Administrator. If half the street only is under improvement, the other half shall be conditioned and maintained as detour.
- 2.2 Incident Management and Reporting
- .1 The Contractor shall facilitate incident response vehicles and staff and move traffic safely and expeditiously through or around an incident on site and provide assistance to emergency response personnel as required. An incident includes, but is not limited to, motor vehicle accidents, emergency road repairs, disabled

vehicles, and debris on the road. The immediate response to an emergency shall by necessity make use of available devices and equipment.

- .2 If an incident occurs on site, the Contractor will be required to submit a report to the Contract Administrator documenting details of the incident including event, location, date, time, action taken, duration and restoration of site.

2.3 Traffic Control Plans

- .1 The Contractor shall designate a qualified Traffic Control Supervisor for the works, per the requirements of WCB regulations Section 18.

The designated Traffic Control Supervisor may be the same individual that is designated as the Traffic Manager, or may be a separate individual qualified for the responsibilities of this function.

- .2 The Contractor shall prepare weekly the anticipated traffic control activities, locations, and durations for the upcoming week.
- .3 Permissible delays shall only be considered outside Peak Hours. Permissible delays are categorized as follows:
 - a) Minor Delays - Less than two (2) minutes in duration; for occasional interruption due to construction activities. These delays shall be coordinated with available breaks in the traffic flow.
 - b) Major Delays - Maximum ten (10) minutes in duration; for occasional interruption of traffic for construction activities if traffic volumes permit.
- .4 The Contractor is responsible for ensuring that the flow of traffic is unimpeded by construction-related activities.

3.0 EXECUTION

3.1 Traffic Control Plan

- .1 A copy of the approved current Traffic Plan must be held on site by both the Site Superintendent as well as the person/company responsible for the traffic control implementation.
- .2 Failure to produce a valid approved Traffic Plan on site, or having work not follow the Traffic Control Plan will result in immediate shut-down of the work. The Contractor will be required to safely restore facility conditions to allow traffic flow at their expense. The Contractor must take all steps to acquire an approved Traffic control Plan before work can re-start on site. No claim will be accepted by the Owner for costs associated with this work shut-

down.

3.2 Road and Sidewalk
Closure Permits

- .1 The Contractor must have, on-site, a copy of an approved Road and Sidewalk Closure Permit valid for the work being done. Failure to produce a valid Road and Sidewalk Closure Permit on-site will result in shut-down of the work. Failure to comply on what is stated on the approved permit will result in shut-down of the work. The Contractor will be required to safely restore facility conditions to allow traffic flow at their expense. The Contractor must take all steps to acquire a Road and Sidewalk Closure Permit before work can re-start on site. No claim will be accepted by the Owner for costs associated with this work shut-down.

3.3 Traffic Control
Personnel
& Equipment

- .1 The Contractor shall supply all necessary traffic control devices required to perform traffic control services for the project. Signs and traffic control devices not applying to existing conditions shall be removed. Where operations are carried out in stages, only those traffic control devices that apply to the current stage are to be left in place.
- .2 There must be sufficient Traffic Control Persons (TCPs) on site to appropriately and safely direct traffic in all sections of the Work.

3.4 Signage

Supply, installation, maintenance and removal of all works-related signs shall be the responsibility of the Contractor. The location and type of each sign shall be indicated on the approved Traffic Control Plan, for each stage of the works.

Traffic control signs and devices must be positioned and used as specified in the Traffic Control Plan and signs and devices must be located so as to allow traffic to move by or through the work area in a controlled manner and, if necessary, to come to a controlled stop with due regard for the prevailing weather and road conditions.

Signs shall be checked daily for legibility, damage, suitability and location. Signs and delineators shall be cleaned as frequently as necessary to ensure full legibility and reflectance.

3.5 Detours

Any proposed detours must be approved by the Contract Administrator and conducted in accordance with the approved Traffic Plan and the Traffic Control Manual for Work on Roadways.

3.6 Abrupt Changes in
Surface Elevations

The Contractor shall minimize any abrupt changes in roadway elevation left exposed to traffic during both working and non-working hours.

A wedge of asphalt must be used as a transition to vertical differences in travelled areas and have a slope of 4:1 or less.

3.7 Cyclist and Pedestrian
Access

The Contractor shall make provision for pedestrians, wheel chairs and bicycles to have safe access across the work zone at all times. If this cannot be readily accommodated then acceptable detours and appropriate signs shall be provided.

3.8 Temporary Pavement
Markings

The Contractor shall be responsible for the application and removal of all temporary pavement markings and reflective devices. All temporary markings must be removed after installation of permanent markings.

4.0 TRAFFIC RESTRICTIONS

4.1 Road and Sidewalk
Closure Permits

- .1 One lane of traffic must be maintained at all times during any allowed lane closure times.
- .2 A Road and Sidewalk Closure Permit is required for each instance of closure and will be valid for a maximum period of one (1) week and, if still necessary, re-submittal of a Road and Sidewalk Closure Request is required.

A copy of the approved Road and Sidewalk Closure Permit must be held on site by both the Site Superintendent and the person/company responsible for the traffic control implementation.

- .3 Total Road Closure Is Not Permitted
- .4 Detours will only be permitted as approved by the Contract Administrator and must have a complete Traffic Control Plan indicating detour route, signing, and duration. Detours will not be allowed without sufficient lead time for commercial and retail operation to react appropriately to detour information provided to them.

4.2 Lane Closure
Restrictions

- .1 **For each of the road sections affected:**
 - Road and Sidewalk Closures will be reviewed for appropriateness during the allowable hours of work.
 - Minimum single lane traffic is required at all times
 - Access to properties to be maintained
 - Sufficient Traffic Control Persons are required for each Road and Sidewalk Closure (or any work activities), including side street intersections, to safely guide traffic through the work site

**5.0 CONSTRUCTION
OPERATIONS**

5.1 Truck Routes

- .1 The Contractor is restricted to the City's designated Truck Routes. The current Truck Route Map is available on the City's website at www.coquitlam.ca and can be found under **Residents, Transit &**

These supplementary Specifications must be read in conjunction with the Master Municipal Specifications contained in the Master Municipal Construction Documents (Gold Book), Volume II, 2000.

Transportation, Trucking Routes.

- 5.2 Road Specific Considerations
 - .1 Ensure that Traffic Management Plan accommodates businesses and residences during construction activities.

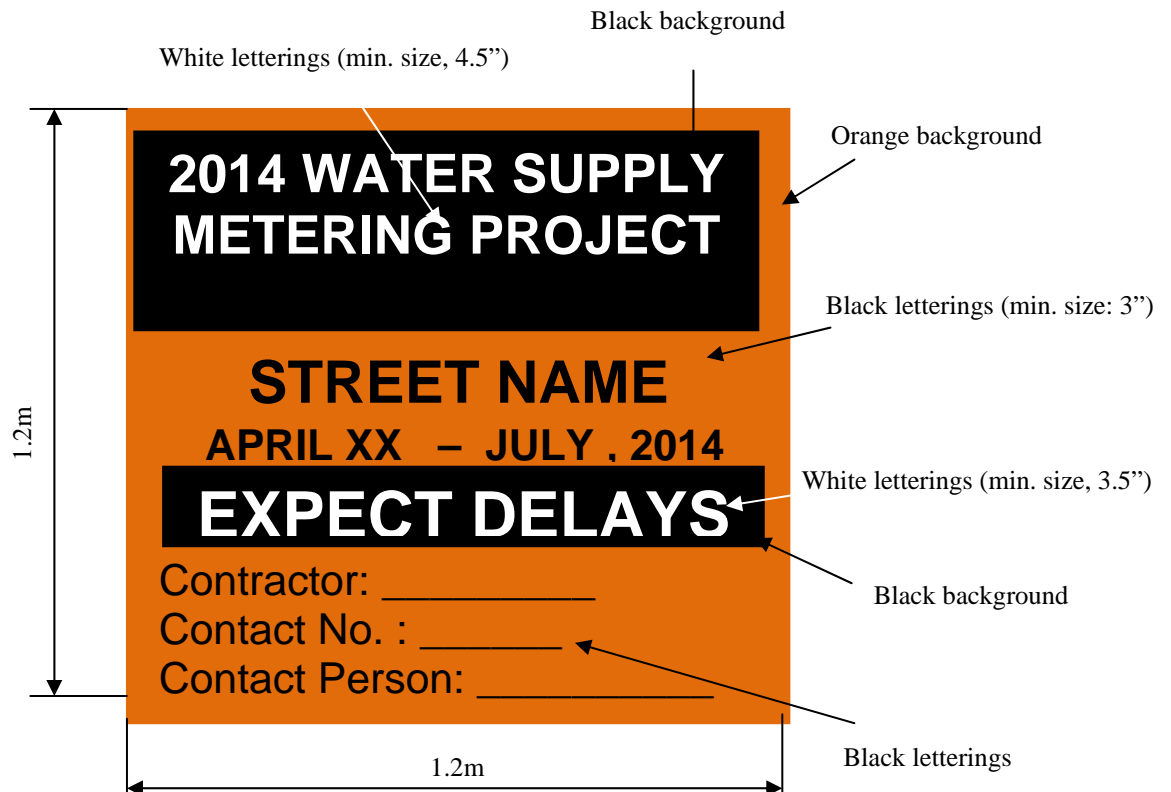
- 5.3 Work stoppage due to traffic
 - The City will not control or direct traffic control activities of the Contractor, but may require an immediate stop to any work where, in the sole opinion of the Contract Administrator, the provided traffic management plan is ineffective.

- 5.4 Construction Activity and Signage
 - The Contractor will be responsible to place other construction information signs as required to inform the public of construction activities, and ensure safe travel through the work site.

- 5.5 Construction Zone Information Signs
 - The Contractor is required to provide, one week prior to start of work, minimum of two stationary signs to inform traffic of existing and anticipated conditions at entry points of the street to be worked on. Signs can be re-used provided that the street name is legible and reflects the actual street currently working on.

Ensure that signs and locations are addressed in the Traffic Management Plan. All signs are to be removed at the end of the construction period.

Construction Zone Information Signs to follow specifications below:



These supplementary Specifications must be read in conjunction with the Master Municipal Specifications contained in the Master Municipal Construction Documents (Gold Book), Volume II, 2000.

APPENDIX 1



City of Coquitlam
Road and Sidewalk Closure Permit Request

Traffic Operations Division
3000 Guildford Way, Coquitlam BC V3B 7N2
Phone: 604-927-6250 Fax: 604-927-6255
Email: trafficoperations@coquitlam.ca

Submit to the Traffic Operations Division a minimum of 5 business days prior to the intended closure date.

Permit Fee - Under Review Payment Methods - Under Review

Application Date: _____ City Project or Film Permit Number (if applicable): _____

Contact Information

Company Name: _____

Applicant Name: _____

Name of Contractor doing work for Company/Applicant: _____

Phone: _____ Fax: _____

24 Hour Emergency Phone: _____ Email: _____

Location, date and time, and traffic control plan information

I request approval to close (check all that apply): Direction: Northbound Southbound Eastbound Westbound

Specific Lanes: Sidewalk Curb/Cycling Lane Right Turn Lane Centre Lane Left Turn Lane All Lanes

Road/Street Name: _____

Location Description: _____

Date & Time Information: Dates: _____ Starting _____ Ending

Hours: _____ Starting _____ Ending

Purpose: _____

Will this closure disrupt: Bus Routes & Stops? Yes No If yes, the Applicant will need to contact Coast Mountain Bus Company regarding disruptions.

Traffic Control Plan*:

(a) Traffic Control Manual for Work on Roadways Figure Number _____, or

(b) A sketch (attach separately) indicating signage, taper lengths, direction of traffic, work area, and north arrow

Traffic control persons (flag persons) on duty? Yes No If yes, specify how many: _____

* Important Notice: All operations within the road right-of-way must comply with Worksafe BC regulations and BC Ministry of Transportation standards for work on roadways. Permits must be renewed every 2 weeks (no additional fee).

File #: 11-5210-01/000/2013-1 Doc #: 1555880.v1

These supplementary Specifications must be read in conjunction with the Master Municipal Specifications contained in the Master Municipal Construction Documents (Gold Book), Volume II, 2000.

Application Checklist

- Permit Fee
- Prime Contractor Designation Letter
- City of Coquitlam Certificate of Insurance
- Sketch for Traffic Control Plan or Traffic Control Manual for Work on Roadways Figure Number
- Coast Mountain Bus Company (Phone: 778-593-5774 | Email: special.events@coastmountainbus.com) contacted regarding impact to bus routes and bus stops

Should the City grant approval of the Road and Sidewalk Closure Permit, the Applicant will contact Engineering & Public Works Customer Service (604-927-3500 and staffed 24 hours, 7 days a week):

- 24 hours prior to the road closure, and
- upon removal of the closure.

I HEREBY AGREE to the terms stipulated herein and further agree to indemnify and save harmless the City against any and all claims, actions, or expenses whatsoever or by whomsoever brought against the City by the reason of the City granting us this Road and Sidewalk Closure Permit. I further agree to accept responsibility to ensure proper situation control and street sweeping for the duration of the road or sidewalk obstruction.

_____ *Date*

_____ *Applicant Signature*

Office Use Only - PERMIT STATUS

- | | | |
|---|--|--|
| <input type="checkbox"/> Permit Fee | <input type="checkbox"/> Prime Contractor Letter | <input type="checkbox"/> Certificate of Insurance |
| <input type="checkbox"/> Traffic Control Plan | <input type="checkbox"/> Impact to bus service | <input type="checkbox"/> Impact garbage and recycling collection |

Request is denied for the following reason(s): _____

Request is approved with the following change(s): _____

Request is approved as submitted

_____ *Date*

_____ *Traffic Technologist or Designate*

File #: 11-5210-01/000/2013-1 Doc #: 1555880.v1

These supplementary Specifications must be read in conjunction with the Master Municipal Specifications contained in the Master Municipal Construction Documents (Gold Book), Volume II, 2000.

Appendix B

Supplementary Construction Specifications

**APPENDIX B
SUPPLEMENTARY CONSTRUCTION SPECIFICATIONS
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END OF DOCUMENT

1.0 GENERAL

1.1 Background

1.1.1 The City of Coquitlam is continuing the implementation of their Supply Point Metering Program. The goal of the program is to meter all supply points from the Metro Vancouver system.

1.2 Scope

1.2.1 The work of this Contract consists of the supply and installation of materials, including all labour, equipment, plant and tools related to the proposed flow meter chamber and facilities construction in accordance with the drawings and specifications, and for the prices tendered in the Schedule of Quantities and Prices.

1.2.2 The components of the work are generally described as follows:

1.2.2.1 Construct one flow meter chamber and one flowmeter/PRV chamber with precast concrete c/w appurtenances such as occasional H-20 loading rated access hatches, access ladders, lights, convenience receptacles.

1.2.2.2 Supply and install water piping as shown on drawings including all mechanical and electrical equipment.

1.2.2.3 Supply and install drainage and venting piping and equipment.

1.2.2.4 Supply and install electrical kiosks and equipment as required by drawings and specs.

1.3 Limits of Work Sites

1.3.1 The work sites are limited to Municipal rights-of-way.

1.4 Slope Protection and Erosion Control

1.4.1 Control of Water – General

1.4.1.1 The Contractor shall ensure that slopes affected by construction are adequately protected with erosion control measures in accordance with the B.C. Land Development Guidelines and the B.C. Water Act.

1.4.1.2 Keep the construction area free from water during construction.

1.4.1.3 Execute excavation and filling in a manner and sequence that will provide drainage at all times.

1.4.1.4 All water shall be diverted from the site by way of a cut-off ditch and as may otherwise be necessary.

1.4.1.5 Remove water in such a manner that it will not be a source of annoyance or damage to adjacent areas.

- 1.4.1.6 Ensure that all runoff from construction areas is controlled and provide settling basins if necessary to ensure that silt or deleterious substances are not carried into nearby water courses.
- 1.4.1.7 All sediment and erosion control measures shall be installed immediately prior to the commencement of construction.
- 1.4.2 The Contractor shall maintain all erosion and sediment control measures during the entire construction period in accordance with City bylaws.

1.5 Dewatering

- 1.5.1 The Contractor shall dewater all excavations as required to ensure that construction and backfilling is completed under safe and dry conditions. All water from dewatering operations is to be directed to the temporary silt basin.

1.6 Drawings

- 1.6.1 The Contractor shall examine all drawings in advance of construction and shall advise the Engineer of any apparent errors, discrepancies or inconsistencies, in order that the Engineer can provide instructions clarifying the design.
- 1.6.2 The Contractor shall also advise the Engineer of any discrepancies or apparent inconsistencies between the drawings and the specifications, in order that the Engineer may clarify the intent of the Contract.

1.7 Sequence of Construction

- 1.7.1 The Contractor shall carry out the work of this Contract such that all aspects of the work are completed under conditions necessary for construction, installation or application of materials as required by the manufacturer or by the Contract.
- 1.7.2 Ensure against uplift of structures. The Contractor shall coordinate his construction to ensure that partially constructed facilities are not subject to uplift as a result of failure to control water in the excavations. Openings are to be left in all such structures so that the structure will automatically be flooded on the interior as well as the exterior. Pipe openings may be used for this purpose if they are open to the excavation.
- 1.7.3 Schedule the work such that disruption of normal traffic and inconvenience to residents in the working area are kept to a minimum. The North Road & Gatineau location needs to be completed by June 30th, 2014 to avoid impacting the Evergreen Line Construction. Shop drawings and material ordering shall be expedited for this location.

1.8 Testing and Start-up

- 1.8.1 The Contractor shall be responsible for all aspects of the testing and start-up of the flow meter stations except for the following:
- the PLC (programmable logic controller), and

- the RTU Panel external communications system and the central station control.

1.8.2 Detailed requirements for each system and item of equipment are provided in the appropriate specification sections.

1.8.3 The City will be responsible for start up of the PLC and the aspects of the flow meter station operation which involve PLC control. During the period that the City is carrying out the PLC testing and start up procedures, the Contractor shall ensure that qualified representatives of the mechanical and electrical trades are on site and able to correct deficiencies, make adjustments, and assist in start up procedures as required.

1.8.4 Attendance and participation of these trades in the start up procedures shall be at the Contractor's cost.

2.0 PRODUCTS

(NOT USED)

3.0 EXECUTION

(NOT USED)

END OF SECTION

1.0 GENERAL

1.1 General

- 1.1.1 Payment items will be defined in this section, which shall supersede the Payment Section(s) specified in the standard MMCD document.
- 1.1.2 Refer to the Instructions to Tenderers and Form of Tender for additional payment details.
- 1.1.3 Work completed under this Contract will be paid for at the lump sum prices and unit prices set out in the Schedule of Quantities and Prices.
- 1.1.4 Incorporate all costs associated with finding and supplying all material and performing all work specified herein in the prices set out in the Schedule. Include Contractor's overhead and profit.
- 1.1.5 No claim by Contractor for extra payment on grounds that work performed or materials supplied in accordance with the drawings and/or specifications could not be properly charged to items listed in the Schedule will be considered by the City.
- 1.1.6 Include costs for work and material not expressly listed in the Schedule, but included in the drawings and/or specifications by either direct mention or implication, in items to which they pertain most closely.
- 1.1.7 Prorate costs of a general or incidental nature that do not pertain to any one item among all items.

1.2 Description of Payment Items

- 1.2.1 Work set out in the Schedule of Quantities and Prices shall include, but not be limited by, the following brief descriptions:

PART 1 - GENERAL

1.1 Bonding and Insurance

This item shall include all costs for bonding and insurance for the complete Contract.

Payment will be made at the lump sum price tendered in the Schedule of Quantities and Prices on the first progress payment subsequent to submission of documentation of Bonding and Insurance coverage.

The lump sum tender under this item shall not exceed 1% of the total tender price.

Refer to the Bonds and Certificates section of the Contract Documents for the City of Coquitlam's Special Provisions regarding contract insurance and bond specifications.

1.2 Mobilization/Demobilization

This item shall include all costs for mobilization and demobilization associated with the Contractor's equipment, site facilities, and services.

Payment for mobilization and demobilization will be made at the lump sum price shown in the Tender Form. Fifty percent (50%) of the lump sum price will be paid on the first progress payment certificate due after the Contractor has established the operation and facilities specified. The remaining 50% will be paid upon completion of the contract and removal of equipment and cleanup of the work areas to the satisfaction of the Engineer.

The lump sum bid under this item shall not exceed 5% of the total tender.

PARTS 2 and 3

Payment for Parts 2 and 3 has been arranged so that payment items are grouped to correspond to each metering site. Work at each metering site will consist of like work for all sites as described below.

Sitework: Items 2.1, 3.1

These items provide full and complete compensation for all work that includes but is not limited to general site work, including but not limited to the following.

- Clearing, grubbing, and stripping,
- Backfill and general site grading and drainage,
- Shoring and excavation,
- Environmental protection,
- Drain rock soak-away pits,
- Installation of no-post barriers,
- Traffic control, barriers, and temporary road diversion measures,
- Supply, placement and compaction of materials,
- Removal and disposal of excess and unsuitable materials,
- Concrete curbs and gutter, or sidewalk repair,
- Road repair, asphalt, surfacing, and markings, and
- General site restoration.

This item shall include excavation and subgrade preparation, and backfilling for the chambers, listed below.

Payment will be made at the lump sum prices tendered in the Schedule of Quantities and Prices.

Supply and Installation of Flow Meter Station and Flow Meter/PRV Station: Items 2.2, 3.2

These items provide full and complete compensation for all work that includes but is not limited to supply and installation of the stations, including but not limited to the following.

- Supply and installation of precast metering chambers,

- Concrete work,
- Chamber access hatches, ladders, and risers,
- Chamber internal mechanical work,
- Supply and installation of flow meters,
- Supply and installation of pressure reducing/relief valves,
- Supply and installation of pressure transmitters,
- Supply and installation of two required sump pumps and piping inside chambers, and
- Vent piping inside the chambers.

The spatial limits of these items shall be defined to include all piping work and connections to the mechanical or transition couplings outside of the chamber, or exterior watermain valves.

This item shall not include excavation and subgrade preparation, and backfilling for chambers, as noted above.

Payment will be made at the lump sum prices tendered in the Schedule of Quantities and Prices.

Underground Piping and Ducting: Items 2.3, 3.3

These items provide full and complete compensation for all work that includes but is not limited to supply and installation of underground utilities, including but not limited to the following.

- Underground watermain piping and valving,
- Underground electrical conduits and buried cables,
- Underground chamber ventilation ducts,
- Underground drainage piping and connections,
- Tie-in to existing Metro Vancouver watermain pipes,
- Coordination with Metro Vancouver regarding any connection to their piping system,
- Permit application (if required), e.g., gas line cross permit, and
- Testing, disinfection, and commissioning.

The spatial limits of these items shall be defined to include all watermain up to restrained couplings(inclusive) immediately outside of chambers and ducting within 1.0 m from the kiosk or antenna base structure, but not the required interconnections between the kiosks and antenna bases or chambers.

Payment will be made at the lump sum prices tendered in the Schedule of Quantities and Prices.

Electrical: Items 2.4, 3.4

These items provide full and complete compensation for all electrical work that includes but is not limited to the following.

- Co-ordination with BC Hydro utility connections and modifications,
- Power supply to kiosk,
- Electrical work within all chambers,
- Existing Kiosk modification,
- Kiosk and components (complete) supply and installation,
- Kiosk base preparation and concrete base,
- Grounding,

- Antenna base, pole, and antenna supply and installation, and
- Testing and commissioning.

This item shall not include any power utility design costs associated with the work, which shall be paid directly by the City. The Contractor shall, however, provide all co-ordination and permit applications to BC Hydro required for the work and civil works for the service connection.

Termination of RF cables or antennae, and configuration plus commissioning of SCADA radio systems shall be done by a radio shop active in this type of work. They shall be listed as a sub-contractor in the "Form of Tender".

Programming and configuration of the PLC/RTU shall be done by others. The contractor shall provide assistance during commissioning of this device.

Payment will be made at the lump sum prices tendered in the Schedule of Quantities and Prices.

PART 4 - INDETERMINATE ITEMS

Items in this section shall only include costs for work and/or materials that are of indeterminate nature and not covered under the lump sum items.

4.1 Additional Mass Concrete as Requested by the Engineer

This item shall include all costs for crude forming and placement of mass concrete as requested by the Engineer.

Payment will be made at the unit price quoted in the Schedule of Quantities and Prices for each cubic meter of concrete in place. Measurement will be based on truck volume as per dispatch slips certified by the Engineer.

4.2 Over-Excavation and Drain Rock Requested by Engineer

This item shall include all costs for over excavation and removal of unsuitable material from the base of trenches as requested by the Engineer and replacement with the specified drain rock material.

Payment will be made at the unit price quoted in the Schedule of Quantities and Prices for each metric tonne (1000 kg) of drain rock in place. Measurement will be based on truck dispatch slips as certified by the Engineer.

4.3 Additional 19 mm Minus Backfill Material as Requested by Engineer

This item shall include all costs for supply, placement, and compaction of additional specified 19 mm minus backfill material as requested by the Engineer.

Payment will be made at the unit price quoted in the Schedule of Quantities and Prices for each metric tonne (1000 kg) of the specified 19 mm minus road base material in place. Measurement will be based on truck dispatch slips as certified by the Engineer.

4.4 Additional Paving Requested by the Engineer at 75 mm Thickness

This item is for extra work only.

This item shall include all costs for milling and keying of existing asphalt, supply, placement, and compaction of additional specified asphalt paving as requested by the Engineer, over and above trench restoration.

Payment will be made at the unit price quoted in the Schedule of Quantities and Prices for each square metre (1 sq.m.) of surface asphalt milled, keyed, and placed. Measurement will be based on finished surface measurements as certified by the City.

PRODUCTS

(NOT USED)

EXECUTION

(NOT USED)

END OF SECTION

1.0 GENERAL

1.1 Work Included

- 1.1.1 This section specifies the requirements for supply, fabrication, coating and installation of all metal work shown on the drawings and described herein.
- 1.1.2 Includes but not necessarily limited to, miscellaneous embedded and non-embedded metal work, custom fabricated pipe supports and hangers, anchor bolt assemblies, lifting eyes, ladders, and all other metal items required for completion of all Mechanical and Electrical Work.
- 1.1.3 Chamber access hatches factory assembled with frames and hardware as described herein and shown on the drawings.
- 1.1.4 All anchors, plates, bolts, nuts and screws etc. as may be required to complete all work and to join the work of others.
- 1.1.5 All bracing, cutting, drilling, etc. as required to complete work and to join the work of others.

1.2 Related Work

- 1.2.1 Division 15 Mechanical
- 1.2.2 Division 16 Electrical

1.3 Drawings

- 1.3.1 The installation requirements for the majority of all miscellaneous metal work has been shown on the mechanical drawings. This has been done to show how the mechanical work co-ordinates with the metal work. In addition, a large portion of the metal work, pipe supports, hangers, support brackets etc. are installed as part of the mechanical trade.

1.4 Standards

- 1.4.1 Unless specified otherwise herein, the following standards (most recent editions) apply to the work:
 - 1.4.1.1 Welding Qualification Code, CSA W47, performed only by qualified operators.
 - 1.4.1.2 Electrodes to appropriate CSA W48.
 - 1.4.1.3 CSA G164 Hot Dip Galvanizing of Irregularly Shaped Articles.
 - 1.4.1.4 CSA W59.2 Welded Aluminum Construction.
 - 1.4.1.5 CSA S157 Aluminum Fabrication and Assembly.

1.5 **Submittals**

- 1.5.1 Submit shop drawings to City for review in accordance with the requirements of the General Conditions.
- 1.5.2 Clearly indicate outside dimensions, size and location of all openings and banding, fasteners, and finishes.

1.6 **Guarantee**

- 1.6.1 Provide a written guarantee that the hatches will remain fully operative and weather tight for a minimum period of five (5) years.

2.0 **PRODUCTS**

2.1 **Materials**

2.1.1 General

- 2.1.1.1 All materials to be new.
- 2.1.1.2 Replace steel which is rust pitted, deformed, bent or otherwise defective without extra cost.
- 2.1.1.3 All steel to be cleaned prior to galvanizing in accordance with CSA S16 and Steel Structures Painting Council Manual.

2.1.2 Steel

- 2.1.2.1 Conforming to CSA Standard G40.21 Grade 350 W.
- 2.1.2.2 Pipe, Standard Weight, conforming to ASTM Standard A120, Schedule 40 or Sch. 80 as specified on the drawings..
- 2.1.2.3 Seamless hollow structural sections, conforming to CSA Standard G40.21 - Grade 350W.

2.1.3 Stainless Steel

- 2.1.3.1 Stainless steel for plate and extruded sections shall be 304L alloy.
- 2.1.3.2 Stainless steel pipe used in the fabrication of handrails and miscellaneous pipe supports and other fabricated items shall be Schedule 40, 304, stainless steel pipe in accordance with ASTM A312.

2.1.4 Aluminum

- 2.1.4.1 All extruded structural aluminum shapes shall conform to ASTM B221 and shall be Alloy 6061.

- 2.1.4.2 All extruded architectural aluminum shapes shall conform to ASTM B221 and shall be Alloy 6063.
- 2.1.5 Bolts, Nuts, Miscellaneous Fasteners
- 2.1.5.1 Where anchors, lifting hooks, screws, bolts, nuts, washers, hangers and other fasteners are not specifically shown or specified, provide such items with at least the strength and corrosion resistance properties of the metal fabrication for which they are required.
- 2.1.5.2 Bolts, nuts and washers in accordance with material and size requirements of CSA Standard CAN S 16.1.
- 2.1.5.3 All bolts, nuts and washers used in the wet well shall be 304/316 stainless steel.
- 2.1.5.4 Welding Materials to CSA W48.1.
- 2.1.5.5 Rubber for fastening to metal pipe support clamps and other uses to be hard neoprene (40 50 Durometer).
- 2.1.5.6 Bond rubber to various items, as required, with Acro Bond adhesive.
- 2.1.5.7 Anchor bolts to ASTM A328.
- 2.1.6 Anchor Bolts
- 2.1.6.1 Provide 316 stainless steel Hilti HVA adhesive anchor bolts, or Hilti Kwik as shown on the drawings.
- 2.2 Steel Chamber Access Hatch, H-20 Loading**
- 2.2.1 Provide 914 mm x 914 mm aluminum hatches where shown on the drawings. The hatches shall be reinforced for occasional H-20 traffic live load.
- 2.2.2 Hatch shall have bitumen coating where metal is embedded into concrete.
- 2.2.3 Provide diamond plate galvanized steel cover, with bituminous coating on underside only.
- 2.2.4 Provide stainless steel spring operators to afford easy operation and an automatic hold open arm with release handle.
- 2.2.5 Also provide a recessed oversized hasp and staple protected by a hinged flap flush with the surface. The hasp area shall be large enough to accommodate the City's padlock. Provide a stainless steel slamlock and removable key
- 2.2.6 Hatches shall be trough framed complete with drain port.
- 2.2.7 Provide US Foundry products meeting the above requirements or approved equal, refer to drawing for model and make.

2.3 General Metals Fabrication

2.3.1 General

- 2.3.1.1 Verify all dimensions on site prior to shop fabrication.
- 2.3.1.2 Fit and shop assemble in largest practical section for delivery to site.
- 2.3.1.3 Supply all components required for proper anchorage of all metal fabrications.
- 2.3.1.4 Grind smooth sharp edges, angles and corners.
- 2.3.1.5 Fix to concrete or masonry using embedded anchor bolts, KWIK BOLTS, expansion shield or self-drilling anchors, or epoxy embedded anchors (type and size of most fasteners noted on drawings, where sizes not shown, size to suit loads being supported).
- 2.3.1.6 Galvanize all embedded and non-embedded metal work including pipe supports and hangers.
- 2.3.1.7 Aluminum welding shall be of the mig and tig process and shall conform to CSA Specification W47.2 using filler rod that is compatible with the specified alloys.
- 2.3.1.8 Band all holes for piping, valve access, etc.

2.3.2 Coating

- 2.3.2.1 Unless noted otherwise on the contract drawings, all other steel work shall be painted in accordance with Section 09900. Steel work shall be painted with one shop coat of primer compatible with the paint finish.
- 2.3.2.2 All metalwork steel work shall be sand blasted (as a minimum) to SSPC-SP-6 (commercial blast) and immediately coated with 2 – 3 mils of inorganic zinc rich primer.
- 2.3.2.3 Unless noted otherwise on the contract drawings, all other steel work shall be painted in accordance with Section 09900. Where aluminum is intended to be in contact with either dissimilar metals, concrete, or masonry, paint the surfaces to be in such contact with aluminum coloured bituminous paint. Prepare aluminum surface as per the paint manufacturer's recommendations (as a minimum, brush blast all surfaces to be coated).

2.4 Ladders

- 2.4.1 Ladders shall be heavy duty aluminum fabricated in accordance with the requirements of AA SAS-30 and ANSI A14.3 and applicable CSA standards.
- 2.4.2 Aluminum ladders shall be alloy 6061 or 6063.
- 2.4.3 Vertical rung spacing shall not exceed 305 mm and the minimum inside clear width of rungs shall be 450 mm.

- 2.4.4 Rung diameter shall be no less than 25 mm and shall be complete with non-slip surfaces.
- 2.4.5 Ladders shall be fitted with wall brackets.
- 2.4.6 Ladders shall be located a minimum of 200 mm clearance between the ladder rungs and the wall.
- 2.4.7 Ladder Safety Extension Posts shall be provided for all chamber access ladders, as shown on the drawings.

3.0 EXECUTION

3.1 Installation

3.1.1 General

- 3.1.1.1 Install work of this Section using skilled craftsmen and in accordance with manufacturer's recommendations where applicable.
- 3.1.1.2 Install metal fabrications in the correct locations and positions, plumb, level, structurally sound, securely fastened, free from defects detrimental to finished appearance and to acceptance of the Engineer.
- 3.1.1.3 Supply items required to be cast into concrete or necessary setting templates.
- 3.1.1.4 Complete work with all required anchorage and accessories necessary for installation.
- 3.1.1.5 Tolerances: CAN/CSA S16.1 M.

3.1.2 Field Painting

- 3.1.2.1 After erection has been completed, clean steelwork of all dirt, grease and other foreign matter.
- 3.1.2.2 Touch up all field bolts, field welds and any abrasions to the shop coat with a suitable zinc oxide primer.
- 3.1.2.3 Touch up all galvanizing with Galvacon primer.
- 3.1.2.4 Apply isolation coating to surfaces between dissimilar metals, and between metal and concrete, mortar, grout or masonry.
- 3.1.2.5 Provide top coating in accordance with Division 9.

3.1.3 Installation of Anchors & Fasteners

- 3.1.3.1 Install as per manufacturer's instructions.

- 3.1.3.2 Unless otherwise indicated on the drawings arrange bolts with sufficient length to embed 100 mm in the structural floor slab and to project the threaded position a minimum of 50 mm above the proposed elevation of the base plate or mounting plate.
- 3.1.3.3 Set anchor bolts accurately in holes in concrete using plywood templates prepared from manufacturer's shop drawings. Set items in grout. Use anchor grout for submerged and exterior conditions.
- 3.1.3.4 Do not offset bolts by deformation.
- 3.1.3.5 For submerged conditions where bolts are used, use lock nuts or nuts with lock washer.
- 3.1.3.6 Seal hole around bolts with silicon sealant prior to making bolted connection.

3.2 Access Hatch Installation

- 3.2.1 Install hatches true and level and in proper alignment as shown, and in accordance with manufacturer's written instructions.
- 3.2.2 Remove protective materials, wash with mild soap solution and rinse with water.
- 3.2.3 Adjust all operating parts to work smoothly.
- 3.2.4 Provide temporary padlock complete with minimum 2 keys for each chamber.
- 3.2.5 Ensure hatch drains to drain port and is free from all deleterious material

END OF SECTION

1.0 GENERAL

1.1 Description of Work

- 1.1.1 Provide all labour, materials services and equipment necessary and reasonably incidental to complete preparations and painting as set forth in the drawings, Finish Schedule, and Specifications.
- 1.1.2 This section does not include surface preparation and priming and coating to be carried out as specified in Divisions 3, 5, 15, and 16.
- 1.1.3 This section is applicable to all coatings applied on site including miscellaneous metals, piping and concrete.
- 1.1.4 Finish surfaces as indicated in Schedule at end of this section.

1.2 Related Work Specified Elsewhere

- 1.2.1 Shop painting of miscellaneous metal (Division 5).
- 1.2.2 Shop coating of piping and mechanical equipment (Division 15).
- 1.2.3 Shop coating of electrical equipment (Division 16)
- 1.2.4 Miscellaneous equipment not requiring coating. The following equipment will be supplied with factory coatings:
- electrical panels;
- This equipment is to be cleaned and the factory coatings touched up where they have sustained damage.

1.3 Submittals

- 1.3.1 Approvals: Submit a written request to the Engineer for his approval of equivalent or alternative products during bidding period. List each of the materials proposed, surfaces to be covered, manufacturer's name and brand name of material.
- 1.3.2 List of materials: Prior to commencement of work, submit three copies of list with name of manufacturer, number, grade and quality of materials proposed for use on this project.
- 1.3.3 Product and safety data sheets: Submit three copies of data sheets for each product.
- 1.3.4 Colours: Paint colours as selected by the City. Before starting work, obtain from the City a schedule showing where the various colours and finishes are to be applied.
- 1.3.5 General Colour Requirements: Refer to the Contract Documents for type and extent of finishes and as specified under this Section. Paint exterior and interior steel and door frames and trim generally same colours but a different shade than adjacent walls. Piping shall be colour coded in accordance with the type of service.

2.0 PRODUCTS

2.1 Materials

2.1.1 Unless otherwise detailed, provide paint, varnish, stain, enamel, lacquer, and fillers of a type and brand herein specified and listed under "Paint Product Recommendations" described in the Association Manual, latest edition, for specific purposes intended.

2.1.2 Provide paint materials such as linseed oil, shellac, turpentine, etc., and any of the above materials not specifically mentioned herein but required for first class work with the finish specified, of the highest quality product of an approved manufacturer. Ensure coating materials are compatible.

2.2 Equipment

2.2.1 All compressors, pots, lines and nozzles to be in good condition throughout the course of work.

2.2.2 Compressor sized to maintain the required amounts of air for the production rate anticipated.

2.2.3 Proper maintenance to be given to pots, lines and nozzles in order to ensure continuously trouble free operation.

2.2.4 Provide heat lamps to maintain recommended temperatures for coating of concrete.

3.0 EXECUTION

3.1 Preliminary Work

3.1.1 Delivery

3.1.1.1 Deliver paint materials in sealed original labelled containers, bearing manufacturer's name, type of paint, brand name, colour designation and instructions for mixing and/or reducing.

3.1.2 Storage

3.1.2.1 Store paint materials as per manufacturer's instructions.

3.1.3 Fire Hazard and Safety

3.1.3.1 Take necessary precautionary measures to prevent fire hazards and spontaneous combustion.

3.1.3.2 Where toxic and explosive solvents and materials are used, take appropriate precautions and do not smoke in the area.

3.1.4 Environmental Conditions

3.1.4.1 Comply with manufacturer's recommendations.

3.1.4.2 Relative humidity: do not coat when relative humidity is higher than 85%.

3.1.4.3 Moisture of surfaces: use electronic "Moisture Meter" testing method.

3.1.4.4 Avoid painting surfaces exposed to direct sun.

3.1.4.5 Plaster and wallboard - maximum moisture content allowed is 12%.

3.1.4.6 Ensure that all piping is completely drained and dry prior to coating.

3.1.5 Protection

3.1.5.1 Adequately protect other surfaces from paint and damage; make good any damage.

3.1.5.2 Furnish sufficient drop cloths, shield and protective equipment to prevent spray or droppings from fouling surfaces not being painted.

3.1.5.3 Place cotton waste, cloths and material which may constitute a fire hazard in closed metal containers and remove daily from site.

3.1.5.4 Remove all electrical plates, surface hardware, fittings and fastenings, prior to painting operations; carefully store, clean and replace on completion of work in each area.

3.2 Preparation of Surfaces

3.2.1 Inspect all surfaces and conditions prepared by others before commencing work, and report any defects (in writing) to the Engineer. Commencement of work indicates acceptance of surfaces and job conditions.

3.2.2 Provide surface preparation in accordance with SSPC Manual Volume 2 "Systems and Specifications", Chapter 2.

3.2.3 Mildew Removal: Scrub with solution of TSP and bleach, rinse with clear water and allow surface to dry completely.

3.2.4 Shop welds: Sandblast in accordance with SSPC commercial type blasting SP 6. Remove weld flux and other surface contaminants.

3.2.5 Field welds: Use hand wire brush followed by cleaning with solvent swab.

3.2.6 Masonry and Cement Type Surfaces (brick, concrete, concrete block, etc.): Remove dirt, loose mortar, scale, powder and other foreign matter. Remove oil and grease using a solution containing TSP, then rinse and let dry. This is NOT to be construed to include cleaning, chipping or grinding of protrusions or filling of "honeycomb" holes, etc. which is to be carried out under Division 3.

Treat surfaces which are very smooth or have traces of form oil or parting compounds with acid detergent treatment and wash with water. Remove powder, chalking, and oxidizing.

- Remove concrete stains caused by weathering of corroding metals using a solution of sodium metasilicate after being thoroughly wetted with water. Let dry.
- 3.2.7 Piping, Plumbing, and Duct Work: Treat galvanized surfaces with acetic acid, sal soda or other approved solution, wash with clear water. Scrape, wire brush the surfaces to remove mill scale, rust; clean with solvent to remove dirt, oil grease; where solder flux has been used, clean with benzene. After installation and before final painting of equipment and accessories which are factory primed, clean surfaces and touch up bared or marred spots with same finish as primer.
- 3.2.8 Surfaces primed by item manufacturer: Prepare according to recommendations on Product Data sheets.
- 3.2.9 Factory finished surfaces: Sand down for adhesion.

3.3 Inspection of Surfaces

- 3.3.1 Surface Examinations: The Engineer shall inspect all surfaces to be coated prior to commencement of the coating work. Do not proceed with Coating work until defects have been corrected and surfaces are acceptable to the Engineer.
- 3.3.2 Surface Acceptance: Commencement of work shall not be held to imply acceptance of surfaces except as qualified herein. For surface preparation of structural steel and miscellaneous metal surfaces, refer to the appropriate Section's work and Chapter 10 of CPCA/MPDA Manual (latest edition).

3.4 Mixing

- 3.4.1 Use ready mixed paints unless otherwise specified, except field mix any coating in paste or powder form, or to field catalyzed in accordance with the directions of its approved manufacturer. Fully grind pigments and maintain a soft paste consistency in the vehicle during storage which can be dispersed readily and uniformly by paddle to become a complete homogeneous mixture.
- 3.4.2 Ensure paint has good flowing and brushing properties and is able to dry or cure free of sags, etc. to yield the finish specified.

3.5 Application

3.5.1 General

- 3.5.1.1 Follow manufacturers' instructions to apply.

3.5.2 Safety

- 3.5.2.1 Take precautions to prevent fire.
- 3.5.2.2 Exercise special precautions for safety of workmen applying coating in enclosed areas by complying with the Health and Safety Regulations for Construction Projects in British Columbia.

3.5.2.3 Comply with instructions on paint manufacturer's Safety Data Sheets.

3.5.3 Clean Up

3.5.3.1 Promptly as the work proceeds, and on completion, remove any surplus material and paint where spilled, splashed or spattered.

3.5.3.2 During progress of the work, keep premises free from any unnecessary accumulation of tools, equipment, surplus materials and debris.

3.5.3.3 At conclusion of work, leave areas related to work neat and clean to the satisfaction of the Engineer.

3.6 Coating Schedule

3.6.1 Provide coating systems in accordance with the following schedule.

3.6.2 Confirm all colours with City prior to ordering of materials.

LOCATION	COATING SYSTEM
Concrete Chamber Interior	<ul style="list-style-type: none"> - Primer: One Coat of Tru-Glaze 4030 WB Primer to minimum 4 mils DFT - Finish: One Coat of Tru-Glaze 4408 Gloss/4406 Semi-Gloss WB Polyamide Epoxy Finish to minimum 5 mils DFT
Electrical Panels and Equipment	<ul style="list-style-type: none"> - Touch up only as required.
Aluminium – Kiosks	<ul style="list-style-type: none"> - Primer: One Coat of Devran 201H Epoxy Primer to minimum 3 mils DFT - Intermediate: One Coat of Bar Rust 235 Epoxy to minimum 6 mils DFT - Finish: One Coat of Devthane 379 Aliphatic Urethane to minimum 3 mils DFT

END OF SECTION

1.0 GENERAL

1.1 General Requirements

- 1.1.1 All work shall be performed by qualified tradesmen working for a reputable Contracting company experienced in this type of work and shall be strictly in accordance with the best commercial practice.
- 1.1.2 Coordinate work with the Contractor's working schedule and co-operate to achieve the earliest possible completion of the work.

1.2 Work Included

- 1.2.1 Provide all labour, materials and incidentals for the completion of operable mechanical systems as follows:
 - 1.2.1.1 Major piping and valves for the proposed flow meter station and flow meter/PRV station mechanical works.
 - 1.2.1.2 All minor piping as required for the various instrumentation and all other small piping as shown on the drawings.
 - 1.2.1.3 All station plumbing and drains.
 - 1.2.1.4 Ventilation piping.
 - 1.2.1.5 Piping connections to pressure transmitters, and other instrumentation supplied by the electrical trade, including coordination with the electrical trade.
 - 1.2.1.6 Connection of the flow meter tubes supplied by the electrical trade, including coordination with the electrical trade.

1.3 Equipment Delivery

- 1.3.1 Coordinate equipment delivery with other trades. Note that some items may involve long delivery and therefore should be ordered immediately after Contract award and expedited efficiently.
- 1.3.2 Note that the pressure transmitters and flow meters are supplied by the electrical trade but piping connections are to be completed by the mechanical trade.

1.4 Drawings and Specifications

- 1.4.1 It is intended that these specifications and drawings shall cover the complete mechanical installation ready for uninterrupted operation. Consequently, minor details not necessarily shown or specified, but necessary for the proper functioning of the installation, including equipment serviceability shall be included in the Contractor's estimate.

1.5 Shop Drawings

1.5.1 Refer to the General Conditions of these specifications for shop drawing requirements.

1.5.2 Shop drawings shall show:

- outside dimensions,
- total net assembled weight,
- materials of construction,
- welded joints, weld size and details,
- coatings and finishes, and
- electrical data (where applicable).

And shall include the seal of a Professional Engineer registered in British Columbia (where applicable).

1.5.3 Review of shop drawings is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that approvals of the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor. Such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for quantities and dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for coordination of the work of all subtrades.

1.5.4 The Engineer reserves the right to require the Contractor to make any changes in the Contractor's drawings and/or his specifications which may be necessary, in the opinion of the Engineer, to make the finished product conform to the requirements and intent of these specifications.

1.5.5 Any fabrication completed prior to shop drawing approval shall be at the Contractor's risk.

1.6 Operation and Maintenance Manuals

1.6.1 Provide one PDF copy of Operation and Maintenance manuals c/w spare parts lists for all of the following equipment:

- control valves,
- flow meters,
- pressure transmitters,
- sump pumps, and
- all other mechanical systems.

Coordinate and bind with manuals provided by electrical subcontractor.

1.6.2 Manuals shall contain at least the following:

- title page,
- table of contents,
- drawings and manufacturers' specifications for each specific item of equipment supplied including model nos. and serial nos.,
- maintenance and operating instructions where applicable, and

- electrical connection drawings and control schematic for applicable equipment.

1.7 Equal and Alternate Equipment

- 1.7.1 Equipment, other than that specified, of equal quality, will be allowed. Acceptable equipment shall be that which has been reviewed and approved by the Engineer five working days prior to the closing of tenders.
- 1.7.2 Should the Contractor propose to substitute equipment having different dimensions or requiring connections or piping layout at variance with the drawing, it shall be the Contractor's responsibility to submit a detailed drawing showing how proposed substitute equipment is to be installed and connected in the available space. Any proposed variations from contract drawings shall be specifically indicated.
- 1.7.3 Where two or more items of equipment or materials of similar design are to be installed, they shall be the products of one manufacturer.
- 1.7.4 Equipment, other than that specified which has been approved by the Engineer as "equal" 5 days prior to the closing of tenders may be substituted at the Contractor's discretion provided aforementioned conditions are met.
- 1.7.5 Equipment, other than that specified which may be approved by the Engineer as an "alternate" following the closing of tenders, may be substituted by the Contractor at the discretion of the Engineer provided suitable adjustment of contract price is negotiated.
- 1.7.6 Equipment, other than that specified, which has been installed but not approved by the Engineer, may be rejected. In this case the equipment shall be removed, and approved equipment installed, at the Contractor's expense.
- 1.7.7 The Contractor shall be responsible for all expenses incurred in the work of other trades made necessary because of substitution.

1.8 Related Work

- | | | |
|-------|-------------------------|-------------|
| 1.8.1 | Coatings | Division 9 |
| 1.8.2 | All Mechanical Sections | Division 15 |
| 1.8.3 | Electrical | Division 16 |

2.0 PRODUCTS

2.1 Protection of Materials and Equipment

In addition to the responsibilities outlined in the General Conditions, for care of property and materials, the Contractor shall ensure that the mechanical components shall be given the following attention:

- 2.1.1 After delivery, before and after installation, protect equipment and materials against theft, injury or damage from all causes.
- 2.1.2 All materials and equipment stored on site shall be adequately supported above the ground on suitable timber blocks.
- 2.1.3 Protect equipment outlets, pipe and duct openings with temporary plugs, caps and canvas.
- 2.1.4 All motors and/or motor operated equipment and other delicate equipment such as gauges and control panels, etc., shall be stored indoors in a heated space and completely covered with dustproof sheets until such time as these items are put into operation or tested.

2.2 Quality of Workmanship and Materials

- 2.2.1 All materials contemplated by these specifications and the plans accompanying them, unless otherwise stated, must be new and at all times open to the inspection, acceptance or rejection of the Corporation but any omission or failure on the part of the Corporation to disapprove or reject any work or material shall not be construed to be an acceptance of any defective work or material.
- 2.2.2 All equipment shall be installed in accordance with Manufacturer's printed installation directions. Erect equipment in neat and workman-like manner, align, level and adjust for satisfactory operation. Install so that connecting of piping and accessories can be made readily so that all parts are easily accessible for inspection, maintenance and repair.

2.3 Co-operation with Other Trades

- 2.3.1 Care shall be taken in laying out the mechanical work to accommodate the space requirements for other installations. Particular attention must be given to length of hangers and locations of piping in order to ensure that these components of the building fit into the space allotted, and also to ensure that required head room is provided below piping.
- 2.3.2 The mechanical trade shall make piping connections for the following equipment supplied by the electrical subtrade:
- flow meters, and
 - pressure transducers (provide piping and fittings as shown).

2.4 Screws, Bolts, Fasteners, and Small Fittings

- 2.4.1 Screws, bolts and nuts shall all be stainless steel of uniform size and head pattern.
- 2.4.2 Smaller fittings (<65 mm in diameter) shall all be stainless steel. Use nickel impregnated PTFE thread sealing tape at threaded stainless steel fittings.

2.5 Cleaning and Touch Up Painting

- 2.5.1 Thoroughly clean all fixtures and equipment of grease, dirt, or other foreign material at the completion of the project.
- 2.5.2 Chrome plated and stainless steel fittings, gauge glasses and indicator light lenses shall be polished upon completion of the work.
- 2.5.3 Any finished surfaces which have become scratched, marred or damaged in any way shall be repaired and refinished, or replaced at the discretion of the Engineer.
- 2.5.4 All dirt or rubbish on walls, floors, ceilings or fixtures accumulated from the work of the Mechanical trade shall be removed promptly from the premises.
- 2.5.5 Touch up all other painted surfaces which may become damaged in the course of construction.

2.6 Electrical Power Connections and Wiring

- 2.6.1 All power and control wiring shall be completed by the electrical subtrade.
- 2.6.2 All starting and disconnect switches unless otherwise stated in this division will be provided under Division 16. Any additional control relays or switches required and their wiring to ensure operation of systems as specified shall be provided under Division 16.

2.7 Start Up of Mechanical Systems

- 2.7.1 The Contractor shall be responsible for the start up and testing of all mechanical systems supplied or installed under this contract. This shall be completed in coordination with the Electrical subtrade and shall include but is not limited to:
- flowmeters,
 - pressure reducing/relief valves, and
 - pressure transmitters.

3.0 EXECUTION

(NOT USED)

END OF SECTION

1.0 GENERAL

1.1 Work Included

- 1.1.1 Provide all labour, materials and incidentals for complete and operable mechanical piping systems as shown on the drawings and herein described.
- 1.1.2 This section includes all piping and associated systems and materials within the facilities. This is described by, but not limited to piping and piping accessories for the proposed flow meter, valve chambers, existing valve chamber, and pump station modifications.

1.2 Related Work

- 1.2.1 Section 09900 Painting (for Field Coating of Pipe)
- 1.2.2 Section 15100 Valves
- 1.2.3 Division 16 Electrical

1.3 Quality Assurance and Reference Standards

- 1.3.1 Work shall be carried out only by qualified tradesmen.
- 1.3.2 Conform to all standard specifications referenced herein.

1.4 Submittals

- 1.4.1 Provide shop drawings for all fabricated piping, supports and appurtenances, in accordance with the General Conditions.
- 1.4.2 Submit manufacturers' literature and catalogue information for all valves and equipment.
- 1.4.3 Submit list of recommended spare parts with current prices for valves and equipment.
- 1.4.4 Submit documentation relating to welding as specified herein.

1.5 Delivery, Storage and Handling

- 1.5.1 Protect all piping and valves from weather, and from all damage.

1.6 Co-operation and Sequencing of Work

- 1.6.1 Co-operate with all trades in scheduling work.
- 1.6.2 Install items which are to be supplied by the electrical trade and installed by the mechanical trade. These include but are not limited to:

- flowmeters, and
- float switches and pressure transmitters.

2.0 **PRODUCTS**

2.1 **Piping Systems**

2.1.1 Pipe Classification Schedule

Supply pipe, fittings, and valves conforming to specifications given in the schedule below; each class of pipe with its associated fittings is identified by a class abbreviation, and service for which each type is to be used is designated in the Systems Schedule.

2.1.1.1 CARBON STEEL PROCESS PIPING

Piping Class Abbreviation CS

ITEM	SIZES	GENERAL DESCRIPTION
Pipe	65 mm and larger	Standard schedule (Schedule 40), beveled ends, ASTM A53 Grade A or B carbon steel. Coat interior and exterior of pipe as per AWWA C210.
Pipe	150 mm and larger	Seamless, straight weld, or spiral seam steel pipe to AWWA C200-12. Standard Schedule unless otherwise indicated on the drawings. Coat interior of pipe as per AWWA C210.
Fittings	65 mm and larger	Standard schedule (Schedule 40), tube turn, butt weld, ASTM A234 Grade WPB carbon steel to ANSI B16.9. Coat to suit the adjoining pipe.
Fittings	Smaller than 65 mm	ASTM A193 stainless steel.
Welding Outlets	All	Weldolets, sockolets and thredolets to ANSI B16.9, ANSI B16.11 and ANSI B31.1. Coat with adjoining pipe.
Joints	65 mm and larger	Full penetration butt weld.
Flanges	65 mm and larger	ANSI Class 150 mild steel ASTM A105 Grade B, raised face, slip-on or weld-neck to ANSI B16.5. Use flat faced flanges against flat-faced valves and equipment. Coat to suit the adjoining pipe.
Bolts and Nuts	-	ASTM A193, Grade 8M stainless steel hex head machine bolts with heavy hex nuts.
Gaskets	All	3 mm full-face premium grade neoprene.

2.1.1.2 PVC PIPING, DESIGN PRESSURE 100 PSIG

Piping Class Abbreviation PVC

ITEM	SIZES	GENERAL DESCRIPTION
Pipe	General	Rigid PVC pressure pipe to CSA B137.3.
Pipe	12 mm to 50 mm	Schedule 40 wall, plain end.
Fittings	12 mm to 50 mm	Schedule 40 moulded, socket-weld fittings.

2.2 Steel Piping

2.2.1 Flanges shall be true and perpendicular to the axis of the pipe or fitting. Plain ends of pipe or fittings shall be true and perpendicular to the axis, with edges deburred.

2.2.2 Pipe shall be free from rust, dents and unsightly defects.

2.2.3 Welding in fabricator's shop and in the field shall be performed by qualified welders using approved procedures.

2.2.4 Field welding of pipe joints shall be kept to a minimum. Shop-fabricate piping assemblies in largest sections possible. All field welds shall be treated with pickling paste, scrubbed and washed with stainless wire brushes until clean. Completed pipe lines shall be washed with steam or hot water to remove any dirt picked up during transport on construction site.

2.2.5 Particular care shall be exercised during fabrication and installation to avoid contact of stainless steel pipe with structural steel, chain, wire-ropes, steel tools, etc., as the contamination of stainless steel by steel may lead to marks due to rusting of imbedded steel.

2.2.6 Thrust rings shall be continuously welded.

2.2.7 Pipe Welding

2.2.7.1 Standards - General

- ANSI/ASME Boiler and Pressure Vessel Code, Section VIII, Division 1,
- ANSI B32.1 Metal Products,
- ANSI B31.3 Process Piping, and
- CSA W59-M Welded Steel Construction (Metal Arc Welding).

2.3 PVC Piping

2.3.1 Plain ends of pipe or fittings shall be true and perpendicular to the axis, with edges deburred.

2.3.2 Pipe shall be free from damage and defects.

- 2.3.3 Solvent welding of pipe shall be performed by qualified operators using the manufacturers' written procedures.

3.0 EXECUTION

3.1 General Piping System Installation Requirements

- 3.1.1 Carefully place and support all pipe at proper lines and grades; where possible slope to permit complete drainage.
- 3.1.2 Blow all piping clean after assembly and before connecting to equipment; test underground piping both before and after backfilling.
- 3.1.3 Handle pipes with care at all times and use equipment designed so that no damage occurs; replace any pipe damaged in handling or laying.
- 3.1.4 All PVC pipe and socketed fittings shall be joined by cold welding through the use of solvent based cements in accordance with ASTM D2564. Ends of pipe shall be cut square and pipe and sockets of fittings cleaned with PVC pipe cleaner to remove all dirt, grease and glossy finish. Joints shall be made in accordance with the pipe manufacturer's recommendations and the pipe shall be assembled as shown on the drawings.
- 3.1.5 Repair factory coatings at field cuts or where otherwise damaged in accordance with Section 09900.
- 3.1.6 The pipe shall be cleaned of dirt and other foreign materials. The pipe shall be flushed at water velocities of 1.0 m/s or as high a velocity as can be obtained from the available water sources. Flushing water shall be discharged to the storm sewer system.

3.2 Tolerances for Pipe Installation

- 3.2.1 Install inside piping precisely to dimensions shown on drawings.

3.3 Unions

- 3.3.1 Unless pipe is flanged, provide unions in all piping connections to all items of equipment to permit the removal of each and every device without dismantling the pipe.

3.4 Installation of Magnetic Flow Meters

- 3.4.1 The magnetic flow meters are to be supplied by the electrical trade.
- 3.4.2 The flow tube-type flow meters are to be carefully installed by the mechanical trade in accordance with the manufacturer's instructions.
- 3.4.3 Electrical connections, startup and testing of the flow meter shall be by the electrical trade.

3.5 Pressure and Leakage Testing of Piping

- 3.5.1 Supply all equipment, materials, and install all necessary fittings to complete pressure testing to the satisfaction of the Engineer.
- 3.5.2 Provide all temporary caps, flanges, valves, and thrust blocks required for testing.
- 3.5.3 The Contractor shall notify and obtain the approval of the City prior to proceeding with initial testing of the piping. Upon successful completion of the initial tests, the City is to be contacted to witness a final test.
- 3.5.4 The purpose of the test is to detect any damaged material that may have been installed, and to ensure that all fittings are properly braced. Pipe, fittings, valves and joints should be inspected thoroughly while under pressure.
- 3.5.5 If leaks develop or excessive pipe movement is noted, make all necessary corrections and new tests until all defects or deficiencies have been remedied. Corrections necessary for the proper functioning of the installation shall be made to the satisfaction of the Engineer before final acceptance of the facility.
- 3.5.6 Provide a written report to the Engineer summarizing the results of the pressure and leakage testing for each section. The report will include the type of test, duration, allowable leakage rate, and actual leakage. The report will be prepared by the Contractor and shall be signed by both the Engineer and the Contractor.
- 3.5.7 Test mechanical piping to 1380 kPa (200 psi).
- 3.5.8 Check all drains for obstructions.

3.6 Disinfection of Piping

- 3.6.1 Complete disinfection of all water piping in conjunction with and as specified for the work in Section 02666.

END OF SECTION

1.0 GENERAL

1.1 Work Included

- 1.1.1 Provide all labour, materials and incidentals for complete and operable valves and appurtenances as shown on the drawings and herein described.
- 1.1.2 This section includes all valves and associated materials within the facilities. This is described by, but not limited to isolation and drain valves for inside metering and PRV chambers.

1.2 Related Work

- 1.2.1 Section 09900 Painting (for Field Coating of Valves)
- 1.2.2 Section 15060 Piping Systems

1.3 Quality Assurance and Reference Standards

- 1.3.1 Work shall be carried out only by qualified tradesmen.
- 1.3.2 Conform to all standard specifications referenced herein.

1.4 Submittals

- 1.4.1 Provide shop drawings for all valves and appurtenances.
- 1.4.2 Submit manufacturers' literature and catalogue information for all valves and actuators.
- 1.4.3 Submit list of recommended spare parts with current prices for valves and equipment.

1.5 Delivery, Storage and Handling

- 1.5.1 Protect all valves from weather, and from all damage.

2.0 PRODUCTS

2.1 Gate Valves

- 2.1.1 Cast Iron AWWA Gate Valves (resilient seat)
- Handwheel actuated, OS&Y bronze rising stem, to AWWA C509,
 - 250 psig (1723 kPa) maximum working pressure,
 - Cast iron wedge with bonded rubber coating,
 - O-Ring seals,
 - Resilient Seat,
 - Valve exterior shall be liquid epoxy coated to AWWA 210, and
 - Valve interior shall be lined to AWWA 210 and NSF 61.
 - maximum allowable velocity for a fully open valve shall be greater than 22 fps.

Approved Manufacturers and Models:

- Clow or Mueller Resilient Wedge Valve, or
- Approved equal.

2.2 Check Valves

2.2.1 Double Door Check Valves

- Lug style check valve rated to ANSI Class 125,
- Cast iron body,
- Double leaf, bronze disc ,
- Stainless steel torsion spring, hinge pin & retainers,
- Valve exterior shall be liquid epoxy coated to AWWA 210, and
- Valve interior shall be lined to AWWA 210 and NSF 61.

Approved Manufacturers and Models:

- Apco Series 9000L, or
- Approved equal.

2.3 Butterfly Valves

2.3.1 ANSI Class 150 Butterfly Valves

Valves:

- Handwheel actuated,
- fully grease packed,
- carbon steel body,
- PTFE packing,
- stainless steel disc,
- stainless steel shaft,
- PTFE bearing,
- clearly visible position indicator,
- adjustable travel stops,
- bushings and seals on input shaft,
- seals on output shaft, and
- valve pressure rating must exceed 250 psi.
- Valve exterior shall be liquid epoxy coated to AWWA 210, and
- Valve interior shall be lined to AWWA 210 and NSF 61.

Approved Manufacturers and Models:

- DeZURIK BHP High Performance Butterfly Valves, or
- Approved equal.

2.4 PVC Check Valves (For Sump Pump Discharge)

2.4.1 Provide Zoeller Model 30-0020 or approved equal.

2.5 Basket Strainer

- 2.5.1 Provide low pressure drop, large flow area basket strainers in the diameters shown on the drawings.
- 2.5.2 Strainers shall have fusion bonded epoxy coated ductile iron body.
- 2.5.3 Strainer shall be 316 Stainless steel with Standard 10 mesh
- 2.5.4 Strainer body shall come complete with drain/blow-Off connection furnished with Stainless Steel plug.
- 2.5.5 Cover fasteners shall be stainless steel.
- 2.5.6 Standard of acceptance:
 - Singer Valve Model ZS strainer

2.6 Pressure Reducing Valve

- 2.6.1 Setpoints for valves will be provided by the Engineer at shop drawing stage.
- 2.6.2 Pressure reducing valves:
 - provide epoxy powder coated globe style pressure reducing valves with fully hydraulic operation in the diameters shown on the drawings,
 - valve shall have valve position indicator,
 - provide Singer Model 106-PR or approved equal,
 - provide singer pilots for control and back-up, pressure setting to be confirmed by Engineer,
 - provide single Arion filter c/w bronze bowls on instrumentation piping,
 - instrumentation piping to be stainless steel c/w isolation valves and unions on each sensing line, and
 - provide opening and closing micrometer type speed control.

2.7 Air Release Valve

- 2.7.1 Provide 25 mm diameter Valmatic Model 201C combination air release valve, or approved equal.

2.8 Ball Valves

- 2.8.1 Full Port SS Ball Valves (less than 75 mm)
 - 2-piece 316 SS body, screwed ends to ANSI B2.1.,
 - adjustable packing nut, blowout proof 316SS stem,

- locking lever handle,
- 316 SS **FULL PORT** ball, reduced port balls will not be accepted,
- Teflon stem packing and Teflon seats,
- M.A. Stewart Model G2,
- Kitz Code #39, or
- approved equal.

2.8.2 Full Port PVC ball valves (for sump pump discharge)

- Schedule 80 female threaded ends,
- floating ball construction,
- Pressure rating to be 150psi
- Hayward Ture Union, or
- Nibco Tru-Block PVC, or
- approved equal.

2.9 Flange Isolation Kits

2.9.1 Where indicated on the drawings, install in the place of rubber flanges gaskets, isolation gaskets to the following requirements:

- Gaskets to be full diameter flange insulating gaskets with precision located holes to match the flange bolt pattern, phenolic with nitrile seal elements.
- Insulating sleeves to be 0.79mm thick wall polyethylene.
- Insulating bolt washers to be 3.97mm thick, polyethylene.
- 2 standard of acceptance:
 - PSI Type 'E' Linebacker gaskets c/w sleeves and washers available from Bedford Pipe & Engineered Products Ltd., Burnaby, BC (604) 291-6271
 - APS Double Insulation set available from Kraft Mill & Mine Suppliers Ltd.,
 - Approved equal.

3.0 EXECUTION

3.1 Installation Requirements

3.1.1 Installation, testing, and disinfection of valves are covered under Section 15060.

END OF SECTION

PART 1– GENERAL

1.1 References

- .1 Canadian Standards Association (CSA International)
 - .1 CSA C22.1, Canadian Electrical Code, Part 1 (Current Edition), Safety Standard for Electrical Installations.
 - .2 CAN/CSA-C22.3 No. 1, Overhead Systems.
 - .3 CAN/CSA-C22.3 No.7, Underground Systems
 - .4 CAN3-C235, Preferred Voltage Levels for AC Systems, 0 to 50,000 V.
 - .5 CSA Z462 – Workplace Electrical Safety
- .2 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)
 - .1 IEEE SP1122-[2000], The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.
- .3 Electrical Contractor’s Association of British Columbia Seismic Restraint Standards Manual – Guideline for Electrical Systems

1.2 Definitions

- .1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.
- .2 **Certification agency:** an organization accredited by the Standards Council of Canada under the Standards Council of Canada Act as an organization engaged in conformity assessment.
- .3 **Certification mark:** a stamp, mark, seal, label, tag, or other identification of a certification agency, certifying that the regulated product to which it is affixed or attached meets the standard that the product must meet for certification.
- .4 **Certified equipment:** Regulated products which meet the standards that the product must meet for certification and are identified as such by a certification mark.
- .5 **Provide:** Supply and install.

1.3 Design Requirements

- .1 Operating voltages: to CAN3-C235.
- .2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.
 - .1 Equipment to operate in extreme operating conditions established in above

standard without damage to equipment.

1.4 Work Included

- .1 All labour, materials, equipment, services, and supervision required to provide a complete electrical system as listed herein and shown on the drawings.

1.5 Submittals

- .1 Submittals: in accordance with Submittal Procedures.
- .2 Shop drawings will be reviewed by the Engineer only for general conformity with the design concept. The Engineer's shop drawing review does not relieve the Contractor and/or the supplier and/or manufacturer from responsibility for correct equipment and materials inclusive of design, details and dimensions, and of responsibility of checking for errors and/or omissions. The Contractor is responsible for providing a complete and operational system; the Engineer's shop drawing review does not relieve the Contractor of the Contract responsibility.
- .3 Where the Engineer determines in shop drawing review that the proposed equipment does not meet the specification or that insufficient information is presented, the Contractor shall be requested to and shall re-submit the shop drawing(s) with the additional information requested by the Engineer.
- .4 Shop drawings:
 - .1 Each individual shop drawing shall include identification as to the exact piece of equipment that it represents pertaining to the project. The Contractor shall use drawing detail numbers and equipment name where identified on the drawings, to clarify shop drawing identification.
 - .2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure co-ordinated installation.
 - .3 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
 - .4 Indicate of drawings clearances for operation, maintenance, and replacement of operating equipment devices.
 - .5 Submit copies of drawings and product data to authority having jurisdiction.
 - .6 If changes are required, notify Engineer of these changes before they are made.
- .5 Quality Control: in accordance with Quality Control procedures.
 - .1 Provide certified equipment and material.
 - .2 Where certified equipment and material is not available, submit such equipment and material to authority having jurisdiction for approval before delivery to site.
 - .3 Submit test results of installed electrical systems and instrumentation.
 - .4 Permits and fees: in accordance with General Conditions of contract.
 - .5 Submit, upon completion of Work, load balance report as described in PART 3 – FIELD QUALITY CONTROL - LOAD BALANCE.
 - .6 Submit certificate of acceptance from authority having jurisdiction upon

completion of Work to Engineer.

- .6 Manufacturer's Field Reports: submit to Engineer, manufacturer's written report, within 3 days of review, verifying compliance of Work and electrical system and instrumentation testing, as described in PART 3 - FIELD QUALITY CONTROL – MANUFACTURER'S FIELD SERVICES.

1.6 As-Built Drawings

- .1 The Contractor shall maintain one set of white prints on the job site for the Contractor's recording all work, as provided. As-built mark-ups shall include installation locations, sizes, gauges, and equipment part numbers to completely represent the installation. The site as-built mark-ups shall be completed daily. The as-built mark-ups shall be turned over to the Engineer at job completion, prior to request for final payment.
- .2 As-built mark-ups shall be to the same standard and detail as the contract drawings. Mark-ups shall be to scale, or dimensions shall be noted. They shall show all changes made in the Contract including site changes, addendums and change orders.
- .3 The Contractor shall submit as-built mark-up drawings to the Engineer for inspection, when the Engineer is on site to inspect the Contractor's work.
- .4 If the Engineer finds that the final as-built mark-ups do not accurately reflect the work done, he shall return them to the Contractor for revision. If the Contractor does not resubmit adequate and correct drawings within 7 days, the Engineer will mark up as-built prints to final and correct state. The Engineer's cost for this work will be deducted from the Contractor's final payment.
- .5 Note that final contract payment will not be considered by the Owner until the Contractor's final as-built drawings, to the approval of the Engineer, have been received by the Engineer.

1.7 Quality Assurance

- .1 Quality Assurance: in accordance with Quality Control procedures.
- .2 Qualifications: electrical work to be carried out by qualified, licensed electricians who hold a valid BC Electrical Contractor license or apprentices in accordance with authorities having jurisdiction and as per the conditions of Provincial Act respecting manpower vocational training and qualification.
 - .1 Employees registered in provincial apprentices program: permitted, under direct supervision of qualified licensed electrician, to perform specific tasks.
 - .2 Permitted activities: determined based on training level attained and demonstration of ability to perform specific duties.

1.8 System Startup

- .1 Instruct Engineer and operating personnel in operation, care and maintenance of systems, system equipment and components.
- .2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.
- .3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with aspects of its care and operation.

1.9 Operating and Maintenance (O+M) Manuals

- .1 Provide 4 copies of O+M manuals.
- .2 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.
- .3 O+M Manuals to include following:
 - .1 equipment shop drawings,
 - .2 schematic and line diagrams,
 - .3 instrumentation set points,
 - .4 normal operating parameters such as operating voltage and ampacity,
 - .5 start up, proper adjustment, operating, lubrication, and shutdown procedures.
 - .6 safety precautions,
 - .7 procedures to be followed in event of equipment failure,
 - .8 other items of instruction as recommended by manufacturer of each system or item of equipment,
 - .9 testing parameters for trouble shooting such as cable resistance measurements,
 - .10 contractor's contact information inclusive of telephone number and email address,
 - .11 list of spare parts that may be required with equipment supplier contact information inclusive of telephone number and email address,
 - .12 guarantee,
 - .13 copy of permits and final inspection reports by the Authorities Having Jurisdiction, and
 - .14 copy of special inspection reports.
- .4 It is intended that the O+M manuals be complete at the site start up date with the exception of minor revisions for parameter adjustments made during commissioning. The Contractor shall make sufficient allowance for timing and work to provide completed O+M manuals prior to job completion. All costs to turn over the O+M manuals as specified are the Contractor's.
- .5 All O+M copies shall be bound in separate hard back binders and include table of contents, and all sections be separated by tab dividers labelled to follow the table of contents.

1.10 Guarantee

- .1 The Supplier shall guarantee his work, equipment and materials supplied for a period of one year after final completion. He shall repair, replace or otherwise make good any part or all of the electrical installation should any failure, malfunction or deficiency becomes known during that period. This work shall be done at no cost to the Owner.

PART 2 – PRODUCTS

2.1 Materials and Equipment

- .1 Material and equipment to be certified. Where certified material and equipment is not available, obtain special approval from authority having jurisdiction before delivery to site and submit such approval as described in PART 1 - SUBMITTALS.
- .2 Factory assembled control panels and component assemblies.

2.2 Equals and Substitutions

- .1 Where equipment and materials is specified by manufacturer, "or approved equal" is implied unless specifically noted otherwise. Submit full technical data with request for approval of equals, a minimum of 5 days prior to tender closing.
- .2 Contractors who supply approved equals shall furnish revised wiring and mounting details where required. The Contractor shall pay for all additional Engineering costs related to installation of substituted equipment.
- .3 As-built drawings shall show the revised wiring, mounting and other details.

2.3 Warning Signs

- .1 Warning Signs: in accordance with requirements of authority having jurisdiction.
- .2 Decal signs, minimum size 175 mm x 250 mm.

2.4 Wiring Terminations

- .1 Ensure lugs, terminals, screws used for termination of wiring are designed for the type and size of conductor being terminated.

2.5 Equipment Identification

- .1 Identify electrical equipment with nameplates as follows:

- .1 Nameplates: plastic laminate 3 mm thick plastic engraving sheet, black face, white core, lettering accurately aligned and engraved into core, mechanically attached with self tapping screws.
- .2 Sizes as follows:

NAMEPLATE SIZES

Size 1	10 mm x 50 mm	1 line	3 mm-high letters
Size 2	12 mm x 70 mm	1 line	5 mm-high letters
Size 3	12 mm x 70 mm	2 lines	3 mm-high letters
Size 4	20 mm x 90 mm	1 line	8 mm-high letters
Size 5	20 mm x 90 mm	2 lines	5 mm-high letters
Size 6	25 mm x 100 mm	1 line	12 mm-high letters
Size 7	25 mm x 100 mm	2 lines	6 mm-high letters

- .2 Labels: embossed plastic labels with 6 mm-high letters unless specified otherwise.
- .3 Allow for minimum of twenty-five (25) letters per nameplate and label.
- .4 Nameplates for terminal cabinets and junction boxes to indicate system and voltage characteristics.
- .5 Disconnects, starters and contactors: indicate equipment being controlled, voltage. Phases, and circuit number.
- .6 Terminal cabinets and pull boxes: indicate system, voltage, and phases.
- .7 Transformers: indicate capacity, primary and secondary voltages.

2.6 Wiring Identification

- .1 Identify wiring with permanent indelible identifying markings, numbered on both ends of phase conductors of feeders, branch circuit wiring, and instrumentation and control wiring. Identification to be machine-printed, hand-printed identification will not be accepted.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour coding: to CSA C22.1.

2.7 Finishes

- .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.
 - .1 Paint outdoor electrical equipment "equipment green" finish.
 - .2 Paint indoor switchgear and distribution enclosures light gray.

2.8 Approved Suppliers

- .1 The following panel shops are approved to manufacture the kiosks and control panels:

These Supplementary Specifications must be read in conjunction with the Master Municipal Specifications contained in the Master Municipal Construction Documents, Volume II, January 1996 (Rev. April 2000).

- .1 Allied Controls – Burnaby, BC (604) 420-1630
 - .2 Canadian Process & Control Ltd – Port Coquitlam, BC (604) 461-4547
 - .3 PLC Technical Services – Surrey, BC (604) 209-9607
 - .4 Softac Systems – Surrey, BC (604) 888-9507
- .2 Alternate kiosk manufacturers will only be considered if offered as an alternate at time of tendering. Any reduction in cost shall be indicated at that time. The acceptance of any such alternate manufacturer shall be at the option of the City.

PART 3 – EXECUTION

3.1 Site Inspection

- .1 Examine construction sites prior to submitting tender and ascertain all conditions affecting work. Base tender on site conditions. Advise Engineer of any potential problems observed during the site visit, within 24 hours of visit.

3.2 Permits, Licenses, and Fees

- .1 Submit drawings to all inspection authorities for approval.
- .2 Apply and pay for all required permits, licenses and fees. Supply inspection certificates to the Owner at the end of the job. Work shall not be considered complete until these certificates are submitted to the Owner.

3.3 Installation

- .1 Complete installation in accordance with CSA C22.1.
- .2 Complete installation of overhead systems in accordance with CSA 22.3 No. 1, and underground systems in accordance with CSA C22.3 No.7.

3.4 Excavation, Backfilling, Cutting, And Patching

- .1 All excavation, backfill, cutting, and patching required for electrical installation will be by the General Contractor.

3.5 Nameplates and Labels

- .1 Ensure manufacturer's nameplates, certification labels and identification nameplates are visible and legible after equipment is installed.

3.6 Conduit and Cable Installation

- .1 Install conduit and sleeves prior to pouring of concrete.
 - .1 Sleeves through concrete: plastic, sized for free passage of conduit, and protruding 50 mm.
- .2 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.
- .3 Install cables, conduits and fittings embedded or plastered over, close to building structure so furring can be kept to minimum.

3.7 Co-ordination of Protective Devices

- .1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.

3.8 Field Quality Control

- .1 Load Balance:
 - .1 Measure phase current to panelboards with normal loads (lighting) operating at time of acceptance; adjust branch circuit connections as required to obtain best balance of current between phases and record changes.
 - .2 Measure phase voltages at loads and adjust transformer taps where applicable to within 2% of rated voltage of equipment.
- .2 Conduct following tests in accordance with Quality Control procedures.
 - .1 Power distribution system including phasing, voltage, grounding and load balancing.
 - .2 Insulation resistance testing in accordance with the Canadian Electrical Code before energization of any circuits or equipment.
 - .3 Check resistance to ground before energizing.
- .3 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- .4 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.9 Startup

- .1 Completely test and demonstrate the system to the satisfaction of the Engineer. The tests and demonstrations to include, but not be limited to the generality of the following:

- .1 Instrumentation
 - .1 Flow readings
 - .2 Pressure readings
 - .3 Level readings
- .2 Alarm Systems
 - .1 Actuating devices
 - .2 Signaling devices

3.10 Making Good

- .1 Repair, replace, or otherwise make good any damage or destruction caused to the structures and equipment, or work of other trades on this project.

3.11 Seismic Restraint

- .1 Provide seismic restraints for electrical equipment as detailed in the Electrical Contractor's Association of British Columbia Seismic Restraint Standards Manual – Guideline for Electrical Systems. Where the guidelines do not provide detail for specific equipment, obtain seismic restraint details from a Professional Engineer registered in British Columbia who specializes in such designs. The Contractor shall provide and install the engineered seismic restraint system as designed.
- .2 Submit sealed documents pertaining to seismic restraint systems to Engineer. Include copies in the O+M manual inserted in the corresponding equipment section.

3.12 Cleaning

- .1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.
- .2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

END OF SECTION

PART 1– GENERAL

1.1 Related Sections

- .1 Section 16010 – *Electrical General Requirements*.

PART 2 – PRODUCTS

2.1 Equipment

- .1 Rod electrodes: copper clad steel 19 mm dia by 3 m long.
- .2 Plate electrodes: galvanized steel, minimum surface area 0.2 m², 1.6 mm thick.
- .3 Grounding conductors: bare stranded copper, soft annealed, size as per Canadian Electrical Code requirements.
- .4 Insulated grounding conductors: green, type RW90.
- .5 Ground bus: copper, complete with insulated supports, fastenings, connectors.
- .6 Non-corroding accessories necessary for grounding system, type, size, material as indicated, including but not necessarily limited to:
 - .1 Grounding and bonding bushings,
 - .2 Protective type clamps,
 - .3 Bolted type conductor connectors,
 - .4 Thermit welded type conductor connectors,
 - .5 Bonding jumpers, straps,
 - .6 Pressure wire connectors, and
 - .7 Anti-oxidant sealant.

PART 3– EXECUTION

3.1 Installation General

- .1 Install complete permanent, continuous grounding system including, electrodes, conductors, connectors, accessories.
- .2 All conduits, except primary and secondary service ducts, to include bonding conductor.
- .3 Install connectors in accordance with manufacturer's instructions.

- .4 Protect exposed grounding conductors from mechanical injury.
- .5 Make buried connections, and connections to conductive water main, electrodes, using copper welding by thermit process, or high-compressions clamps.
- .6 Use mechanical connectors for grounding connections to equipment provided with lugs.
- .7 Soldered joints not permitted.
- .8 Install bonding wire for flexible conduit, connected at both ends to grounding bushing, solderless lug, clamp or cup washer and screw. Neatly cleat bonding wire to exterior of flexible conduit.
- .9 Install flexible ground straps for bus duct enclosure joints, where such bonding is not inherently provided with equipment.
- .10 Install ground conductor to outdoor lighting standards.
- .11 Connect building structural steel and metal siding to ground.
- .12 Make grounding connections in radial configuration only, with connections terminating at single grounding point. Avoid loop connections.
- .13 Bond single conductor, metallic armoured cables to cabinet at supply end and load end.
- .14 Ground secondary service pedestals.

3.2 Electrodes

- .1 Install rod or plate electrodes and make grounding connections.
- .2 Bond separate, multiple electrodes together.
- .3 Use copper conductors for connections to electrodes.

3.3 System and Circuit Grounding

- .1 Install system and circuit grounding connections to neutral of wye connected secondary system, neutral of 120/240 V systems, and neutral on control transformers.

3.4 Equipment Bonding

- .1 Bond non-current carrying metallic parts of all equipment and structure to main ground bus.

3.5 Grounding Bus

- .1 Install copper grounding bus mounted on insulated supports on wall of electrical room.
- .2 Bond items of electrical equipment in electrical room to ground bus with individual bare stranded copper connections.

3.6 Field Quality Control

- .1 Perform tests in accordance with Section 16010 – *Electrical General Requirements*.
- .2 Perform ground continuity and resistance tests using method appropriate to site conditions and to approval of local authority having jurisdiction over installation.
- .3 Perform tests before energizing electrical system.

END OF SECTION

PART 1- GENERAL

1.1 Related Sections

- .1 Section 16010 – *Electrical General Requirements*.

1.2 References

- .1 National Electrical Manufacturers Association
 - .1 NEMA 250, Enclosures for Electrical Equipment (1000 V Maximum)

1.3 Dimensions

- .1 Dimensions shown on drawings are approximate. Supply a larger enclosure where increased size is required to house necessary equipment. Coordinate with other trades to ensure concrete slab size is correct.

PART 2 – PRODUCTS

2.1 Construction Materials

- .1 General
 - .1 All materials shall be new.
 - .2 Replace materials which are pitted, bent or otherwise defective without extra cost.
- .2 Aluminum
 - .1 Type 5052 H-32 aluminum.
- .3 Miscellaneous Fasteners
 - .1 Where anchors, lifting hooks, screws, bolts, nuts, washers, hangers and other fasteners are not specifically shown or specified, provide such items with at least the strength and corrosion resistance properties of the metal fabrication for which they are required.
 - .2 Rubber for fastening to metal pipe support clamps and other uses to be hard neoprene (40-50 Durometer).
 - .3 Bond rubber to various items, as required, with Acro Bond adhesive.

- .4 Heavy Duty Stainless Steel Expansion Anchors
 - .1 Anchors (sizes M8 through M20): Heavy duty expansion anchor complete with compatible nut and washers; 316 stainless steel; minimum yield strength 450 MPa, Hilti HSL Heavy Duty Anchors or approved equal.

2.2 Fabrication

- .1 General
 - .1 Verify all dimensions prior to preparing shop drawings or to proceeding with shop work fabrication.
 - .2 Supply all components required for proper anchorage of all metal fabrications.
 - .3 Wherever overlapping or contacting surfaces cannot be avoided, completely seal weld these surfaces. Deterioration of finish in such areas will require remedial seal welding and refinishing.
 - .4 Fabricate the work true to dimensions, plumb and square. Accurately fit members with hairline joints, and join using adequate fastening.
 - .5 Construct finished work free from distortion and defects detrimental to appearance and performance.
 - .6 File or grind exposed welds smooth and flush. Do not leave grinding marks. Construct internal and external corners with sharp lines. Provide continuous welds unless otherwise approved by the Engineer in writing.
 - .1 Remove weld spatter and slag. After finish grinding and smoothing welds, passivate welds with pickling paste.
 - .7 Band all holes for piping, valve access, etc.

2.3 Enclosure Construction

- .1 Enclosure shall be aluminum sheet, welded construction with bracing as required and with edges and welds ground smooth.
- .2 Enclosure shall be free standing. Provide heavy duty formed angle and channel framing. Enclosure shall be mounted on a formed channel base on all four sides complete with:
 - .1 pre-drilled 16 mm holes for anchor bolts (eight required, provide 10 mm Hilti Kwik bolts to suit)
 - .2 drainage holes to ensure that water cannot accumulate within the channel
- .3 Doors shall have minimum three hinges, concealed inside when doors are closed.
- .4 Doors shall be suitable for padlocking in the closed position. Locking hasps shall be vandal resistant and recessed, so that hasps and locks cannot be struck by a vertical swing and cannot be cut with a standard hacksaw.
- .5 Enclosure doors shall be gasketed for dust resistance.
- .6 Enclosure shall be weatherproof. Provide minimum 75 mm overhang on the slightly peaked steel roof. Provide gutters over all doors and openings.

- .7 Enclosure shall be suitable for bottom entry of conduits and both sides shall have ground lugs. Ground lugs shall be connected to the ground rod.
- .8 Enclosure with vent compartment shall have louvred sides in the vent compartment to allow passage of air. Louvres shall be backed with insect screen. The partition between the fan compartment and the junction box compartment shall be sealed to the door in the closed position so that there is no air recirculation when the fan is operating.
- .9 Enclosure compartments shall be complete with rear mounting panels.
- .10 Enclosure shall be sandblasted, degreased, primed and painted as described below under Finishes - Shop Coating.

2.4 Finishes

- .1 Shop Coating NOTE: DFT = Dry Film Thickness
 - .1 apply using acceptable low loss method
 - .2 commercially sandblast all surfaces to SSPC SP6 prior to application
 - .3 one base coat of epoxy zinc rich primer. DFT=1.5 mils to 2 mils
 - .4 one intermediate coat of polyamide high build epoxy. DFT=4 mils to 6 mils
 - .5 one top coat of aliphatic polyurethane. DFT=2 mils to 3 mils
 - .6 colours - green outside, white inside.
- .2 Provide green and white touch-up paint of same type as above.
- .3 Alternate coating systems may be used upon approval by the Engineer.

PART 3 – EXECUTION

3.1 Assembly

- .1 Provide a complete kiosk as shown on the drawings, complete with equipment shown and required to ensure a complete working system.

3.2 Equipment Shipped Loose

- .1 The contractor shall ship the following items loose in one container included with the enclosure:
 - .1 anchors, and
 - .2 touch up paint.

END OF SECTION

PART 1– GENERAL

1.1 Related Sections

- .1 Section 16010 – *Electrical General Requirements*.

1.2 Service – General

- .1 Provide service in accordance with requirements and standards of the electrical power utility (the Utility). On this project this is BC Hydro.
- .2 Confirm service characteristics with the Utility prior to submitting bid.
- .3 All materials and equipment to the approval of the Utility.
- .4 Co-ordinate all work by the Utility.
- .5 Provide all civil work on private property for underground service including trenching and backfilling.
- .6 Provide pull boxes, junction boxes, drainage and mechanical protection of duct where required.
- .7 Provide primary and secondary duct, pilasters, service disconnect switches, secondary disconnect switches, splitters and all associated accessories where required.

1.3 Service Drawings

- .1 The scope of work is outlined in the tender drawings. The Utility may issue detailed drawings to the Contractor. He shall do the work in accordance with these detailed drawings and the standard requirements of the Utility. If the Contractor is unfamiliar with their standards he shall acquire these standards prior to submitting a bid, and base his price on the work required to meet these standards.

1.4 Cost of Work by Utility

- .1 The contractor will pay the utility charges.

1.5 Work by Utility

- .1 The Utility will supply and install:
 - .1 transformer,
 - .2 primary and secondary service conductor,

- .3 metering transformers, and
- .4 utility meters.

PART 2 – PRODUCTS

2.1 Equipment

- .1 Meter base: in accordance with Utility standards.
- .2 In-ground Pull box: in accordance with Utility standards.

PART 3 – EXECUTION

3.1 Installation

- .1 Install service equipment.
- .2 Connect to incoming service.
- .3 Connect to outgoing load circuits.
- .4 Make grounding connections in accordance with Section 16062 - Grounding - Secondary.
- .5 Make provision for power supply authority's metering.

END OF SECTION

PART 1– GENERAL

1.1 Section Includes

- .1 Materials and installation for standard and custom breaker type panelboards.

1.2 Related Sections

- .1 Section 16010 – *Electrical General Requirements*.

1.3 References

- .1 Canadian Standards Association (CSA International)
 - .1 CSA C22.2 No.29, Panelboards and enclosed Panelboards.

1.4 Submittals

- .1 Submittal drawings to include electrical detail of panel, branch breaker type, quantity, ampacity and enclosure dimension.

PART 2 – PRODUCTS

2.1 Panelboards

- .1 Panelboards: to CSA C22.2 No.29 and product of one manufacturer.
- .2 250 V panelboards: bus and breakers rated for 10,000 A (symmetrical) interrupting capacity or as indicated.
- .3 Panelboards: mains, number of circuits, and number and size of branch circuit breakers as indicated.
- .4 Two keys for each panelboard and key panelboards alike.
- .5 Copper bus with neutral of same ampere rating as mains.
- .6 Mains: suitable for bolt-on or snap-on breakers.
- .7 Trim with concealed front bolts and hinges.
- .8 Trim and door finish: baked grey enamel.

2.2 Breakers

- .1 Moulded-case circuit breakers, Circuit breakers, and Ground-fault circuit-interrupters: to CSA C22.2 No. 5.
- .2 Common-trip breakers: with single handle for multi-pole applications.
- .3 Circuit breakers to have minimum 10,000 symmetrical rms interrupting capacity rating.
- .4 Breakers with thermal and magnetic tripping in panelboards except as indicated otherwise.

2.3 Equipment Identification

- .1 Provide equipment identification in accordance with Section 16010 – *Electrical General Requirements*.
- .2 Nameplate for each panelboard size 4 engraved as indicated.
- .3 Nameplate for each circuit in distribution panelboards size 2 engraved as indicated.
- .4 Complete circuit directory with typewritten legend showing location and load of each circuit.

PART 3 – EXECUTION

3.1 Installation

- .1 Locate panelboards as indicated and mount securely, plumb, true and square, to adjoining surfaces.
- .2 Mount panelboards to height specified in Section 16010 – *Electrical General Requirements*, or as indicated.
- .3 Connect loads to circuits.
- .4 Connect neutral conductors to common neutral bus.

END OF SECTION

PART 1– GENERAL

1.1 Related Sections

- .1 Section 16010 – *Electrical General Requirements*
- .2 Section 16991 – *Process Control Panels and Hardware*

1.2 References

- .1 Canadian Standards Association (CSA International)
 - .1 CSA C22.2 No. 142, Process Control Equipment
 - .2 CSA C22.2 No. 14, Industrial Control Equipment

1.3 Submittals

- .1 Catalog/specifications sheets on components listed in Part 2 of this specification section.

1.4 Scope of Work

- .1 The Contractor shall supply and install the following equipment and systems at each site:
 - .1 Tube Type Magnetic Flow Meters,
 - .2 Pressure Transmitters and Accessories,
 - .3 Pressure Gauges, and
 - .4 Level Switches.

1.5 General Requirements

- .1 Unless specifically stated otherwise, all equipment covered by this specification shall be suitable for operation in buildings or enclosures where minimum and maximum ambient temperatures are expected to be between -10°C and 40°C respectively.
- .2 All devices shall be designed for continuous operation. Field located devices shall be suitable for continuous operation in a wet atmosphere or hazardous Class 1 Division 2.
- .3 Provide, except where otherwise specified, the materials of construction necessary for satisfactory operation on the service specified. Any changes from specified materials must be approved in writing.
- .4 All instruments shall be factory calibrated to values stated in the documents, or as determined from process requirements.
- .5 All instruments and devices on panel fronts and all devices in the panel rear shall be

identified by a legend plate or nameplate.

- .6 Finish shall be manufacturer's standard, but must include a prime coat and two finish coats.
- .7 All process equipment packages which include control devices must provide interconnection and termination systems between all devices and equipment of the vendor's supply. This shall include, but not be limited to interconnecting tubing, piping and fittings, and terminal strips for field connections, bulkhead plates for cable and piping terminations, any local controls, block or isolation valves and all other control accessories as would normally be required on such an installation. Such installations must comply with applicable codes of good practice to ensure sound, reliable operation when installed. The supplier shall provide detailed installation instructions to the Contractor. This shall include wiring drawings and mechanical drawings showing equipment installation in pipe.
- .8 The Contractor shall provide complete sets of internal and external wiring diagrams, trouble-shooting data and calibration manuals for each device supplied.
- .9 All instruments shall include a 12 month supply of consumables. Spare fuses and lamps shall be shipped with control panels. Supply not less than six of each type used in the panels.
- .10 All instruments requiring AC power supply shall be for 120 volts, 1 phase, 60 hertz.

1.6 Co-ordination With Mechanical Trade

- .1 Pressure transmitters, flow meters, and similar devices will be installed in pipes by the mechanical trade and wired by the electrical trade.

PART 2 – PRODUCTS

2.1 Pressure Transmitters

- .1 Provide gauge type pressure transmitters.
- .2 Input and Output characteristics shall be as follows:
 - .1 Supply voltage of 24 volts DC,
 - .2 Maximum supply voltage effect of .005% for each 1 volt change within the specified supply voltage requirements,
 - .3 Maximum external load resistance of 500 ohms at 24 VDC,
 - .4 4 mA to 20 mA output,
 - .5 Complete with indicator and custom scale to suit each site (see pressure information for each site in the table below).

Location	Operation Pressure	Pressure Measurement Range
North Road and Gatineau Place	112 psi	0 psi -200 psi
Dewdney Trunk and Viewmount Place	220 psi	0 psi -300 psi

- .3 The pressure transmitter shall be suitable for mounting in a Class 1, Division 2 hazardous area.
- .4 Approved models include:
 - .1 Siemens SITRANS P, DS III series,
 - .2 Rosemount Model 2088 Pressure Transmitter, or
 - .3 Approved equal.

2.2 Pressure Gauges

- .1 Provide pressure gauges meeting the following requirements:
 - .1 Measurement range at each location to match with the values listed in article 2.1.2.5 above,
 - .2 To ANSI B-40.100,
 - .3 90 mm (3-1/2 ") diameter phenolic case, plain case style,
 - .4 Dual scales, in kPa and psi as noted below,
 - .5 1% accuracy,
 - .6 Recalibration adjustment accessible from face of gauge, and
 - .7 6 mm (1/4 ") NPT connection.
- .2 Standard of Acceptance:
 - .1 Marsh Quality Gauge;
 - .2 Ametek Solfrunt Standard Gauge; or
 - .3 Approved equal.

2.3 Magnetic Flow Meters

- .1 Provide tube type magnetic flow meters with a minimum accuracy of +/- 0.5%

Location	Modelled Minimum Daily Flow	Modelled Average Daily Flow	Modelled Maximum Daily Flow	Fire Flow
North Road and Gatineau Place	<i>(not available yet)</i>	<i>(not available yet)</i>	<i>(not available yet)</i>	150 L/s
Dewdney Trunk and Viewmount Drive	8.7 L/s	23.6 L/s	55.6 L/s	150 L/s

- .2 Flow meter to c/w the following:

- .1 ASME B16.5 Class 150 carbon steel flange connections, flanges shall be capable of taking minimum 200 psi line pressure,
 - .2 NSF-61 approved elastomer liner,
 - .3 Sealed (watertight) junction box,
 - .4 Stainless steel grounding ring,
 - .5 Remote mounted electronic display unit with NEMA 4 enclosure and 3-line LCD display with totalizer, one 4 mA -20 mA flow rate output, and
 - .6 24 VDC power supply.
- .3 Manufacturer:
- .1 Rosemount Model 8750WA,
 - .2 Siemens SITRANS F M MAG 5100W/6000, or
 - .3 Approved equal.

2.4 Level Switches

- .1 Flygt ENH-10 non-mercury type liquid level regulator, Standard Version complete with form C contact, six meter cable, strain relief connector, and cable weight. Provide additional strain relief connector Flygt Cat. No. 130598310 for each level switch.

PART 3 – EXECUTION

3.1 Pressure Transmitters

- .1 Transmitters shall be stored by the Contractor on site in a clean heated and secure environment.
- .2 Mount in accordance with the manufacturer's detailed instructions.
- .3 Mount as shown on drawings at the precise elevations indicated.
- .4 Piping connections will be completed by the mechanical trade.
- .5 Confirm, and if necessary adjust, the factory calibrated zero suppression and span for each pressure transmitter. This shall be accomplished by correlating the 4 mA to 20 mA output with the measured water level in the stilling wells.

3.2 Magnetic Flow Meters

- .1 The flow meters shall be supplied to the mechanical trade for installation in the station piping. The exact laying length of the flow meter including grounding rings shall be made available to the Mechanical Contractor to facilitate the fabrication of the station piping.
- .2 Connect and test flowmeter and transmitter. Ensure manufacturer's field representative is present to assist with this phase of the work.

- .3 Connection box on the meter to be potted with approved manufacturer's materials.

3.3 Level Switches

- .1 Set actuation levels as indicated on the drawings.

END OF SECTION

PART 1– GENERAL

1.1 Related Sections

- .1 Section 16010 – *Electrical General Requirements.*
- .2 Section 16423 - *Control Devices*

1.2 References

- .1 Canadian Standards Association (CSA International)
 - .1 CSA C22.2 No. 142, Process Control Equipment
 - .2 CSA C22.2 No. 14, Industrial Control Equipment

1.3 Submittals

- .1 Prior to manufacture, the successful bidder to submit the following for approval:
 - .1 General arrangement drawing complete with dimensions,
 - .2 Connection drawings,
 - .3 Nameplate Drawing, and
 - .4 Catalog/specifications sheets on components listed in Part 2 of this specification section.

PART 2 – PRODUCTS

2.1 Controllers

- .1 Programmable logic controller: Control Microsystems SCADAPack 334
 - .1 Model TBUP334-1A20-AB10.

2.2 Digital Displays

- .1 Loop-powered panel meters with the following features:
 - .1 4 mA -20 mA input,
 - .2 5 digit LCD display, minimum 15 mm high,
 - .3 loop powered backlight,
 - .4 custom Engineering Units, and
 - .5 front panel programming.
- .2 Manufacturer: Precision Digital PD688 or equivalent.

2.3 Power Supplies

- .1 Provide primary switch-mode DC power supplies as indicated.
 - .1 24 VDC Output
 - .1 Phoenix Contact Quint series, 5 A output.

2.4 Ethernet Switch

- .1 Rail-mount, 4-port unmanaged Ethernet switch
 - .1 Phoenix Contact FL series.

2.5 Control Devices

- .1 Control Relays
 - .1 Control Relays to CSA C22.2 No.14
 - .2 General purpose plug-in type
 - .1 Heavy duty,
 - .2 Electrical held,
 - .3 4 pole, convertible from NO to NC by changing wiring connections,
 - .4 Coil rating: 120 VAC or 24 VDC as indicated, and
 - .5 Contact Rating: 250 V, 5 A, or as indicated.
- .2 Pushbuttons
 - .1 Operator: flush type, black, and
 - .2 Contact arrangement: 1-NO and 1NC contact, rated 10A, 250 V AC.
 - .3 Manufacturer: Allen-Bradley 800E series.
- .3 Selector Switches
 - .1 Heavy duty, maintained, 3 position (or as indicated),
 - .2 Operators: standard, and
 - .3 Contact arrangement: as indicated, rated 10 A, 250 V AC.
 - .4 Manufacturer: Allen-Bradley 800E series.
- .4 Indicating Lights
 - .1 Heavy duty, full voltage LED type,
 - .2 Lens colour as indicated, and
 - .3 Supply Voltage: as indicated.
 - .4 Manufacturer: Allen-Bradley 800E series.
- .5 Keyed-Switch
 - .1 Camden CM100, and
 - .2 Insert: Camden M118SA-26D.
- .6 Alarm Buzzer
 - .1 Sonalert SC628N.
- .7 Off-Delay Timer Relay
 - .1 IDEC G3TF-2AD24 or equivalent.

2.6 Terminal Blocks

- .1 Terminal blocks for conductors exiting control panels shall be two-way type with double terminals, one for internal wiring connections and the other for external wiring connections.
 - .1 Double-height bridgeable terminals are approved for I/O wiring as shown.
- .2 Terminal blocks shall be made of suitable insulating material with full deep barriers between each pair of terminals.
- .3 A terminal identification strip shall form part of the terminal block and each terminal shall be identified by a number in accordance with the numbering scheme on the approved wiring diagrams.
- .4 Manufacturers: Phoenix Contact, Weidmuller.

2.7 Circuit Breakers

- .1 Rail mount supplementary protectors to CSA 22.2 No. 235, type B trip curve (3x to 5x continuous device rating)
 - .1 AC: 240 V, current ratings as shown, and
 - .2 DC: 48 V (min), current ratings as shown.

2.8 Grounding

- .1 Control panel enclosures shall be equipped with a solid copper ground bus or certified ground terminal blocks.
- .2 The ground bus shall be securely anchored to the enclosure so as to effectively ground the entire structure.
- .3 Clamp-type terminals sized large enough to carry the maximum expected current shall be provided on the ground bus for grounding cables.

2.9 Wiring

- .1 Conductors to be type TEW, 300 V rated, minimum #18AWG, or as indicated.
- .2 Analog signal wiring to be twisted pair, #18AWG, shielded cable, with minimum 300 V rated insulation.
- .3 Conductor colour coding:

Black	Ungrounded AC circuit conductors operating at the supply voltage
Red	Ungrounded AC circuit conductors operating at a voltage less than the supply voltage
White	Grounded AC circuit conductors regardless of

	voltage
Blue	Ungrounded DC circuit conductors
Grey	Grounded DC circuit conductors
Green, or green with yellow stripe	Ground
Yellow	Ungrounded AC or DC circuit conductors that may remain energized when main disconnect switch is in the 'off' position. Typically used for PLC output points.
Orange	Ungrounded AC or DC circuit conductors that may remain energized when main disconnect switch is in the 'off' position. Typically used for PLC input points.
White with yellow stripe, or white with orange stripe:	Grounded AC or DC circuit conductors that may remain energized when main disconnect switch is in the 'off' position.

2.10 Ventilation System

- .1 For indoor control panels provide:
 - .1 Single phase, 120 volt ac ventilation fan capable of supplying a minimum of 5 L/s (100 cfm) of ventilation air through the enclosure.
 - .2 Each fan shall be provided with a line voltage thermostat. Thermostat setpoints shall be adjustable in a range of 21 degrees C to 60 degrees C (70 degrees F to 140 degrees F) as a minimum.
 - .3 Each supply and exhaust grille shall contain a filter that is easily removed for cleaning or replacement.

2.11 RTU Radio

- .1 MDS iNET 900, DIN rail mount.
- .2 Antenna mast: 9.1m (30') octagonal pole.
 - .1 West Coast Engineering Cat# 15480-06
- .3 Antenna: Sinclair SY406

2.12 Uninterruptible Power Supply (UPS)

- .1 Always-ON N-series, 1500 VA, including:
 - .1 Always-On Wraparound bypass.
 - .2 Remote display (part # 30000)

PART 3 – EXECUTION

3.1 Panel Assembly

- .1 Control panels shall be factory assembled and shipped to the jobsite as a single unit.
- .2 Panels shall be fabricated as indicated and devices shall be mounted as shown or required.
- .3 Anchor equipment to panel as recommended by manufacturer.
- .4 Provide space around PLC as required by the PLC manufacturer to ensure adequate cooling.
- .5 Wires entering and exiting PLC sized to comply with the PLC manufacturer's requirements. Ensure doors on all components can be fully closed when all wires are installed.
- .6 Ensure that equipment ventilation slots are unobstructed.
- .7 Interior control panel wiring shall be tie-strapped bundles installed in narrow finger, grey wiring duct. Panduit Type F, or equivalent.

3.2 Conductor Identification

- .1 Conductors to be identified at each end with pre-printed plastic sleeves. Hand-printed identification will not be accepted.

3.3 Electrical Requirements

- .1 Each panel shall be powered by a dedicated 120 volts ac circuit, with a circuit breaker, sized as indicated.
- .2 Wiring shall terminate inside the panel on terminal blocks.

3.4 Grounding

- .1 Insulated wiring having a continuous rated current of not less than the circuit fuse rating shall be used for grounding.
- .2 Grounding terminals of power receptacles shall be solidly grounded to the panel enclosure.

3.5 Programming

- .1 Controller programming will be by the Owner.

END OF SECTION

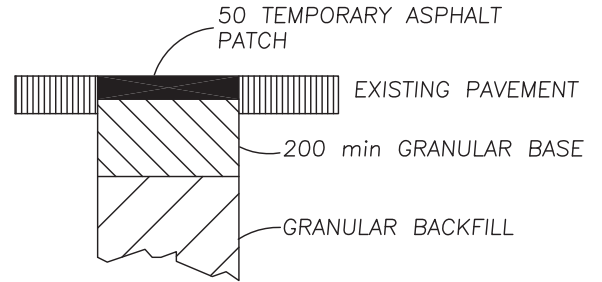
Appendix C

Detailed Drawings to the MMCD 2000 Edition

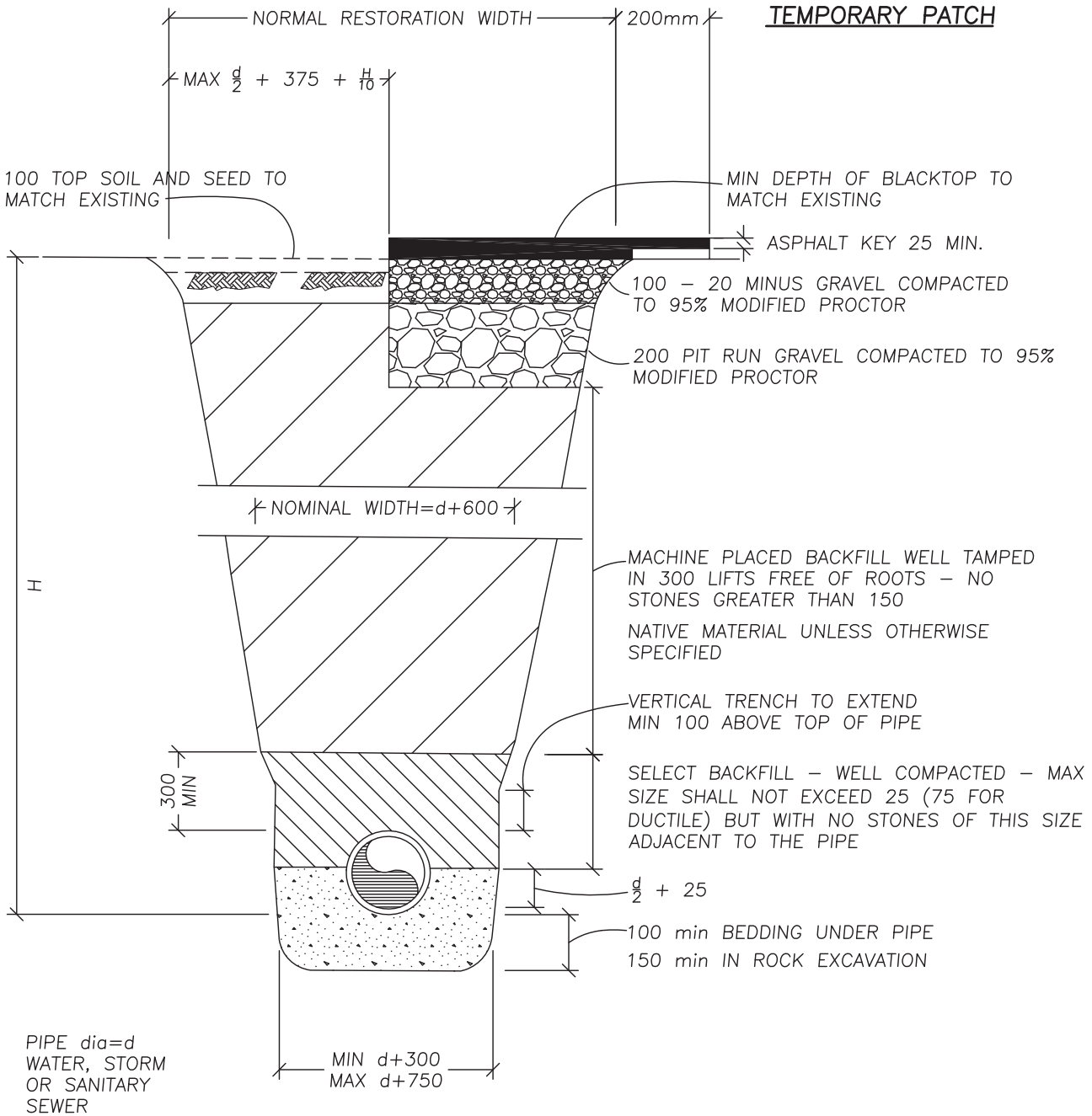
ALL DIMENSIONS IN MILLIMETRES

d = PIPE DIA IN mm

H = TRENCH DEPTH IN mm



TEMPORARY PATCH



City of Coquitlam

TRENCH DETAILS FOR STANDARD SECTION

REVISIONS				No.	DATE:	CKD.	APP.
DESIGNED BY:	DRAWN BY: A.S.K.	CHECKED BY:					APPROVED BY:
SCALE: N.T.S.	DATE: JUN 12/02						DRAWING NO.: COQ-G4